7.0 Forecasting Future Travel Demand

The following chapter describes how transportation demand in the MPA was forecasted through 2040 for the Metropolitan Transportation Plan (MTP).

7.1 Generalized Travel Demand Forecast Process

The 2040 MTP uses a regional travel demand model to forecast future travel demand. This generalized four-step process is described below. More detailed information can be found in the Appendix.

Step 1: Trip Generation

This is the first step of the travel demand modeling process. This step determines the number and type of trips that will be produced from and attracted to a Traffic Analysis Zone (TAZ), or small geographical area defined specifically for transportation planning purposes. Trip generation relies on socioeconomic and land use data. While this data already exists for the base year, it must be forecasted for future years.

Step 2: Trip Distribution

This step determines trip origins and destinations based on land use patterns and a gravity model, which assumes that travelers will gravitate toward the closest establishment that meets the purpose of their trip.

Step 3: Mode Choice

This step converts person trips to vehicle trips and accounts for the fact that not all trips are made by motor vehicles.

Step 4: Trip Assignment

This is the final step in which vehicular trips are distributed across the roadway network based on a number of factors, most notably travel time.

7.2 Forecasting Population and Employment Changes

Aside from changes to the transportation system, land use changes are the primary drivers of changes in travel demand over time. For modeling purposes, land use changes are measured by changes in the magnitude and distribution of population, employment, and school enrollment. Changes are forecasted at the TAZ level, which is typically comprised of multiple census blocks but is not larger than a census block group.

Data Sources and County Control Totals

Population, employment, and school enrollment information for the base year was compiled for all TAZs using the following sources:

- The 2010 Census provided population and housing information.
- Proprietary employment point data obtained by MDOT from InfoUSA provided detailed information on existing establishments in the MPA, including the number of employees.
- School enrollment data was obtained from the U.S. Department of Education National Center for Education Statistics.

Population and employment forecasts were developed at the county level as part of Mississippi's statewide Long-Range Transportation Plan. These forecasts were developed using a combination of projections, including historical projections and forecasts by Woods & Pool Economics, Inc. and Regional Economic Models Inc. (REMI).

TAZ-Level Forecasts

After developing the county forecasts, population, employment, and school enrollment had to be forecast for all TAZs in the MPO to 2020, 2030, and 2040. The first step in doing these was to determine where future growth would be concentrated. To do this, the MTP Subcommittee, composed of planners, engineers, and other members of the MPO's Technical Committee, identified growth areas by different land use categories within the MPO. The results of this exercise, illustrated in Figure 7.1, were used as a guide in developing forecast numbers at the TAZ level.

Next, a socio-economic forecasting model was developed based on the suitability and attractiveness of an area to develop. This model is summarized by the following steps:

- An area's maximum population and employment, or carrying capacity, is determined based on the amount of developable and re-developable land and the area's likely maximum density (based on a land use classification).

- Next, an area's attractiveness for residential, commercial/professional, and industrial development is calculated. There are three main factors considered, with varying sub-factors depending on the land use attractiveness being measured:
    - Land develop-ability – considering ease of land assembly and presence of flood zones
    - Accessibility – considered regional accessibility to employment and services, and proximity to major roadways, interstate interchanges, rail lines, and intermodal facilities.
    - Demand – considered proximity to major employment centers, retail clusters, industrial clusters, high-growth residential areas, and underserved commercial markets.
- After an area's attractiveness for residential, commercial/professional, and industrial development is calculated, growth is allocated in an iterative process based on this attractiveness score. Iterations continue until the 2020, 2030, or 2040 control total are reached. Individual TAZs may max out before the control total is reached for a given year.

After TAZ-level population and employment forecasts for 2020, 2030, and 2040 were developed by the socioeconomic forecasting model, results were reviewed for consistency with the growth areas identified by the MTP subcommittee and for consistency with recently approved or constructed developments. Adjustments were made where necessary.

With the final TAZ-level population and employment forecasts by year, school enrollment was forecasted using the following approach:

- School-age populations were calculated using a cohort-component approach
- All TAZs were assigned to existing public schools and enrollment was assumed to grow in proportion to the increase in the school-age population. Private school and college/university enrollment was projected to grow in proportion to the increase in total population in the MPO.
- In areas where school sizes increased drastically, new school locations were added.

Summary of Forecasted Change

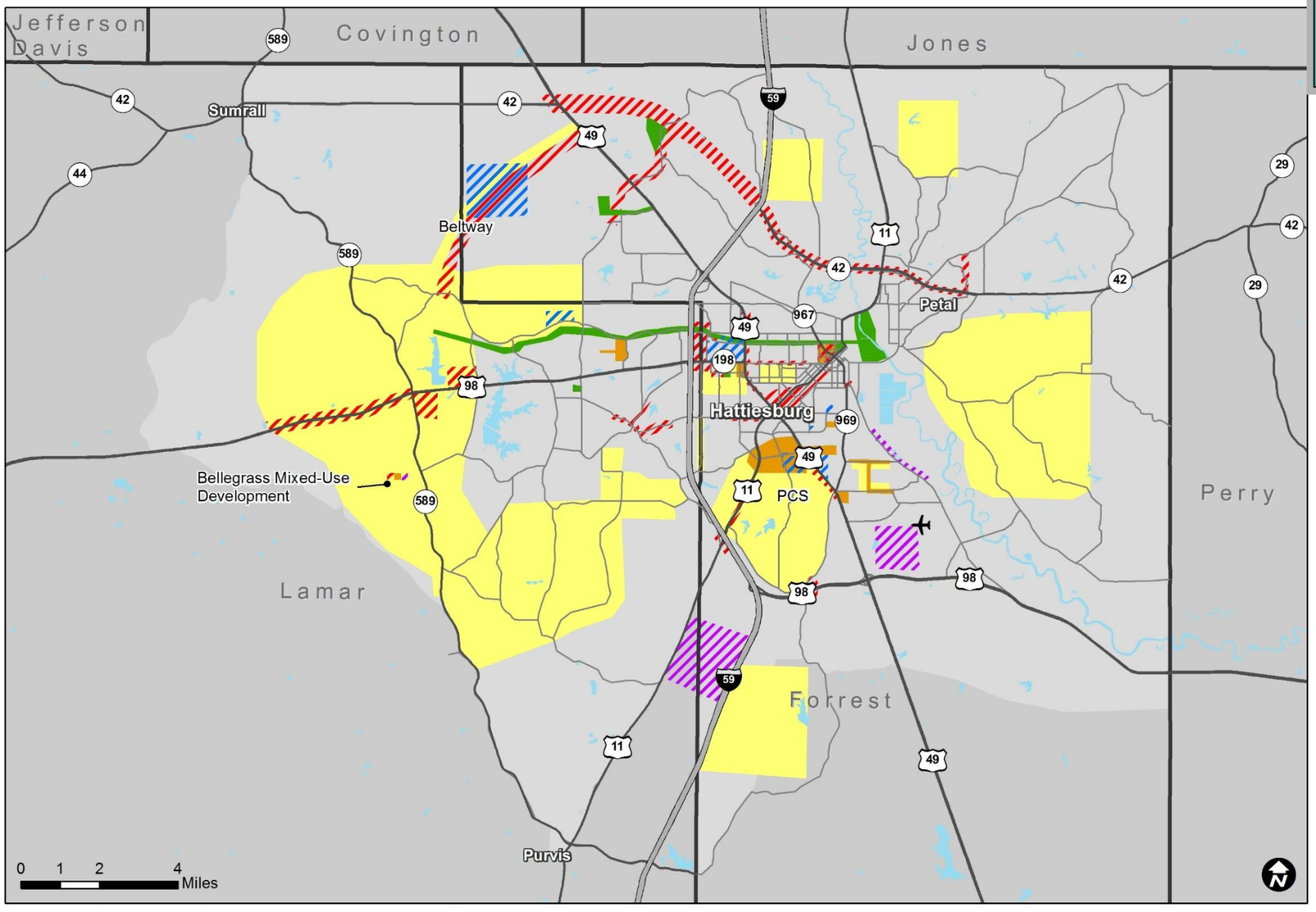
The resulting changes in population and employment through 2040 are shown in Table 7.1 and illustrated in Figures 7.2 through 7.7.

Table 7.1 Change in Population and Employment Variables in MPA, 2013 to 2040

Variable	Description	2013	2040	Change	Percent Change
OCCDU	Occupied Dwelling Units (Households)	41,263	59,971	18,708	45.3%
TOTPOP	Total Population in TAZ	106,413	154,105	47,692	44.8%
TOT_EMP	Total Employment	69,505	97,424	27,919	40.2%
RET_EMP	Retail Employment	15,860	22,829	6,969	43.9%
AMC_EMP	Agriculture, Mining and Construction Employment	3,138	3,288	150	4.8%
MTCUW_EMP	Manufacturing, Transportation/Communications/Utilities and Wholesale Trade Employment	9,974	8,968	-1,006	-10.1%
OS_EMP	Government, Office and Services Employment	39,442	61,251	21,809	55.3%
OTH_EMP	Other Employment	1,091	1,088	-3	-0.3%
SCHATT	School Enrollment	39,837	55,870	16,033	40.2%

Source: Hattiesburg Regional Travel Demand Model

FIGURE 7.1 IDENTIFIED GROWTH AREAS



2040 MTP

Legend

- Interstate
- Secondary Roadways
- Other Major Roadways in MPO
- Water

MTP Subcommittee Identified Growth Areas

Growth Area Types*

- Commercial
- Educational
- Industrial
- Recreational
- Residential Multi-Family
- Residential Single-Family
- Metropolitan Planning Area
- Counties

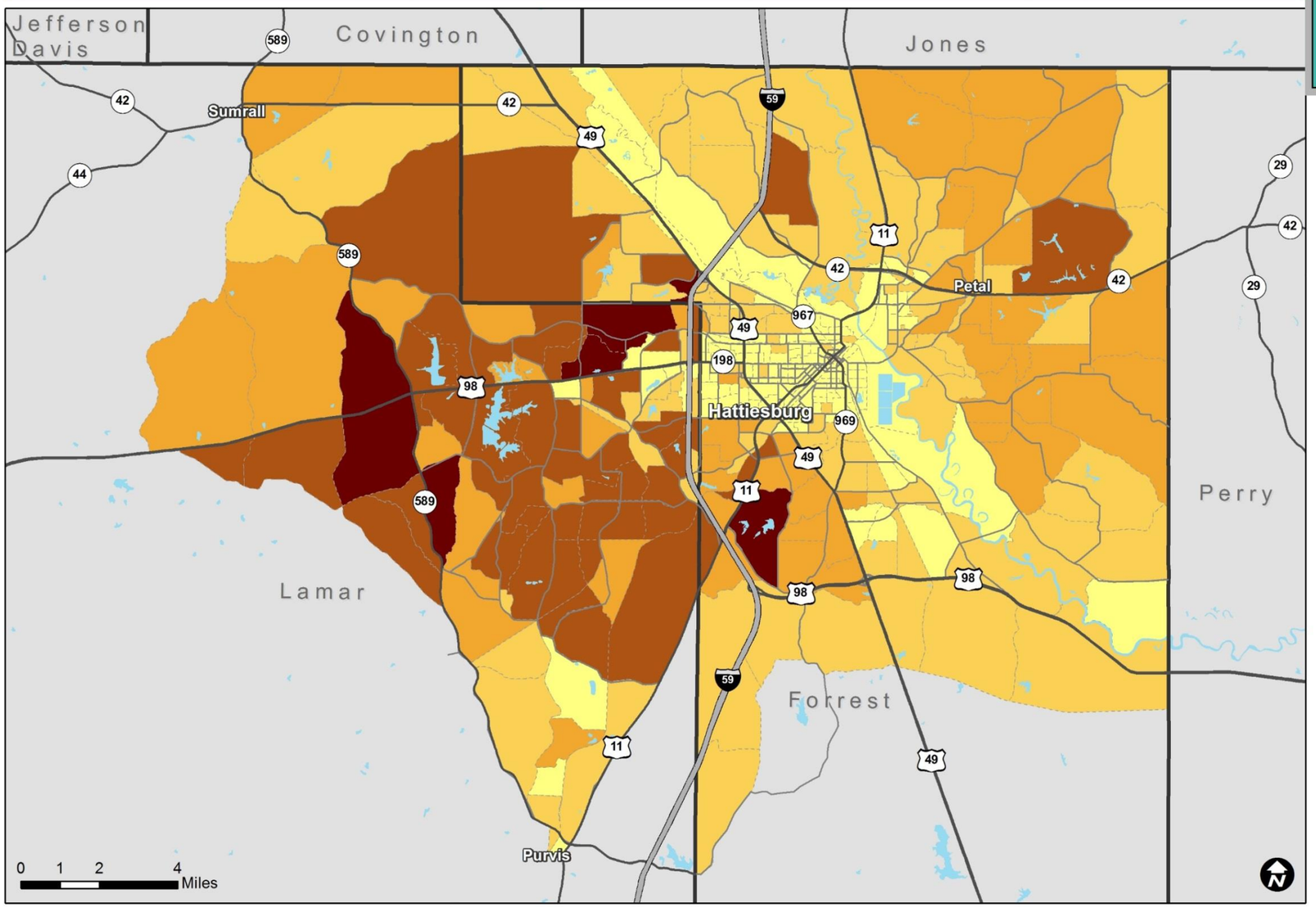
*Overlapping areas indicate a potential mix of uses.

Disclaimer: This map is for planning purposes only. Contact MPO Staff for more information.

Map Source: Neel-Schaffer, Inc.

Data Sources: MTP Subcommittee Meeting

FIGURE 7.2 CHANGE IN HOUSEHOLDS, 2013 TO 2040



2040 MTP

Legend

Traffic Analysis Zones

Change in Households

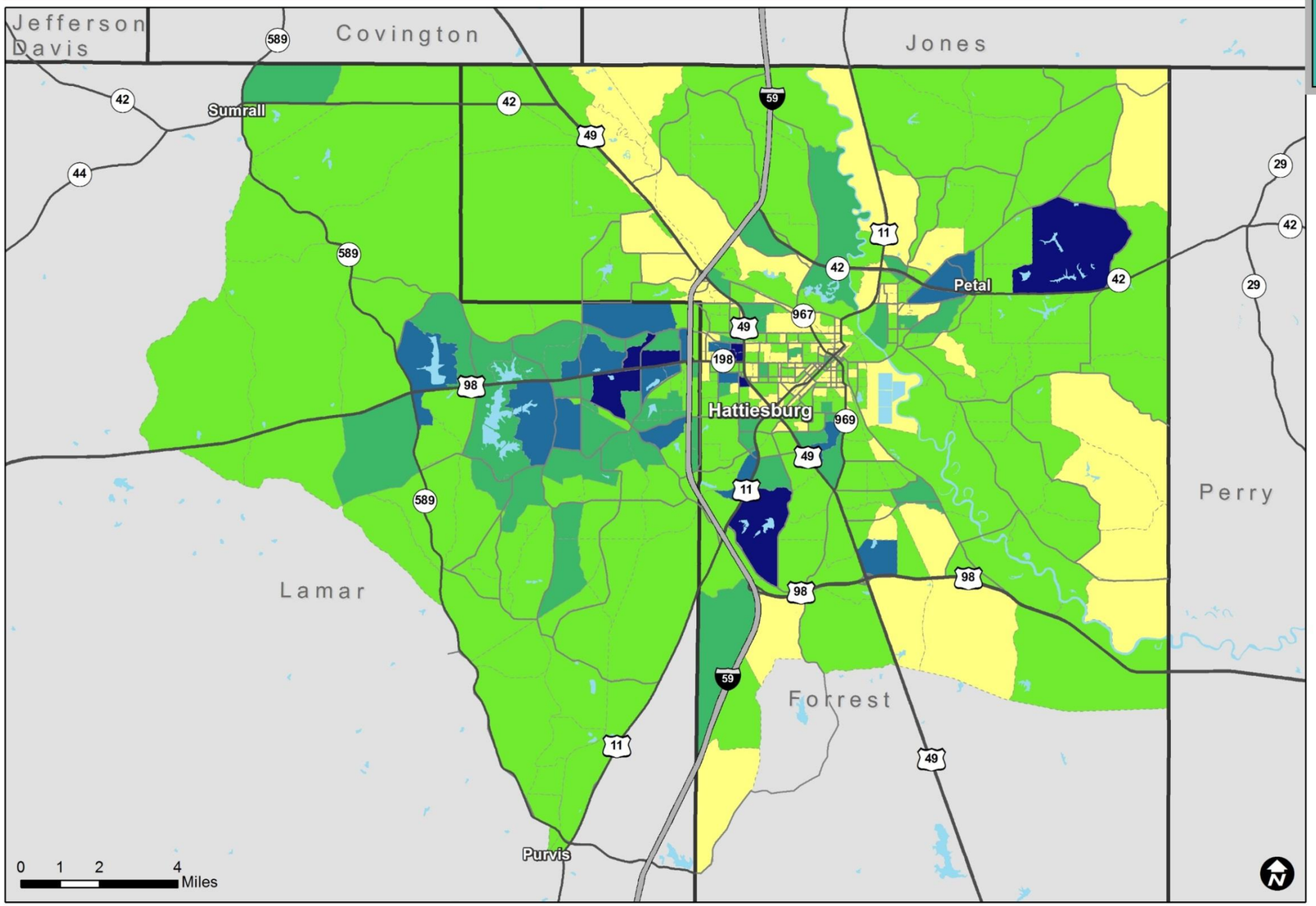
- No Growth
- 1 - 50
- 51 - 100
- 101 - 250
- 251 - 850
- Interstate
- Secondary Roadways
- Other Major Roadways in MPO
- Water
- Counties

Disclaimer: This map is for planning purposes only. Contact MPO Staff for more information.

Map Source: Neel-Schaffer, Inc.

Data Sources: Hattiesburg Regional Travel Demand Model

FIGURE 7.3 CHANGE IN EMPLOYMENT, 2013 TO 2040



2040 MTP

Legend

Traffic Analysis Zones

Change in Jobs

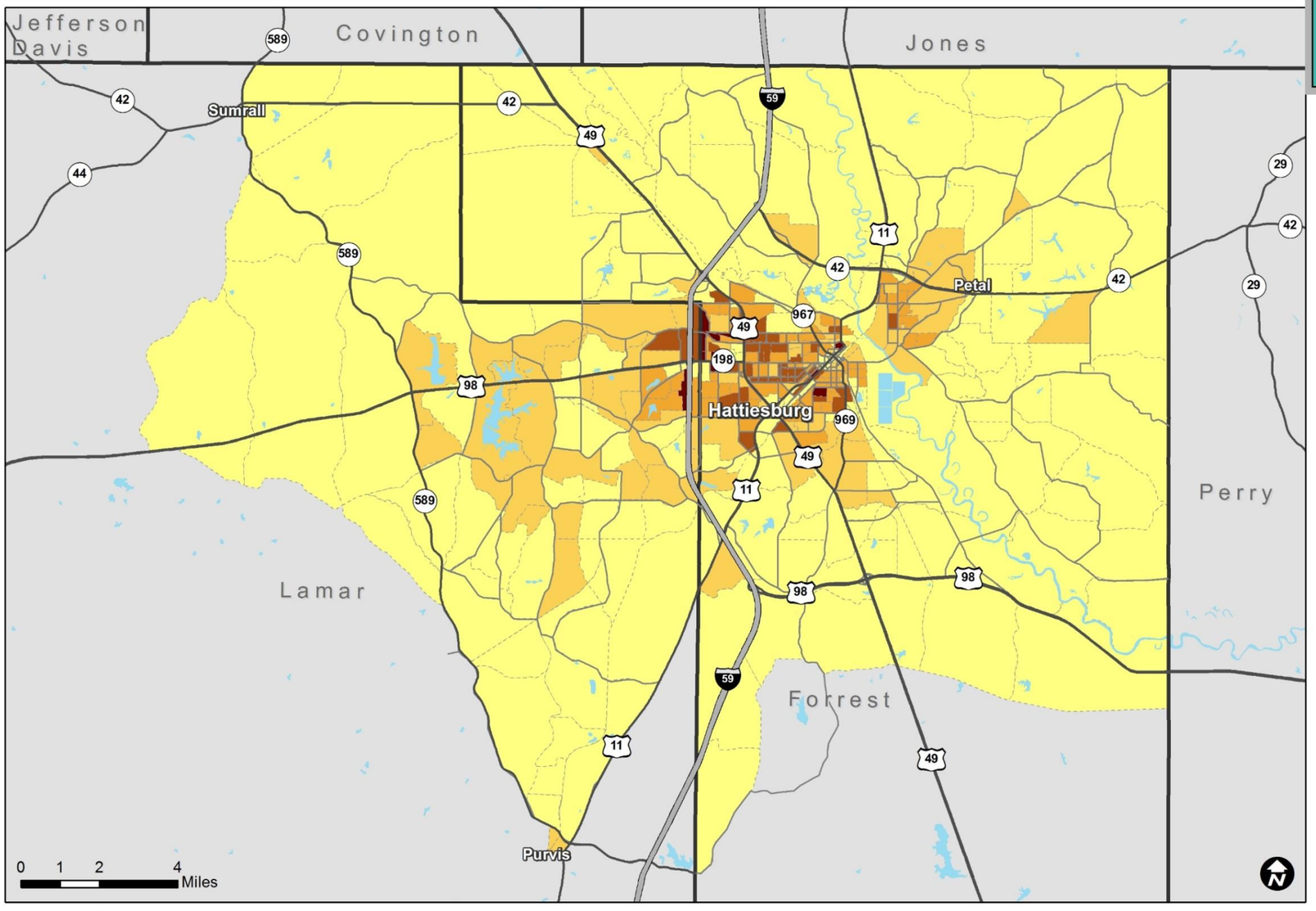
- No Growth
- 1 - 100
- 101 - 250
- 251 - 500
- 501 - 1,570
- Interstate
- Secondary Roadways
- Other Major Roadways in MPO
- Water
- Counties

Disclaimer: This map is for planning purposes only. Contact MPO Staff for more information.

Map Source: Neel-Schaffer, Inc.

Data Sources: Hattiesburg Regional Travel Demand Model

FIGURE 7.4 HOUSEHOLD DENSITY, 2013



2040 MTP

Legend

Traffic Analysis Zones

Households per Acre

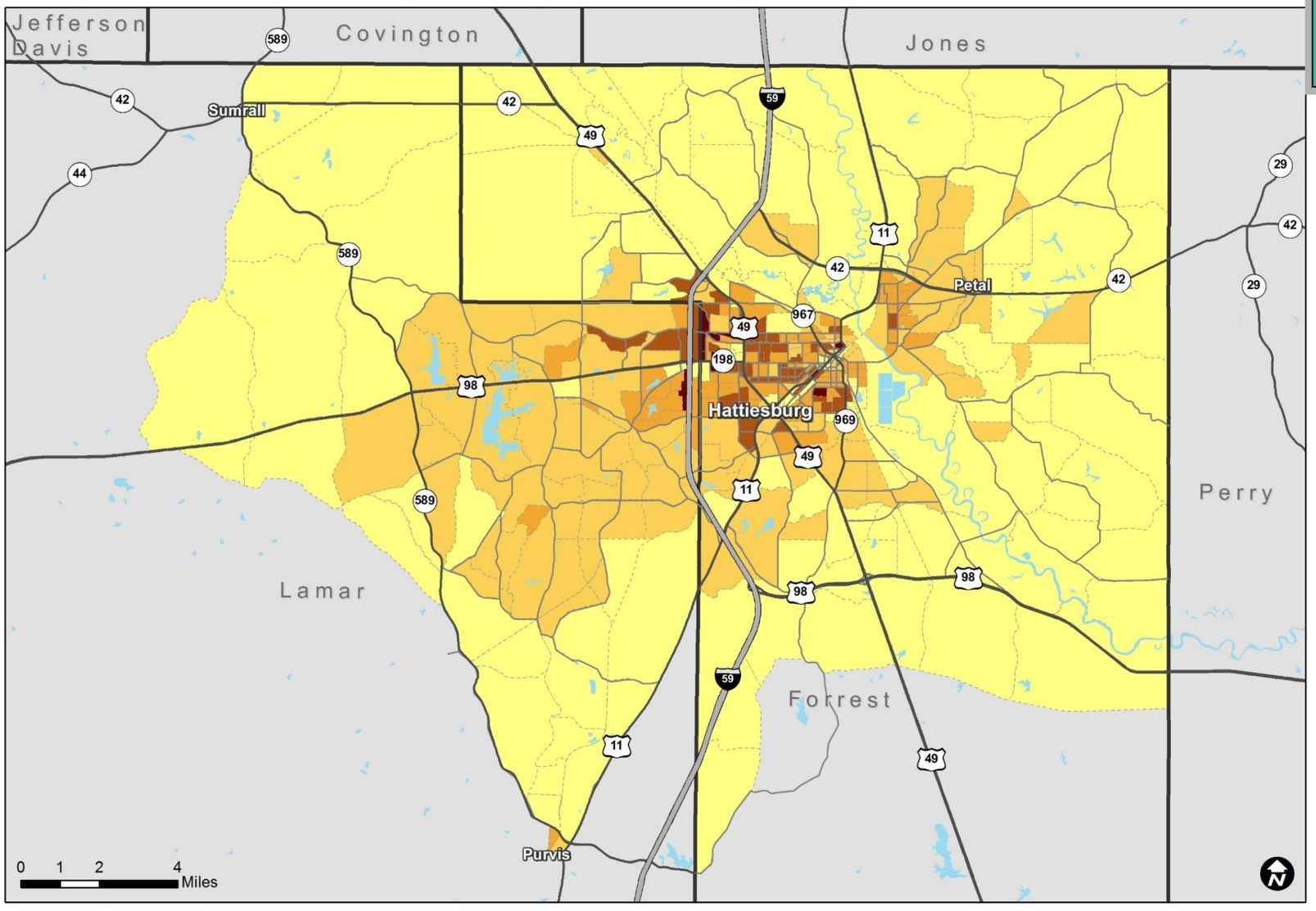
- 0.00 - 0.25
- 0.26 - 1.00
- 1.01 - 2.00
- 2.01 - 4.00
- 4.01 - 11.26
- Interstate
- Secondary Roadways
- Other Major Roadways in MPO
- Water
- Counties

Disclaimer: This map is for planning purposes only. Contact MPO Staff for more information.

Map Source: Neel-Schaffer, Inc.

Data Sources: Hattiesburg Regional Travel Demand Model

FIGURE 7.5 HOUSEHOLD DENSITY, 2040



2040 MTP

Legend

Traffic Analysis Zones

Households per Acre

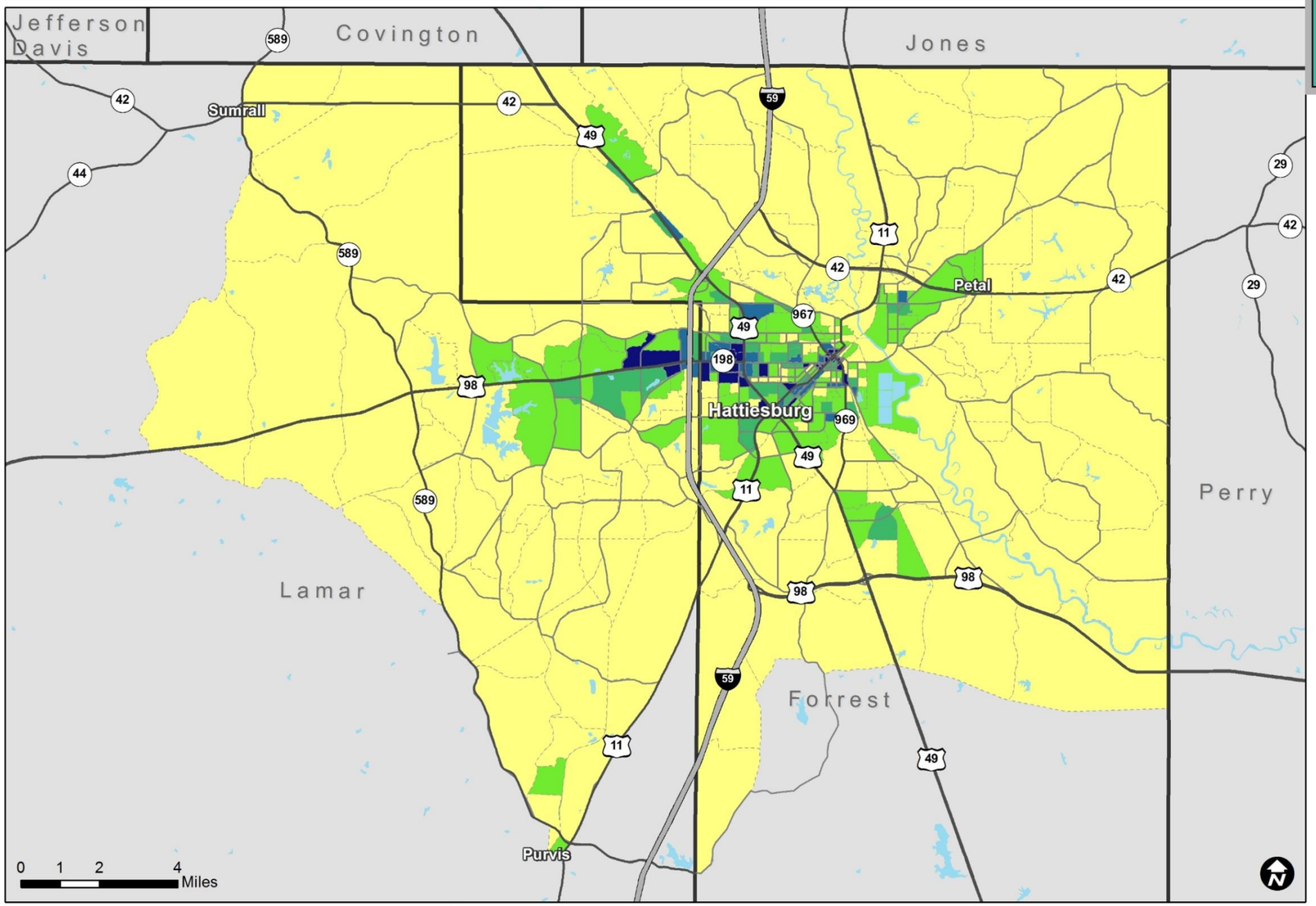
- 0.00 - 0.25
- 0.26 - 1.00
- 1.01 - 2.00
- 2.01 - 4.00
- 4.01 - 15.42
- Interstate
- Secondary Roadways
- Other Major Roadways in MPO
- Water
- Counties

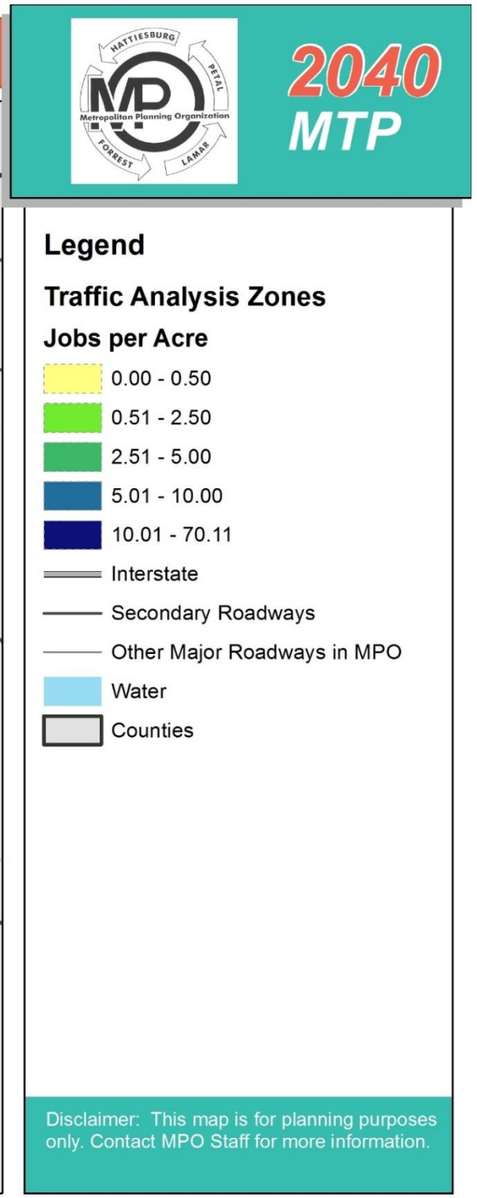
Disclaimer: This map is for planning purposes only. Contact MPO Staff for more information.

Map Source: Neel-Schaffer, Inc.

Data Sources: Hattiesburg Regional Travel Demand Model

FIGURE 7.6 EMPLOYMENT DENSITY, 2013

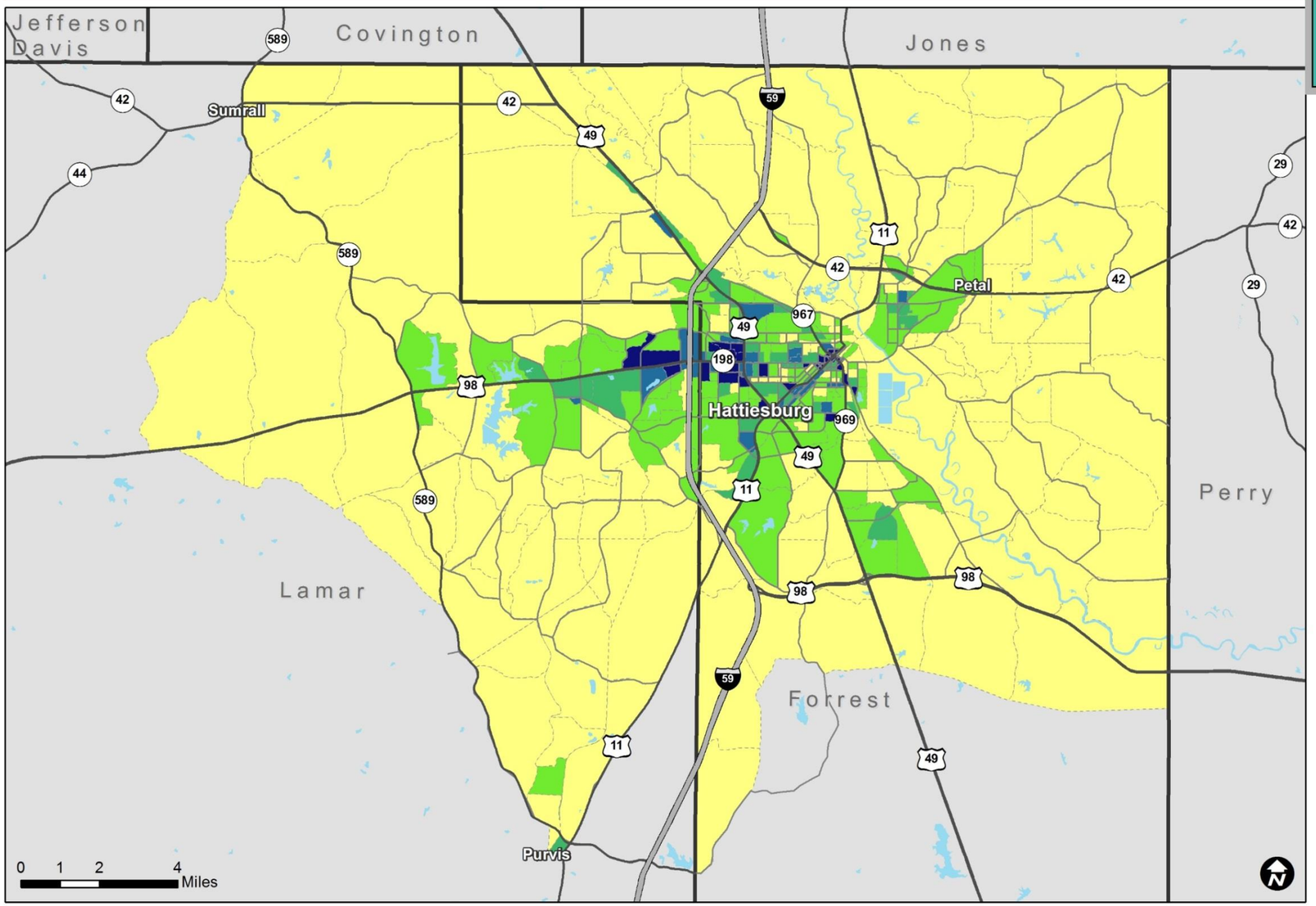


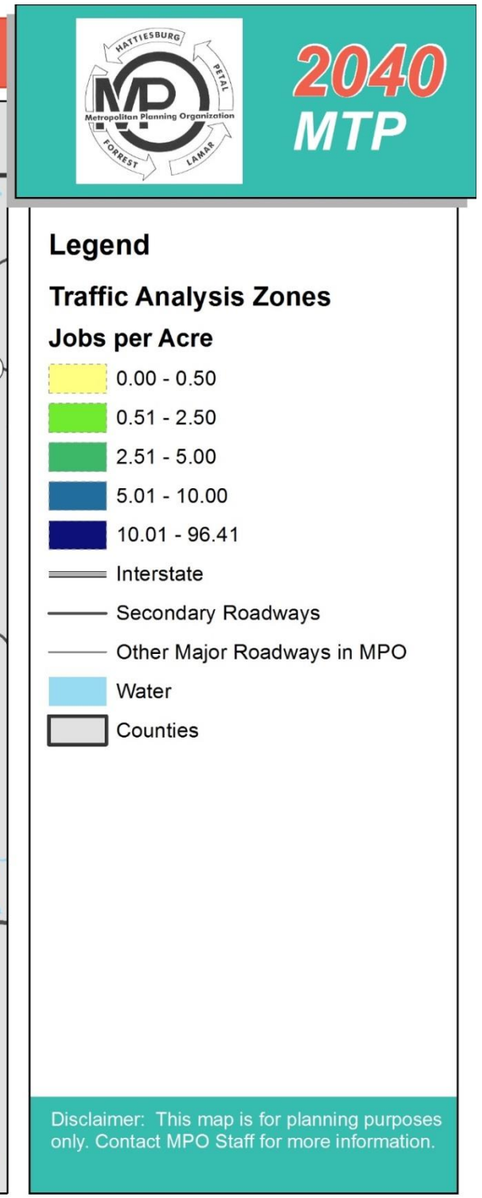


Map Source: Neel-Schaffer, Inc.

Data Sources: Hattiesburg Regional Travel Demand Model

FIGURE 7.7 EMPLOYMENT DENSITY, 2040





Map Source: Neel-Schaffer, Inc.

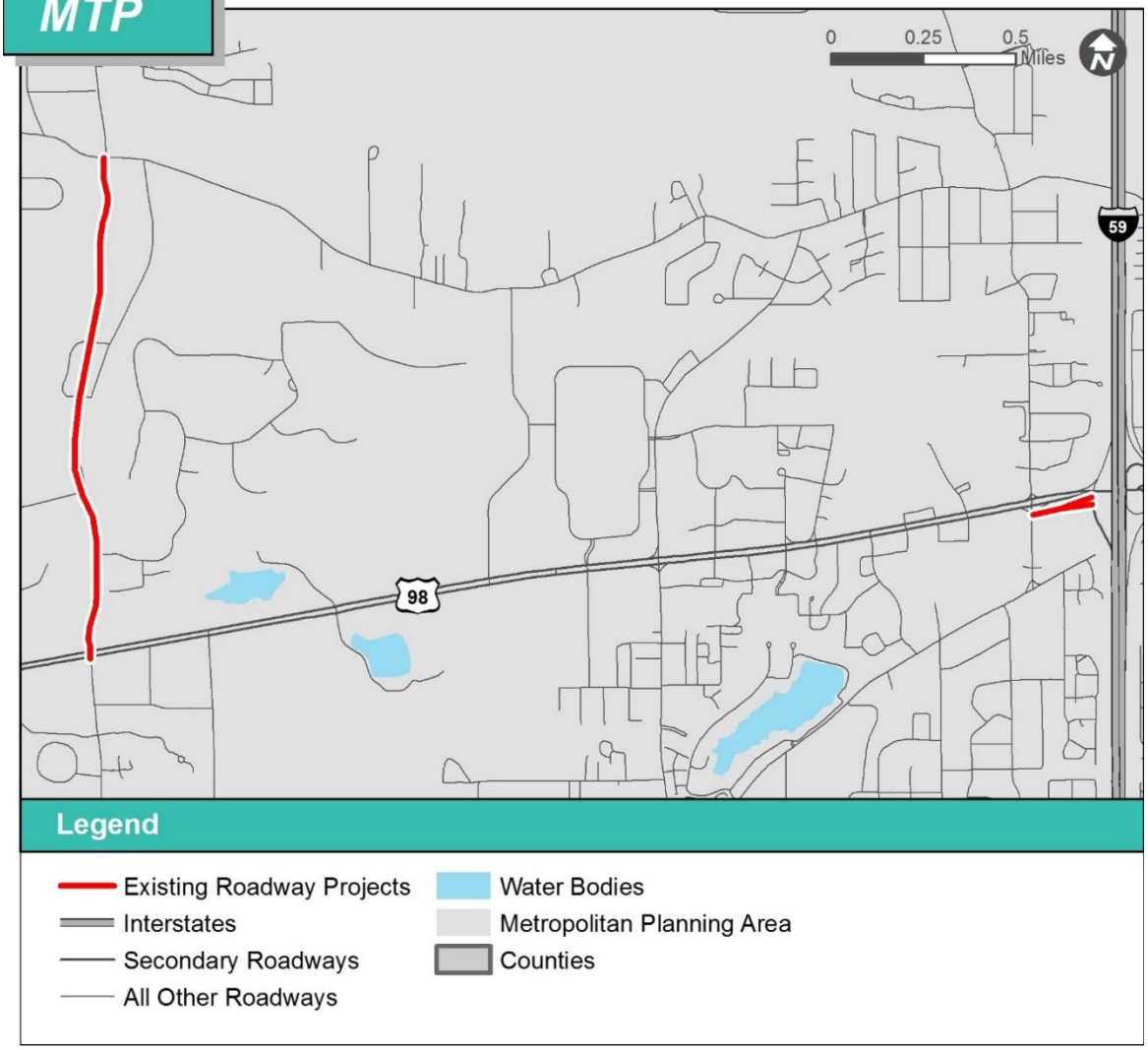
Data Sources: Hattiesburg Regional Travel Demand Model

7.3 Updating the Future Transportation Network

Improvements to the transportation network also affect travel demand. In addition to the socioeconomic forecasts, transportation projects that have committed funding or have been constructed since 2013 were noted. These projects were then added to the model network to create a 2040 Existing plus Committed (E+C) network. These E+C projects are depicted in Figure 7.8 and consists of the Jackson Road extension and interchange improvements at I-59 and Hardy Street.

