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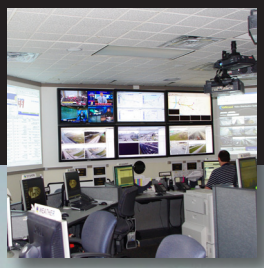
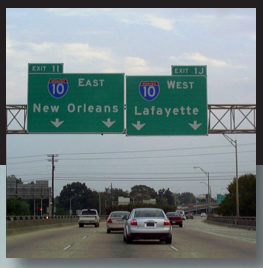
Louisiana DOTD 5-Year ITS Strategic Business Plan





October 5, 2010

Table of Contents

Table of Figures

Acronyms

ATMS	Advanced Traffic Management Systems
AVL	Automated Vehicle Location
BCR	Benefit Cost Ratio
CAD	Computer Aided Dispatch
CCTV	Closed Circuit Television
DMS	Dynamic Message Sign
EOC	Emergency Operations Center
FHWA	Federal Highway Administration
GIS	Geographic Information Systems
GPS	Global Positioning System
ITS	Intelligent Transportation Systems
DOTD (DOTD)	Louisiana Department of Transportation and Development
LSP	Louisiana State Police
MOT	Maintenance of Traffic
MOU	Memorandum of Understanding
MTBF	Mean Time Between Failures
NTCIP	National Transportation Communications for ITS Protocol
PTZ	Pan/Tilt/Zoom
PM/CM	Preventive Maintenance / Corrective Maintenance
O-D	Origin and Destination
O&M	Operations and Maintenance
QPL	Qualified Product List
RFP	Request For Proposal
RSIP	Roadway Safety Incident Program (Formerly MAP)
RWIS	Roadway Weather Information Systems
SOP	Standard Operating Procedures
TIM	Traffic Incident Management
TMC	Transportation Management Center
TSM&O	Transportation System Management & Operations
UPS	Uninterruptible Power Supply
VD	Vehicle Detector
VII	Vehicle Infrastructure Integration

1.0 Introduction

Over the past decade, the Louisiana Department of Transportation and Development (DOTD) Section 56 has made significant investments in Intelligent Transportation Systems (ITS) to improve the operations of the state's transportation systems as well as facilitate Louisiana's unique needs for hurricane related emergency evacuation.

In March 2000, DOTD prepared the Louisiana ITS Business Plan to develop a long-term strategic vision and program of projects to integrate ITS applications into its surface transportation planning, operation, and management activities. The Plan identified the requirements for coordinating, planning, integrating, funding, and deploying a statewide program of ITS initiatives to improve the safety and efficiency of the state's existing and planned transportation network. In addition, the "Louisiana Statewide ITS Implementation & Telecommunications Plan" was prepared to achieve the following vision:

- Major traveler delays on freeways and major arterial routes will be minimized through rapid detection, response, and clearance of all reported incidents.
- Citizens will be able to reach safe locations during emergency evacuations sooner through the continuous monitoring and management of traffic and communication of best route information to evacuees.
- Travelers will be able to avoid delays on freeways and major arterial routes through the availability of accurate information on work zone, construction area, and incident locations in a wide variety of ways, both pre-trip and en-route.
- Travelers will be able to make informed decisions about trip need, time, route, and mode because they will be able to access accurate information about current traffic conditions and public transit options.
- Accidents in work zone areas and at high-accident locations will be reduced through advance warnings and effective speed control measures through additional DMS installations.
- Traveler delay on major arterial routes will be minimized through use of traffic signal control strategies that respond to changing traffic conditions.
- Louisiana's industry will realize lower transportation costs.
- Quality of life will be improved because travel will become more predictable and less stressful.

The goals of this *ITS Strategic Business Plan* were continued from the "Louisiana Statewide ITS Implementation & Telecommunications Plan" (2003) as follows:

- Improved Transportation Network Safety
- Improved Traffic Management
- Reduced Non-Recurring Congestion
- Effective Dissemination of Traffic Information
- Improved Emergency Management
- More Efficient Modal Utilization
- Improved Administrative Efficiency, Operational Safety, and Productivity for Commercial Vehicles

The purpose of this *ITS Strategic Business Plan* is to provide guidance on the direction of the ITS Program over the next five years (2011 – 2015). For the purposes of the current development of the ITS Strategic Business Plan, the above vision and business plan goals are considered appropriate and remain the same. The contents of this report include the following:

1. Introduction - Discussion of the background and purpose of the ITS Strategic Business Plan and its contents.
2. Strategic Plan - Development of a vision reflecting the desired status of the ITS program in the year 2015. This vision addresses each facet of the program including: ITS deployment; TMC operations; ITS maintenance; ITS systems; motorist safety patrols; traffic incident management; traveler information; traffic engineering; partnering; and public outreach.

3. Business Plan - The Business Plan provides future initiatives for each of the above categories on a year-by-year basis (i.e., 2011 – 2015).
4. Cost Estimates - Cost estimates are provided for each significant component listed in the business plan in terms of initial costs and annual costs of operations and maintenance. Activities to be conducted by staff are not included in the analysis.
5. Performance Management - Performance measures are developed to track the progress and effectiveness of the ITS program on an annual basis.
6. Beyond the Year 2015 - A list of initiatives is provided to position DOTD to continuously improve the ITS program in preparing for the next generation of transportation needs and technologies.

The methodology used in preparing this report was based on interactive workshops conducted with DOTD management, other agencies and consultants as well as follow-up interviews with stakeholders.
In summary, the "ITS Strategic Business Plan" provides specific initiatives on the projects, processes and strategies needed to achieve the vision and business goals of the DOTD ITS program. These initiatives will be incorporated into current and future contracts, as well as work program updates, then tracked on an annual basis to ensure that they are being accomplished.

2.0 Strategic Plan

The ITS Strategic Business Plan presented in this document was developed for a five-year time period. This is in recognition that the time frame beyond five years will be influenced by major initiatives and emerging technologies (e.g., IntelliDrive); therefore, this Strategic Business Plan was developed to cover the years 2011 – 2015.

One of the most significant areas of the Strategic Business Plan is ITS deployment. It is impractical to deploy ITS technologies throughout the entire state highway system. Return on investment in ITS technologies is highest when they are deployed strategically along critical highway segments of prime importance to the State. These include interstates, freeways, expressways, and major arterials which serve a large portion of the annual vehicle-miles traveled and annual freight flows within Louisiana. It also includes areas that:

- Experience significant recurring and non-recurring congestion;
- Experience a high number of crashes;
- Serve as an evacuation route during emergencies;
- Serve as a major freight route within and through the state; and
- Provide connections to intermodal facilities.

In establishing ITS priority corridors, the existing communications infrastructure and roadway functional classification system were considered.

The strategic vision is presented in terms of describing existing conditions and providing future initiatives to achieve the desired status of each key component of the ITS program in the future (i.e., 2015). Specifically, these components include the following: ITS deployment; TMC operations; ITS maintenance; ITS systems; Roadway Safety Incident Program (RSIP); traffic incident management; traveler information; traffic engineering; partnering; and public outreach.

2.1 ITS Deployment

This section summarizes the current ITS infrastructure including Closed Circuit Television (CCTV) cameras, Dynamic Message Signs (DMS), Vehicle Detectors (VD), Roadway Safety Incident Program (RSIP), as well as communication infrastructure, and provides initiatives for future deployments.

The current ITS inventory has CCTV cameras, DMS, and VD located along the major roadways surrounding the metropolitan regions of Baton Rouge, Shreveport, Lake Charles, Lafayette, Houma, Hammond, and New Orleans. The information collected by these devices is transmitted to the statewide and/or the regional Traffic Management Centers (TMC's) to provide operators a clear picture of traffic flow around the region. There are over 180 CCTV cameras (PTZ and Fixed), approximately 30 DMS's, and over 120 VD (DOTD and Traffic.com), which are distributed in the various regions as shown in the adjacent table. These deployments were based on the 2000 ITS Business Plan, which provided a long-term strategic vision and program of projects to assist the state in integrating ITS applications into its surface transportation planning, operation and management activities.

The ITS communications network infrastructure is comprised of a combination of 21 Mbps leased lines from AT&T, leased fiber optic cable (MCI, Qwest, and Detel), DOTD installed fiber optic cable and 155 Mbps microwave links. A full page illustration of this graphic is located in Figure 2.

Figure 1 Approximate ITS Deployment

Region	CCTV	DMS	VD
Baton Rouge	>100	8	>60
Shreveport	>15	12	>70
Lake Charles	>10	0	5
Lafayette	>50	7	15
Houma	>15	2	12
Hammond/North Shore	>45	5	10
New Orleans	>70	15	>20
Total	>305	>49	>125

Currently, the major ongoing ITS improvement is the ITS Design-Build (Phases 1 and 2) project, which incorporates the installation of communications infrastructure, CCTV cameras, VD and DMS's from Baton Rouge to New Orleans and Baton Rouge to Lafayette.

