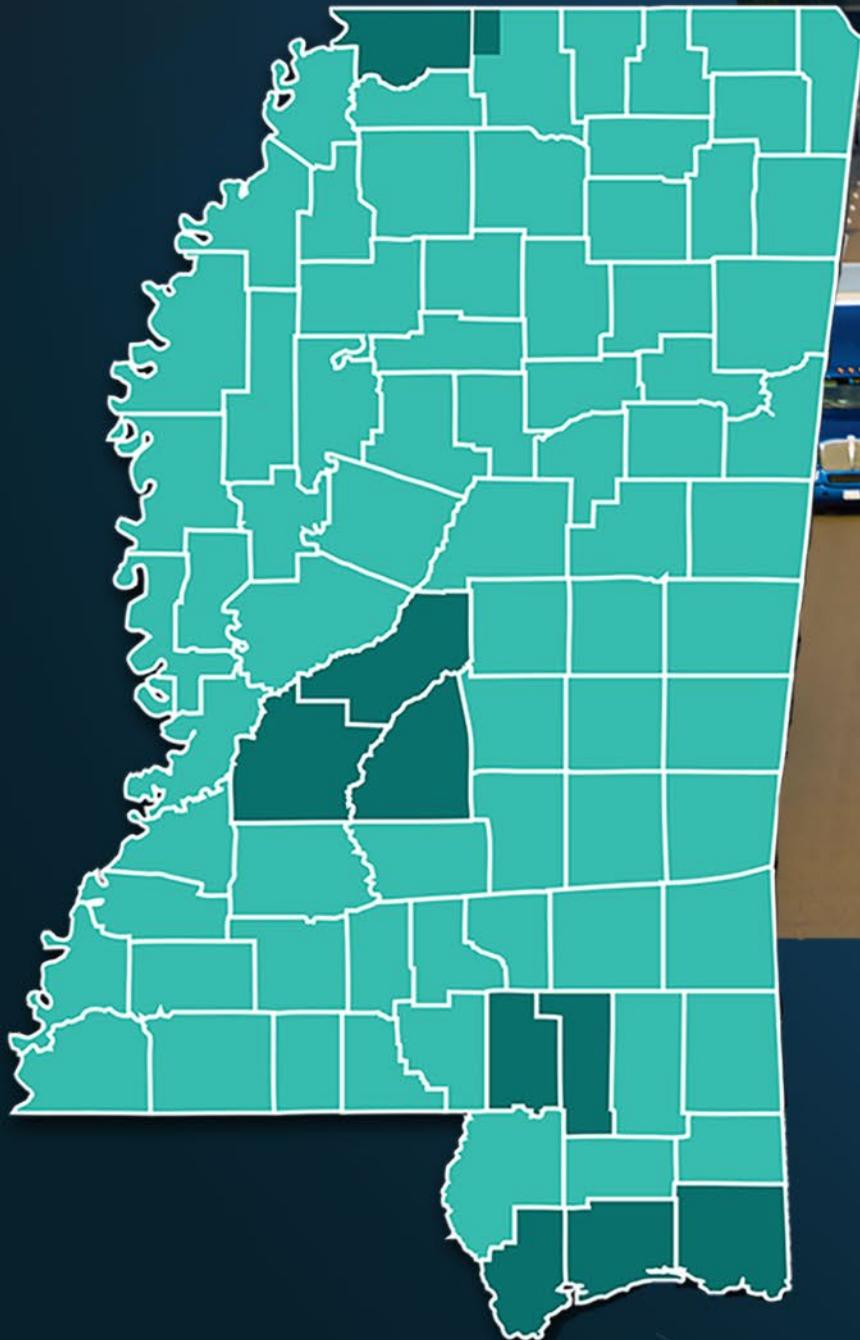


2040 Mississippi Unified Long-Range Transportation Infrastructure Plan

October 2015

DRAFT

*The Driving Force
of a Strong Economy*



2040



MULTIPLAN
THE FUTURE IN MOTION



MDOT
MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 1. PLAN OVERVIEW

TRANSPORTATION IN MISSISSIPPI

A well-performing transportation network keeps jobs in Mississippi by promoting safer, more efficient travel for businesses, residents, and tourists. It allows businesses to manage their inventories and transport goods more efficiently and access a variety of suppliers and markets for their products, making it more cost-effective for manufacturers to keep production in or move production to the State. Mississippi families benefit too: as consumers, from lower-priced goods; and as workers, by gaining better, safer access to jobs.

Mississippi has a vast transportation network requiring significant preservation, modernization and expansion.

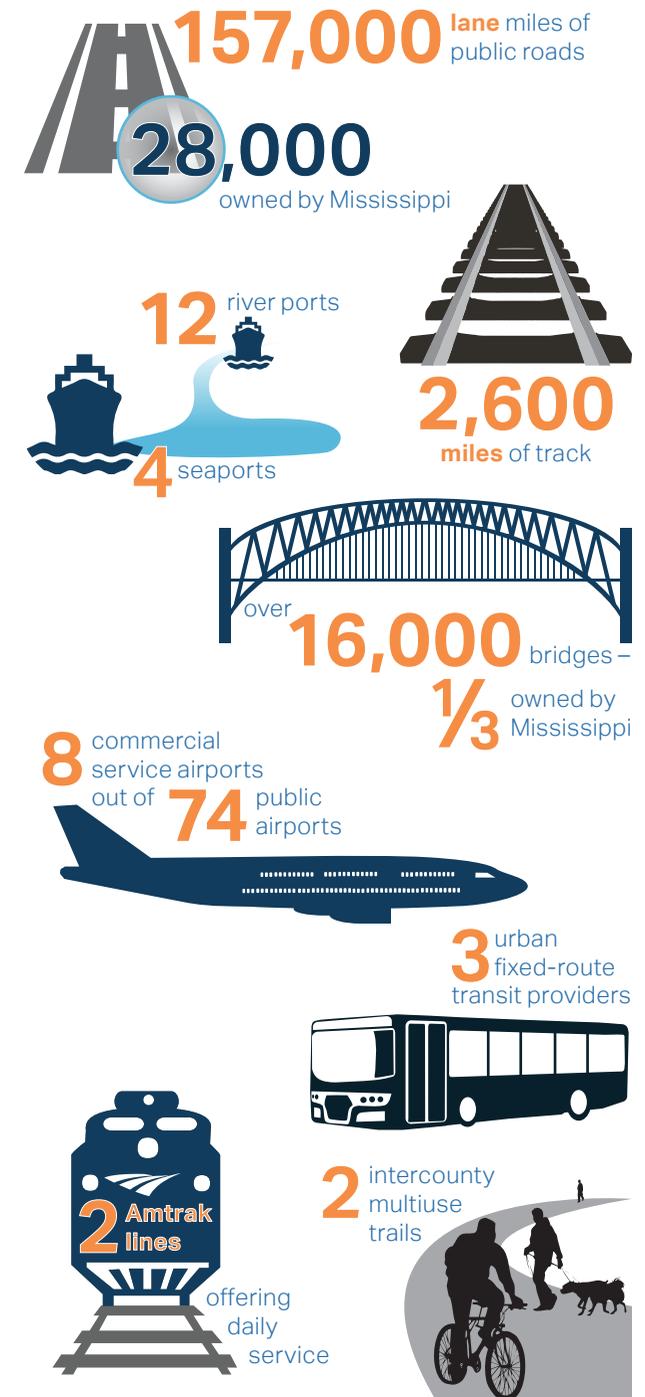
The Benefits of Smart Transportation Infrastructure Investment

- Long-term competitiveness
- Increased safety
- Reduced vehicle wear and tear
- Lower vehicle maintenance costs
- Lower prices for consumer goods
- Lower costs of doing business

The demand for transportation infrastructure grows and changes as the State’s population and employment grows and changes. On average, Mississippians travel over 10,000 miles annually on the State’s roadway and bridge network, with the growth in the average annual miles traveled per capita in Mississippi outpacing the national average since 2004. In recent years, miles traveled per capita have increased about 30 percent faster in Mississippi than the national average. The increased demand for travel has resulted in increasing needs for the State’s transportation infrastructure. At the same time, transportation funding has been relatively stagnant and growing significantly slower than the demand for infrastructure.

The costs of inadequate infrastructure investment are exhibited all around the State. Mississippians spend more hours in congestion, costing time and money. The pavement conditions deteriorate, leading to increased vehicle maintenance costs. Mississippi businesses pay more in freight transportation costs and experience more delays in shipments. This results in increased costs of doing business and higher costs of living.

Mississippi Transportation Facts



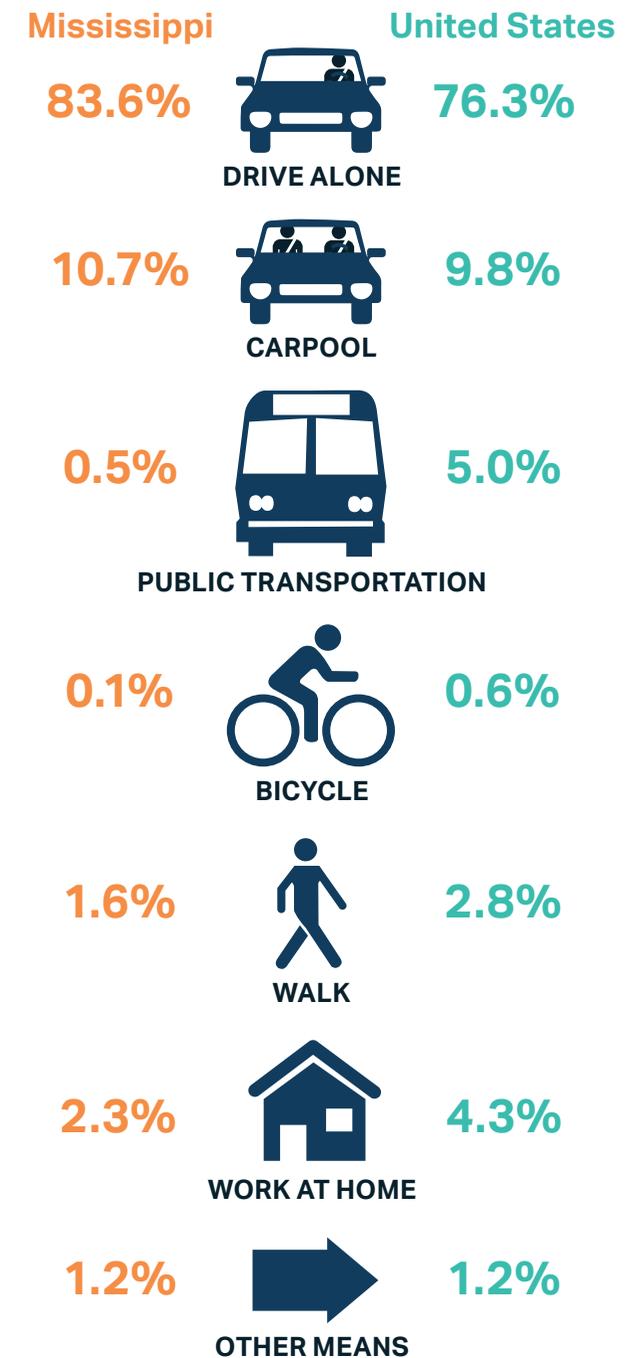
The negative impacts of inadequate infrastructure investment are exhibited all around the State, resulting in increased costs of doing business and higher costs of living.

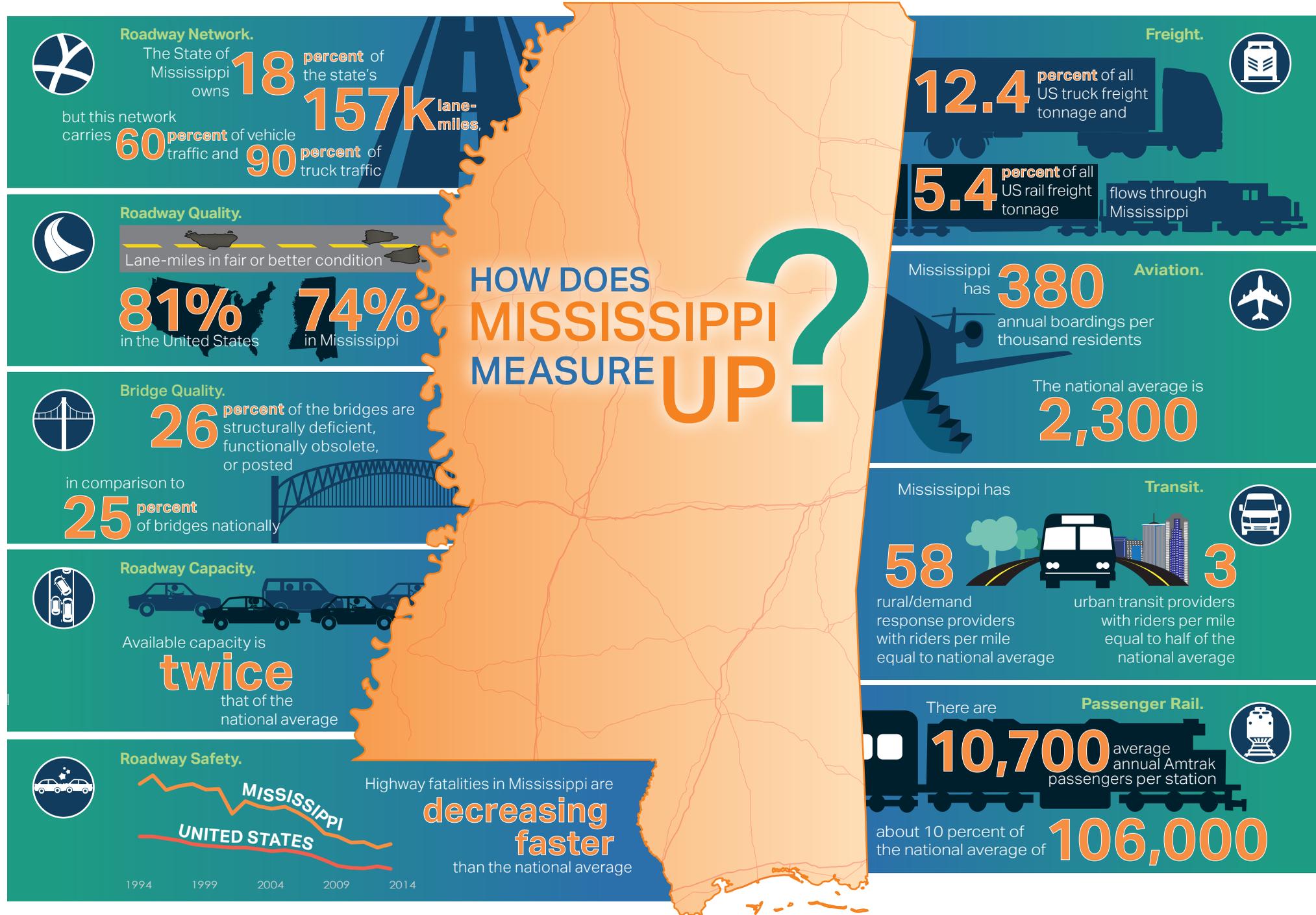
HOW MISSISSIPPI'S TRANSPORTATION SYSTEM MEASURES UP

Mississippi's unique culture, economy, geography, and land-use patterns offer distinct challenges and opportunities for providing and maintaining a world-class transportation system. By most measures, the system in Mississippi is functioning well and is meeting the diverse needs of residents and businesses. However, transportation systems require continual maintenance and upgrades, so comparing key statistics to national averages can help Mississippi benchmark progress, set achievement targets, and may present opportunities to improve system efficiency.

Mississippians drive more than the average American, in part due to the large rural population. In 2012, the per capita measurement of roadway usage or vehicle miles traveled (VMT) for Mississippi and the U.S. was roughly 10,000 and 8,000, respectively. Similar to national averages, most employees in Mississippi commute by private vehicle. Despite this fact, the rate of carpooling in Mississippi is higher than the national average. Rates of public transit, bicycling, walking, and working from home are lower than national averages. Bicycling and walking is more common in Mississippi's Urbanized Areas (UZA) but remain lower than UZAs nationwide.

COMMUTE MODE SHARE





POPULATION AND ECONOMIC GROWTH FUELING TRANSPORTATION DEMAND

Trends in transportation, travel behavior, and revenue vary over time with changing economic and population characteristics, energy and environmental change, technological advances, and transitions in the political environment. The most direct influence on transportation demand is the presence of people and jobs, as well as the type of jobs and the demographics of the population. While total population is the best indicator of system usage, other factors such as income levels and ages of individuals influence the amount of travel, the mode used, and trip purpose.

Population

In Mississippi, population is anticipated to grow by 19 percent from about 3 million people to 3.5 million by 2040. Most growth is expected in major cities, including Jackson, Hattiesburg, northern Mississippi, and along the Gulf Coast, while the western portion of the State is expected to lose population and employment. Mississippi must not only expand the system to prepare for future growth, but also the existing infrastructure must be maintained and upgraded overtime.

In Mississippi, population is anticipated to grow by 19 percent from about 3 million people to 3.5 million by 2040.

While the 20- to 34-age group has remained unchanged between 1990 and 2010, the number of residents age 35 to 64 increased 39 percent over the 20-year period. It is also the largest of all the age groups and individuals of this age make more trips than any other age group. Additionally, the number of residents over 65 increased by 19 percent and is

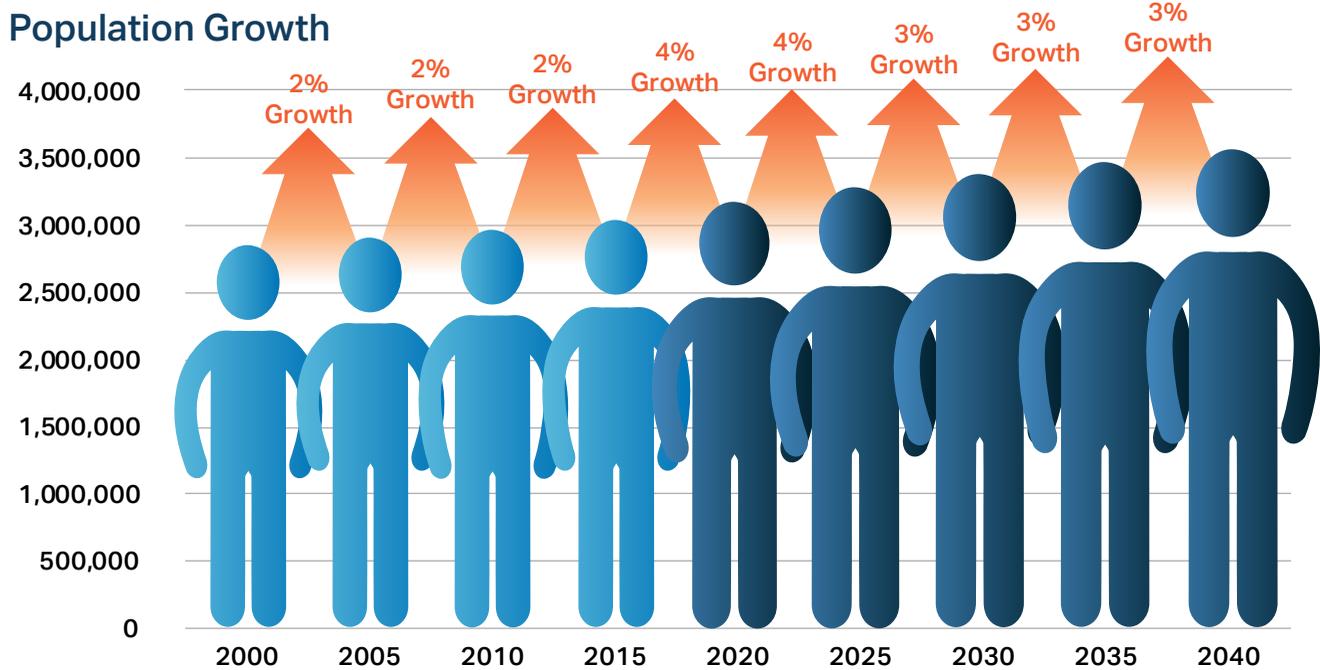
projected to increase by 77 percent by 2040. In order to allow Mississippians to remain in their homes, to “age in place,” the transportation system must consider the mobility and safety concerns of an aging population.

Economy

By 2040, employment is expected to grow by 32 percent from approximately 1.3 million employees in 2015 to 1.7 million employees. Since 1990, employment growth has centered on a few industries, including:

- Leisure and hospitality;
- Education and health services; and
- Professional and business services.

Population Growth



By 2040, employment is expected to grow by 32 percent from approximately 1.3 million employees in 2015 to 1.7 million employees.

Meanwhile the State has witnessed a decline in the manufacturing and logging industries. Over the next 30 years, projected growth industries include construction and health care, among others. Much of the existing and projected demand for the highway system is associated with trucking and related employment activity. By 2040, cargo flow is projected to grow by 61 percent; primarily along State-owned highways near urban centers and ports.

Household income remains lower than the national average; however, the percent increase in the past 30 years has outpaced the national

average. Total personal income is expected to almost double by 2040 and increases in income are correlated with higher levels of travel.

By 2040, cargo flow is projected to grow by 61 percent; primarily along State-owned highways near urban centers and ports.

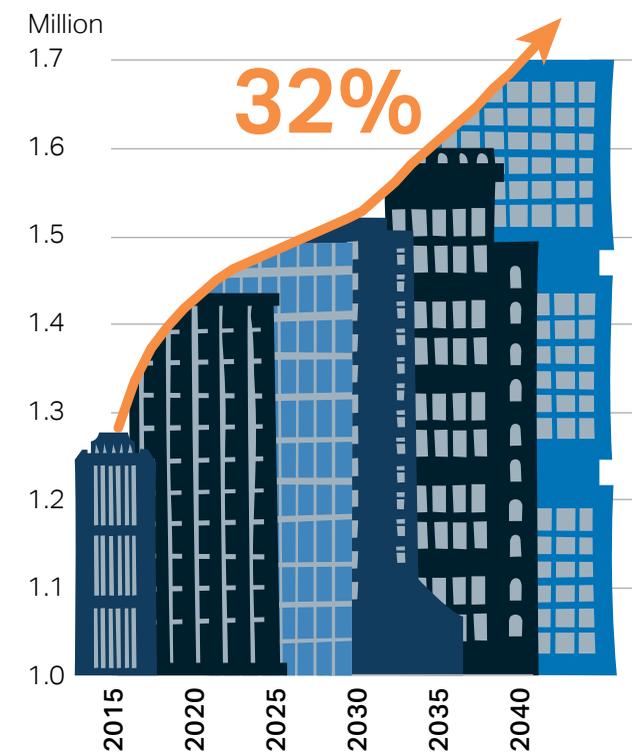
Other Factors Impacting Transportation Demand

ENVIRONMENTAL FACTORS. Prolonged heat waves and an increased number or severity of weather events have the potential to cause short-term but serious impacts to Mississippi’s transportation system. Hurricanes and other high-wind events deposit debris and disrupt roadways and railways. Prolonged or more severe rain events can cause road washouts, landslides, culvert and drainage failures, and bridge scour. Increased temperatures accelerate deterioration of infrastructure, strain electrical grids, increase the cost of transporting perishable goods, and can increase the likelihood of engine and tire failure.

TECHNOLOGICAL ADVANCES. The past few years have seen tremendous expansion in transportation-related technology, including new shared mobility opportunities such as private car ridesharing and increases in alternative fuel vehicles that drive down the cost of driving.

GLOBAL POLICY AND TRANSPORTATION INVESTMENTS. Increasing global trade continues to be fueled by new and expanding trade agreements and the opening of new markets, including Cuba. Perhaps one of the most significant global infrastructure projects is the expansion of the Panama Canal which is projected to divert more Asian-borne trade to U.S. ports in the Gulf of Mexico and on the east coast. Given Mississippi’s geographic location and deep water ports, the State is poised to take advantage of these global opportunities.