2040 MTP

FIGURE 7.8 EXISTING AND COMMITTED ROADWAY PROJECTS



Disclaimer: This map is for planning purposes only.

Map Source: Neel-Schaffer, Inc.

Data Sources: MDOT

7.4 Travel Demand Model Outputs

The primary outputs of the Travel Demand Model are vehicle trips, vehicle miles traveled, vehicle hours traveled, and vehicle hours of delay. This information, when combined with roadway capacities and other network information, informs the needs analysis in Chapter 8: Future Transportation Need.

8.0 Future Transportation Need

This section discusses transportation issues that will need to be addressed in the future. It was developed by an analysis of existing conditions and travel demand model forecasts. However, existing plans, public involvement, and stakeholder input were also incorporated.

8.1 Roadways and Bridges

Congestion Relief

Given the population and employment growth forecasted to occur by 2040, the Hattiesburg Travel Demand Model indicates that the number of vehicle trips in the MPA will increase by nearly 30 percent, resulting in about 220,000 trips from 2013 to 2040. Most trip types grow by the same rate, but trips originating outside of the MPA are forecasted to grow slightly lower. These changes are summarized in Table 8.1.

Table 8.1 Vehicle Trips by Purpose, 2010 to 2040

Trip Purpose	2013	2040 (E+C)	Change	Percent Change
Home-Based Work	83,706	123,029	39,323	47.0%
Home-Based Other	183,361	269,441	86,080	46.9%
Non-Home Based	97,181	141,414	44,233	45.5%
Commercial Vehicle	32,995	44,777	11,782	35.7%
Truck	9,829	13,073	3,244	33.0%
External-Internal	88,296	121,467	33,171	37.6%
External-External	13,852	18,586	4,734	34.2%
Total	**509,220**	**731,787**	**222,567**	**43.7%**

Note: E+C is future scenario with only Existing and Committed transportation projects.

Source: Hattiesburg Travel Demand Model, NSI

As shown in Table 8.2, if transportation projects that currently have committed funding are constructed then the centerline miles will increase by 0.6 percent because of new roadways and widening projects.

Table 8.2 also shows the forecast change in Vehicle Miles Traveled (VMT), Vehicle Hours Traveled (VHT), and hours of delay. This data indicates that both VMT and VHT will increase by about 40 and 67 percent respectively, largely due to the forecast growth and change in land use patterns. The change in hours of delay shows that without any additional projects beyond those already funded, the additional travel generated by this growth will result in a very high percent increase in delay. The minutes of delay per trip in 2040 would increase to 3.2 from 1.8 in year 2013, a 50 percent increase.

Table 8.2 Travel Demand Impact of Growth and Existing and Committed Projects, 2013 to 2040

Centerline Miles of Roadways				
Classification	**2013 (Base)**	**2040 (E+C Projects)**	**Change**	**Percent**
Interstate	22	22	0	0.0%
Principal Arterial	62	64	0	0.0%
Minor Arterial	76	76	0	0.0%
Collector	172	174	2	1.2%
Total	**332**	**334**	**2**	**0.6%**
Daily Vehicle Miles Traveled (VMT)				
Classification	**2013(Base)**	**2040 (E+C Projects)**	**Change**	**Percent**
Interstate	621,013	821,778	200,765	32.3%
Principal Arterial	1,134,731	1,503,836	369,105	32.5%
Minor Arterial	442,742	628,379	185,637	41.9%
Collector	413,955	706,645	292,690	70.7%
Total	**2,612,441**	**3,660,638**	**1,048,197**	**40.1%**
Daily Vehicle Hours Traveled (VHT)				
Classification	**2013 (Base)**	**2040 (E+C Projects)**	**Change**	**Percent**
Interstate	11,219	17,062	5,843	52.1%
Principal Arterial	30,592	50,642	20,050	65.5%
Minor Arterial	13,551	21,441	7,890	58.2%
Collector	11,813	23,204	11,391	96.4%
Total	**67,175**	**112,349**	**45,174**	**67.2%**
Daily Vehicle Hours of Delay (VHD)				
Classification	**2013 (Base)**	**2040 (E+C Projects)**	**Change**	**Percent**
Interstate	1,877	4,702	2,825	150.5%
Principal Arterial	9,269	22,581	13,312	143.6%
Minor Arterial	2,291	5,655	3,364	146.8%
Collector	1,698	5,925	4,227	248.9%
Total	**15,134**	**38,863**	**23,729**	**156.8%**

Note: E+C is future scenario with only Existing and Committed transportation projects.

Source: Hattiesburg Travel Demand Model, NSI

While congestion is currently concentrated mostly near intersections in the Hattiesburg MPA, by 2040 congestion is forecast to become more widespread if only the existing and committed projects are implemented. The number of roadway segments with Volume to Capacity (V/C) ratios above 1.00 would increase from 12 in 2013 to 31 in 2040, as listed in Table 8.3 and illustrated in Figure 8.1.

It is important to note that not all segments with a high V/C ratio should be widened with additional through lanes or turning lanes. In urban settings, it may be more appropriate to consider ITS improvements like signalization improvements or reversible lanes. It also may be more appropriate to employ Transportation Demand Management (TDM) strategies and/or improve walking, biking, or transit conditions to encourage alternative means of transportation.

Table 8.3 Segments with Volume to Capacity Ratios above 1.00 in 2040 (E+C)

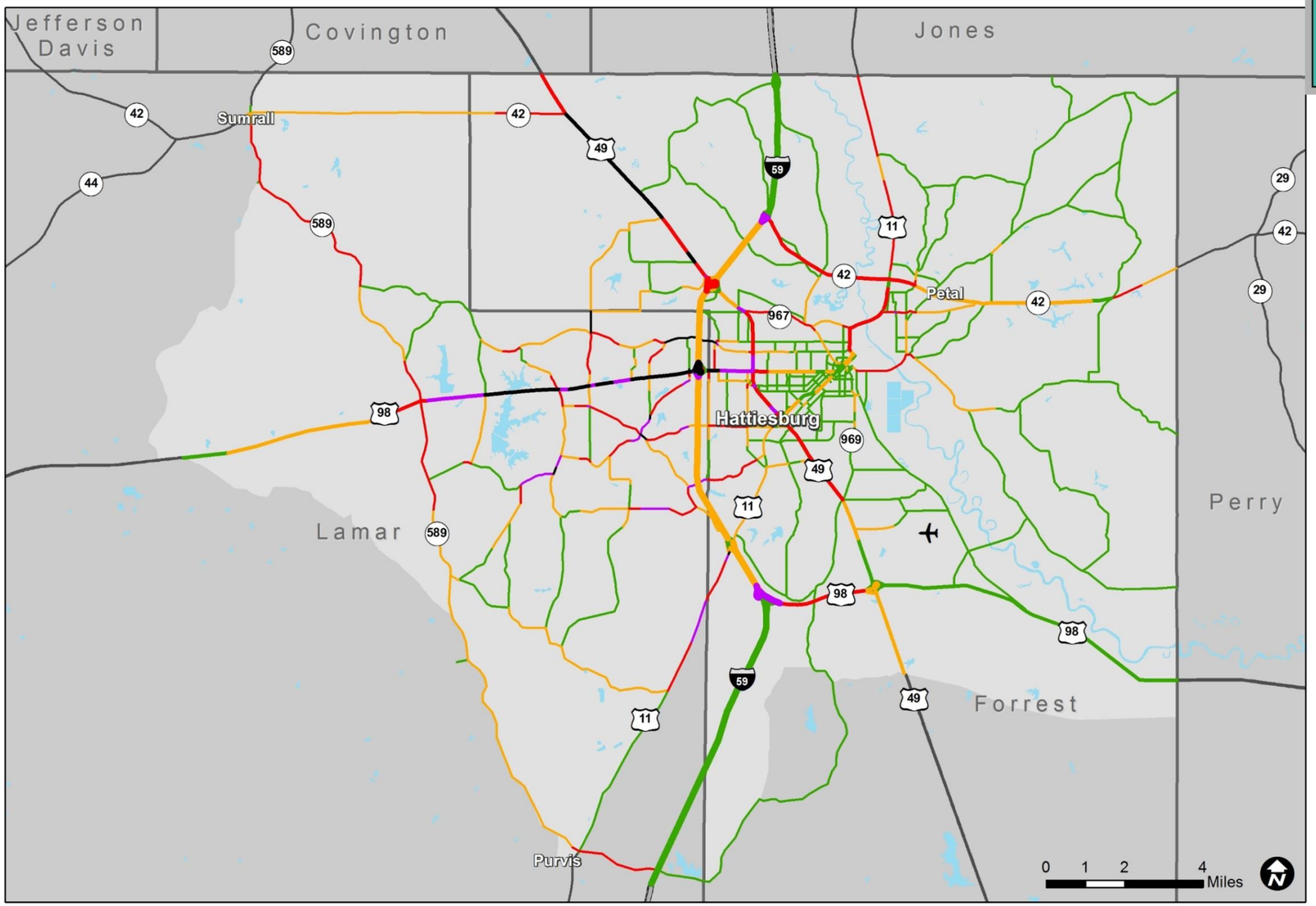
Route	Limits	Length (miles)
US 98/Hardy St	MS 589 to US 49	8.51
I-59 NB Clover On-Ramp	From US 98 EB	0.12
I-59 Collector-Distributor Road	I-59 NB Clover On-Ramp to I-59 NB On-Ramp	0.20
I-59 NB On-Ramp	I-59 Collector-Distributor Road to I-59	0.04
I-59 SB Off-Ramp	@ US 98	0.21
I-59 SB On-Ramp	@ US 98	0.16
I-59 NB Off-Ramp	I-59 to I-59 Collector-Distributor Road	0.06
I-59 SB Off-Ramp	@ MS 42	0.17
I-59 NB Off-Ramp	@ MS 42	0.17
I-59 NB On-Ramp	@ US 98 Bypass	0.60
I-59 SB Off-Ramp	@ US 98 Bypass	0.34
W 4th St	Weathersby Rd to N 37th Ave	1.42
MS 42	SB Ramps to NB Ramps on I-59	0.11
MS 42	US 49 to Rawls Springs Rd	3.63
MS 42	Blackwell Blvd to Rawls Springs Loop Rd	0.29
MS 42	Classic Dr to I-59 SB Ramps	0.07
MS 42	N George St to S George St	0.02
Oak Grove Rd	0.1 mi W of Lamar Ave to Westover Dr	0.19
US 49	N 31st Ave to Old Hwy 42	0.16

Route	Limits	Length (miles)
US 49	0.1 mi S of W 4th St to Hardy St	0.40
US 49	US 49 Frontage Rd Ramp to Mamie St	0.03
US 49	Bartur St to US 11 SB Ramps	0.17
US 11	0.16 mi S of Sullivan Kilrain Rd to I-59 SB Ramps	0.32
US 11	R D heartfield Rd to Steele Rd	0.98
Jackson Rd	J Ed Turner Dr to W 4th St	0.55
Lincoln Rd	Oak Grove Rd to Sandy Run Rd	0.19
Old Hwy 11	Old Hwy 24 to Oak Grove Rd	0.49
Old Hwy 24	Burnt Bridge Rd to Old Hwy 11	0.91
Oak Grove Rd	Friend Rd to Weathersby Rd	0.82
Richburg Rd	Carter Rd to Santmyer Rd	0.70
Richburg Rd	Sandy Run Rd to S 40th Ave	0.51

Note: E+C is future scenario with only Existing and Committed transportation projects.

Source: Hattiesburg Travel Demand Model, NSI

FIGURE 8.1 FUTURE ROADWAY CONGESTION, 2040 (EXISTING+COMMITTED)



2040 MTP

Legend

Modeled Existing plus Committed Network

Volume/Capacity Ratio

- 0.00 - 0.50
- 0.51 - 0.75
- 0.76 - 1.00
- 1.01 - 1.20
- 1.21 - 3.00

Roadways Outside MPA:

- Interstate
- Secondary Roadways
- Water Bodies
- Metropolitan Planning Area
- Counties

Disclaimer: This map is for planning purposes only. Contact MPO Staff for more information.

Map Source: Neel-Schaffer, Inc.

Data Sources: Hattiesburg Regional Travel Demand Model

Roadway Safety Needs

Within the study area, a total of 14,248 automobile-only crashes occurred between 2011 and 2013. The majority of these crashes took place between the hours of 7 a.m. to 7 p.m., with the most crashes occurring from 12 p.m. to 6p.m.. These peak hour crashes are likely the result of intersections and/or roadways not being designed to operate efficiently when presented with large traffic volumes. Safety can likely be improved and collisions reduced by adjusting signal timing, intersection improvements and/or adding lane(s). Approximately 81 percent of crashes in the study area occurred during dry roadway surface conditions; therefore, roadway surface conditions do not play a major factor in the majority of crashes. The overwhelming majority of crashes, about 76 percent, occurred during the daylight hours. About 8 percent of crashes occurred at locations with no street lights during the nighttime hours (dark). The crashes that occurred under these conditions are likely the result of poor lighting and can be reduced by providing proper lighting at intersections.

Within the study area, there were a total of 46 fatal automobile-only crashes and 3,133 injury automobile-only crashes between 2011 and 2013. About three percent of the crashes that occurred in the study area involved alcohol, but nearly 10 percent of total fatal crashes were alcohol related. Hence, this study recommends promoting programs that aim to eliminate drunk driving.

The four highest collision types, making up nearly 86 percent of the crashes in the study area, were:

- Rear-end collisions
- Angle collisions
- Sideswipe collisions
- Run off road collisions

Recommendations for reducing these types of crashes are outlined below:

Rear-End Collisions

In the study area, rear-end collisions account for the largest amount of crashes. These crashes can be attributed to a number of factors. One main cause of rear-end accidents is the driver's inattentiveness. Other potential causes include large turning volumes, slippery pavement, inadequate roadway lighting, crossing pedestrians, poor visibility of a traffic signal, congestion, inadequate signal timing, and/or an unwarranted signal.

The crash data shows high concentrations of rear-end crashes along US Hwy 49 and US Hwy 98/Hardy St. The crashes occur primarily at intersections. Correlating the crash data with field conditions and observations reveal that many of these rear-end crashes may be influenced by intersection geometry and traffic operations. Rear-end crash frequency may be reduced by adjusting the yellow clearance intervals in compliance with the *Institute of Transportation Engineers (ITE)* recommended clearance interval practices. The number of crashes may further be reduced by reconfiguring the travel and turning lanes. This can be accomplished in a variety of methods including converting the two-way frontage roads to one-way frontage roads, providing exclusive right-turn lanes, providing advanced warning signs, providing indirect left-turns, or by displacing left-turn movements.

In general, the recommendations for reducing rear-end crashes include:

- Analyze turning volumes to determine if a right-turn lane or left-turn lane is warranted. Providing a turning lane separates the turning vehicles from the through vehicles, preventing through vehicles from rear ending turning vehicles. If a large right turn volume exists, increasing the corner radius for right turns is an option.
- Checking the pavement conditions. Rear-end collisions caused by slippery pavement can be reduced by lowering the speed limit with enforcement, providing overlay pavement, adequate drainage, groove pavement, or with the addition of a "Slippery When Wet" sign.
- Ensure roadway lighting is sufficient for drivers to see the roadway and surroundings.
- Determine if there is a large amount of pedestrian traffic. Pedestrians crossing the roads may impede traffic and force drivers to stop suddenly. If crossing pedestrians are an issue, options include installing or improving crosswalk devices and providing pedestrian signal indications.
- Check the visibility of the traffic signals at all approaches. In order to provide better visibility of the traffic signal, options include installing or improving warning signs, overhead signal heads, installing 12" signal lenses, visors and back plates, or relocating/adding signal heads.
- Verify that the signal timing is adequate to serve the traffic volumes at the trouble intersections. Options include adjusting phase-change interval, providing a red-clearance interval, providing progression, and utilizing signal actuation with dilemma zone protection.
- Verify that a signal is warranted at the given intersection.

Angle Crashes

Angle collisions are the second most prevalent collision type in the study area between 2011 and 2013. They can be caused by a number of factors, including restricted sight distance, excessive speed, inadequate roadway lighting, poor visibility of a traffic signal, inadequate signal timing, inadequate advance warning signs, running a red light, and large traffic volumes.

In general, the recommendations for reducing right angle collisions include:

- Verify that the sight distance at all intersection approaches is not restricted. Options to alleviate restricted sight distance include removing the sight obstruction and/or installing or improving warning signs.
- Conduct speed studies to determine whether or not speed was a contributing factor. In order to reduce crashes caused by excessive speeding, the speed limit can be lowered with enforcement, the phase change interval can be adjusted, or rumble strips can be installed.
- Ensure roadway lighting is sufficient for drivers to see the roadway and surrounding area.
- Check the visibility of the traffic signal at all approaches. In order to provide better visibility of the traffic signal, options include installing or improving warning signs, overhead signal heads, installing 12" signal lenses, visors, back plates, and/or relocating or adding signal heads.
- Verify that the signal timing is adequate to serve the traffic volumes. Options include adjusting phase change interval, providing a red-clearance interval, providing progression, and/or utilizing signal actuation with dilemma zone protection.
- Verify that the intersection is designed to handle the traffic volume. If the traffic volumes are too large for the intersection's capacity, options include adding a lane(s) and retiming the signal.

Sideswipes

Sideswipes are the third most prevalent crashes that occurred in the study area. They can be caused by a number of factors including excessive speed, inadequate roadway lighting, poor pavement markings, large traffic volumes, and driver inattentiveness.

The recommendations for reducing sideswipes include:

- Check for proper signage around the intersection, especially if the roadway geometry may be confusing for the driver. Verify that all one-way streets are marked "One-Way" and "No Turn" signs are placed at appropriate locations.
- Verify that pavement markings are visible during day and night hours.
- Verify that the roadway geometry can be easily maneuvered by drivers.
- Evaluate left and right turning volumes to determine if a right turn and/or left turn lane is warranted.
- Ensure roadway lighting is sufficient for drivers to see roadway and surroundings.
- Verify that lanes are marked properly and provide turning and through movement directions on lanes as well as signage that indicates lane configurations. This will prevent cars from dangerously switching lanes at the last minute.

Other Collision Types

Within the study area, there are a number of other collision types that are prevalent, including left turn-angle, left turn-opposite, left turn-same, right turn-same, right turn-opposite, sideswipe-same, and sideswipe-opposite.

In general, the recommendations for increasing the safety and reducing the number of crashes at all the study intersections include:

- Determine if the speed limit is too high or if vehicles in the area are traveling over the speed limit. Reducing the speed can reduce the severity of crashes and make drivers more attentive to their surroundings.
- Verify the clearance intervals for all signalized intersection approaches and ensure that there is an all red clearance. For larger intersections, it is particularly important to have a long enough clearance interval for vehicles to safely make it through the intersection before the light turns red.

- Check for proper intersection signage, especially if the roadway geometry may be confusing for the driver. Verify that all one-way streets are marked "One-Way" and "No Turn" signs are placed at appropriate locations.
- Verify that pavement markings are visible during day and night hours.
- Verify that the roadway geometry can be easily maneuvered by drivers.
- Evaluate left and right turning volumes to determine if a right turn and/or left turn lane is warranted.
- Ensure roadway lighting is sufficient for drivers to see roadway and surroundings.
- Check the visibility of the traffic signals from all approaches.
- Verify that lanes are marked properly and provide turning and through movement directions, as well as signage that indicates lane configurations. This will prevent cars from dangerously switching lanes at the last minute and reduces crash potential.

Develop a Safety Management System (SMS)

Traffic safety programs are relatively uniform from state to state in their approach to making the highway system safer for their users. The typical traffic safety program combines several different features from a SMS, which all states were mandated to have under ISTEA in 1991. Under ISTEA, the SMS was required to address:

- Coordinating and integrating safety features for the various modes of travel
- Identifying hazardous locations, investigating them, and establishing countermeasures to increase safety
- Early consideration for safety in all highway projects and programs
- Identifying safety needs of special user groups (handicapped, elderly, etc.)
- Routinely maintaining and upgrading the safety features on the roadways
- Marketing safety programs to encourage community involvement

The SMS mandate was later withdrawn due to the 1995 National Highway System Designation Act. However, MAP-21 Section 1203 requires that each state and MPO have a planning process that addresses the safety performance measure to "achieve a significant reduction in traffic fatalities and serious injuries on all public roads." MAP-21 also retains the SAFETEA-LU requirement that the planning process address the need to "increase the safety of the transportation system for motorized and non-motorized users." A traffic safety program involves several steps.

The typical traffic safety program includes:

- A crash record system
- Identification of hazardous locations
- Engineering studies
- Selection of countermeasures
- Prioritization of improvement projects
- Planning and implementation of improvement projects
- Evaluation of the implemented projects

The crash record system should contain data on individual crashes that occur in the area. The crash data should include the following information:

- Time,
- Date,
- Weather condition,
- Pavement condition,
- Driver, and
- Roadway.

The primary source for this data is usually police reports from local jurisdictions. In order for this record system to be useful, the data has to be processed and available on a timely basis so that it can be analyzed.

The identification of hazardous locations is based on actual crashes that have occurred, and/or the potential of an area to have a high number of crashes. The severity of these crashes must also be considered in order to prioritize the locations and develop solutions for them. Once the hazardous locations are identified, engineering studies can be conducted using the crash record system data. An analysis can use crash frequency, crash rate, Equivalent Property Damage Only (EPDO) rates, and other methods. Supplemental data from police comments and citizen complaints can also be used in the analysis process in order to find the causes of the crashes.

Once the causes of the crashes have been determined, countermeasures are proposed and then evaluated. Improvement projects are then selected based on the benefits they provide compared to the cost to implement them. Sometimes, enforcement and education

may be all that is necessary in order to reduce the number of crashes. Other times, multiple projects may be needed to mitigate a particular problem area.

Once projects have been selected, they need to be prioritized based on their cost and benefits. Not all improvement projects will be able to be implemented due to funding limitations. After the projects have been selected and prioritized, an implementation plan should be developed to help ensure that resources and finances are available to complete the improvement projects in a timely manner. Implementation of projects should occur as soon as possible to avoid cost increases and prevent potential crashes that may occur without the project in place.

Projects must be evaluated to determine whether they are effective or can be used to address similar problems in the future. This is typically done in a before-and-after analysis by observing the frequency and severity of the crashes several years before the implementation of the project, and then for several years after the project has been completed. Two issues can arise in this method of analysis. First, if enforcement and/or education change from before to after conditions, it can affect the number of crashes at that location. Second, "regression to the mean", a statistical phenomenon that can make natural variation in repeated data look like real change, must be taken into account to ensure that change in crash patterns and/or frequency can be attributable to the safety projects. In order to correct these two issues, control sites should be established that are similar to the study locations, but have not had any changes made to them.

Roadway Maintenance Needs

According to 2013 data from the FHWA's Highway Performance Monitoring System, most of the pavements on major roadways in the MPA are in good or fair condition, as measured by the International Roughness Index (IRI).

Table 8.4 shows the major roadway segments in the MPA that were in poor condition in 2013 and have not been repaved.

Table 8.4 Roadway Segments in MPA with Poor Pavement Conditions

Route	From	To	Miles	Functional Class	Average Daily Traffic	IRI
US 11	Main St	E 4th St	0.60	Arterial	1,400-6,800	245
US 49	MS 42	Irby Rd	1.87	Arterial	24,000	186

Source: HPMS, 2013

Bridge Deficiencies

The existing conditions analysis revealed that there are currently 19 bridges in poor condition in the Hattiesburg MPA, two of which are on the NHS. The two bridges on the NHS in poor condition are the northbound and southbound bridges above the Bouie River on I-59.

Table 8.5 ranks the 19 bridges in poor condition in the MPA by their sufficiency ratings, regardless of location on the NHS. By addressing the needs of these bridges, the MPO can prevent/improve safety and reduce bridge-related bottlenecks. Furthermore, by addressing the bridges in poor condition on the NHS, the MPO can also improve its performance on national performance measures, which are currently proposed to only be concerned with the NHS bridges.

While some of these deficient bridges may be improved in the 2040 MTP incidental to other transportation projects, such as a roadway widening projects, the MPO and MDOT should prioritize these bridges for improvements as funding becomes available.

Table 8.5 Worst Performing Bridges in Poor Condition by Sufficiency Rating

Facility	Feature Intersecting	County	Year Built	Sufficiency Rating	Special Classification
US 11	Greene Creek	Forrest	1931	7.0	Structurally Deficient
James St	Burketts Creek	Forrest	1965	7.0	Structurally Deficient
Chappell Hill Rd	Greens Creek	Forrest	1970	12.6	Structurally Deficient
Sunrise Rd	Reese Creek	Forrest	1960	15.9	Structurally Deficient
Broad St	Gordons Creek	Forrest	1937	18.8	Structurally Deficient
Pinehills Dr	Branch Of Gordons Creek	Forrest	1975	23.3	Structurally Deficient
Byron St	Branch Of Gordons Creek	Forrest	1975	23.3	Structurally Deficient
McLeod St	Gordons Creek	Forrest	1929	25.8	Structurally Deficient
12th Ave	Gordons Creek	Forrest	1980	28.1	Structurally Deficient
Hillendale Dr	Gordons Creek	Forrest	1979	28.5	Structurally Deficient
Hardie Rd	Mill Creek	Lamar	1987	30.9	Structurally Deficient
Hillendale Dr	Gordons Creek Hillendale	Forrest	1973	33.0	Structurally Deficient
Campbell Scenic Dr	Mixon Creek	Forrest	1970	36.0	Structurally Deficient
Old Corinth Rd	Dry Prong Creek	Forrest	1997	36.5	Structurally Deficient
Lynn Ray Rd	Boggy Branch	Forrest	1979	36.6	Structurally Deficient
Cedar Rd	Lotts Creek	Forrest	1986	36.8	Structurally Deficient

Facility	Feature Intersecting	County	Year Built	Sufficiency Rating	Special Classification
Unetta St	Gordons Creek	Forrest	1960	39.9	Structurally Deficient
I-59	Bouie River	Forrest	1960	62.9	Structurally Deficient
I-59	Bouie River	Forrest	1960	62.9	Structurally Deficient

Source: National Bridge Inventory, 2013

Alternative Fuel Vehicle Infrastructure Needs

While AFVs only made up approximately seven percent of all light-duty vehicles in the U.S. in 2013, by 2040 the U.S. Energy Information Administration's *Annual Energy Outlook* anticipates that the AFV market share will grow to about 16 percent. In terms of raw numbers, the report forecasts a roughly threefold increase from approximately 15.8 million light-duty vehicles to 45.4 million light-duty vehicles.

The two biggest gainers amongst AFVs are ethanol vehicles (+16.9 million) and electric vehicles (+12.1 million), which together account for about 98 percent of the forecasted growth in light-duty AFVs through 2040. While electric vehicles are forecast to grow at a much faster rate than ethanol vehicles, accommodating the increase in both types of AFVs will require regional transportation systems to provide additional infrastructure (i.e. fuel/charging stations).

The Hattiesburg MSA currently has only one publicly accessible electric vehicle charging station. This translates to about 0.7 per 100,000 residents, which is below the 2.3 per 100,000 average for MSAs with populations less than 250,000 and significantly below the rates of the top performing small MSAs. Furthermore, there are currently no E85 stations in the MSA.

In order to ensure that the current and future infrastructure needs for these two growing types of AFVs are being met, the MPO needs to further study the regional demand for AFVs and examine the most appropriate role of the MPO in encouraging and accommodating increases in their use.

8.2 Bicycle and Pedestrian Need

High Demand Areas and Projects

The latent demand analysis in Chapter 6: The Existing Transportation System highlights many areas of high demand. In particular, the areas of greatest demand are around the University of Southern Mississippi, the Hattiesburg CBD, and the area between the Hattiesburg CBD and William Carey University.

Given the poor rating of sidewalks and crosswalks in the MPA by the public, the existing conditions and latent demand analyses in Chapter 6, and the recommendations in the MPO's Pathways Master Plan, the existing bicycle and pedestrian system does not meet the needs of the Hattiesburg MPA. While new residential subdivisions in Hattiesburg are providing sidewalks, per the city's subdivision regulations, and new roadway projects funded with state or federal funds will include bicycle and pedestrian facilities, much of the MPA transportation right-of-ways are in need of retrofitting to accommodate bicyclists and pedestrians.

The MPO's Pathways Master Plan prioritizes pedestrian improvements along major roadway corridors and in zones around schools, parks, and other major generators. It also recommends a network of on-street bikeways and shared use paths. While the 2040 MTP recognizes a high need for bicycle and pedestrian improvements, it does not identify specific bicycle and pedestrian projects. Instead, it defers to the MPO's Pathways Master Plan and local governments and institutions to identify high-need projects to worthy of pursuing federal funding.

The reason for this approach is that bicycle and pedestrian planning is much more subject to local conditions than other modes of transportation. Right-of-Way issues, facility design, and alternatives evaluation greatly impact bicycle and pedestrian project development. The MTP is not intended to analyze areas in this great of detail.

Bicycle and Pedestrian Policies

The MPO should encourage all local governments to revisit their development ordinances and consider requiring pedestrian and bicycle accommodations for new development with urban densities or in close proximity to urban areas. This will ensure that future development addresses bicycle and pedestrian needs and does not exacerbate existing system gaps and deficiencies.

For future federally funded transportation projects, bicycling and walking facilities will be incorporated into all transportation projects unless exceptional circumstances exist. In order to assess the project-specific bicycle and pedestrian needs, the surrounding context will be considered, including: land use patterns; existing, informal bicycle or pedestrian activities; any reference to bicycle or pedestrian needs in the planning process; and public,

agency, or other comments requesting bicycle or pedestrian facilities. This approach is consistent with federal guidance.

Local jurisdictions may take this a step further by adopting Complete Streets policies or ordinances which require similar or more stringent actions for all locally funded transportation projects, regardless of involvement of federal funding.

8.3 Public Transit Need

Maintaining and Improving the Existing System

The main issue for maintaining the existing system in the future will be maintaining vehicles in good condition. Hub City Transit (HCT) will ensure its vehicles are in good condition and the MPO includes funding for the replacement and rehabilitation of vehicles in the staged improvement plan in Chapter 11: Implementation Plan.

Beyond maintaining the existing system, improving the existing level of service is the greatest and most urgent need. The existing conditions revealed that there is a lack of sidewalks near transit stops and route headways are currently very long.

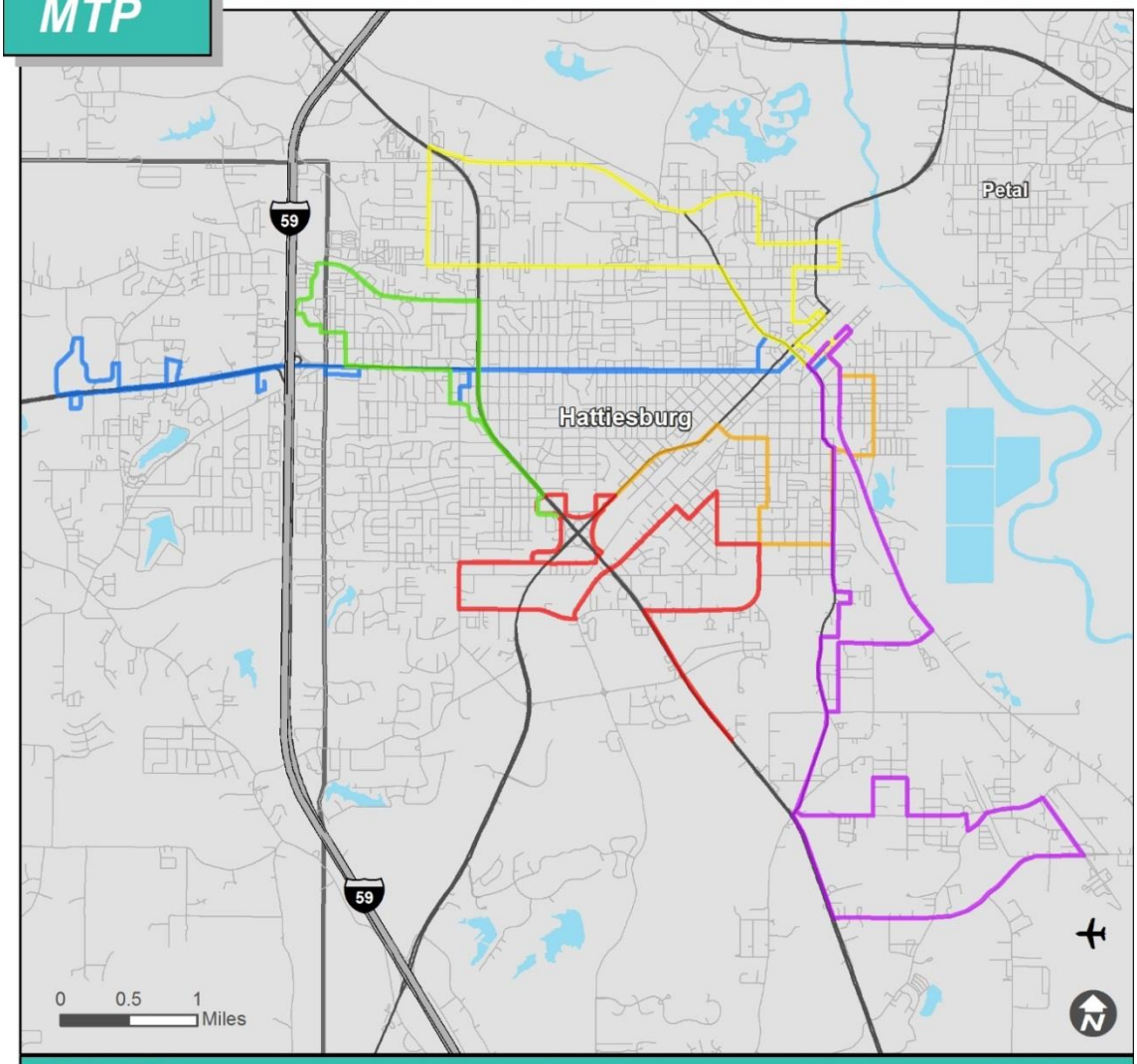
The MPO should work with the HCT/city of Hattiesburg and other agencies to prioritize pedestrian improvements near transit stops, especially near major generators.

Currently, there are route modifications being proposed by the city of Hattiesburg that will make the system more efficient and increase the level of service in some areas. These modifications, illustrated in Figure 8.2, utilize the same number of buses and should be implemented before expanding the system by increasing the number of buses.

No safety or security information was reported for HCT because it uses a small systems waiver. Therefore, no assessment of safety or security needs was made for the 2040 MTP.

2040 MTP

FIGURE 8.2 PROPOSED HCT FIXED ROUTE SYSTEM



Legend

Proposed HCT Fixed Routes
- Blue Line (Hardy St)
- Green Line (4th St)
- Red Line (Country Club)
- Orange Line (Broadway)
- Yellow Line (Hwy 42)
- Purple Line (Palmer's Crossing)

- Interstates
- Secondary Roadways
- All Other Roadways
- Counties
- Water Bodies
- Metropolitan Planning Area

Disclaimer: This map is for planning purposes only.

Map Source: Neel-Schaffer, Inc.

Data Sources: City of Hattiesburg

Increasing Transit Service

When compared to fixed route transit systems in peer urbanized areas (Chapter 6: The Existing Transportation System), HCT provides a low level of service. Out of the five selected peer areas in the South, three systems provide 2-4 times the number of annual vehicle revenue miles as HCT and have an annual ridership of 6-12 times that of HCT. While a direct comparison is limited because of differences in the built environment from place to place, the peer analysis indicates that Hattiesburg lags many of its southern peers in providing fixed route transit service.

For the Hattiesburg MPA to be economically competitive amongst its peers, the MPO must encourage HCT and other agencies to increase the current level of service for public transit. This can be done primarily by increasing route frequencies, expanding hours of operation, extending coverage to new areas, redesigning routes to be more efficient, and improving stop accommodations and ADA accessibility.

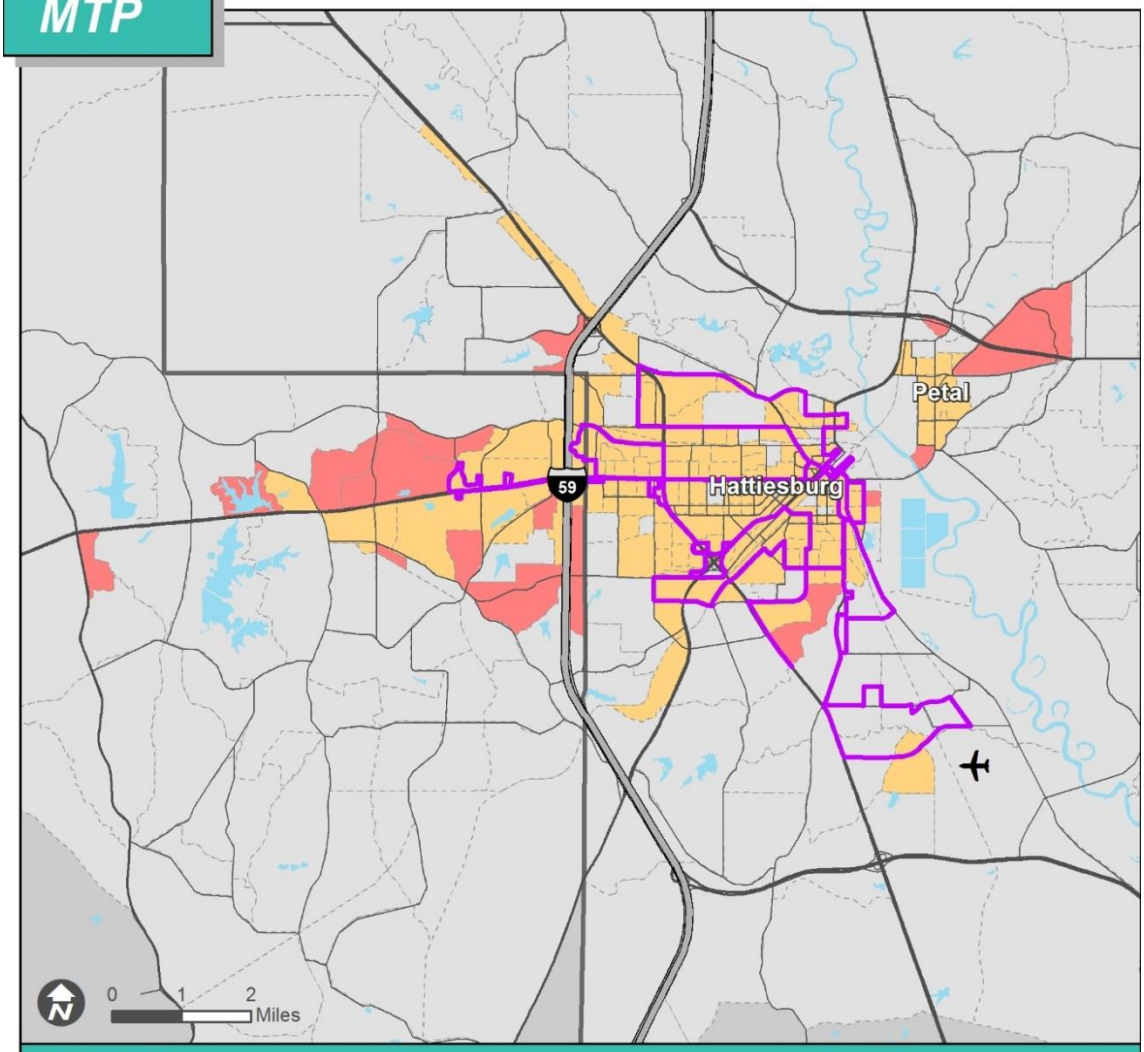
The latent demand analysis in Chapter 6: The Existing Transportation System shows there are many areas of moderate demand that are not currently served by fixed routes in the MPA, even if routes are modified as currently proposed. The main area in need of fixed route service that is not currently being served is Petal.

Beyond areas of existing demand, future growth will increase demand in some areas of the MPA. Using the socioeconomic forecast data developed for the Hattiesburg Regional Travel Demand Model, the number of Traffic Analysis Zones (TAZs) that meet or exceed two (2) households or jobs per acre in 2013 and 2040 were compared. While some areas that met this activity density threshold in 2013 are forecasted to decline at such a rate that they would not meet this threshold in 2040, the number and distribution of instances was insignificant. However, there were several areas that grew at such a rate that they exceeded this threshold by 2040 despite being below the threshold in 2013. These areas are illustrated in Figure 8.3.

The growth areas worth noting are along US 98 in Lamar County, MS 42 in Petal, and Lincoln Road in Lamar County. By 2040, depending on the development patterns, there may be moderate to high transit demand in these areas.

2040 MTP

FIGURE 8.3 TRANSIT SUPPORTIVE DENSITIES, 2013-2040



Legend

Traffic Analysis Zones:
- Transit Supportive in 2013
- Transit Supportive in 2040
- Not Transit Supportive by 2040

- Proposed Bus Routes
- Interstates
- Secondary Roadways
- Other Roadways in MPA
- Water Bodies
- Counties

Disclaimer: This map is for planning purposes only.

Map Source: Neel-Schaffer, Inc.

