

MISSISSIPPI'S UNIFIED LONG-RANGE TRANSPORTATION INFRASTRUCTURE PLAN



2035



MISSISSIPPI DEPARTMENT OF TRANSPORTATION

FINAL REPORT

APPENDIX G: ITS NEEDS ASSESSMENT

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1. INTRODUCTION

The purpose of a long range plan is to ensure that a state adequately plans for long term changes in transportation needs. For this reason, long range plans typically focus on large capital projects. However, as demands have increased on capital budgets, the importance of improving the operating efficiency of the existing transportation infrastructure has been recognized, and operational improvements have become increasingly relevant in addressing the long term needs of a region.

For these reasons, US DOT has increased its emphasis on the inclusion of operational issues and projects in the long range plan. Some of these are relatively inexpensive localized improvements, such as adding a right turn lane at a congested intersection. Others can have a more regional impact - for example, corridor or system wide signal coordination - but are still inexpensive compared to capital projects. The combined results of these small and medium scale operational improvements can add up to a significant impact on traveler benefits.

Intelligent Transportation Systems (ITS) typically fit in the latter category of moderate scale operational improvements that can have compounding benefits on regional transportation system efficiency. ITS projects use technology and communications to improve management and operations of a transportation system. ITS typically delivers the most benefits when deployed on a regional scale. For example, a single traffic camera would involve considerable costs for minor benefits, but a system of traffic cameras can provide more benefits to an entire region.

Larger scale ITS deployments are usually far more cost effective than a capital project, but they can still cost millions of dollars. However, they often have a more noticeable effect on the region. Signal coordination can greatly improve traffic speeds along a corridor, incident management can dramatically reduce non-recurring congestion, and advanced traveler information can help manage demand. In addition, ITS should always be considered in combination with other capital improvement projects to help better manage operations along the corridor.

This Report addresses some of the longer term issues related specifically to ITS. Beginning with a review of the history of ITS in the state and a brief inventory of existing systems, this document presents the 25-year vision for ITS in Mississippi. The relationship between the overall MULTIPLAN goals and the specific ITS actions is also discussed.

As of this writing, Mississippi is in the process of completing an ITS Strategic Deployment Plan. Developed concurrently with this Long Range Plan, the Strategic Deployment Plan will outline details of the actual planned and programmed projects. This memorandum will not duplicate the deployment plan but will describe at a high level the longer term vision for ITS in Mississippi and the major actions that need to occur to implement that vision.

2. CURRENT ITS SYSTEM

2.1 Previous Efforts

The previous MULTIPLAN was conducted in two phases and Phase I (completed in 2002) included a statewide ITS vision. At that time, there was very little deployment of ITS within Mississippi. Since the completion of that previous MULTIPLAN, the ITS capabilities and infrastructure of MDOT have increased dramatically. This includes the development of a statewide traffic management center, deployment of ITS components in four urban areas across the state, the development of a statewide Concept of Operations, and development of a statewide ITS Architecture and four regional ITS architectures. There are also numerous ongoing projects to expand the current system. Concurrent with this MULTIPLAN 2035 effort is the development of an ITS Strategic Deployment Plan. That document, along with the aforementioned planning documents, provides a wealth of detail on how MDOT will proceed with ITS over the short and medium term. Once finalized, the ITS Deployment Plan can be obtained from the ITS section of the MDOT Traffic Engineering Division.

2.2 Current Conditions

The current ITS infrastructure deployment began during the late 1990s, when the Mississippi Department of Transportation began to design, build, operate, and maintain Intelligent Transportation Systems with the intent to provide traveler information to motorists throughout the State. For over 10 years, MDOT ITS staff has worked to install various ITS devices including closed circuit television cameras, dynamic message signs, vehicle detection systems, communications systems and a traveler information web site (<http://www.msTraffic.com/>). The following provides a short overview of the ITS infrastructure in place as of 2010. Refer to the ITS Strategic Deployment Plan for a more detailed description.

2.2.1 Inventory

The sections that follow provide a brief inventory of ITS systems that are the foundation from which MDOT can build. This information is primarily derived from the current Mississippi ITS Strategic Deployment Plan.