Total Employment



Vehicle Miles Traveled (VMT)

Mississippi's total VMT (a measure of roadway usage), has risen steadily in the past, and until recently, has correlated with Gross Domestic Product (GDP) on the national level. The recession of 2007 slowed VMT growth nationwide and in Mississippi. Total VMT peaked in 2008 and per capita VMT has decreased since 2010, though it still remains higher than national averages. Similar to nationwide trends, it is projected that Mississippi's total VMT will rise again but at a slower rate than before the recession, while per capita VMT may remain stable or continue to decrease.

FUNDING TRANSPORTATION IN MISSISSIPPI

How Transportation Funds are Spent in Mississippi

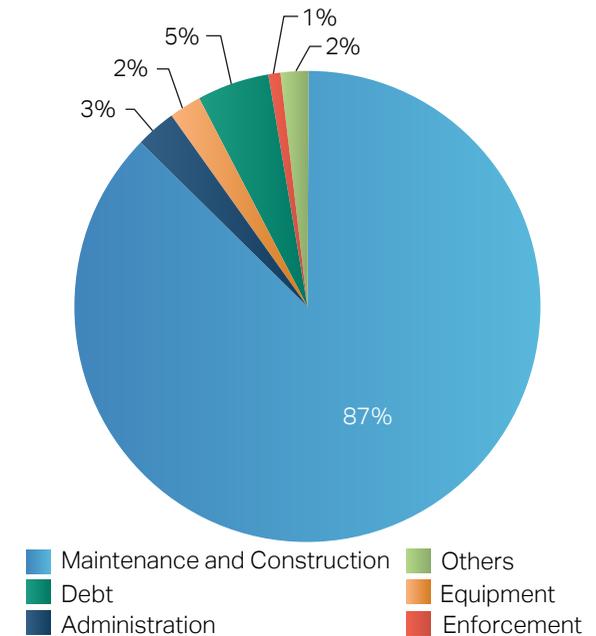
A large majority of the Mississippi Department of Transportation's (MDOT) annual budget is used to support the Construction Program, and about 85 percent of the annual revenues are spent directly on the state's highway systems.

Funding for transportation comes from a variety of state and federal sources. Historically, roughly 50 percent has come from federal sources through the Federal Highway Administration (FHWA) and the Federal Transit

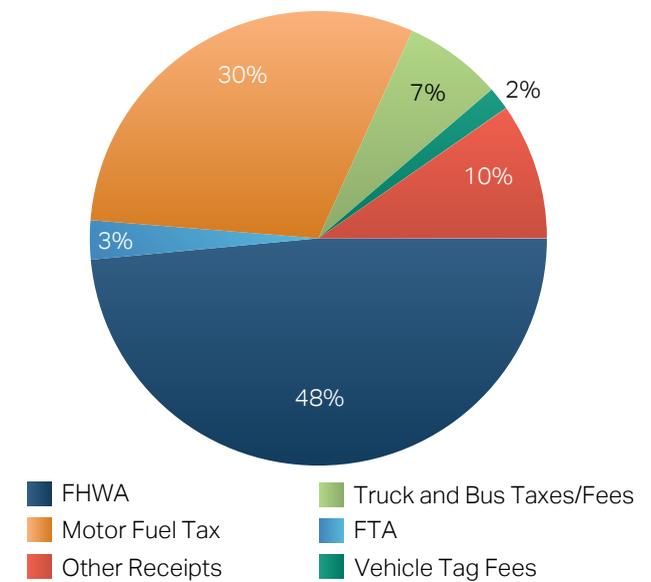
Administration (FTA) and the other half has come from a variety of state taxes and fees. The majority of federal funding is derived from the federal motor vehicle fuel tax. Combined with the state fuel tax, the vast majority of funding for Mississippi's transportation system is dependent on revenues from the fuel pump.

DECLINING REVENUE. However, these gas taxes are not tied to inflation and therefore cannot keep up with rising construction costs and debt service obligations. Further exacerbating the declines from gas tax revenue are the potential decline in per capita VMT, mandated increases in vehicle fuel economy, and a shift toward electric and alternative fueled vehicles. Most federal funding apportionments are statutorily defined, and with uncertainty pertaining to a new or reauthorized transportation bill, there is risk in relying on federal revenues.

How MDOT Spends Transportation Dollars



Where Transportation Dollars Come From

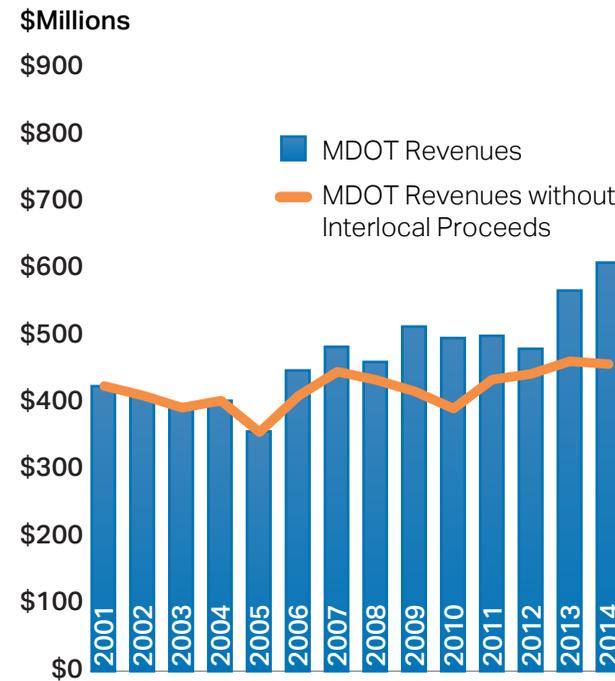


Historical Transportation Funding in Mississippi

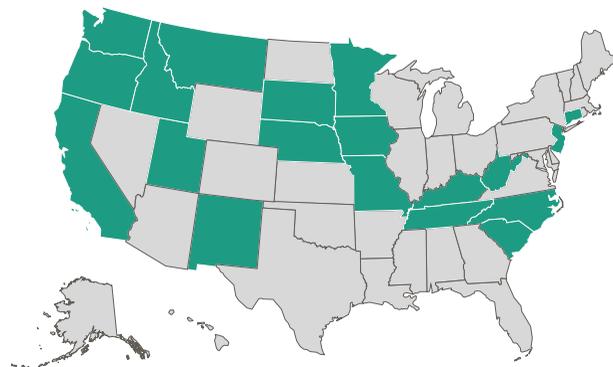
FHWA Obligations to Mississippi



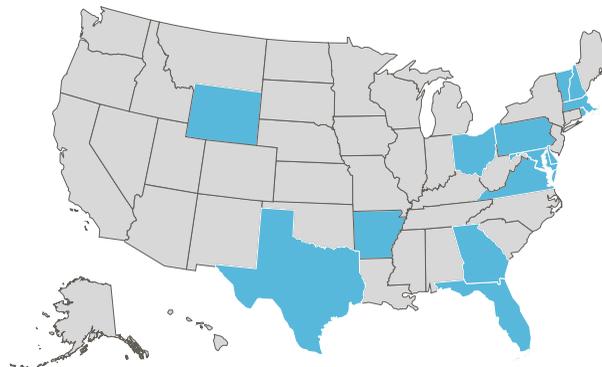
State Revenues to MDOT



States Currently Considering Legislation to Raise Additional Revenue for Transportation



States that Recently Passed Legislation to raise Revenue for Transportation



A large majority of MDOT's annual budget is used to support the Construction Program, and about 85 percent of the annual revenues are spent directly on the State's highway systems.



PATH TO HIGHER REVENUE. Many states have recently combated the expected decline in gas tax and other transportation revenue sources through new legislation. This includes legislation raising the motor fuel tax, vehicle registration fees, and more toll roads, among others. Mississippi is one of the few states that has neither identified additional transportation revenue sources in the past three years nor is currently considering legislation to raise or create new transportation revenue sources.

In Mississippi, the total state gas tax is lower when compared to neighboring states and is well below the national average of about

30 cents per gallon. Mississippi also has lower excise taxes, driver’s license fees, and vehicle registration fees when compared to surrounding states, which impacts the total funds available for transportation.

In Mississippi, the total state gas tax is lower when compared to neighboring states and is well below the national average of about 30 cents per gallon.

Common Transportation Revenue Sources in Surrounding States

REVENUE SOURCE	MISSISSIPPI	ALABAMA	LOUISIANA	ARKANSAS	TENNESSEE
STATE GAS TAX (CENTS PER GALLON)	18.79	20.87	20.01	21.80	21.40
EXCISE TAX ON VEHICLE SALES ^a	5%	2%	4%	6.5%	7%
NONCOMMERCIAL DRIVER'S LICENSE FEE (DOLLARS PER YEAR)	\$6.00-\$6.38	\$9.06	\$5.38 -\$6.38	\$5.00	\$3.90
VEHICLE REGISTRATION FEE (PASSENGER CAR)	\$14.00	\$23.00	\$10.00 ^b	\$6.50-\$16.25	\$24.00

^a Excludes other county, city, and local fees.

^b Minimum.

MULTIPLAN 2040 – A LONG-RANGE PLAN FOR MISSISSIPPI’S MULTIMODAL TRANSPORTATION SYSTEM

Overview

The Mississippi Department of Transportation’s (MDOT) Unified Long-Range Transportation Infrastructure Plan 2040 (MULTIPLAN 2040) is Mississippi’s federally compliant Long-Range Transportation Plan (LRTP). This plan is a continuation of statewide planning efforts and is an update to the most recent MULTIPLAN 2035 released in 2011. MULTIPLAN 2040 sets the stage for MDOT’s strategic transportation investment over the next 25 years in Mississippi.

Consistent with the previous three updates, the MULTIPLAN 2040 update leverages other statewide, regional, and local planning efforts and

Incorporating Existing Plans

- Statewide Freight Plan
- Statewide Rail Plan
- Statewide Ports and Waterways Assessment
- Statewide Aviation Economic Impact Study
- Transit Plans and Studies
- Pedestrian and Bicyclist Plans and Studies
- Strategic Highway Safety Plan
- Intelligent Transportation Systems Strategic Business Plan

includes close collaboration with the State’s four metropolitan planning organizations (MPO): the Central Mississippi Planning and Development District, the Gulf Regional Planning Commission, the Hattiesburg-Petal-Forrest-Lamar MPO, and the Memphis Urban Area MPO, a cross-border MPO that includes portions of north Mississippi. MULTIPLAN 2040 advances long-range planning in Mississippi as required by the federal transportation bill, Moving Ahead for Progress in the 21st Century (MAP-21). MAP-21 requires an increased emphasis on performance-based planning and target setting. MULTIPLAN 2040 is an actionable plan, emphasizing unmet funding needs compared to available resources, comparing strategies based on transportation systems impacts and how they address systemwide goals, and presenting a plan of action for the State of Mississippi.

Transportation investment in Mississippi is guided by three overarching program themes: Preservation, Modernization, and Expansion.



Preservation

To maintain Mississippi’s existing infrastructure and assets



Modernization

To upgrade existing assets to current design standards and technologies

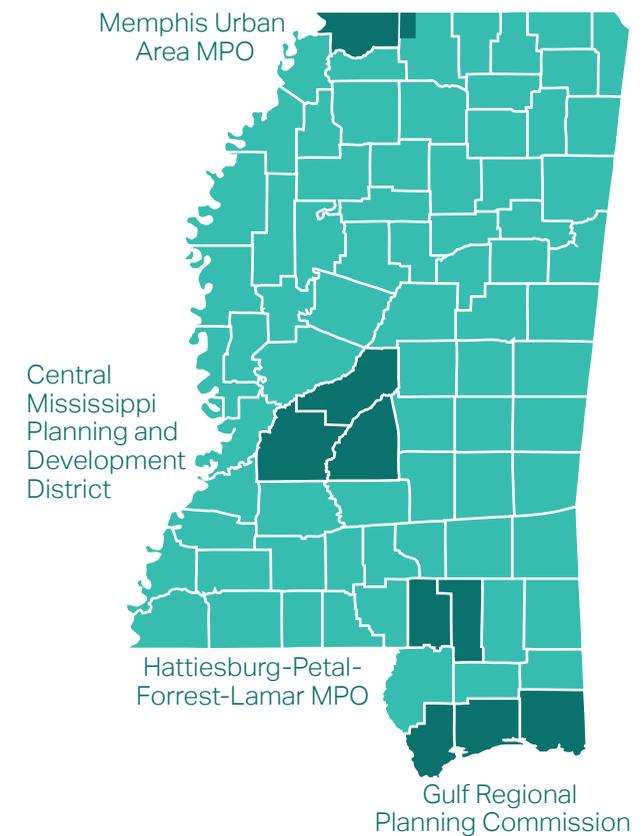


Expansion

To provide new capacity to accommodate future growth

Declining revenues and increases in population and employment mean that Mississippians must strategically prioritize investments. This means tough decisions will have to be made. MULTIPLAN 2040 outlines the overall system needs, the financial constraints, and the plan for going forward to achieve the State’s transportation goals. Three levels of investment were analyzed:

1. Maintain the Existing System;
2. Meet Minimum Performance Targets; and
3. Meet all Needs.



PERFORMANCE-BASED PLANNING

Measuring progress toward goals is a critical element of a long-range planning process. It provides a level of transparency and objectivity that is critical for plan development. Performance-based planning takes place within an overall Performance Framework, which is comprised of five basic elements. Performance-based planning has become more common as states face increasing calls for accountability. Additionally, to comply with MAP-21, the United States Department of Transportation (U.S. DOT) requires states to establish and make progress toward targets for each goal area. Associated monitoring and reporting requirements that ensure overall accountability in demonstrating performance are also required. As part of the MULTIPLAN 2040 update, MDOT and its partners established goals, identified performance measures, set reasonable targets, used a tradeoff analysis to determine a preferred funding allocation, and made plans to measure and track results.

Performance-Based Planning Framework Elements



OUTREACH

Public involvement is an integral part of long-range planning. The general public, MDOT partners, and other stakeholders provide important insight into local and regional concerns and priorities. As part of the MULTIPLAN 2040, MDOT staff and the project team coordinated outreach efforts with the State's three MPOs and the Memphis MPO of Tennessee which includes parts of northern Mississippi, to ensure consistency in multijurisdictional planning efforts. The goal of the outreach process was to understand what Mississippians want and need from the transportation system by encouraging participation from a diverse group of stakeholders and providing opportunities to contribute through a wide variety of traditional and web-based platforms. The following section describes some of the key outreach activities and input received. A full list of outreach goals and activities are included in Annex 6, Public Outreach.

Establishing Priorities

The MULTIPLAN 2040 solicited input from a varied group of stakeholders through targeted outreach and advisory committees, a key stakeholder mailing list, a public engagement website, meetings, and a statewide public survey. Outreach efforts employed a three-pronged approach – the general public, key business and public stakeholders, and MDOT management and leadership.

General public involvement process included about 20 public workshops with over 250 participants and an on-line website and forum with over 6,000 unique visitors. To encourage

people to express their thoughts, the planning team offered the following three activities during public meetings and on-line:

- **Rate our transportation system:** Participants rated the condition of various transportation categories.
- **Transportation budget priority:** Participants used a form to express how they felt our State's transportation dollars should be spent; and
- **Transportation improvement needs:** Participants reviewed maps depicting State-maintained highways, multimodal facilities and the MPO areas and provided written comments identifying transportation needs or issues.

The goal of the outreach process was to understand what Mississippians want and need from the transportation system by encouraging participation from a diverse group of stakeholders and providing opportunities to contribute through a wide variety of traditional and web-based platforms.

General Public

Public input was solicited through a statewide statistically valid survey that garnered over 1,200 responses, an interactive website that continuously updated the public and solicited feedback, and two rounds of public meetings held at various locations throughout the State.



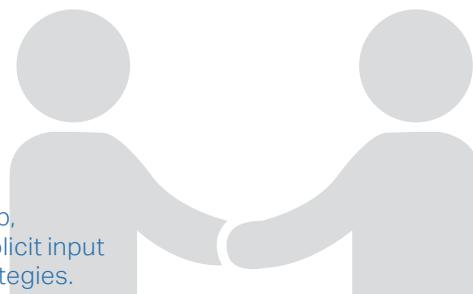
Key Business and Public Stakeholders

Two stakeholder meetings solicited input on goals, needs, priorities, and investment strategies.



MDOT Management and Leadership

Two visioning meetings were conducted with MDOT leadership, including the Commissioners and the Executive Director, to solicit input and feedback on goals, priorities, targets, and investment strategies.





Additionally, a statewide survey was conducted to capture general public feedback. The Mississippi Long-Range Plan Survey identified key transportation needs and issues in the State's transportation system. The statewide survey gathered information from over 1,200 respondents, on perceptions of Mississippi residents regarding the State's transportation network, including overall performance, accessibility, safety, modes used, features in need of improvement and future transportation challenges.

Key Business and Public Stakeholders were asked to participate in a survey to identify their priorities for limited funding. Stakeholders were also asked to let planners know how they would prioritize our State's transportation goals. Three broad goals were provided – maintain existing, expand as needed, and invest in multimodal –and participants were asked to identify "what is more important."

Thousands of people responded either in person, through on-line tools, or survey mechanisms, providing valuable feedback and guidance on which strategy most appropriately meets the needs of Mississippi residents and businesses. Overall the general public placed a clear priority on maintaining the current transportation

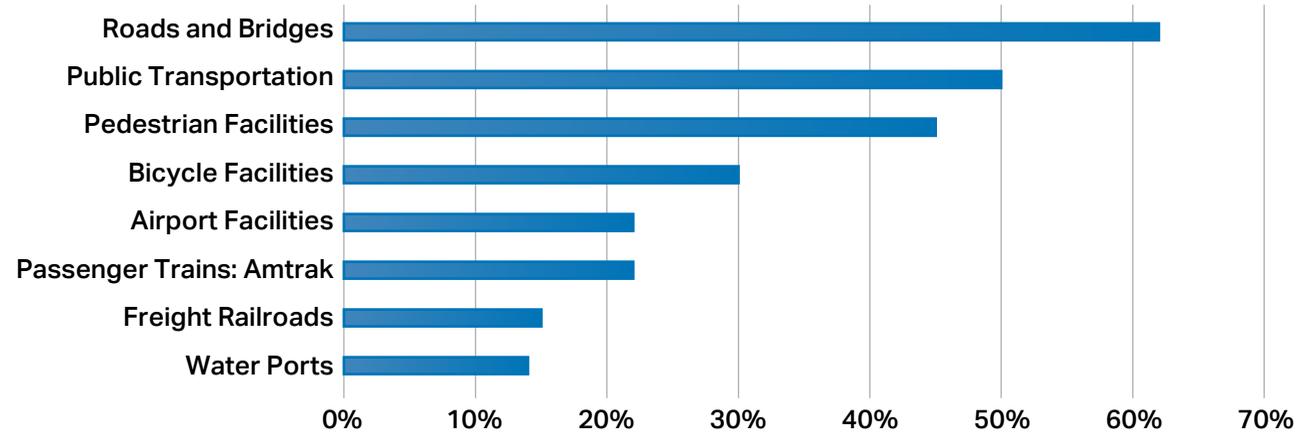
infrastructure, especially the State's roads, highways, and bridges. Public transportation, pedestrian facilities, and safety were also key concerns, though these facilities were generally used less frequently. Rural respondents were more likely to prioritize the quality and connectivity of roads, while urban respondents prioritized safety and congestion reduction. Respondents were also concerned about the ability of the State government to raise enough funds to meet the maintenance and infrastructure needs of the transportation network.

Key Business and Public Stakeholders meetings allowed targeted feedback. These comments focused more on economic development, fiscal health of the system, and connections to other regions and nations through Mississippi's network of rail, air, and waterways. Stakeholders prioritized investments in areas where jobs are located, and were concerned about the ability of the State to leverage its ports and intermodal capabilities. Business stakeholders felt that expansion investments should only be made when funding is available; otherwise, the focus should be on maintenance and preservation. For example, in a limited-funding strategy, stakeholders preferred repave/repair efforts over widening congested roads.

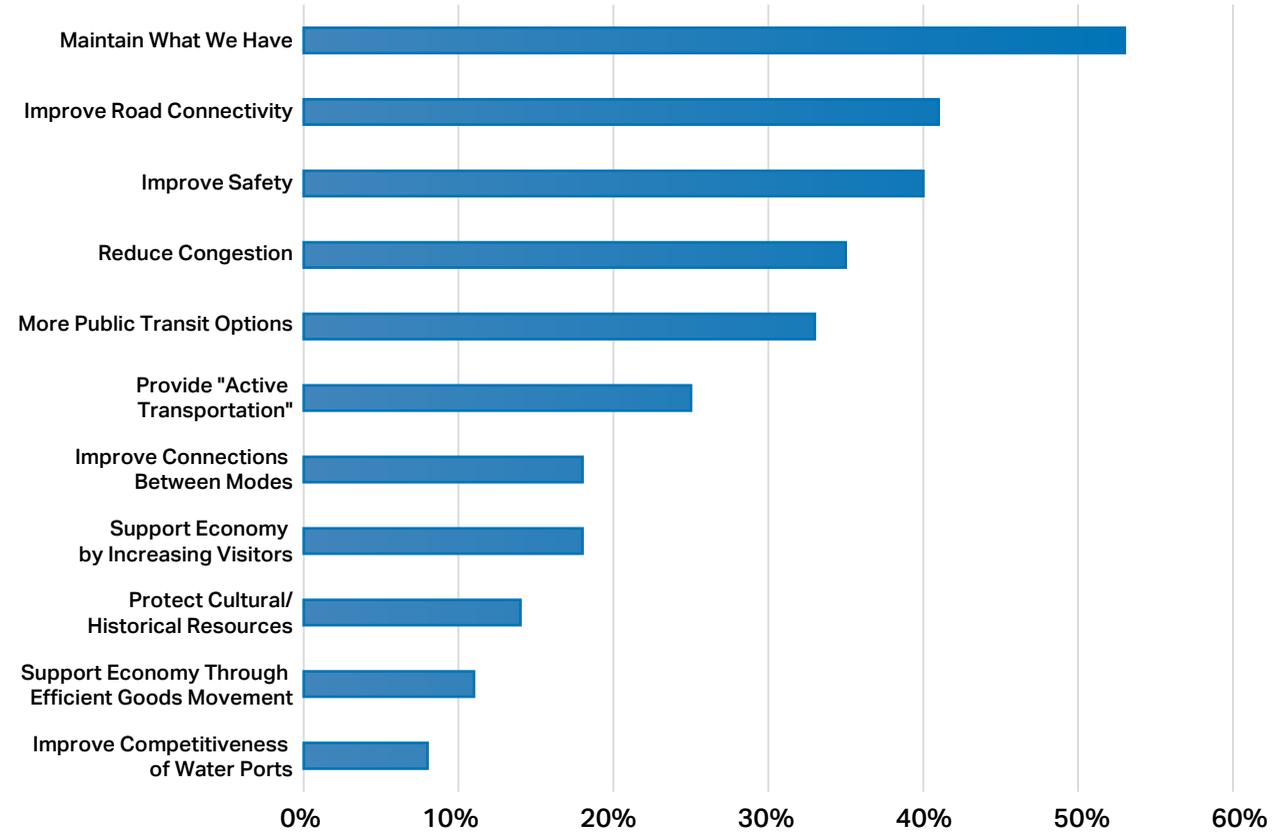
MDOT Management and Leadership met several times through the process. During these meetings the team used the information gathered from the general public and key business and public stakeholders and general planning expertise to establish goals, system performance measures, and targets to help make goals and objectives meaningful to all Mississippians. The MULTIPLAN 2040 goals, performance measures, and targets are used to set the direction of transportation over the next 25 years.