Data Sources: Hattiesburg Regional Travel Demand Model; City of Hattiesburg

Funding for Increasing Transit Service

If transit service is to be increased to a level significantly above the current or proposed level of service, additional transit revenues will need to be identified and collected. While federal grants can be used to subsidize operating and capital costs, additional local sources of funding will be necessary to match and supplement federal funds. Simply matching federal funding will not provide enough funding to expand transit service to a level that is truly convenient and accessible.

An analysis of the operating costs of the peer systems, provided in Table 8.6, shows that all of the peer transit systems are less reliant on federal funding for operations, especially those that provide much higher levels of service. While fare revenues tend to cover a larger share of operating costs for systems that provide higher levels of service, local funds also cover a substantially higher share.

The Hattiesburg MPA will need to identify dedicated local funding source(s) in order to significantly improve transit service. Raising fares should be explored based on the peer analysis, but fare increases alone will not be enough to fund the improvements necessary to substantially improve the level of service.

Table 8.6 Sources of Operating Funds Expended by Transit System

Transit System	Vehicle Revenue Miles (Fixed Route)	Share of Operating Cost by Source				
		Federal Assistance	State Funds	Local Funds	Fare Revenues	Other Funds
HCT (Hattiesburg, MS)	175,963	66.0%	0.0%	30.1%	3.6%	0.3%
JET (Jonesboro, AR)	192,780	55.1%	35.9%	0.0%	7.4%	1.6%
CUATS (Cleveland, TN)	211,320	48.8%	18.5%	16.1%	4.3%	12.3%
RTD (Rome, GA)	454,104	45.2%	0.0%	32.4%	21.3%	1.1%
JTA (Jackson, TN)	568,940	40.6%	14.1%	24.0%	19.9%	1.4%
Monroe Transit (Monroe, LA)	776,328	28.9%	4.4%	46.3%	19.1%	1.3%

Source: National Transit Database, 2013

8.4 Freight Need

Trucking Need

Forecast Growth

Table 8.7 shows the growth in freight tonnage for trucks in the MPA counties from 2011 to 2040, as projected by Transearch/IHS Freight Finder. This data suggests that freight truck tonnage will grow slightly faster than the state of Mississippi as a whole.

Table 8.7 Change in Inbound and Outbound Truck Freight Tonnage in MPA Counties, 2011-2040

	2011	2040	Change	Percent Change
Forrest County, MS	2,072,118	3,613,502	1,541,384	74.4%
Lamar County, MS	1,123,982	2,044,895	920,913	81.9%
MPA Counties	3,196,100	5,658,397	2,462,297	77.0%
Mississippi	115,368,000	192,202,000	76,834,000	66.6%

Note: Excludes through-traffic

Source: Transearch/IHS Freight Finder

Table 8.8 shows, in a general sense, where freight being transported on trucks is projected to be going. By comparing this table to the same information for 2011 in Table 6.23 (Chapter 6), the following observations emerge:

- When combined, the MPA counties follow the statewide trend of out-of-state export tonnage growing more rapidly than out-of-state import tonnage. However, at the county level, the percent change in export tonnage is actually slightly lower than that of import tonnage.
- Export tonnage to other counties in Mississippi from the combined MPA counties is projected to grow twice as fast as import tonnage from other counties in Mississippi.
- The percent growth in tonnage from trips beginning and ending in Forrest County is projected to increase at a rate approximately 2.5 times that of the county's overall percent growth in tonnage.

Table 8.8 Inbound and Outbound Freight Truck Movement in the MPA by Direction by Weight, 2040

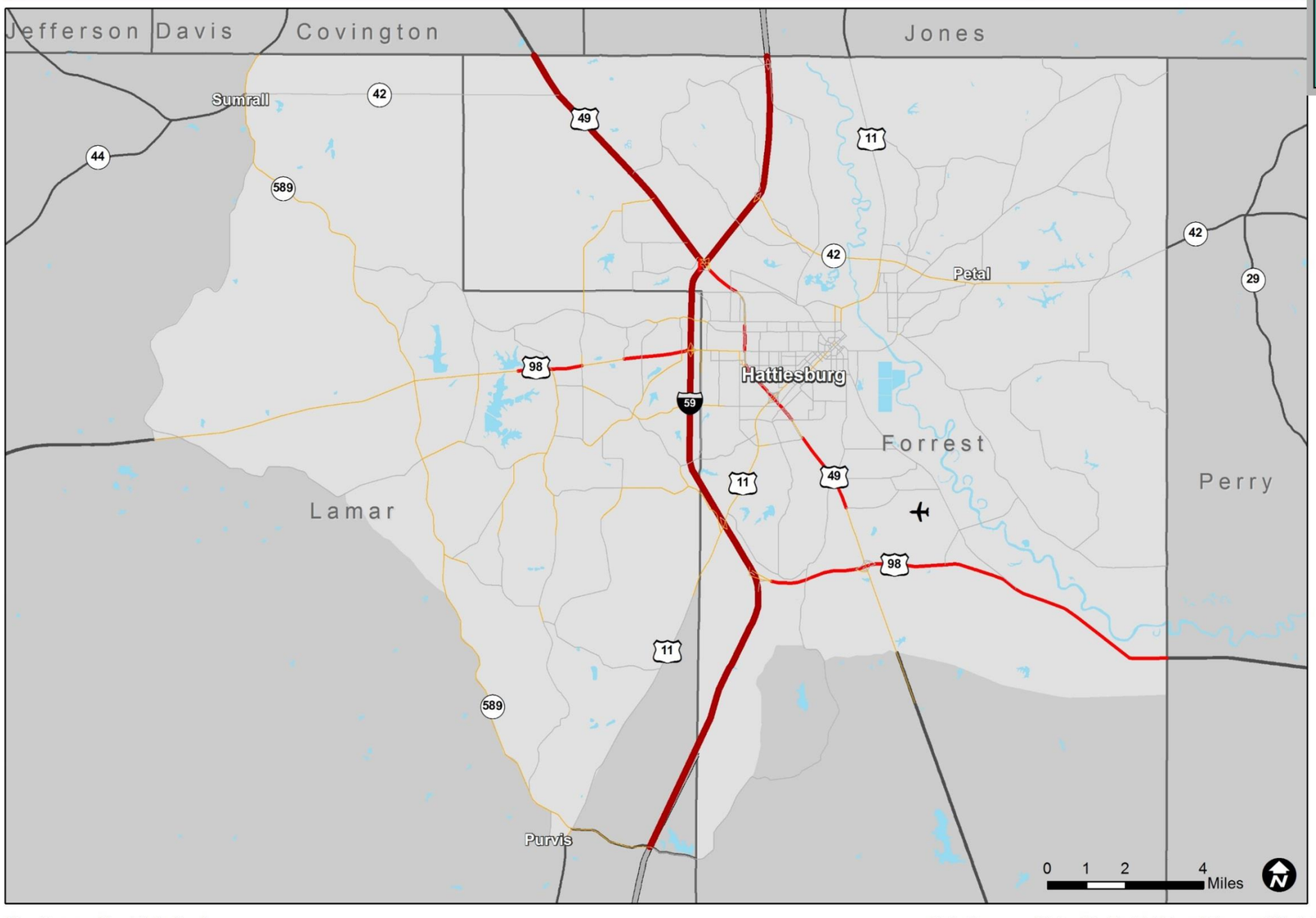
	From Outside Mississippi	To Outside Mississippi	From Other Mississippi County	To Other Mississippi County	Within County	Total
Forrest County, MS	1,074,114	890,440	445,254	1,193,494	10,201	3,613,502
Lamar County, MS	517,069	761,251	168,705	595,433	2,437	2,044,895
Combined	1,591,183	1,651,691	613,959	1,788,926	12,638	5,658,397

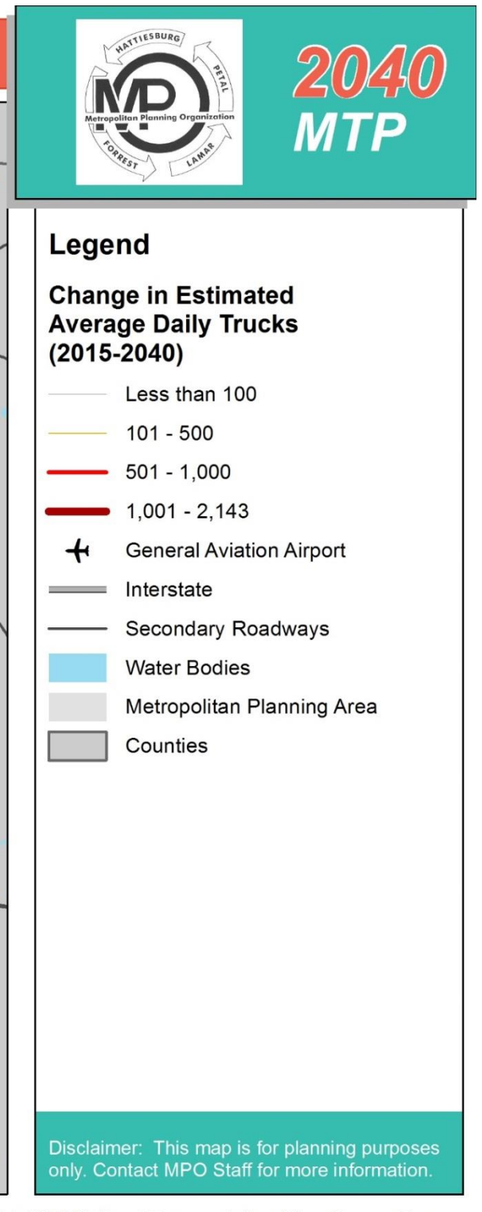
Note: Excludes through-traffic

Source: Transearch/IHS Freight Finder

Figure 8.4 illustrates where growth in freight truck traffic is anticipated to be the highest in the MPA. Figure 8.5 then shows the 2040 estimated truck volumes on roadways in the Hattiesburg MPA. Most growth is along existing major freight corridors such as I-59, US 49, and US 98 and to a lesser extent MS 589, MS 42, and US 11.

FIGURE 8.4 FORECAST CHANGE IN MPO FREIGHT TRUCK TRAFFIC, 2015-2040

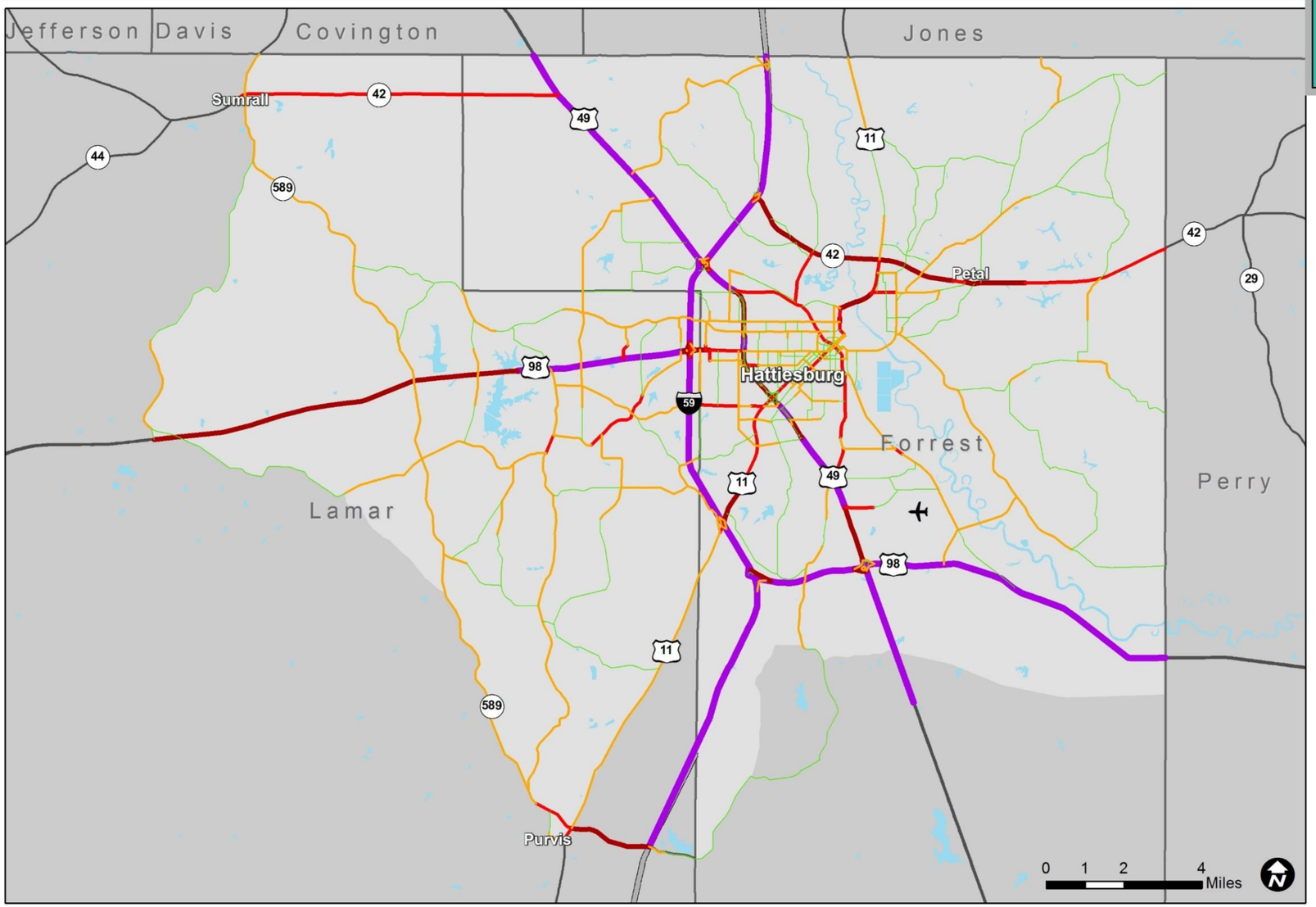




Map Source: Neel-Schaffer, Inc.

Data Sources: Statewide Freight Travel Demand Model; 2014 National Transportation Atlas; Census Bureau

FIGURE 8.5 MODELED MPO FREIGHT TRUCK TRAFFIC, 2040



2040 MTP

Legend

Estimated Average Daily Trucks (2040)

- 0 - 100
- 100 - 500
- 500 - 1,000
- 1,000 - 2,500
- 2,500 - 13,367
- General Aviation Airport
- Interstate
- Secondary Roadways
- Water Bodies
- Metropolitan Planning Area
- Counties

Disclaimer: This map is for planning purposes only. Contact MPO Staff for more information.

Map Source: Neel-Schaffer, Inc.

Data Sources: Statewide Freight Travel Demand Model; 2014 National Transportation Atlas; Census Bureau

Roadway Capacity and Reliability

One way to address travel time reliability for freight trucks is through Intelligent Transportation System (ITS) improvements. The Mississippi Statewide Freight Plan recommends leveraging the deployment of the Hattiesburg region ITS Incident Management System and TMC Operations to include expanded commercial vehicle elements. Beyond ITS improvements, traditional capacity improvements can alleviate congestion-related delay.

Table 8.9 and Figure 8.6 show the roadway segments that accommodate a large number of freight truck trips and experience some form of congestion. Either the segment experiences traffic volumes that exceed the roadway capacity (max) or it experiences significant peak period delay (peak). These segments represent the highest need for capacity/reliability improvements that would improve freight conditions.

The peak period delay was quantified by a travel time index that compares roadway speed during peak periods to roadway speed during free flow conditions. Areas that experienced at least a 10 percent decline in speed were considered to experience significant peak period delays.

Table 8.9 Major Freight Roadways with Congestion Issues

Facility	From	To	Estimated Daily Trucks (2040)	MFN	Congestion
US 49	Rawls Springs Rd	MS 42	8,100-8,300	Tier I	Max
MS 198 (Hardy St)	US 49	I-55	900-2,100	No	Peak, Max
US 98 (Hardy St)	I-55	Lakewood Dr	3,300-4,800	Tier II	Peak, Max
US 98	Lakewood Dr	Jackson Rd	2,500-3,300	Tier II	Max
US 98	Jackson Rd	Old Hwy 11	2,600-2,800	Tier II	Peak, Max
US 98	Old Hwy 11	MS 589	1,800-2,600	Tier II	Max
Oak Grove Rd	Weathersby Rd	Friend Rd	500-800	No	Max

Note: Peak congestion means that the corridor has reliability issues during AM or PM peaks. Max means that the daily volumes in 2040 exceed the capacity.

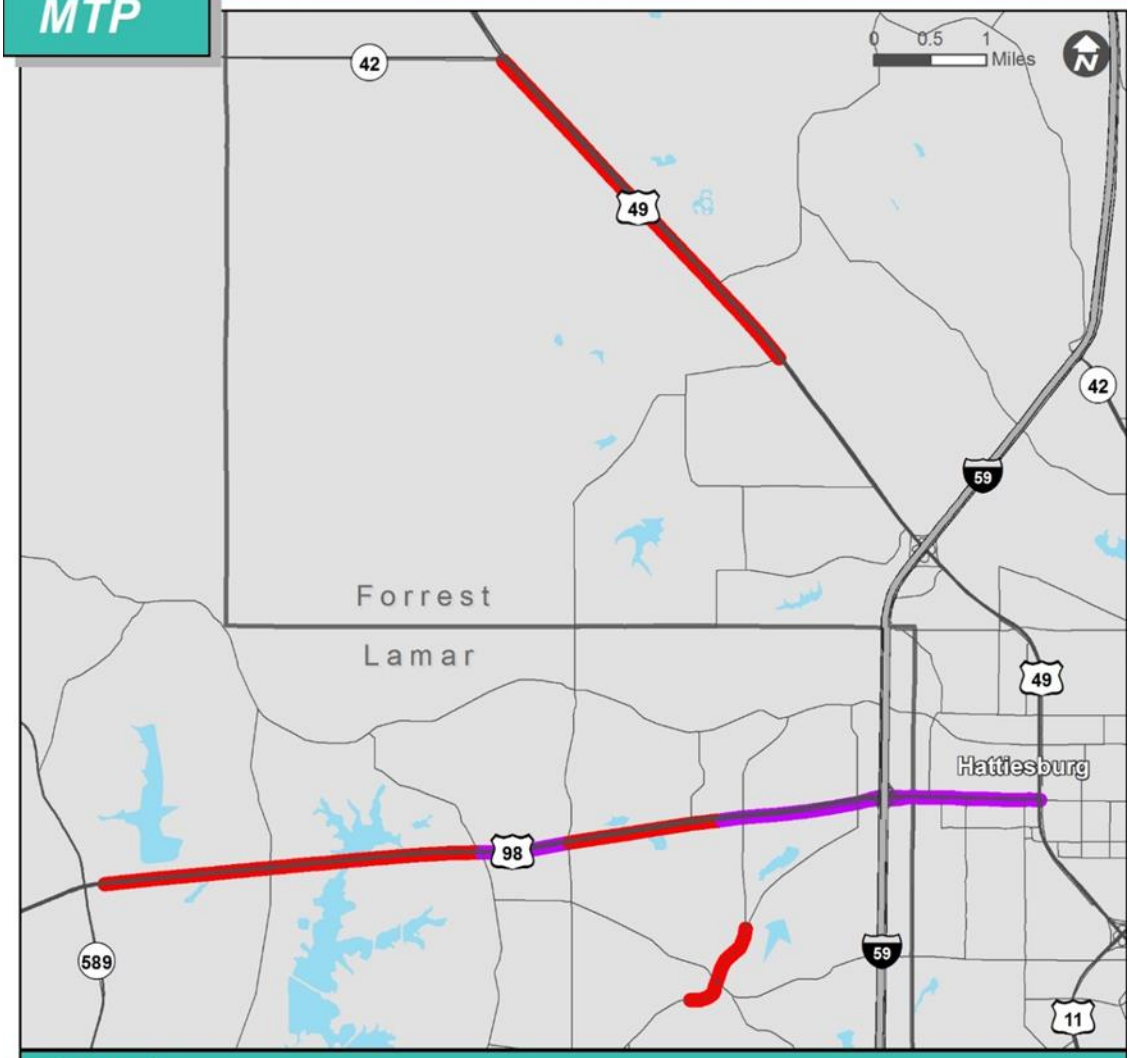
Safety

The analysis of freight truck crashes suggests the following improvements are the greatest freight truck safety needs in the Hattiesburg MPA:

- Freight truck safety improvements at US 49 @ Classic Dr.; and
- Freight truck safety improvements at US 49 @ Old Hwy 42

2040 MTP

FIGURE 8.6 FREIGHT CORRIDORS WITH CONGESTION ISSUES



Legend

Freight Corridors with Congestion Issues

- Volume Exceeds Daily Capacity in 2040
- Existing Peak Period Congestion and Volume Exceeds Daily Capacity in 2040

- Interstates
- Secondary Roadways
- Other Roadways in MPA
- Water Bodies
- Metropolitan Planning Area
- Counties

Disclaimer: This map is for planning purposes only.

Map Source: Neel-Schaffer, Inc.

Data Sources: INRIX; Hattiesburg Regional Travel Demand Model

Rail Need

Forecast Growth

Table 8.10 shows the growth in freight tonnage for rail in the MPA counties from 2011 to 2040, as projected by Transearch/IHS Freight Finder. This data suggests that rail tonnage in the MPA will grow slower than the state of Mississippi as a whole. However, at the county level, growth in rail tonnage is projected to outpace the state in Forrest County while growth is projected to be negative in Lamar County.

Table 8.10 Change in Inbound and Outbound Rail Freight Tonnage in MPA Counties, 2011-2040

	2011	2040	Change	Percent Change
Forrest County, MS	1,033,168	1,693,963	660,795	64.0%
Lamar County, MS	905,644	751,392	-154,252	-17.0%
MPA Counties	1,938,812	2,445,355	506,543	26.1%
Mississippi	24,986,000	36,286,000	11,300,000	45.2%

Note: Excludes through-traffic

Source: Transearch/IHS Freight Finder

Rail Capacity

Rail capacity and related needs can be measured in many ways. Because actual volumes and capacities are not known for all rail segments in the Hattiesburg MPA, it is not possible to forecast future capacity utilization rates and needs by segment. However, according to Mississippi's 2040 long-range transportation plan, MULTIPLAN, the following elements are typically assessed to determine physical rail capacity:

- Vertical clearances. Distance between the rail bed and the bottom of overhead structures. Modern railcars, including double-stacked containers and tri-level auto-rack cars need more space than previous generations of equipment.
- Weight limits. The gross (total) weight of a rail car plus any cargo it is carrying. Railcars continue to increase in weight, with today's standard for a four-axle car reaching 286,000 pounds.
- Number of tracks. The more tracks that exist, the greater the number of trains that can be handled on a given line. Side or passing tracks which allow trains to either overtake or pass one another in an area with only a single main line typically are not included. In industrial areas alongside busy main lines, this category includes tracks that are needed to efficiently serve customers without delaying through traffic.

- Traffic control and signaling. Signaling systems help ensure safe operations and effect permissible passenger and freight train speeds, while traffic control systems improve capacity utilization in an efficient manner. Traffic management systems can range from simple to complex, with lines experiencing higher traffic volumes benefiting from more advanced systems. These include automated technologies that help ensure operational safety (such as automatic block signals), and computerized dispatching systems that help manage the flow of trains over a route.
- Terminal and yard capacity. The number of cars that can be handled or stored at a facility. If trains cannot be built or loaded/unloaded efficiently at these locations, mainline capacity is of little value. Operational strategy and efficiency at the terminal or yard facilities can have large impacts on overall line capacity.
- Rail Line Operating Speed. The average speed that trains move on a corridor impacts capacity, and effects railroads' ability to move higher value, time-sensitive goods.

Vertical Clearance

Information on vertical clearance of railroad overpasses was not available for the Hattiesburg MPA.

Weight Limits

All of the main line railroads with information available in the MPA have been upgraded to accommodate the industry standard of 286,000 pounds (286k). However, no information is available for the Kansas City Southern main line railroad between Hattiesburg and Gulfport or any branch lines from the main lines.

Number of Tracks

The majority of the approximately 65 miles of railroad in the MPA are single track. No lines are considered double-tracked, though multiple tracks do exist near railroad yards, such as the Hattiesburg Yards, Dragon Yards, and industrial site yards.

Traffic Control and Signaling

Railroads in the Hattiesburg MPA that utilize signaling as a form of traffic control may use three different signal systems to control traffic movements on their systems. These are Manual, Automatic Block Signals (ABS), and Centralized Train Control (CTC). The capacity benefits of each signal system are summarized below:

- Manual: allows maximum speeds of 49 to 59 miles per hour;
- ABS: allows maximum speeds of up to 80 miles per hour; and
- CTC: considerable capacity improvements over ABS.

The Norfolk Southern Railway main line that also accommodates Amtrak service utilizes ABS while the Canadian National Railway main line that runs from Hattiesburg towards Perry County utilizes manual control. No information for the remaining main lines is available.

Operating Speeds

The Mississippi Statewide Freight Plan (MSFP) recommends that all Tier I main line track meet the Federal Railroad Administration (FRA) Class 4 standard of speed greater than 40 miles per hour for freight. The MSFP also recommends that all Tier II main line track meet the FRA Class 3 standard of speed greater than 25 miles per hour for freight.

Table 8.11 breaks down the railroad crossings by maximum speed according to railroad timetables. About 85 percent of all MFN Tier I rail crossings exceed operating speeds of 40 MPH.

Table 8.11 Maximum Operating Speeds of At-Grade Railroad Crossings in MPA

Rail Category	> 40 MPH		26-40 MPH		25 MPH or under		Total
	Number	Percentage	Number	Percentage	Number	Percentage	Number
MFN Tier I	38	84.4%	1	2.2%	6	13.3%	45
MFN Tier II	21	95.5%	0	0.0%	1	4.5%	22
Other – Branch Line	3	100.0%	0	0.0%	0	0.0%	3
Total	62	88.6%	1	1.4%	7	10.0%	70

Source: Federal Railroad Administration

By mapping the location of main line railroad crossings with slow speeds, we can better understand the concentration of these areas. Figure 8.7 illustrates all Tier I main line crossings that do not meet the MSFP performance standard of higher than 40 miles per hour and all other main line crossings with operating speeds of 25 miles per hour or less.

Many of the Mississippi Freight Network (MFN) Tier I rail crossings with lowest operating speeds are in urban areas where there may not be a desirable alternative. Consultation with rail companies, representatives of the local government, and the surrounding residents and businesses should occur if improvements to these areas are desired.

Terminal and Yard Capacity

Information on terminal and yard capacities were not available at this time for the Hattiesburg MPA.

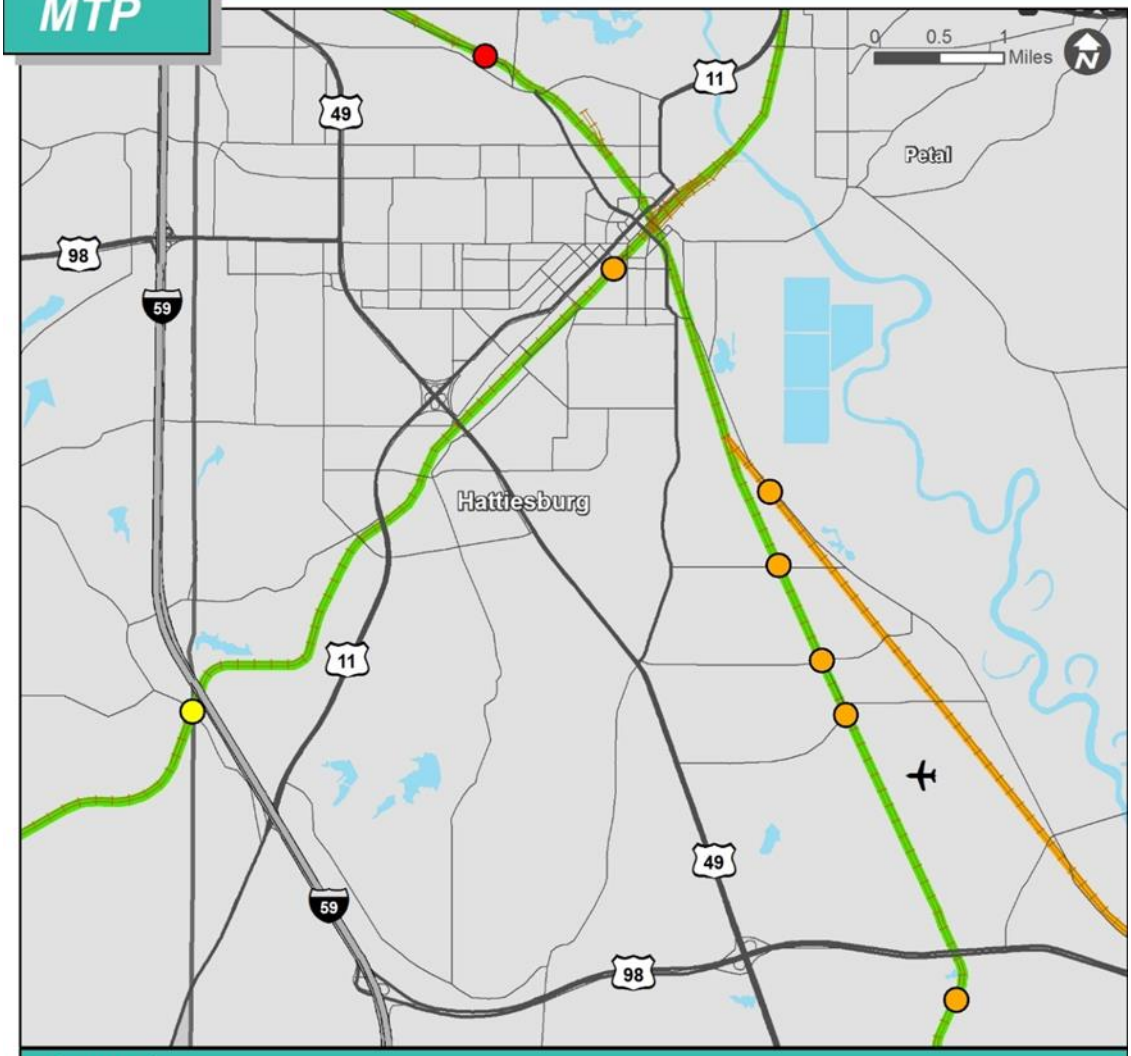
Safety

The analysis of railroad incidents suggests the following improvements are the greatest rail safety needs in the Hattiesburg MPA:

- Active warning device(s) at Canadian National Railway intersection with Mobile St. in Hattiesburg; and
- Active warning device(s) at Canadian National Railway intersection with Tatum Rd. in Hattiesburg

2040 MTP

FIGURE 8.7 LOW SPEED MAIN LINE RAILROAD CROSSINGS



Legend

Main Line, At-Grade Railroad Crossings
Maximum Speed
- 10
- 25
- 40
- Tier I Rail Corridor (MS Freight Network)
- Tier II Rail Corridor (MS Freight Network)

- Railroads
- Interstates
- Secondary Roadways
- Other Roadways in MPA
- Water Bodies
- Metropolitan Planning Area
- Counties

Disclaimer: This map is for planning purposes only.

Map Source: Neel-Schaffer, Inc.

Data Sources: 2014 National Transportation Atlas; FRA

9.0 Forecasting Future Available Funding

MTPs are required to be fiscally constrained. In order to be fiscally constrained, the costs of programmed projects must not exceed the amount of funding that is reasonably expected to be available. This chapter provides an analysis of anticipated funding available for transportation projects and programs in the MPA.

9.1 Roadway Funding

Potential Federal Funding Sources

MAP-21 authorized the Federal Surface Transportation Programs for highways, highway safety, and transit for the two-year period 2013-2014 and has been extended by continuing resolution by the United States Congress since then. MAP-21 builds on the firm foundation of the three previous landmark bills that brought surface transportation into the 21st century – the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), the Transportation Equity Act for the 21st Century (TEA 21), and the Safe, Accountable, Flexible, Efficient Transportation Equity Act – Legacy for Users (SAFETEA-LU).

MAP-21 provides total funding of $105 billion nationally for the original two-year period, the current apportionment for 2015 is $37.8 billion. This legislation includes several categories of funding, under which many of the projects in the financially constrained plan will be eligible for federal funding assistance. These categories are:

National Highway System (NHS)

This category covers all Interstate routes and a large percentage of urban principal arterials. The federal/state funding ratio for arterial routes is 80/20. The interstate system, although a part of NHS, will retain its separate identity and will receive separate funding at a 90/10 ratio. The U.S. Congress passed the NHS bill in 1996.

Surface Transportation Program (STP)

The STP is a block grant funding program with subcategories for states and urban areas.

These funds can be used for any road, including NHS, which is not functionally classified as a local road or rural minor collector. The state portion can be used on roads within an urbanized area and the urban portion can only be used on roads within an urbanized area. The funding ratio is 80/20.

Bridge Replacement and Rehabilitation Program (FBR)

These funds can be used to replace or repair any bridge on a public road. The federal/state funding ratio is 80/20.

Congestion Mitigation and Air Quality (CMAQ)

Urban areas which do not meet ambient air quality standards are designated as nonattainment areas by the U.S. Environmental Protection Agency (USEPA). These funds are apportioned to those urban areas for use on projects that contribute to the reduction of mobile source air pollution through reducing vehicle miles traveled, fuel consumption, or other identifiable factors. Starting in FY 2013 all CMAQ projects will require a 20 pecent local match, with the exception of carpool & vanpool projects, which will remain 100 percent federal.

The Hattiesburg MPO currently does not qualify for CMAQ funds because it is in attainment of air quality standards. However, should that change in the future, the MPO would become eligible for CMAQ funding.

Potential Local Funding Sources

Any costs not covered by federal and state programs will be the responsibility of the local governmental jurisdictions. Local funding can come from a variety of sources including property taxes, sales taxes, user fees, special assessments, and impact fees.

Each of these potential sources is important and warrants further discussion.

Property Taxes

Property taxation has historically been the primary source of revenue for local governments in the United States. Property taxes account for more than 80 percent of all local tax revenues. Property is not subject to federal government taxation, and state governments have, in recent years, shown an increasing willingness to leave this important source of funding to local governments.

General Sales Taxes

The general sales and use tax is also an important revenue source for local governments. The most commonly known form of the general sales tax is the retail sales tax. The retail sales tax is imposed on a wide range of commodities. The rate is usually a uniform percentage of the selling price.

User Fees

User fees are fees collected from those who utilize a service or facility. The fees are collected to pay for the cost of a facility, finance the cost of operations, and/or generate revenue for other uses. User fees are commonly charged for public parks, water and sewer services, transit systems, and solid waste facilities. The theory behind the user fee is that those who directly benefit from these public services pay for the costs.

Special Assessments

Special assessment is a method of generating funds for public improvements, whereby the cost of a public improvement is collected from those who directly benefit from the improvement. In many instances, new streets are financed by special assessment. The owners of property located adjacent to the new streets are assessed a portion of the cost of the new streets, based on the amount of frontage they own along the new streets.

Special assessments have also been used to generate funds for general improvements within special districts, such as central business districts. In some cases, these assessments are paid over a period of time, rather than as a lump sum payment.

Impact Fees

Development impact fees have been generally well received in other states and municipalities in the United States. New developments create increased traffic volumes on the streets around them. Development impact fees are a way of attempting to place a portion of the burden of funding improvements on developers who are creating or adding to the need for improvements.

Bond Issues

Property tax and sales tax funds can be used on a pay-as-you-go basis, or the revenues from them can be used to pay off general obligation or revenue bonds. These bonds are issued by local governments upon approval of the voting public.

2040 MTP Funding Forecast

Assuming that future funding for transportation improvements will be consistent with the level of expenditure indicated by recent historical data, an average of $15.6 million per year in 2013 dollars is forecasted to be available in state and federal funds for transportation improvements in the MPA, using both MPO designated funding and MDOT funds. By factoring in a one percent annual inflation rate, the total amount forecast to be available through 2040 is $453 million. The annual amounts are aggregated to the three time periods of the MTP resulting in the following levels of state and federal funding to be available for each stage.

- Stage 1 (2016-2020) - $81,827,281
- Stage 2 (2021-2030) - $176,389,519
- Stage 3 (2031-2040) - $194,843,766

9.2 Public Transit Funding

Potential Federal Funding Sources

There are many federal funding sources for public transit. Most of these sources are programs funded by the Federal Transit Administration (FTA) or Federal Highway Administration (FHWA) and administered by MDOT. The following federal funding programs are formula-based or discretionary grants funded by the federal government that are available for transit providers in the Hattiesburg MPA to utilize.

Metropolitan Transportation Planning (Section 5303)

This formula-based funding program provides funding and procedural requirements for multimodal transportation planning in metropolitan areas that are cooperative, continuous, and comprehensive, resulting in long-range plans and short-range programs of transportation investment priorities. Federal share is 80 percent with a required 20 percent local match. Funding is only available to Metropolitan Planning Organizations.

Urbanized Area Formula Grants (Section 5307)

This formula-based funding program provides funds for capital and operating assistance for transit operations in urbanized areas with populations greater than 50,000 and for transportation-related planning. Funds can be used for planning, engineering, design and evaluation of transit projects and other technical transportation-related studies; capital investments in bus and bus-related activities such as replacement of buses, overhaul of buses, rebuilding of buses, crime prevention and security equipment and construction of maintenance and passenger facilities; computer hardware/software; and operating assistance in urbanized areas under 200,000 in population or with 100 or fewer fixed-

route buses operating in peak hours. Activities eligible under the former Job Access and Reverse Commute (JARC) program, which provided services to low-income individuals to access jobs, are now eligible under the Urbanized Area Formula program. Federal share is 80 percent for capital projects, 50 percent for operating assistance, and 80 percent for ADA non-fixed route paratransit service.

Rural Area Formula Grants (Section 5311)

This formula-based funding program provides administration, capital, planning, and operating assistance to support public transportation in rural areas, defined as areas with fewer than 50,000 residents. Activities eligible under the former JARC program, which provided services to low-income individuals to access jobs, are now eligible under the Rural Area Formula program. In addition, the formula now includes the number of low-income individuals as a factor. Funds may be used for planning, capital purchases, administration, planning and operating expenses, and requires a local match. Eligible recipients include local public bodies, non-profit organizations and state agencies. Federal share is 80 percent for capital projects, 50 percent for operating assistance, and 80 percent for ADA non-fixed route paratransit service, using up to 10 percent of a recipient's apportionment. This program is administered by MDOT and includes the follow sub-programs:

- Intercity Bus Program
    - This program meets a federal requirement for assistance to bus operators in providing connecting services between non-urbanized areas and larger regional or national bus routes.
    - At least 15 percent of annual apportionment is used to develop and support intercity bus transportation.
- Rural Transit Assistance Program (RTAP)
    - RTAP funds are used by the Public Transit Division to provide training, and technical assistance, support research or demonstration projects, and enable contractors to promote transit as a mobility alternative.
- Other set asides are for public transportation on Indian Reservations and Appalachian Development Public Transportation Program.

Enhanced Mobility of Seniors and Individuals with Disabilities (Section 5310)

Grants are made by the MDOT to private non-profit organizations (and certain public bodies) to increase the mobility of seniors and persons with disabilities. The former New Freedom program (Section 5317) is folded into this program. The New Freedom program provided grants for services for individuals with disabilities that went above and beyond the requirements of the Americans with Disabilities Act (ADA). Activities eligible under New Freedom are now eligible under the Enhanced Mobility of Seniors and Individuals with Disabilities program. Eligible capital costs include buses, vans, radios, computers, engines, and transmissions. Using these funds for operating expenses requires a 50 percent local match while using these funds for capital expenses (including acquisition of public transportation services) requires a 20 percent local match. At least 55 percent of program funds must be spent on the types of capital projects eligible under the former section 5317. The remaining 45 percent may be used for new freedom related program requirements. Projects must be included in a coordinated human service transportation plan.

Bus and Bus Facilities Formula Grants (Section 5339)

This program provides funds to replace, rehabilitate, and purchase buses and related equipment and to construct bus-related facilities. Eligible recipients under this section are designated recipients that operate fixed- route bus service or that allocates funding to fixed route bus operators. A designated recipient that receives a grant under this section may allocate amounts of the grant to sub-recipients that are public agencies or private non-profit organizations engaged in public transportation. This is a capital grant program which requires 20 percent local match.

Other FTA Grant Programs

The FTA has several other funding sources for special programs. These include: Public Transportation Emergency Relief Program (Section 5324), Research, Development, Demonstration, and Deployment Projects (Section 5312), Technical Assistance and Standards Development (Section 5314), Transit-Oriented Development Planning, and Fixed Guideway Capital Investment Grants ("New Starts") (Section 5309).

Surface Transportation Program (STP)

The STP provides funding that may be used by states and localities for a wide range of projects to preserve and improve the conditions and performance of surface transportation, including highway, transit, intercity bus, bicycle and pedestrian projects. Local match requirement varies.

Transportation Alternatives Program (TAP)

This is funded by a 2 percent set-aside from the Highway Account of the federal Highway Trust Fund. Eligible projects are broadly defined but are mostly focused on bicycle and pedestrian projects. The program is administered by MDOT and a 20 percent local match is required.

National Highway Performance Program (NHPP)

The NHPP provides support for the condition and performance of the NHS, for the construction of new facilities on the NHS, and to ensure that investments of federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a state's asset management plan for the NHS. This is a new program under MAP-21.

NHPP funds may only be used for the construction of a public transportation project that supports progress toward the achievement of national performance goals for improving infrastructure condition, safety, mobility, or freight movement on the NHS and which is eligible for assistance under chapter 53 of title 49, if: the project is in the same corridor as, and in proximity to, a fully access-controlled NHS route; the construction is more cost-effective (as determined by a benefit-cost analysis) than a NHS improvement; and the project will reduce delays or produce travel time savings on the NHS, as well as improve regional traffic flow. Local match requirement varies.

Potential Local Funding Sources

Local funding sources include all of the same potential sources as local roadways revenue, outlined previously. Fare revenue, a user fee, is an important but relatively small local funding source.