2.2.1.1 TMCs

MDOT has established Regional Transportation Management Centers (TMCs) covering each of the four major urban areas in Mississippi. The Transportation Management Center in Jackson serves as the statewide TMC and began full operations in August 2008. Currently, the statewide TMC is manned on weekdays from 6:00 am to 8:00 pm and has recently added coverage on weekends from 9:00 am to 7:00 pm. Operators monitor traffic conditions along metro Jackson freeways, issue traffic alerts for incidents, coordinate incident response with area authorities, and provide traveler information using Dynamic Message Signs (DMS) located throughout the region, as well as on a statewide basis. Additionally, TMC staff support emergency operations

and special events on a statewide basis. MDOT is also currently in the design stage for a new Statewide TMC building in Jackson near the location of the current TMC.

Regional TMCs include the following:

- Northwest Mississippi TMC is located in Southaven in a facility shared by the local Police department;
- Gulf Coast TMC is located in Lyman, inland from Gulfport, and
- Hattiesburg TMC, serving the Hattiesburg area on I-59 in the state's inland southeast.

The Regional TMCs are intended to provide local control of regional field devices and will be responsible for daily freeway and surface street operations within their area of control. At the present time, the Regional TMCs are not staffed on a regular basis, but are monitored and controlled remotely from the Statewide TMC. It is anticipated that the Regional TMCs in Northwest Mississippi and Hattiesburg will be staffed in 2011 and the Gulf Coast in 2012.

2.2.1.2 Communications

MDOT has constructed an extensive communications network to support the transmission of the large amounts of data and video required to support the daily ITS operations. Initially, this network consisted of the Jackson fiber ring, a fiber optic based OTN SONET network that carries data and video throughout the Jackson area. As device implementation has expanded statewide, this concept has been replicated in other areas of the state and connected back to Jackson via leased lines. More details on the communications infrastructure can be found in Chapter 4 of the ITS Strategic Plan document.

2.2.1.3 Field Devices and ITS Components

There are several primary types of ITS field devices currently installed statewide: CCTV, Dynamic Message Signs (DMS), Vehicle Detection Systems (VDS), Highway Advisory Radio (HAR) and traffic signal systems. Additionally, there are several software packages that are used with ITS, and an emerging incident management program.

MDOT currently has 250+ CCTV cameras located on arterials and freeways throughout the state. These include a combination of fixed cameras and tilt/pan/zoom cameras. Cameras are utilized primarily for monitoring of traffic flow and verification of incidents. Camera images are also provided to the public on the msTraffic.com website.

There are nine DMS located in the Jackson area, two on arterial roadways and seven on the freeways. One new DMS has recently been added in the Southaven area and seven will soon be operational in Hattiesburg. DMS are used to provide motorists with travel and incident information. DMS are also very effective during special events and emergencies such as hurricane evacuations.

Detection devices are installed along US 90 on the Gulf Coast and additional detection devices are under construction on I-59 in Hattiesburg. Detection devices collect data and provide TMC operators with real-time information on traffic flow conditions.

MDOT operates and maintains traffic signals on the state highway system in areas with a population of less than 20,000. Traffic signals are located throughout the state. Those with remote communications capability are monitored using ACTRA software located in District offices and regional TMCs.

2.2.1.4 Software

As a short term operational support solution, MDOT currently uses several software applications to support TMC operations. ACTRA is a Windows-based software application that enables monitoring and control of traffic signals. The MDOT ACTRA system consists of four ACTRA servers. Servers are located at the Statewide TMC, the City of Jackson TOC, the Hattiesburg Regional TMC and the Northwest Regional TMC in Northwest Mississippi. The ACTRA system will eventually be deployed statewide for signal coordination and control. The system will consist of regional servers connected to a central server in Jackson. Cameleon/360 ITS is a Windows-based software application that serves as the primary user interface to monitor and control CCTV, DMS and VDS. MDOT also utilizes a Microsoft Access database application to collect and archive incident management information. As incidents are detected by the operations staff, relevant data are entered into this application during the course of managing the incident. The application provides the ability to display all active incidents and includes an archive function to collect and maintain historical data for each incident. Unfortunately, these applications, while all using the same operating system, are not able to exchange information and all of the integration and interface between the programs is via manual manipulation of the data and in some cases requires manual data entry.