Future Initiatives

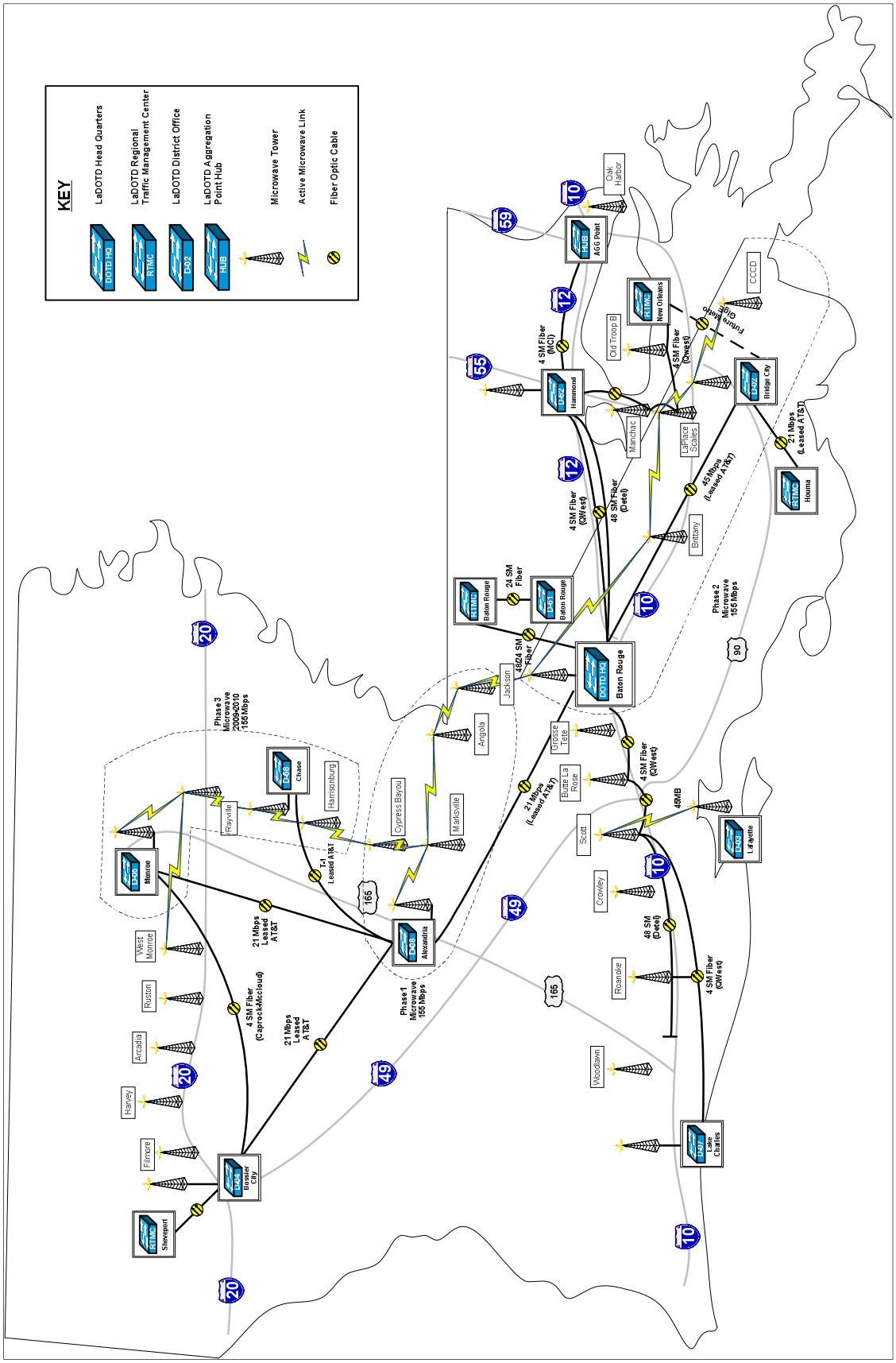
The following initiatives are proposed in planning and deploying future ITS infrastructure to support DOTD operations and the motoring public.

1. Determine the Appropriate Scale of ITS Scale ITS deployment based on a desired level of service to provide to the public. For example:
   - Develop minimum spacing criteria for ITS devices to support the identification, verification, and response to incidents.
   - Define the minimum level of service to be provided to customers and then have the private sector enter into an agreement with the Department to provide added value at no cost. Examples of this would be travel times or data provided by a private entities.
2. ITS Master Plan Develop an overall vision of the "ultimate" ITS infrastructure build-out. This plan will be reviewed every five (5) years in conjunction with the ITS business plan. This critical step identifies the ITS equipment required as well as capital, operations and maintenance costs associated with that equipment. This will support the annual budgeting of ITS funds to complete the programs goals.
3. Deployment The following field devices have been identified by operations and planning staff as the most critical devices required in order of priority:
   a. Expansion of the CCTV camera coverage to interstates included within the largest cities such as Baton Rouge, New Orleans, Lafayette, and Shreveport. Given that deploying additional CCTV cameras and associated communication infrastructure requires capital investment, and that a 100% CCTV coverage is cost-prohibitive and unnecessary, the expansion of the CCTV camera coverage is prioritized based upon the following three criteria:
      i. High crash locations that include major impact on the corridor(s);
      ii. High levels of traffic congestion; and
      iii. Availability of fiber-optic communication networks

   Phased implementation is recommended where "near-term" includes interstate or state roadways with existing fiber optic communications; "medium-term" includes state roadways experiencing high levels of traffic congestion but with some or no fiber-optic communications; and "long-term" includes state roadways with no fiber-optic communications.

   b. Expansion of Dynamic Message Signs to provide extended coverage of traveler information.

Figure 2 ITS Communications Infrastructure



This Strategic Plan expands upon the existing system within the State by recommending additional DMS at critical locations identified along the major interstates. The additional DMS will assist drivers in making route choices; alert them of travel times, delays, crashes and construction; and inform them of closed lanes, roadways, exit ramps, and emergencies.

DMS have been problematic as many devices were provided by vendors who no longer support maintenance. DMS retrofits will continue with newer full matrix signs.

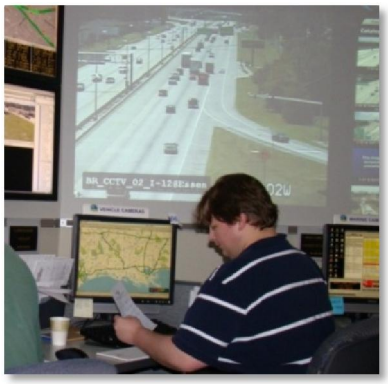
c. Expand the vehicle detection network by deploying traffic sensors and acquire data from private sources (i.e. INRX) to effectively collect travel times throughout the State. Continue to use traffic sensors to collect travel time information on highways such as I-10, I-12, I-20, I-110, I-49, and LA-190 as well as those highways where CCTV camera coverage exists or is proposed. Providing a dense network of vehicle detectors is not needed or desired. Vehicle detectors will be located at strategic or key locations rather than providing full coverage of the entire interstate network.

   Future TMC central software will continue to extract data from the Traffic.com server for all of their traffic sensors. The software will then combine the Traffic.com data with other ITS sensors owned by DOTD.

d. Expand the ramp metering system in major cities (i.e., New Orleans and Baton Rouge), as appropriate, to improve highway operations during peak periods.

e. The early deployment of the Highway Advisory Radio system produced a lower quality and sometimes an ineffective signal. DOTD will investigate the use of newer, more reliable systems to expand the HAR system. The previous RWIS systems deployed were not located in the most

ideal locations to produce relevant data. DOTD will also investigate potential expansion of the RWIS to more suitable locations.



4. Mainstreaming ITS deployment will be mainstreamed as part of all design and construction projects, where applicable. Roadway and bridge construction projects will be reviewed to determine if the installation of conduit as part of construction would support the overall ITS deployment program. Section 56 will take the initiative to work with other sections to mainstream and recommend technologies suitable for in the use in Smart Work zones. This would enable the ITS network to be expanded more cost effectively by utilizing construction projects that may already include earth disturbance (less expensive conduit and pull box installation), as well as higher quantities of

concrete (reduction in ITS foundations costs). In summary, coordination with typical highway and bridge projects will reduce the overall capital funding required for ITS deployment.

5. Arterial Systems Signal systems that are integral diversion routes to major interstates will be reviewed and timing plans will be established to include coordination of arterial signals and ramp metering during evacuations. Arterial DMS's could be installed along the approaches of each I-10, I-12, I-49, and I-20 interchange to provide information to motorists within major metropolitan areas encompassing these interstates.

   By developing and implementing a Master Plan, based on input received from planning and operations staff ,the ITS Division can better document the benefits of strategic ITS deployment throughout the State. This information can be utilized as a basis for funding requests to complete the ultimate deployment build-out as well as covering operations and maintenance of the system.

2.2 TMC Operations

The existing Statewide TMC located in Baton Rouge and New Orleans Regional TMC both operate24 hours per day, 7 days per week, 365 days per year. The Baton Rouge TMC is shared with the Emergency Operations Center. Regional TMC's are located in Baton Rouge, New Orleans, Shreveport, and Houma. The regional TMC's operate Monday – Friday, 6:00am – 10:00pm. The Statewide TMC takes control of the regional TMC's during nights and weekends. The existing TMC's are primarily responsible for the following functions:

- Incident Management TMC operators are responsible for receiving and collecting incident information; documenting, activating and updating information into the 511 software; dispatching RSIP vehicles if not already on scene; notifying emergency agencies and providing updates; posting messages, updating messages and blanking DMS's; sending and updating incident email

alert and twitter notifications; and locating incidents via CCTV cameras.

- RSIP Program Management TMC operators monitor RSIP activity in terms of the event activities and motorists they are assisting. This encompasses information on RSIP schedules, abandoned vehicles, debris, and incidents, incidents with injuries and/or fatalities, missing / malfunctioning equipment, RSIP accident involvement and Maintenance of Traffic (MOT).
- Emergency Management The TMC operator's role prior to, during, and after an emergency varies based on the type and severity of the emergency. For example, during a hurricane event the TMC operators are responsible for coordination with other DOTD sections, other agencies, and emergency responders within the region.
- Special Event Management TMC operators are responsible for supporting special event management, including posting advance messages on DMS's and monitoring impacts along roadways within the system.
- Equipment Failure Monitoring The TMC operations staff monitors the "health status" of the ITS equipment in the field. This includes monitoring the status of CCTV cameras, DMS's, vehicle detectors, and communications. Equipment failures are reported through the "trouble ticket" process.
- Amber Alerts The TMC operator is responsible for posting Amber alerts in accordance with State policy.

Future Initiatives

The efficiency of TMC operations will improve, while realizing the potential of the Statewide ITS program, through implementation of the following:

Figure 3 - Potential TMC Operations Performance Measures

Performance Measure	Definition	Suggested Threshold
Quality Control	Ratio of TMC Operator "errors-to-events" measured monthly for all operations staff. Potential errors relate to data entry, notifications, DMS's messaging, service patrol dispatching, etc. Reference DOTD Standard Operating Procedures" for details on the methodology.	Less than 0.20 error-to-event per month
DMS's Usage	Comparison of the number of travel lane(s) blocking events that were potentially signable versus the actual number of events signed (monthly average).	More than 95%
Service Patrol Dispatching	Monthly average for all travel lane blocking events	Less than 2 minutes from event detection
Event Confirmation	Monthly average for all travel lane blocking events	Less than 2 minutes from event detection
DMS's Messaging	Monthly average for all travel lane blocking events	Less than 5 minutes from event confirmation
Notifications	Monthly average for all travel lane blocking events	Less than 7 minutes from event confirmation

1. Performance Measures As the TMC Standard Operating Procedures (SOP) are being developed, specific performance measures should be considered. Potential performance measures are presented in Figure 3.
2. Training A formalized training program will be developed and implemented for new and existing staff. The Standard Operating Procedures (SOPs) will provide the basis for the training program. Trainees will utilize the SOPs in order to make the training more beneficial and interactive.
3. Certification The current TMC Operator Certification Program will be enhanced based on the SOPs and training manuals. This updated certification program will be used to assess all the TMC staff's knowledge of their position by conducting daily tests to identify weakness and areas needing additional training. Daily tests will be a comprehensive open book test to allow trainees to learn how to find information in both the training manual and SOPs. The final test will be cumulative and include observations to further identify weaknesses and additional training needs. Once the training is complete, and all tests are passed, a certification will be issued to the TMC Operators to recognize their accomplishment. Those not passing the examination will be subject to additional recurrent training, focusing on the topics identified as most challenging to them based on their test results.

