Massachusetts Strategic Highway Safety Plan

September 2006

Massachusetts Strategic Highway Safety Plan

prepared for

Massachusetts Highway Department

prepared by

Cambridge Systematics, Inc.

September 2006

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Dear Massachusetts citizen:

I am pleased to present the Massachusetts Strategic Highway Safety Plan. This is a plan for all Massachusetts citizens, because it will take all of us to solve the large and enduring challenge of improving highway safety in the Commonwealth.

In 2005, 442 people died and more than 5,000 were seriously injured in traffic crashes on Massachusetts roads. Although this reflects a decrease in the number of crash-related fatalities from 2004, we must stay vigilant to avoid the loss of additional life. The human and economic costs of motor vehicle crashes are preventable, unaffordable, and unacceptable. It will take the committed and sustained efforts of partners in every level of government, the private sector, citizens, and the "four E's" of engineering, enforcement, education, and emergency response – all working together -- to achieve success.

The Massachusetts Strategic Highway Safety Plan was prepared in compliance with the requirements of the federal transportation legislation known as the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users, or SAFETEA-LU. It contains implementation strategies and a plan for measuring and monitoring progress toward achieving the goals of the Highway Safety Plan. It represents a major, year-long effort involving dozens of federal, state, regional, local agencies and organizations with an interest in highway safety. I am grateful for their contributions, and look forward to working with them as we implement the actions outlined in the Strategic Highway Safety Plan.

I encourage you to become involved in the implementation of the plan. More importantly, I encourage you to do your part – buckle up, slow down, don't drink and drive, and pay attention to your driving. These actions alone will move us toward safer roads in Massachusetts.

Sincerely,

Luisa Paiewonsky
Commissioner

Memorandum of Understanding Relating to the Massachusetts Strategic Highway Safety Plan

By and Among

Massachusetts Executive Office of Transportation
Massachusetts Highway Department
Massachusetts Registry of Motor Vehicles
Governor's Highway Safety Bureau
Massachusetts State Police
Massachusetts Department of Public Health
Massachusetts Chiefs of Police Association
Massachusetts Association of Regional Planning Agencies
Federal Highway Administration
National Highway Traffic Safety Administration

WHEREAS, In 2004, motor vehicle crashes in the Commonwealth of Massachusetts resulted in 476 deaths and 5,554 associated injuries requiring hospitalization with a total economic impact of more than $6.9 billion, and

WHEREAS, this highway carnage, human suffering, and economic loss is unacceptable to the citizens of Massachusetts, and

WHEREAS, the Massachusetts Highway Department ("MassHighway") has the responsibility under Title 23 U.S.C. §148 to develop a Strategic Highway Safety Plan that:

(A) is developed after consultation with-
- (i) a highway safety representative of the Governor of the State;
- (ii) regional transportation planning organizations and metropolitan planning organizations, if any;
- (iii) representatives of major modes of transportation;
- (iv) State and local traffic enforcement officials;
- (v) persons responsible for administering section 130 at the State level;
- (vi) representatives conducting Operation Lifesaver;
- (vii) representatives conducting a motor carrier safety program under section 31102, 31106, or 31309 of title 49;
- (viii) motor vehicle administration agencies; and
- (ix) other major State and local safety stakeholders;

(B) analyzes and makes effective use of State, regional, or local crash data;
(C) addresses engineering, management, operation, education, enforcement, and emergency services elements (including integrated, interoperable emergency communications) of highway safety as key factors in evaluating highway projects;
(D) considers safety needs of, and high-fatality segments of, public roads;
(E) considers the results of State, regional, or local transportation and highway safety planning processes;
(F) describes a program of projects or strategies to reduce or eliminate safety hazards;
(G) is approved by the Governor of the State or a responsible State agency; and
(H) is consistent with the requirements of section 135(g).