2.2.1.5 Traveler Information and Incident Management

MDOT uses multiple tools to provide traveler information to motorists. MsTraffic.com is MDOT's traveler information website and serves as MDOT's primary traveler information interface to the public. MsTraffic.com provides real-time information including streaming video, viewing of active DMS messages and incident/road closure information. In addition to viewing real-time information on the website, users can access the website on mobile devices and subscribe to receive email alert notices as incidents occur. MDOT also plans to implement a statewide 511 system in 2011. This system will allow the public to access real-time traveler information via landline and cellular phones.

Mississippi's incident management programs are coordinated with the state ITS operations. Operators in the Statewide TMC can identify incidents via CCTV, and can receive information about active incidents from the Mississippi Highway Patrol or other verified sources. MDOT District Offices submit information on construction or maintenance activities to the TMC or

enter construction and maintenance activities directly into MsTraffic.com. All incident information is posted to the MsTraffic.com website and is subsequently geocoded to the statewide map on the website. Operators assist incident and emergency responders in the field as needed by posting messages to DMS and forwarding the request for an incident response to the appropriate MDOT district or local transportation agency.

3. 25-YEAR ITS VISION

The accomplishments of the ITS program to date have been tremendous. In order to continue to advance and improve, it is important to have a clear vision for what should be accomplished with ITS in the future. As previously mentioned, there are many short-term and mid-term projects that MDOT has already planned. The purpose of MULTIPLAN 2035 is to look at the longer range goals and vision. The following sections will describe MDOT's 25-year ITS vision and how it will improve travel in Mississippi. The goal of ITS is always to improve operations – making travel safer, less congested and more efficient. This 25-year vision will help those goals to be realized and have a significant positive impact on travel throughout Mississippi. The projects, priorities and enhancements to the ITS system will be planned with this vision in mind.

3.1 What Does Travel Look Like in 2035?

3.1.1 Interstate System

The interstate traveler of 2035 – whether a passenger car or a commercial vehicle – will have significantly more information available to use to help with travel decisions. This will include both historic and real-time travel times across all interstates and predictive systems to identify anticipated incidents such as construction and near-term severe weather. Additional information will be available in urban areas including comprehensive real-time incident data and suggested alternate routes.

This information will be available to the traveler in a variety of formats. For those planning trips, the information will be available over the internet to computers and smartphones. For those already on their trip, information will be available along the interstate through DMS, HAR, 511 and in-vehicle navigation devices. As the automotive industry and public agencies move forward with advanced technologies such as Intellidrive¹, networked wireless communications among vehicles, the infrastructure, and passengers' personal communications devices will make travel safer.

Incidents on the interstate (although reduced from many of the safety benefits of ITS), will still occur. Through training, deployment of advanced technologies, and coordinated responses, all

¹ IntelliDriveSM is a multimodal initiative sponsored by USDOT and others that aims to enable safe, interoperable networked wireless communications among vehicles, the infrastructure, and passengers' personal communications devices to make surface transportation safer, smarter and greener.

incidents will be handled quickly and efficiently. The majority of the urban incidents are expected to be cleared off the roads in under 20 minutes with no lane blockage and 30 minutes with lane blockage, while rural incidents are cleared within 45 minutes. Emergency responders, recovery service providers, and the MDOT will work together in a closely coordinated manner to minimize the impact of each incident on the operations of the interstate.

On critical sections of the interstate system, additional management tools such as lane control signs and variable speed limits will be implemented as deemed prudent. Where tolling is implemented, variations on tolling such as High Occupancy Toll lanes will be considered as another tool to reduce congestion.

3.1.2 Arterial System

The urban arterial system will consist of a network of adaptive traffic signals and smart intersections that are constantly monitored and adjusted to achieve peak system performance. These signal systems of the future will utilize historic data as well as real-time incident and event information to provide timing plans that help (unknown to the drivers) move all traffic in the most efficient manner.

Also available to the urban driver will be strategically placed DMS. All the same means of distributing traveler information to the interstate driver will also be available to the urban arterial driver, including 511 and Intellidrive.

On the rural highways, selected higher volume corridors will also be monitored and controlled. This will include CCTV near interchanges as well as sensor data throughout. This monitoring and management will provide MDOT with the ability to determine the best way to move traffic along the corridors. This may include alternate route use during major incidents, as well as suggested routes to the interstates for those trying to access the interstate system from rural Mississippi locations.