- Operational Audits On a periodic basis, each position will continue to be audited through visual observation, interviews with supervisors and peer staff, and a comprehensive performance review. If the audit reveals a weakness in the position's performance, recurrent training will be focused in that area(s). The results of these audits will be used as input to improve SOPs, training and certification programs.
- Documentation Updates Training materials will be updated to conform to changes in SOPs, status of ITS deployment and TMC policies. SOPs and training materials will then be updated to incorporate changes. Changes occurring between annual updates will be documented as part of an appendix, and then subsequently incorporated in the SOP during the next scheduled update. The findings and recommendations generated by analysis of performance measures will be considered in the updates of SOPs and training. For example, if quality control (e.g., error-to-event ratios) is consistently

being reported above the threshold, then the training materials will be revisited to determine what changes are necessary to achieve the targets.

- Video Wall Video walls within the TMC's will be assessed from an operational perspective to determine how they can be more efficiently utilized. This assessment will consider the needs of the operators to manage the roadway network more efficiently as well as provide other needed functions. For example, in addition to displaying video images, the video wall may display the health status of the equipment in the field; signal system information along strategic corridors; RSIP vehicle locations in real-time; performance measure dashboards; incident data on a streaming ticker at the bottom (or top) of the video wall; etc.
- Workstations In addition to the core functions provided at the computer consoles, additional functionality may be considered by adding more workstations to some or all consoles. Additional functions may include signal system monitoring; traffic simulation software; strategic roadway network maps with selected GIS layers (e.g., congestion level exceeding designated thresholds; speed profiles along selected roadways; crash data; etc.). This will enable the TMC operator to provide a more encompassing proactive traffic management and incident management functions.
- CCTV Camera and DMS's CCTV cameras will be positioned to view congested and high incident locations by time of day. This information will be derived from the historic data collected and processed by the TMC software. In addition, preset DMS's messages may also be considered for these same locations to provide motorist advisories as default messages.
- Signals System Operation Include the monitoring of the signal systems and ramp meters, and refresh the timings, along strategic corridors as part of the operator's daily functions.
- Stakeholders Outreach ITS Management will partner with other sections within DOTD, as well as other agencies, to communicate how TMC operations can support their needs. For example, TMC operations may support the construction activities, through the use of smart work zones, in monitoring the impacts related to the closure of lanes and shoulders; construction diversion routes; compliance with lane-closure permits; and messaging on portable DMS's.

In summary, while the primary focus continues to be on efficiency, the incident management capabilities of TMC operations will be leveraged to address the needs of DOTD in managing the roadways system more effectively in terms of traffic safety, congestion, and mobility. Furthermore, the TMC operation's span of command and control will grow proportionately with other initiatives as they come on-line in the future (e.g., integrated corridor management).

2.3 ITS Maintenance

While the focus of the ITS program in the past has been on deployment, there will be a shift in priority in operating and maintaining the equipment as the system is built-out. This is

anticipated to be reflected in the resources and funding that will be assigned to this component of the program versus implementation.

Based on current operations, at the start of each TMC shift, the operators verify that the CCTV cameras are working and are up on the website. In addition, the Public Information Office receives calls from the public indicating that CCTV cameras are not functioning on the website and will notify ITS staff of such failure. If there is a problem, TMC staff performs a Level 1 triage to determine if the outage is a hardware, communication, maintenance, or construction issue. DOTD staff spends a significant amount of time resolving these issues and therefore needs a more automated process. Furthermore, DMS and CCTV maintenance issues continue to be problematic requiring retrofit of legacy equipment.

Currently, DOTD uses in-house staff to perform limited preventive maintenance (e.g., change filters, pest control, etc.). Maintenance staff includes 25 people distributed throughout the nine districts and central office. The existing ITS Maintenance annual budget is $2.5 million (60% hardware, 40% labor). The Department uses authorized vendors with approvals ranging from $5,000 - $25,000 for equipment diagnosis and repairs. No preventative or response maintenance is provided by outside vendors.

Since most ITS equipment is not within the travel lanes, the vendors do not need to utilize resources for Maintenance of Traffic (MOT), which reduce costs to DOTD. If MOT is required, then it is typically provided by the DOTD or scheduled as part of construction projects.

DOTD will be rolling out a new Asset Management System for the Department in the near-term. The ITS infrastructure will need to be populated into this system to effectively track ITS equipment, (i.e., bar-code scanning including make, model, and firmware of equipment); a trouble ticket system integrated with a maintenance reporting system to track reports of outages, frequency and quality of repair, etc. This system will replace the spreadsheets and Microsoft Access Database that DOTD currently has in place and will have portable entry capability for field staff. ITS devices will be located on a GIS maps for easy identification and expansion of the system.

The proposed ITS Maintenance Plan will provide the foundation for sustaining the longevity of the devices. A Request for Proposal (RFP) is being developed to retain an ITS Maintenance Consultant. This is anticipated to be led by an Engineering Consultant, with support provided by a Maintenance Contractor(s), based on qualification selection criteria to improve the quality of services and avoid “low bid” procurement.

Future Initiatives

The following initiatives are proposed to improve the efficiency of ITS maintenance and the reliability of the Statewide ITS infrastructure.

Figure 4 - Potential ITS Maintenance Performance Measures

Performance Measure	Definition	Suggested Threshold
Response Maintenance		
TMC Control Room Equipment Failures	Time to respond to Control Room staff request. Time to respond on-site. Time to repair equipment malfunction.	15 minutes 1 hour 4 hours
ITS Field Equipment Failures	CCTV cameras, DMS’s, Communications. Vehicle detectors, HAR, RWIS.	24 hours 72 hours
Preventive Maintenance		
DMS’s	DMS’s, controller, cabinet and support equipment.	6 month intervals
CCTV Camera	CCTV camera, controller, cabinet, switch, monitor, and support equipment.	6 month intervals
Vehicle Detection	Vehicle detector, controller, cabinet and support equipment plus alignment.	6 month intervals
Communications Equipment	Communications devices, controller, cabinet and support equipment.	6 month intervals

1. Performance Measures As the ITS Maintenance RFP is being developed, specific performance measures will be considered. Figure 4 demonstrates a maintenance plan for the overall ITS program.
2. As-Built Documentation Detailed as-built drawings will be developed and easily accessible for all ITS infrastructure. Section 56 has already taken a first step in documenting the communication interfaces for all of their ITS equipment as well as have cataloged the equipment within the TMC. It is recommended that each ITS field device will be identified by GPS coordinates.
3. Mobility Mobile testing labs will be used to diagnose, troubleshoot, and repair systems remotely. Maintenance technicians will begin to use wireless internet access so they can access a web-based asset management system for downloading maintenance history as well as documenting maintenance activities.
4. Obsolescence Management Plan Obsolescence issues for ITS technology will be addressed, particularly as it pertains to outdated equipment which can be replaced with significantly better and more cost-effective technology. The Obsolescence Management Plan will help control the increasing annual cost of maintaining and replacing legacy ITS equipment. This plan will describe retrofit and replacement options using available replacement cost estimate information. The plan will also assign a numerical obsolescence risk ranking to all ITS equipment, based primarily on condition and availability of replacement parts and assemblies. Systems and equipment units with the worst rankings will receive higher priority.

The above strategies are anticipated to result in a higher level of system availability through improved reliability as well as improved response and repair times. Furthermore, cost efficiencies will be realized through a rational ITS equipment replacement program.

2.4 ITS Systems

Current ITS Systems are comprised of four (4) main components, including their communications infrastructure and TMC device control as noted below:

- Individual TMC Specific Software TMC operators utilize a variety of software packages varying from the highly integrated Management Information System for Transportation (MIST®) package which controls various ITS devices to vendor specific equipment control packages. This approach, while facilitating timely and cost effective deployments, has led to some operational inefficiency in the documentation of incidents, the sharing of historical incident information for forensic reviews of the actions taken, and the development of statewide best practices.

- Hybrid Communications Strategy The communication system supporting TMC's is a heterogeneous combination of microwave, fiber, and leased lines connections. This condition, while supporting the short term needs of the Department, will present a challenge in the deployment and utilization of larger more centralized applications, center-to-center communications, and operational strategies. The network is incomplete from a statewide perspective. Several projects currently underway are attempting to close some of the interconnection gaps within the next five (5) years.
- Decentralized Data Collection and Storage Existing TMC data is archived locally and is utilized by the local staff to analyze their effectiveness as well as for training exercises. The vision of a centralized data repository or data warehouse will be hampered by the current communication network as well as the varying data formats (low band width versus high band width) utilized by the TMC control systems.

Future Initiatives

The following future initiatives are proposed to improve the ITS Systems while supporting the Statewide ITS program.

1. Identify and Procure a Statewide ATMS Software Package Develop a Concept of Operations based on targeted interviews with stakeholders to define and validate a set of system level requirements, which will be used as a baseline for a set of procurement documents (Concept of Operations, High-Level functional requirements and a Request for Proposal) of an ATMS system. The requirements will define a system that is scalable to accommodate the differences between local and regional TMC's. The software package will also enable the statewide control center to manage other regional TMC's during off hours or during emergencies. Particular care will be afforded to the interface between the TMC's and Emergency Operations Centers (EOC's), and to the integration of the existing field equipment and operational toolsets. The system will support the processes and procedures which will facilitate the coordination of incident responses as well as the communication of roadway statuses between the various TMC's and the statewide center. The procurement evaluation process will be designed to maximize the benefit to the state in terms of qualifications, schedule, features delivered and cost.
2. Complete the Communications Interconnection While continuing the five (5) year "Filling-in-the-Gaps" communication deployment program, based on design-build projects, reassess the communication bandwidth requirements. The use of a new ATMS, based on TMC center-to-center communication needs, and an ultimate ITS deployment will require more bandwidth than currently available. This assessment needs to be a pragmatic approach based on the quality of video images required (whether streaming video or frame updates are needed), the number of CCTV camera images being transmitted through the network and the connectivity of the Statewide and regional TMC's and outside agencies.
3. Creation of a State Wide Data Warehouse Evaluate the strategies to develop and maintain a state wide warehouse for transportation data. This warehouse would allow for the identification of trends in traffic parameters, as well as the analysis and comparison of incident response histories and data. While this repository would not yield any immediate results, the creation of a historical baseline, compared against future changes and planning efforts, will prove to be valuable. An academic (e.g. LSU) partner will be identified to assist in the long term evaluation of the data, as well as assist in providing input for the data sets to be archived.
4. Video Distribution DOTD is currently under a no-cost contract with Trafficland for posting video on their web site. Other value added innovations will be explored as part of the video dissemination engineering effort, including streaming video, mobile phone applications, media sharing, and streamlining of manual processes. As part of this effort, the costs of internal video distribution to all TMC's will be reviewed as well as the potential benefit of directly distributing video to the media, emergency responders, and the public will be determined.
5. Field Equipment Interface Standardization Establish a Qualified Product List (QPL) which would define the field equipment, and network components used in the deployment of ITS and associated infrastructure. While this is not a new concept, the management of this list would ease and minimize the risk associated with future deployments, upgrades, and enhancements. An additional benefit would be the reduced investment in the size of spare parts inventories. It would also allow for the staging of inventories at key locations around the state by maintaining spare parts (switches, CCTV cameras, DMS's modules) at regional TMC facilities.
6. Create a Process to Perform Periodic System Performance Audits Establish a series of performance measures for evaluating the operational efficiency of the systems and networks. The process will track the system availability, the causes, and reactions to failures, as well as the specific failures.