What We Heard *Facilities Needing Improvement*



What We Heard *Overall Transportation Priorities*



A series of goals identified the focus of Mississippi's future transportation network. Many of Mississippi's transportation goals directly relate to one or more national transportation goals under MAP-21. The seven statewide transportation goals established by MDOT and reaffirmed through MULTIPLAN 2040 are described on the following page.

MULTIPLAN 2040 GOALS



Safety



Creating a safe transportation network for all users is a vital goal of MULTIPLAN 2040. With an average of 70,000 crashes per year, 28 percent of which result in a fatality or serious injury, MDOT, local governments, and Mississippians all need to collaborate on improving the safety of the roadways. Specific strategies to improve systemwide safety focus on the “4 Es” of safety: Engineering (infrastructure improvements), Education (awareness campaigns), Enforcement (working with local authorities), and Emergency services (reducing response times).

Maintenance and Preservation



Deferring maintenance of the existing transportation network can lead to safety concerns, increased overall maintenance costs, and increased transportation costs for businesses and motorists. The existing transportation infrastructure will need repair and upkeep throughout the next 25 years, which includes the State-owned and total system of roadways, bridges, transit assets, and freight facilities. Participants and stakeholders of MULTIPLAN 2040 agreed that maintenance should be prioritized over expansion.

Accessibility and Mobility



Mobility and accessibility is defined as the ease, ability, and quality of travel to and from destinations. Access to community resources, employment opportunities, and commerce can strengthen a community, while excessive traffic congestion and unreliable transportation system can have negative impacts on the State’s residents and businesses.

Economic Development



Transportation is vital for Mississippi businesses, allowing the commerce and movement of goods to, from, and throughout the State. A strong transportation network supports economic development by decreasing the cost of doing business while improving efficiency. MULTIPLAN 2040 supports the goal of improving the transportation network to increase economic development opportunities and to meet the needs of existing businesses.

Environmental Stewardship



Transportation has a notable impact on the overall natural and human environment. Reducing that impact is an important goal of MULTIPLAN 2040. Transportation sources comprise approximately 27 percent of the total greenhouse gas emissions nationwide, contributing to more air quality concerns, and higher healthcare costs. The expansion and modernization of

the transportation network should be mindful of its effect on the environment and attempt to mitigate short- or long-term impacts.

Awareness, Education and Cooperative Processes



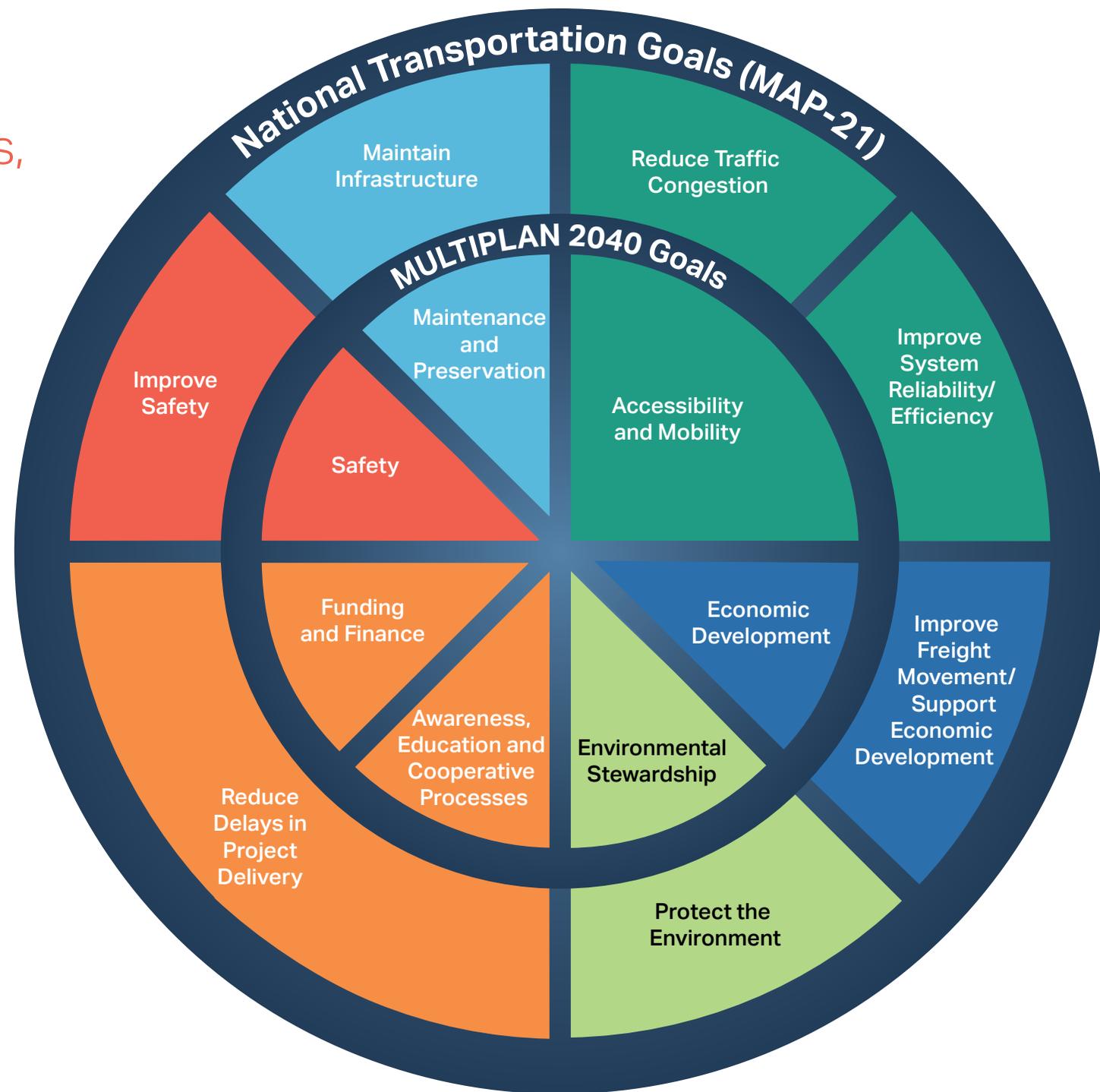
Efficient and successful transportation relies on effective partnerships and cooperative processes across jurisdictions and modes. MULTIPLAN 2040 supports increasing the awareness of the transportation systems’ benefits and unmet funding needs, as well as to encourage cooperation and resource sharing among public officials, stakeholders, and transportation professionals to improve overall project delivery and system performance.

Funding and Finance



A stable and appropriate funding source for transportation infrastructure is required to ensure adequate maintenance, modernization, and expansion of the transportation network. Without sufficient funding to meet the most critical needs, funding allocation should benefit the greatest number of residents, represent the desires of stakeholders, and help to further statewide transportation goals. Additional revenue and financing opportunities should be explored when possible, and funding allocation should incentivize cost efficiency and timely project delivery.

To ensure compliance with federal requirements, the goals of MULTIPLAN 2040 align with those in MAP-21. The goals are consistent with previous MULTIPLAN updates and represent a coherent and comprehensive vision for transportation in Mississippi.



WHAT'S IN THE PLAN

Section 2

Presents a series of snapshots of the current condition, usage, and investment needs for the State's primary multimodal transportation assets.

Section 3

Compares the funding needs to the available revenue and presents the performance tradeoffs of alternative funding strategies.

Section 4

Puts forth two strategies for going forward – one constrained by projected funding levels under existing revenue sources and one that provides adequate revenue for maintaining and strengthening Mississippi's transportation system – and presents the economic implications of each.

The remainder of this Plan describes the current and future state of Mississippi's transportation system and how MDOT will strategically allocate resources to address the challenges and strive to meet its transportation goals, in light of a financially constrained future.

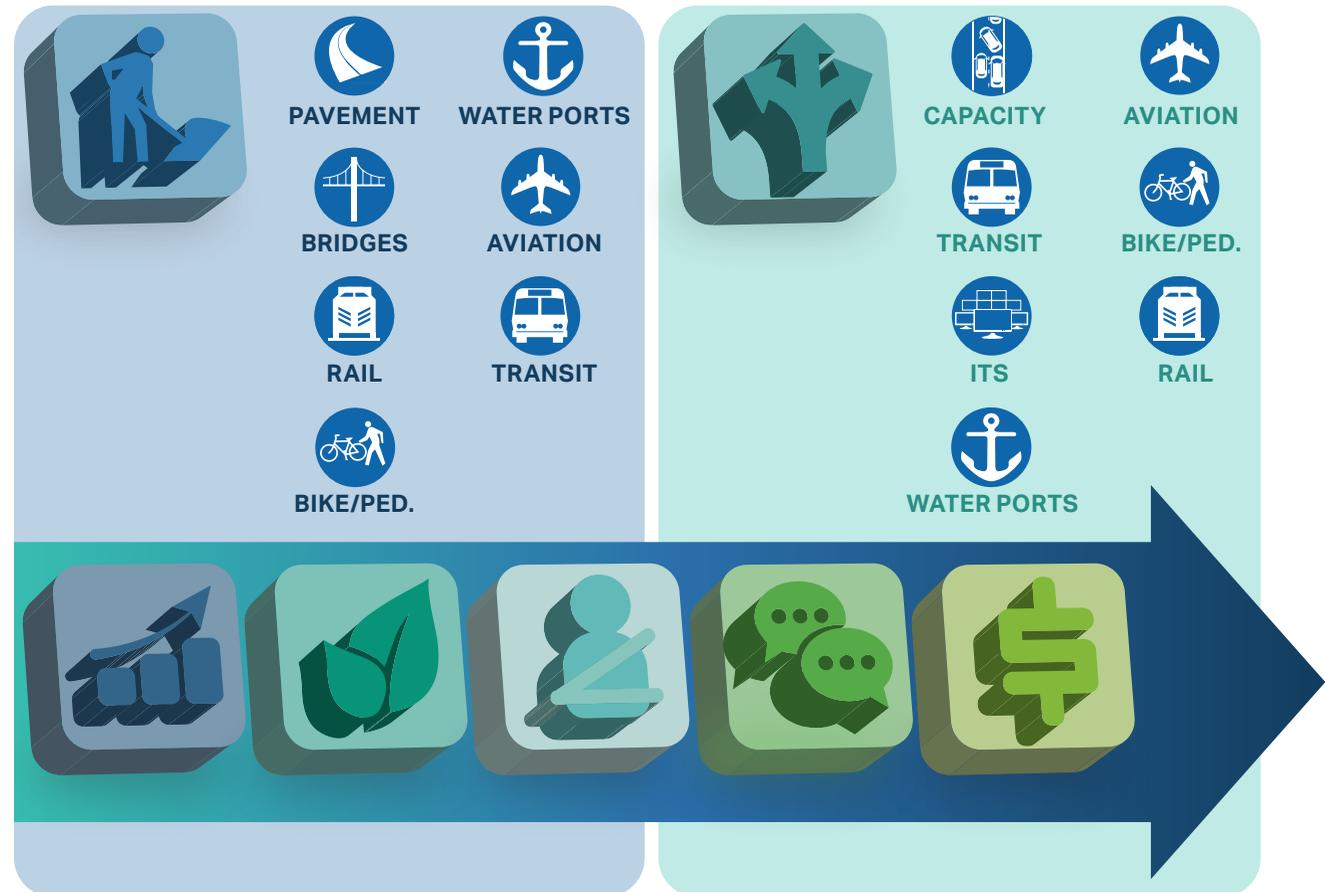


SECTION 2. OVERVIEW OF MISSISSIPPI'S TRANSPORTATION ASSETS AND NEEDS

MULTIPLAN 2040 includes a comprehensive assessment of the State's multimodal transportation system. The assessment is a key component of the MDOT's long-range transportation planning effort that is used to understand the current and future needs, set performance targets and determine investment needs.

Meeting MULTIPLAN 2040 Goals – The needs assessment was undertaken with the MULTIPLAN 2040 goals in mind. Each capital program was evaluated based on its role in meeting the goals. For example, the preservation and maintenance goal was a key theme for pavement, bridges and multimodal programs while the accessibility and mobility goal was a key theme for the capacity, ITS, and multimodal program. Some goals, such as safety, environmental stewardship, economic development, funding and finance, and awareness, education, and cooperative processes cut across all of the programs.

Using the MULTIPLAN 2040 Goals to Assess the Needs



For each capital program, the following pages summarize information gathered and analyzed as part of the MULTIPLAN 2040 planning process, some of which is described in more detail in later sections. For each capital program, the following snapshots summarize:

- Key system statistics including condition and demand;
- Performance measures and targets;

- Alternative levels of investment needs to meet performance targets;¹
- Investment strategies based on tradeoffs between funding and performance;
- A summary of the opportunities and challenges; and
- Economic development impacts of program investment.

¹ All dollar values are expressed in 2014\$.

PAVEMENT



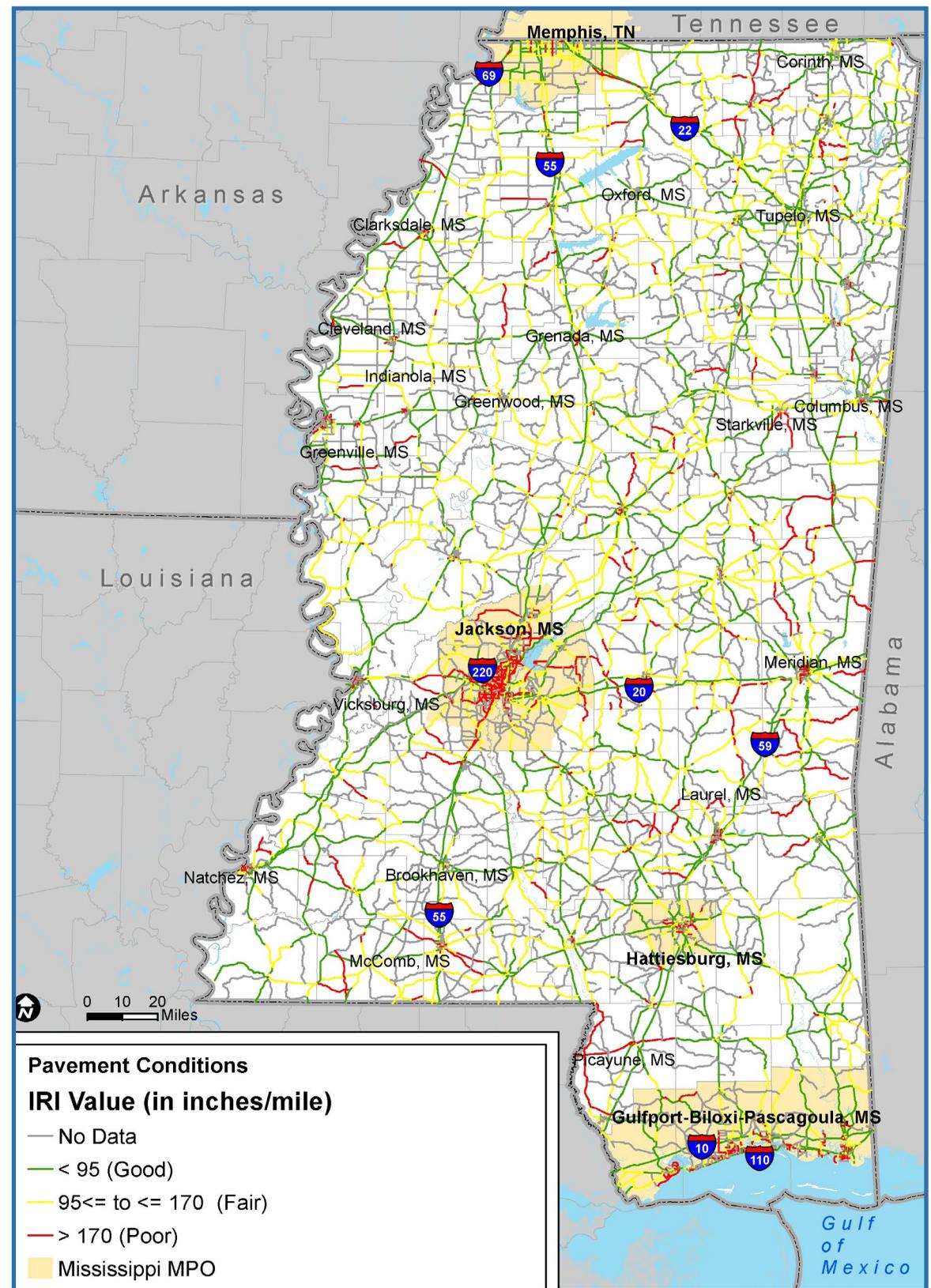
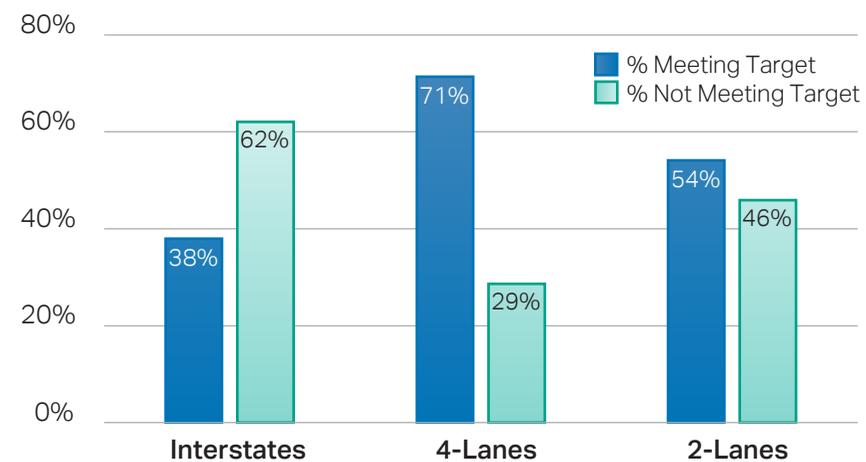
There are about 75,000 miles of roadways comprising 157,000 lane-miles in Mississippi. The State-owned system consists of the most critical roadways, including all of the interstates and most of the National Highway System (NHS).

FUNCTIONAL CLASSIFICATION	MDOT	LOCAL	OTHERS	TOTAL
INTERSTATE	700	0	0	700
OTHER FREEWAYS AND EXPRESSWAYS	75	2	0	77
OTHER PRINCIPAL ARTERIAL	2,590	246	0	2,836
MINOR ARTERIAL	3,674	840	313	4,827
MAJOR COLLECTOR	3,613	9,882	42	13,536
MINOR COLLECTOR	66	2,256	33	2,356
LOCAL	181	49,923	681	50,784
TOTALS	10,899	63,148	1,069	75,116
	15%	84%	1%	

Although the State owns only **18 percent** of the centerline miles, **60 percent** of the passenger vehicle miles traveled and **90 percent** of the truck miles traveled.

Pavement conditions are assessed using a variety of factors. The final measurement assigns either a Good, Fair, or Poor condition to each roadway segment. Currently, about 60 percent of the State-owned lane-miles are in "Fair" or better condition. However, many segments are approaching the end of their engineered life and will need minor or major rehabilitation over the next 25 years.

Pavement Condition of State-Owned System



Disclaimer: This map is for planning purposes only. Please contact MDOT for more information.

Note: Pavement conditions and investment needs will be updated once the MDOT Pavement Management System, currently under development, is completed.



Pavement Performance Targets

Interstates	NHS Non-Interstates
75 percent in Good or better condition (95 percent in Fair or better using MAP-21 rating)	75 percent in Fair or better condition



Total Needs Through 2040

Maintain Existing Conditions \$13,775 Million
Meet Minimum Performance Target \$17,350 Million



Investment Strategy

Type of Roadway	Expected Constrained Funding Strategy Annual Spending – \$372 million		Adequate Funding Strategy Annual Spending – \$694 million	
	Spending (Millions)	Performance Pavement Condition	Spending (Millions)	Performance Pavement Condition
Interstates	\$244.0	MAP-21 target	\$380.0	75 percent Good
NHS Non-Interstates	\$119.0	70 percent Fair or better	\$161.7	75 percent Fair or better
State-Owned Non-NHS 4-lanes	\$8.5	75 percent Fair or better	\$8.5	75 percent Fair or better
State-Owned Non-NHS 2-lanes	\$0.0	25 percent Fair or better	\$143.8	75 percent Fair or better

Opportunities

- Extend life of the asset.
- Reduce cost of reconstruction.
- Safer roadways.
- Reduce cost of driving and improve quality of the ride.
- Support economic development.

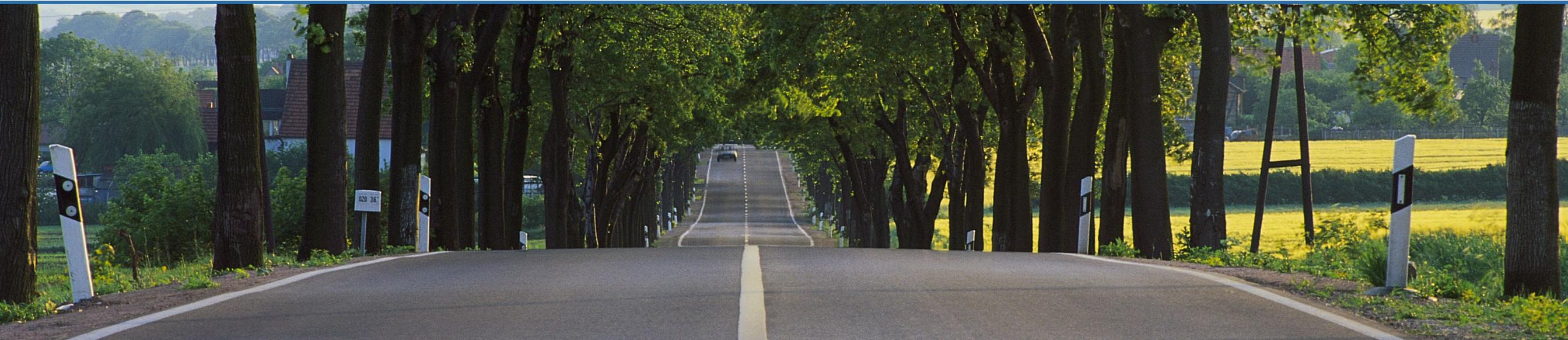
Challenges

- Growth in vehicle miles traveled over the next 25 years.
- Significant portion of the State transportation budget.
- Aging infrastructure costs more to maintain.



Economic Impacts

From 2016 to 2040	GSP (Million \$2014)	Income (Millions \$2014)	Jobs
Expected Funding Strategy	(-\$79,302)	(-\$94,241)	(-48,338)
Adequate Funding Strategy	\$43,718	\$63,933	29,191



BRIDGES

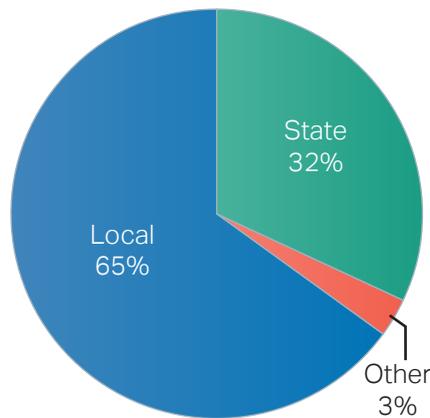


Bridges are a necessity for traversing waterbodies, railroads, elevation changes, and other roadways.