3.1.3 The 2035 TMC

All the field devices will report back to the 2035 Statewide TMC in Jackson as well as three regional TMC's in Southaven, Hattiesburg and the Gulf Coast. At the TMCs, all devices will be monitored, traveler information will be generated, and the operators will have the ability to use available tools to manage traffic throughout Mississippi. This will include a state of the art software system that effectively manages all the various components including field devices, TMC equipment and operations, communications management, etc. The system will be designed specifically to take advantage of the latest developments within the industry, and to be flexible enough to add new services as they are implemented or become available.

MDOT will have deployed high speed communications between all TMCs within the state, and to the state line to connect to other regional TMCs in nearby states. Other communication lines

will be developed between critical centers (including other state and local public agencies) and critical field devices. To the greatest extent possible, the communications network will be built to withstand the worst weather expected in Mississippi, or at least designed in a manner that provides redundancy and best allows for timely restoration of services after any damage.

The 2035 TMC will also provide advanced system management and data archiving. Data archiving is critical to the operational units who will use the historic data for real time operations decisions, as well as the planning units and research organizations. The data archive will be robust, complete, and easy to use. The system should be created to address the needs of all anticipated data users.

If tolling is implemented in Mississippi, the 2035 TMC will work closely with any toll authority or private sector operator to ensure appropriate operational data is shared, and operational coordination is accomplished to best serve all travelers.

In addition to improving transportation in Mississippi, the 2035 TMC will be connected and integrated with other regional TMCs in nearby States to ensure the traveler continues to receive real-time information as they cross the state lines. Data and operational issues will be quickly and seamlessly shared between these systems to address larger incidents, and potentially provide additional backup systems for each other.

3.1.4 Multi-Modal Integration

ITS will be integrated with all modes of transportation in Mississippi. In particular, ITS will be dedicated to advancing the movement of freight across Mississippi. This will be accomplished by further developing all aspects of the federal Commercial Vehicle Information Systems and Networks (CVISN) program and working with the trucking community and other public agencies to ensure barriers to productivity are reduced or removed through automation. Integration with the rail system will help warn motorists of potential rail crossing dangers and expected delays. In addition, the ITS components will be integrated with transit initiatives that develop throughout Mississippi to ensure that real-time information is provided for transit passengers as well as transit operators. Refer to the “Transit Needs Assessment” section of MULTIPLAN 2035 for details on the specific transit initiatives.

3.2 Actions Needed to Implement the Vision

The 25-year Vision will offer motorists in Mississippi a wealth of traveler information and will greatly improve the safety and efficiency of the transportation system. However, it will require that MDOT continue its past history of success in growing the ITS program and will have to provide sufficient funding needed to implement the various projects and enhancements necessary to realize that Vision. The specific project by project details will be included in other documents, but a high level overview of the actions needed to implement this vision are summarized below.

3.2.1 Prioritize Appropriate Funding for the ITS Program

MDOT will strive to provide a dedicated funding source to support the necessary budget for ITS construction, operations, and maintenance. As the program continues to expand, the funds and resources needed to effectively operate and maintain the system will continue to increase. The 25-year vision can only be accomplished with sufficient funding in each of these areas.

3.2.2 Evaluate Revenue Generation Options

The funding will need to come from typical state and federal transportation funding sources; therefore MDOT will evaluate potential revenue generating options that could offset some of the costs. These options could include sponsorships for services such as 511 and service patrols, selling advertisements on websites or communication sharing agreements. In some cases, changes in Mississippi law may be needed but MDOT will evaluate each of these options to determine the most cost-effective method of expanding the ITS program.

3.2.3 Fully integrate ITS into MDOT's Overall Planning Process

To fully achieve the vision for the ITS program, it is critical that the evaluation for ITS needs be considered a normal part of every MDOT project. Just as every roadway project evaluates the need for guardrail, every project and initiative within MDOT should also evaluate the benefits of utilizing ITS technology to better achieve the overall purpose of providing a safe and reliable transportation system. Not all projects will benefit from ITS, but many will and consideration should be given for evaluating the need for ITS on every project.