Utilizing such a process will identify the weaknesses in the system, the network approach, or implementation strategies and recommend mitigation of the specific failures. This process will also help define strategies which work quickly and efficiently to identify and alleviate errors or outages/failures of equipment based on historical maintenance records. These strategies will then become part of a systems and network best practices document and distributed to technicians statewide.

7. Identify and Utilize an Enhanced Maintenance Management Support Tool Once the state wide ATMS has been deployed, there are many opportunities to enhance the knowledge of and control over the equipment and processes which make up the statewide system. A tracking system would enable the identification of multiple failures of the same device or component, the identification of a bad lot of spare parts, or just the identification of a device or component which does not satisfy the physical environment in Louisiana. This system will also assist in the management of warranties, maintenance contracts, and maintenance contractors, by identifying which components are still under manufacturer's warranty, which devices are under a maintenance contract and which contractor is responsible for the repair. It will also assist in the management of the service and maintenance contract, by allowing for the identification of like or similar devices which could or will be covered by the same contract. This system used in conjunction with the performance audits previously mentioned would allow for the evaluation of the performance of a maintenance consultant.

In summary, the primary focus on the IT Systems will continue to be on maximizing the efficiency and capabilities of TMC operations. It is envisioned that they will provide and support a consist process through the implementation and utilization of a standards based approach to all systems, hardware, and operations procedures.

2.5 Roadway Safety Incident Program

The Roadway Safety Incident Program (RSIP), formerly known as the Motorist Assistance Patrol (MAP) program provides free assistance to stranded motorists. There are several RSIP vehicles statewide, plus tow trucks and debris management pick-up vehicles. The RSIP program began as an outgrowth of major construction programs and is concentrated on the interstate system.

RSIP vehicles currently provide an average 400-450 assists each week to stranded motorists in Baton Rouge (I-10, I-12 and I-110), Lake Charles (I-10), Shreveport-Bossier City (I-20) and New Orleans (I-10). These assists include the following:

- Provide one gallon of fuel
- Change a flat tire
- Jump start car
- Assist law enforcement with traffic control
- Basic assistance to stranded vehicles
- Provide the use of a cellular phone to make a local call for additional assistance if needed

Credit for the success of the program is largely attributed to the RSIP patrollers, who must be qualified first responders, quick thinkers and customer-oriented. In addition to assisting with vehicle problems, these contracted employees are often the first to arrive at the scene of an accident.

Future Initiatives

A balanced mix of incident management and motorist assistance will be established for the RSIP program, as defined in the following initiatives.

1. Integrate RSIP into a Traffic Management/Incident Management Role RSIP operations need to be better integrated into the traffic management/incident management component of the overall ITS program. Drivers will be trained in incident management

and will be a key services provider to state and local police during the response to and clearing of incidents. Communications between TMC's and RSIP patrollers can be enhanced by integrating the Automated Vehicle Location (AVL) system into the ATMS software to more efficiently track and deploy the nearest responder to provide traffic management during an incident.

2. Include Incident Management Devices in RSIP Vehicles The RSIP vehicles will continue to utilize electronic arrow boards and a sufficient number of traffic cones to effectively support traffic control during incident management as well as motorist assistance. DOTD RSIP patrollers will be required to possess a minimum level of Maintenance of Traffic (MOT) training on work zone safety and incident management.
3. Utilize Mobile Cameras for Incident Video Mobile CCTV cameras will be installed on all RSIP vehicles with flexible camera mounts to facilitate the repositioning of the cameras outside the vehicle. The vehicles can provide wireless feeds to the TMC so operators can provide support to RSIP personnel and responders at an incident.
4. Performance Based Contract "Low bid" contracts for the RSIP program are currently utilized. Innovative procurements will be used to address motorist assistance such as the use of performance based contracts for the program. For example, the RSIP provider's compensation may be based on qualifications of the team (drivers trained in incident management / traffic control), vehicle-miles patrolled, the number of incidents they aid during traffic control, motorists they assist, timeliness of service provided, quality control, and frequent performance monitoring and reporting.
5. Investigate Private Sponsorship The RSIP program is very well received and is the most visible program by DOTD. Approximately $2.8M annually is spent on its RSIP program, which accounts for approximately 14% of the entire (Operations and Construction) annual ITS budget. Similar programs throughout the country receive advertising/sponsoring revenue from private industry, such as insurance carriers (State Farm sponsors the Pennsylvania Turnpike MAP and Florida Turnpike Enterprise Road Rangers). This type of sponsorship could be an example of public private partnership that helps travelers and also provides funding to enhance the RSIP program. A sponsorship contribution of approximately 5-10% could save the ITS section almost $300,000 a year.
6. Review Existing RSIP Coverage Existing coverage will be reviewed, and necessary adjustments made, based on historic information of high incident locations.
7. Promotion The program needs to promote itself as a free safety service provided by DOTD. It is recommended that larger and more visible logos are placed on the vehicles and television traffic reports mention the RSIP program is provided by DOTD.

2.6 Traffic Incident Management

Traffic incidents cause approximately 25% of traffic congestion, but can be managed so that congestion is reduced. Traffic Incident Management is an important tool in lessening the impact of non-recurring congestion as well as providing for a safer environment for drivers. Traffic Incident Management (TIM) is a planned and coordinated process to detect, respond to, and remove traffic incidents and restore traffic capacity as safely and quickly as possible. This coordinated process involves a number of public and private sector partners, including: Law Enforcement, Fire and Rescue, Emergency Medical Services, Transportation, Public Safety Communications, Emergency Management, Towing and Recovery, Hazardous Materials Contractors, and Traffic Information Media.

The "Instant Tow Dispatch" program, a pilot program in its very infant stage, will use municipal police to instantly dispatch a tow truck to respond to an incident. If there is no tow, the towing company receives a predetermined compensation. The "Heavy Duty Tow Incentive Program", also in its infant stage, will provide financial incentives in clearing a major incident within 60 minutes. If this is not achieved, then they are compensated at their contractual rates without penalties. TMC operators serve as the time keeper for tracking the incident clearance times. This program is intended to be used for major incidents that close the roadway (e.g., truck roll-over), but not hazardous materials events or trucks that are stalled. DOTD anticipates six to ten of these types of incidents per year.

While Memoranda of Understandings (MOU's) are a first step in developing improved working relationships among emergency responders, "face-to-face" communications is needed with key emergency responder partners (e.g., municipal police) to obtain their buy-in and develop meaningful Joint Operating Policies. TIM includes regional teams in Baton Rouge, New Orleans, Shreveport, Houma, Lafayette and a Corridor TIM team for the North Shore (I-12 Corridor). The typical agenda includes the following: DOTD update on construction activities (including lane closures and proposed construction); RSIP report; TMC Operations report (e.g., # incidents, incident locations, time to open lanes); post incident analyses (2-3 per meeting); and pilot program updates. Occasionally, a training component is added as well as updates of pending legislation (e.g., removal of abandoned vehicle from three days to one day; Open Roads Policy). While the TIM teams are active in Baton Rouge, New Orleans, Shreveport, and North Shore, a better model is needed for the smaller regions (i.e., Lake Charles, Houma, Monroe, Lafayette, and Alexandria).

Future Initiatives

1. TIM Participation Municipal Law Enforcement will be encouraged to increase their participation in TIM meetings. A TIM Team DVD will be prepared to support agency outreach to increase their participation.
2. On-site Support Assign a part-time representative that rotates to each District to provide on-site support during major incidents. This person would represent the Department in coordination with other emergency responders and to communicate with the TMC and Public Information Office. Typically, the Public Information Office receives real-time updates on incidents from TMC Operations.
3. Quick Clearance Develop quick clearance policies in defining a maximum time threshold to clear an incident.
4. Hazardous Materials Cleanup Louisiana State Police has a unit assigned to respond to incidents involving hazardous materials; however, cleanup is provided by others. The RSIP will support this effort by providing traffic control assistance.
5. Multi-agency After Action Reviews Multi-agency after action reviews will be coordinated by DOTD and the Louisiana State Police. These reviews will be used to improve incident response, management, and clearance among the various agencies.
6. Interagency Agreements An "Open Roads Policy", MOU, and specific Joint Operating Policies will be developed to implement revised procedures to improve TIM performance measures.
7. Diversion Routes Diversion route signal timing plans and DMS messages will be developed and implemented during road closures.
8. Computer Assisted Dispatch 911 Computer Assisted Dispatch systems will be integrated into the Statewide ATMS Software where possible.

2.7 Traveler Information

Traveler information dissemination is a significant component of an effective incident management program. Managing traffic flow through an incident area

includes directing and informing travelers, not only within the immediate incident area or queue, but also in approaching the highway. By informing motorists via DMS's, HAR, website, public announcements or through the media, of an incident or delay, motorists are given forewarning to modify their route to avoid delays. The resulting capacity relief can significantly reduce congestion at the incident site, which in turn can result in a more efficient incident response and clearance. These efficiencies may lead to:

- Improved emergency response times;
- Lower carbon-monoxide emissions, which promote a greener environment;
- Reduced number of secondary accidents; and
- Reduced delays for commuter and freight traffic.

DMS's, HAR and websites have traditionally been the primary means of traveler information dissemination by state and local agencies. Since 2005, there has been tremendous growth in wireless internet, in-vehicle navigation devices, and smart phones. Added to this, the emergence of social networking technologies makes it possible to disseminate traveler information directly to individuals. Nevertheless, these technologies have yet to reach wide-spread market penetration to levels where a majority of travelers are covered. Until this occurs, DMS's will continue to serve as the primary means of en-route information dissemination.

Future Initiatives

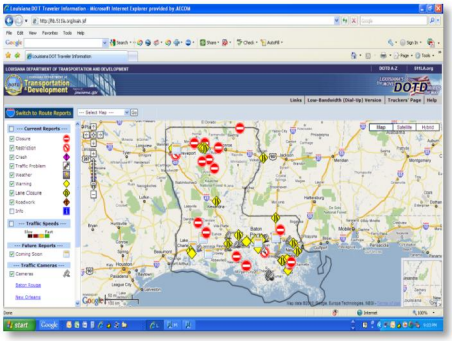
This ITS Strategic Plan expands upon the existing system within the state by recommending additional DMS's at locations along the critical interstates within the state. The additional DMS's will assist drivers in making route choices, alert them of travel times, delays, crashes and construction, and inform them of closed lanes, roadways, exit ramps, and emergencies.