2040 MTP Funding Forecast

The only federal funding source forecasted is Section 5307 funding since the city of Hattiesburg is allocating funding for this program based on the population of the Hattiesburg Urbanized Area. Other funding programs, such as Section 5339, Section 5311, and Section 5310, are not entirely related to urbanized areas and are allocated to the state, which sub-allocates to urban and rural areas, depending on the program. Local/state matches are based on matching these federal funding sources.

The following assumptions are utilized:

- The base year (2016) revenue is $993,740, based on the 2015 allocation specified in the MPO's 2015-2019 Transportation Improvement Program (TIP).
- Revenue is inflated 0 percent annually from 2016 to 2020. This is consistent with the 2015-2019 TIP, where a conservative approach was utilized that assumed revenues would remain stagnant in the short-term. After 2020, revenue is inflated 2.5 percent annually in order to account for long-term inflation.
- The utilization of "carry over" funding, the result of not obligating all federal allocation, will continue for Section 5307 funding.
- Any local costs above and beyond those required to match federal funds are assumed to grow in proportion to the increase in revenues and to continue to be paid by local sources. Therefore, they are not discussed further in this section.

Based on these assumptions, the following levels of state and federal funding for public transit in the MPO can be expected to be available through 2040:

- Stage 1 (2016-2020) - $6,311,981
- Stage 2 (2021-2030) - $12,543,152
- Stage 3 (2031-2040) - $15,619,284

9.3 Bicycle and Pedestrian Funding

For future federally funded transportation projects, bicycling and pedestrian facilities will be incorporated into all transportation projects unless exceptional circumstances exist. In order to assess the project-specific bicycle and pedestrian needs, the surrounding context will be considered, including: land use patterns; existing, informal bicycle or pedestrian activities; any reference to bicycle or pedestrian needs in the planning process; and public, agency, or other comments requesting bicycle or pedestrian facilities. This approach is consistent with federal and state guidance.

Beyond these incidental bicycle and pedestrian projects there is still a need to forecast federal funding available for independent, or stand-alone, bicycle and pedestrian projects.

Potential Federal Funding Sources

While many of the major federal roadway and public transit funding sources described in previous sections of this chapter are flexible enough to fund construction of bicycle and pedestrian facilities, the MTP will forecast available independent bicycle and pedestrian funding based on TAP funding since it is the federal funding source most explicitly intended for bicycle and pedestrian projects.

Potential Local Funding Sources

Local funding sources include all of the same potential sources as local roadways revenue, outlined previously.

2040 MTP Funding Forecast

TAP funding for the MPO was forecast based on the following assumptions:

- Only 50 percent of a state's TAP apportionment (after deducting the set-aside for the Recreational Trails Program (RTP), if applicable) is sub-allocated to urban and rural areas based on their relative share of the total state population.
- The MPO will receive an amount of funding from the 50 percent dedicated for sub-allocation throughout the state that is proportionate to its urbanized area's current share (2.7 percent) of the state population in 2010. In 2014, that amounted to $125,132.
- TAP revenue will increase one percent annually.

Using the assumptions above, the amount of TAP funding reasonably expected to available for bicycle and pedestrian projects in the MPO through 2040 is as follows:

- Stage 1 (2016-2020) - $652,067
- Stage 2 (2021-2030) - $1,405,616
- Stage 3 (2031-2040) - $1,552,674

10.0 Project Development and Prioritization

This chapter summarizes how transportation projects were developed and evaluated in the 2040 MTP.

10.1 Project Development

Project Identification

Projects were identified in the following ways:

- Roadway capacity projects were identified from the public visioning exercise, MTP subcommittee, stakeholder input, and previous plans.
- Roadway Maintenance and Operations projects were identified through an analysis of existing conditions and consultation with local transportation providers.
- Public Transit projects and programs were identified from the 2015-2019 STIP under the assumption that public transit will continue to operate at similar levels in the future. There was no anticipated change in the level of service for the MTP.
- The primary means of collecting input from the public and stakeholders regarding freight projects was through the public meeting that kicked off the project and from the project's MindMixer website. Projects from the MPO's 2035 Metropolitan Transportation Plan were also considered. The only independent freight project identified was an eastern railroad bypass of Hattiesburg, illustrated in Figure 2.3. However, this project was not evaluated in the MTP due to its preliminary nature.

Project Cost Estimates

Roadway Project Cost Estimates

Cost estimates for some projects were available from the MDOT or local public agencies. However, for most, it was necessary to develop new estimates. This effort began with cost estimates obtained from historic project costs from the MDOT and local public agencies. Where such construction estimates were not available, the study team prepared order-of-magnitude cost estimates in 2015 dollars based on projects in the historic funding database. The typical construction cost estimates for various types of improvements are shown in Table 10.1.

No cost estimates were made for maintenance projects such as bridge and pavement projects.

Table 10.1 Hattiesburg Urbanized Area MTP 2040 Typical Project Cost by Improvement Type (2015 Dollars)

Improvement Type	Avg. Cost	Unit
New Interstate	$16,650,000	Mile
Interstate Widening	$ 9,500,000	Mile
Interstate Rehab	$ 2,000,000	Mile
New 4 Lane Arterial	$ 9,400,000	Mile
New 2 Lane Arterial	$ 5,200,000	Mile
Arterial Widening	$ 3,500,000	Mile
Center Turn Lane	$ 2,650,000	Mile
Reconstruction	$ 2,000,000	Mile
Overlay	$ 700,000	Mile
ITS	$ 800,000	Mile
New Bridge	$ 3,300,000	Each
Bridge Replacement	$ 2,000,000	Each
RR Crossing	$ 200,000	Each
Intersection Improvement	$ 850,000	Each
Interchange Improvement	$ 5,750,000	Each
New Interchange	$23,000,000	Each
Underpass	$10,500,000	Each
Railroad Overpass	$ 6,250,000	Each
Roundabout	$ 1,000,000	Each

Source: MDOT Historic Project Lettings 1991-2014, NSI 2015

Public Transit Project Cost Estimates

The annual cost of operating public transit in the MPO was taken from current levels of expenditures for Hub City Transit in the MPO's 2015-2019 TIP. It is assumed that any local costs above and beyond those required to match federal funds in the TIP will grow in proportion to the increase in revenues and will continue to be paid by local sources.

As previously mentioned, no new capacity projects were identified for transit.

In order to forecast transit operating costs through 2040, the following assumptions are utilized:

- The cycle of acquiring new support vehicles will continue at the level in the 2015-2019 TIP, averaging $17,500 per year.
- The cycle of acquiring new ADA vehicle equipment will continue at the level in the 2015-2019 TIP, averaging $21,875 per year.
- Replacement of existing fleet/rolling stock and/or addition to the existing fleet are assumed to be covered by continuing the "Capital Equipment ADA Rolling Stock" funding levels in the 2015-2019 TIP, averaging $250,000 per year.
- Projects costs will remain flat through 2020, consistent with the TIP. After 2020, project costs are inflated 2.0 percent annually.

10.2 Roadway Project Prioritization

In order to maximize limited funding, roadway capacity projects were prioritized. The relatively few ITS projects and high-priority Maintenance and Operations (MO) projects identified in Chapter 8: Future Transportation Need will be funded through the federal programs highlighted in Chapter 9: Forecasting Future Available Funding. There was no need to prioritize these projects.

Table 10.2 shows the criteria and weights that were utilized to prioritize identified roadway capacity projects. Table 10.3 then shows how these criteria were measured. The results of this prioritization exercise are show in Table 10.4 and illustrated in Figure 10.1.

Table 10.2 Roadway Capacity Project Prioritization Criteria

Criteria	Rationale	Maximum Points
Travel Delay Reduction Benefits	Make most efficient use of limited funding by selecting projects that reduce overall network delay experienced by the users.	40
Safety	Unsafe areas should receive priority over other areas.	15
Connectivity/Continuity	Connectivity benefits exceed quantifiable model outputs, especially as it relates to the provision of alternative routes and street connectivity for bicyclists and pedestrians.	10
Intermodal/Multimodal Benefits	Encourage projects that benefit both the movement of people and goods and/or have the potential to improve bicycle and pedestrian conditions.	10
Plan Consistency	Encourage projects that have been vetted through locally-adopted plans, existing studies or plans such as Congestion Management Process (CMP).	10
Potential Impact to Community or Natural Resources	Avoid negative and costly environmental impacts.	10
Potential Impact to Minority and Low-Income Population	Environmental Justice.	5

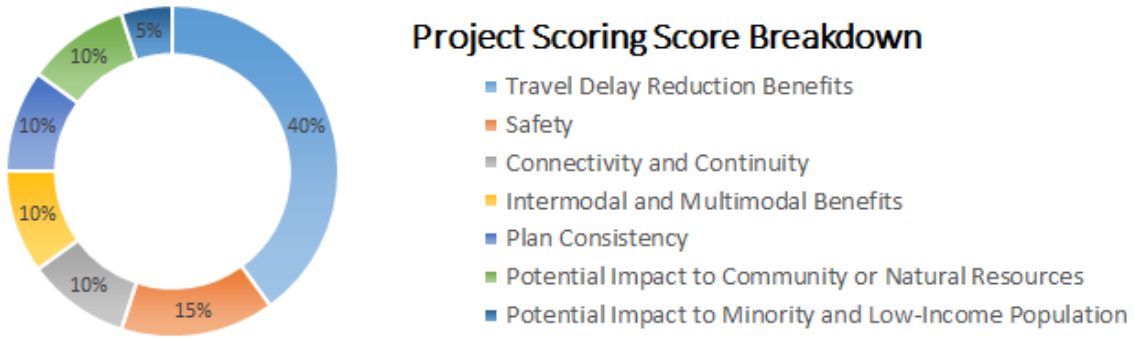


Table 10.3 Roadway Capacity Project Prioritization Criteria Measures

Criterion	Rationale	Measure	Scoring Scale (Points Possible)				
			0	5	10	15	40
Travel Delay Reduction Benefits	Make most efficient use of limited funding by selecting projects that reduce overall network delay experienced by the users.	Vehicle hours of delay.	Points awarded in increments of 4 based upon the effectiveness of a project in reducing overall roadway network delay.				
Safety	Unsafe areas should receive priority over other areas.	Qualitative assessment based on crash data, bridge conditions, and engineering judgement.	No safety benefits	Minimal safety benefits	Moderate safety benefits	Considerable safety benefits	
Connectivity and Continuity	Connectivity benefits exceed quantifiable model outputs, especially as it relates to the provision of alternative routes and street connectivity for bicyclists and pedestrians.	For new roadways/extensions: arterials intersected per mile (Principal arterials count as 2). For roadway widenings: Number of connections or intersections with existing widened facilities.	No arterial intersections/ does not connect or intersect with roadway with higher number of lanes	< 2 intersections per mile/ connects or intersects 1 roadway with higher number of lanes	2+ intersections per mile/connects or intersects 2+ roadways with higher number of lanes		
Intermodal and Multimodal Benefits	Encourage projects that benefit both the movement of people and goods and/or have the potential to improve bicycle and pedestrian conditions.	Type of roadway and estimated truck traffic. For new roadways, assume similar truck traffic as similar or parallel facility.	Not a major freight route/freeway with no bike or pedestrian access	>= 500 estimated average daily trucks	More than 1,000 estimated average daily trucks or part of MDOT primary freight corridor		
Plan Consistency	Encourage projects that have been vetted in locally-adopted plans or existing studies or plans.	In previous locally-adopted plan or in preliminary study.	Not in previous plans	In previous MTP.	In local plan or preliminary study		
Potential Impact to Community or Natural Resources	Avoid negative and costly environmental impacts.	Proximity to community or natural resources like historic sites, recreational areas, churches, cemeteries, preserves, etc.	Scaled 1-10, depending on nearby resources				
Potential Impact to Minority and Low-Income Population	Avoid disproportionately high and adverse impacts to Environmental Justice groups.	Percentage of population in Environmental Justice group along project route.	Above planning area average	Below planning area average			

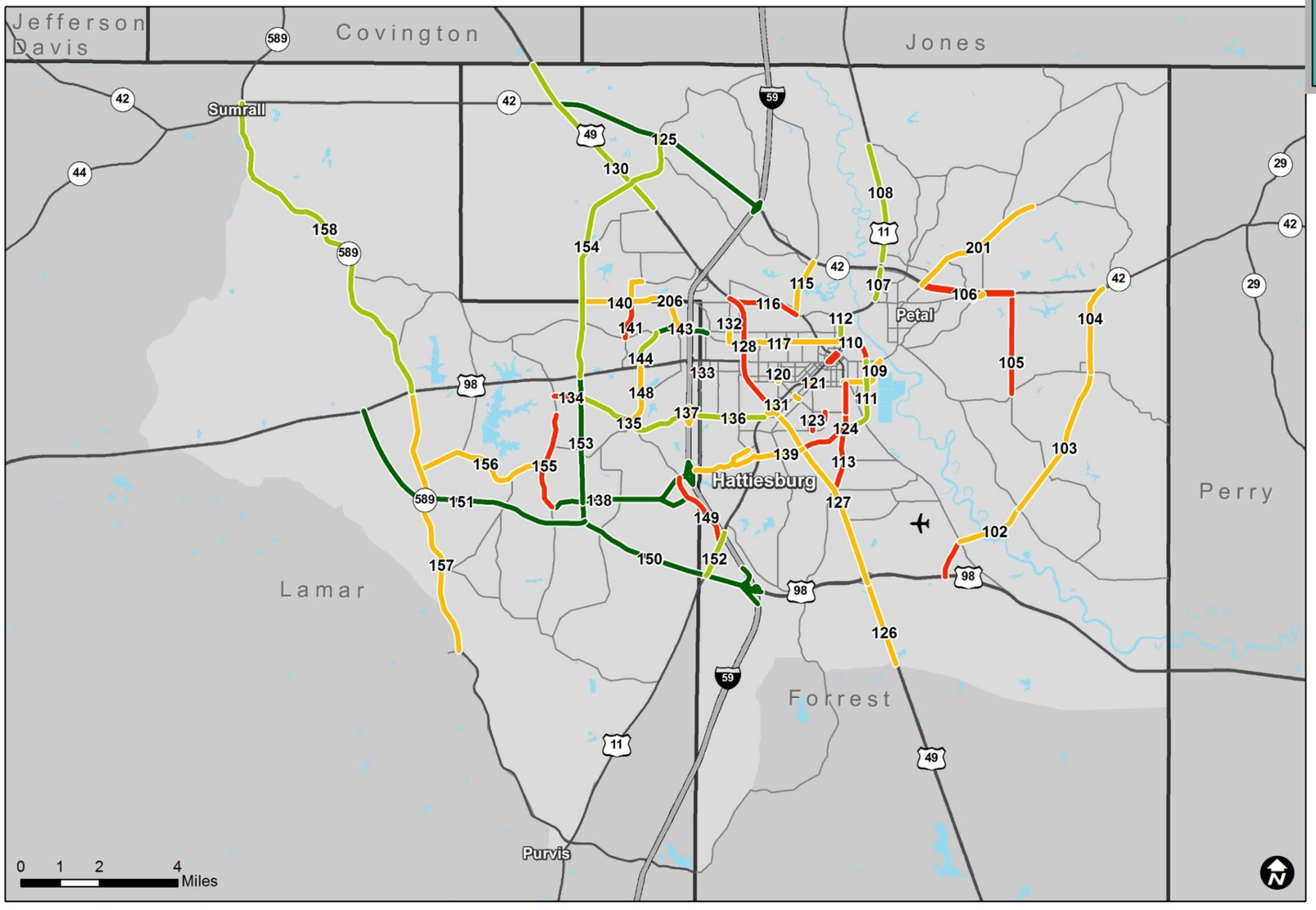
Table 10.4 Roadway Capacity Project Prioritization Results

Project ID	Route	Limits	Improvement	Miles	Cost (2015 Dollars)	Delay Reduction Points	Safety Points	Connectivity and Continuity Points	Intermodal and Multimodal Points	Plan Consistency Points	Env't Points	EJ Points	Total Points	Rank
138	Richburg Rd	Old US 11 to I-59	Widen to 4 Lanes, New 4 Lane Roadway, New Interchange	4.05	$40,550,000	40	10	10	5	10	9	5	89	1
153	Western Bypass Phase I	Richburg Rd to US 98	Widen to 4 Lanes, New 4 Lane Roadway	3.20	$18,870,000	36	10	5	10	10	8	5	84	2
150	US 98 Bypass Extension Phase I	Richburg Rd to I-59	New 4 Lane Roadway and Interchange	4.85	$45,590,000	40	10	5	5	10	9	5	84	3
125	MS 42 Realignment	US 49 to Eatonville Rd	New 4 Lane Roadway, Widen to 4 Lanes, Interchange Modifications	5.80	$54,520,000	40	15	5	5	10	7	0	82	4
151	US 98 Bypass Extension Phase II	US 98 to US 98 Bypass Extension Phase I	New 4 Lane Roadway	7.05	$66,270,000	40	10	5	5	10	7	5	82	5
143	W 4th St	Weathersby Rd to N 38th Ave	Widen to 4 Lanes	1.35	$4,725,000	36	10	5	10	10	10	0	81	6
136	Lincoln Rd	S 40th Ave to Broadway Dr.	Widen to 4 Lanes	1.65	$5,775,000	28	10	10	10	10	7	5	80	7
154	Western Bypass Phase II	US 98 to re-aligned MS 42	Widen to 4 Lanes, New 4 Lane Roadway	5.50	$32,820,000	36	10	5	10	10	8	0	79	8
130	US 49	Rawls Springs Loop Rd to North Study Area Boundary	Widen to 6 Lanes	4.75	$16,625,000	36	5	5	10	10	7	5	78	9
108	US 11	Chapel Hill Rd to Leeville Rd	Widen to 4 Lanes	2.55	$8,925,000	28	10	5	10	10	9	5	77	10
135	Lincoln Rd	Sandy Run Rd/Hegwood Rd to I-59	Widen to 4 lanes	2.80	$9,800,000	32	10	5	10	10	9	0	76	11
107	US 11	W Central Ave to Evelyn Gandy Pkwy	Widen to 4 Lanes	0.50	$1,750,000	32	10	10	10	0	10	0	72	12
152	US 11	1.1 miles south of I-59 to I-59	Widen to 4 Lanes	1.20	$4,200,000	24	5	5	10	10	10	5	69	13
144	Weathersby Rd	Methodist Blvd to W 4th St	Widen to 4 Lanes	0.70	$2,450,000	20	10	5	10	10	10	0	65	14
158	MS 589	US 98 to MS 42	Widen to 4 Lanes	9.50	$33,250,000	32	5	5	10	0	6	5	63	15
111	CBD Bypass Phase II	E Hardy St to Edwards St	New 4 Lane Roadway	2.05	$19,270,000	28	10	5	10	0	9	0	62	16
112	Bouie St	E 4th St to Old MS 42/US 11	Widen to 4 Lanes	0.55	$1,925,000	32	5	5	10	0	9	0	61	17
109	Hall Ave Extension	James St to E Hardy St	New 2 Lane Roadway	1.30	$6,760,000	24	5	10	10	0	9	0	58	18
157	MS 589	Luther Lee Rd to US 98	Widen to 4 Lanes	5.65	$19,775,000	24	5	5	10	0	9	5	58	19
103	Sims Rd Extension	Old River Rd to Indian Springs Rd	New 4 Lane Roadway	4.00	$37,600,000	24	10	5	5	0	9	5	58	20
115	Glendale Ave	Old MS 42 to Evelyn Gandy Pkwy (MS 42)	Widen to 4 Lanes	1.45	$5,075,000	20	5	5	10	10	7	0	57	21
120	S 17th Ave	Adeline St to Mamie St	New 2 Lane Roadway	0.15	$780,000	8	10	10	10	0	10	5	53	22

Project ID	Route	Limits	Improvement	Miles	Cost (2015 Dollars)	Delay Reduction Points	Safety Points	Connectivity and Continuity Points	Intermodal and Multimodal Points	Plan Consistency Points	Env't Points	EJ Points	Total Points	Rank
137	I-59	@ Lincoln Rd	New Interchange	--	$23,000,000	8	15	10	0	10	10	0	53	23
131	US 49	@ Broadway Dr	Reconstruct Interchange	--	$5,750,000	12	10	0	10	10	10	0	52	24
104	Sunrise Rd	Indian Springs Rd to MS 42	Widen to 4 Lanes, Realign Intersections	2.05	$7,875,000	20	5	5	5	0	9	5	49	25
127	US 49	US 98 Bypass to Broadway Dr	Widen to 6 Lanes	5.35	$18,725,000	28	5	0	10	0	6	0	49	26
140	J Ed Turner Dr/Classic Dr	Jackson Rd to N Beverly Hills Rd	Widen to 4 Lanes	2.00	$7,000,000	16	5	5	10	0	7	5	48	27
203	Springfield Rd Extension	Corinth Rd to Evelyn Gandy Pkwy	New 2 Lane Roadway	0.35	$1,820,000	12	5	10	5	0	10	5	47	28
122	Timothy Ln Extension	W Pine St to Eastside Ave	New 2 Lane Roadway	0.15	$780,000	4	10	10	10	0	10	0	44	29
148	Oak Grove Rd/Weathersby Rd	Lincoln Rd to US 98	Widen to 4 Lanes	1.55	$5,425,000	4	5	5	10	10	10	0	44	30
102	Sims Rd	James St/Old US 49 to Old River Rd	Widen to 4 Lanes	1.80	$6,300,000	20	5	0	5	0	9	5	44	31
117	W 4th St	US 49 to Bouie St	Widen to 4 Lanes	2.45	$8,575,000	4	10	5	10	10	5	0	44	32
201	Old Richton Rd	Evelyn Gandy Pkwy to Herrington Rd	Widen to 4 Lanes	3.50	$12,250,000	16	5	5	5	0	8	5	44	33
121	Broadway Dr Extension	W Pine St to Hall Ave	New 2 Lane Roadway	0.25	$1,300,000	4	10	10	10	0	9	0	43	34
139	Richburg Rd	I-59 to US 49	Widen to 4 Lanes, New 4 Lane Roadway	2.90	$9,785,000	4	10	10	10	0	9	0	43	35
156	Old Hwy 24	MS 589 to Old US 11	Add Center Turn Lane	3.70	$11,655,000	4	5	0	10	10	8	5	42	36
126	US 49	South Study Area Boundary to US 98 Bypass	Upgrade to Expressway	2.20	$20,900,000	12	10	0	10	0	10	0	42	37
132	N 31st Ave Extension	W 4th St to W 7th St	New 2 Lane Roadway	0.25	$1,300,000	4	10	10	10	0	7	0	41	38
206	J Ed Turner Dr Extension	Classic Dr. to W 4th St	New 2 Lane Roadway	0.40	$2,080,000	8	5	10	10	0	8	0	41	39
114	Edwards St	Tuscan Ave to James St	Widen to 4 Lanes	0.70	$2,450,000	16	5	0	10	0	9	0	40	40
155	Old US 11	Richburg Rd to 6th Section Rd	Add Center Turn Lane	2.65	$8,347,500	4	10	0	10	0	10	5	39	41
116	Old MS 42	US 49 to Glendale Ave	Widen to 4 Lanes	1.65	$5,775,000	4	10	5	10	0	9	0	38	42
149	Sullivan-Kilran Rd/ Richburg Rd	US 11 to Richburg Rd	Add Center Turn Lane	2.15	$6,772,500	12	5	0	5	0	10	5	37	43
110	CBD Bypass Phase I	Bouie St/Gordon St to E Hardy St	New 4 Lane Roadway	0.95	$8,930,000	4	10	10	5	0	8	0	37	44
124	WSF Tatum Blvd Extension	US 49 to Edwards St	New 4 Lane Roadway	1.25	$11,750,000	4	5	10	10	0	8	0	37	45
101	Ralston Rd	US 98 Bypass to James St/Old US 49	Add Center Turn Lane	1.00	$3,150,000	16	5	0	5	0	10	0	36	46
113	Edwards St	US 49 to Tuscan Ave	Add Center Turn Lane	2.05	$6,457,500	8	10	0	10	0	7	0	35	47
133	W Arlington Loop Extension	S 40th Ave to S 37th Ave	New 2 Lane Roadway	0.25	$1,300,000	4	5	10	5	0	10	0	34	48

Project ID	Route	Limits	Improvement	Miles	Cost (2015 Dollars)	Delay Reduction Points	Safety Points	Connectivity and Continuity Points	Intermodal and Multimodal Points	Plan Consistency Points	Env't Points	EJ Points	Total Points	Rank
145	I-59	@ W 4th St	New Interchange	--	$15,000,000	4	10	10	0	0	10	0	34	49
134	Lincoln Rd	Old US 11 to Sandy Run Rd/Hegwood Rd	Add Center Turn Lane	0.70	$2,205,000	4	5	0	10	0	9	5	33	50
141	Classic Dr. Extension	W 4th St to J Ed Turner Rd	New 2 Lane Roadway	0.95	$4,940,000	4	5	10	5	0	9	0	33	51
105	Batson Rd Extension	Sunrise Rd to MS 42	New 2 Lane Roadway	2.55	$13,260,000	4	5	5	5	0	9	5	33	52
106	Evelyn Gandy Pkwy (MS 42)	Old Richton Rd to Herrington Rd	Add New Service Roads	2.30	$23,920,000	4	5	0	10	0	8	5	32	53
118	Pine St/Front St	Hardy St to Market St	Convert to Two Way	0.65	$1,000,000	4	0	10	10	0	6	0	30	54
128	US 49	Broadway Dr. to N 31st Ave	Widen to 6 Lanes	3.00	$10,500,000	4	5	5	10	0	6	0	30	55
123	Martin Luther King Ave Extension/ Penton St	Bowling St to Helveston Rd	New 2 Lane Roadway, Restrict Through Access	0.25	$1,300,000	4	0	0	10	0	8	0	22	56

FIGURE 10.1 ROADWAY CAPACITY PROJECT PRIORITIZATION



Map Source: Neel-Schaffer, Inc.

Data Sources: Neel-Schaffer, Inc.

11.0 Implementation Plan

11.1 Fiscally-Constrained Staged Improvement Program

The 2040 MTP's staged improvement program is a fiscally-constrained list of transportation projects that collectively represents the Hattiesburg MPA's planned future transportation improvements. Projects included in the MTP's staged improvement plan become eligible for federal and/or state funding assistance through programs such as the NHS and Surface Transportation Program (STP). These programs are funded under the current transportation bill, MAP-21.

In developing this plan, the approach has been to identify transportation needs, and to consider alternative ways of meeting those needs. In many cases, additional studies may be required in order to determine the most effective and feasible improvement alternative. Suggested improvements identified in the staged improvement program are meant to convey the type of improvement that would make the most sense based on currently available information.

This approach acknowledges the inability to avoid all future traffic congestion simply by building as much roadway capacity as the anticipated demand for travel would seem to require. It also recognizes the reality of induced demand, that is, additional roadway capacity inevitably generates additional traffic. One principle which has guided the development of this plan has been the idea that alternative travel options should be made available wherever possible. Possibilities include new or improved parallel routes, or modal choices that serve the same origins and destinations. In the case where there is a projected need for additional roadway capacity, the preferred response may not be a wider facility, but enhanced operational efficiency. Improvements can be achieved using Transportation System Management (TSM), Travel Demand Management (TDM), or Intelligent Transportation System (ITS) strategies and access management techniques that serve to optimize the performance of a facility.

Project Staging Phases and Applying Fiscal Constraint

The staged improvement program is a long-range plan for transportation improvements in the Hattiesburg MPA, covering a 25-year period from 2016 to 2040. Recommended improvements are distributed among three stages:

- Stage I covers the short-term period from 2016 through 2020;
- Stage II corresponds to the intermediate period from 2021 through 2030; and
- Stage III is the long-range period from 2031 through 2040.

The assignment of a given project to a particular stage was largely determined by the prioritization of projects discussed in Chapter 10, estimated funding available for each

stage of the plan, project cost, and other mobility-related considerations (such as safety, emergency evacuation, access to developable areas, etc.).

Table 11.1 summarizes the total costs of the roadway capacity projects selected to be funded in the 2040 MTP as well as all forecast state and federal revenues, with local match funding, anticipated to be available for implementing transportation projects through 2040. The anticipated state and federal roadway capacity funding, with local match funding, for the plan period (2016–2040) was calculated to be $453 million. The estimated total cost of improvements as identified in the staged improvement program is $455 million, which is within acceptable programming limits of available funding. Therefore, the roadway capacity projects in the 2040 MTP are fiscally-constrained.

Table 11.1 Fiscal Constraint for Roadway Capacity Projects

	Stage I 2016 - 2020	Stage II 2021 - 2030	Stage III 2031 - 2040	Total 2016 - 2040
Estimated Funding Availability	$81,827,281	$176,389,519	$194,843,766	$453,060,566
Estimated Fiscally-Constrained MTP Project Costs	$80,771,652	$175,999,612	$198,189,644	$454,960,908
			Vision Needs	$596,767,471
			Total Needs Plan	$1,051,728,379

Note: Annual Inflation Factors – 2.0% on Project Cost, 1.0% on Funding Availability

Table 11.3 summarizes all forecast transit-related costs through 2040 and all federal revenues anticipated to be available for transit-related projects through 2040. The anticipated state and federal transit funding for the plan period (2016–2040) was calculated to be $32 million. The estimated total cost of transit projects as identified in the staged improvement program is $31 million, which is within acceptable programming limits of available funding. Therefore, the transit projects in the 2040 MTP are fiscally-constrained.

Table 11.2 Fiscal Constraint for Public Transit Operations

	Stage I 2016 - 2020	Stage II 2021 - 2030	Stage III 2031 - 2040	Total 2016 - 2040
Estimated Transit Projects Cost (federal share)	$5,184,395	$11,583,991	$14,120,821	$30,889,207
Estimated Federal Funding Available	$6,311,981	$12,543,152	$15,619,284	$32,331,348

Note: Federal funding only includes Section 5307. Total 2016-2040 federal funding available does not equal sum of all stages because unobligated balance remaining in each year is added to the annual amount available.

Stage I (2016-2020) Projects

Stage I is planned for improvements in the years 2016 to 2020. A list of projects is shown in Table11.3. These planned improvements - are projected to cost **$88.7 million** and will be funded with local, state, and federal funds. Project improvements consist of intersection improvements, roadway widenings, roadway preservation, enhancements, and safety projects.

Table 11.3 2040 MTP Staged Improvement Program - Stage I (2016-2020)

ID	Mode	Route	Location	Project Description	Project Cost ($)
143	Roadway	W 4th St	Weathersby Rd to N 38th Ave	Widen to 4 Lanes	$5,018
136	Roadway	Lincoln Rd	S 40th Ave to Broadway Dr.	Widen to 4 Lanes	$6,131
108	Roadway	US 11	Chapel Hill Rd to Leeville Rd.	Widen to 4 Lanes	$9,478
107	Roadway	US 11	W Central Ave to Evelyn Gandy Pkwy	Widen to 4 Lanes	$1,859
119	Roadway	Hardy St	US 49 to 21st Ave	ITS Improvements	$297
129	Roadway	US 49	I-59 to Rawls Springs Loop Rd.	ITS Improvements	$1,997
146	Roadway	Hardy St	King Rd/Old US 11 to I-59	ITS Improvements	$2,931
204	Roadway	Hardy St	N 21st Ave to W Pine St	ITS Improvements	$1,487
205	Roadway	Hardy St	I-59 to US 49	ITS Improvements	$1,317
Line Item	Roadway	Various	Various	Enhancement	$3,461
Line Item	Roadway	Various	Various	Safety	$3,323
Line Item	Roadway	Various	Various	FBR	$6,431
Line Item	Roadway	Various	Various	Overlay	$28,412
Line Item	Roadway	Various	Various	Maintenance	$895
Line Item	Roadway	Various	Various	Reconstruction	$7,734
Line Item	Transit	--	--	HCT Operations	$3,754
Line Item	Transit	--	--	HCT Preventative Maintenance	$2,188
Line Item	Transit	--	--	Passenger Amenities	$313
Line Item	Transit	--	--	Transit Enhancements Bus Shelters	$188
Line Item	Transit	--	--	HCT Capital Equipment ADA Rolling Stock	$1,250
Line Item	Transit	--	--	HCT Support Vehicles	$88
Line Item	Transit	--	--	ADA Vehicle Equipment	$109
Total Stage I					**$88,661**

Stage II (2021-2030) Projects

Stage II is planned for improvements in the years 2021 to 2030. A list of projects is shown in Table -11.4. These planned improvements are projected to cost **$193.7 million** and represent improvements consisting of roadway widening, new roadway construction, roadway preservation, enhancements, and safety projects.

Table 11.4 2040 MTP Staged Improvement Program - Stage II (2021-2030)

ID	Mode	Route	Location	Project Description	Project Cost ($)
153	Roadway	Western Bypass Phase I	Richburg Rd to US 98	Widen to 4 Lanes, New 4 Lane Roadway	$23,267
152	Roadway	US 11	I-59 south for 1.2 miles	Widen to 4 Lanes	$5,179
144	Roadway	Weathersby Rd	Methodist Blvd to W 4th St	Widen to 4 Lanes	$3,021
112	Roadway	Bouie St	E 4th St to Old MS 42/US 11	Widen to 4 Lanes	$2,374
109	Roadway	Hall Ave Extension	James St to E Hardy St	New 2 Lane Roadway	$8,335
115	Roadway	Glendale Ave	Old MS 42 to Evelyn Gandy Pkwy	Widen to 4 Lanes	$6,257
120	Roadway	S 17th Ave	Adeline St to Mamie St	New 2 Lane Roadway	$962
122	Roadway	Timothy Ln Ext	W Pine St to Eastside Ave	New 2 Lane Roadway	$962
Line Item	Roadway	Various	Various	Enhancement	$7,462
Line Item	Roadway	Various	Various	Safety	$24,471
Line Item	Roadway	Various	Various	FBR	$13,864
Line Item	Roadway	Various	Various	Overlay	$61,247
Line Item	Roadway	Various	Various	Maintenance	$1,929
Line Item	Roadway	Various	Various	Reconstruction	$16,672
Line Item	Transit	--	--	HCT Operations	$8,385
Line Item	Transit	--	--	HCT Preventative Maintenance	$4,886
Line Item	Transit	--	--	Passenger Amenities	$698
Line Item	Transit	--	--	Transit Enhancements Bus Shelters	$419
Line Item	Transit	--	--	HCT Capital Equipment ADA Rolling Stock	$2,792

ID	Mode	Route	Location	Project Description	Project Cost ($)
Line Item	Transit	--	--	HCT Support Vehicles	$198
Line Item	Transit	--	--	ADA Vehicle Equipment	$246
Total Stage II					**$193,735**

Stage III (2031-2040) Projects

Stage III is planned for improvements in the years 2031 to 2040. A list of projects is shown in Table -11.5. These planned improvements - are projected to cost **$220 million** and represent improvements consisting of roadway widening, new roadway construction, roadway preservation, enhancements, and safety projects.

Table 11.5 2040 MTP Staged Improvement Program - Stage III (2031-2040)

ID	Mode	Route	Location	Project Description	Project Cost ($)
135	Roadway	Lincoln Rd	Sandy Run Rd/Hegwood Rd to I-59	Widen to 4 lanes	$14,729
104	Roadway	Sunrise Rd	Indian Springs Rd to MS 42	Widen to 4 Lanes, Realignment	$11,837
140	Roadway	J Ed Turner Dr/ Classic Dr	Jackson Rd to N Beverly Hills Rd	Widen to 4 Lanes	$10,522
203	Roadway	Springfield Rd Ext	Corinth Rd to Evelyn Gandy Pkwy	New 2 Lane Roadway	$2,736
148	Roadway	Oak Grove Rd/ Weathersby Rd	Lincoln Rd to US 98	Widen to 4 Lanes	$8,154
102	Roadway	Sims Rd	James St/Old US 49 to Old River Rd	Widen to 4 Lanes	9,469
121	Roadway	Broadway Dr Ext	W Pine St to Hall Ave	New 2 Lane Roadway	$1,954
Line Item	Roadway	Various	Various	Enhancement	$8,242
Line Item	Roadway	Various	Various	Safety	$27,031
Line Item	Roadway	Various	Various	FBR	$15,314
Line Item	Roadway	Various	Various	Overlay	$67,655
Line Item	Roadway	Various	Various	Maintenance	$2,131
Line Item	Roadway	Various	Various	Reconstruction	$18,416

ID	Mode	Route	Location	Project Description	Project Cost ($)
Line Item	Transit	--	--	HCT Operations	$10,221
Line Item	Transit	--	--	HCT Preventative Maintenance	$5,956
Line Item	Transit	--	--	Passenger Amenities	$851
Line Item	Transit	--	--	Transit Enhancements Bus Shelters	$511
Line Item	Transit	--	--	HCT Capital Equipment ADA Rolling Stock	$3,404
Line Item	Transit	--	--	HCT Support Vehicles	$242
Line Item	Transit	--	--	ADA Vehicle Equipment	$300
Total Stage III					**$220,030**

Effectiveness of Fiscally-Constrained Projects

Table 11.6 shows the travel impacts of implementing the capacity projects in the fiscally-constrained project lists versus a "no-build" scenario where only existing and committed projects are modeled. Figure 11.1 provides an illustration of these projects.

While daily vehicle miles traveled and daily vehicle hours traveled only decrease slightly, the daily hours of delay decrease by about 13 percent by implementing the projects recommended in the 2040 MTP.

Table 11.6 Travel Impacts of Fiscally-Constrained 2040 MTP Roadway Capacity Projects

Measure	2040 Existing and Committed	2040 Fiscally Constrained MTP	Difference	Percent Difference
Daily Vehicle Miles Traveled	4,379,518	4,358,210	-21,308	-0.5%
Daily Vehicle Hours Traveled	136,868	131,386	-5,482	-4.0%
Daily Hours of Delay	41,275	35,925	-5,350	-13.0%

Source: Hattiesburg Travel Demand Model, NSI

Note: Values in this table include all facilities modeled and do not match the values in other tables regarding VMT, VHT, and VHD.

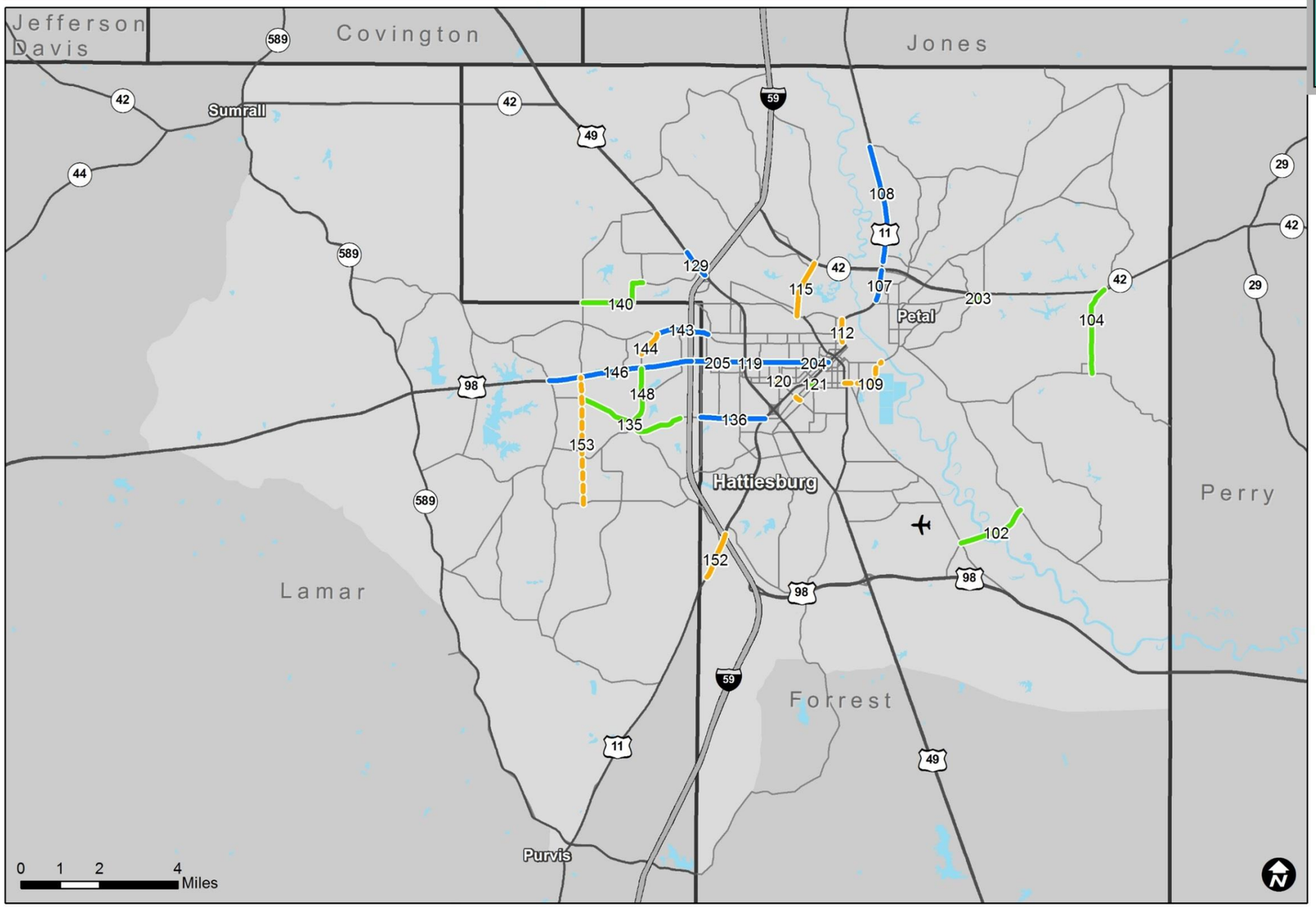
Table 11.7 Travel Impacts of Fiscally Constrained 2040 MTP Projects by Roadway Functional Class

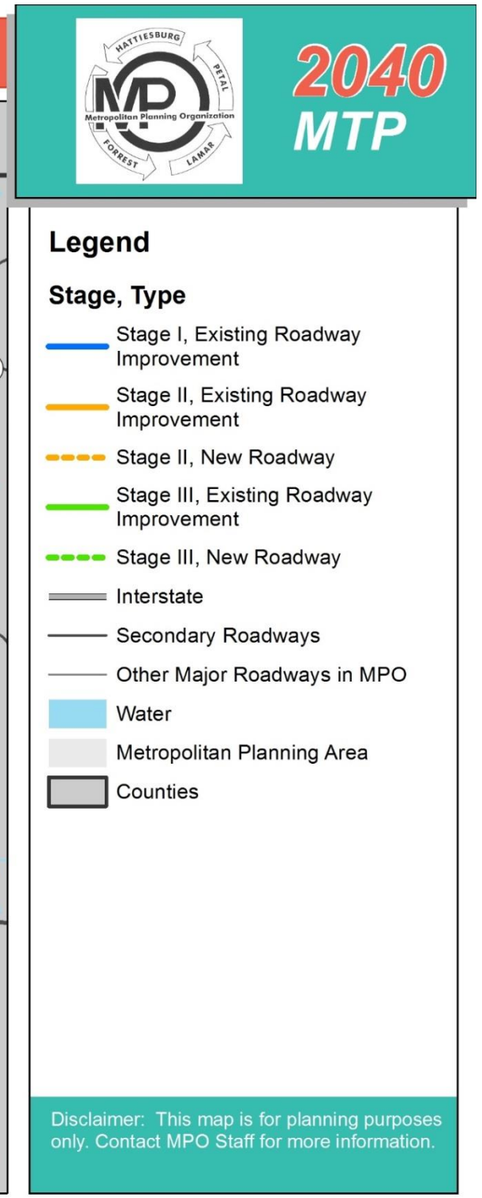
Centerline Miles of Roadways				
Classification	**2040 (E+C Projects)**	**2040 MTP**	**Difference**	**Percent**
Interstate	22	22	0	0.0%
Principal Arterial	64	66	4	6.5%
Minor Arterial	76	77	1	1.3%
Collector	174	176	2	1.1%
Total	**334**	**341**	**7**	**2.1%**
Daily Vehicle Miles Traveled (VMT)				
Classification	**2040 (E+C Projects)**	**2040 MTP**	**Difference**	**Percent**
Interstate	821,778	796,686	-25,092	-3.1%
Principal Arterial	1,503,836	1,479,718	-24,118	-1.6%
Minor Arterial	628,379	656,785	28,406	4.5%
Collector	706,645	728,356	21,711	3.1%
Total	**3,660,638**	**3,661,546**	**908**	**0.0%**
Daily Vehicle Hours Traveled (VHT)				
Classification	**2040 (E+C Projects)**	**2040 MTP**	**Difference**	**Percent**
Interstate	17,062	15,694	-1,368	-8.0%
Principal Arterial	50,642	47,617	-3,025	-6.0%
Minor Arterial	21,441	21,667	226	1.1%
Collector	23,204	23,044	-160	-0.7%
Total	**112,349**	**108,022**	**-4,327**	**-3.9%**
Daily Vehicle Hours of Delay				
Classification	**2040 (E+C Projects)**	**2040 MTP**	**Difference**	**Percent**
Interstate	4,702	3,694	-1,008	-21.4%
Principal Arterial	22,581	20,032	-2,549	-11.3%
Minor Arterial	5,655	5,089	-566	-10.0%
Collector	5,925	5,234	-691	-11.7%
Total	**38,863**	**34,049**	**-4,814**	**-12.4%**

Note: E+C is future scenario with only Existing and Committed transportation projects.