3.2.4 Implement Enhanced Incident Management Statewide

MDOT will continue to develop and implement a complete incident management system throughout each of the major cities in Mississippi as well as rural areas that demonstrate the need for these systems. These incident management systems will include vehicle detection, CCTV surveillance, dynamic message signs, highway advisory radio and other advanced technologies to quickly identify incidents, inform and warn the motorists, dispatch the appropriate response personnel and aid in quicker clearance of the incident. This will include communication and integration with the various emergency service providers.

3.2.5 Improve Traveler Information by Providing Drive Times

MDOT will develop and implement systems (or contract with 3rd party vendors) to provide drive times on the interstates and major arterials throughout the entire state. Other applications for improving traveler information will also be evaluated and implemented to provide the most effective and accurate traveler information available throughout the state. This will likely require a combination of MDOT installed elements as well as coordination with private entities.

3.2.6 Implement a Fully Integrated Arterial Management Program

MDOT will evaluate the implementation of ITS technologies on the congested arterials and will fully integrate those systems with the interstate system. This includes improved signal timing, response plans and traffic signal management to be able to react to traffic diversions from the interstate to the arterials. Traffic signal management is planned to include implementation of adaptive signal systems and smart intersections.

3.2.7 Implement Next Generation of ATMS Software

MDOT will develop and deploy a fully-integrated Advanced Transportation Management System (ATMS) software package that supports the various functions and services of the statewide ITS Program.

3.2.8 Enhance and Expand the Communication System

Communications is the backbone of all ITS systems and must be capable of supporting the transfer of information. As such, MDOT will, as is appropriate, install, operate, and maintain a communications network between regional TMCs to support full center-to-center communications.

3.2.9 Enhance the Interoperability between the Gulf States

Mississippi's central location makes it a natural hub for a true Gulf Regional ITS system between Mississippi, Louisiana (Baton Rouge/New Orleans), Tennessee (Memphis) and Alabama (Birmingham/Mobile). MDOT will continue to work with appropriate personnel in each state to develop this overall regional approach.

3.2.10 Implement a Data Collection and Reporting System

A robust data collection and reporting system is planned to be implemented to capture the valuable data as ITS elements are expanded. The system will be developed to meet the needs of each division within MDOT.

3.2.11 Fully Integrate with Other Modes of Transportation

As the system expands, MDOT will look for opportunities to ensure that all modes of transportation within the state are integrated into the overall ITS system. This will include integration with Freight/CVISN services, ports and waterway activities, transit alternatives, etc. Coordination and integration with Homeland Security will also be included.

3.2.12 Improve Traveler Information in Rural Areas

MDOT will as is appropriate identify specific needs and implement ITS applications in rural areas throughout the state. This will include Road/Weather systems as well as other safety applications.

3.2.13 Integration of Future Toll Roads

As MDOT considers toll roads to be built in the state, the ITS program will be planned to fully integrate these applications in the overall system.

3.2.14 Support the National Initiatives such as Intellidrive

Intellidrive as well as other national initiatives will be studied to determine application throughout the state. MDOT should closely follow and evaluate all such regional and federal initiatives in the future.

3.2.15 Prioritize the Key Corridors

MDOT will evaluate the system from year to year to identify and prioritize the key corridors for system implementation. The complete interstate system in each of the four major cities as well as the major state arterials will continue to remain top priorities. The other key corridors for system implementation will be based on congestion data, safety data, and other factors that demonstrate a need that can be met with specific ITS technology.

3.2.16 Flexibility to Adapt to Future Technologies

The specific technologies used to meet the goals of the ITS program continue to develop and change from year to year. As the ITS program expands and grows, MDOT will continually evaluate the available systems and current technologies to determine the most effective method of meeting the intended goals. The Vision itself does not change, but the components and specific projects needed to implement the Vision will evolve with the technology.

3.2.17 Implement the Strategies and Actions to Meet Overall MULTIPLAN Goals

The next section identifies the seven specific long range goals of MULTIPLAN 2035 and how the ITS vision specifically relates to those goals. There are specific ITS strategies and actions that can be linked to each of those overall MULTIPLAN goals.