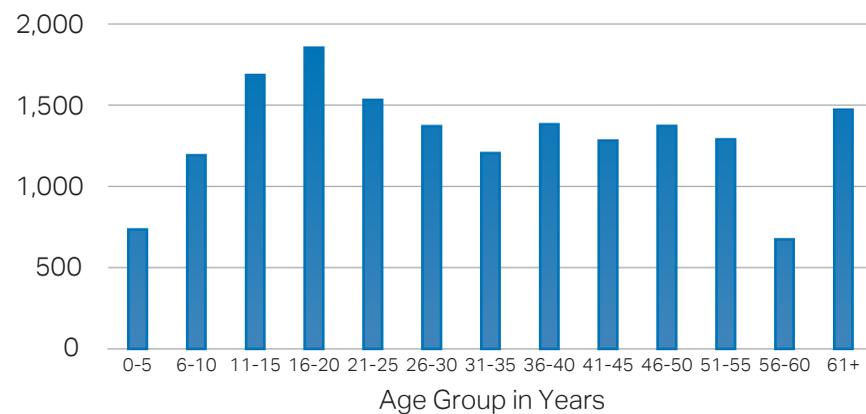
Mississippi has a total of:

- 16,631 bridges.
- 5,775 State-owned bridges.
- 4 percent State-owned bridges are structurally deficient.
- 12 percent State-owned bridges are functionally obsolete.
- 198 State-owned bridges are posted.

Bridge Ownership in MS

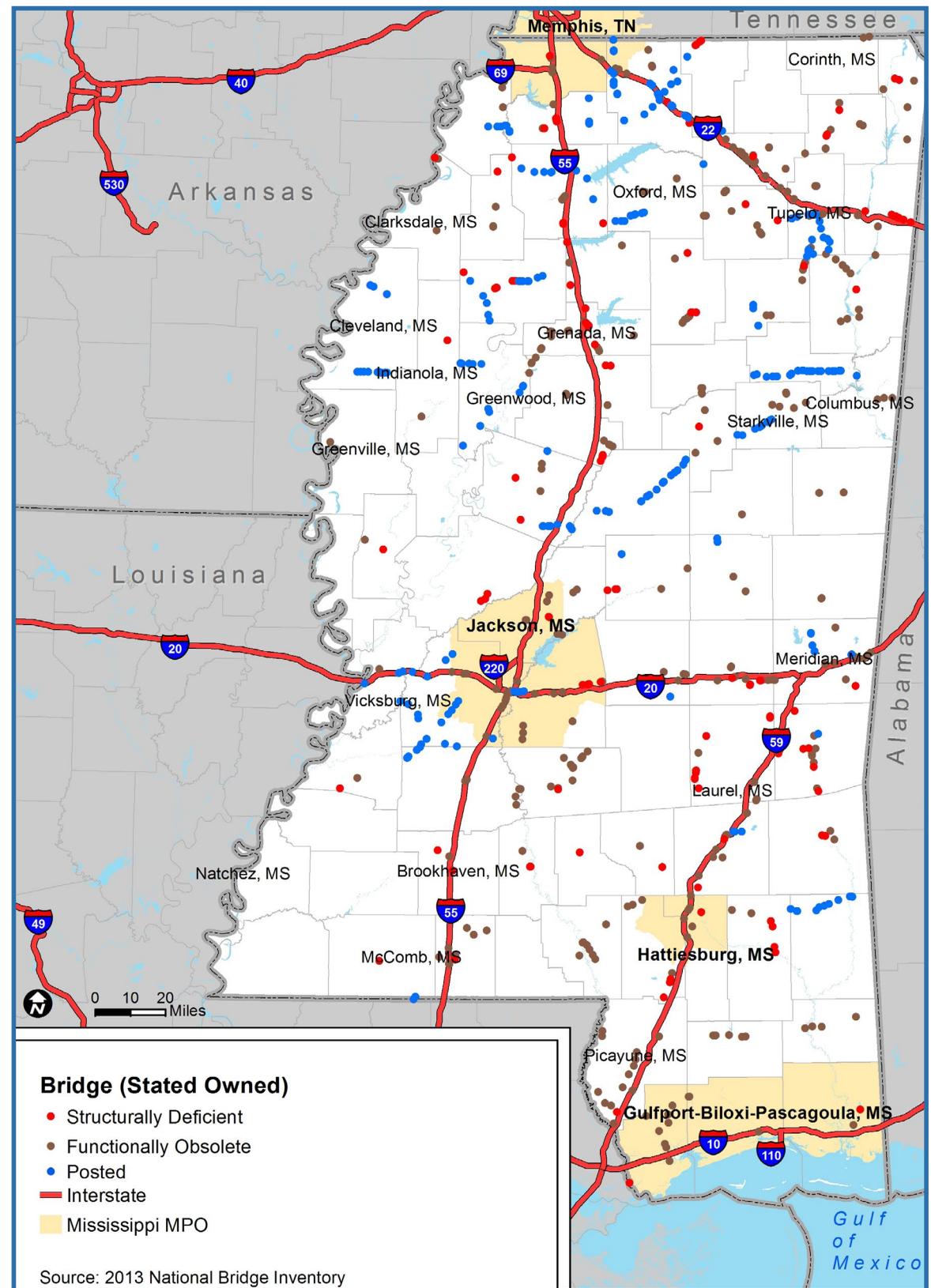


Bridges by Age



A **Structurally Deficient (SD)** bridge does not imply that a bridge is unsafe, but that the bridge requires additional repair, maintenance, and specific vehicle restrictions to remain in service. These bridges will require major rehabilitation or replacement in the near future.

A **Functionally Obsolete (FO)** bridge also does not imply that a bridge is unsafe, but that the bridge does not meet current design standards. However, they do not have sufficient lane and shoulder widths to meet the current volume of traffic. Addressing functional deficiencies may require the widening or replacement of the structure.



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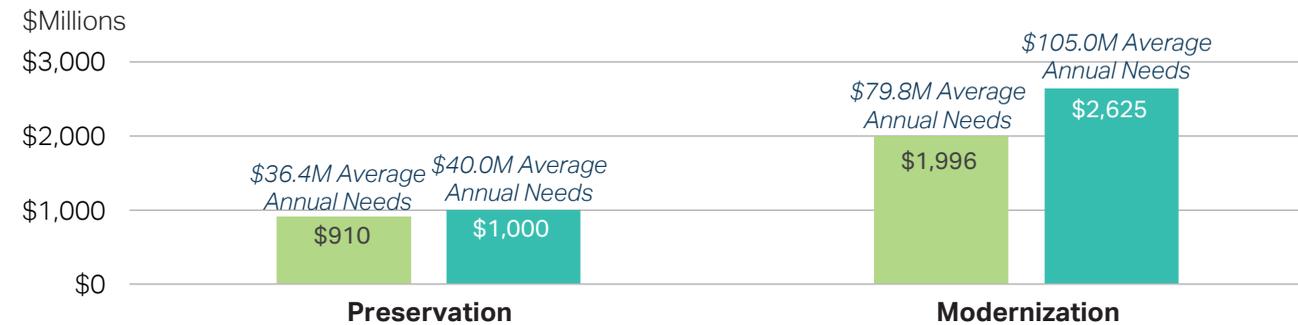
Bridge Performance Targets

MAP-21 Targets	Existing Conditions	Mississippi Targets
90 percent not SD on NHS system	98 percent not SD	98 percent not SD and posted bridges replaced



Total Needs Through 2040

Maintain Existing Conditions \$2,906 Million
Meet Minimum Performance Target \$3,625 Million



Investment Strategy

Expected Constrained Funding Strategy		Adequate Funding Strategy	
Spending (Millions)	Performance	Spending (Millions)	Performance
\$116.2	90 percent not SD and posted bridges replaced	\$145.0	98 percent not SD and posted bridges replaced

Opportunities

- Extend life of the asset.
- Reduce cost of reconstruction.
- Safer roadways.
- Reduce cost of driving and improve quality of the ride.
- Support economic development.

Challenges

- Growth in vehicle miles traveled over the next 25 years.
- Significant portion of the State transportation budget.
- Aging infrastructure costs more to maintain.



Economic Impacts

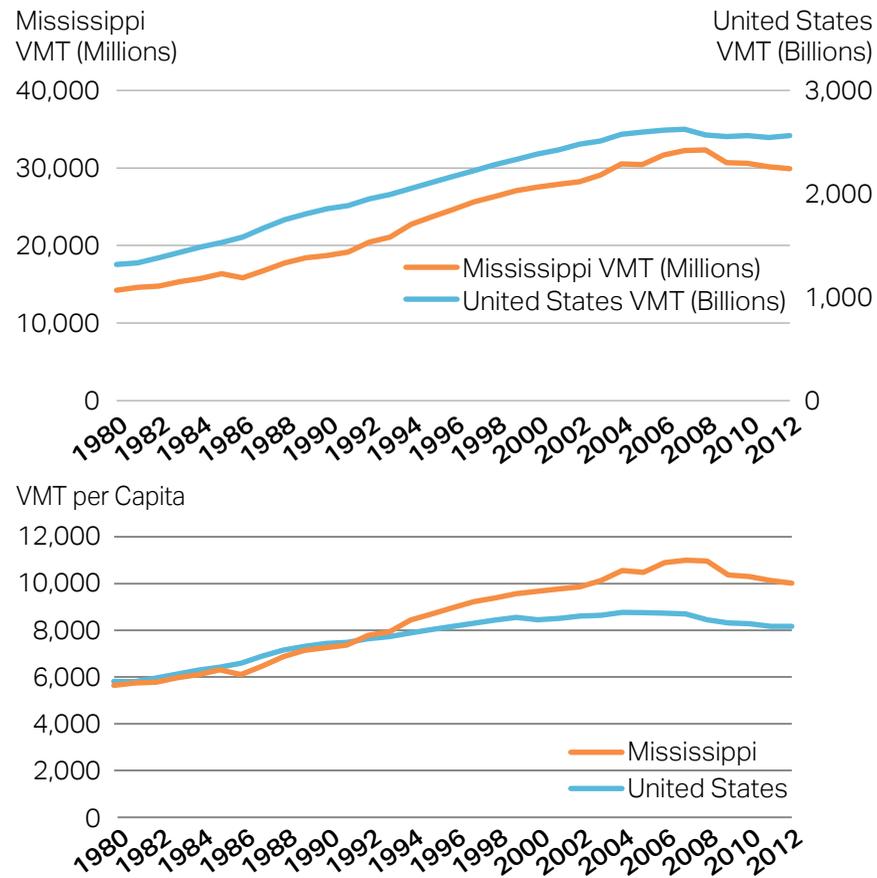
- Traffic diverted around posted bridges and functionally obsolete bridges leads to higher transportation costs.
- Deficient bridges can impact marketability of land for economic development.
- Bridge closures can cut off access for people and freight.



CAPACITY

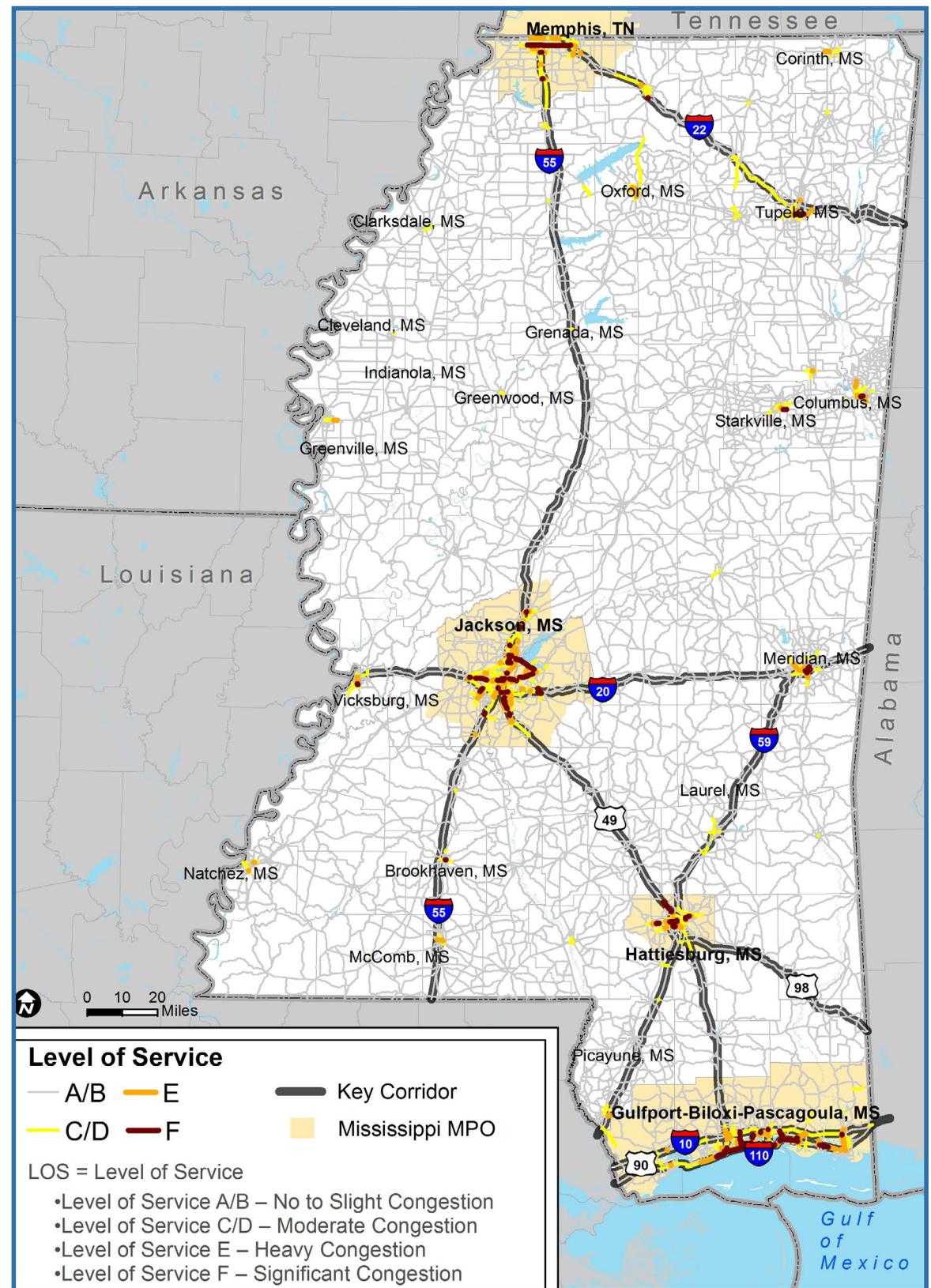


Congestion delays and unreliable travel times arise as traffic volumes increase, costing time and money. Controlling congestion requires maintaining enough roadway capacity to meet the demands of a growing population and economy. The demand for roadways is measured by Vehicle Miles Traveled or VMT. The growth in VMT per capita in Mississippi has outpaced the national average since the early 90s. VMT are projected to continue to grow by one percent per year on average.



One measure of Mississippi's highway capacity is a roadway's level of service (LOS). LOS is a measurement of a roadway's traffic flow, comparing the capacity, or the maximum amount of traffic that is able to travel on a facility, to the daily volume.

The State-owned facilities include the most heavily traveled corridors:





Capacity Performance Targets

Existing Conditions	Mississippi Targets
95 percent at LOS D or better	100 percent urban at LOS of D or better; 100 percent rural at LOS of C or better



Total Needs Through 2040

Maintain Existing Conditions \$1,517 Million
Meet Minimum Performance Target \$3,950 Million



Investment Strategy

Expected Constrained Funding Strategy		Adequate Funding Strategy	
Spending (Millions)	Performance	Spending (Millions)	Performance
\$0.0	Targets not met, increase of 99,600 daily hours of delay	\$158.0	Add capacity to meet targets on entire State-owned system

Opportunities

- Mitigate congestion, reduce costs, and improve safety in growing regions.
- Direct and nearby access to freight hubs in Memphis, New Orleans, and Gulfport.

Challenges

- Increased cost of preservation leaves no funding for capacity.
- Increased safety along primary highway corridors, especially Tier II freight highway corridors.



Economic Impacts

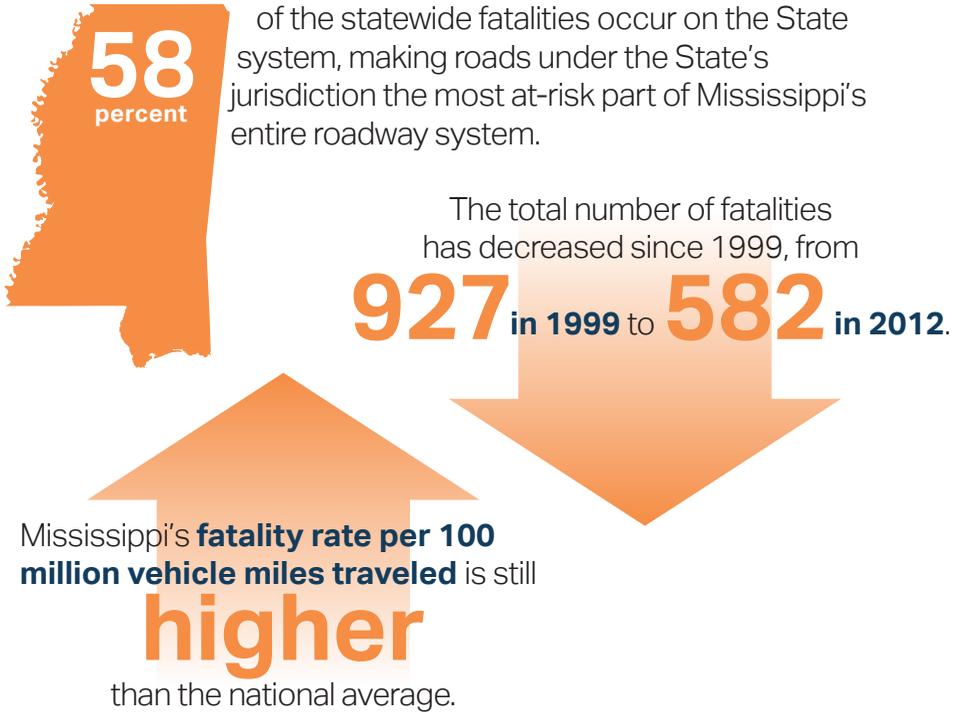
Failing to add needed capacity to the State-owned system will lead to the following impacts in 2040:



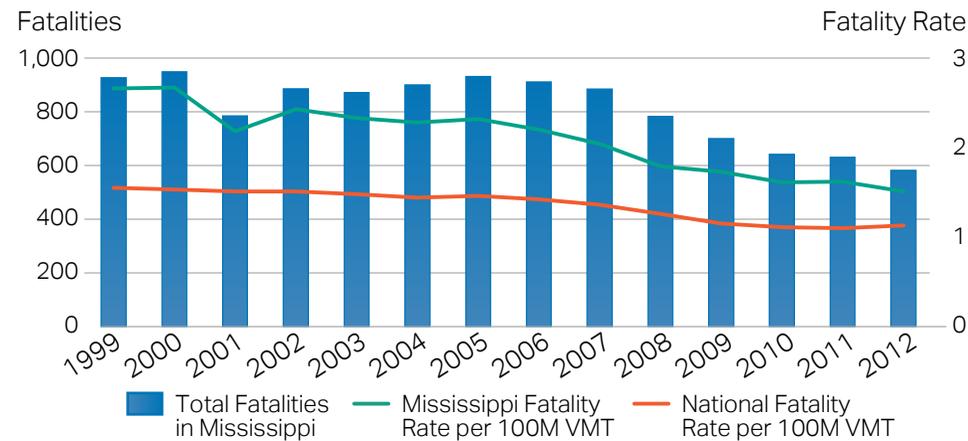
SAFETY



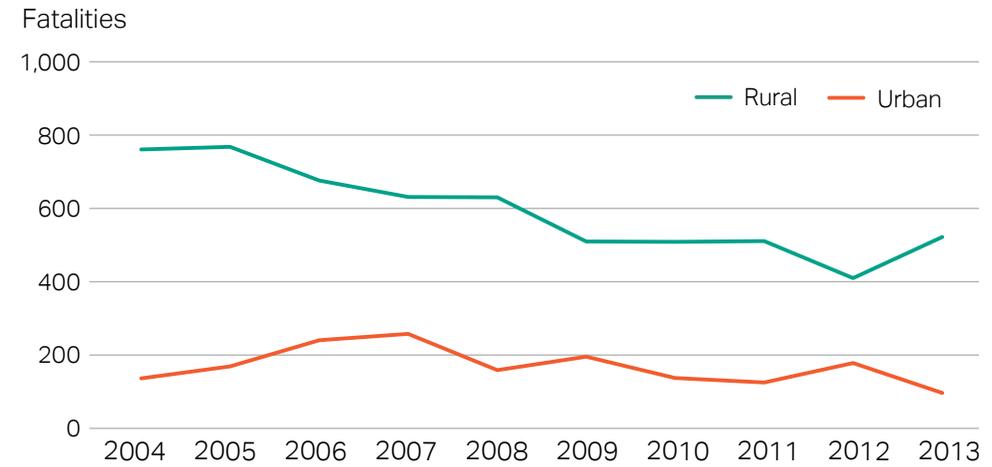
Highway safety is central to MDOT's mission. While significant gains have been made in making the State's roadways safer, there is a long way to go to meet MDOT's goal of Toward Zero Deaths.



Fatalities by Year and Fatality Rate per 100 Million Vehicle Miles Traveled (VMT)



Fatalities in Urban and Rural Areas



The new Strategic Highway Safety Plan (SHSP) includes a mission statement for safety:

"Save lives and reduce injuries by using partnerships to coordinate and integrate education, enforcement, engineering, and emergency response initiatives"

The MDOT's Safety Section generates a list of Highway Safety Improvement Program (HSIP) candidate projects using a Safety Analysis Management System (SAMS) but also seeks input from sources within and outside MDOT. Locations selected for HSIP funding go through a prioritization process before being selected. Safety projects that are programmed for funding have, at a minimum, one of the following characteristics:

- A severity index above an acceptable level.
- Elevated crash rate compared to similar locations.
- High number of crashes.
- Crash types producing fatalities or severe injuries.



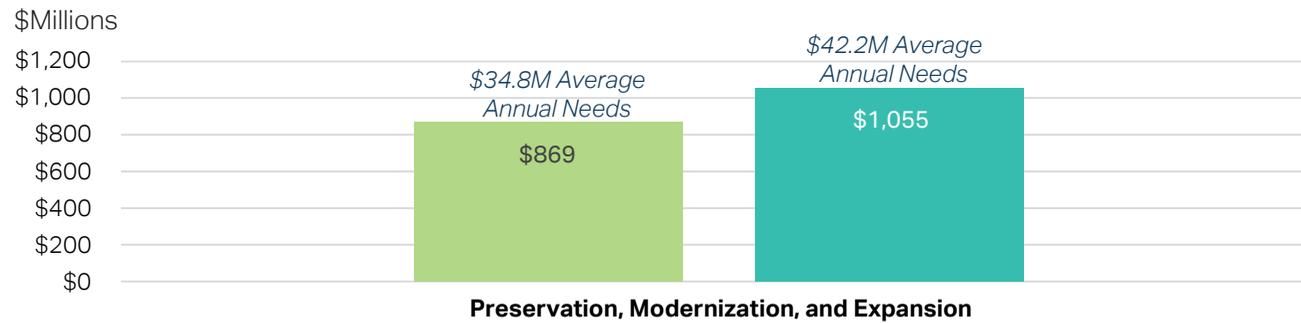
Safety Performance Target

Toward Zero Deaths with Consistent Decline in Fatality Rate



Total Needs Through 2040

Maintain Existing Conditions **\$869 Million**
 Meet Minimum Performance Target **\$1,055 Million**



Investment Strategy

Funding Strategy	
Spending (Millions)	Performance
\$34.8	100 fewer fatalities

Opportunities

- Providing more educational opportunities for local agencies.
- Dedicating a fraction of the safety program for projects on the local system.
- Systemic/proactive deployment of low-cost strategies to address severe road crashes.