1. Electronic Signs The DMS's provides a variety of message options, including travel time. However, due to the high cost of DMS's, less expensive ground-mounted static signs with electronic inserts are proposed for the critical links to the Interstate roadways that are currently without DMS's. Travel time signs also address Section 1201 of SAFETEA-LU which requires the establishment of "a real-time system management information program to provide, in all states, the capability to monitor, in real-time, the traffic, and travel conditions of the major highways of the United States and to share that information." The signs can provide motorists with the travel times to multiple destinations to allow better en-route decisions.

   In addition, travel time information could be posted on typical full matrix or 3-line DMS's as default messages as well as to display pictograms to simplify the conveyance of complex messages to motorists. Data for the travel times can either be collected through the use of existing vehicle detectors, or through private companies.

2. Enhanced Traveler Information System The Traveler Information System will be advanced, through a public-private partnership, in addressing the needs of travelers using the multi-modal transportation system throughout the state. This will focus on the following:

   ✓ 511 website The existing www.511la.org will be enhanced to provide real-time traveler information such as an origin and destination (O-D) summary page. This information will be in addition to the existing data of traffic operating



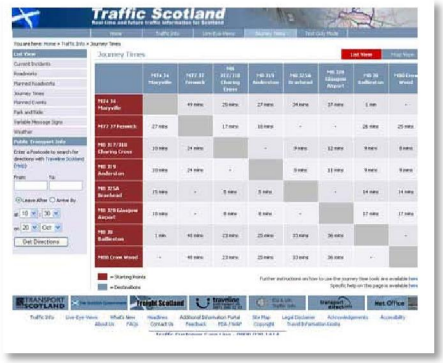
   conditions, on-going construction projects, incidents, and other planned/unplanned events, weather conditions and video images already available to the public. The O-D feature would be beneficial by highlighting specific routes such as New

Orleans to Baton Rouge, as well as route information to major destinations, such as airports and seaports to aid in the efficient movement of goods throughout Louisiana.

- ✓ Provide other multi-modal facility information on the website such as bus/trolley car schedules, delays, and cancellations. This information can be transmitted through the DOTD existing Twitter information dissemination program.
- ✓ Cost DOTD single banner advertising on the 511 website or only on the suggested O-D table to provide funding to help off-set the cost of maintaining the site. Advertising from commercial trucking companies may be easible as they benefit from the O-D information and have an opportunity for exposure to the public or other transportation industry companies.

3. Arterial Travel Times Technology applications will continue to be researched and tested to provide reliable travel times along arterials. Such technologies may include Bluetooth to provide additional information to/from vehicles or wireless in-pavement sensors, such as magnetometer technology, that can help provide travel time with little infrastructure requirements. Magnetometer technology takes a vehicle magnetic "print" and tracks it along a roadway to provide travel times. These "prints" can also be utilized to collect volume, speed and lane occupancy data

The aforementioned strategies will provide users of the statewide roadway system accurate, reliable, timely and useful information to make informed decisions on alternate routes, modes and schedules while the 511 system will provide a broader range of services regarding the statewide multi-modal transportation system (buses, trains, trolley/surface cars, airports) using a variety of dissemination devices (e.g., interactive voice response, media, web site, social networks, text alerts, etc.).



4. Traffic Channel A traffic channel, similar to the weather channel, will be explored to broadcast traffic on television. This channel can be a local public access channel that provides feeds from the ATMS flow maps of the various regions in the state, as well as scrolling information from the 511 or Traffic.com systems.

2.8 Traffic Engineering

According to the Texas Transportation Institute, approximately one-half of traffic congestion can be attributed to recurring (normal) traffic conditions and half to non-recurring (incidents) conditions, both operational scenarios need to be addressed as part of a comprehensive ITS program. This component of the ITS Strategic Business Plan is focused on applying traditional traffic engineering principles to proactively optimize traffic system efficiency during recurring (i.e., normal) conditions.

The term traffic engineering encompasses a range of tactics developed to optimize traffic operations and safety. Traffic engineers typically conduct many (if not all) of the following tasks to identify "hot spots' in terms of traffic congestion and safety, then analyze, recommend, test and apply appropriate operational and safety mitigation measures:

- Field Studies Investigation of physical and operational characteristics; peak period analyses; identification of geometric, roadway, signing / pavement striping and traffic control deficiencies; identification of constraints that may impact constructability of improvements; etc.
- Data Collection Traffic counts along highway segments; turning movement counts at selected intersections; travel time & delay studies; condition and collision diagrams; queuing studies; vehicle gap studies; etc.
- Analyses Level of service analyses; signal

warrant analyses; safety reviews; crash analyses; intersection analyses; intersection delay studies; conflict analyses; pedestrian studies; sight distance studies; safe curve speed studies; speed zone studies; etc.

- Mitigation Measures Development and assessment of mitigation measures that address traffic operational and safety deficiencies.
- Evaluations Benefit / cost analyses; before & after studies.

The ITS resources (e.g., CCTV cameras, DMS's, vehicle detection, etc.) managed at the TMC's can be a valuable asset in enhancing the aforementioned functions. This will contribute to the increased efficiency in conducting many of these tasks from the TMC, thereby reducing costs associated with field studies.

Future Initiatives

The following initiatives are proposed in conducting traditional traffic engineering functions within the TMC to develop a closer working relationship between traffic engineers (proactive traffic management) and ITS operations (incident management):

1. TMC Traffic Engineers A traffic engineer will be assigned to TMC's to focus on traffic operations and safety studies using real-time traffic data and video. These off-line users would utilize this data to identify critical bottlenecks in the system that adversely impact traffic efficiency based upon day-to-day observations of traffic operations as well as utilizing the archived data to conduct capacity analyses, simulation studies and safety analyses. This will enable traffic engineers to be more efficient in the identification and analyses of "hot spots"; development and analyses of mitigation measures; conducting required data collection; and performing before and after analyses of implemented improvements. Initially, a traffic engineer from the Districts will be assigned to split time between the TMC's in Baton Rouge and New Orleans. As the program evolves, additional traffic engineers may be added to provide increased coverage in the Baton Rouge and New Orleans TMC's as well as part-time coverage in the other TMC's throughout the state.
2. Decision Support System TMC operations staff will develop and apply decision support systems that utilize archived data to automatically predict "hot spot" locations; generate an array of potential solutions; analyze these solutions based on adopted measures of effectiveness; and support the recommendation of the preferred strategy for implementation. As an example, seasonal events in Baton Rouge or New Orleans generate large volumes of traffic to and from the stadiums. Utilizing historic archived data, traffic engineers can analyze this data and implement strategies with the TMC operations staff to determine alternatives to make traffic flow more efficient. Such strategies may include signal retiming and the creation of and dissemination via DMS's of "Best Routes" with travel times to distribute traffic more evenly.
3. Congestion Management While the TMC operators monitor the roadways, traffic engineers will analyze historical data on congested segments of the highway system in terms of travel speed, delay, volume, and occupancy. They will utilize this information to analyze and implement the appropriate congestion mitigation measures based on off-line simulation analyses.
4. Work Zone Management Traffic engineers will monitor work zones using CCTV cameras to determine compliance with lane-closure permits; to verify the accuracy and timeliness of messages posted on portable DMS's; as well as monitor smart work zone systems. Smart work zone systems can be stand-alone or they may supplement existing systems during construction. They can also be used to more quickly detect incidents and better determine the appropriate degree of response needed, thereby limiting the amount and duration of additional capacity restrictions. These systems may also be used to manage traffic along detour routes during full road closures in reconstruction projects.

5. Signal Timing Optimization Traffic signal system retiming and optimization is one of the most cost-effective traffic operational improvement strategies. The extent of benefits realized from traffic signal retiming depends on various factors including the quality of existing timing plans, street network configuration, and traffic patterns. For optimal performance, traffic signal timing plans will be updated at least every three to five years, and possibly more frequently depending on growth and changes in traffic patterns. TMC operations staff will have the ability to modify signal timings based on traffic simulations or based on observations of problems identified using CCTV cameras and detection data. This will enable signal timing adjustments to be made closer to real-time.
6. Performance Measures TMC operations staff will utilize adopted performance measures to proactively manage the highway network in terms of mobility, congestion, and safety. This will be performed using dashboards at their workstations that indicate the current versus historical or typical conditions, as well as utilizing dashboards on the video wall, as part of their core functions.
7. Ramp Metering Ramp metering systems use traffic signals at on-ramps to control the rate of vehicles entering the freeway. The signals can be set for different metering rates to optimize freeway flow and minimize congestion. Signal timing algorithms and real-time data from mainline video detectors are often used for more effective results. Traffic engineers will monitor traffic delays and queuing impacts along downstream roadways and signalized intersections where ramp metering systems are operational (i.e., Baton Rouge). TMC operations need to be proactive to increase the release rate for ramp meters, instead of just automatically flushing the queue, when queues extending beyond the length of the ramp as well as to investigate motorist complaints.

Working together, traffic engineers, transportation planners, transit operations staff, and ITS operations staff from different sections / agencies can share solutions in a data rich environment with access to CCTV cameras and vehicle detection data. Over time, this team can advance traffic engineering to the next level and provide the foundation for true integrated corridor management systems. Subsequently, the working group may provide a core team to operate and maintain regional Transportation System Management & Operations (TSM&O) networks. TSM&O strategies enable transportation practitioners to provide higher levels of customer service in the near-term without incurring the high cost associated with major infrastructure projects. (An example of TSM&O strategies include multi-State traveler information systems, electronic transit payment services, traffic signal coordination, and traffic incident management. Multiple jurisdictions participating in an arterial emergency response team in the Phoenix metropolitan region save time and money by calling on the team to manage traffic during major incidents.) In addition, operators are able to make their limited staff time and other resources go further by collaborating with planners and other operators to proactively address operations from a regional perspective. Transportation operations improvements made in one jurisdiction are reinforced by coordinated improvements in neighboring areas enabling travelers to move seamlessly across the region without encountering, for example, inconsistent traveler information, toll collection technologies, or traffic signal timing.

TMC operations would monitor the TSM&O system to identify system failures and network segments approaching critical thresholds of performance measures. Mitigation measures will be analyzed off-line, with the optimum strategy implemented prior to exceeding the threshold.

2.9 Partnering

The full potential of the ITS program will be realized by how well DOTD partners with other sections, other agencies as well as the private sector. Currently, DOTD has a proven track record in partnering within their two TMC's in Baton Rouge and New Orleans.

The Regional TMC in Baton Rouge includes the East Baton Rouge and City Parish Emergency Operations Center (e.g., local police, fire, rescue, Mayor's office) as the primary tenant and DOTD as the secondary tenant. However, other than sharing the same facility, there is little communication and relationship-building between the EOC and TMC operations staff.