4. ITS RELATIONSHIP TO MULTIPLAN GOALS

There are seven specific Mississippi MULTIPLAN goals that identify the core basis and approach to the long range plan:

- **Accessibility and Mobility:** Improve Accessibility and Mobility for Mississippi's People, Commerce and Industry;
- **Safety:** Ensure High Standards of Safety in the Transportation System;
- **Maintenance and Preservation:** Maintain and Preserve Mississippi's Transportation System;

- Environmental Stewardship: Ensure that Transportation System Development is Sensitive to Human and Natural Environment Concerns;
- Economic Development: Provide a Transportation System that Encourages and Supports Mississippi's Economic Development;
- Awareness, Education and Cooperative Processes: Create Effective Transportation Partnerships and Cooperative Processes that Enhance Awareness of the Needs and Benefits of an Intermodal System, and;
- Finance: Provide a Sound Financial Basis for the Transportation System.

Within MULTIPLAN, goals are followed by a series of “strategies” that are then followed by a series of “action steps”. Strategies define concepts that address various portions of the goal. The action steps define specific steps that could be followed to implement each strategy. Since ITS is one of many components of the overall MDOT program, it is important to define the relationship between the ITS Vision and these seven overarching goals. This approach fits well within the Systems Engineering process that is applied to all ITS projects. The table in **Appendix A** summarizes and illustrates how the overall goals and strategies are related and the specific ITS action steps that would be needed accomplish those.

APPENDIX A: GOALS, STRATEGIES AND ACTION STEPS

Goals	Strategies	Action Steps
ACCESSIBILITY AND MOBILITY – Improve accessibility and mobility for Mississippi’s People, Commerce and industry	Enhance Mississippi’s research and implementation of Intelligent Transportation Systems Technologies	Continue to participate in cooperative programs with other states to study and implement system improvements in mobility, operational efficiency, and safety-based initiatives on emerging new technologies and operational management systems
		Continue to implement ITS projects in the ITS Strategic Deployment Plan
	Improve regional public transportation processes that consider community needs while achieving new levels of efficiency	Implement an advanced dispatching system that maintains or improves the services of those citizens with disabilities.
		Implement an advanced dispatching and management system that meets the needs of the rural riders at reduced costs from current systems
		Improve coordination with highway oriented agencies to share information and reduce congestion where applicable
	Improve the efficiency of all existing roads	Implement ITS and operational improvements where appropriate and cost effective to reduce congestion and incident impacts
	Improve airport ground access	Implement improved information on flight status and airport directions to allow for more efficient ground access around the airports
		Provide improved fare collections at parking facilities to increase ingress and egress efficiency and more quickly find places to park
	Promote increased use of the state’s freight rail system	Implement improvements for ingress and egress to intermodal facilities to facilitate transfer of goods from highway to rail
		Promote the use of technology to improve grade crossing safety
Promote increased use of the state’s intermodal transportation alternatives and linkages	Provide improved ground access around intermodal facilities to increase ingress and egress efficiency	

Goals	Strategies	Action Steps
SAFETY – Promote public health and safety by working to eliminate transportation related deaths and injuries	Design and implement a Strategic Safety Plan that will improve safety on Mississippi’s entire highway system	Ensure that ITS and technology are considered in all potential steps to improve safety
		Implement ITS solutions where cost effective and appropriate
	Provide a statewide approach to Incident Management	Develop a statewide manual on how to address incident management
		Train local responders on proper processes and the incident management manual in order to promote interagency cooperation
		Enact enabling legislation that supports the quick clearance of accidents
	Support statewide improvements to rail crossings and corridors	Promote the use of technology, where appropriate, in reducing grade crossing accidents
		Promote the use of technology and information sharing along rail corridors to improve grade crossing safety
	Encourage a secure and safe environment for public transportation	Integrate transit security systems with local police computer aided dispatch systems
	Continue to improve work zone safety	Support the use of smart work zones where cost effective
		Require the use of certain technologies to reduce speeds in work zones and improve safety
		Enable legislation to improve safety in work zones (e.g., use of speed cameras, doubled fines, etc.)
	Provide safe and efficient multimodal access to Mississippi’s airports	Implement improved information on flight status and airport directions to allow for more efficient ground access around the airports
	Provide safe travel for pedestrians and bicyclists	Promote the use of technology to improve pedestrian crossings in high accident locations, including passive pedestrian detection.
		Provide advanced traveler information for pedestrians and bicyclists (e.g., paths, etc.)