Source: Hattiesburg Travel Demand Model, NSI

FIGURE 11.1 FISCALLY-CONSTRAINED ROADWAY CAPACITY PROJECTS





Map Source: Neel-Schaffer, Inc.

Data Sources: Neel-Schaffer, Inc.

11.2 Visionary (Unfunded) Roadway Projects

The previous section addressed Stage I, II, and III's transportation improvements with identified funding sources; however, many other transportation improvements are desired to further improve travel conditions. These unfunded transportation improvements are included in a Visionary Needs list to keep a record of future needs. .

Unfunded transportation improvements are not necessarily less important or effective; they just cannot be accommodated within the financially constrained budget. Delayed funding for a transportation improvement project may be the result of the project's size, cost, design complexity, acquisition difficulties, jurisdictional concerns, and/or environmental concerns. A project may be delayed because its efficiency is minimized until other projects are completed or it does not alleviate existing transportation deficiencies that will only be exacerbated over time.

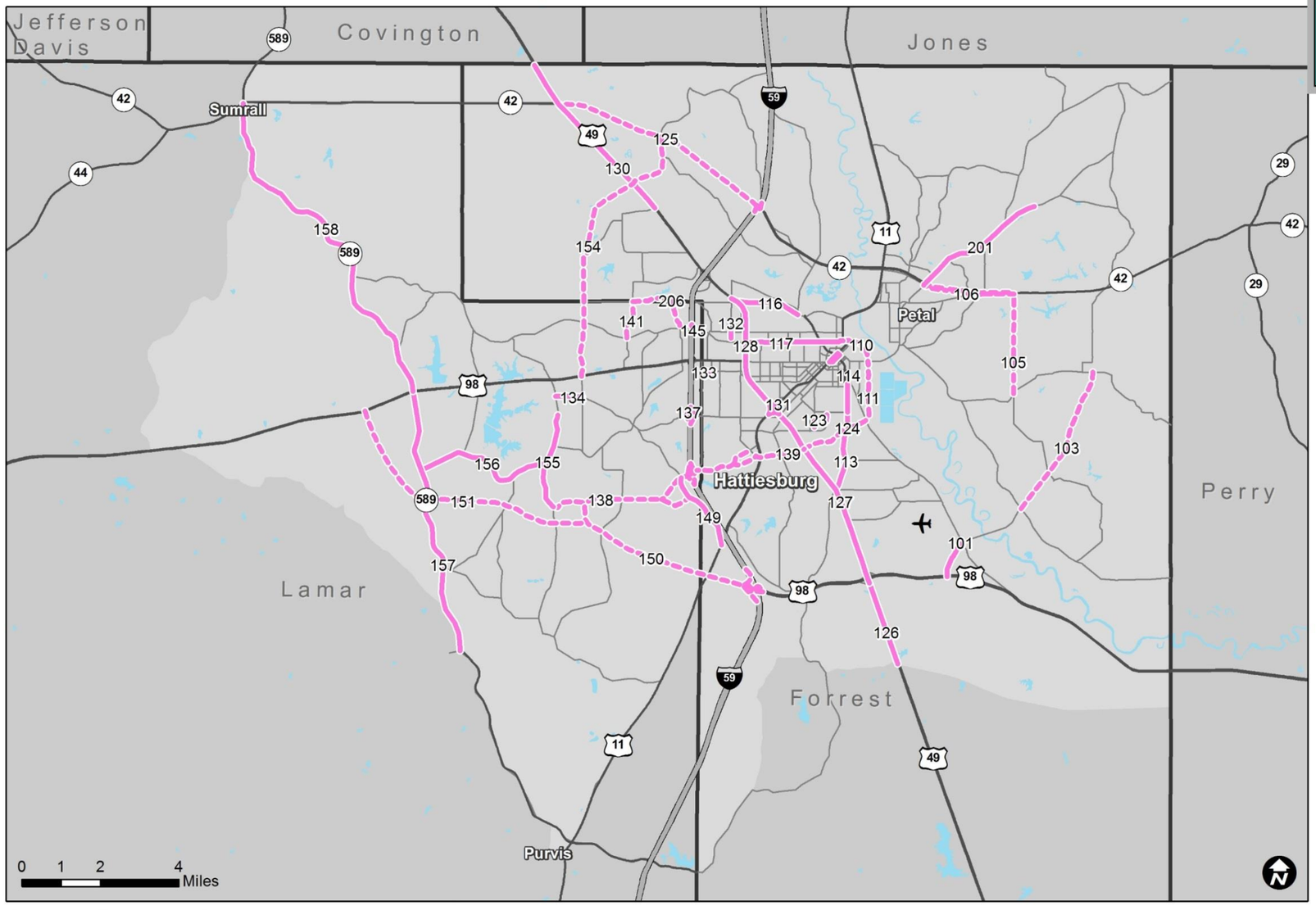
The estimated cost, in 2015 dollars, to implement the unfunded projects is $596.8 million. The Visionary Needs list is shown in Table 11.8 and projects are illustrated in Figure 11.2.

Table 11.8 2040 MTP Visionary Needs List

ID	Route	Location	Improvement	Miles	Project Cost (2015 $,000)
138	Richburg Rd	Old US 11 to I-59	Widen to 4 Lanes, New 4 Lane Roadway, New Interchange	4.05	$40,550
150	US 98 Bypass Extension Phase I	Richburg Rd to I-59	New 4 Lane Roadway and Interchange	4.85	$45,590
125	MS 42 Realignment	US 49 to Eatonville Rd	New 4 Lane Roadway, Widen to 4 Lanes, Interchange Modifications	5.80	$54,520
151	US 98 Bypass Extension Phase II	US 98 to US 98 Bypass Extension Phase I	New 4 Lane Roadway	7.05	$66,270
154	Western Bypass Phase II	US 98 to re-aligned MS 42	Widen to 4 Lanes, New 4 Lane Roadway	7.20	$32,820
130	US 49	Rawls Springs Loop Rd to North Study Area Boundary	Widen to 6 Lanes	4.75	$16,625
158	MS 589	US 98 to MS 42	Widen to 4 Lanes	9.50	$33,250
111	CBD Bypass Phase II	E Hardy St to Edwards St	New 4 Lane Roadway	2.05	$19,270
157	MS 589	Luther Lee Rd to US 98	Widen to 4 Lanes	5.65	$19,775
103	Sims Rd Extension	Old River Rd to Indian Springs Rd	New 4 Lane Roadway	4.00	$37,600
137	I-59	@ Lincoln Rd	New Interchange	--	$23,000
131	US 49	@ Broadway Dr	Reconstruct Interchange	--	$5,750
127	US 49	US 98 Bypass to Broadway Dr	Widen to 6 Lanes	5.35	$18,725

ID	Route	Location	Improvement	Miles	Project Cost (2015 $,000)
117	W 4th St	US 49 to Bouie St	Widen to 4 Lanes	2.45	$8,575
201	Old Richton Rd	Evelyn Gandy Pkwy to Herrington Rd	Widen to 4 Lanes	3.50	$12,250
139	Richburg Rd	I-59 to US 49	Widen to 4 Lanes, New 4 Lane Roadway	2.90	$9,785
156	Old Hwy 24	MS 589 to Old US 11	Add Center Turn Lane	3.70	$9,805
126	US 49	South Study Area Boundary to US 98 Bypass	Upgrade to Expressway	2.20	$20,900
132	N 31st Ave Extension	W 4th St to W 7th St	New 2 Lane Roadway	0.25	$1,300
206	J Ed Turner Dr Extension	Classic Dr to W 4th St	New 2 Lane Roadway	0.40	$2,080
114	Edwards St	Tuscan Ave to James St	Widen to 4 Lanes	0.70	$2,450
155	Old US 11	Richburg Rd to 6th Section Rd	Add Center Turn Lane	2.65	$2,329
116	Old MS 42	US 49 to Glendale Ave	Widen to 4 Lanes	1.65	$5,775
149	Sullivan-Kilran Rd/ Richburg Rd	US 11 to Richburg Rd	Add Center Turn Lane	2.15	$5,697
110	CBD Bypass Phase I	Bouie St/Gordon St to E Hardy St	New 4 Lane Roadway	0.95	$8,930
124	WSF Tatum Blvd Extension	US 49 to Edwards St	New 4 Lane Roadway	1.25	$11,750
101	Ralston Rd	US 98 Bypass to James St/Old US 49	Add Center Turn Lane	1.00	$2,650
113	Edwards St	US 49 to Tuscan Ave	Add Center Turn Lane	2.05	$5,433
133	W Arlington Loop Extension	S 40th Ave to S 37th Ave	New 2 Lane Roadway	0.25	$1,300
145	I-59	@ W 4th St	New Interchange	--	$15,000
134	Lincoln Rd	Old US 11 to Sandy Run Rd/Hegwood Rd	Add Center Turn Lane	0.70	$1,855
141	Classic Dr Extension	W 4th St to J Ed Turner Rd	New 2 Lane Roadway	0.95	$4,940
105	Batson Rd Extension	Sunrise Rd to MS 42	New 2 Lane Roadway	2.55	$13,260
106	Evelyn Gandy Pkwy (MS 42)	Old Richton Rd to Herrington Rd	Add New Service Roads	2.30	$23,920
118	Pine St/Front St	Hardy St to Market St	Convert to Two Way	0.65	$1,000
128	US 49	Broadway Dr to N 31st Ave	Widen to 6 Lanes	3.00	$10,500
123	Martin Luther King Ave Extension/ Penton St	Bowling St to Helveston Rd	New 2 Lane Roadway, Restrict Through Access	0.25	$1,539
Total Vision					**$596,768**

FIGURE 11.2 VISIONARY ROADWAY CAPACITY PROJECTS



Map Source: Neel-Schaffer, Inc.

Data Sources: Neel-Schaffer, Inc.

11.3 Strategies to Improve Public Transit Conditions

Based on existing conditions and future needs, this section presents recommendations for future transit planning efforts. The timeframes for recommendations in this section of the report are based on the direction of the FHWA and FTA. These timeframes include:

- Short-Term Strategies (Years 1-5)
- Medium and Long-Term Strategies (Years 6-25)

Table 11.9 Public Transit Actions to Address Transit Needs

Strategies	Time Frame	Description
Implement Proposed HCT Fixed Route Modifications	Short	Fixed Route modifications have been proposed which improve access to the system and increase frequencies.
Install bike racks on all HCT buses	Short	Bicycle racks on buses extend the reach of transit.
Work with Southern Mississippi Transit (SMT) group to develop Coordinated Human Services Transportation Plan	Short	This will identify opportunities for coordination between different public transit providers and make federal funding available for these projects.
Improve existing HCT stop accessibility and amenities	Short	There are many existing bus stops with poor sidewalk coverage nearby. Most stops are currently unaccommodating to pedestrians and bicyclists.
Improve HCT rider information	Short	Improve rider marketing materials. Add mobile app tracking of buses. Provide route information at stops.
Improve HCT transit revenues	Short	Consider alternative additional funding sources such as public-private partnerships, Tax Increment Financing, advertisements, student fees at colleges and universities, etc.
Implement regional Transportation Demand Management (TDM) Program	Short	Focus on vanpooling, ridesharing, and partnering with major employers to provide employee incentives.
Expand HCT hours of operation	Medium	Expand hours of operation later into evenings and on weekends so more jobs are accessible by transit.
Explore extending transit service to Petal	Medium	Petal is the largest area without transit service that has moderate demand. A fixed or deviated-fixed route should be explored that connects the Walmart area in Petal to the Hattiesburg Train Depot, with stops in high demand areas along the way. Contracted service could be an interim step or alternative to a regional transit authority.
Study formation of regional transit authority	Long	One transit system in the region with a dedicated funding source. Demand-response service providing access in rural areas.

11.4 Strategies to Improve Bicycle and Pedestrian Conditions

In order to address the need for improved bicycle and pedestrian conditions in the Hattiesburg MPA, a Pathways Master Plan (2015) was adopted by the MPO. Implementation of the plan's most important strategies and short-term actions, reproduced in Table 11.10, will put the MPO on track to become bicycle and pedestrian friendly.

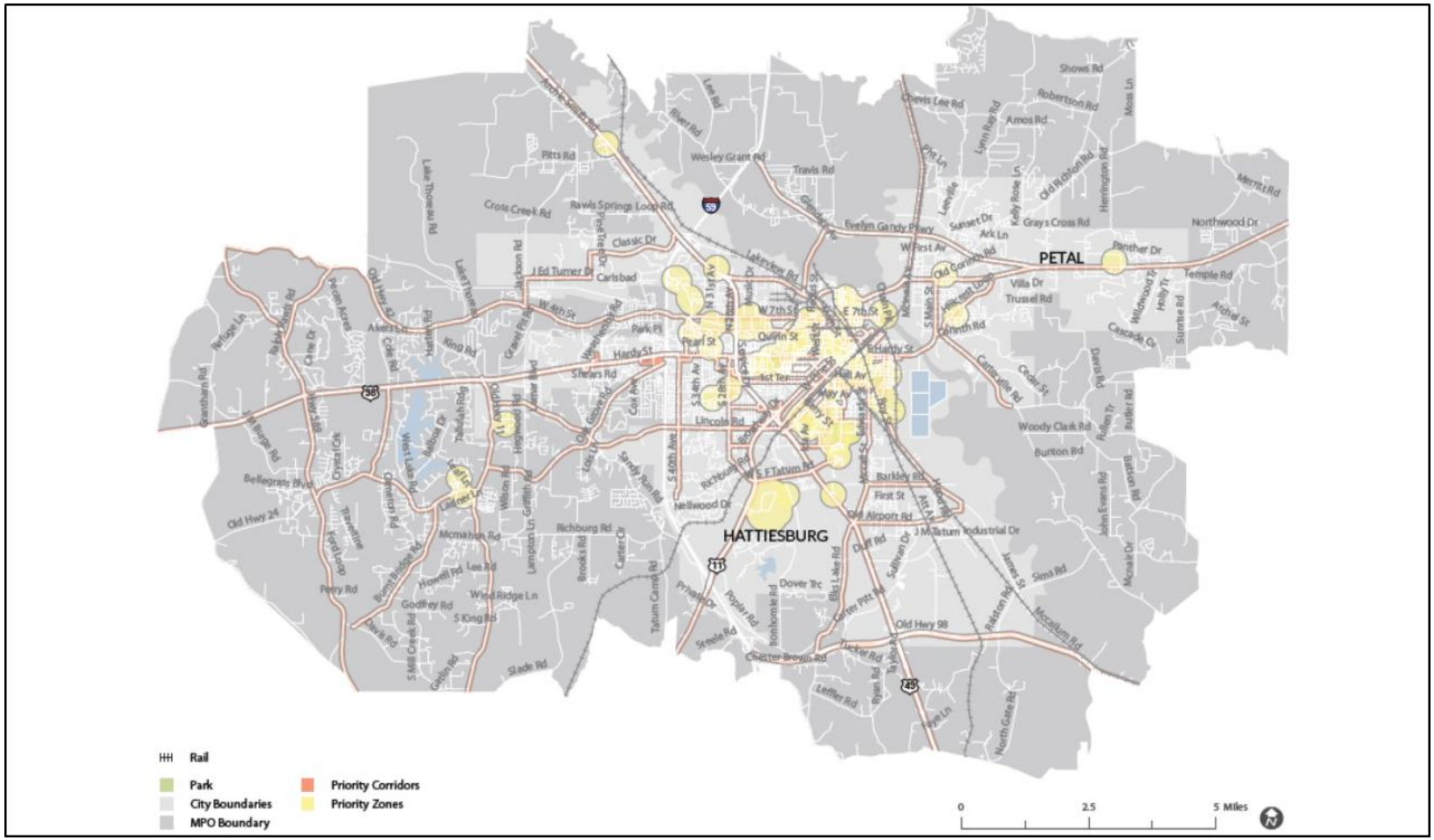
In the long-term, the MPO should focus on improving pedestrian conditions in the pedestrian corridors and zones illustrated in Figure 11.3 and on implementing the bicycle facilities plan, as illustrated in Figure 11.4. The Transportation Alternatives Program (TAP) funding discussed in Chapter 9: Financial Analysis is a good source for incrementally addressing these needs. Approximately, $3.6 million in TAP funding is forecast for the MPO from 2016 to 2040.

Table 11.10 Bicycle and Pedestrian Actions

Task	Details	Phase
Policy Action Steps		
Coordinate Development Plans	During the development review process, City and County staff should reference this plan. If a new development requires changing the public right-of-way, the changes should be used to support walking and biking improvements identified in this Plan. The site design should also be supportive of walking and biking access on the property.	Ongoing
Form a Bicycle and Pedestrian Advisory Committee	Form the Bicycle and Pedestrian Advisory Committee and confirm the goals of the BPAC to include the implementation of this plan.	Short-Term (2015)
Seek Multiple Funding Sources and Facility Development Options	To implement this plan, funding from a variety of funding sources will need to be leveraged. Working with MPO and other partners, the BPAC should identify public and private funding sources and pursue these resources on an ongoing basis.	Short-Term/Ongoing (2015 onward)
Program Action Steps		
Designate Staff	Designate staff to oversee the implementation of this plan and the proper maintenance of the facilities that are developed. Designated staff should include City and County staff.	Short-Term (2015)
Become designated as a Bicycle-Friendly Community (BFC)	The development and implementation of this plan is an essential first step toward becoming a designated BFC. With ongoing efforts and the short- term work program recommended here, MPO jurisdictions should be in a position to apply for and receive recognition within a few years.	Short-Term (2015) City of Hattiesburg Mid-Term/Long-Term (2017 onward) City of Petal, Forrest and Lamar County
Become designated as a Walk-Friendly	The development and implementation of this plan is an essential first step toward becoming a designated WFC. With ongoing efforts and the short- term work program recommended here, MPO jurisdictions	Short-Term (2015) City of Hattiesburg Mid-Term/Long-Term

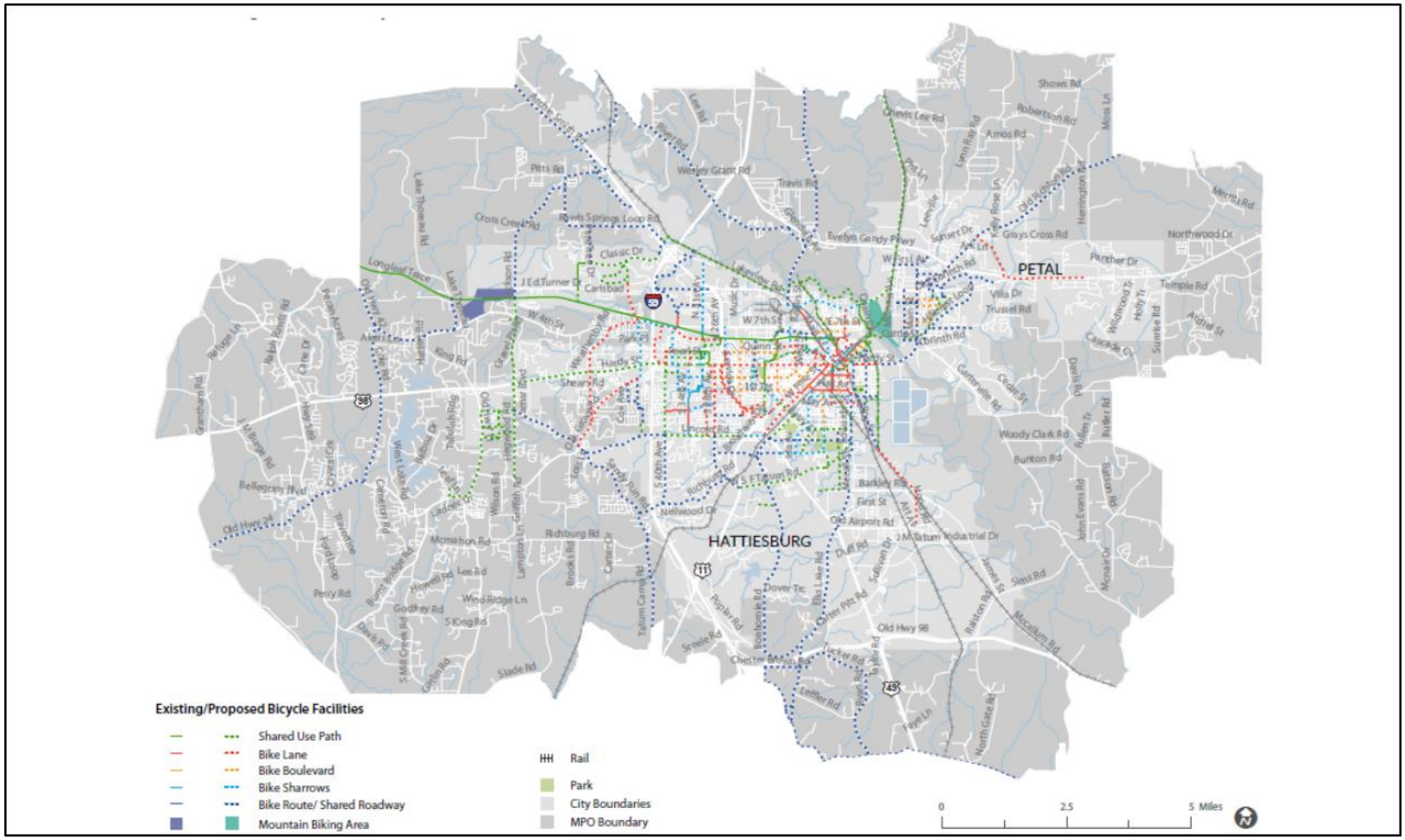
Task	Details	Phase
Community (WFC)	should be in a position to apply for and receive recognition within a few years.	(2017 onward) City of Petal, Forrest and Lamar County
Communication and Outreach	The BPAC should establish a communication campaign to celebrate successes as facilities are developed and otherwise raise awareness of the overall pedestrian and bicycle network and its benefits. A key first task of this group is to design and launch a one-stop website. Set up the one-stop website to provide information to residents and tourists on walking and biking in the community. To begin, the website can include the maps included in this plan.	Short-Term (2015)
Establish Evaluation and Reporting Program	The MPO and the BPAC should brainstorm specific benchmarks to track through a monitoring program and honor the completion of projects with public events and media coverage.	Mid-Term/Ongoing (2016 onward)
Begin annual Meeting with Key Project Partners	Key project partners (see org. chart on page 68) should meet on an annual basis to evaluate the implementation of this Plan. Meetings could also occasionally include on-site tours of priority project corridors.	Short-Term/Ongoing (2015 onward)
Improve Existing Programs and Launch New Programs	These groups should coordinate to improve existing bicycle and pedestrian programs and to launch new programs, such as those described in Recommendations chapter.	Short-Term/Ongoing (2015 onward)
Provide Enforcement and Education Training for Public Safety Officials	Provide police and fire officers with training through free online resources available from the National Highway Traffic Safety Administration, and through webinars available through the Association of Pedestrian and Bicycle Professionals. Provide officers with an informational handout to be used during bicycle and pedestrian-related citations and warnings. Coordinate regular in-person training workshops for officers to learn bicycle and pedestrian laws and enforcement strategies.	Short-Term/Ongoing (2015/2016 onward)
Infrastructure Action Steps		
Identify Funding	To allow continued development of the overall walkway and bikeway system, capital funds for pedestrian and bicycle facility construction should be set aside every year. Local and Federal funds should be programmed for facility construction. Funding for an ongoing maintenance program should also be included in the Cities and County's operating budgets.	Short-Term/Ongoing (2015 onward)
Complete Short-Term Priority Projects	The Recommendations chapter identifies projects for implementation. Aim to complete at least two of these projects by the end of 2017.	Mid-Term (2017)

Figure 11.3 Priority Pedestrian Corridors and Zones



Source: Hattiesburg-Petal-Forrest-Lamar MPO Pathways Master Plan, 2015

Figure 11.4 On-Street Bikeways and Shared-Use Paths



Source: Hattiesburg-Petal-Forrest-Lamar MPO Pathways Master Plan, 2015

11.5 Strategies to Improve Freight Conditions

Deploy Regional Intelligent Transportation Systems (ITS) Incident Management System

Several ITS projects are included in the 2040 MTP fiscally-constrained projects. All of these projects are on major freight corridors. In addition to the delay reduction benefits of these ITS improvements; the MPO will leverage the deployment of the Hattiesburg Region ITS Incident Management System and TMC Operations to include expanded commercial vehicle elements. This is a recommendation -from the Mississippi Statewide Freight Plan (2015).

Implement MTP Roadway Projects

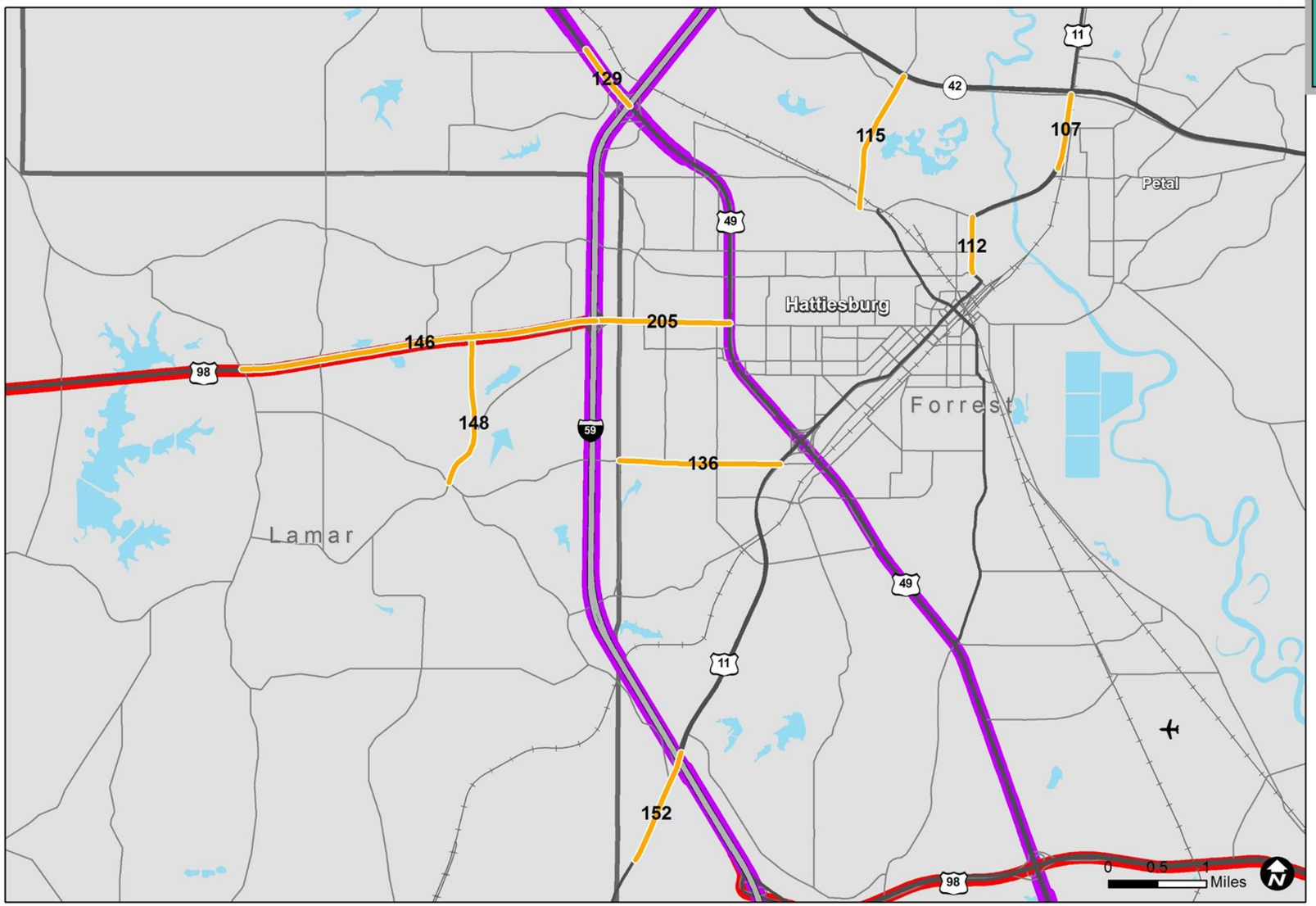
Table 11.11 shows roadway projects funded in the 2040 MTP that are along major freight corridors or roadway segments with 500 or more estimated daily trucks and are also illustrated in Figure 11.5.

These projects address two of the three areas of concern for freight truck congestion: US 98/Hardy Street, and Oak Grove Road. They also address an area of concern for freight truck safety: US 49 from I-59 to Classic Drive. By implementing these projects, both passenger and commercial traffic should experience reductions in delay and safety incidents.

Table 11.11 2040 MTP Roadway Projects with Freight Benefits

ID	Route	Location	Improvement	Stage
107	US 11	W Central Ave to Evelyn Gandy Pkwy	Widen to 4 lanes	Stage I
136	Lincoln Rd	S 40th Ave to Broadway Dr	Widen to 4 lanes	Stage I
205	Hardy St	I-59 to US 49	ITS Improvements	Stage I
129	US 49	I-59 to Rawls Springs Loop Rd	ITS Improvements	Stage I
146	Hardy St	King Rd/Old US 11 to I -59	ITS Improvements	Stage I
112	Bouie St	E 4th St to Old MS 42/US 11	Widen to 4 lanes	Stage II
115	Glendale Ave	Old MS 42 to Evelyn Gandy Pkwy	Widen to 4 lanes	Stage II
152	US 11	I-59 south for 1.2 miles	Widen to 4 lanes	Stage II
148	Oak Grove Rd/ Weathersby Rd	Lincoln Rd to US 98	Widen to 4 lanes	Stage III

FIGURE 11.5 MTP ROADWAY PROJECTS ON MAJOR FREIGHT FACILITIES



2040 MTP

Legend

- MTP Roadway Project on facility with 500+ estimated daily trucks
- Interstate
- Secondary Roadways
- Other Major Roadways in MPO selection
- Railroads
- Tier I Highway Corridor (MS Freight Network)
- Tier II Highway Corridor (MS Freight Network)
- Water Bodies
- Metropolitan Planning Area
- Counties

Disclaimer: This map is for planning purposes only. Contact MPO Staff for more information.

Map Source: Neel-Schaffer, Inc.

Data Sources: Neel-Schaffer, Inc.; MDOT

11.6 Strategies to Improve Air Quality

According to the FHWA, transportation strategies to mitigate the impacts of air pollution emissions from automobiles can be organized into four major groups:

1. **Improve system and operational efficiencies** by optimizing the design, construction, operation, and use of transportation networks. The strategies range from anti-idling ordinances to traffic management to congestion pricing. The objective of this group of strategies is to reduce the energy use and emissions associated with a given unit of passenger or freight travel (e.g., person-miles, vehicle-miles, or ton-miles of travel).
2. **Reduce travel activity** by reducing growth in vehicle-miles traveled. The objective of this group of strategies is to influence travelers' activity patterns, thereby reducing total travel, shifting travel to more efficient modes, increasing vehicle occupancy, or otherwise taking actions that reduce energy use and emissions associated with personal travel.
3. **Introduce low-carbon fuels.** Petroleum-based fuels account for 97 percent of U.S. transportation energy use. The objective of this group of strategies is to develop and introduce alternative fuels that have lower carbon content and generate fewer transportation emissions. These alternative fuels include ethanol, biodiesel, natural gas, liquefied petroleum gas, synthetic fuels, hydrogen, and electricity.
4. **Increase fuel efficiency** by advancing and bringing to market advanced engine and transmission designs, lighter-weight materials, improved aerodynamics, and reduced rolling resistance. The objective of this group of strategies is to use less fuel and generate fewer emissions.

Table 11.12 below outlines actions the MPO can take to begin addressing the negative impacts of vehicle emissions on air quality and public health.

Table 11.12 Actions to Reduce Transportation-Related Air Pollution Emissions

Strategy	Action Category	Description
Implement the Hattiesburg Regional ITS Deployment Plan and update as necessary.	Improve system and operational efficiencies	This will improve the operational efficiency of the existing transportation system, reducing the higher level of vehicle emissions occurring at low speeds or while idling.
Encourage local governments to adopt land use regulations that encourage building urban, suburban and rural communities with housing and transportation choices near jobs, shops and schools.	Reduce travel activity	Increasing the walkability of the MPO will reduce the need for trips to be made by driving an automobile. It can also be more energy efficient overall.
Implement transit and bicycle/pedestrian strategies outlined previously to reduce automobile trips.	Reduce travel activity	Many of these actions will make walking, biking, and transit more attractive, thereby potentially reducing demand for travel by automobile.

Strategy	Action Category	Description
Work with MDOT to explore creating a Clean Cities coalition for Mississippi.	Introduce low-carbon fuels; Increase fuel efficiency	At the local level, coalitions leverage resources to create networks of local stakeholders and provide technical assistance to fleets implementing alternative and renewable fuels, idle-reduction measures, fuel economy improvements, and emerging transportation technologies.
Perform studies to identify best programmatic, policy, and infrastructure strategies to reduce regional transportation-related air pollution emissions.	All	These studies should focus on improving system and operational efficiencies (e.g. idle reduction strategies and traffic management), reducing travel activity (e.g. Transportation Demand Management [TDM]), and increasing the utilization of alternative fuel vehicles (e.g. ethanol, biodiesel, natural gas, propane, synthetic fuels, hydrogen, and electricity).

Appendix A: Public Participation Record

- Initial Public Notice of MTP Update and MindMixer website
  - MindMixer press release from MDOT – January 12, 2015

- 2040 MTP Kick-off Meeting
  - Legal Advertisement (Public Notice)
  - Environmental Justice (EJ) Outreach Summary Letters
  - Sign In sheets
  - Kick-off Meeting Summary and Public Input

- Draft Plan Public Input Period
  - Legal Advertisement (Public Notice) for Review of Draft Plan
  - MDOT Press Release – October 16, 2015
  - MPO Press Release – October 28, 2015
  - MDOT Stakeholder notice of public meetings
  - MDOT Stakeholder notice of draft plan availability for review
  - MindMixer notice of plan available for comment
  - Meeting Location Change Notification
  - Flyers posted at public locations
  - WDAM article – October 30, 2015
  - Sign In sheets
  - Comments received during public comment period

MDOT news (website) and released statewide 1/12/15

New Website Allows Citizens to Voice their Community's Critical Transportation Needs for Statewide Long-Range Transportation Plan

JACKSON, MISS--- The Mississippi Department of Transportation (MDOT) and the Gulf Coast, Hattiesburg and Jackson Metropolitan Planning Organizations (MPOs) are pleased to announce the launch of mississippitransportationplan.mindmixer.com. The site provides citizens with a new way to connect and communicate their thoughts with transportation decision makers and other citizens about Mississippi's long-range transportation plan known as MULTIPLAN 2040.

Sometimes it is difficult for citizens to take time away from family and work to attend face-to-face public meetings. This new website allows online input from those who might not have the opportunity to attend a meeting. The goal of the site is to increase opportunities for the public's voice to be heard. Feedback gathered through this site will be vital to the planning of future infrastructure throughout the state of Mississippi.

The partnership with MDOT and the MPOs in the planning process will help ensure that urban and rural transportation needs are addressed in a comprehensive manner statewide. Additionally, MDOT and each MPO will still host face-to-face meetings in locations across the state. Meetings are set to begin in February and will occur until June; exact dates and locations will follow.

The site gives contributors a chance to share new ideas, support existing concepts and provide feedback on a variety of transportation topics online anytime, anywhere. The topics are designed to generate critical thinking about ideas that would have a positive impact on future infrastructure over the next 25 years. Participants are encouraged to share photos, use maps to help pinpoint locations and have conversations with other citizens from across the state.

The site is accessible through mobile devices and is available in over 50 languages for easy access to join the conversation.

Online discussions will host topics including:

- What do you want our transportation system to look like in 25 years?
- If you could change one thing about our existing transportation system, what would it be?

The site will measure and track participation on the most compelling topics. The resulting data provides invaluable insights for this and future planning processes. For more information on how you can join the conversation, please visit mississippitransportationplan.mindmixer.com.

CUTLINE: The Mississippi Department of Transportation (MDOT) and the Gulf Coast, Hattiesburg and Jackson Metropolitan Planning Organizations (MPOs) are pleased to announce the launch of mississippitransportationplan.mindmixer.com...

WMT	72.27	90.97	86.19	+.48	+0.6	+0.4	+17.3	18	2.2
WFC	44.17	55.95	53.45	+.64	+1.2	-2.5	+19.5	13	2.6
WY	27.48	37.04	35.57	+.33	+0.9	-0.9	+21.4	27	3.3

$5.85, or 0.3 percent, to $63.17 after the country's largest chain of car dealerships reported income that beat Wall Street's estimates.

civil service protection.

"I think he (Fisher) will be very sensitive about personnel," Clarke said.

Fisher said he would like to see the salary for correctional officers and probation officers increased. He said the avarage pay is $22,000 a year for a correctional officer and $27,000 for a probation officer.

A key goal is retention of correctional and probation officers, Fisher said, and better pay might help.

Fisher said he plans to increase annual training requirements, including firearm proficiency for correctional and probation officers.

Contact Jimmie E. Gates at jgates@jackson.gannett.com or (601) 961-7212. Follow @jgatesnews on Twitter.

Dining

Continued from Page 9A

Luby's is famous for its made-from-scratch, homestyle meals that are available "at a great value in a friendly cafeteria style environment," she said. "Luby's is about real food, real ingredients and home-cooked dishes made every day with fresh, unprocessed ingredients by dedicated team members."

The Original Burger, Bacon Cheddar Burger, and the Buffalo Burger are the top three customer favorites on Fuddruckers' menu, she said.

Fried fish, fried chicken, and blackened tilapia are the top three customer favorites at Luby's, she said.

According to its website, "Luby's operates restaurants under the brands Luby's Cafeteria, Fuddruckers and Cheeseburger in Paradise and provides food service management through its Luby's Culinary Contract Services business segment.

"In addition to the 73 company-operated Fuddruckers locations, Luby's is the franchisor for 111 Fuddruckers franchise locations across the United States (including Puerto Rico), Canada, Mexico, Italy, the Dominican Republic, Panama and Chile," according to the website.