Future Initiatives

The following initiatives are proposed to foster relationship-building in developing stronger partnerships to leverage the Statewide ITS program.

1. Video-Sharing As the CCTV camera system is expanded throughout the state, and ATMS deployments are implemented by Section 56, video-sharing agreements will be developed. Video sharing will increase CCTV camera coverage for each partner (police, EOC, DEP, media, etc.), thereby allowing each partner to operate and manage their transportation systems more efficiently and provide effective response to emergency situations. Video sharing will also allow greater ability by each partner to provide current and relevant traveler information, and transportation performance assessment.
2. Co-location Continue to explore benefits associated with co-location opportunities as new TMC's come on-line in the future. Co-location has the potential for providing more effective agency integration among traffic, transit, planning and law enforcement agencies in managing recurring congestion as well as incidents within the region. Furthermore, co-located TMC facilities have been found to operate more efficiently, facilitate exchange of information among agencies and reduce functional redundancy.
3. Fiber Sharing As the fiber optic communications system expands throughout the state, DOTD shall explore construction cost-sharing agreements will outside agencies to help reduce costs as well as provide system redundancy. As an example, if DOTD is planning on installing fiber optic cable along I-20, and there is interest from another agency or private company (communications) to also install cabling, then DOTD shall review potential cost sharing measures to reduce their construction capital burden.
4. Diversion Routes As ITS and ATMS deployments progress, an aggressive outreach program will be conducted with the metropolitan regions to obtain their concurrence in using designated arterials as diversion routes during major incidents.
5. Team-Building Cross-training programs will be implemented to provide operations staff a better understanding of maintenance tasks and vice versa (maintenance staff understanding operational tasks). Joint training will be conducted with State Police, TMC Operators and RSIP staff to discuss incident management and the unified command and control procedures and process. Furthermore, a rotation program is recommended within the TMC (i.e., Deployment, Maintenance, and Operations personnel), as well as with other TMC's throughout the state to share best practices during cross-operations exercises. As an example, an ITS TMC operator in the New Orleans RTMC would spend a day or so in the Shreveport RTMC to share best practices between the two (2) centers.
6. Service Provider TMC's will become service providers to other sections within DOTD including planning, design, construction and maintenance as well as other agencies (e.g., MPO). They can provide historical traffic information for future planning/design efforts, monitor construction, and work with traffic engineers to analyze roadway capacity and better diversion routes.
7. University Partnerships An ITS curriculum may be developed in partnership with a university to teach ITS from a practical perspective. DOTD and consultants may consider teaching courses on various ITS subject areas, including ITS planning, design and construction; ITS operations and maintenance; IT / ITS systems; traffic incident management; and TMC's. In addition,

internship programs will be encouraged with local universities.

8. Data Mining Develop standard formats for sharing TMC data with others (e.g., research, planning, design, construction, maintenance, etc.). ITS generated data would be useful in running traffic models during various time periods of the day (peak and off-peak); analyzing various incident management strategies; providing data for performance management systems; providing traffic data for roadway design projects; etc.
9. Mainstreaming Close coordination will continue to be maintained with DOTD roadway and bridge design units to include conduit in roadway reconstruction projects for future ITS usage.

   A working group between DOTD and other transportation agencies / parishes will be developed to create synergy in implementing and integrating a system of freeways and arterials. Initially, the working group may focus on small demonstration projects, and then gradually apply these successes in incrementally growing an Integrated Corridor Management system along congested corridors. Quarterly meetings will be conducted at the management level between DOTD and their partners to discuss operational issues and resolve disputes. A semi-annual staff meeting will also be conducted at the planning, operations & maintenance levels to improve coordination and working relationships.

2.10 Public Outreach

Public outreach plays an important role in educating travelers, other DOTD sections and other agencies on how to use ITS as well as the benefits derived from the program. Currently, the Public Information Office (PIO) conducts tours of the TMC's; distributes ITS brochures; addresses inquiries and complaints from the public; coordinates media releases; and provides input in updating the website. A marketing plan is being developed to improve promotion of the ITS program.

The ITS program receives the most attention during disaster events (e.g., hurricane evacuations). The most visible components of the ITS program, from the PIO perspective, are the 511 service (i.e., particularly CCTV camera images) and RSIP program.

The 511 program needs improvement to better market the availability of CCTV camera images posted on the website and to present the website information the public desires in a user-friendly manner. Specifically, the public desires a reliable CCTV camera system, combined with an effective social networking (i.e., twitter) system, that provides accurate, useful and timely information (e.g., travel times, accidents, construction advisories) so they can make informed decisions on alternate routes.

The RSIP service is one of the most popular programs provided by DOTD. The program has noticeably reduced delays, which results in reduced traffic congestion and travel times. The Department needs to promote this program more effectively to clearly indicate that it is a core business function of DOTD and associate the benefits of the program with the Department's investment in this initiative. Motorists in a recent survey believe that the RSIP program is separate from the DOTD. Of those surveyed, most were aware of the program but no data is available that supports that they are aware that DOTD is providing the service.

Future Initiatives

Public outreach efforts will focus on serving external customers (e.g., traveling public, other agencies) as well as internal customers (e.g., DOTD sections and staff). Specifically, the following strategies are recommended:

1. Web Site The site will be upgraded to enable the public easier access to relevant information by district rather than being integrated with other information relevant to technical users (e.g., planners, engineers, contractors). IT manages the web site with input provided by

the Public Information Office. There are specific SOPs guiding the format of the web site and the information presented.

2. Speakers Bureau A Speakers Bureau will be established in making presentations to non-technical audiences (e.g., state legislators, municipalities, chambers of commerce, social clubs, etc.). A standard presentation, and possibly a short video (e.g., 2-3 minutes), will be developed to support the presentations with an invitation to subsequently tour the TMC.
3. Marketing Marketing of the benefits of the ITS program will use non-technical language in order to engage the public and political leaders in better understanding, using and supporting the program.
4. Customer Service Customer Service Representatives will be situated in the New Orleans region to share project status information; construction advisories; traveler information generated by the ITS program; as well as providing guidance on how to better use ITS (e.g., text messages, twitter, etc.).
5. TMC Tours Standard TMC tours will be upgraded to display new ITS deployments and features as they come on-line. These tours will be formatted to address the interests of other agency staff (e.g., technical and non-technical), other sections within DOTD as well as the general public and other agencies.
6. Media Events Media events will be conducted in conjunction with the completion of major ITS deployments.
7. ITS Monitor Display An ITS monitor will be installed within the DOTD Building lobbies to provide employees and visitors an opportunity to learn how ITS can benefit their job functions, the projects they work on, as well as their own travel needs. The monitor will display video, current incidents, construction information and travel times.
8. Diversion Routes Diversion and evacuation routes will be shared with the public and maintenance agencies to improve their effectiveness during incident and emergency events.
9. Public Outreach Performance Quantitative measures will be developed and used to track how well public outreach is performing.

In summary, the above strategies will result in an improved awareness of the ITS program and how it can be used by the traveling public to improve their travel choices and travel time reliability.

3.0 Business Plan

The Business Plan provides a series of recommended strategies to be implemented for each year during 2011 to 2015. These recommended strategies support the Strategic Plan presented in the previous section of this report.

2011	2012	2013	2014	2015
ITS Deployment				
Develop ITS "Build-Out" Master Plan as well as fiber optic cable inventory plant and ITS Standard Specifications and plans.	Twin Span approaches, Alexandria deployment, Lafayette gaps.	Monroe ITS Phase I, Shreveport Term (Phase 2b), Lake Charles, Baton Rouge, New Orleans Gaps, Statewide TMC and EOC.	Regional TMC's	Implement ITS Deployment for the balance of the statewide system to complete the ITS "Build-Out".
Coordinate with the Design and Construction Sections to mainstream ITS improvements in roadway & bridge construction projects.	Continue fiber optic cable inventory plant and ITS Standard Specifications and plans.	Retain ITS CEI firm to conduct system acceptance testing of ITS components mainstreamed into roadway & bridge construction projects.	Ensure that as-builts include ITS infrastructure in accordance with standard formats consistent with data fields for asset management system.	Transfer information from ITS as-builts to asset management database.
Coordinate with local agencies to determine the appropriate signal systems within strategic corridors to be integrated into TMC operations.	Design appropriate signal systems along arterials within strategic corridors in accordance with the ITS "Build-Out" Plan.	Integrate appropriate signal systems along arterials within strategic corridors in accordance with the ITS "Build-Out" Plan.	Deploy the appropriate scale of ITS technologies (i.e., cameras, detection, DMS's) along arterials within strategic corridors.	Continue to deploy the appropriate scale of ITS technologies along arterials within strategic corridors.
TIM Phase III, DMS's Replacement, TMC design.				Regional TMC's and Advertise/Maintain RSIP Contract.
Develop a Master Plan and ConOps for ground-mounted Travel Times Message Signs.	Procure & install travel time message signs based on a priority plan.	Continue to procure & install Travel Time Message Signs based on a prioritized plan. (Continuation from original year)	Continue to procure & install Travel Time Message Signs based on a prioritized plan. (Continuation from original year)	Continue to procure & install Travel Time Message Signs based on a prioritized plan. (Continuation from original year)

TMC Operations				
Define, discuss and approve performance measures to be used for TMC operations.	Establish baseline for performance measures and begin to track them.	Modify SOP manual to improve performance measures that are not meeting desired thresholds.	Modify training programs consistent with revised SOP Manual to improve performance measures.	Re-evaluate performance measures to ensure that they are consistent with current goals and objectives.
Formalize / document existing training programs to provide consistency in TMC operations throughout the state.	Formalize existing certification programs to provide consistency in TMC operations throughout the state.	Develop on-line training program to provide refresher training on demand as well as to provide orientation for new operators.	Update training program to reflect lessons learned to improve performance measures based on updated SOP Manual.	Re-evaluate training program to reflect revised policies, procedures and accommodation of new ITS technologies.
Conduct independent operational audits of existing TMC operations.	Implement recommendations generated by operational audits in the appropriate TMC's.	Conduct best practices workshop with input provided by similar scale TMC's in other states.	Implement appropriate recommendations generated by the TMC Best Practices Workshop.	Conduct another independent operational audit as part of a continuous improvement program.
Conduct an assessment of the TMC video walls and workstations to identify improvements needed to optimize their effectiveness.	Identify and procure appropriate TMC equipment to support the new Statewide ATMS software.	Coordinate with video wall and workstation vendors to identify state-of-the-art solutions available to address operational needs.	Incrementally replace outdated video wall and workstation equipment, as they approach the end of service life, with recommended technologies.	Develop a structured program to ensure consistency among the TMC's throughout the state in terms of the layout and use of video walls and workstations.
ITS Maintenance				
Issue ITS Maintenance RFP inclusive of performance measures for preventive and response maintenance.	Audit ITS Maintenance consultant to ensure that they are achieving performance measures.	Develop corrective plan, in partnership with the ITS Maintenance consultant, to address deficiencies.	Develop SOP Manual and Training Program to continuously improve system availability.	Update ITS Maintenance Program to address new technologies and scale of deployment.
Develop or procure an Enhanced Maintenance Information Management System.	Populate the Maintenance Information Management System with current equipment data.	Integrate the Maintenance Information Management System with the Statewide ATMS Software.	Apply the Maintenance Information Management System to modify preventive maintenance SOPs.	Apply Maintenance Information Management System to support implementation of the Obsolescence Plan.