Challenges

- Lack of funding does not permit increase investment level.
- Impaired drivers.
- Distracted drivers.
- Lane departure crashes.
- Intersection crashes.



Economic Impacts

- Lost productivity and earning ability.
- Increase in insurance costs.
- Property damage costs.
- Cargo loss costs.



INTELLIGENT TRANSPORTATION SYSTEMS

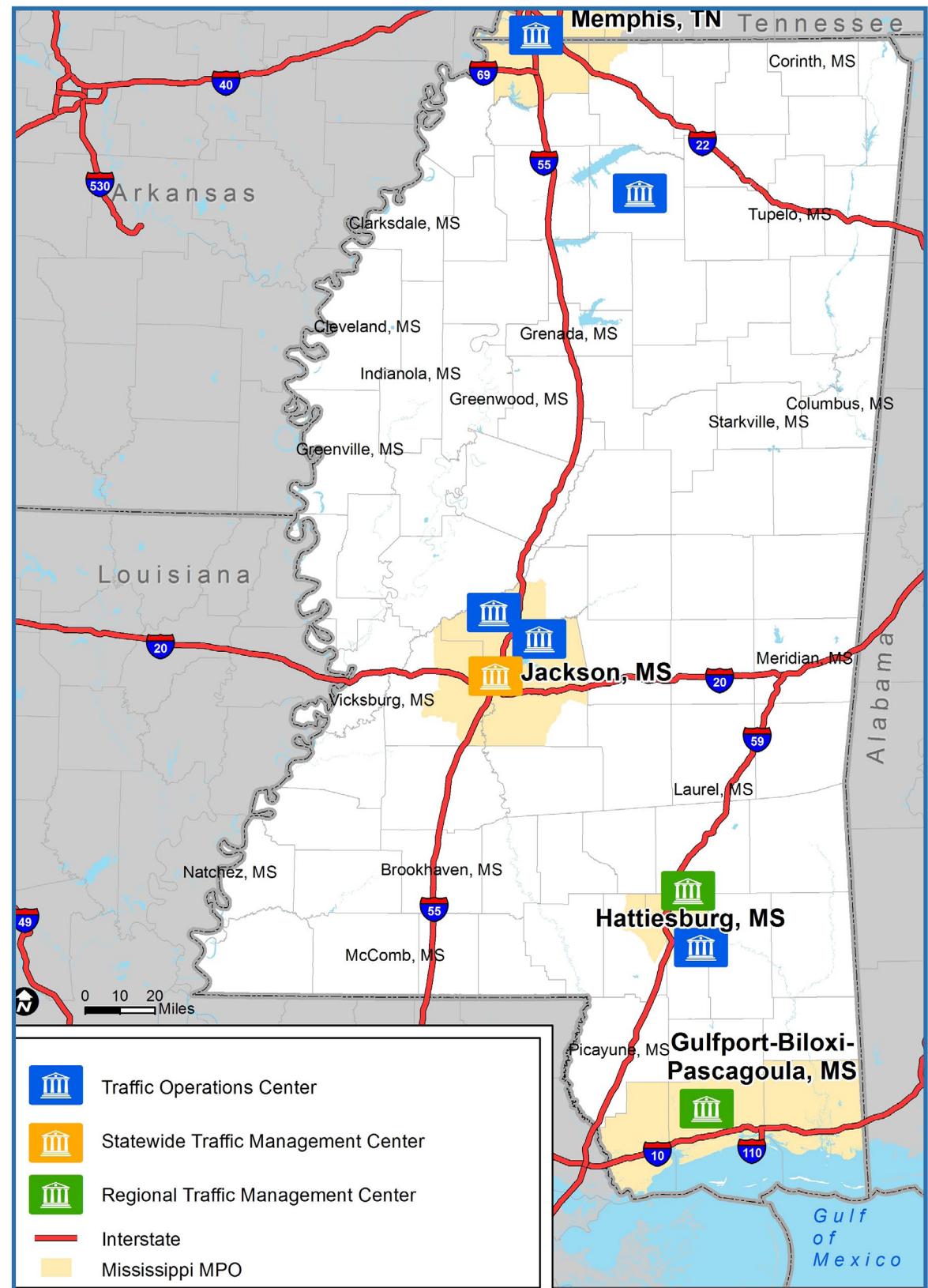


The deployment and integration of intelligent transportation systems (ITS) over the past 10 years has enhanced MDOT's ability to increase productivity, mobility, safety, efficiency, and security of the State's transportation network.

ITS includes a variety of advanced technological applications which can be used to monitor roadway conditions, relay travel information to motorists, collect and archive travel information, and/or modify traffic signals.

MDOT's existing ITS infrastructure includes:

- Transportation Management Centers (TMC)/Traffic Operation Centers (TOC)** – The base of operating and monitoring statewide, regional, or local transportation network. Manned 24 hours a day, seven days a week, TMCs provide a wide range of services including relaying traveler information, monitoring traffic and weather conditions, and coordinating incident response.
- Field Devices** – Including, but not limited to, closed circuit televisions (CCTV), dynamic message signs (DMS), and traffic signals. These devices collect live traffic conditions and relay information to motorists.
- Software** – Computer applications that support TMC operations, using data collected from field devices. This includes software to coordinate traffic signals, collect and archive incident management information, and manage work orders to repair ITS and traffic signal infrastructure.
- Incident Management and Traveler Information Systems** – The front-facing application that can be used by motorists and first responders. These applications relay current traffic conditions through streaming video, active dynamic message signs, incident information, and road closures.



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Intelligent Transportation Systems Performance Target

75 Percent of Needs Met



Total Needs Through 2040

Maintain Existing Conditions \$40 Million

Meet Minimum Performance Target \$70 Million



Opportunities

- Technological changes.
- Greater coordination among agencies.
- Improved reliability for autos, freight and transit vehicles.

Challenges

- Multijurisdictional coordination.
- Lack of documentation of benefits.



Economic Impacts

- Improved safety and mobility.
- Increased capacity/throughput, enhancing the quality of service, saving motorists time and money.
- Reduced emissions and energy output.
- Over \$100,000 in travel time costs savings to Mississippi drivers daily.



Investment Strategy

Funding Strategy	
Spending (Millions)	Performance
\$1.6	Maintain current funding



FREIGHT RAIL



Mississippi has an extensive freight rail system that includes:

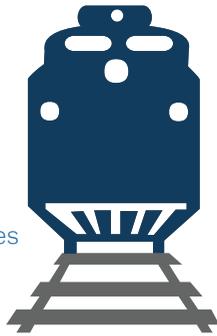


5 Class I Railroads

2,600 miles of track

15 rail facilities

including truck/rail transfer, bulk, and automotive facilities



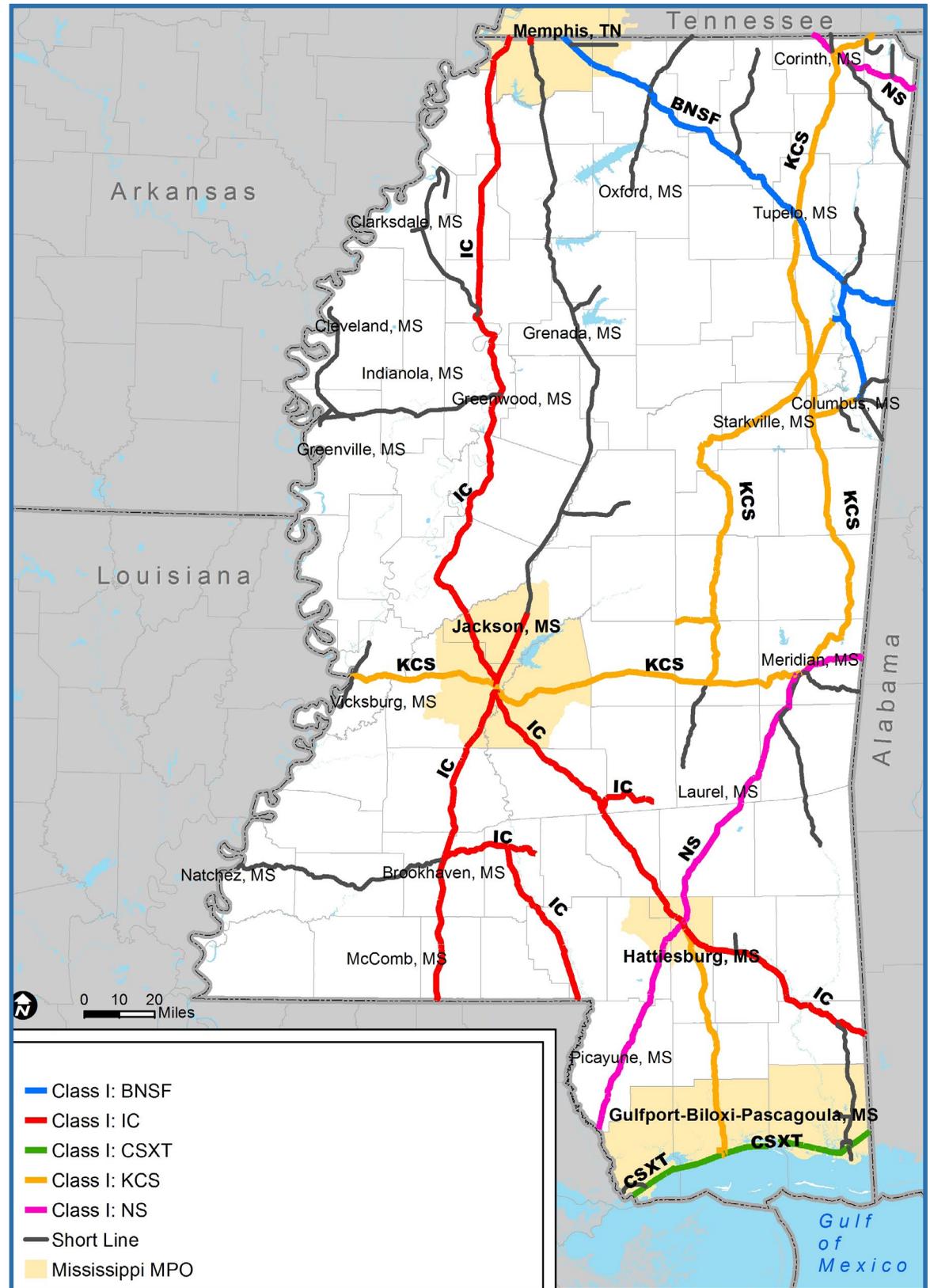
22

local and regional shortline railroads



Currently, the vast majority of rail movement in Mississippi are through shipments, a trend that is projected to continue through 2040. Most of the rail tonnage is generated around the cities of Jackson, Gulfport, Biloxi, Pascagoula, Hattiesburg, and Columbus.

Key commodities moved by rail in 2013:



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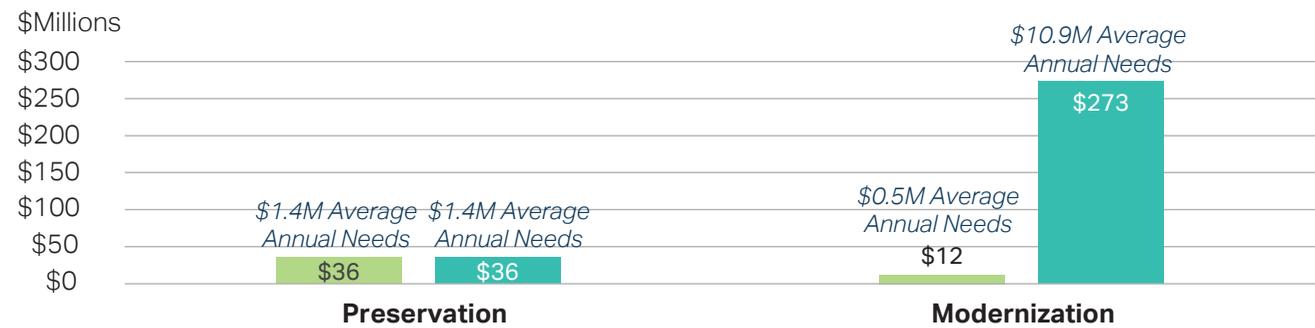
Freight Rail Performance Target

20 Percent of Needs Met



Total Needs Through 2040

Maintain Existing Conditions \$48 Million
 Meet Minimum Performance Target \$309 Million



Opportunities

- Current network can accommodate future growth and drive continued economic development.
- Five Class I railroads located in the State.
- Connections to major cities, including Memphis, Atlanta, Houston, Birmingham, Mobile, and New Orleans.

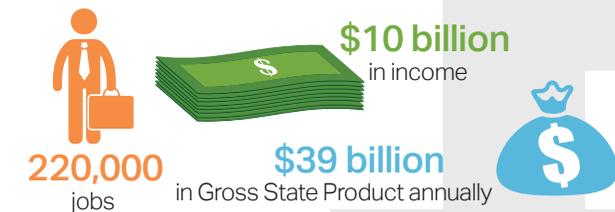
Challenges

- Lack of intermodal demand.
- Decline in bulk commodities.
- Need for infrastructure repair, new technology, and improvements to meet federal requirements.



Economic Impacts

Freight railroads support a lot of rail dependent industries in Mississippi. Annually, the railroads support:



Investment Strategy

Funding Strategy	
Spending (Millions)	Performance
\$1.2	Maintain current funding



PORTS AND WATERWAYS



Mississippi has 16 ports serving 3 different water systems, including:

- 6 ports on the Mississippi River;
- 6 ports on the Tenn-Tom; and
- 4 ports on the Gulf Coast.

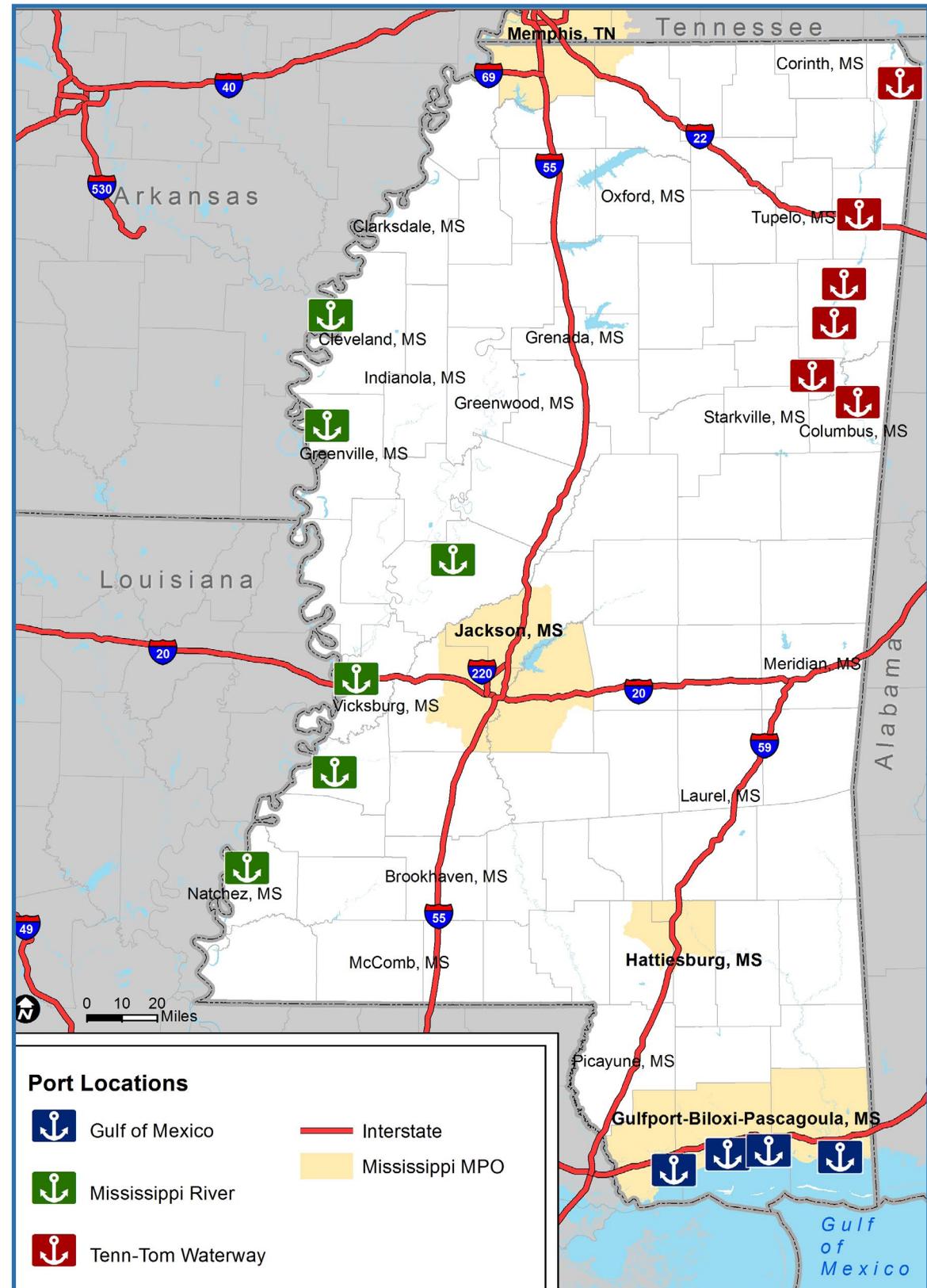
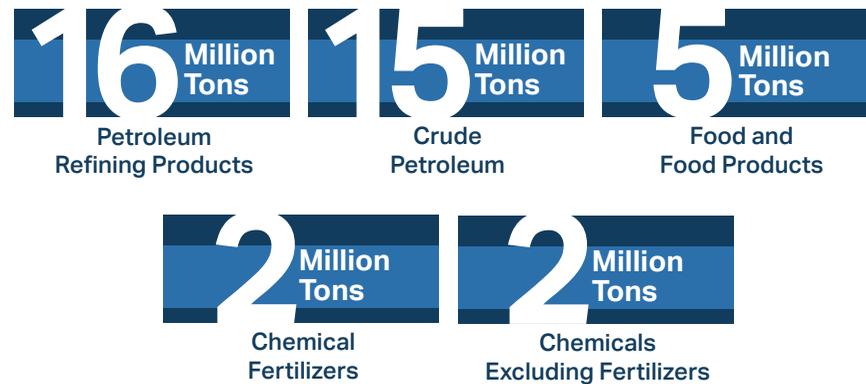
Most of Mississippi's commodity tonnage flows outbound, primarily to the western portion of the United States. Trade with foreign countries is also common, with over 26.5 million tons flowing in and out of the State.

Domestic Commodity Flows by Direction 2012 and 2040; In Thousands

DIRECTION	TOTAL 2012 TONNAGE		TOTAL 2040 TONNAGE		TOTAL GROWTH 2012 TO 2040
	AMOUNT	PERCENTAGE	AMOUNT	PERCENTAGE	
INBOUND	8,020	35%	8,408	36%	5%
OUTBOUND	13,806	63%	15,109	62%	9%
INTRASTATE	467	2%	526	2%	13%

Source: U.S. Army Corps of Engineers, U.S. Waterway Data.

The majority of commodities shipped in Mississippi, along with their corresponding tonnage flow in 2012, include:



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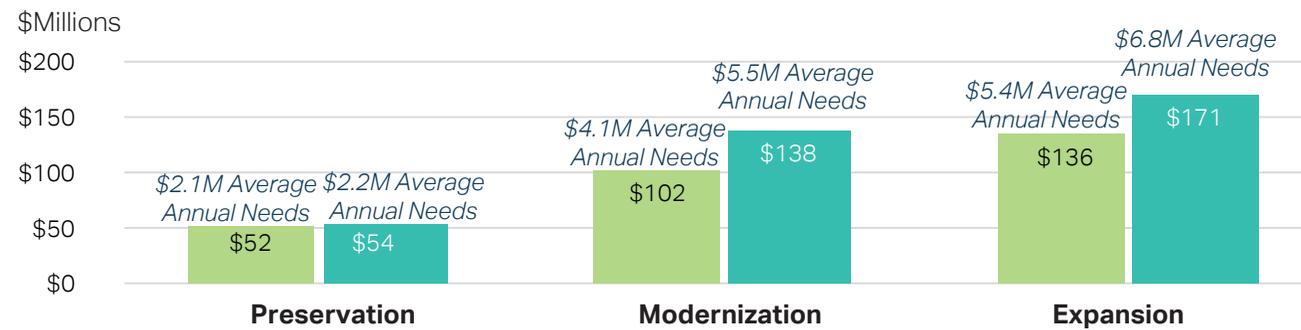
Ports and Waterways Performance Target

20 Percent of Needs Met



Total Needs Through 2040

Maintain Existing Conditions **\$290 Million**
 Meet Minimum Performance Target **\$363 Million**



Investment Strategy

Funding Strategy	
Spending (Millions)	Performance
\$3.8	Maintain current funding

Opportunities

- Access to three water systems throughout the State.
- Port of Gulfport Restoration Program to support sustainable growth and make Mississippi more competitive.
- Support key export industries.

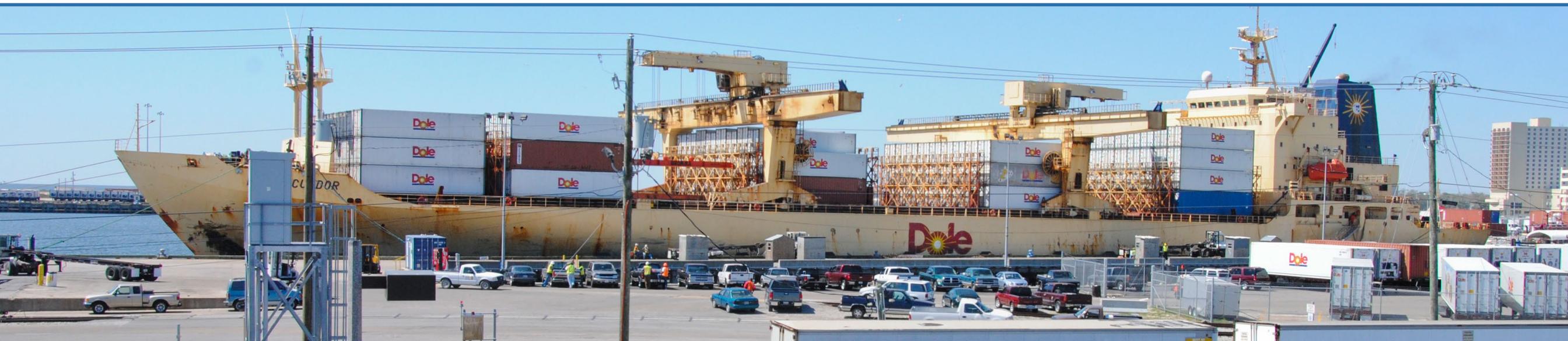
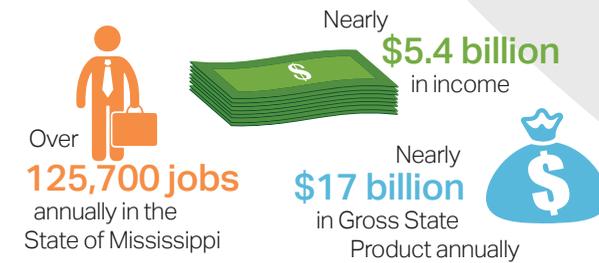
Challenges

- Lack of additional reliable and continuous funding sources.
- Continued maintenance for ports and waterways.
- No formal business plan, master plan, or strategic marketing assessment for many ports.