Nell Luter Floyd is a shopping enthusiast. Contact her at nellfloyd@bellsouth.net

Mississippi Long Range Transportation Plan
Open Forum Public Meetings

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HATTIESBURG: Wednesday, February 18, 4 –6 p.m.
Breland Community Center (Lamar County), 79 Jackson Road

HATTIESBURG: Thursday, February 19, 4 –6 p.m.
Historic Train Depot (Forrest County), 308 Newman Street

BAY ST. LOUIS: Tuesday, February 24, 4 –6 p.m.
Louis Community Hall, 301 Blaize Avenue

GAUTIER: Wednesday, February 25, 4 –6 p.m.
Gautier Convention Center, 2012 Library Lane

BILOXI: Thursday, February 26, 4 –6 p.m.
Donal Snyder Community Center, 2520 Pass Road

CLARKSDALE: Tuesday, March 3, 4 –6 p.m.
Clarksdale Historic Greyhound Bus Station, 300 Issaquena Avenue

TUPELO: Wednesday, March 4, 4 –6 p.m.
MDOT District Office, 1909 Gloster Street

JACKSON: Thursday, March 5, 4 –6 p.m.
CMPDD Office, 1170 Lakeland Drive

Staff members will be present at each meeting to discuss the planning process and receive input on the MULTIPLAN.

CL-0000313730

JCL 2/4

Jackson Clarion Ledger

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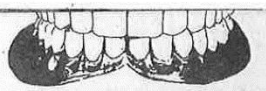

DENTURES

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Mississippi Long-Range Transportation Plan
Open Forum Public Meetings

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Historic Train Depot (Forrest County), 308 Newman Street

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H Burg Impact 2/9

FROM THE FRONT

Story

Continued from Page 1A

rhymes, tickles, bounces and stories."

Thornhill sits in the front of the library's amphitheater and recites rhymes and sings songs, using gestures to act them out. Mothers and fathers help their children follow along. This day there are children as young as 2 months and as old as 2 years. Everyone participates.

"There was a lot of repetition," Thornhill said. "I think that is the key with young children. They comprehend on a deeper level, and it all gets in there."

Thornhill started Baby Story Time last October, using what she calls "board books" — books with large, colorful pictures and just a few words on each page.

She came up with "Mother Goose on the Loose," this time around, thinking nursery rhymes would reach the children.

During this session, the babies sit in their parents' laps, while the 2-year-olds begin to get restless. It doesn't bother Thornhill.

"Toddlers, it's their jobs to fiddle around, but they're still paying attention," she said. "You think they're totally distracted, but their moms will tell me later, 'You know, they were singing that song.'"

Angel Herring, assistant professor in child and family studies at the University of Southern Mississippi, said young children can definitely get something out of an activity like Baby Story Time.

"Children come into the world pre-wired to learn," she said. "New babies show a preference for their mother's voice. Very soon after birth, they show a preference for their mother's scent.

"And babies come into the world showing a preference for human faces."

Herring said it's important to be reading to infants from birth.

"It teaches babies about communication, listening, memory and vocabulary skills," she said. "By 1 year of age, babies have learned all the sounds necessary to speak their native language."

Herring said reading to children early in their lives has benefits for them.

"(They) have larger vocabularies and better math skills," she said. "You can't discount the social and emotional skills — you're probably holding the baby, looking at the baby, you're interacting with the baby."

Thornhill said she is aware of the importance of early reading for children. She wants to make sure she does her part to help children early in life so they have the skills they need later in life.

"My focus is reading readiness," she said. "I want these children to love books. I have an opportunity to read to children — to let them see the words — let them hear a book."

Thornhill said even the youngest patron can get a library card.

"Anyone under 16 just needs an adult caregiver to sign for them," she said. "They can't see over the counter, but they're reaching up for the (library) card."

Thornhill has started a new program for young children called "1,000 Books Before Kindergarten." It's based on research showing children age birth through 5 who are read to regularly are more prepared for learning when they enter kindergarten.

Children can get a reading log at the Hattiesburg or Petal library. Every time they read 100 books, they receive a sticker and an incentive prize.

Thornhill said 1,000 books might sound daunting, but it's not. She said if a parent and child manage just one book a night, that will be 1,095 books in three years.

Herring said reading to children is considered so crucial, an influential pediatric group is making a new suggestion.

"The American Academy of Pediatrics has now recommended that pediatricians talk to parents about reading to their babies. It's that important," she said.

Herring said early encounters with books can make all the difference as a child ages.

"There's no better predictor of future academic success than reading," she said. "And there's no better predictor of being a successful reader than being read to as a child."

PROGRAMS FOR YOUNG READERS

HATTIESBURG LIBRARY
- What: Baby Story Time
- What: Birth to 2 years
- When: 1:30 p.m., Tuesdays through March 3
- What: Family Story Time
- What: 2-5 years, but all welcome
- When: 10 a.m., Wednesdays

PETAL LIBRARY
- What: Family Story Time
- Who: 2-5 years, but all welcome
- When: 10 a.m., Thursdays

HATTIESBURG/PETAL LIBRARIES
- What: 1,000 Books Before Kindergarten
- When: Ongoing
- How it works: Sign up at either library. Get a reading log to keep track of each book read. Favorite books read again and again count, too. Each time you read 100 books, bring your reading log to the library for a sticker, small incentive prize and a new log.
- How long will this take: 1,000 books is self-paced. If you read just one book a night, you will have read 1,095 books in three years.

Mississippi Long-Range Transportation Plan
Open Forum Public Meetings

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HATTIESBURG:
Wednesday, February 18, 4 – 6 p.m.
Breland Community Center (Lamar County), 79 Jackson Road

Thursday, February 19, 4 – 6 p.m.
Historic Train Depot (Forrest County), 308 Newman Street

Staff members will be present at each meeting to discuss the planning process and receive input on the MULTIPLAN.

Council

Continued from Page 1A

pastors refused to relinquish the microphone and allow a public hearing scheduled for 4 p.m. to be held.

For the past two days, the pastors have requested the reinstatement of the long-suspended Citizens Forum, which once provided an opportunity for the public to address the council.

The forum, which had been suspended in October 2013 for at least 90 days, originally had been intended to give residents a chance to present problems or complaints to the council.

But after a contentious and controversial mayoral election between incumbent Johnny DuPree and former Councilman Dave Ware, the public discourse often turned to tirade, a steady stream of personal blisterings aimed at DuPree and council members.

Attempts to bring back the forum over the past 15 months had failed in concerns over decorum and behavior as well as an acrimonious quid pro quo between the mayor and the council.

"We do not belong to the mayor," the Rev. Arthur Siggers of Mount Olive Baptist Church said. "We do not belong to the council. We may agree with the mayor. We may agree with the council.

"But to use (the silencing of the public) as a bargaining chip is ludicrous."

Naylor tried to reassure the overflow crowd that he expected to see the return of Citizens Forum sooner than later, but could not give a concrete timeline.

"I feel certain that we, meaning the council members, will come to some resolve," Naylor said after the meeting. "Being as this just occurred, I'm not in a position to say for sure what's going to be done, but just as sure as all of us are elected, I don't think the citizens of Hattiesburg will sit back and let us do nothing.

"So, I'm confident that we're going to take the necessary steps to bring some suitable resolve to the whole matter."

Naylor said past issues need to be resolved.

"I think one thing for certain, though, is that we do need to fully acknowledge our roles," he said. "The mayor has one, and the council has one, and for starters, if we do just what our roles are, then that will get us going in the right direction.

"The mayor definitely has to carry out his role as the executive of this and we need to fully understand that role of his and he needs to do likewise and fully understand that we are the legislative body and we have our role."

And the folks who crammed into Hattiesburg City Hall on Monday and Tuesday know their roles, and vowed that they would stay the course.

"We are not going away," said the Rev. D. Franklin Browne of Antioch Missionary Baptist Church. "We are here to stay."

College

Continued from Page 1A

ades. There was a 46-point gap between the two groups in 1970, compared with a 36-point gap in 2012.

But completion gaps are growing: While 99 percent of students entering college from the highest-income families — those making $108,650 or more a year — graduate by 24, just 21 percent of students from the lowest-income families finish by that age.

Perna said there are a number of factors contributing to the widening divide, including access to the information and support needed to enter college and graduate; college readiness; and the availability of higher education that meets people's needs, particularly for students who might have children, limited access to transportation and full-time jobs.

She also noted that the likelihood of finishing a degree varies dramatically by the type of institution. Students from the poorest families are overrepresented in public two-year institutions, which tend to have lower completion rates, while those from wealthier families are abundant in doctoral-granting institutions.

The Obama administration has expanded the availability of Pell Grants and supported a tax credit for tuition costs, but the study says the amount of the maximum Pell Grant award has not kept up with the rising cost of college. College costs were more than two times higher in 2012 than in 1975 at the start of the Pell Grant Program, which provides aid to low-income students based on need.

Pell Grants covered 67 percent of college costs in 1975 but only 27 percent in 2012.

The study shows the burden of paying for college has increasingly shifted from state and local governments to students and families. That, Perna said, should prompt an important question: Who should pay for college given the individual and societal benefits?

"Students only have so many resources they can use to pay the costs," Perna said.

Michael Kramer, 29, is the first in his family to attend college. The son of a country club maintenance supervisor and a factory worker, he went straight to jobs in retail and plumbing after graduating high school, unable to afford college. He eventually enrolled in a community college while working full time and is now taking out loans to help finish his bachelor's degree at the University of California, Los Angeles.

"We're a country that says everybody should be getting higher education, and nowadays, to get any decent job, you need a bachelor's degree," Kramer said.

But for low-income students like him, Kramer said the high cost of college often means making a difficult choice between fulfilling basic food and housing needs and obtaining an education.

"It's a continuous cycle that they get stuck in," he said.

Hattiesburg 2/4

106 S. President St.
4th Floor
Jackson, MS 39201
Phone: (601) 961-1415
Fax: (601) 960-0420

SOL Engineering Services, LLC
Engineers & Project Managers

1100 Poydras St.
Suite 2130
New Orleans, LA 70163
Phone: (504) 522-4575
Fax: (504) 522-4576

March 10, 2015

Rebecca Boone
Neel-Schaffer, Inc.
125 S. Congress Street, Suite 1100
Jackson, MS 39201

RE: Feedback on Environmental Justice (EJ) and Underserved Groups Outreach
MDOT's Long Range Transportation Plan Project – 4022-029

Dear Rebecca:

Over the past week, SOL Engineering Services, LLC (SOL) was tasked with reaching out via various means of communication to personally communicate to Environmental Justice (EJ) and underserved groups. During the past week, SOL personnel reached out mainly to personal contacts as well as additional organizations that may or may not have been personally contacted during the previous outreach attempts. SOL made several phone calls, sent several emails and during this communication, also requested that contacted individuals share this information via their social media pages if possible. Additionally, contacted individuals were informed of the purpose of the project as well as the importance of having community leaders and citizens provide their input in the development of our future transportation system as well as times and locations of the scheduled meetings.

While surveying social media sights after making phone call requests to post the information on their respective pages, the following was observed on pages where the information was posted:

Facebook Observations	
Contact/Organization	**Number of Page Members or Affiliates**
Word and Worship Church*	582
City of Byram Unofficial Facebook Page	1,131
City of Indianola Unofficial Facebook Page	140
WHLH 95.5 Hallelujah FM personnel (Nikki Dulaney, Michael Davis, and Lance Fuller)	unknown
JSUNAA Byram-Terry Chapter Facebook Page**	800+
Personal Friends	4500+ (collectively)

*Members also shared it on their personal pages.
**This post also tagged approximately 7 other individuals to share on their personal pages. Those numbers, where possible, are included in the personal friends FB numbers.

"Shaping Communities through Engineering Innovations"

Since we had not previously called any county human resource agencies during our additional outreach efforts, we called all agencies in or near the Clarksdale, Tupelo, and Jackson areas. Finally, utilizing the American Public Transportation Association webpage, we also contacted all transportation agencies in or near the aforementioned areas to inform them about the upcoming meetings in their respective areas.

All who were reached via telephone were very receptive to the information, and about 90% of them said they would either attend or send a representative. There were a few who had previous engagements, and therefore, wouldn't be able to attend. They were informed about the mindmixer website and the opportunity to view the LRTP information online and still have the opportunity to provide feedback. Overall, the organizations and individuals were very appreciative of the information, and expressed an interest in participating in the project planning process.

The groups and personal contacts who were contacted expressed very sincere appreciation for their invitation to be involved. Overall, the outreach process proved to be very successful based on the feedback received via telephone calls and the observed number of people/groups who shared the information on their social media pages.

Warmest Regards,

Falicia L. Edwards, PhD, REM
Project Manager

MULTIPLAN Public Meeting Sign In Sheet

Breland Community Center | 79 Jackson Road, Hattiesburg, MS | Wednesday, February 18, 2015 | 4 p.m. to 6 p.m.

2040 MULTIPLAN THE FUTURE IN MOTION

Name	Affiliation	Email	Telephone
TIMOTHY TORREY	SOL ENGINEERING	ttorrey@solengrs.com	601.961.1415
Donna Lum	NS	donna.lum@neel-schaffer.com	6017204418
Jacqueline Nesbitt	MPO	jnsClaire@hattiesburgms.com	601-543-2807
Denise Dove			
Felicia Edwards	SOL Engineering	fedwards@solengrs.com	601 961 1415
Lindsay Netherland	MDOT	lnetherland@mdot.ms.gov	601-359-7685
Della Collins	MPO	MPO Temp @Hattiesburg.com	601 545 2807
Ed Gibson	2/19		(601) 545-4695
Chuck Arnold	Fire		601-730-3809
Tony Gaumer	HFD		601-297-6444
Robert Walker	NIT	robert.walker@neel-schaffer.com	601-948-7071
KEITH STEELE	MDOT	ksteele@mdot.ms.gov	601-544-6511
Nick Connolly	Forrest Co	nick@sl-w.com	601 544 1821

MDOT Mississippi Department of Transportation | CMPDD Central Mississippi Planning and Development District | MPO Metropolitan Planning Organization | Gulf Regional Planning Commission

mississippitransportationplan.mindmixer.com planning@mdot.ms.gov

MULTIPLAN Public Meeting Sign In Sheet

Breland Community Center | 79 Jackson Road, Hattiesburg, MS | Wednesday, February 18, 2015 | 4 p.m. to 6 p.m.

2040 MULTIPLAN THE FUTURE IN MOTION

Name	Affiliation	Email	Telephone
Chad Miller	USM	Chad.r.miller@usm.edu	601-266-6666
Paula Darcell	CS	pdarcell@camsys.com	404 861 5834
Larry Byrd	MS House of Rep. 104	LByrd@House.ms.gov	
Stephanie Roberts	HFD		
Ginger Maddox	Hattiesburg Planning	GMADDOX@Hattiesburgms.com	601-544-1081
Michael Maret	Hattiesburg Planning	mmaret@hattiesburgms.com	601-545-4544
Michael Esters	MSL		
LaKeyah White	Hattiesburg MPO	lwhite@hattiesburgms.com	601-545-4579
LaTonia Shirly			601-359-6678
Sherreta Ford		sherretaf@yahoo.com	601-402-8087
Ladarion Ford		ladarionford@yahoo.com	601-402-8087
Quindarious Ford			601-402-8087
Jakiya Ford			601-402-8087

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mississippitransportationplan.mindmixer.com planning@mdot.ms.gov

MULTIPLAN Public Meeting Sign In Sheet

Breland Community Center | 79 Jackson Road, Hattiesburg, MS | Wednesday, February 18, 2015 | 4 p.m. to 6 p.m.

2040 MULTIPLAN THE FUTURE IN MOTION

Name	Affiliation	Email	Telephone
Roddrick Anderson			601-402-8087
Clarence Williams	COH	cpwilliams@hattiesburgms.com	601-545-4558
Lula J Howes	JCF Trucking		
Vincent Nelms	City of Hattiesburg/Mass Transit	vnelms@hattiesburgms.com	601-545-4670
Robert McNamee	CS	rmcnamee@camsys.com	512-691-8170
Larry BARNES	COH	L.BARNES@HaHiesburg ms. Com.	601-674 1596
JANET BALDWIN add to received	Oseola McCarty KDC	jbaispecial@comcast.net	601-520-0657
Valerie Arnold	COH	Varnold@Hattiesburgms.com	601 545-4503

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MULTIPLAN Public Meeting Sign In Sheet

Hattiesburg Historic Train Depot | 308 Newman Street, Hattiesburg, MS | Thursday, February 19, 2015 | 4 p.m. to 6 p.m.

2040 MULTIPLAN THE FUTURE IN MOTION

Name	Affiliation	Email	Telephone
Robert Walker	NSI	robert.walker@neel-schaffer.com	601-948-7071
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Robert McHaney	Cambridge	rmchaney@camsys.com	512-691-8950
Sammy Holcomb	MDOT	sholcomb@mdot.ms.gov	601-355-7685
Paula Dowell	CS	pdowell@camsys.com	404 861 5834
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Lindsey Netherland	MDOT Planning	lnetherland@mdot.ms.gov	601-359-7685
R. CHAD WALLACE	MDOT ENV.	rcwallace@ ". ". "	
Don Walker	The Walker Associates/Lamar Co.	dwalker@thewalkerassociates.com	601-583-2127
Felicia Edwards	SOL Engineering	fedwards@solengrs.com	601-961-1415
Donna Lum	NS	donna.lum@neel-schaffer.com	601-720-4418

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MULTIPLAN Public Meeting Sign In Sheet

Hattiesburg Historic Train Depot | 308 Newman Street, Hattiesburg, MS | Thursday, February 19, 2015 | 4 p.m. to 6 p.m.

2040 MULTIPLAN THE FUTURE IN MOTION

Name	Affiliation	Email	Telephone
Kim Osterman		Ostermanster@gmail.com	601-307-0063
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Alan Tyson		Tyson_Alan@Hotmail.com	865-465-0638
Paul Hampton	Sun Herald	JPHAMPTON@SUNHERALD.COM	228-896-2338
PHILLIP CARLISLE	LAMAR Co.	pcarlisle@lamarcounty.com	601 447 2103
Katherine Perry	City of Hattiesburg		
Christine Brown	HPFL-MPO	mpo@hattiesburgms.com	601-545-6259
Jacqueline McClain	HPFL-MPO	jmcclain@hattiesburgms.com	601-545-6325
Hema Gopalan	MPO Hattiesburg	hgopalan@hattiesburgms.com	601 545-6220
JEFF ELY	MDOT	JELY@MDOT.MS.GOV	601-359-7685

MDOT Mississippi Department of Transportation

CMPDD Promoting Regional Excellence Since 1968 — Central Mississippi Planning and Development District

Hattiesburg Metropolitan Planning Organization

Gulf Regional Planning Commission

mississippitransportationplan.mindmixer.com planning@mdot.ms.gov

Public Meeting Summary
Hattiesburg MPO

Meeting Format

The Mississippi Department of Transportation (MDOT) Planning Division and the Hattiesburg MPO staff held two public meetings on February 18 and 19, 2015. The first meeting was held in Lamar County at the Breland Community Center located at 79 Jackson Rd., Hattiesburg and had 34 citizens in attendance. The Forrest County meeting was held at the Hattiesburg Historic Train Depot located at 308 Newman St., Hattiesburg and had 23 participants. Transportation planners guided participants through the planning process and provided an opportunity for them to complete activities designed to gather input for use in the development of a draft plan.

MDOT provided a short video at each public meeting and on line to provide citizens with information about the transportation planning process.

Attendees were invited to watch a brief video explaining the planning process for Mississippi's Unified Long-Range Transportation Infrastructure Plan known as MULTIPLAN 2040. The video provided educational information and explained how stakeholders and the public could become engaged in the transportation planning process.

Visitors reviewed statewide transportation goals, the funding process, safety data, highway mobility information, and bridge and highway preservation statistics (see Figures 1-5). MPO-specific data on transportation safety, model roadway network, the study area, and goals were also available (see Figures 6-9). Members of the consulting team, MDOT and the MPO were available to answer questions and provide supplemental information from past, and in some cases, existing initiatives.

The planning team offered three activities designed to encourage input from the public. The activities included the following:

- Transportation improvement needs: participants reviewed maps depicting state maintained highways, multi-modal facilities and the MPO area then asked to make written comments identifying transportation needs or issues (see Figure 10);
- Rate our transportation system: participants rated the condition of various transportation categories (see Figure 11); and
- Transportation budget priority: participants used a form to expressed how they felt our state's transportation dollars should be spent (see Figure 12).

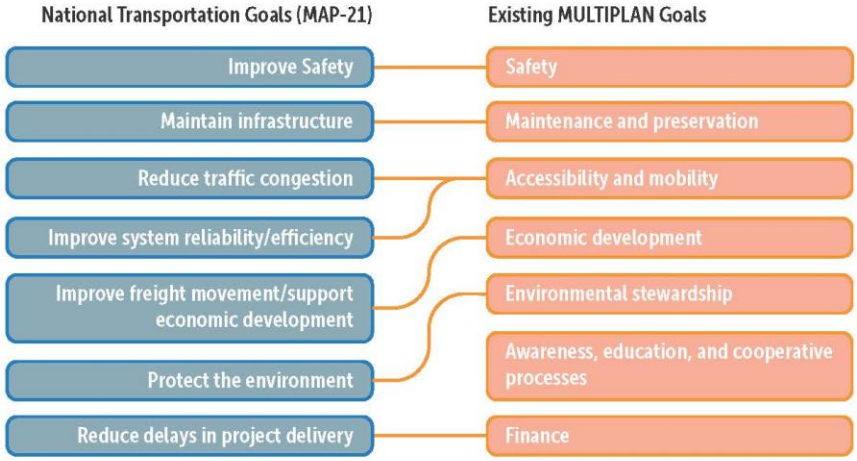
1

Public Meeting Summary
Hattiesburg MPO

Statewide Display Boards

Figure 1 - Statewide Goals

Goals

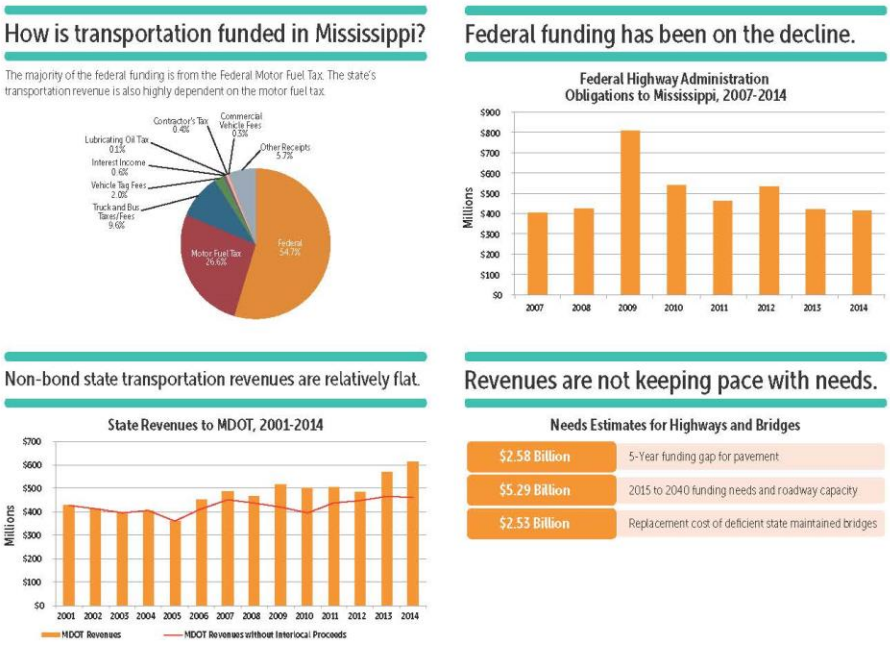


Mississippi's transportation goals are developed with input from the public to support national transportation goals. The graphic above represents Mississippi's existing statewide goals and demonstrates how they support national goals. Public meeting participants were encouraged to review the existing goals and provide feedback that will aid in the development of Mississippi's draft Unified Long-Range Transportation Infrastructure Plan.

2

Public Meeting Summary
Hattiesburg MPO

Figure 2 - Transportation Funding

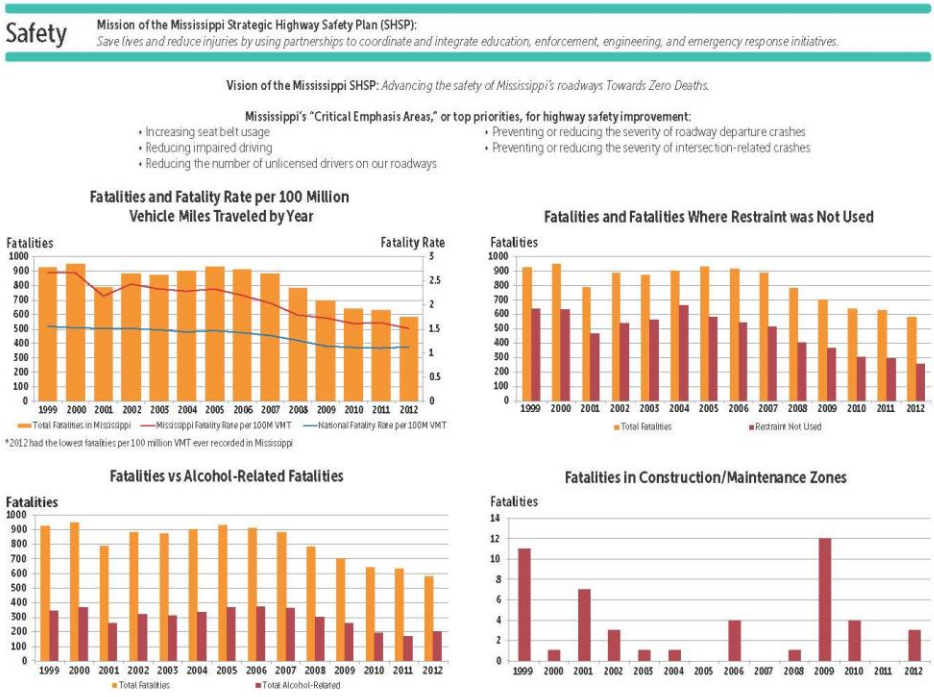


Understanding how transportation is funded and that current needs outweigh revenues is key to helping the public and stakeholders provide meaningful input in planning our future transportation process. The charts above represent statewide funding challenges and were provided during public meetings.

3

Public Meeting Summary
Hattiesburg MPO

Figure 3 - Safety



The mission of the Mississippi Strategic Highway Safety Plan (SHSP) is to save lives and reduce injuries by using partnerships to coordinate and integrate education, enforcement, and emergency response initiatives. This display board, which was presented during public meetings, help participants understand needs on the state maintained system and to provide meaningful input during the transportation planning process.

4

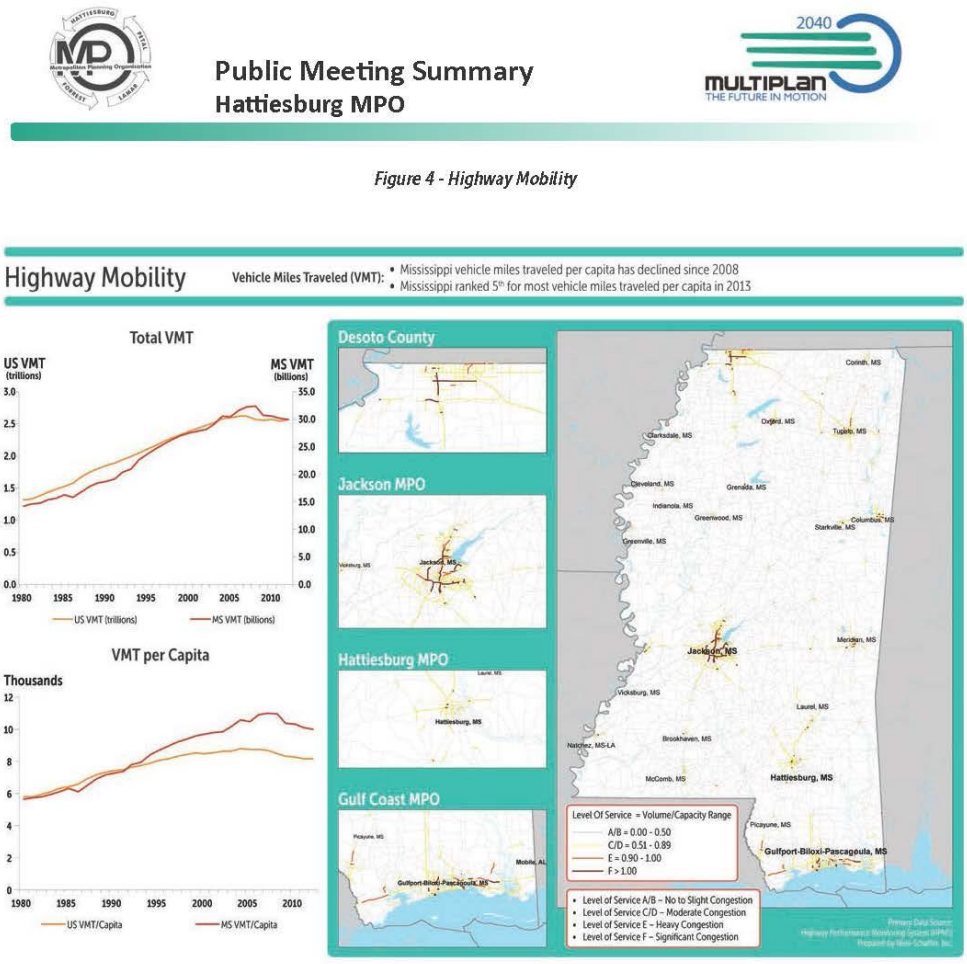


Figure 4 - Highway Mobility

Vehicle Miles Traveled (VMT) per capita in Mississippi has declined since 2008. The state was also ranked 5th for the most VMT per capita in 2013. The public was provided the opportunity to review the maps and charts above during public meetings to inform them of our state's highway mobility levels.

Public Meeting Summary
Hattiesburg MPO

2040 MULTIPLAN THE FUTURE IN MOTION

Figure 5 - Bridge and Highway Preservation

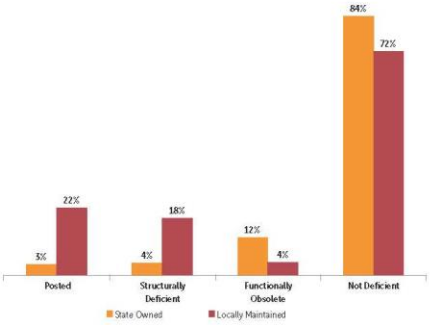
Bridge and Highway Preservation

Bridge Conditions

Posted
- Unable to carry legal weight limits

Structurally Deficient
- Does not imply bridge is unsafe
- Bridge requires additional repair to remain in service

Functionally Obsolete
- Does not imply bridge is unsafe
- Bridge does not meet current design standards



Highway Conditions

Highway Performance – Pavement Roughness:

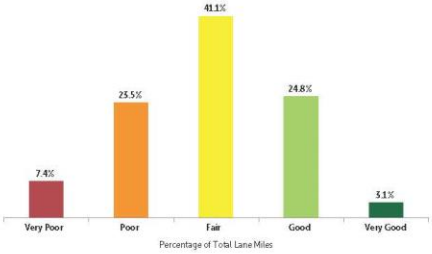
Very Good
- New or almost new pavement, will not require improvement for some time

Good
- In satisfactory condition, free of significant defects, preserve pavement

Fair
- Some defects or deficiencies, minor rehabilitation needed

Poor
- Advanced deterioration, needs structural repair in the near future to preserve usability

Very Poor
- Needs replacement or reconstruction to restore serviceability



Maintaining the bridges, highways and other transportation facilities currently in place is one of our statewide goals. The chart above was provided during public meetings to give the public an idea of how our highways and bridges rank today.

6

MDOT Mississippi Department of Transportation

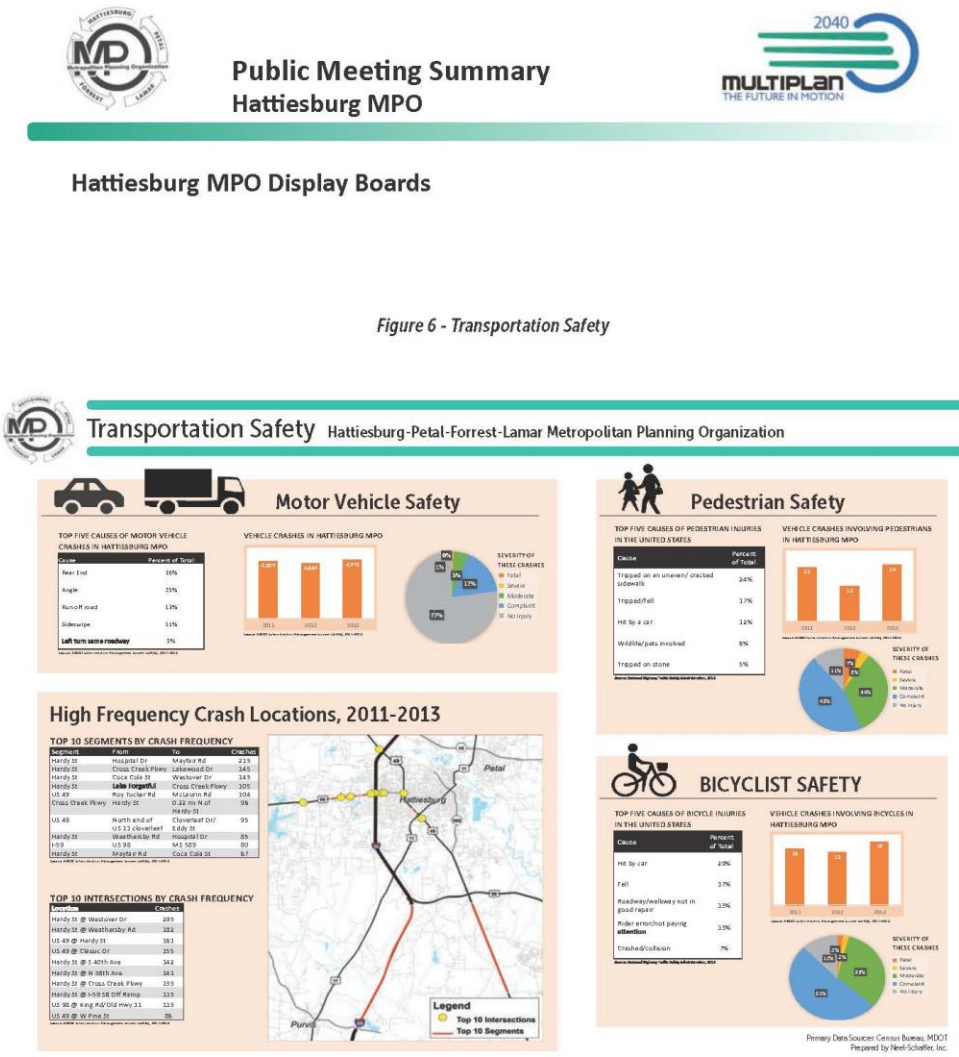


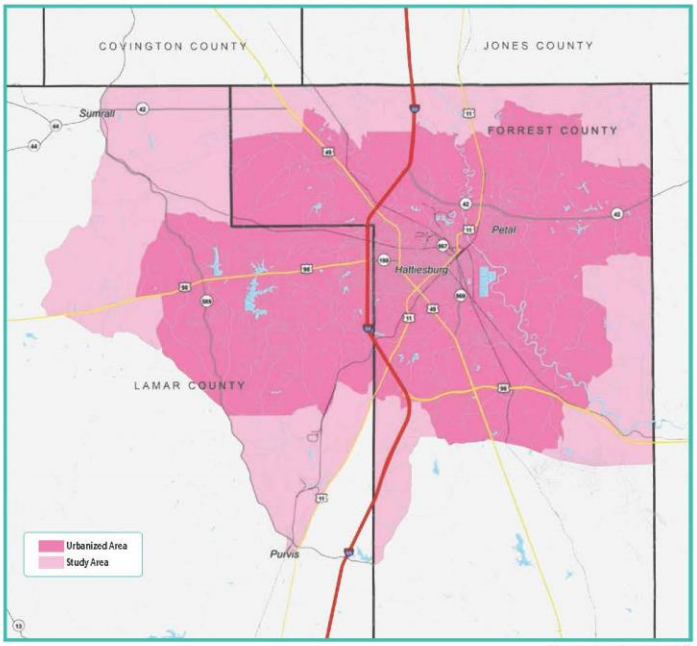
Figure 6 - Transportation Safety

Safety is everyone's priority. The Hattiesburg MPO provided the above safety statistics during its February 2015 public meeting.

Public Meeting Summary
Hattiesburg MPO

Figure 7 - Study Area

Study Area
Hattiesburg-Petal-Forrest-Lamar Metropolitan Planning Organization



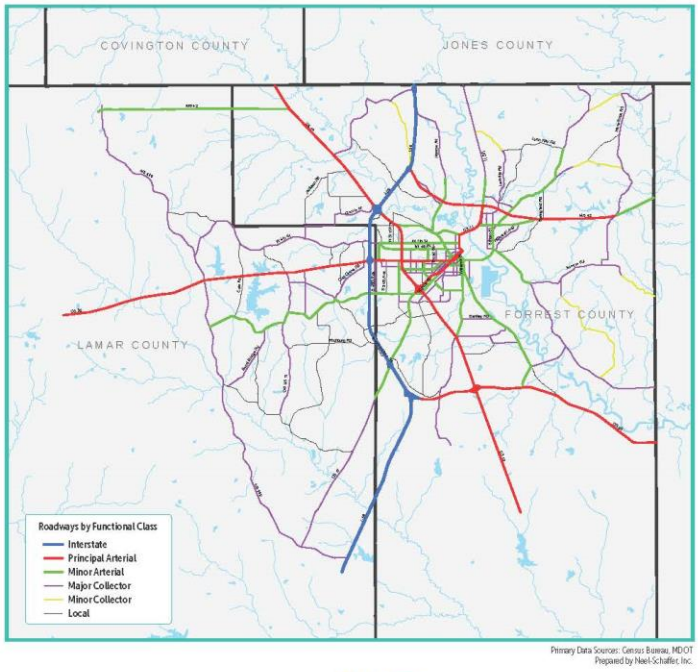
The map above was made available at the Hattiesburg MPO public meeting and provided a visual of the long-range transportation study area.

8

Public Meeting Summary
Hattiesburg MPO

Figure 8 - Model Roadway Network

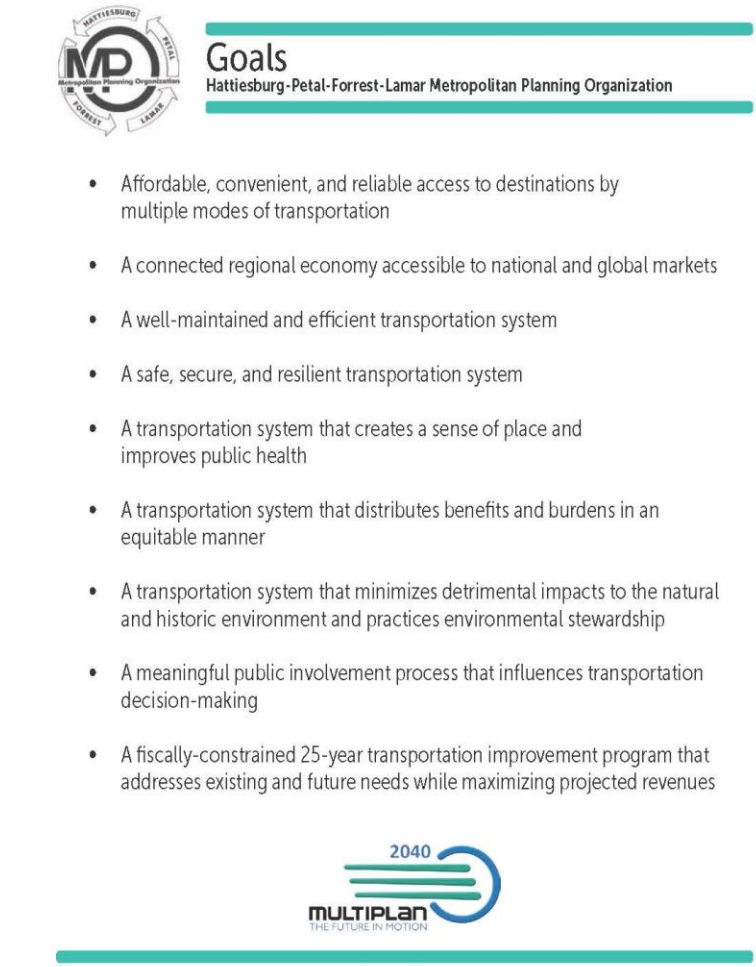
Model Roadway Network
Hattiesburg-Petal-Forrest-Lamar Metropolitan Planning Organization



Roadways within the Hattiesburg Urbanized area are depicted here by functional class. This map was made available during the February 2015 public meeting and helped participants visualize the different types of roadways and streets with the area.

9

Figure 9 - Goals



Transportation goals developed by the Hattiesburg MPO were made available during the public meeting.

10

Public Meeting Summary
Hattiesburg MPO

2040 MULTIPLAN THE FUTURE IN MOTION

Transportation Improvement Needs

Participants were given markers to note areas on a statewide map indicating where improvements are needed (see Figure 10). The following comments were noted:

- Regional loop around Hattiesburg with connections near Prentiss, Columbia, Wiggins, New Augusta, and Laurel
- Connector roads from Hwy 98 West to I-59 and I-59 to Hwy 49
- Better access to improve safety noted on Hwy 49

MDOT

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Public Meeting Summary
Hattiesburg MPO

2040 MULTIPLAN THE FUTURE IN MOTION

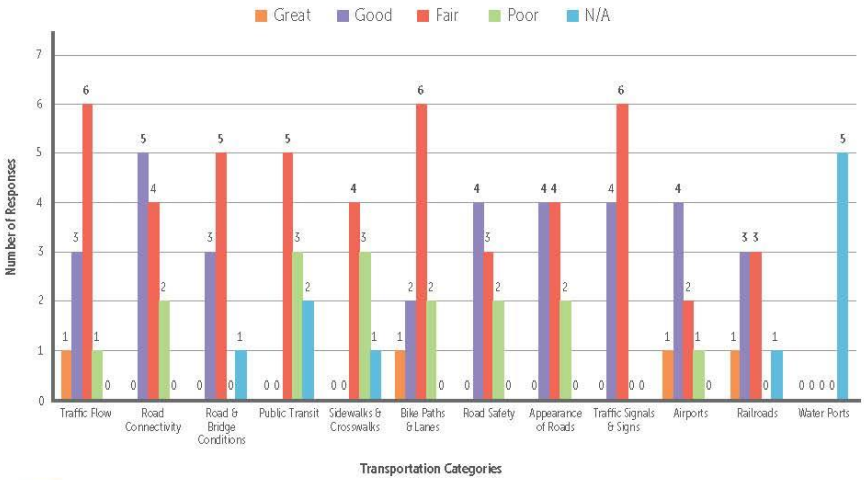
Figure 10 - Transportation Improvement Map

Public Meeting Summary
Hattiesburg MPO

Rate our Transportation System

Meeting participants rated 12 transportation categories as great, good, fair, poor or not applicable by placing a sticker on a graph (see Figure 11). A majority of the categories received a fair rating. Below are the overall results of this opinion poll.