Conduct an assessment on how maintenance technicians can be more efficient in the field. Investigate use of VoIP tools.	Develop hardware and software specifications to share data and video between TMC and maintenance techs in the field.	Procure appropriate hardware and software for maintenance techs to share data and video between the TMC and field.	Develop mobile test lab specifications so that maintenance techs can perform more testing / repairs in the field.	Procure mobile test labs so that maintenance techs can conduct more testing and repairs in the field.
ITS Systems				
Procure the Statewide ATMS Software and develop a Configuration Management Board.	Install the ATMS Software at the Statewide and Regional TMC to work out the software and operational bugs.	Develop a Software Users Group to track status of bugs / fixes and to generate requests for new software modules.	Implement new software modules approved by the Configuration Management Board.	
Identify gaps in the statewide communications infrastructure to support the ITS "Build-Out" Plan.	Incrementally "fill in the gaps" in building out the statewide communications infrastructure.	Continue to "fill in the gaps" in building out the statewide communications infrastructure.	Continue to "fill in the gaps" in building out the statewide communications infrastructure.	Continue to "fill in the gaps" in building out the statewide communications infrastructure.
Develop a performance measurement dashboard system to apply to all ITS programs throughout the state.	Develop the framework for a Statewide Transportation Data Warehouse.	Develop the ConOps and system architecture for the data warehouse.	Coordinate with other DOTD sections and other agencies to develop the data warehouse.	Incrementally populate the data warehouse with the priority being TMC generated data.
Develop ConOps, requirements to implement a new video distribution system.	Implement a new video distribution system and develop an obsolescence plan.			
Develop a DOTD "Qualified Product List" (QPL) for procuring ITS and network equipment.	Develop a test lab for certifying ITS vendor products in accordance with the QPL.	Implement the QPL for all ITS deployment and mainstreamed projects throughout the state.	Procure a critical supply of spare parts using the QPL in serving the regional ITS programs.	Encourage new vendors, with new products, to be included on the QPL.

Traffic Incident Management				
Transition RSIP drivers to focus more on incident management vs. motorist assists. Advertise/Maintain RSIP Contract.	Solicit sponsorships to augment funding for RSIP program. Advertise/Maintain RSIP Contract. (Continual Contract)	Transition a portion of the RSIP vehicles to provide more incident management tools and supplies. Advertise/Maintain RSIP Contract. (Continual Contract)	Review incident data to adjust RSIP beats, schedules and coverage areas, if necessary. Advertise/Maintain RSIP Contract. (Continual Contract)	Continuously improve the efficiency of the RSIP program by assessing incident data. Advertise/Maintain RSIP Contract. (Continual Contract)
Develop / implement performance measures for RSIP Program.	Apply performance measures to identify additional RSIP training needs (e.g., MOT, Work Zone Safety).	Develop / implement formal training program for RSIP operators.	Develop / implement training to improve communications between RSIP operators and TMC's.	
Develop "Open Roads Policy", MOU and specific Joint Operating Policies. Develop a multi-agency after action review process.	Develop performance measures to track incidents by TIM partner.	Implement revised procedures to improve performance measures.	Utilize an Incident Management Expert to observe and critique major incidents (road closures).	Improve procedures based on findings by Incident Management Expert.
Encourage local police, fire / rescue to actively participate in TIM meetings.	Develop TIM Team DVD to support agency outreach.	Develop diversion route signal timing plans and DMS's messages.	Implement diversion route signal timing plans and DMS's messages.	Integrate 911 Computer Assisted Dispatch system into Statewide ATMS.
Traveler Information				
Conduct best practice survey of other State DOTD traveler information websites.	Assess existing DOTD website to identify traveler information improvements.	Modify DOTD website to address existing deficiencies and incorporate best practices.	Develop origin-destination table of real-time travel times between major nodes to post on website.	Begin to incorporate travel times along arterials within strategic corridors.
Seek partnerships with private sector to augment existing travel time data collected by detectors.	Develop agreements with the private sector in sharing travel time data.	Develop and implement a reliable travel time system along arterials in strategic corridors.	Begin applying graphics as part of messaging on DMS's to simplify traveler information.	Seek interest in having the private sector use DOTD data to operate a Traffic Channel.

Traffic Engineering				
Assign Traffic Engineer to TMC's, splitting time between Baton Rouge and New Orleans.	Identify traffic congestion and safety hot spots based on video images and detectors. Begin to develop predictive models to proactively identify hot spots.	Implement traffic mitigation measures and conduct before & after analyses using TMC video images and detectors.	Begin to develop and utilize decision support systems to proactively manage traffic in a near real-time mode.	Assign full-time Traffic Engineer to the Baton Rouge and New Orleans TMC's. Assign another Traffic Engineer to rotate through the other TMC's.
Develop performance measures to address traffic operations and safety.	Collect baseline data to be applied for traffic operations and safety performance measures	Improve traffic operations and safety based on review of performance data and TMC generated information.	Improve traffic operations and safety based on review of performance data and TMC generated information.	Improve traffic operations and safety based on review of performance data and TMC generated information.
Partnering				
Conduct a study to identify potential TMC co-location partners at DOTD TMC's.	Develop ConOps to address TMC co-location opportunities and trade-offs of other partners.	Develop agreements to include other partners within DOTD TMC's, where feasible.	Develop a structured approach to partnering to maximize the effectiveness of co-location.	Revisit the layout of the TMC, including system hardware and software, to maximize the effectiveness of co-location.
Conduct public outreach with municipalities along strategic corridors about utilizing arterials as part of diversion routes.	Identify public and private sector partners to "fill in the gaps" in building out the statewide communications infrastructure.	Develop cost-sharing and maintenance agreements with public and private sector partners for communications.	Continue to "fill in the gaps" in the communication system, using public and private partnerships, where appropriate.	Continue to "fill in the gaps" in the communication system, using public and private partnerships, where appropriate.
	Develop agreements with municipalities along strategic corridors to utilize arterials as part of diversion routes.			
Develop joint training programs among TMC operators, RSIP operators, and State Highway Patrol regarding Incident Management and MOT.	Implement joint training programs among TMC operators, RSIP operators, and State Highway Patrol regarding Incident Management and MOT.	Conduct annual refresher joint training among TMC operators, RSIP operators, and State Highway Patrol regarding Incident Management and MOT.	Conduct annual refresher joint training among TMC operators, RSIP operators, and State Highway Patrol regarding Incident Management and MOT.	Conduct annual refresher joint training among TMC operators, RSIP operators, and State Highway Patrol regarding Incident Management and MOT.

	Develop ITS curriculum for a university course to be taught using DOTD ITS staff, consultants, and contractors.	Teach the ITS course at selected universities throughout the state. Encourage interns to participate in TMC operations.	Continue to teach the ITS course on an annual basis and attract interns to conduct research at the TMC.	Continue to teach the ITS course on an annual basis and attract interns to conduct research at the TMC.
Public Outreach				
Develop a Speakers Bureau to make presentations to state legislators, municipalities, etc.	Develop a standard presentation to be delivered as part of presentations.	Prepare a brief video to be used in presentations that provides an overview of the ITS program.	Conduct media events at major milestones of ITS Deployment completions or TMC openings.	
	Develop metrics to be used to track how well the public outreach program is performing.			
Develop standardized TMC tours to convey a consistent message across all TMC's.	Install ITS monitor display within DOTD Building lobby as well as other facilities.			

4.0 Cost Estimates

Cost estimates were developed for the major business plan components in terms of initial costs and annual costs of operations and maintenance. Activities to be conducted by DOTD staff are not included in the analysis shown below. All costs are expressed in current dollars.

Cost Estimates

Business Plan Activity	Initial Cost	Annual Cost
ITS Deployment		
Develop ITS "Build-Out" Plan	$300,000	$0
Develop procurement documents for ITS deployment projects		$650,000
Implementation of ITS deployments in Lake Charles and Baton Rouge (I-10) – 2011	$8,000,000	
Implementation of ITS deployments in Baton Rouge (I-10) / New Orleans Regional ITS (Twin Span) - 2012	$8,000,000	
Implementation of ITS deployments in Monroe/Lafayette/Alexandria – 2013	$8,000,000	
Implementation of ITS deployments in Shreveport and Fill-in Gaps Baton Rouge and New Orleans - 2014	$8,000,000	
Implementation of ITS deployments for balance of Statewide ITS "Build-Out" – 2015	$8,000,000	
Develop ITS standards for mainstreaming ITS as part of roadway & bridge projects	$280,000	
Populate asset management system on completed ITS deployment projects		$30,000
Conduct study to determine appropriate signal systems to be integrated into TMC operations	$50,000	
Design signal systems upgrades along strategic corridors to support ITS "Build-Out" Plan	$500,000	
Integrate signal systems upgrades along strategic corridors to support ITS "Build-Out" Plan		$500,000
Deploy ITS technologies along arterials within strategic corridors		$500,000
Subtotals	$41,130,000	$1,680,000
ITS Engineering Consultant Retainer Contract		$1,000,000
ITS Construction Engineering & Inspection Consultant Retainer Contract		$800,000
Develop a master plan and ConOps for ground-mounted travel time message signs – 2012	$250,000	
Incrementally procure & install travel time message signs along the statewide network – 2013 - 2015		$500,000
Subtotals	$41,380,000	$3,980,000
TMC Operations		
Define performance measures and collect baseline data	$100,000	
Modify SOPs and training programs to address performance measures		$10,000
Develop on-line training program	$50,000	
Conduct independent audits of TMC operations		$5,000
Implement periodic upgrades to TMC video walls and workstations		$10,000
Subtotals	$150,000	$25,000
TMC Operations Consultant Retainer Contract		$2,000,000
Subtotals	$150,000	$2,025,000