Economic Impacts

Mississippi ports support:



AVIATION



Mississippi's system of airports is an integral component of the State's overall transportation system as it transports both people and goods.

The State's aviation system is comprised of:

74 Publicly Owned Public-Use Airports

8 Commercial Service Airports

66 General Aviation Airports

11 Million Passengers in 2012

89 percent of which occurred at either Jackson-Medgar Wiley Evers International or Gulfport-Biloxi International Airports. However, the busiest airport in terms of operations (when an aircraft performs either a takeoff or landing) is University-Oxford Airport.

Continued increases in air cargo volume are expected due to the diversity and high priority of items shipped as well as a market need for just-in-time or next day delivery of products.

Top Commodities Shipped via Air by Weight in 2011:

1,830 Tons Electrical Machinery, Equipment, or Supplies

1,380 Tons Miscellaneous Manufacturing Products

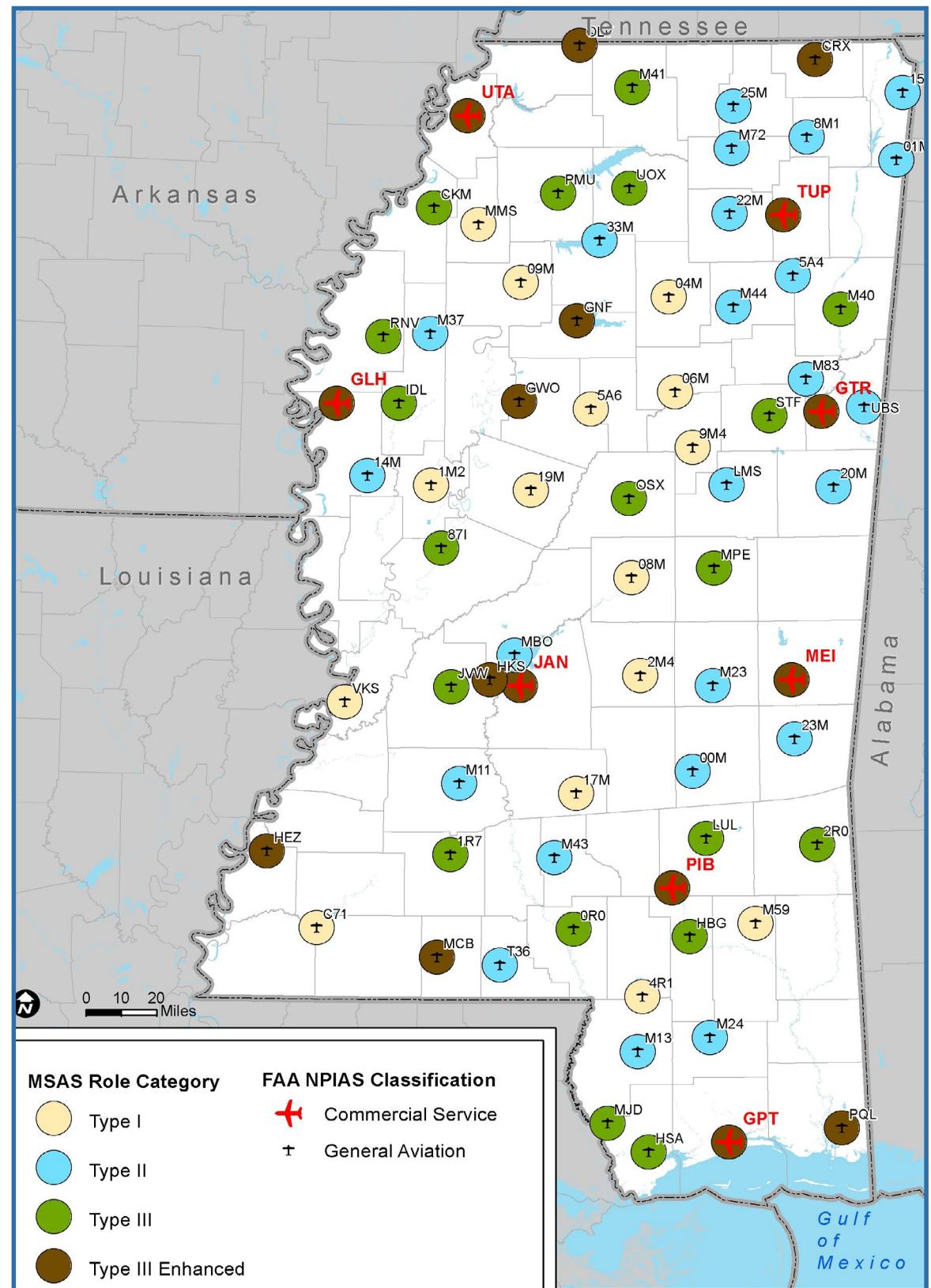
1,200 Tons Farm Products

Top Commodities Shipped via Air by Value in 2011:

846 Million Miscellaneous Manufacturing Products

411 Million Electrical Machinery, Equipment, or Supplies

112 Million Manufactured Instruments



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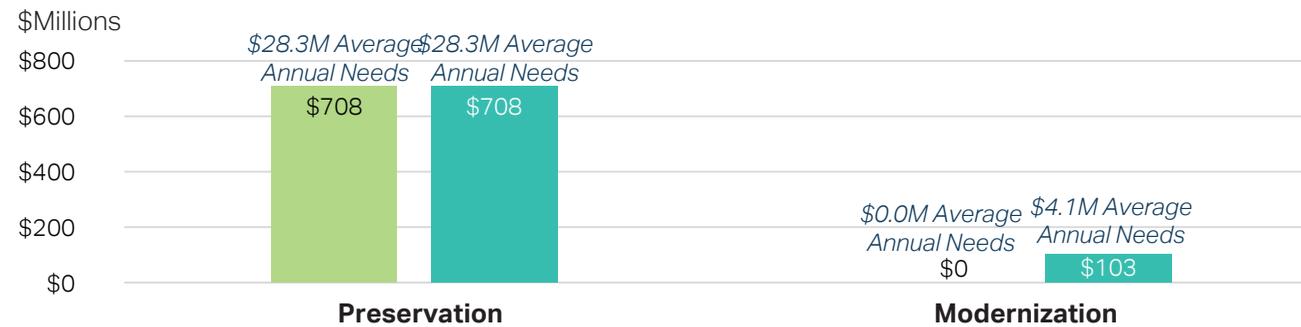
Aviation Performance Target

20 Percent of Needs Met



Total Needs Through 2040

Maintain Existing Conditions **\$708 Million**
 Meet Minimum Performance Target **\$811 Million**



Investment Strategy

Funding Strategy	
Spending (Millions)	Performance
\$3.4	Maintain current funding Meets 7 percent of needs

Opportunities

- Mississippi State University recently selected as the National Center of Excellence for Unmanned Aircraft Systems.
- All airports at sufficient operational capacity with room for additional demand.
- Nearly 95 percent of Mississippi residents are within 45 minutes of an airport meeting business user needs.

Challenges

- Recent changes to FAA classification reduced available funding for general aviation airports.
- National public perception of unmanned aircraft systems.
- National migration of network carriers to aircraft with higher capacities.



Economic Impacts

Airports and the activities at airports support:



PUBLIC TRANSPORTATION



Mississippi's transit network provides access to essential needs such as health care and everyday activities such as work and the grocery store. The State currently has:



3 urban fixed-route transit providers

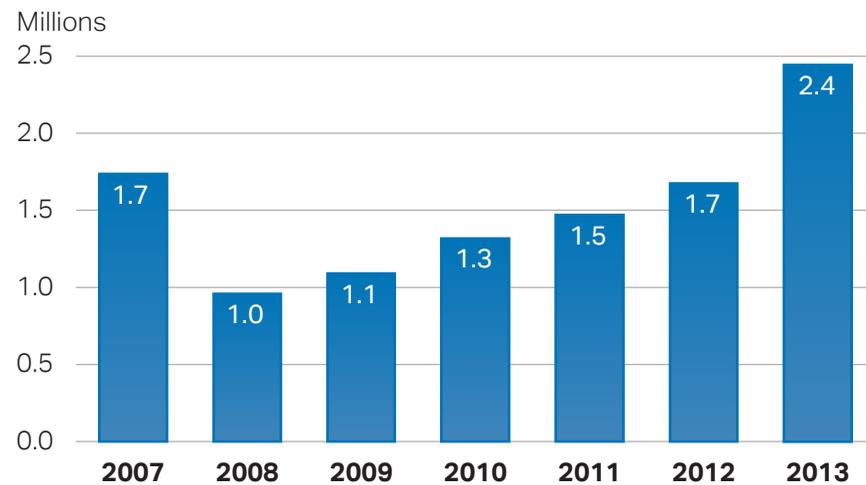
City of Jackson Transit System (JATRAM)

Coast Transit Authority (CTA) in Gulfport, Biloxi, and Ocean Springs

Hub City Transit (HCT) in Hattiesburg

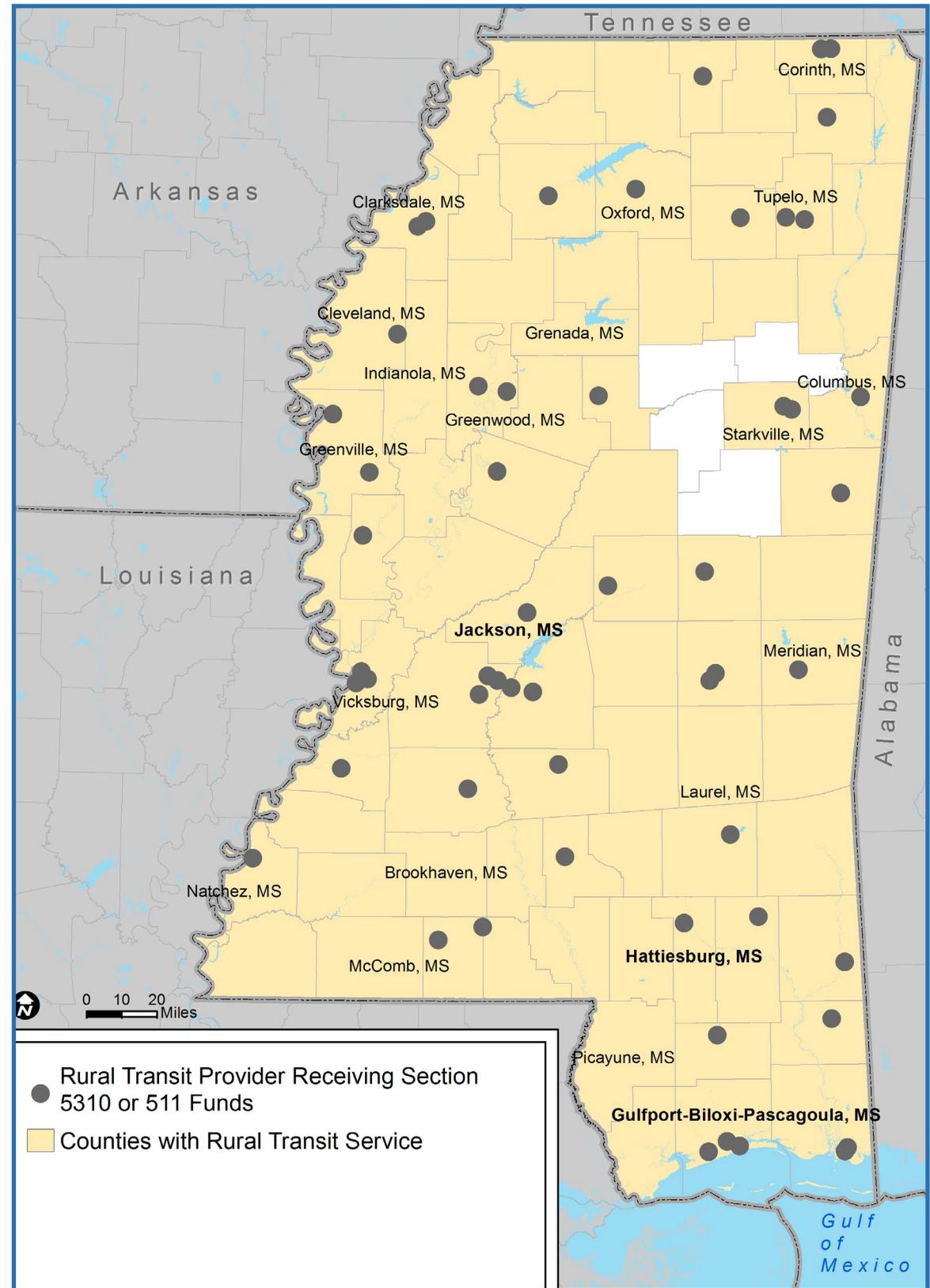
The State has **58** rural transit providers, located throughout the State, providing service to seniors, university students, and residents.

Total Passenger Trips for Rural Transit Providers



Urban and rural transit ridership has increased in recent years. CTA in particular has increased by 35 percent in the past 5 years, mostly attributed to their new vanpool service. Many rural agencies had over 100,000 riders in 2013 and have steadily grown in ridership since 2008. All but four counties in Mississippi have access to at least one rural transit provider.

Another mass transit option in Mississippi is passenger rail service. Amtrak currently operates two long-distance train services: City of New Orleans and Crescent. This provides direct connections between New Orleans to Chicago via Memphis and New York to New Orleans via Atlanta.



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Public Transportation Performance Target

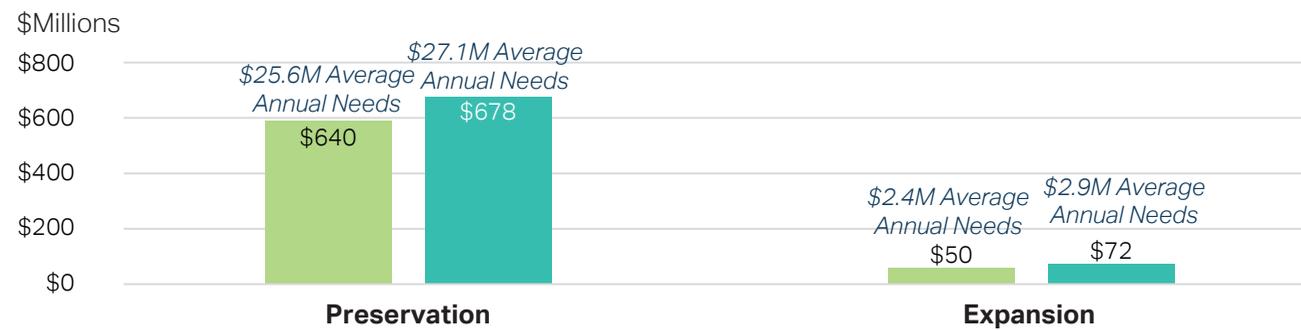
75 Percent in State of Good Repair



Total Needs Through 2040

Maintain Existing Conditions \$690 Million

Meet Minimum Performance Target \$750 Million



Opportunities

- Increase in ridership among rural and urban providers.
- Expanding coordination and collaboration between providers.
- Continued availability of technology to enhance service and improve efficiency.
- Changing attitudes toward transit.

Challenges

- Changing demographics resulting to an increasing elderly population.
- Increasing need for additional weekend and evening services.
- Lack of reliable funding sources.



Economic Impacts

Transit impacts the economy in numerous ways, including:

- Enhancing access to labor;
- Providing affordable mobility; and
- Reducing need for additional highway capacity.



Investment Strategy

Expected Constrained Funding Strategy		Adequate Funding Strategy	
Spending (Millions)	Performance	Spending (Millions)	Performance
\$27.6	56 percent in State of Good Repair	\$30.0	80 percent in State of Good Repair



BIKE AND PEDESTRIAN



Bicycling and walking are considered the most inexpensive and energy-efficient modes of transportation. Today, more than 63 percent of Americans take at least one walking trip and 12 percent take at least one bicycle trip a week. The integration of bicycling and walking into daily life reduces traffic congestion, decreases energy consumption of fossil fuels, and promotes healthier lifestyles.

Mississippi has

19 major bicycle routes

that traverse both the urban and rural areas of the State, including on-street signed routes, on-street non-signed routes, and multi-use trails.

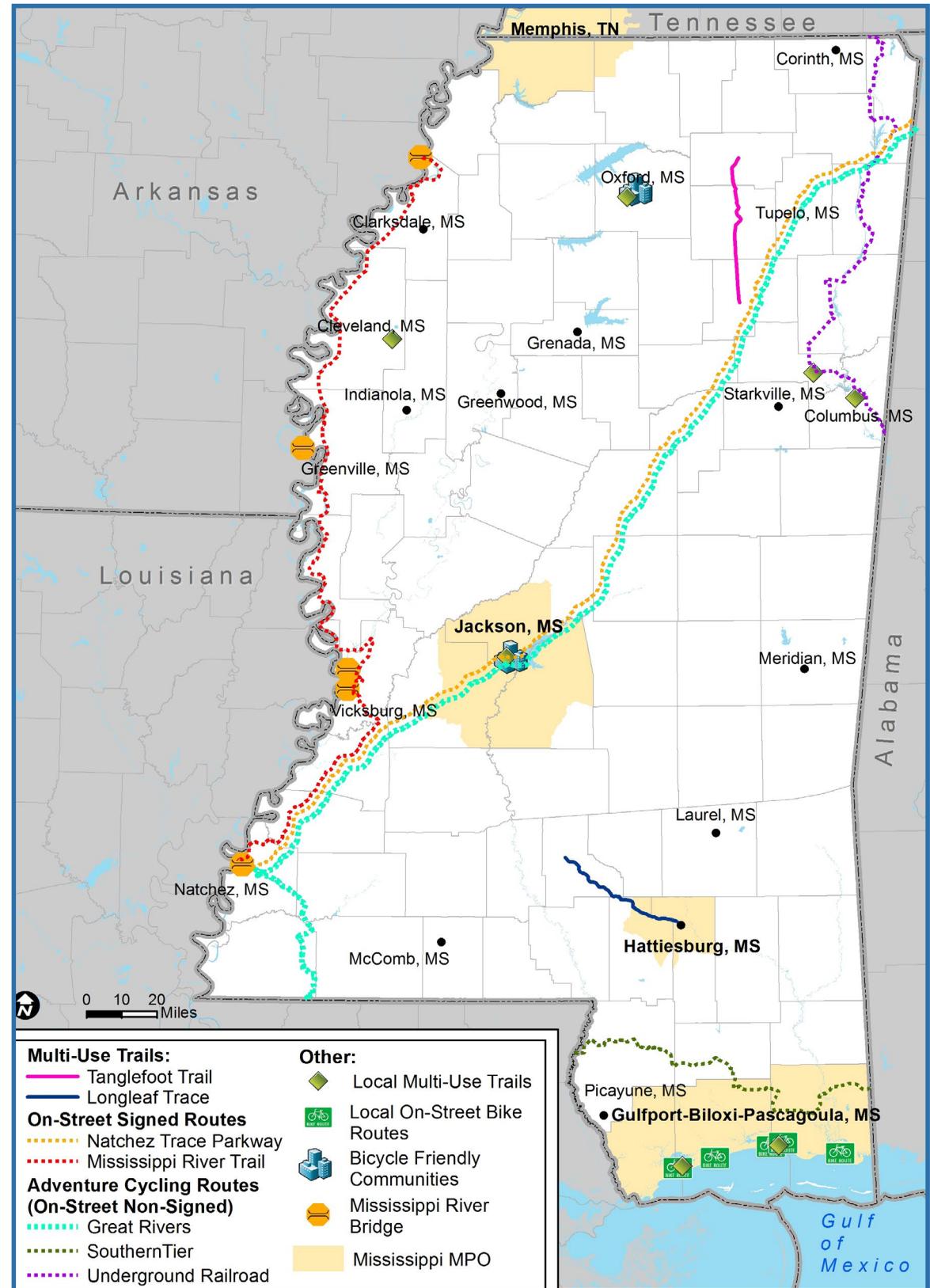
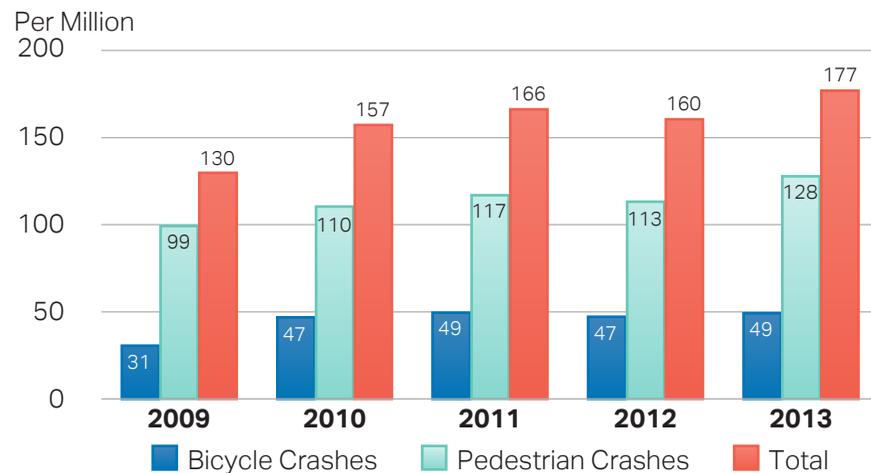


Bicycle and pedestrian infrastructure has been further supported through various cities adopting a Complete Streets policy, a set of design standards for roadways that support safe travel and accessibility for all users on a roadway.

However, as more people engage in bicycling and walking, there is an elevated risk of injury as bicyclists and pedestrians are more susceptible to serious injuries in crashes. In recent years, the total number of relative bicycle and pedestrian crashes in Mississippi have increased, with most of the crashes occurring in major cities and university towns. The bicycle and pedestrian crash rate for the past five years is shown below.

Bicycle and Pedestrian Crash Rate by Year

Crashes per Million People



Disclaimer: This map is for planning purposes only. Please contact MDOT for more information.



Bike and Pedestrian Performance Target

Maintain Current Funding Amount



Total Needs Through 2040

Maintain Existing Conditions \$32 Million
 Meet Minimum Performance Target \$63 Million



Investment Strategy

Funding Strategy	
Spending (Millions)	Performance
\$1.3	Meets 34 percent of needs Maintains existing funding

Opportunities

- Abandoned railways for additional rails to trails networks.
- Increasing incorporation of bicycle and pedestrian needs into local plans.
- Support active transportation choices and improve public health.

Challenges

- Low rate of bicycling and walking as a commute mode when compared to national averages.
- Increase in life threatening bicycle crashes.
- Limited paved shoulders on rural two-lane roads and rumble strips on shoulders decrease bicyclist safety.



Economic Impacts

Bike/pedestrian facilities give rise to economic impacts through:

- Low cost commute alternatives for residents;
- Increased tourism; and
- Decreased health costs.



BE
PREPARED
TO STOP



WRONG
WAY

STOP

SPEED
LIMIT
45

NORTH

STOP

CROSS TRAFFIC
DOES NOT STOP



SECTION 3. MEETING MISSISSIPPI'S TRANSPORTATION NEEDS

MULTIPLAN 2040 aims to provide a roadmap for meeting the State's future multimodal transportation needs in a challenging funding environment. Transportation funding is necessary to maintain the existing infrastructure, to modernize and upgrade existing assets, and to provide needed capacity through system expansion. MDOT invests across three primary program areas.



Preservation

To maintain Mississippi's existing infrastructure and assets



Modernization

To upgrade existing assets to current design standards and technologies



Expansion

To provide new capacity to accommodate future growth

The level of funding required to preserve, modernize, and expand the system depends on the current deficiencies, both in terms of deteriorating quality and limited capacity, as well as the projected growth.