Goals	Strategies	Action Steps
MAINTENANCE AND PRESERVATION – Maintain and preserve Mississippi’s transportation system	Implement bridge improvement projects as applicable through the plan	Implement the use of ITS for monitoring of critical bridges to allow for more logical and improved programming of funds Utilize ITS to monitor security of critical bridge infrastructure
	Enforce bridge weight and size restrictions	Use weigh-in-motion to monitor and enforce truck compliance with legal weight limits. Automate the overweight/oversize permitting process to provide more timely checks of routing issues Implement bridge height warning systems where appropriate
	Support the use of a roadway inventory and management system	Provide data collection and management of the roadway ITS devices and subsystems statewide for use in programming projects, implementing comprehensive configuration management.
	Technologies should be implemented in a manner that minimizes turnover of equipment and maximizes use of existing services and tools	Implement the ITS program in a building block approach where each project builds upon those before it Ensure all necessary services, subsystems, communications, and equipment are available or included in projects before implementation Adopt standards that provide consistency in technologies and communications protocols, reducing integration and maintenance costs
	Support improved maintenance and planned replacement of public transit equipment and facilities	Implement AVL and monitoring systems on busses to ensure mechanical issues are identified and resolved early, thus extending the life of the equipment

Goals	Strategies	Action Steps
ENVIRONMENTAL STEWARDSHIP – Protect and enhance the natural and human environment affected by Transportation system development	Promote the use of ITS in context sensitive solutions for transportation system development	Ensure the consideration of ITS or other operational improvements when designing improvements
	Support leadership in environmental stewardship	Provide metrics that demonstrate how ITS and the various agencies can promote environmental stewardship

Goals	Strategies	Action Steps
ECONOMIC DEVELOPMENT – Provide a Transportation System that encourages and supports Mississippi’s economic development	Continue development and implementation of highway programs geared towards economic development efforts	Include ITS projects in the overall programs to help attract technology firms to Mississippi
	Promote the role of airports for tourism and economic development	Increase use of traveler information to help promote tourism in Mississippi
	Stimulate economic development by improving public transportation networks and broadening and encouraging the use of transit	Provide tourism related travel information to help promote visitors to Mississippi
	Promote a balanced freight transportation system that takes advantage of the inherent efficiencies of each mode	Use ITS to improve ingress and egress to the airports to improve the efficiency of local businesses
	Support continued development of the state’s water ports	Use ITS to improve efficiency of transit systems in urban areas to increase availability of housing and employment to all
		Increase use of paratransit and shared rides in rural areas to increase availability of housing and employment to all
		Provide improved ground access around intermodal facilities to increase ingress and egress efficiency
		Use data from ITS systems to support the freight planning process
		Implement technology to aid in the efficient processing of freight at ports
		Use technology to improve security around water ports and navigation routes to ensure safe and efficient movement of goods
		Provide improved ground access around intermodal facilities to increase ingress and egress efficiency

Goals	Strategies	Action Steps
AWARENESS, EDUCATION AND COOPERATIVE PROCESSES – Create effective transportation partnerships and cooperative processes that enhance awareness of the needs and benefits of an intermodal system	Elevate public involvement in Mississippi’s transportation plans and programs to foster participation by all citizens	Use data from ITS systems to generate “dashboard” metrics on current efficiencies and operations
	Create a higher level of public awareness for transportation problems, needs, issues, and solutions	Use data from ITS systems to generate “dashboard” metrics to help illustrate issues
	Develop an intermodal-based awareness program that will encourage transfers between the transportation modes	Implement advanced traveler information systems that incorporate public transit information and highlight the use of this system
		Use ITS to improve ingress and egress to intermodal facilities
		Use ITS to improve access and coordination between transit modes

Goals	Strategies	Action Steps
FINANCE – Provide a sound financial basis for the transportation system	Establish a balanced funding program to achieve MDOT’s objectives	Seek specific ITS funding to address ITS or operational projects
		Use available funding from traditional sources for ITS projects where cost effective
	Help alleviate the shortfall of funds for public transportation, aviation, water ports, and rail capital and maintenance programs	Implement technology solutions where the project improves operations and decreases agency costs
	Develop new funding mechanisms to help pay for improvements	Implement all electronic tolling on new facilities where applicable
		Implement HOT lanes where appropriate to alleviate congestion while paying for the improvement