Rate Our Transportation System–Hattiesburg MPO
February 18-19, 2015



13

Figure 11 - Rate our Transportation System

Rate Our Transportation System

Place a sticker in the box that best describes your satisfaction in each category of Mississippi's transportation system.

Transportation Category	Great	Good	Fair	Poor	N/A
Traffic Flow					
Road Connectivity					
Road and Bridge Conditions					
Public Transit					
Sidewalks and Crosswalks					
Bike Paths and Lanes					
Road Safety					
Appearance of Roads					
Traffic Signals and Road Signs					
Airports					
Railroads					
Water Ports					

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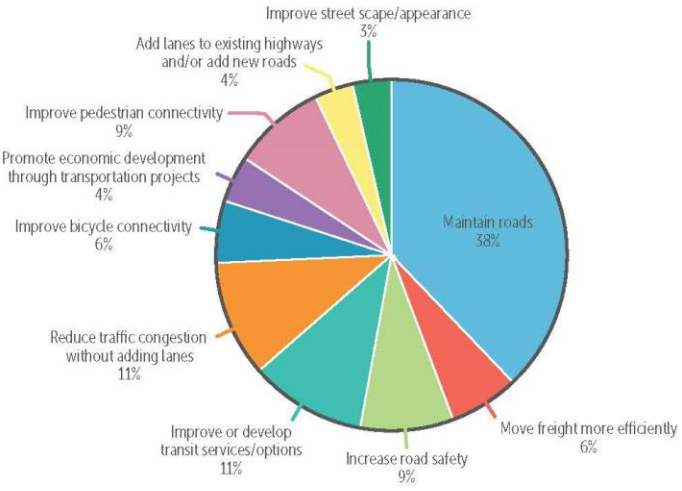
Public Meeting Summary
Hattiesburg MPO

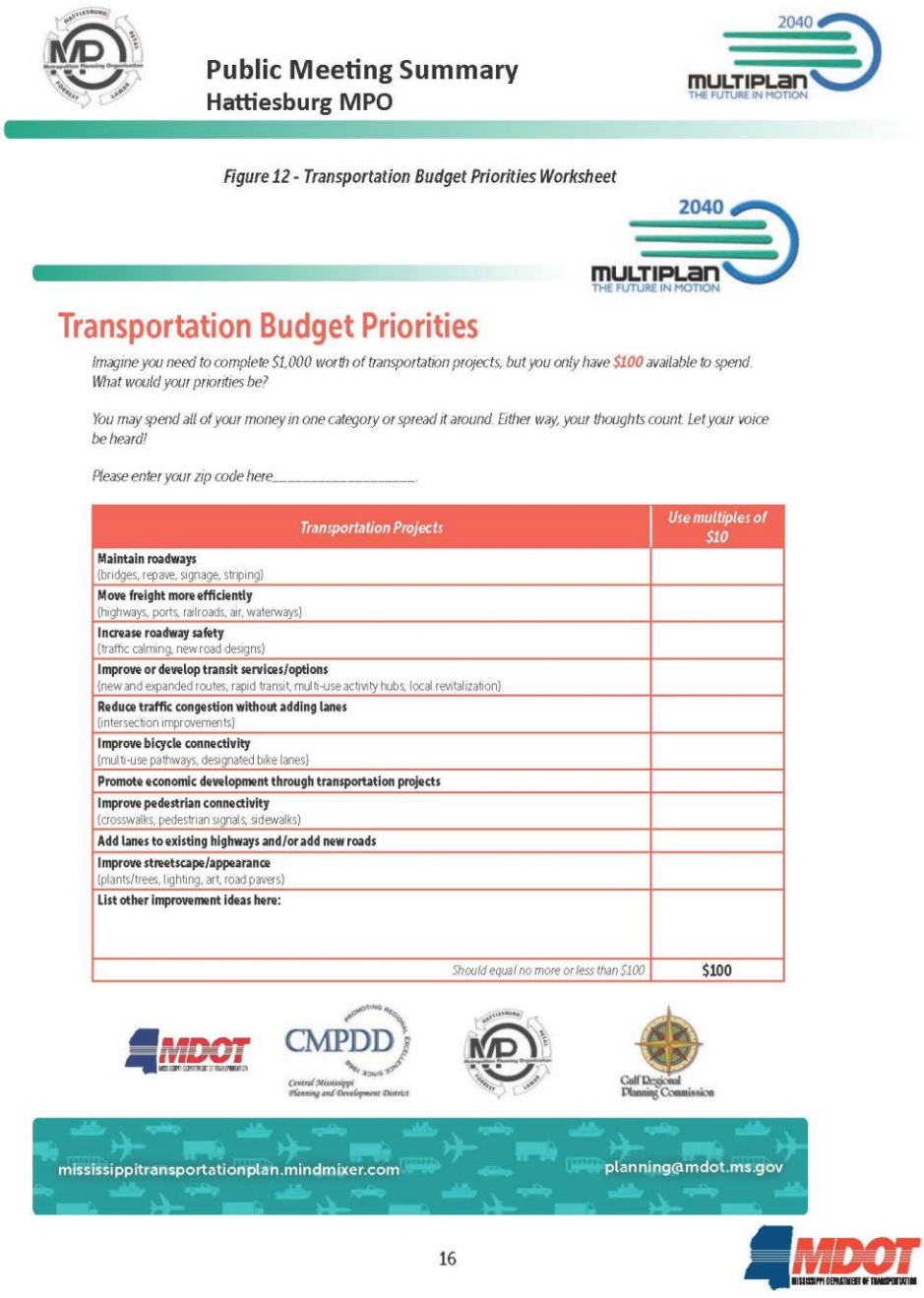
Transportation Budget Priorities

This activity allowed participants to spend $100 over ten transportation categories. A total of 14 surveys were collected. Maintain roads received the highest priority (38 percent) while improve streetscape/appearance of roadways, add lanes to existing highways and/or add new roads, and promote economic development through transportation projects received the lowest priority (4 percent). Below is a pie chart that reflects the percentage of funds allocated by category followed by a copy of the survey questions (Figure 12).

Transportation Budget Priorities–Hattiesburg MPO
February 18-19, 2015



15



Public Meeting Summary
Hattiesburg MPO

2040 MULTIPLAN THE FUTURE IN MOTION

Figure 12 - Transportation Budget Priorities Worksheet

2040 MULTIPLAN THE FUTURE IN MOTION

Transportation Budget Priorities

Imagine you need to complete $1,000 worth of transportation projects, but you only have $100 available to spend. What would your priorities be?

You may spend all of your money in one category or spread it around. Either way, your thoughts count. Let your voice be heard!

Please enter your zip code here_____.

Transportation Projects	*Use multiples of $10*
Maintain roadways (bridges, repave, signage, striping)	
Move freight more efficiently (highways, ports, railroads, air, waterways)	
Increase roadway safety (traffic calming, new road designs)	
Improve or develop transit services/options (new and expanded routes, rapid transit, multi-use activity hubs, local revitalization)	
Reduce traffic congestion without adding lanes (intersection improvements)	
Improve bicycle connectivity (multi-use pathways, designated bike lanes)	
Promote economic development through transportation projects	
Improve pedestrian connectivity (crosswalks, pedestrian signals, sidewalks)	
Add lanes to existing highways and/or add new roads	
Improve streetscape/appearance (plants/trees, lighting, art, road pavers)	
List other improvement ideas here:	
Should equal no more or less than $100	**$100**

MDOT CMPDD Central Mississippi Planning and Development District

Gulf Regional Planning Commission

mississippitransportationplan.mindmixer.com planning@mdot.ms.gov

16

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION

Legal Advertisement (Public Notice) for Review of Draft Plan
will go here once received from publishing agency.

Public Affairs › News Releases: Review Mississippi's Draft Long-Range Transportation Plans

MDOT

Public Affairs Division

Title	**Review Mississippi's Draft Long-Range Transportation Plans**
Cutline	**Meeting dates, times and locations are provided below and are available online at mississippitransportationplan.mindmixer.com.**
Area	**Statewide**
Event Date & Time	**10/30/2015 12:00:00 AM**
Category	**Upcoming Events**
Body	

JACKSON, MISS.--- The Mississippi Department of Transportation (MDOT) and the Jackson, Hattiesburg-Petal-Forrest-Lamar (HPFL), and Gulf Coast Metropolitan Planning Organizations (MPOs) are holding joint, open-house public meetings to hear your thoughts about our state's draft long-range transportation plans.

Meeting dates, times and locations are provided below and are available online at **mississippitransportationplan.mindmixer.com.** Individuals who would like to participate online may do so beginning Friday, Oct. 30. Copies of the draft statewide plan as well as the MPOs' draft plans can be seen and comments made there. Questions? Call 601-359-7685 or email planning@mdot.ms.gov.

Date/Time Location Plan(s) Available for Review:

***Oct. 20, 4-6 p.m. at Jackson MPO CMPDD District Office**
1170 Lakeland Drive in Jackson, MS
Plan available for review: Jackson MPO Plan

***Oct. 21, 4-6 p.m. at Madison Co. Admin. Building, 1st Floor**
125 W North Street in Canton, MS
Plan available for review: Jackson MPO Plan

***Oct. 22, 4-6 p.m. at Rankin Co. Courthouse Annex Board Room**
211 East Government Street, Brandon, MS
Plan available for review: Jackson MPO Plan

***Nov. 4, 4-6 p.m. at Jackson MPO CMPDD District Office**
1170 Lakeland Drive, Jackson, MS
Plan available for review: Statewide Plan

***Nov. 5, 4-6 p.m. at Hattiesburg Historic Train Depot**
308 Newman Street, Hattiesburg, MS
Plans available for review: Statewide Plan and HPFL MPO Plan

***Nov. 10, 4-6 p.m. at Breland Community Center**
79 Jackson Road, Hattiesburg, MS
Plans available for review: Statewide Plan and HPFL MPO Plan

***Nov. 11, 4-6 p.m. at Historic Train Depot**
326 Blues Alley, Clarksdale, MS
Plan available for review: Statewide Plan

***Nov. 12, 11 a.m. - noon at Jackson MPO CMPDD District Office**
1170 Lakeland Drive, Jackson, MS
Plan available for review: Jackson MPO Plan

***Nov. 12, 4-6 p.m. at MDOT District Office**
1909 Gloster Street, Tupelo, MS
Plan available for review: Statewide Plan

***Nov. 17, 4-6 p.m. at Pascagoula Senior Center**
1912 Live Oak Avenue, Pascagoula, MS
Plans available for review: Statewide Plan and Gulf Coast MPO Plan

***Nov. 18, 4-6 p.m. Edgewater Mall (near Dillards)**
2600 Beach Boulevard, Biloxi, MS
Plans available for review: Statewide Plan and Gulf Coast MPO Plan

***Nov. 19, 4-6 p.m. at Bay St. Louis Community Hall**
301 Blaize Avenue, Bay St. Louis, MS
Plans available for review: Statewide Plan and Gulf Coast MPO Plan

Mississippi's Unified Long-Range Transportation Infrastructure Plan or MULTIPLAN 2040 is the strategy for meeting mobility needs over the next 25 years. By reviewing and commenting on the draft plans, input will be considered before the drafts are finalized.

MULTIPLAN's goal is to look at the big picture and answer questions such as "How can we make the best use of limited funding to provide a transportation system that meets current and expected needs?" It provides a framework for developing and putting into place our strategic and financial plans.

MDOT and the MPOs are teaming up to make better use of limited funds and to ensure that all transportation planning is well coordinated. While MDOT is responsible for the statewide transportation system, the MPOs have planning responsibilities for each of their respective urbanized areas.
Earlier this year, MDOT and the MPOs asked "What do you think our transportation system should look like in the year 2040?" and "How would you spend limited transportation dollars?"

Comments were received from individuals, agencies, corporations and groups from all across the state. Planners considered this input, along with technical data, to develop the draft transportation plans being offered for review today.

Technical data reviewed included information such as the following:

- The current population and its projected growth
- Where people are traveling to work and school
- Where future development is likely to occur that could increase traffic demands
- The existing conditions and capacity of our transportation system and how it would be impacted by growth
- Information determined from previous studies

Together, we are planning for the best possible transportation system to safely meet your needs, strengthen our economy, and provide the mobility you deserve. Individuals who require auxiliary aids or require alternative languages and want to participate in the meeting should call 601-359-7685 at least five days prior to the meeting date.

###

Attachments

News Release

Contact: Matt Williams
Phone: 601.545.6259 Email: mpo@hattiesburgms.com

Draft Long-Range Transportation Plans Ready for Review

HATTIESBURG, MS; Wednesday, Oct. 28, 2015-------The Hattiesburg-Petal-Forrest-Lamar Metropolitan Planning Organization (MPO) and the Mississippi Department of Transportation (MDOT) are holding **joint, open-house public meetings to hear your thoughts about our state's draft long-range transportation plans.**

Meeting dates, times and locations are provided below:

Date/Time	Location	Plan(s) Available for Review
Nov. 5 4- 6 p.m.	Hattiesburg Historic Train Depot 308 Newman Street, Hattiesburg	Statewide Plan and HPFL MPO Plan
Nov. 10 4- 6 p.m.	Breland Community Center 79 Jackson Road, Hattiesburg	Statewide Plan and HPFL MPO Plan

Individuals who would like to review and make comments about the plans online may do so beginning Friday, Oct. 30, at mississippitransportationplan.mindmixer.com. By participating in the review process, your comments will be carefully considered before the plans are finalized.

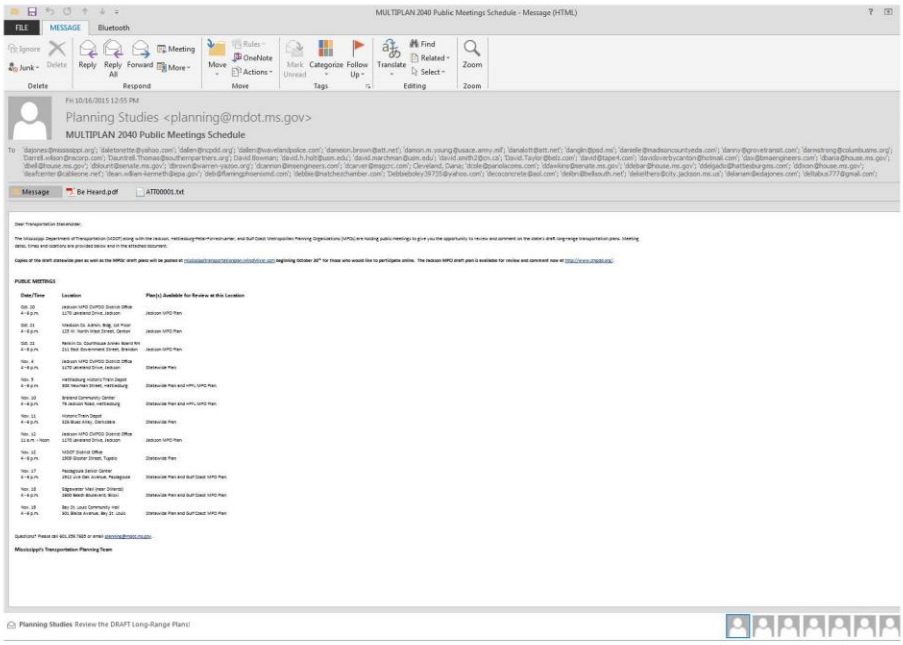
The MPO and MDOT are teaming up to make better use of limited funds and to ensure that all transportation planning is well coordinated. While MDOT is responsible for the statewide transportation system, the state's MPOs have planning responsibilities for each of their respective urbanized areas.

Mississippi's Unified Long-Range Transportation Infrastructure Plan or MULTIPLAN 2040 is our strategy for meeting mobility needs over the next 25 years.

MULTIPLAN's goal is to look at the big picture and answer questions such as "How can we make the best use of limited funding to provide a transportation system that meets needs?" It provides a framework for developing and putting into place our strategic and financial plans.

Individuals who require auxiliary aids or require alternative languages and want to participate in a meeting should call 601.545.6259 at least five days prior to the meeting date.

###



Copy of email blast sent to Stakeholder list inviting them to public meetings.

10/16/15

From: Planning Studies
To: "pdkey@bellsouth.net"; "pdowell@camsys.com"; "pelahat@bellsouth.net"; "penney.stokes@dmh.state.ms.us"; "pepper@msroadbuilders.com"; "peter@msleveeboard.com"; "pfisher@clintonms.org"; "pgandy@senate.ms.gov"; "pgary@cmicsp.org"; "pgunn@house.ms.gov"; "phdministries7@aol.com"; "phil.hardwick@msstate.edu"; "Phillip.Sanderson@mmns.state.ms.us"; "phillip.seal@sabic-ip.com"; "phillip@carpenterproperties.com"; "phunt@mississippi.org"; "pickettmarvin@aol.com"; "Pierce.Moore@governor.ms.gov"; "pikecd@cableone.net"; "pjwylie@southernco.com"; "pkclark123@gmail.com"; "pkennedy@smpdd.com"; "pking@bgccm.org"; "platture@comcast.net"; "plee@senate.ms.gov"; "plglong@hotmail.com"; "plieb@mdah.state.ms.us"; "PMADDOX@MSDH.STATE.MS.US"; "pmoran@senate.ms.gov"; "pmroadpro@bellsouth.net"; "pnelson@house.ms.gov"; "porlatinos@yahoo.com"; "pragati.srivastava@memphistn.gov"; "prairieopportunity@yahoo.com"; "pratallan@netscape.net"; "pres@wmcarey.edu"; "president@lambra.org"; "prussell@jcedf.org"; "pslaughter@yoursccaa.com"; "psudduth@ncpdd.org"; "psullivan@house.ms.gov"; "psumrall@mississippi.edu"; "ptisdale@biloxi.ms.us"; "publicworks@madisonthecity.com"; "pwalley@ihl.state.ms.us"; "pwatson@house.ms.gov"; "pwillis@house.ms.gov"; "qci@qualitycustomerinteractions.com"; "quitmanema@att.net"; "ra3@rac.com"; Jansen, Randy; "randallgeorge@bellsouth.net"; "randy.stewart@tunicagov.com"; "rasvp@oxfordms.net"; "ravila@stepscoalition.org"; "ray_aycock@fws.gov"; "Raymond@sd-w.com"; "rbarlow@copiahcountyms.gov"; "RBell@GWRR.com"; "rbell@msfa.state.ms.us"; "rbennett@house.ms.gov"; "rbgcontr@msn.com"; "rbobkoskie@swmmhc.org"; "rbost@olemiss.edu"; "rboxx@mississippi.org"; "rboyd@house.ms.gov"; "rbrantley@trpdd.com"; Burt, Bobby; "rchra@bellsouth.net"; "rcook@hmcompany.com"; "rcovington@mississippi.org"; "rcrawford@earthcon.com"; "rdavis@cityofpascagoula.com"; "rdc506@yahoo.com"; "rdickson@house.ms.gov"; "rdombrowski@gulfport-ms.gov"; "rdrane@copiahcountyms.gov"; "rduren@ibcconstruction.net"; "rdzanie@gmail.com"; "reascountrylane@att.net"; Rebecca Boone; "rebelservices@yahoo.com"; "reed.harrington@cn.ca"; "rejones@umc.edu"; "rellis@diberville.ms.us"; "relmore@edgellc.us"; "renata.lana@noaa.gov"; "renee@gulfcoast.org"; "rererussell@yahoo.com"; "retailms@bellsouth.net"; "rfbahm@gmail.com"; "rferguson@mississippi.org"; "rferguson@pickeringfirm.com"; "rflowers@gulfport-ms.gov"; "rforster@olemiss.edu"; "rgacfs@aysia.com"; "rginn@dps.ms.gov"; "rgordon@ndpdd.com"; "rgoza@monroecoms.com"; "rgraham@co.hinds.ms.us"
Subject: Review the DRAFT Long-Range Plans!
Date: Monday, November 02, 2015 2:22:14 PM
Attachments: image001.png
Tell Us What You Think.pdf
ATT00001.txt

Stakeholder:

Drafts of Mississippi's 2040 statewide and urban long-range transportation plans are ready for your review and comment at http://mississippitransportationplan.mindmixer.com/. Using technical data and your input, we have developed strategies for meeting future transportation needs for the next 25 years.

If you prefer, follow the links below to make comments directly to the participating Metropolitan Planning Organizations and the Mississippi Department of Transportation.

Mississippi's Unified Long-Range Transportation Infrastructure Plan (MULTIPLAN):
www.gomdot.com/multiplan2040

Jackson Metropolitan Transportation Plan:
www.cmpdd.org

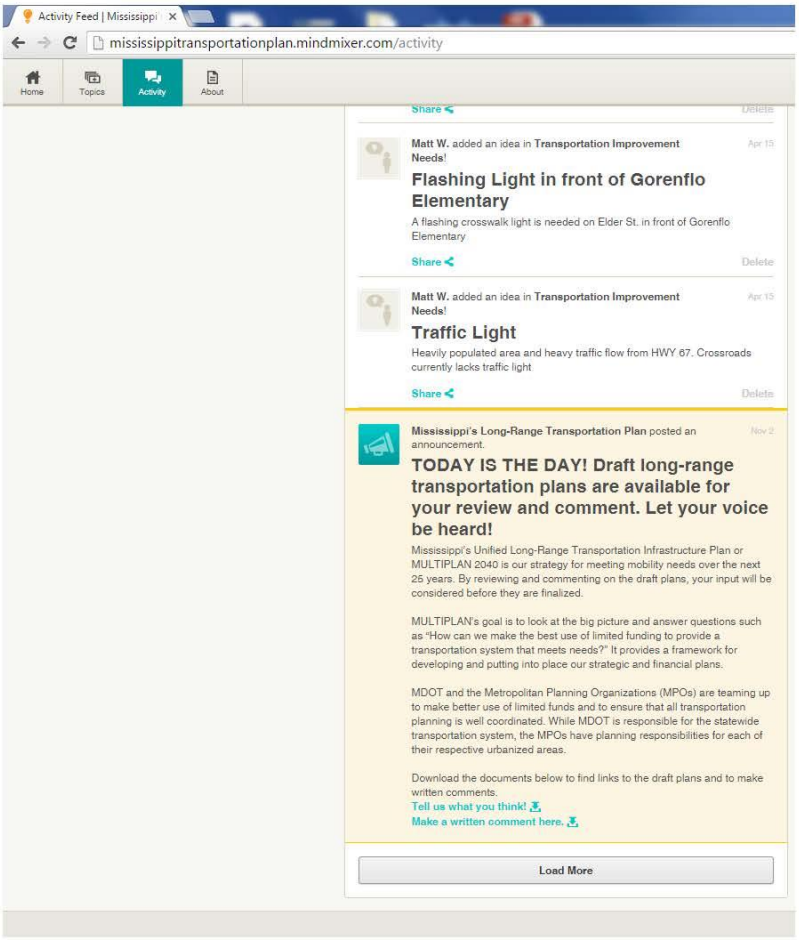
Hattiesburg-Petal-Forrest-Lamar Metropolitan Transportation Plan:
www.Hattiesburgms.com/government/departments/federal-programs/metropolitan-planning-organization/

Gulf Coast Metropolitan Transportation Plan:
www.grpc.com/mpo-plans/mtp/

Help us get the message out! Post or share the attached flier with your co-workers, friends, relative and others. Together we can plan for the best possible use of limited transportation funds.

Questions? Please call 601.359.7685 or email planning@mdot.ms.gov.

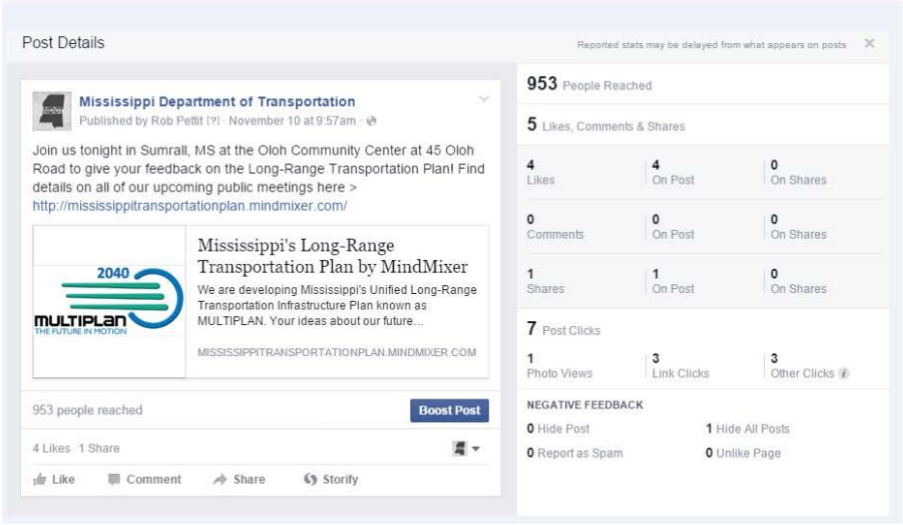
Mississippi Transportation Planning Team

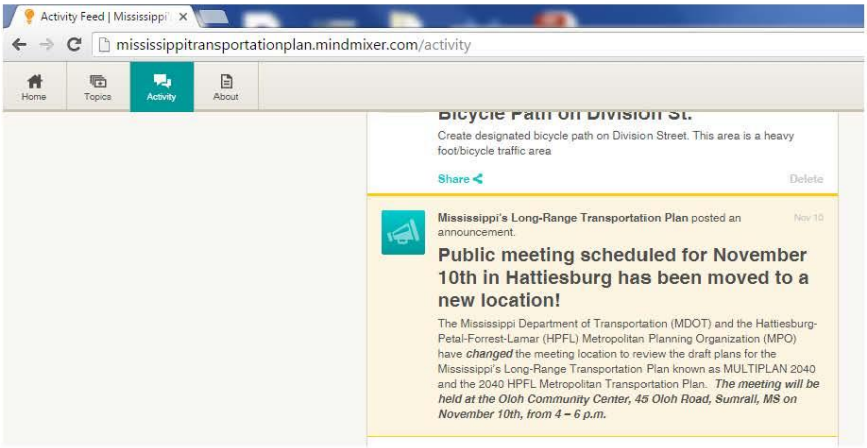


Notification of draft plan availability on MindMixer Nov. 2, 2015

Hattiesburg Public Meeting notice

Nov. 10, 2015





Notification of new venue for Lamar County public meeting Nov. 10, 2015

2040 MULTIPLAN
THE FUTURE IN MOTION

Mississippi 2040 Long-Range Transportation Plans

Let Us Hear From YOU!

We hope you will take time to review Mississippi's statewide draft transportation plan and plans developed for our urbanized areas. Let us know what you expect from your transportation system! Public meeting locations are listed below.

If you prefer, draft plans can be reviewed on line at mississippitransportationplan.mindmixer.com beginning Friday, October 30.

Date/Time	Location	Plan(s) Available for Review
Oct. 20 4- 6 p.m.	Jackson MPO CMPDD District Office 1170 Lakeland Drive, Jackson	Jackson MPO Plan
Oct. 21 4- 6 p.m.	Madison Co. Admin. Bldg, 1st Floor 125 W. North Street., Canton	Jackson MPO Plan
Oct. 22 4- 6 p.m.	Rankin Co. Courthouse Annex Board Rm 211 East Government Street, Brandon	Jackson MPO Plan
Nov. 4 4- 6 p.m.	Jackson MPO CMPDD District Office 1170 Lakeland Drive, Jackson	Statewide Plan
Nov. 5 4- 6 p.m.	Hattiesburg Historic Train Depot 308 Newman Street, Hattiesburg	Statewide Plan and HPFL MPO Plan
Nov. 10 4- 6 p.m.	Breland Community Center 79 Jackson Road, Hattiesburg	Statewide Plan and HPFL MPO Plan
Nov. 11 4- 6 p.m.	Historic Train Depot 326 Blues Alley, Clarksdale	Statewide Plan
Nov. 12 11 a.m.- noon	Jackson MPO CMPDD District Office 1170 Lakeland Drive, Jackson	Jackson MPO Plan
Nov. 12 4- 6 p.m.	MDOT District Office 1909 Gloster Street, Tupelo	Statewide Plan
Nov. 17 4- 6 p.m.	Pascagoula Senior Center 1912 Live Oak Avenue, Pascagoula	Statewide Plan and Gulf Coast MPO Plan
Nov. 18 4- 6 p.m.	Edgewater Mall (near Dillards) 2600 Beach Boulevard, Biloxi	Statewide Plan and Gulf Coast MPO Plan
Nov. 19 4- 6 p.m.	Bay St. Louis Community Hall 301 Blaize Avenue, Bay St. Louis	Statewide Plan and Gulf Coast MPO Plan

MDOT Mississippi Department of Transportation

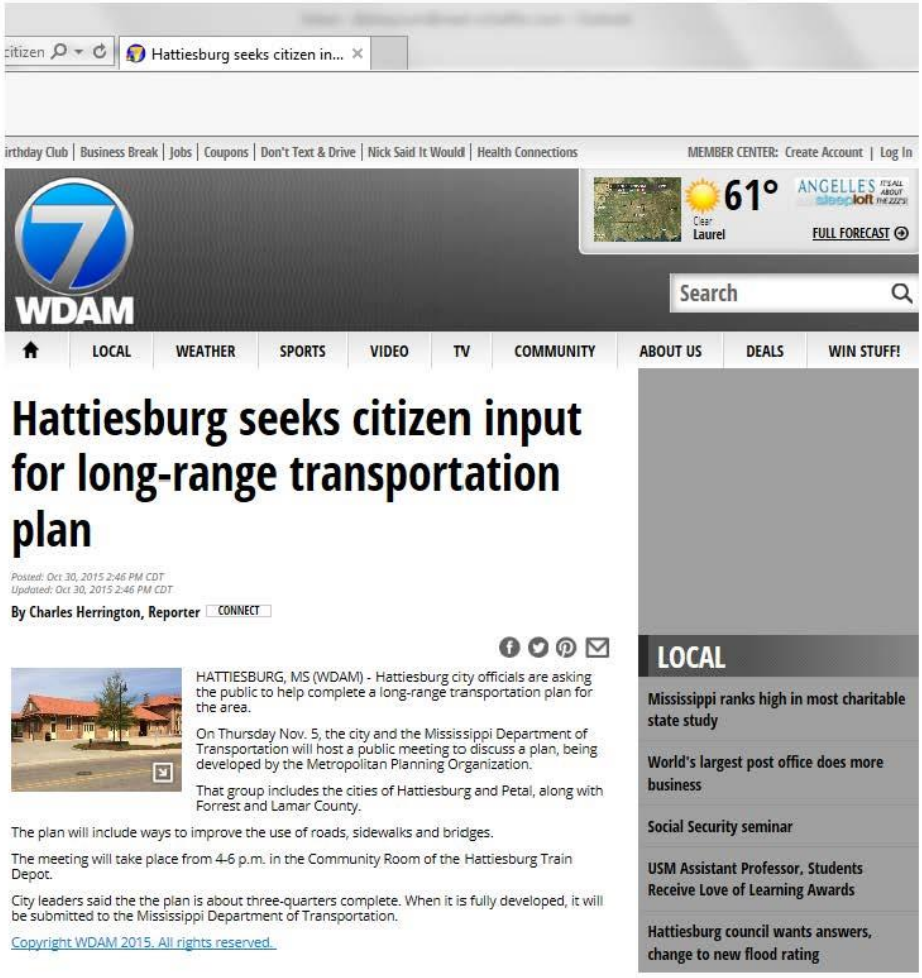
CMPDD Promoting Regional Excellence Since 1966
Central Mississippi Planning and Development District

Hattiesburg Petal Forrest Lamar Metropolitan Planning Organization

Mississippi Gulf Coast Metropolitan Planning Organization
Gulf Regional Planning Commission

News article generated by news release

Round 2, Oct. 30, 2015



citizen | Hattiesburg seeks citizen in... ×

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WDAM

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Hattiesburg seeks citizen input for long-range transportation plan

Posted: Oct 30, 2015 2:46 PM CDT
Updated: Oct 30, 2015 2:46 PM CDT

By Charles Herrington, Reporter CONNECT

HATTIESBURG, MS (WDAM) - Hattiesburg city officials are asking the public to help complete a long-range transportation plan for the area.

On Thursday Nov. 5, the city and the Mississippi Department of Transportation will host a public meeting to discuss a plan, being developed by the Metropolitan Planning Organization.

That group includes the cities of Hattiesburg and Petal, along with Forrest and Lamar County.

The plan will include ways to improve the use of roads, sidewalks and bridges.

The meeting will take place from 4-6 p.m. in the Community Room of the Hattiesburg Train Depot.

City leaders said the the plan is about three-quarters complete. When it is fully developed, it will be submitted to the Mississippi Department of Transportation.

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LOCAL

Mississippi ranks high in most charitable state study

World's largest post office does more business

Social Security seminar

USM Assistant Professor, Students Receive Love of Learning Awards

Hattiesburg council wants answers, change to new flood rating

MULTIPLAN and HPFL Public Meeting Sign In Sheet

Hattiesburg Historic Train Depot | 308 Newman Street, Hattiesburg, MS | Thursday, November 5, 2015 | 4 p.m. to 6 p.m.

2040 MULTIPLAN THE FUTURE IN MOTION

Name	Affiliation	Email	Telephone
Tim Torrey	SOL ENGINEERING	ttorrey@solengrs.com	601·961·1415
Edward Jones	SOL Engineering	ejones@solengrs.com	601·961·1415
Donna Lum	NS	donna.lum@neel-schaffer.com	601-948-3071
Trung Trinh	MDOT	ttrinh@mdot.ms.gov	601-359-7685
Lindsey Netherland	MDOT	lnetherland@mdot.ms.gov	601-359-7685
L P Ledet	Neel-Schaffer	louis.ledet@neel-schaffer.com	337-232-6111
Robert Walker	"	robert.walker@neel-schaffer.com	601-948-3071
Taylor Marcantel	"	taylor.marcantel@neel-schaffer.com	337-232-6111
Jacqueline Mercier	Hattiesburg MPO	jmclain@hattiesburgms.com	601-545-6021
Amy Ricedorf	Pine Belt Mental Health	amy.ricedorf@pbmhr.org	601-545-3668
Matt Williams	MPO Hattiesburg	mpo@hattiesburgms.com	601-545-6259
Chris Bowen	Forrest Co.	chris@co.forrest.ms.us.	601-545-6091
Robert McHaney	GS	rmchaney@camrys.com	512-691-8510

MDOT Mississippi Department of Transportation

CMPDD Promoting Regional Excellence Since 1969 — Central Mississippi Planning and Development District

Metropolitan Planning Organization — Hattiesburg · Petal · Forrest · Lamar

Mississippi Gulf Coast Metropolitan Planning Organization — Gulf Regional Planning Commission

mississippitransportationplan.mindmixer.com planning@mdot.ms.gov

MULTIPLAN and HPFL Public Meeting Sign In Sheet

Hattiesburg Historic Train Depot | 308 Newman Street, Hattiesburg, MS | Thursday, November 5, 2015 | 4 p.m. to 6 p.m.

2040 MULTIPLAN THE FUTURE IN MOTION

Name	Affiliation	Email	Telephone
DANIEL JAYROE	AREA DEV. PARTNERSHIP	D.JAYROE@THEADP.COM	601.408.4557
ALBERT WHITE	MDOT - DISTRICT 7	awhite@mdot.ms.gov	601-249-5301
W.L. Sanders	city of Hattiesburg	WSanders@hattiesburgms.com	601-606-8522
Chad Miller	USM	Chad.r.miller@usm.edu	601 266-6666
Lamar Rutland	City Hattiesburg LAMAR RESIDENT	lrutland@hattiesburgms.com	601-545-4546
PHIL ORTON		ORCOLLC@HOTMAIL.COM	228-671-9032
LARRY BARNES	City of Hattiesburg	LBARNES@Hattiesburgms.com	601-674-1596
Andrew George	City of Hattiesburg	ageorge@Hattiesburgms.com	601.319-0719
LaKeylah White	City of Hattiesburg	lwhite@hattiesburgms.com	601-545-4570
Derrick Ware	The Ware Group	thewaregroupllc@gmail.com	601 307. 6110
Carrie Acey	CRS	carrieacey@yahoo.com	601.606.0945

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION

CMPDD Central Mississippi Planning and Development District — PROMOTING REGIONAL EXCELLENCE SINCE 1968

Hattiesburg Petal Forrest Lamar Metropolitan Planning Organization

Mississippi Gulf Coast Metropolitan Planning Organization — Gulf Regional Planning Commission

mississippitransportationplan.mindmixer.com planning@mdot.ms.gov

MULTIPLAN and HPFL MPO Public Meeting Sign In Sheet

Oloh Community Center | 45 Oloh Road, Sumrall, MS | Tuesday, November 10, 2015 | 4 p.m. to 6 p.m.

2040 MULTIPLAN THE FUTURE IN MOTION

Name	Affiliation or Residency	Email	Telephone
Timothy Torrey	SOL Engineering	Ttorrey@solengrs.com	601.961.1415
Edward Jones	SOL Engineering	ejones@solengrs.com	601-961-1415
Jacqueline McClain	Hattiesburg MPO	jmcclain@hattiesburgms.com	601-545-6395
Trung Trinh	MDOT	ttrinh@mdot.ms.gov	601-359-7685
Lindsey Netherland	MDOT Planning	lnetherland@mdot.ms.gov	601-359-7685
Robert McHaney	CS	rmchaney@camsys.com	512-691-3510
Greg Wilkinson	MDOT - District 7	gwilkinson@mdot.ms.gov	601-249-5216
Rebecca Boone	NSI	rebecca.boone@neel-schaffer.com	601-948-3071
Shannon Campbell	USM	shannon.campbell@usm.edu	601-517-0933
Hema Gopalan	COH	hgopalan@hattiesburgms.com	601-545-6227
Sammy Holcomb	MDOT	sholcomb@mdot.ms.gov	601-359-7685
Matt Williams	MPO	mpo@Hattiesburgms.com	601-545-6259
Alan Tyson	Resident	Tyson-Alan@Hattiesburgms.com	863-4666638

MDOT Mississippi Department of Transportation

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Hattiesburg Petal Forrest Lamar Metropolitan Planning Organization

Mississippi Gulf Coast Metropolitan Planning Organization — Gulf Regional Planning Commission

mississippitransportationplan.mindmixer.com planning@mdot.ms.gov

MULTIPLAN and HPFL MPO Public Meeting Sign In Sheet

Oloh Community Center | 45 Oloh Road, Sumrall, MS | Tuesday, November 10, 2015 | 4 p.m. to 6 p.m.

2040 MULTIPLAN THE FUTURE IN MOTION

Name	Affiliation or Residency	Email	Telephone
Lee Hutchins	Lamar County Resident	Hutch3lee@gmail.com	
Phil Orton	Resident	orcollc@hotmail.com	228-671-9032
Joseph Vaughn	MPO		

MDOT Mississippi Department of Transportation

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Hattiesburg Petal Forrest Lamar Metropolitan Planning Organization

Mississippi Gulf Coast Metropolitan Planning Organization — Gulf Regional Planning Commission

mississippitransportationplan.mindmixer.com planning@mdot.ms.gov

JOINT PUBLIC MEETING
Hattiesburg-Petal-Forrest-Lamar MPO and
Mississippi Department of Transportation
Forrest County
11/5/15

We want to hear from you! Use the space below (and back if needed) to make comments about our draft long-range transportation plans. Please use a different form for each plan.

My comments are about (please check one):

☐ Mississippi's Statewide Long-Range Transportation Plan

☑ Hattiesburg-Petal-Forrest-Lamar Metropolitan Transportation Plan

ELECTRIC VEHICLES (EV)
CO2 BUILDUP IN THE ATMOSPHERE, DEPLETION OF FOSSIL FUELS, INEVITABLE RETURN TO HIGHER FUEL COSTS, STEADY GROWTH OF EV'S AND SIGNIFICANT INCENTIVES FROM THE FEDERAL GOVT. AND OTHER STATES ALL POINT TO THE NEED TO RECOGNIZE AND SUPPORT THIS RAPIDLY EVOLVING SEGMENT OF TRANSPORTATION. I REQUEST AND RECOMMEND THAT EV CHARGING STATIONS BE INCLUDED IN MS REST STOPS ON INTERSTATE HIGHWAYS AND IN SIGNIFICANT PUBLIC AREAS, INCLUDING CONVENTION CENTERS AND THAT THE PROGRAM START IN 2016

PROJECT 154
I OPPOSE THIS PROJECT. MAJOR FUNDING, LAND ACQUISITIONS, DISRUPTION OF LIVES OF RESIDENTS ALONG JACKSON ROAD HAVE BEEN ON-GOING FOR SEVERAL YEARS. ALSO, THE ADDING OF SIGNIFICANTLY MORE TRAFFIC ON TO HWY 98 SEEMS UNREASONABLE. ADDITIONALLY, MAJOR GROWTH IS OCCURING WESTERLY.