INVESTMENT NEEDS

The needs assessment identified the total unmet funding needs to maintain and upgrade Mississippi's transportation system based on the following funding priorities:

1. **Maintain Existing Conditions and/or Meet MAP-21 Targets.** The funding needed to maintain existing conditions and/or address immediate deficiencies. The annual funding needed to maintain existing conditions and address immediate deficiencies is \$835.0 million of which \$727.9 million is for pavement, bridges, and capacity on State-owned roadways.
2. **Meet Minimum Performance Targets.** The funding level needed to meet minimum performance targets necessary to ensure a safe, well-maintained, efficient transportation system. The annual funding needed to meet minimum performance targets is \$1.1 billion of which \$997.0 million is for pavement, bridges and capacity on State-owned roadways.
3. **Meet all Needs.** The funding level needed to fully address all unmet needs. The annual funding needed to maintain and address all unmet needs in Mississippi is \$1.4 billion of which \$1.2 billion is for pavement, bridges, and capacity on State-owned roadways.

MDOT makes investments across modes as well as funding for cross-modal priorities, such as safety and security, key corridors, and Intelligent Transportation Systems (ITS).



Funding Needs by Mode and Investment Level through 2040

Millions of 2014 Dollars

MODE	MAINTAIN EXISTING CONDITION	MEET MINIMUM TARGETS	MEET ALL NEEDS
PAVEMENT	\$13,775	\$17,350	\$22,650
BRIDGES	\$2,906	\$3,625	\$3,825
CAPACITY	\$1,517	\$3,950	\$4,025
SAFETY	\$869	\$1,055	\$1,117
TRANSIT	\$690	\$750	\$788
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)	\$40	\$70	\$150
BIKE/PEDESTRIAN	\$32	\$63	\$94
INTERMODAL – RAIL, AVIATION, PORTS	\$1,046	\$1,483	\$2,346
TOTAL FUNDING NEED	\$20,875	\$28,346	\$34,995
TOTAL PAVEMENT, BRIDGE, AND CAPACITY NEED	\$18,198	\$24,925	\$30,500
TOTAL AVERAGE ANNUAL	\$835.0	\$1,133.8	\$1,399.8

PROJECTED REVENUE FOR GOING FORWARD

Transportation in Mississippi is primarily funded from federal funds and state revenues collected from taxes and fees related to the transportation sector. Traditionally, these sources have consisted of:

1. **Federal Highway Administration Funds**, which provide funding for construction, reconstruction, and improvement of highways and bridges on eligible federal-aid highway routes;
2. **Federal Transit Administration Grants**, which provide financial assistance to support public transit systems;
3. **Mississippi Motor Fuel Excise Taxes**, which are used to pay for highway-related debt service, operating and maintenance expenditures, capital programs, and matching federal funds; and
4. **Vehicle Fees** to provide additional support for operation, maintenance, and capital expenditures.

Other state sources include commercial vehicle fees, contractor's tax, lubricating oil tax, interlocal proceeds, truck and bus fees, interest income, and various other small revenue sources.

For MULTIPLAN 2040, each of the traditional revenue sources was projected over a 25-year planning period using conservative assumptions to develop a set of financially constrained investment recommendations for the plan. The assumptions reflect current funding policy and revenue that is reasonably expected to be available over the life of the transportation plan.

Revenue Projection Methodology

Revenue projections were based on historical revenue information and assumed growth rates. Funding allocations from FHWA programs were projected from the apportionments for the State of Mississippi authorized for FY2014 by MAP-21. Mississippi FHWA apportionments were assumed to grow at 0.25 percent in 2016 given the uncertainty of a new transportation authorization plan. After 2016, apportionments were assumed to grow at an average annual rate of 1.0 percent.

FTA funding for Mississippi was projected using the historical trend to estimate how much is reasonable to be expected over the span of the plan. Different growth factors were applied for each of the MAP-21 programs, and Metropolitan and Statewide Planning Program funds were excluded.

For state motor fuel tax revenue projections, a methodology that recognized the recently adopted fuel economy standards and the future growth of VMT projections from the statewide travel demand model was used.

In addition to federal funds and state revenues, MDOT uses bond proceeds to finance its transportation program. Current debt service payments extend through FY 2040, and it is assumed that no additional bonds are issued during the timeframe of the plan. Debt service obligations are subtracted from the gross revenue projections to reflect debt repayment needs as a priority, before additional investments are considered.

MDOT's other financial commitments, such as administration and operating expenditures and pass throughs to MPOs and other agencies, were also subtracted from the gross revenue projections for the final (net) financially constrained revenue available for preservation and construction.

Revenue Projections

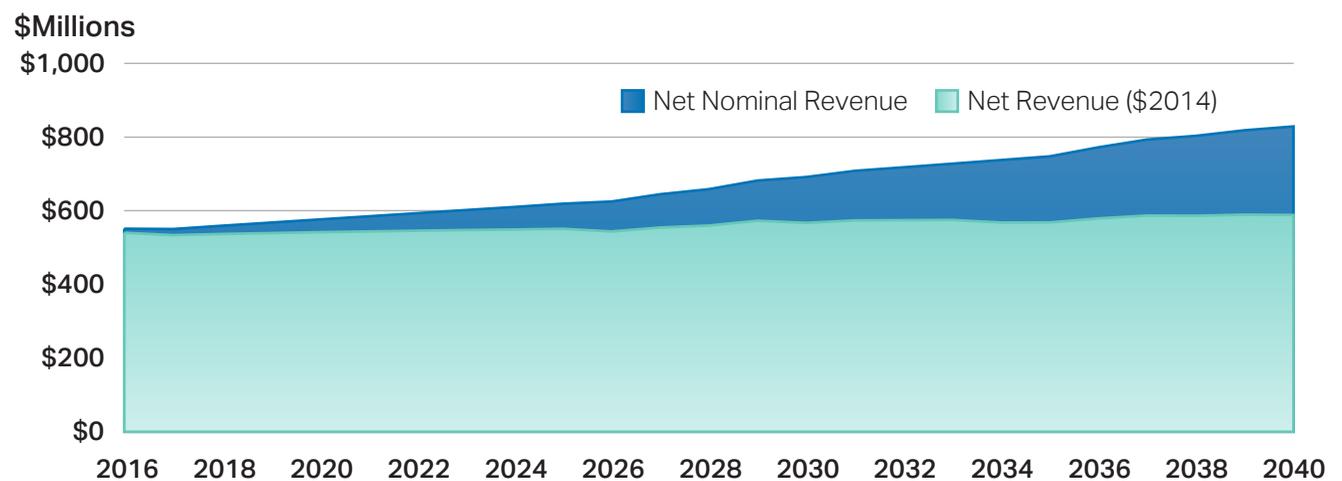
Gross revenues are estimated at \$26,514 million (\$20,308 million in 2014 dollars) over the plan horizon. Nonconstruction obligations over the life of the transportation plan are estimated at \$9,728 million (\$6,278 million in 2014 dollars). After all deductions, the net amount projected to be available for preservation and construction over the life of the plan from federal and state sources is estimated at \$16,786 million. In constant 2014 dollars, the net funding expected to be available is estimated at \$14,030 million.

The 25-year revenue forecast predicts a small increase in some funding sources, however, the motor fuel revenues are projected to decline at an average annual rate of

0.19 percent due to increases in vehicle's fuel economy standards. While the total nominal revenues are projected to increase from \$950 million in 2016 to \$1,178 million in 2040, when accounting for inflation, revenue in real dollars is expected to decline. Declining revenue coupled with increasing preservation and expansion needs means that MDOT must strategically prioritize available resources or must find additional revenue sources.

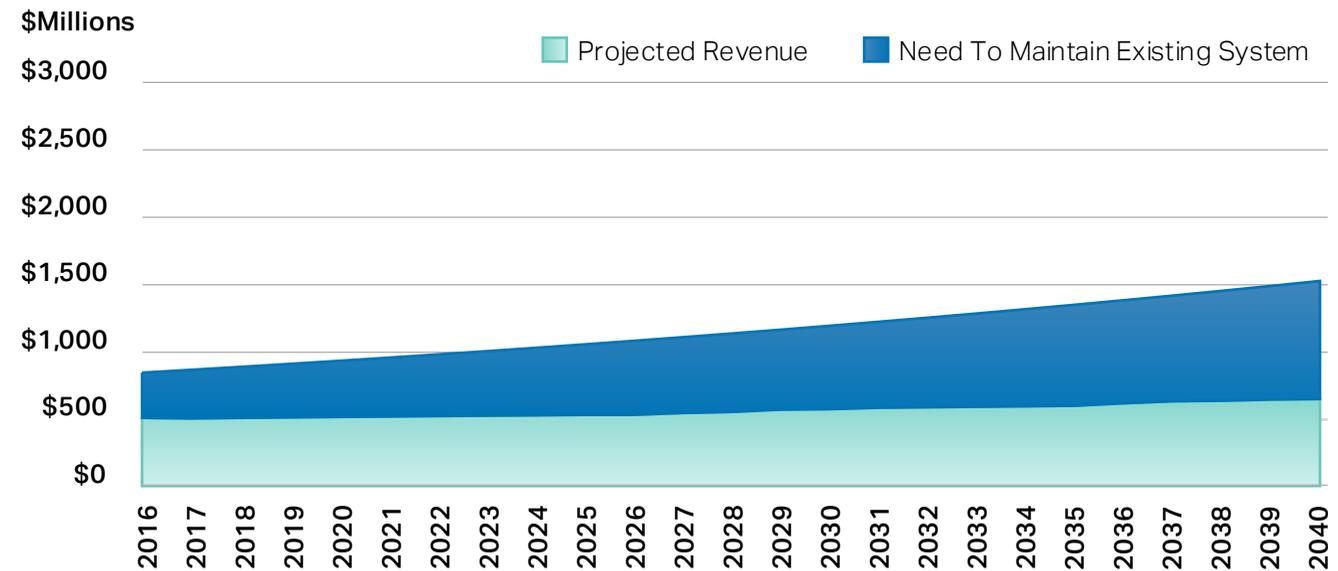
In 2014 dollars, total funding over the life of the plan is \$14,030 million. The total funding need for Mississippi varies by investment level and by the type of projects in need of funding. Ignoring nonhighway programs, there is a funding gap of \$6,021 million in 2014 dollars to maintain the existing system and a gap of \$12,748 million to meet minimum performance targets.

Transportation Funding Projected for Capital Program 2016 to 2040



Declining revenue coupled with increasing preservation and expansion needs means that MDOT must strategically prioritize available resources or must find additional revenue sources.

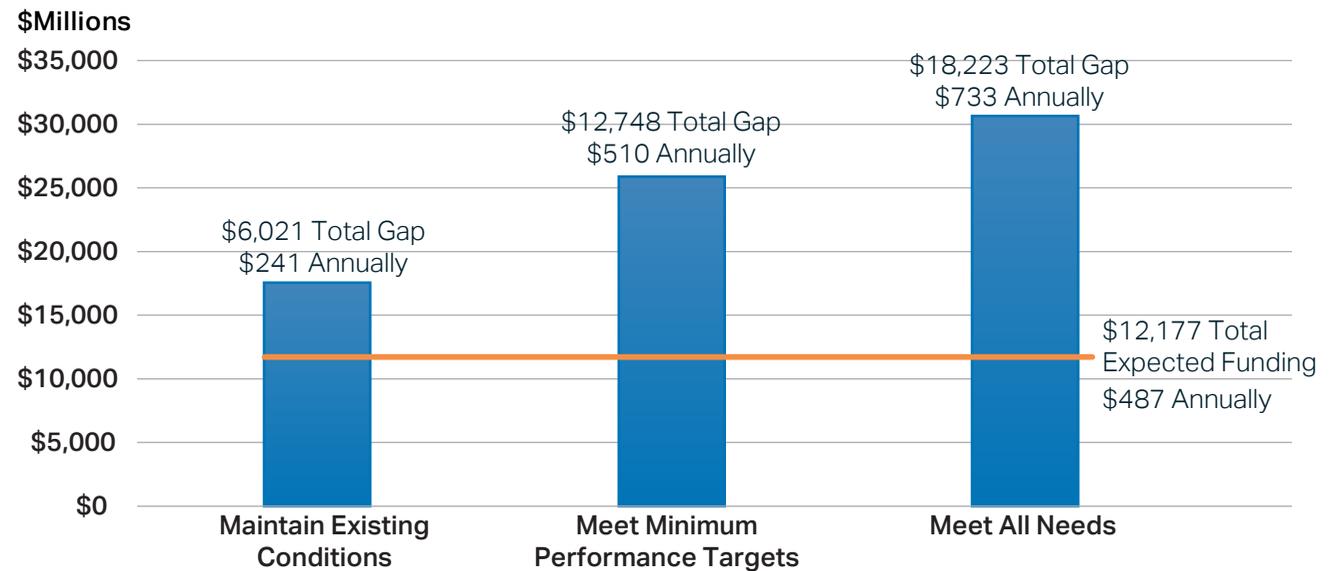
Funding Gap to Maintain Existing System Conditions
Nominal Dollars



Note: Needs estimated in constant 2014 dollars. Converted to nominal dollars assuming an annual growth rate of 2.5 percent.

Funding Gap to Meet Highway Needs

Total Highway Pavement, Bridge, and Capacity Needs versus Revenue, 2015-2040



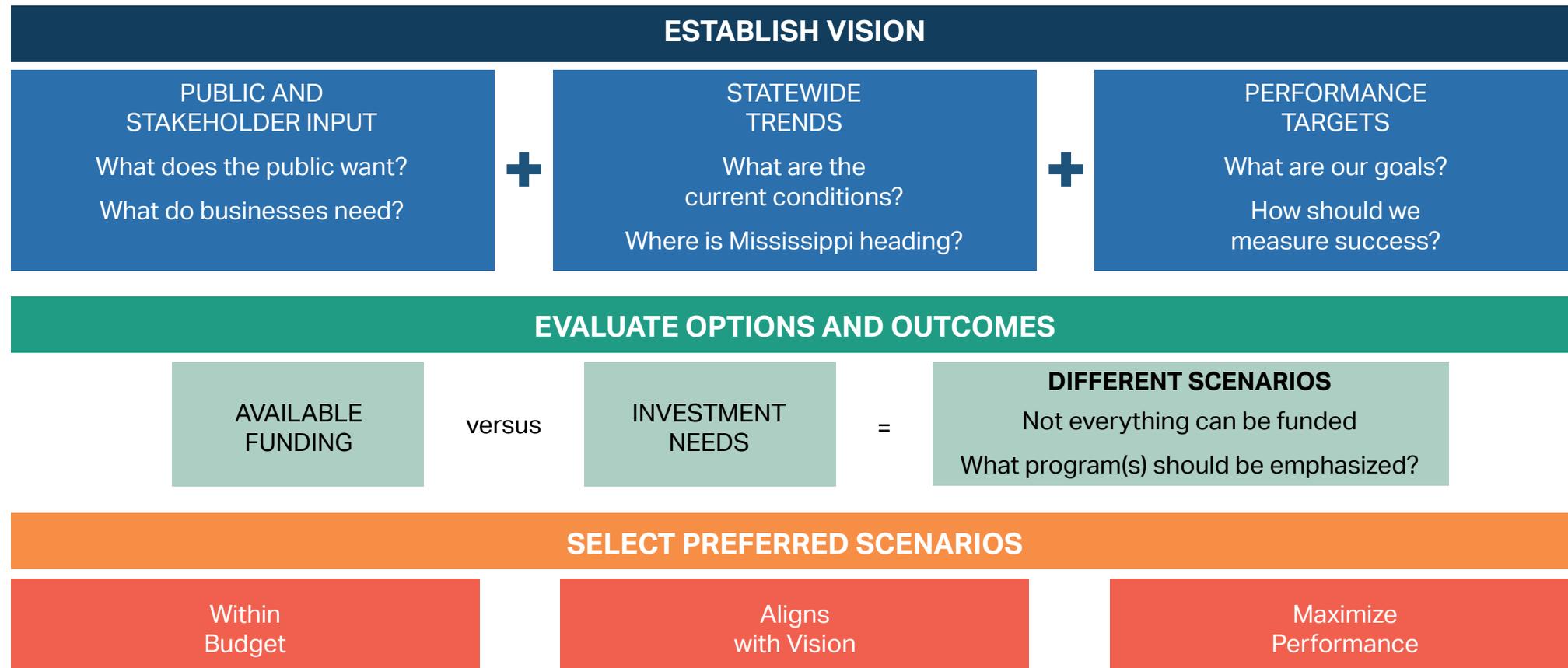
Note: Needs estimated in constant 2014 dollars. Converted to nominal dollars assuming an annual growth rate of 2.5 percent.

UNDERSTANDING THE TRADEOFFS

Throughout the planning process of MULTIPLAN 2040, various public outreach tools were used to gather input to develop the programmatic performance measure and targets. Using the state of the practice performance-based planning and measurement approaches, stakeholder

group facilitation, public input and federal guidelines, the team established performance measures and targets that provide the strategic framework for the MULTIPLAN 2040. This strategic framework helps make goals and objectives meaningful to Mississippians. The table on the following page shows the program area with its corresponding performance measure and target.

A series of investment strategies, each with an alternative emphasis for investment, were developed and evaluated. The six strategies include four that assume no additional funding which is based on historical revenue trends and two that assume increased funding availability.



Programmatic Performance Measures and Targets

PROGRAM AREA	GOAL AREAS SUPPORTED	PERFORMANCE MEASURE	PERFORMANCE TARGET
PAVEMENT	<ul style="list-style-type: none"> Maintenance and preservation Accessibility and mobility Safety Environmental stewardship 	Pavement condition	<p>MAP-21 Target: National Highway System – Interstate: 95% with IRI < 170 – Interstate in Good or better condition</p> <p>MDOT Target: National Highway System – Interstate: 75% at ≥ 82 PCR (~IRI<95)^a – Interstate in Fair or better condition</p> <p>Remaining State Owned System: 75% at ≥ 82 PCR (~IRI<95)^b – Interstate in Fair or better condition</p>
BRIDGES	<ul style="list-style-type: none"> Maintenance and preservation Accessibility and mobility Safety Environmental stewardship 	Total NHS State-owned bridges classified as not structurally deficient	<p>MAP-21 Target: 90% bridges on NHS not SD</p> <p>MDOT Target: 98% State-owned bridges not structurally deficient</p> <p>All posted and timber bridges replaced</p>
CAPACITY	<ul style="list-style-type: none"> Accessibility and mobility Environmental stewardship 	Level of service	LOS C or better – Rural areas LOS D or better – Urban areas
SAFETY	<ul style="list-style-type: none"> Safety 	Reduction in annual fatalities	Towards zero fatalities with consistent declines in the fatality rate
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)	<ul style="list-style-type: none"> Accessibility and mobility Safety Environmental stewardship 	Percent of total needs met	75% or better
INTERMODAL	<ul style="list-style-type: none"> Maintenance and preservation Accessibility and mobility Safety Environmental stewardship 	Percent of total needs met	20% or better
TRANSIT	<ul style="list-style-type: none"> Accessibility and mobility Environmental stewardship 	Percent of vehicles in state of good repair	75% or better
BIKE/ PEDESTRIAN	<ul style="list-style-type: none"> Maintenance and preservation Accessibility and mobility Safety Environmental stewardship 	Funding	Maintain current funding amount

^a MAP-21 Target is 95% at IRI < 172.

^b Pavement condition is measured using a standardized scale called International Roughness Index (IRI) and the FHWA adopted this performance metric as part of MAP-21 regulations. An IRI of less than 95 means that the pavement is in Good condition; an IRI greater than 170 means that the pavement is in Poor condition; an IRI between 95 and 170 means that the pavement is in Fair condition.

Developing Alternative Funding Strategies

Strategy 1 – Expected Funding – Balanced Approach

– Meet MAP-21 requirements first and then proportionately disperse funds across preservation and expansion while maintaining existing funding level for nonhighway categories.

Strategy 2 – Expected Funding – Invest to Maintain and Expand

– Meet MAP-21 requirements, expand on key corridors as needed, maintain funding for nonhighway modes, and spend remaining funds proportionately on preservation of noninterstate state-owned system.

Strategy 3 – Expected Funding – Invest to Maintain

– Meet MAP-21 requirements for pavement, maintain state-owned bridges at 90 percent not SD and replace posted bridges with no spending on expansion, and maintain existing funding levels for other programs.

Strategy 4 – Expected Funding – Invest in Multimodal Options

– Meet MAP-21 requirements, make modest investments in intermodal, transit, bike/pedestrian, and ITS, and maintain safety spending with any remaining funds being dispersed between meeting MDOT preservation targets on bridges and pavement.

Strategy 5 – Increased Funding – Adequate Funding to Meet Minimum Highway Performance Targets (Unconstrained)

– Spend minimum required to meet MAP-21 and MDOT pavement, bridge, and capacity targets and maintain existing funding across all other categories.

Strategy 6 – Increased Funding – Invest to Meet All Needs (Unconstrained)

– Meet MAP-21 and MDOT preservation targets and make aggressive investments across all other categories. It is important to note that this includes investments for which the costs may outweigh the benefits.

The six different funding strategies focused on one or more emphasis areas. This represented different ways MDOT can distribute funds based on different priorities.

USING TRADEOFF ANALYSIS TO EVALUATE THE OPTIONS

Selecting the preferred plan of action, given a future of constrained resources, required balancing funding availability and transportation needs. Each dollar spent on one part of the system is one less dollar on another part of the system. Finding the appropriate level of funding for each mode required setting minimum performance thresholds and desired targets, defining different funding allocation strategies, using tradeoff analysis to calculate the performance benefits of each funding strategy, and comparing the overall benefit of each strategy compared to the desired performance targets and available funding. The potential outcomes and performance of each of these strategies were calculated using Optics, a tradeoff tool developed specifically for MDOT.

Optics is a tool developed for MULTIPLAN 2040 that describes the expected performance of each transportation mode given a specified funding level. The tool was developed to allow MDOT to quickly and easily compare choices about how funding is distributed across major program areas to see how alternative funding approaches can influence the entire network. Users can adjust the desired funding amount, set performance targets across each mode, and compare systemwide results.

The tradeoff analysis revealed some significant performance differences across scenarios. However, one common theme emerged: regardless of how the money is spent, the expected funding level through 2040 will result in the deterioration of Mississippi's highway and multimodal transportation system.