Business Plan Activity	Initial Cost	Annual Cost
ITS Maintenance		
Develop ITS Maintenance SOP and Training Manual – 2014	$125,000	
Develop or procure an enhanced Maintenance Information Management System – 2012	$300,000	
Integrate the Maintenance Information Management System with Statewide ATMS Software – 2013	$65,000	
Develop Obsolescence Management Plan to replace outdated equipment – 2015	$75,000	
Develop hardware and software tools for maintenance techs to exchange data in the field - 2012	$100,000	
Procure mobile test labs so maintenance techs can conduct more testing & repairs in the field 2014-2015	$40,000	
Subtotals	$705,000	
ITS Maintenance Consultant Retainer Contract		$1,000,000
Subtotals	$705,000	$1,000,000
ITS Systems		
Procure Statewide ATMS Software and install in Statewide TMC- 2011	$3,000,000	
Install Statewide ATMS Software in other TMC's – 2012	$500,000	
Conduct ATMS Software Maintenance and provide upgrades as required		$50,000
Develop master plan for the build-out of the statewide communications network – 2011	$200,000	
Fill-in-the –gaps in the statewide communications network		$400,000
Develop a performance measurement dashboard system	$200,000	
Develop the framework and ConOps for a Statewide Transportation Data Warehouse – 2012	$150,000	
Develop a DOTD "Qualified Product List" for procuring ITS and network equipment (Standardize Equip) – 2011	$150,000	$15,000
Develop a DOTD test lab for certifying ITS vendor products in accordance with the QPL – 2015	$150,000	
Procure a critical supply of spare parts using the QPL in serving the regional ITS programs		$50,000
Subtotals	$4,350,000	$515,000
ITS Systems Integration Consultant Retainer Contract		$250,000
Subtotals	$4,450,000	$765,000
RSIP / Traffic Incident Management		
Transition a portion of RSIP vehicles to provide more incident management tools and supplies - 2013	$40,000	$40,000
Develop formal training program for RSIP patrollers – 2012	$250,000	
Add RSIP vehicles to the statewide system in accordance with analysis of incident data		$60,000
Subtotals	$290,000	$100,000
RSIP Services Contract		$1,800,000
Subtotals	$290,000	$1,900,000

Business Plan Activity	Initial Cost	Annual Cost
Traveler Information		
Develop and implement website upgrades to improve traveler information system – 2011	$50,000	$100,000
Develop and implement a reliable travel time system along arterials in strategic corridors (Study) - 2011	$75,000	
Subtotals	$125,000	$100,000
Partnering		
Conduct study, develop ConOps and prepare MOUs for TMC co-locations and video sharing (Study) – 2014	$45,000	
Conduct public outreach and develop agreements with municipalities for diversion routes - 2013	$50,000	
Develop and conduct joint training sessions among TMC operators, RSIP patrollers and LSP		$20,000
Develop and deliver an ITS course in collaboration with a university	$50,000	$25,000
Subtotals	$145,000	$45,000
Public Outreach		
Develop a standard presentation, including a brief video, to support public outreach - 2012	$20,000	
Conduct media events at major ITS deployment milestones or TMC openings		$5,000
Install ITS monitor display within DOTD Building lobby as well as other facilities – 2013	$10,000	
Other		
ITS Infrastructure Management		$600,000
ITS Administration		$685,000
Special Projects		$500,000
Subtotals		$1,758,000

A summary of the costs on a year-by-year basis, inclusive of existing costs plus costs of improvements is presented in the following table.

Summary of Costs by Year

	2011	2012	2013	2014	2015
ITS Deployment	$12,100,000	$11,980,000	$11,480,000	$11,480,000	$11,480,000
TMC Operations	$2,020,000	$2,120,000	$2,100,000	$2,020,000	$2,020,000
ITS Maintenance	$1,000,000	$1,400,000	$1,065,000	$1,125,000	$1,075,000
ITS Systems	$4,000,000	$1,405,000	$655,000	$655,000	$805,000
RSIP / Traffic Incident Management	$1,900,000	$2,150,000	$1,940,000	$1,900,000	$1,900,000
Traveler Information	$175,000	$300,000	$575,000	$575,000	$575,000
Traffic Engineering	$45,000	$45,000	$45,000	$45,000	$45,000
Partnering	$45,000	$45,000	$95,000	$90,000	$45,000
Public Outreach	$50,000	$70,000	$60,000	$50,000	$50,000
Other Admin.	$1,758,000	$1,758,000	$1,758,000	$1,758,000	$1,758,000
Totals	$23,093,000	$21,273,000	$19,773,000	$19,698,000	$19,753,000

5.0 Performance Measures

Performance measures are developed in order to track the progress and effectiveness of the ITS program on an annual basis. Performance measures are converted to a letter grade (i.e., "A" highest, followed by "B", etc.).

Performance Measure	Metric	A	B	C	D	F
ITS Deployment						
% Completion of system build-out	Actual # miles built per yr / Planned # miles built per yr	90 - 100	80 – 89	70 – 79	60 – 69	< 60
TMC Operations						
Benefit / Cost Ratio	BCR (Annual Analysis)	> 15	10 - 15	6 - 9	1 - 5	< 1
ITS Maintenance						
System Reliability (Field Devices)	% Time operational (ITS field devices)	98 - 100	96 – 97	91 – 95	85 – 90	< 85
ITS Systems						
System Reliability (TMC)	% Time operational (TMC systems)	98 - 100	96 – 97	91 – 95	85 – 90	< 85
Roadway Safety Incident Program						
Incident Management Quality	Emergency responder survey (Scale of 1 to 10)	≥ 9	8 - 9	7 - 8	6 - 7	< 6
Traffic Incident Management						
Incident Clearance Time	Overall time to clear incidents (minutes)	≤ 30	31 - 40	41 - 50	51 - 60	> 60
Traveler Information						
Travel Time Messaging on DMS's	% DMS's posting travel times as default messages	90 - 100	80 - 89	70 - 79	60 - 69	< 60
Traffic Engineering						
No. Traffic Ops & Safety Projects	No. traffic ops & safety projects developed by TMC's/yr	> 12	10 - 12	8 - 9	6 - 7	< 6
Partnering						
No. of public and private partners	No. of partners collaborating with on a daily basis	≥ 4	3	2	1	0
Public Outreach						
Satisfaction with ITS Program	Customer survey (Scale of 1 to 10)	≥ 9	8 - 9	7 - 8	6 - 7	< 6

6.0 Beyond the Year 2015

The focus of the ITS Strategic Business Plan is on the years 2011 – 2015. Towards the end of this time frame, the following initiatives are recommended to continue to improve the program and prepare it for the next generation of transportation needs and potential ITS applications.

- Integrated Corridor Management Integrated Corridor Management is the coordination of individual network operations between parallel facilities that creates an interconnected system capable of cross network travel management. For the purposes of this initiative, a corridor is defined as a combination of discrete parallel surface transportation networks (e.g., freeway, arterial, transit networks) that link the same major origins and destinations. It is defined operationally rather than geographically or organizationally. A coordinated effort between networks along a corridor can effectively manage the total capacity of a corridor in a way that will result in reduced congestion and increased trip reliability. The strategic corridors within the statewide network will be analyzed to identify specific corridors for integrated corridor management. Subsequently, master plans will be developed for each of these corridors indicating specific needs and how ITS will support those needs.
- Managed Lanes Managed Lanes are highway facilities or a set of lanes where operational strategies are proactively implemented and managed in response to changing conditions. The managed lane concept is typically a "freeway-within-a-freeway" where a set of lanes within the freeway cross section is separated from the general-purpose lanes. The facility incorporates a high degree of operational flexibility so that over time operations can be actively managed to respond to growth and changing needs. The operation of and demand on the facility is managed using a combination of tools and techniques in order to continuously achieve an optimal condition, such as free-flow speeds. The principal management strategies can be categorized into three groups: pricing, vehicle eligibility, and access control. Examples of operating managed lane projects include high-occupancy vehicle (HOV) lanes, value priced lanes, high-occupancy toll (HOT) lanes, or exclusive or special use lanes. The strategic corridors within the statewide network will be analyzed in identifying specific corridors for potential application of Managed Lanes. Subsequently, master plans will be developed for each of these corridors indicating specific needs and how ITS will support those needs.
- Active Traffic Management Active Traffic Management is the ability to dynamically manage recurrent and non-recurrent congestion based on prevailing traffic conditions. By enacting strategies discussed in the working groups, the region can focus on trip reliability, it maximizes the effectiveness and efficiency of the TMC. It increases throughput and safety through the use of integrated systems with new technology, including the automation of dynamic deployment such as automatic signal timing changes and DMS messaging to optimize performance quickly and without the delay that occurs when operators must deploy operational strategies manually. This congestion management strategy includes speed harmonization, temporary shoulder use, junction control, and dynamic signing and rerouting. The strategic corridors within the statewide network will be analyzed to identify specific corridors for potential application of Active Traffic Management. Subsequently, master plans will be developed for each of these corridors indicating specific needs and how ITS will support those needs.
- IntelliDrive IntelliDrive is a multimodal initiative that aims to enable safe, interoperable networked wireless communications among vehicles, the infrastructure, and passengers' personal communications devices. IntelliDriveSM applications provide connectivity: among vehicles to enable crash prevention;

between vehicles and the infrastructure to enable safety, mobility, and environmental benefits; and among vehicles, infrastructure, and passengers' wireless devices to provide continuous real-time connectivity to all system users. As the nation-wide IntelliDrive program evolves, we will provide the needed ITS infrastructure (e.g., roadside collection devices, communications) and systems to utilize and leverage these new technologies.

- Multimodal ITS Applications Continue to focus on the highway system, while encouraging partnerships with other transportation modes (e.g., transit, airports, seaports, multimodal centers) to build a smart strategic multimodal network. These partnerships will leverage the current ITS infrastructure and systems in growing into a multimodal system. As a starting point, the New Orleans RPC should address the integration of multimodal traveler information as part of the regional ITS architecture. This is particularly important for the region as there are large ships that impact the frequency and duration of bridge openings and freight trains impacting rail crossings. In addition, CCTV cameras mounted on long-span bridges will enable the viewing of large vessels approaching the bridge. Although diversion routes are not practical, messaging of anticipated delays may be considered.
- Freight ITS Applications Traveler information and 511 is primarily focused on commuters and travelers, it does not address the unique constraints of the freight industry including over height and over weight restrictions as well as adequate rest stops along major interstates. Electronic display monitors will be located at welcome centers and rest areas to provide information on incidents, travel times, construction, and video images along the state roadway system.

The focus beyond the year 2015 will continue to provide a balance between deployment, operations, maintenance, system integration, and asset management.

Summary

The ITS Strategic Business Plan provides numerous initiatives distributed over five years (i.e., 2011 – 2015) and over ten categories (i.e., deployment; operations; maintenance; systems; roadway safety incident program; traffic incident management; traveler information; traffic engineering; partnering; and public outreach). The next steps in implementing this plan are the following:

- Executive Management Endorsement Present the ITS Strategic Business Plan to DOTD Executive Management to obtain acceptance of the future initiatives and strategies depicted in this plan.
- Implementation Implement recommended strategies as part of existing and new contracts.
- Performance Assessment Track performance of the proposed initiatives as well as the need for further refinement.

In summary, the ITS Strategic Business Plan provides a roadmap for achieving the ITS vision to support its business goals.

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