Your Name (optional):
PHILIP ORTON

Contact Information (optional):
ORCOLLC@HOTMAIL.COM
228-671-9032

2040 MULTIPLAN
THE FUTURE IN MOTION

JOINT PUBLIC MEETING
Hattiesburg-Petal-Forrest-Lamar MPO and
Mississippi Department of Transportation
Forrest County
11/5/15

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My comments are about (please check one):

☐ Mississippi's Statewide Long-Range Transportation Plan

☑ Hattiesburg-Petal-Forrest-Lamar Metropolitan Transportation Plan

Please Include charging stations for electric vehicles in the Plan as soon as possible. The rest of the country is ahead of us in this area and I would hope one if MS. Supported them both. Our Environment would be much cleaner if we did this.

Your Name (optional):
Alan Tyson
Contact Information (optional):
TYSON-ALAN@HOTMAIL.COM
863-465-0638

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION

HATTIESBURG PETAL FORREST LAMAR Metropolitan Planning Organization

JOINT PUBLIC MEETING
Hattiesburg-Petal-Forrest-Lamar MPO and
Mississippi Department of Transportation
Forrest County
11/5/15

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My comments are about (please check one):

☐ Mississippi's Statewide Long-Range Transportation Plan

☑ Hattiesburg-Petal-Forrest-Lamar Metropolitan Transportation Plan

Concerns have arose regarding Hattiesburg public transit/bus system, specifically in terms of lack of monthly pass options, as well as not running past 6pm nor on weekends.

Your Name (optional):

Contact Information (optional):

2040 MULTIPLAN
THE FUTURE IN MOTION

JOINT PUBLIC MEETING
Hattiesburg-Petal-Forrest-Lamar MPO and
Mississippi Department of Transportation
Forrest County
11/5/15

Use the space below (and back if needed) to make ... transportation plans. Please use a different form for each ...

(please check one):

☑ Mississippi's Statewide Long-Range Transportation Plan

☑ Hattiesburg-Petal-Forrest-Lamar Metropolitan Transportation Plan

With the big push to encourage citizens to make choices that will more positively impact the environment, part of the overall plan should include infrastructure that will support alternatives like electric cars. Without charging stations the range one can drive is very limited. I would like to see more charging stations included in any long range planning.

Kim Osterman
OSTERMANSTER@GMAIL.COM

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION

HATTIESBURG PETAL FORREST LAMAR Metropolitan Planning Organization

2040 MULTIPLAN
THE FUTURE IN MOTION

JOINT PUBLIC MEETING
Hattiesburg-Petal-Forrest-Lamar MPO and
Mississippi Department of Transportation
Forrest County
11/5/15

Use the space below (and back if needed) to make transportation plans. Please use a different form for each plan.

☑ Mississippi's Statewide Long-Range Transportation Plan

☑ Hattiesburg-Petal-Forrest-Lamar Metropolitan Transportation Plan

WE NEED MORE EV CHRGING STATIONS IN MISSISSIPPI TO MAKE THE USE OF ELECTRIC VEHICLES A VIABLE ALTERNATIVE.

WALT OSTERMAN

WALT.OSTERMAN@GMAIL.COM

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION

HATTIESBURG PETAL FORREST LAMAR MPO Metropolitan Planning Organization

2040 MULTIPLAN
THE FUTURE IN MOTION

JOINT PUBLIC MEETING
Hattiesburg-Petal-Forrest-Lamar MPO and
Mississippi Department of Transportation
Forrest County
11/5/15

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My comments are about (please check one):

[X] **Mississippi's Statewide Long-Range Transportation Plan**

[X] **Hattiesburg-Petal-Forrest-Lamar Metropolitan Transportation Plan**

As a family of four who owns a purely Electric Vehicle, I fully support the development of infrastructure for EVs in Mississippi. EVs provide an extremely economical means of transportation as well as numerous benefits to the environment. Our family has found owning an EV to be a purely enjoyable experience. There are very few cons to owning such a vehicle and numerous pros. The pros include: extremely low "fuel" cost. Electricity rates rates range from 10-15 cents/kwh in MS and the EV that I own averages an efficiency level of about 4.5-5 miles/kwh. This is about one quarter the cost of operating a gasoline vehicle. EVs do not require petroleum products to lubricate the engine or the transmission. Essentially the only maintenance required for an EV involves the tires and brake pads.

The cons of owning an EV are essentially isolated to those of range. In MS there are very few charging stations available to the public. Other states have developed EV charging infrastructures that are far more advanced than MS'. I would like to ask that MDOT and the state of MS as a whole provide some support for this fast growing and promising mode of transportation by beginning to develop a charging infrastructure that will alleviate much of the range concerns.

Your Name (optional):

Russell Etheridge

Contact Information (optional):

601-472-5023 (russnc22@gmail.com)

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION

HATTIESBURG PETAL FORREST LAMAR MPO Metropolitan Planning Organization

2040 MULTIPLAN
THE FUTURE IN MOTION

JOINT PUBLIC MEETING
Hattiesburg-Petal-Forrest-Lamar MPO and
Mississippi Department of Transportation
Forrest County
11/5/15

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My comments are about (please check one):

☒ Mississippi's Statewide Long-Range Transportation Plan

☒ Hattiesburg-Petal-Forrest-Lamar Metropolitan Transportation Plan

① a type of Public Transportation between Hattiesburg-Petal-Forrest-Lamar and Camp Shelby, to the Gulf Coast. at the present time a limo service can do it about $100 one-way.
The Hub City bus needs to be continued. Many people relay on and use this service.

② Electric cars should be used by all drivers. no oil, no gas, no emissions. also no noise.
more buyers would be willing to spend the extra money for all electric if they could extend the range. Having more charging stations in our state would enable longer trips.
We are proud owners of an all electric car.
Doing our part to save the enviroment.

Your Name (optional):
LINDA ORTON

Contact Information (optional):
LJORTON@GMAIL.COM

MDOT MISSISSIPPI DEPARTMENT OF TRANSPORTATION

HATTIESBURG PETAL FORREST LAMAR Metropolitan Planning Organization

Hattiesburg-Petal-Forest-Lamar MPO
Mississippi Department of Transportation
Lamar County Presentation – November 10, 2015
OLAH Community Center – Sumrall MS

My comments relate primarily to the "local" 2040 Metropolitan Transportation Plan but some could also apply to the statewide long range transportation plan. These comments are being provided after reviewing the lengthy Transporation Plan and not the November 10 presentations..

(1) The local MTP discusses in excruciating detail our future infrastructure needs associated with roadways, bridges, public transportation, sidewalks and bike paths.

One area that I feel needs to be included in the Plan are potential infrastructure needs associated with electric vehicles. These vehicles eliminate their need for fossil fuels and provide for reduced emissions. Electric vehicles are cutting edge with ever improving technology. Current models are capable of a 100 mile range prior to needing a recharge. Since late 2010, Nissan has sold over 165,000 electric cars called the Leaf. It is anticipated that 100,000 units will be sold in the near future. There are also other electric car brands on the market and the government is encouraging their purchase by offering a $7500 credit on income tax filings. While public charging stations are currently limited, an increase in these units would encourage greater use such as downtown parking in government owned parking facilities or Mississippi Welcoming stations.. I certainly am not qualified to identify the charging station infrastructure needs and costs, but think brighter minds than mine should investigate these needs.

(2) The study has also priortirized road projects and listed a great number of "visionary projects" A real list of "needs" and "like to haves".

Of some concern to me is the visionary project #154 priced at almost $32 million dollars. Can this project be moved from "visionary" to a "priority" without the residents along the proposed roadway being notified? If the residents of Lamar county do not wish this project to come to fruition can it be forced upon us by the Hattiesburg-Petal-Forrest-Lamar MPO or MDOT?

(3) Will the local MTP be modified if the proposed $339 billion federal transportation bill is signed into law ?

Lee Roy Hutchins---

hutch3lee@gmail.com

mindmixer PROJECT REPORTS Idea Report 1

Topic Name: There's still time!

Idea Title: Add Electric Vehicle(EV) Infrastructure Development to Plan

Idea Detail: CO2 buildup in the atmosphere, depletion of fossil fuels, inevitable return to higher fuel costs, steady growth of EV vehicles and significant incentives from the Federal Govt. and other states all point to the need to recognize and support this rapidly evolving segment of transportation. I request and recommend that EV charging stations be included in MS rest stations on interstate highways and in significant public areas, including Convention Centers and that the program start in 2016

Idea Author: Phil O

Number of Stars 9

Number of Comments 4

Comment 1: Thank you for your input. Your original statement and those who have made comments have been received. | By Donna L

Comment 2: We absolutely need to incorporate more zero-emissions vehicles into our transportation planning as well as the infrastructure to support them. I'd consider buying an electric vehicle if I could charge it at work, at the grocery store, and while traveling throughout the state. And not just in the big cities, either. All communities need charging stations in convenient locations, where cars are going to be parked long enough to get a charge. | By Meg H

Comment 3: I agree with the above proposal. Having charging capabilities at MS rest stations, public areas and convention centers is an excellent idea. Also providing RV parks and hotels with incentives to set up EV charging stations is another good solution to expanding the EV infrastructure. | By Ravi K

Comment 4: I fully support the comments to add more charging stations in Mississippi and the Hattiesburg area. MS is way behind in this area and needs to do some catching up. I would buy one if we drive them beyond the local community. | By Alan T

Idea Title: I think planning for our future is very important.

Idea Detail: Transportation is the backbone of our economic engine here in MS. Thank you for planning for our future.

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mindmixer PROJECT REPORTS Idea Report 2

Idea Author: Donna L

Number of Stars 3

Number of Comments 2

Comment 1: Thank you Phil! | By Donna L

Comment 2: I agree, the planning team did a great job!! | By Phil O

Idea Title: Western Beltway Project #154

Idea Detail: Jackson road residents have endured about 7 years of uncertainty, land acquisitions, road building and millions of dollars have been spent improving this road. The Project has just recently been completed and traffic has increased significantly. To now propose widening to 4 lanes and putting more traffic on an already congested Hwy 98 seems unreasonable and prompts the question of 'why do all this work then re-do it immediately afterward'? Additionally, the new growth in this area appears to be moving westward. Lets move the beltway out ahead of the new growth to the west of Jackson Road.

Idea Author: Phil O

Number of Stars 1

Number of Comments 1

Comment 1: Thank you Phil. Your comment has been received. | By Donna L

Idea Title: My idea is this. I attended the Nov 10 Presentation

Idea Detail: Took the time to attend the Nov 10 presentation in Sumerall. Took the time to review the local plan and write up a review which I turned in at the meeting. Can not find where my thoughts were included in any analysis. Makes me think government doesn't want anything to interfere with what they have already designed. Don't ask for input if you don't plan on using them. Lee Roy Hutchins.....Hattiesburg MS

Idea Author: Lee H

Number of Comments 1

Comment 1: Hello Mr. Hutchins, thank you for taking the time to engage in the long-range

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transportation planning process. You will be glad to know that the comment period has not yet ended and planners are still in the process of receiving and reviewing all comments. Comments will be accepted until Dec. 14. | By Donna L

Idea Title: Light rail for Coast

Idea Detail: Obviously, my original write-up did not register. (I got an e-mail and there are 3 ideas, none of which is mine. It asks me to go back. This is it. I am not re-writing stuff over and over because you have picked a lousy vendor or do not update your stuff.) A light rail along either or both 90 or the rail right of way (you will have to purchase rail right of way), or alternating, would give a great commuting method for people to go to Ingalls, the REAL Port (Pascagoula) or the tourist stores and restaurants of Bay St. Louis. Tourists would love it if it had a view. Ozone is about to be a much bigger problem here as the standards are changing. Don't need all these cars with one person in them. Use the $ from HUD for the Fantasy Port, what's left that CH2MHill hasn't stolen.

Idea Author: Julia O

Number of Comments 1

Comment 1: Hi Julia, I am so sorry you have had trouble with this venue. Please know your comment has been heard and sent to the Gulf Regional Planning Commission. | By Donna L

Appendix B: Travel Demand Model Documentation

This section includes a description of the procedures used in developing travel estimates, the relationship between planning data and trip making, and the calibration and testing of the models used in this study.

B.1 Model Overview

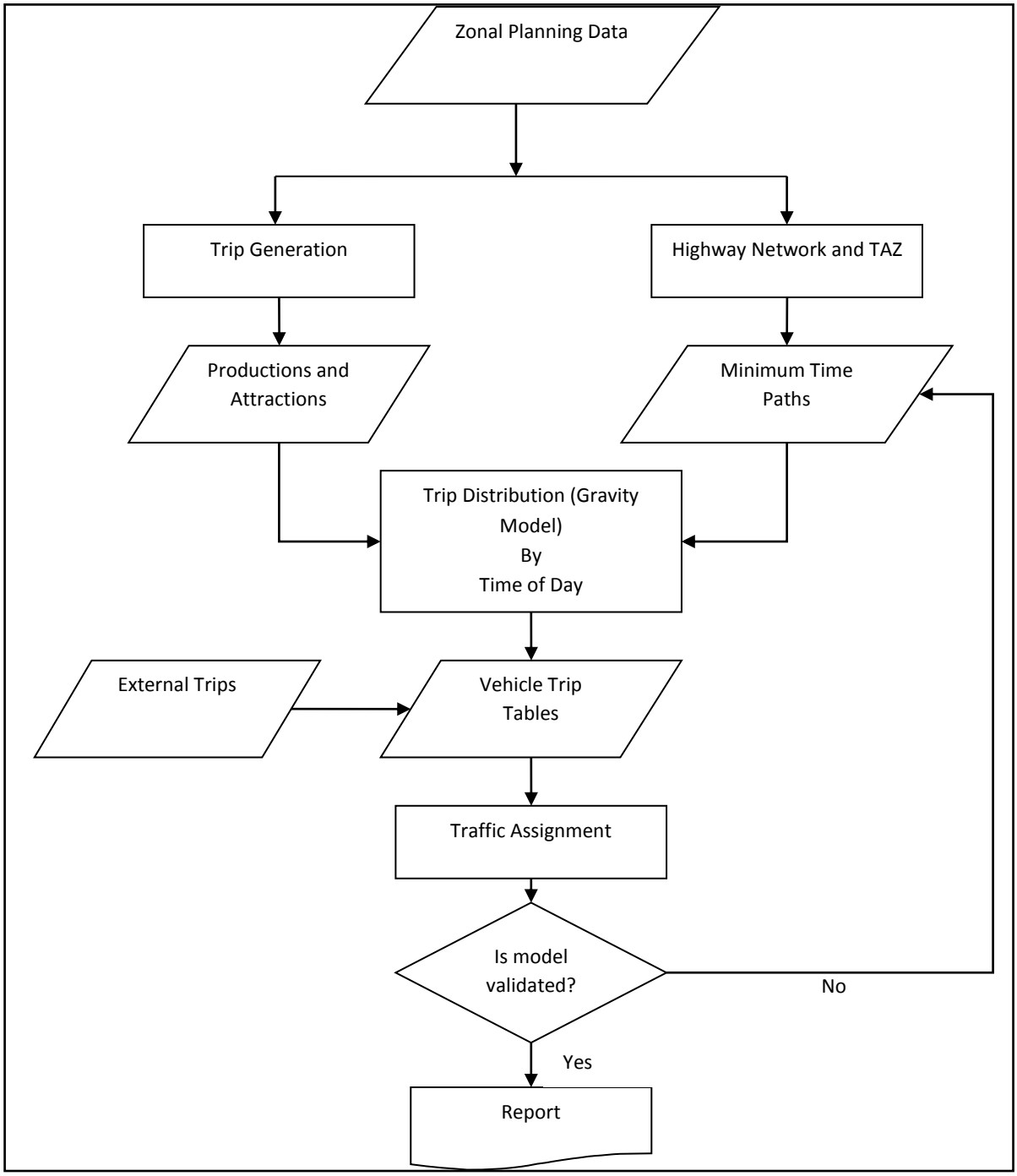
The HPFL MPO Travel Demand Model is based upon the conventional trip-based four-step modeling approach.

Broadly, the main model components fall within the following four categories:

- *Trip Generation* - The process of estimating trip productions and attractions at each TAZ.
- *Trip Distribution* - The process of linking trip productions to trip attractions for each TAZ pair.
- *Modal Choice* - The process of estimating the number of trips using a particular mode for each TAZ pair. Because of the low frequency of transit trips, pedestrian, and bicycle trips in the modeling area, this step was not performed.
- *Trip Assignment* - The process of assigning auto and truck trips onto specific highway facilities in the region.

The general relationships between the different model steps and their inputs and outputs are presented in a schematic drawing in Figure B.1. When calibrating a model, the process contains several review and adjustment loops, which are not shown for the sake of clarity.

Figure B.1: Modeling Process



B.2 Trip Generation

This section describes the procedures used to determine the number of trips that begin or end in a given traffic zone. The identification of the other end of the trips occurs in the trip distribution models to be discussed in the next section.

The model considers the following trip purposes:

Internal Trip Purposes

- Home-Based Work (HBW)
- Home-Based Other (HBO)
- Non Home-Based (NHB)
- Commercial Vehicle (CMVEH)
- Truck Trips (TRK)

External Trip Purposes

- External-Internal Auto Trips (EIAUTO)
- External-Internal Truck Trips (EITRK)
- External-External (Through) Auto Trips (EEAUTO)
- External-External (Through) Truck Trips (EETRK)

Internal Travel Model

For home-based trips, the productions refer to the home end, and the attractions refer to the non-home end of the trip. For non-home based, commercial vehicle, and truck trips, productions and attractions refer to the origin and destination respectively.

The model uses cross-classification trip production models for the home-based and non-home based trip purposes; that is, trip rates that vary by household type are applied at the zonal level. For the commercial vehicle trip purposes, the model applies a linear regression equation that relates zonal employment and households to trip productions and attractions. The trip attraction models are linear regression equations that relate zonal employment, households, and student enrollment to trip attractions. Productions and attractions are balanced at the study area level for all trip purposes by holding trip productions constant.

HBW, HBO, and NHB trip models were developed by using the procedures described in the NCHRP Report 365 for an urban area between 50,000 and 199,999 total population. These trip models were refined as needed during the calibration process. Commercial Vehicle and Truck trip models were derived using the Quick Response Freight Manual,

September 1996. Commercial Vehicle trips represent four-tire commercial vehicles, including delivery and service vehicles. Truck trips represent single-unit with six or more tires and multi-unit with three-plus axle combination trucks. Final trip generation models are shown in Table B.1, Table B.2, Table B.3, Table B.4 and Table B.5.

Table B.1 Home-Based Work Trip Productions

Number of Vehicles per Household	HHS1	HHS2	HHS3	HHS4	HHS5P
HH_VEH0	0.6020	1.2226	1.6278	2.0237	2.2043
HH_VEH1	0.9262	1.7065	2.0237	2.5296	2.6963
HH_VEH2	0.9262	2.0631	2.3316	2.9256	3.2868
HH_VEH3P	0.9262	2.1395	2.6176	3.3215	3.5426

Source: NCHRP 365; NSI, 2015

Table B.2 Home-Based Other Trip Productions

Number of Vehicles per Household	HHS1	HHS2	HHS3	HHS4	HHS5P
HH_VEH0	1.2336	2.2774	3.6410	4.6884	6.1012
HH_VEH1	1.8978	3.1789	4.5267	5.8604	7.4631
HH_VEH2	1.8978	3.8431	5.2155	6.7777	9.0973
HH_VEH3P	1.8978	3.9855	5.8552	7.6950	9.8055

Source: NCHRP 365; NSI, 2015

Table B.3 Non-Home Based Trip Productions

Number of Vehicles per Household	HHS1	HHS2	HHS3	HHS4	HHS5P
HH_VEH0	0.7325	1.2483	2.0046	2.2928	2.5485
HH_VEH1	1.1269	1.7424	2.4922	2.8660	3.1174
HH_VEH2	1.1269	2.1064	2.8714	3.3146	3.8000
HH_VEH3P	1.1269	2.1845	3.2236	3.7632	4.0959

Source: NCHRP 365; NSI, 2015

Table B.4 Commercial Vehicle and Truck Trip Productions

Vehicle Type	OCCDU	RET_EMP	RET_EMP2	OS_EMP	OTH_EMP	AMC_EMP	MTCUW_EMP
CMVEH	0.1506	0.5328	0.5328	0.2622	0.2622	0.6660	0.5628
TRK	0.0719	0.1670	0.1670	0.0404	0.0404	0.2431	0.1817

Source: Quick Response Freight Manual, 1996; NSI, 2015

Table B.5 Trip Attraction Equations by Trip Purpose

Trip Purpose	OCCDU	RET_EMP	RET_EMP2	OS_EMP	OTH_EMP	AMC_EMP	MTCUW_EMP	SCHATT
HBWA	0.0000	1.2044	1.2044	1.2044	1.2044	1.2044	1.2044	0.0000
HBOA	1.0006	2.2236	10.0062	1.8901	0.5559	0.5559	0.5559	0.7416
NHBA	0.4488	1.2567	3.6803	1.0772	0.4488	0.4488	0.4488	0.2478
CMVEHA	0.1506	0.5328	0.5328	0.2622	0.2622	0.6660	0.5628	0.0000
TRKA	0.0720	0.1670	0.1670	0.0400	0.0400	0.2430	0.1820	0.0000

Source: NCHRP 365; NSI, 2015

A special generator is a land use with unusually low or high trip generation characteristics. For the HPFL MPO model there were no locations that were identified as special generators.

Application of the trip generation models to the base-year planning data yielded estimates of trip productions and attractions by travel purpose for each traffic analysis zone. These were then balanced to ensure that every trip generated by the model has both a beginning and an end. Table B.6 lists the daily person trips by trip purpose.

Table B.6 Daily Study Area Trips by Trip Purpose

Trip Purpose	Trips	Trip Type
HBW	83,706	Person Trips
HBO	183,361	Person Trips
NHB	97,181	Person Trips
CMVEH	32,995	Vehicle Trips
TRK	9,829	Vehicle Trips
Total	**407,072**	

Source: NSI, 2015

External Travel Model

External travel consists of two types of trips: external-internal (EI) trips and external-external (EE) trips. EI trips have one end of the trip inside the study area, and the other outside. EE trips pass through the study area having no origin or destination within the study area.

In order to EE trip tables data provided through AirSage on the travel patterns in the metropolitan area and the methodology described in NCHRP 716 were used to create an initial EE matrix that was then run through the Fratar procedure to obtain trips crossing the study area boundary. The EI trip tables were developed using the AirSage data and regression analysis.

External-External (EE) Trips

Table B.7, Table B.8 and Table B.9 list the balanced EE trips used in the model.

Table B.7 Expanded 24-Hour EE Trip Table for All Vehicles

TAZ	601	602	603	604	605	606	607	608	609	610	611	612	Total
601	0.0	0.0	61.6	80.9	721.9	417.0	36.0	11.7	1,352.3	9.4	18.5	1,169.0	**3,878.4**
602	0.0	0.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**9.0**
603	61.6	9.0	0.0	0.0	0.0	0.4	0.0	0.0	3.1	0.0	0.4	103.7	**178.2**
604	80.9	0.0	0.0	0.0	3.2	1.7	0.1	0.0	22.6	0.0	0.6	1,337.2	**1,446.4**
605	721.9	0.0	0.0	3.2	0.0	0.0	0.0	0.0	11.1	0.0	0.0	1,214.0	**1,950.3**
606	417.0	0.0	0.4	1.7	0.0	0.0	0.0	0.0	0.6	0.3	0.0	189.8	**609.8**
607	36.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	15.2	**51.6**
608	11.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.5	0.0	0.0	0.0	**31.3**
609	1,352.3	0.0	3.1	22.6	11.1	0.6	0.2	19.5	0.0	2.8	0.0	83.0	**1,495.3**
610	9.4	0.0	0.0	0.0	0.0	0.3	0.1	0.0	2.8	0.0	0.0	0.0	**12.5**
611	18.5	0.0	0.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.9	**48.4**
612	1,169.0	0.0	103.7	1,337.2	1,214.0	189.8	15.2	0.0	83.0	0.0	28.9	0.0	**4,140.8**
Total	**3,878.4**	**9.0**	**178.2**	**1,446.4**	**1,950.3**	**609.8**	**51.6**	**31.3**	**1,495.3**	**12.5**	**48.4**	**4,140.8**	**13,852.0**

Source: MDOT, 2013; NSI, 2015

Table B.8 Expanded 24-Hour EE Auto Trip Table

TAZ	601	602	603	604	605	606	607	608	609	610	611	612	Total
601	0.0	0.0	43.6	11.7	448.7	258.9	30.5	7.2	1,220.0	8.0	13.8	788.2	**2,830.6**
602	0.0	0.0	7.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**7.9**
603	43.6	7.9	0.0	0.0	0.0	0.4	0.0	0.0	3.1	0.0	0.4	101.5	**156.8**
604	11.7	0.0	0.0	0.0	2.3	1.2	0.1	0.0	21.1	0.0	0.5	1,019.0	**1,056.0**
605	448.7	0.0	0.0	2.3	0.0	0.0	0.0	0.0	11.1	0.0	0.0	1,176.3	**1,638.4**
606	258.9	0.0	0.4	1.2	0.0	0.0	0.0	0.0	0.6	0.3	0.0	183.8	**445.3**
607	30.5	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	15.1	**46.0**
608	7.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.4	0.0	0.0	0.0	**26.6**
609	1,220.0	0.0	3.1	21.1	11.1	0.6	0.2	19.4	0.0	2.8	0.0	82.6	**1,360.9**
610	8.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	2.8	0.0	0.0	0.0	**11.1**
611	13.8	0.0	0.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.4	**43.1**
612	788.2	0.0	101.5	1,019.0	1,176.3	183.8	15.1	0.0	82.6	0.0	28.4	0.0	**3,394.9**
Total	**2,830.6**	**7.9**	**156.8**	**1,056.0**	**1,638.4**	**445.3**	**46.0**	**26.6**	**1,360.9**	**11.1**	**43.1**	**3,394.9**	**11,017.5**

Source: MDOT, 2013; NSI, 2015

Table B.9 Expanded 24-Hour EE Truck Trip Table

TAZ	601	602	603	604	605	606	607	608	609	610	611	612	Total
601	0.0	0.0	18.1	69.2	273.2	158.1	5.5	4.5	132.3	1.4	4.7	380.8	**1,047.7**
602	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.1**
603	18.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	**21.4**
604	69.2	0.0	0.0	0.0	0.9	0.5	0.0	0.0	1.5	0.0	0.1	318.2	**390.4**
605	273.2	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.1	0.0	0.0	37.7	**311.9**
606	158.1	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.9	**164.5**
607	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	**5.7**
608	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	**4.7**
609	132.3	0.0	0.0	1.5	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.5	**134.5**
610	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1.4**
611	4.7	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	**5.3**
612	380.8	0.0	2.2	318.2	37.7	5.9	0.1	0.0	0.5	0.0	0.5	0.0	**746.0**
Total	**1,047.7**	**1.1**	**21.4**	**390.4**	**311.9**	**164.5**	**5.7**	**4.7**	**134.5**	**1.4**	**5.3**	**746.0**	**2,834.4**

Source: MDOT, 2013; NSI, 2015

External-Internal (EI) Trips

The EI attraction equations used in this model were derived by regression analysis using the data provided by AirSage and knowledge of the area's travel patterns. In addition, external-internal trips were also separated into auto and truck trips based on the vehicle classification counts at external stations.

The following EI attraction equations were used in the travel demand model for EIAUTO and EITRK trips.

EIAUTO Attractions = 0.9120 * (OCCDU) + 1.5340 * (RET_EMP + RET_EMP2) +

0.2754 * (AMC_EMP + MTCUW_EMP + OS_EMP + OTH_EMP)

EITRK Attractions = 0.1160 * (RET_EMP + RET_EMP2) + 0.0930 * (AMC_EMP + MTCUW_EMP)

Table B.10 Daily Study Area External Vehicle Trips by Type

Trip Purpose	Trips
EI AUTO	71,172
EI TRUCK	17,124
EE AUTO	11,018
EE TRUCK	2,834
Total	**102,148**

B.3 Trip Distribution

The next step in travel demand modeling is the trip distribution process. This function determines the destinations of trips produced in the trip generation model, and conversely, where the attracted trips originated. Many models are available for this process. The one used for this effort was the doubly constrained gravity model.

This model employs two relationships, the first of which is indirect:

> The shorter the travel time to the destination zone, the greater the number of trips will be distributed to it from the origin zone.

The second relationship is a direct one:

> The more attractions there are in a destination zone, the more trips will be distributed to it from the origin zone.

The generalized equation for this model is:

$$T_{ij} = \frac{(P_i)(A_j)(F_{ij})}{\sum_{j=1}^{n}(A_j)(F_{ij})}$$

Where: T_{ij} = Trips distributed between zones i and j

P_i = Trips produced at zone i

A_j = Trips attracted to zone j

F_{ij} = Relative distribution rate (friction factors or impedance function) reflecting impedance between zone i and zone j

n = Total number of zones in study area

In a model of this type, friction factors determine the effect that spatial separation has on trip distribution between zones. These factors measure the probability of trip making at one-minute increments of travel time. The gamma function was used to derive the friction factors. Calibration of a gamma impedance function involves estimating the three parameters of the gamma function; a, b, and c, as shown in the following equation:

$$f(t_{ij}) = a * t_{ij}^{-b} * e^{-c(t_{ij})}$$

Where: t_{ij} = Travel time between zones i and j

a,b,c = Parameters of the gamma function

e =2.71828183... (Base of the natural logarithm)

The a,b,c parameter values used for each trip purpose are shown in Table B.11.

Table B.11 Gamma Function Parameter Values by Trip Purpose

Trip Purpose	a	b	c
HBO	5,757,246.6014	1.2469	0.1743
HBW	186.9551	-3.5137	0.3270
NHB	2,188,886.4252	1.0691	0.1704
CMVEH	1.0000	0.0000	0.0800
EIAUTO	5.8171	-2.1712	0.1281
EITRK	1.0000	0.0000	0.0307
TRK	1.0000	0.0000	0.1000

Source: NSI, 2015; Quick Response Freight Manual, 1996

The initial outcome of the Trip Distribution step was a daily production-attraction (P-A) matrix. It is necessary to convert this production-attraction matrix to an origin-destination (O-D) matrix to use in the Trip Assignment step. TransCAD's "P-A to O-D" procedure with diurnal distribution of trips by purpose was used to create the final 24-hour O-D matrix.

Diurnal distribution is the process of allocating daily trips (by purpose and mode) into the time periods used for highway assignment. The allocation is achieved via use of time of day or diurnal factors. A time of day factor gives the proportion of total trips (by purpose) that are in-motion during a certain period of the day. These factors are typically developed separately for the production to attraction direction of travel (P-to-A), and the attraction to production direction of travel (A-to-P). This consideration is necessary to ensure that the

trips loaded to the networks are in origin-destination format, and not in the production-attraction format used in all previous modeling steps.

The peak and off-peak person trip tables split into four periods in preparation for highway assignment. This time of day split is based on diurnal factors derived from various sources and are shown in Table B.12. The four assignment time periods are:

- AM Peak Period: 6:00 AM to 9:00 AM
- Mid-Day: 9:00 AM to 3:00 PM
- PM Peak Period: 3:00 PM to 6:00 PM
- Night: 6:00 PM to 6:00 AM

Table B.12 Diurnal Factors Used in Model Development

TIME_PERIOD	ACTUAL_HOUR	HOUR	DEP_HBW	RET_HBW	DEP_HBO	RET_HBO	DEP_NHB	RET_NHB	DEP_CMVEH	RET_CMVEH	DEP_TRK	RET_TRK	DEP_EI_AUTO	RET_EI_AUTO	DEP_EI_TRK	RET_EI_TRK	DEP_EE_AUTO	RET_EE_AUTO	DEP_EE_TRK	RET_EE_TRK
AM PEAK	6	0	10.30	0.25	1.26	0.02	1.35	1.35	3.50	3.50	2.50	2.50	2.82	3.71	2.36	3.80	2.82	3.71	2.36	3.80
AM PEAK	7	1	12.53	0.62	3.24	0.05	2.68	2.68	3.30	3.30	3.65	3.65	3.31	3.56	2.71	3.13	3.31	3.56	2.71	3.13
AM PEAK	8	2	5.30	0.31	3.13	0.09	2.36	2.36	3.20	3.20	3.60	3.60	3.10	2.87	3.01	3.06	3.10	2.87	3.01	3.06
MID-DAY	9	3	2.57	0.29	4.32	1.37	3.81	3.81	2.60	2.60	3.90	3.90	2.78	2.77	3.44	3.10	2.78	2.77	3.44	3.10
MID-DAY	10	4	1.30	0.42	3.63	1.73	3.52	3.52	2.85	2.85	3.50	3.50	2.56	2.59	3.27	3.19	2.56	2.59	3.27	3.19
MID-DAY	11	5	2.08	1.41	3.39	3.07	8.07	8.07	2.70	2.70	3.75	3.75	2.42	2.55	2.95	3.22	2.42	2.55	2.95	3.22
MID-DAY	12	6	1.62	2.16	2.44	2.95	7.40	7.40	2.75	2.75	3.40	3.40	2.59	2.82	2.82	3.18	2.59	2.82	2.82	3.18
MID-DAY	13	7	1.54	1.74	2.72	2.77	5.05	5.05	2.90	2.90	3.55	3.55	2.46	2.81	3.05	3.29	2.46	2.81	3.05	3.29
MID-DAY	14	8	1.33	2.26	2.71	5.13	4.26	4.26	3.20	3.20	3.85	3.85	2.79	2.85	3.33	3.24	2.79	2.85	3.33	3.24
PM PEAK	15	9	1.36	7.95	1.72	3.43	2.50	2.50	3.90	3.90	3.80	3.80	3.20	3.30	3.65	3.21	3.20	3.30	3.65	3.21
PM PEAK	16	10	1.21	11.38	2.33	2.99	2.57	2.57	4.35	4.35	3.30	3.30	4.30	3.92	3.91	2.77	4.30	3.92	3.91	2.77
PM PEAK	17	11	0.75	10.67	3.28	3.41	1.87	1.87	3.55	3.55	2.55	2.55	5.24	3.75	3.83	2.56	5.24	3.75	3.83	2.56
NIGHT	0	12	0.00	0.51	0.00	0.79	0.14	0.14	0.35	0.35	0.35	0.35	0.38	0.21	0.45	0.34	0.38	0.21	0.45	0.34
NIGHT	1	13	0.00	0.43	0.00	0.31	0.09	0.09	0.20	0.20	0.30	0.30	0.28	0.22	0.37	0.30	0.28	0.22	0.37	0.30
NIGHT	2	14	0.00	0.29	0.00	0.03	0.05	0.05	0.20	0.20	0.30	0.30	0.31	0.21	0.50	0.33	0.31	0.21	0.50	0.33
NIGHT	3	15	0.32	0.36	0.00	0.13	0.00	0.00	0.20	0.20	0.25	0.25	0.49	0.35	0.72	0.57	0.49	0.35	0.72	0.57
NIGHT	4	16	1.56	0.20	0.21	0.00	0.46	0.46	0.30	0.30	0.55	0.55	0.85	1.14	0.86	1.16	0.85	1.14	0.86	1.16
NIGHT	5	17	4.73	0.17	0.79	0.00	1.09	1.09	1.00	1.00	1.50	1.50	1.60	2.64	1.54	3.18	1.60	2.64	1.54	3.18
NIGHT	18	18	0.38	3.05	6.87	5.74	1.14	1.14	2.90	2.90	1.75	1.75	3.17	2.68	2.75	2.11	3.17	2.68	2.75	2.11
NIGHT	19	19	0.22	1.06	4.52	4.54	0.59	0.59	1.65	1.65	1.20	1.20	1.78	1.75	1.58	1.45	1.78	1.75	1.58	1.45
NIGHT	20	20	0.31	1.47	1.87	4.62	0.55	0.55	1.45	1.45	0.80	0.80	1.27	1.25	0.91	1.06	1.27	1.25	0.91	1.06
NIGHT	21	21	0.24	1.61	1.01	3.80	0.23	0.23	1.30	1.30	0.65	0.65	1.08	0.98	0.86	0.78	1.08	0.98	0.86	0.78
NIGHT	22	22	0.29	0.98	0.44	2.18	0.14	0.14	1.00	1.00	0.50	0.50	0.75	0.67	0.73	0.56	0.75	0.67	0.73	0.56
NIGHT	23	23	0.07	0.42	0.12	0.85	0.09	0.09	0.65	0.65	0.50	0.50	0.48	0.39	0.39	0.41	0.48	0.39	0.39	0.41

Source: NSI, 2015

B.4 Trip Assignment

Traffic assignment models are used to estimate the traffic flows on a network. The main input to these models is a matrix of flows that indicate the volume of traffic between origin-destination (O-D) pairs. The other inputs to these models are network topology, link characteristics, and link performance functions. The trips between each O-D pair are loaded onto the network based on the travel time or impedance of the alternative paths that could carry this traffic.

TransCAD's Multi-Modal Multi-Class Assignment (MMA), with User Equilibrium (UE) as assignment type, and the Bureau of Public Roads (BPR) Volume-Delay function was used for HPFL MPO model. The MMA model is a generalized cost assignment that lets you assign trips by individual modes or user classes to the network simultaneously. Each mode or class can have different network exclusions, congestion impacts (passenger car equivalent values), values of time, and toll costs.

B.5 Model Validation

The purpose of model validation is to make the adjustments necessary to replicate base-year traffic conditions as closely as possible. In practice, this means making link assignment volumes approximate traffic estimates, based on actual counts, within acceptable limits of deviation. Generally speaking, the lower the volume, the greater the relative deviation that is acceptable. Conversely, the greater the amount of traffic, the greater the degree of accuracy required. This is because the ultimate purpose of the model is to determine whether additional vehicular capacity will be needed on any given roadway at a designated future date. Where existing volumes are low, the model assignment may deviate from actual conditions by 40 or 50 percent without affecting the projected need for additional capacity. On the other hand, in the case of a heavily traveled interstate route, a deviation of 20 percent may be significant (i.e., alter the projection of required capacity). The validation process is intended to ensure that the model is performing within the limits that define acceptable ranges of deviation from observed "real-world" values.

Validation of the HPFL MPO Travel Demand Model proceeded from consideration of its area wide performance to the relative distribution of traffic by roadway functional classification and ADT range. In the final stage of the validation process, the accuracy of the model with respect to specific routes and roadway groups was analyzed. At each level, an appropriate degree of accuracy was defined in terms of the maximum tolerable deviation from base-year vehicular volumes (i.e., estimated annual average daily traffic) and Root Mean Square Error (RMSE).

RMSE was chosen because when comparing model flows versus counts, sometimes a straight aggregate sum by link group can be misleading. The sum of all traffic counts for a particular link group may be close to the sum of the corresponding traffic flows, but individual link flows may still be very different than their corresponding link count. However, the RMSE statistic does not convey information about the magnitude of the error relative to that of the counts. Therefore the Percent Root Mean Square Error (Percent RMSE or % RMSE) is often computed. This measure expresses the RMSE as a percentage of the average count value. The Percent RMSE is defined as below:

$$\%RMSE = \frac{\sqrt{\sum_j (Model_j - Count_j)^2 / (Numberofcounts)}}{\left(\sum_j Count_j / Numberofcounts\right)} * 100$$

Overall, the cumulative model volume for all network links associated with MDOT traffic count locations (2,078,260 vehicles) differed from total model estimated ADT (2,001,047 vehicles) by -3.7 percent compared to an allowable error limit of five percent.

Validation results by ADT group and functional class are shown in Table B.13 and Table B.14 respectively.

Table B.13 Validation of Base-Year Model by ADT Group

ADT Range	Total Count[1]	Total Model Volume[2]	% Dev Limit[3]	% Dev	% RMSE Limit[4]	% RMSE
ADT < 1,000	25,860	28,568	+/- 200.0	10.5	115.8	101.0
1,000<= ADT < 2,500	122,400	120,060	+/- 100.0	-1.9	115.8	45.8
2,500<= ADT < 5,000	170,000	161,609	+/- 50.0	-4.9	115.8	28.8
5,000<= ADT < 10,000	472,000	435,711	+/- 25.0	-7.7	43.1	24.8
10,000<= ADT < 20,000	521,000	526,055	+/- 20.0	1.0	28.3	22.0
20,000<= ADT < 40,000	563,000	540,608	+/- 15.0	-4.0	25.4	12.0
ADT >= 40,000	204,000	188,437	+/- 15.0	-7.6	30.3	8.9
Total	**2,078,260**	**2,001,047**	**+/- 5.0**	**-3.7**	**40.0**	**25.5**

Source: Minimum Travel Demand Model Calibration and Validation Guidelines for State of Tennessee; NSI, 2015

Table B.14 Validation of Base-Year Model by Roadway Functional Class

Functional Class	Total Count[1]	Total Model Volume[2]	% Dev Limit[3]	% Dev
INTERSTATES	232,000	229,546	+/- 7.0	-1.1
PRINCIPAL ARTERIALS	885,000	881,878	+/- 25.0	-0.4
MINOR ARTERIALS	506,000	469,123	+/- 10.0	-7.3
COLLECTORS/LOCAL	317,580	273,077	+/- 15.0	-14.0
Total	2,078,260	2,001,047	+/- 25.0	-3.7

Source: Minimum Travel Demand Model Calibration and Validation Guidelines for State of Tennessee; NSI, 2015

(1) Total Count represents the sum of average daily traffic estimates for all MDOT count locations (area wide), all count locations on principal arterials, all locations on minor arterials, all on major/minor collectors.
(2) Total Model Volume is the sum of model-generated traffic volumes for all network links associated with MDOT count locations (area wide), all links associated with count locations on principal arterials, all links associated with locations on minor arterials, and all links associated with count locations on collectors.
(3) % Dev Limit is the maximum acceptable plus/minus percentage deviation from estimated base-year (2013) average daily traffic (ADT) based on counts conducted by MDOT.
(4) % RMSE Limit is the maximum acceptable magnitude of the error relative to that of the counts conducted by MDOT.

The validation effort concluded that the HPFL MPO study area travel demand forecasting model performs well within the established limits of acceptable deviation from base-year estimated volumes.

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