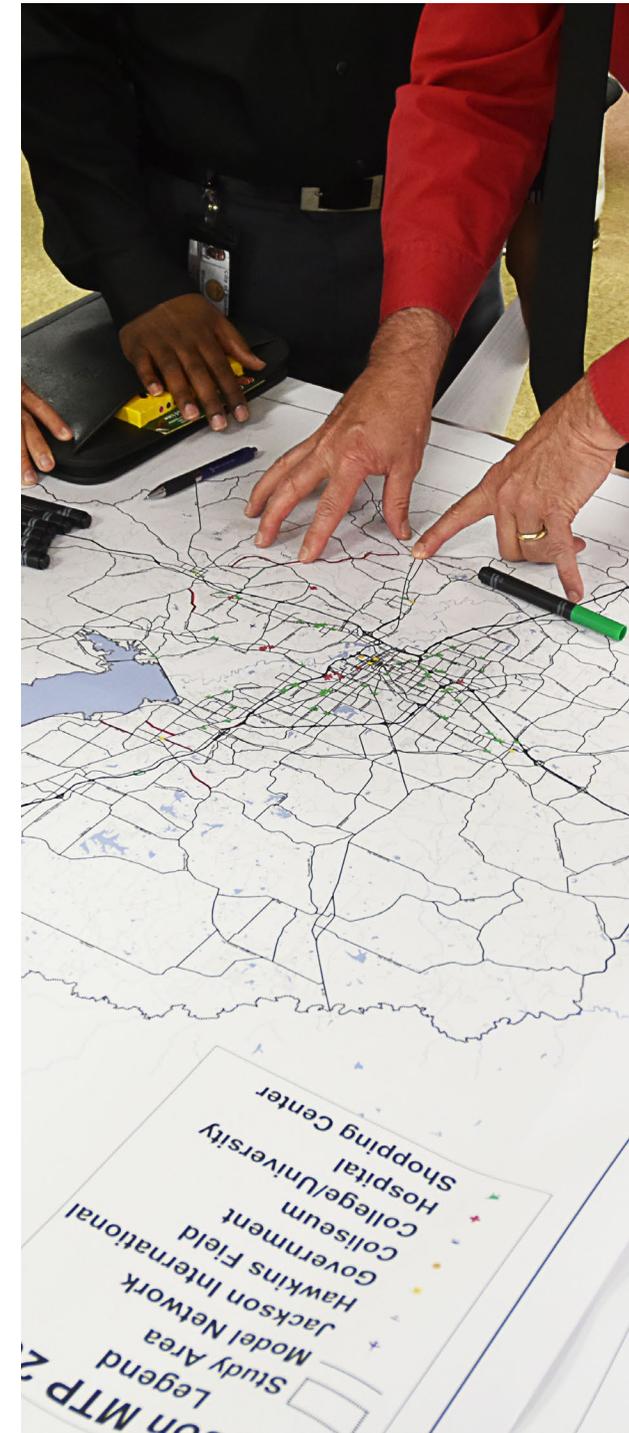
PERFORMANCE TRADEOFFS OF THE ALTERNATIVE INVESTMENT STRATEGIES

Expected Constrained Funding Strategies

PROGRAM AREA	STRATEGY 1		STRATEGY 2		STRATEGY 3		STRATEGY 4	
	STRATEGY FUNDING LEVEL	PERFORMANCE LEVEL	STRATEGY FUNDING LEVEL	PERFORMANCE LEVEL	STRATEGY FUNDING LEVEL	PERFORMANCE LEVEL	STRATEGY FUNDING LEVEL	PERFORMANCE LEVEL
PAVEMENT (STATE OWNED)		62% / 65% / 76% / 25%		62% / 54% / 76% / 25%		62% / 64% / 76% / 25%		63% / 58% / 76% / 25%
INTERSTATE/ NHS, NON-INTERSTATE/ NON-NHS 4-LANE/ NON-NHS 2-LANE	\$375.9	Pavement in Fair/ Good Condition	\$339.9	Pavement in Fair/ Good Condition	\$371.5	Pavement in Fair/ Good Condition	\$349.6	Pavement in Fair/ Good Condition
BRIDGE (STATE OWNED)		90%		90%		90%		90%
	\$86.6	Not Structurally Deficient	\$86.6	Not Structurally Deficient	\$116.0	Not Structurally Deficient and Posted Bridges Replaced	\$86.6	Not Structurally Deficient
CAPACITY		Over 58,000 Daily Hours of Delay Reduced		Capacity on Key Corridors Over 108,000 Daily Hours of Delay Saved		None		None
	\$25.0		\$61.0		None	No Capacity	None	No Capacity
ITS	\$1.6	12,500 Fewer Hours of Delay	\$1.6	12,500 Fewer Hours of Delay	\$1.6	12,500 Fewer Hours of Delay	\$4.0	31,000 Fewer Hours of Delay
INTERMODAL – RAIL, AVIATION, PORTS	\$8.4	10% Needs Met	\$8.4	10% Needs Met	\$8.4	10% Needs Met	\$54.0	60% Needs Met
PUBLIC TRANSIT	\$27.6	56% in State of Good Repair	\$27.6	56% in State of Good Repair	\$27.6	56% in State of Good Repair	\$28.4	75% in State of Good Repair
BICYCLE AND PEDESTRIAN	\$1.3	75% Bike Lane Needs Met	\$1.3	75% Bike Lane Needs Met	\$1.3	75% Bike Lane Needs Met	\$3.8	100% State Bike Lanes Connected
SAFETY	\$34.8	100 Fewer Fatalities	\$34.8	100 Fewer Fatalities	\$34.8	100 Fewer Fatalities	\$34.8	100 Fewer Fatalities
TOTAL AVERAGE ANNUAL	\$561.2		\$561.2		\$561.2		\$561.2	
PLAN HORIZON TOTAL	\$14,030.0		\$14,030.0		\$14,030.0		\$14,030.0	

Increased Funding Strategies

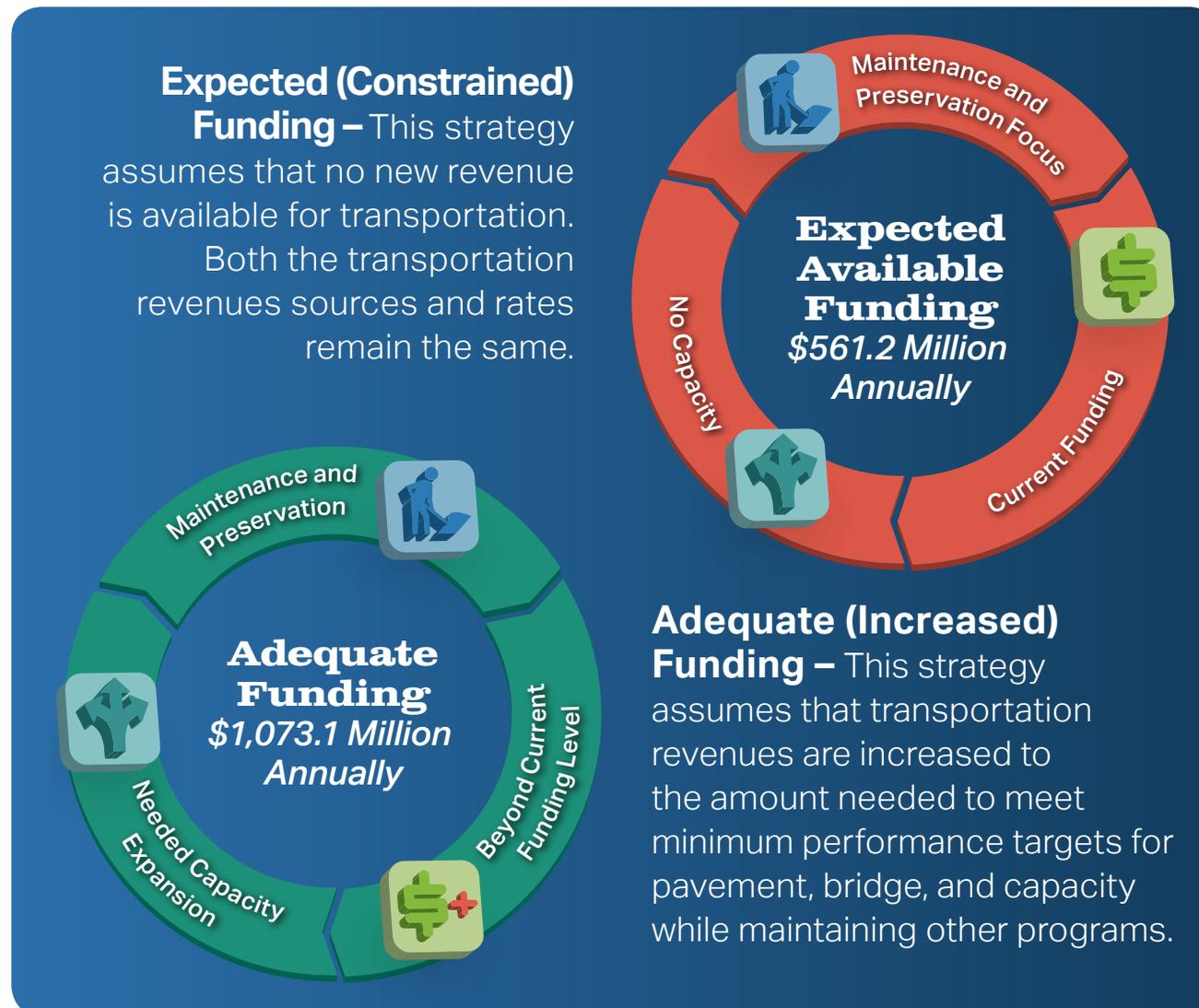
PROGRAM AREA	STRATEGY 5		STRATEGY 6	
	STRATEGY FUNDING LEVEL	PERFORMANCE LEVEL	STRATEGY FUNDING LEVEL	PERFORMANCE LEVEL
PAVEMENT (STATE OWNED)		75% / 75% / 75% / 75%		75% / 98% / 89% / 83%
INTERSTATE/ NHS, NON-INTERSTATE/ NON-NHS 4-LANE/ NON-NHS 2-LANE	\$694.0	Pavement in Fair/ Good Condition	\$906.0	Pavement in Fair/ Good Condition
BRIDGE (STATE OWNED)		98%		100%
	\$145.0	Not Structurally Deficient and Posted Bridges Replaced	\$153.0	Not Structurally Deficient and Posted Bridges Replaced
CAPACITY		Meet all LOS targets		102,000 Fewer Hours of Auto Delay 8,500 Fewer Hours of Truck Delay
	\$158.0		\$161.0	
ITS		12,500 Fewer Hours of Delay		47,000 Fewer Hours of Delay
	\$1.6		\$6.0	
INTERMODAL – RAIL, AVIATION, PORTS		10% Needs Met		100% Needs Met
	\$8.4		\$93.8	
PUBLIC TRANSIT		80% in State of Good Repair		100% in State of Good Repair
	\$30.0		\$31.5	
BICYCLE AND PEDESTRIAN		75% Bike Lane Needs Met		All State Bike Lanes Connected
	\$1.3		\$3.8	
SAFETY		100 Fewer Fatalities		125 Fewer Fatalities
	\$34.8		\$44.7	
TOTAL AVERAGE ANNUAL	\$1,073.1		\$1,399.8	
PLAN HORIZON TOTAL	\$26,827.5		\$34,995.0	



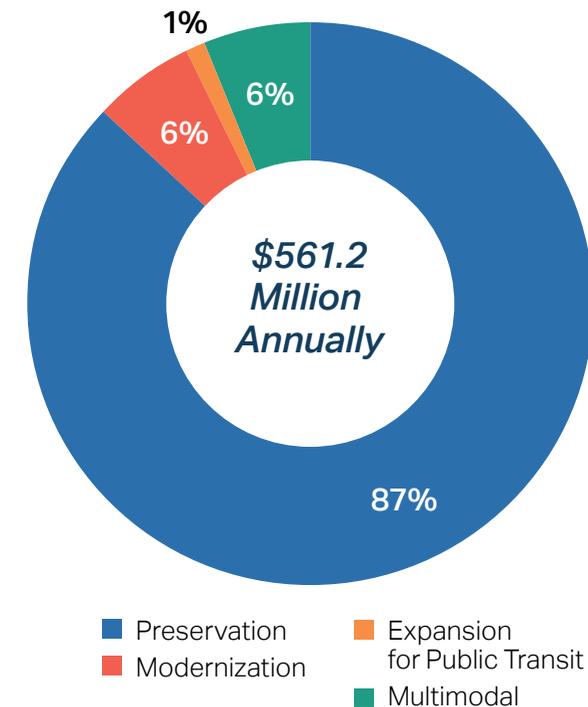


SECTION 4. A PLAN FOR GOING FORWARD

As a result of the tradeoff analysis, two preferred strategies were selected from the six strategy options; Strategy 3 and Strategy 5. Both strategies meet MAP-21 baseline proposed requirements; however, they differ based on the anticipated level of funding and overall performance. The preferred strategies are:



Expected (Constrained) Funding Strategy, is based on expected available funding, and prioritizes maintenance and preservation of the existing system while still maintaining existing levels of investment in ITS and intermodal transportation. It does not include funding for capacity expansion, reflecting stakeholders' desire to maintain and modernize the existing transportation network. Approximately 87 percent of funding is allocated to roadway preservation. Funding for safety, public transit, intermodal, and pedestrian and bicycle facilities is maintained at current levels.



Expected Constrained Funding Strategy – Funding Levels and Performance Results



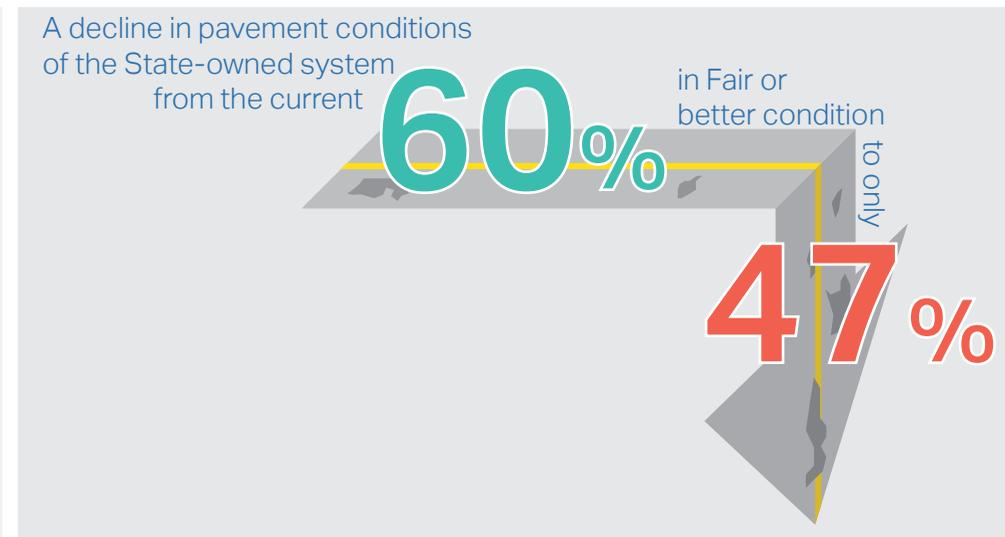
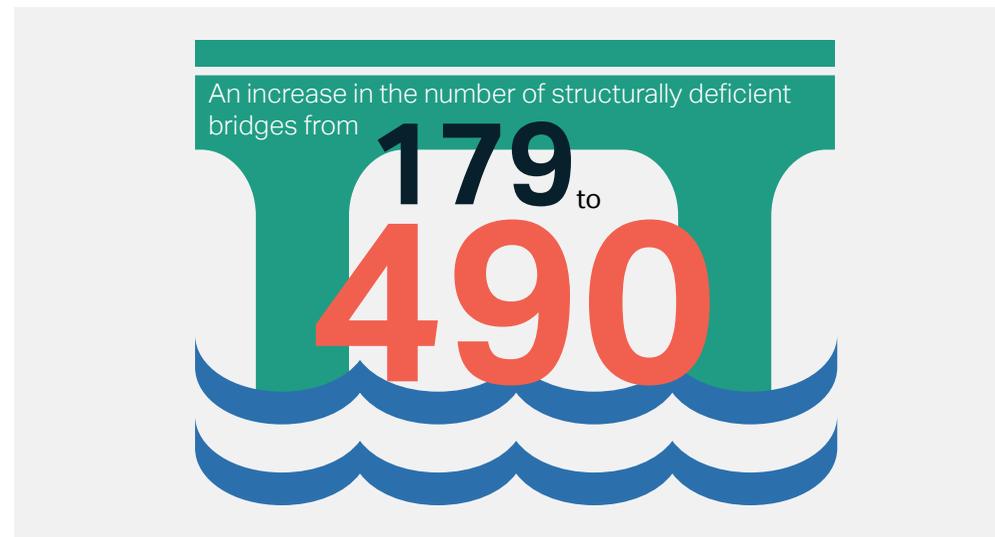
ECONOMIC COSTS OF UNDER FUNDING TRANSPORTATION

The expected constrained funding strategy underfunds transportation in Mississippi and results in deteriorating conditions and performance.

All of these declines in performance lead to higher transportation costs for citizens and businesses. As a result, living and doing business in Mississippi is more expensive.

This impacts the State's ability to retain and attract workers, businesses, and jobs.

The expected constrained funding strategy leads to:



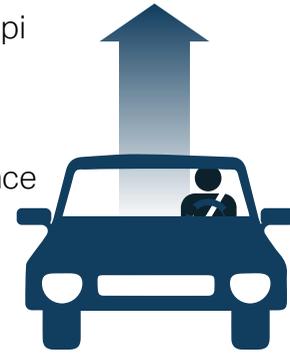


ECONOMIC IMPACT OF THE EXPECTED CONSTRAINED FUNDING

Higher transportation costs makes Mississippi more expensive in terms of the cost of doing business and the cost of living. This impacts the State's ability to retain and attract workers, businesses, and jobs.

The Cost of Under Funding Transportation

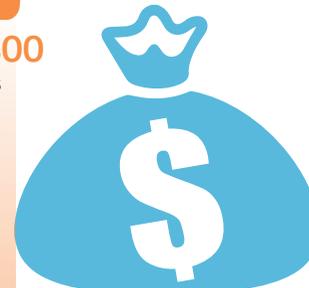
Cost each Mississippi driver an average of **\$650** more per year in maintenance and operating costs, which represents a 38 percent increase.



\$42.7 billion
in transportation costs



-51,800
jobs



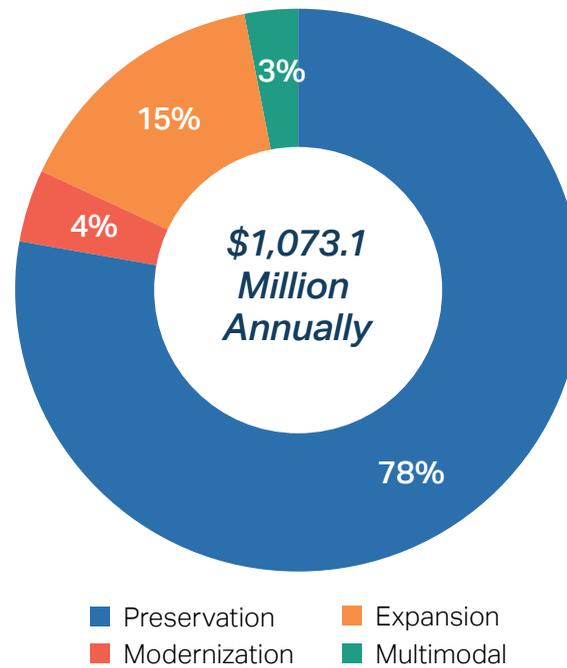
-\$79.7 billion
in Gross State Product annually



-\$94.8 billion
in income annually

PROVIDING ADEQUATE FUNDING FOR MISSISSIPPI'S TRANSPORTATION INFRASTRUCTURE

MDOT and stakeholders have a desire to go above and beyond the proposed federal requirements. The long-term strategic plan is to raise and/or reallocate revenue to implement the **Adequate Funding Investment Strategy**. This strategy reflects the funding required to adequately address the pavement, bridge, and capacity needs on the State-owned system while maintaining existing investment levels in nonhighway programs. The Adequate Funding Strategy allows for replacing posted bridges, improving the state of repair on highways, and adding capacity where needed. Total capital program funding requirements are almost double in the Expected Funding Strategy. This strategy highlights the tradeoff between funding level and system performance as you move from a constrained investment strategy to an increased funding investment strategy.



Adequate Funding Strategy – Funding Levels and Performance Results

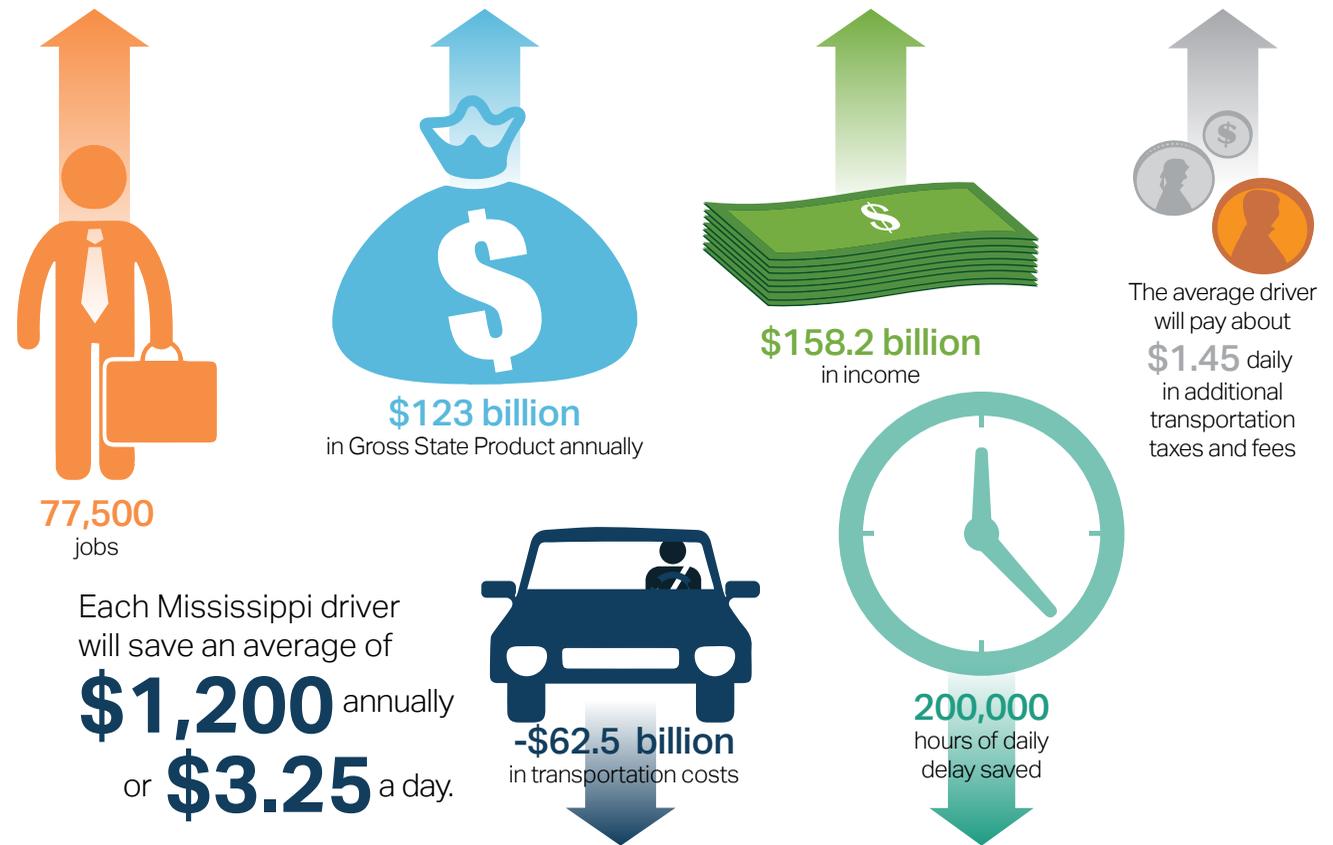


ECONOMIC RETURN ON INVESTING IN MISSISSIPPI'S TRANSPORTATION INFRASTRUCTURE

Just as there is a cost to underfunding transportation infrastructure, there is an economic return on improving the state of repair, safety, and efficiency of the system. This return arises from decreases in vehicle operating costs, travel time savings, and reduction in crashes. These reductions in cost would make Mississippi more competitive and improve the ability to attract and retain jobs, businesses, and people. In addition, there are long-term savings in the cost of maintaining the State's infrastructure in a state of good repair.

Over 70 percent of public survey respondents agree that a good transportation system benefits the economy, and about 50 percent feel transportation is underfunded.

Economic Gains of Increased Investment



CALL FOR ACTION

MULTIPLAN 2040 lays out the challenges Mississippi faces in terms of providing a transportation system that meets the needs of today's global economy. The impacts of underfunding our transportation infrastructure are significant. Only by increasing the level of funding available to maintain and modernize the State's roadways and bridges, can Mississippi keep pace in an increasingly competitive global economy.



The Driving Force of a Strong Economy

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