WHEREAS, the Commonwealth of Massachusetts will undertake the process of developing a Strategic Highway Safety Plan (SHSP) that will include goals and strategies that Federal, state, and local officials and private sector organizations can stand behind to reduce motor vehicle crashes, deaths, and associated injuries on Massachusetts roadways, and

WHEREAS, the impetus for the plan is to minimize the number of deaths and associated injuries, the new Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) law requires each state to develop an SHSP that is based on accurate and timely safety data, consultation with safety stakeholders, and performance-based goals that address infrastructure and behavioral safety problems on all public roads and provides sanctions for failing to do so, and

WHEREAS, states without an by SHSP October 1, 2007, will have all subsequent Highway Safety Improvement Program funds frozen at 2007 levels and may only use their Highway Safety Improvement Program funds for eligible railway-highway crossings or hazard elimination projects, and

WHEREAS, states with an approved SHSP may obligate Highway Safety Improvement Program funds for intersection improvements, roadway and structure improvements, roadside improvements, pedestrian and bicycle improvements and other improvements such as improving safety conscious planning, the collection and analysis of crash data on any public road or any publicly owned bicycle/pedestrian pathway, and

WHEREAS, states with an approved SHSP are eligible to spend up to 10 percent of Highway Safety Improvement Program funds for other safety projects such as education, enforcement and emergency medical services, and

WHEREAS, SAFETEA-LU recommends involving a broad, diverse group of stakeholders, and

THEREFORE, IT IS AGREED THAT, the Massachusetts Strategic Highway Safety Plan Executive Leadership Committee, an interagency, intergovernmental committee is established with a membership from the following:

Commissioner, Massachusetts Highway Department; Executive Director, Office of Transportation Planning; Registrar, Registry of Motor Vehicles; Commissioner, Department of Public Health; Colonel, Massachusetts State Police; Director, Governor's Highway Safety Bureau; President, Massachusetts Chiefs of Police Association; Executive Director, Massachusetts Association of Regional Planning Agencies; Division Administrators of Federal Highway Administration and Federal Motor Carrier Safety Administration; and Regional Administrator, National Highway Traffic Safety Administration; and

THEREFORE, IT IS AGREED THAT, the members of the Executive Leadership Committee agree to support MassHighway in its efforts to achieve the Mission, Vision, and Goals as stated in the statewide Massachusetts Strategic Highway Safety Plan as part of the Executive Leadership Committee.

MISSION: Develop, promote, implement, and evaluate data-driven, multi-disciplinary strategies to maximize safety for users of the roadway system

VISION: Provide the safest roadway system in the country and promote its safe use

GOALS: Reverse the increasing trend of traffic-related fatalities and injuries upon implementation of the MA SHSP (towards zero fatalities and injuries).

Achieve a 20% reduction from 476 (2004) lives lost in traffic-related fatal crashes by 2010.

Achieve a 20% reduction from 5,554 (2004) in non-fatal traffic-related injuries requiring hospitalizations by 2010.

Role of the Strategic Highway Safety Plan Executive Leadership Committee

NOW, THEREFORE, the Signatories hereto jointly agree as follows:

1) Executive Leadership Committee will meet quarterly to review progress towards the shared SHSP goals and provide updates on agency-specific safety initiatives.

2) Members of the Executive Leadership Committee will appoint staff member(s) to the SHSP Steering/Advisory Committee and dedicate staff expertise to further progress towards the shared SHSP goals.

3) The Executive Leadership Committee will provide guidance to the Steering/Advisory Committee on transportation safety-related issues as needed.

4) Each member of the Executive Leadership Committee will consider the SHSP when developing or updating individual agency plans and budgets.

Memorandum of Understanding Relating to the Massachusetts Strategic Highway Safety Plan

This Memorandum Of Understanding executed in multiple originals and made effective starting the 30th day of September 2006, by and among the following member agencies and associations, hereinafter referred to as the Strategic Highway Safety Plan Executive Leadership Committee: Secretary, Executive Office of Transportation; Commissioner, Massachusetts Highway Department; Registrar, Registry of Motor Vehicles; Commissioner, Department of Public Health; Colonel, Massachusetts State Police; Director, Governor's Highway Safety Bureau; President, Massachusetts Chiefs of Police Association; Executive Director, Massachusetts Association of Regional Planning Agencies; Division Administrator, Federal Highway Administration; and Regional Administrator, National Highway Traffic Safety Administration; and shall be effective through September 30, 2009.

By signing below, I, _____ (NAME) of _____ (AGENCY) agree to be an active member of the Massachusetts Strategic Highway Safety Plan Executive Leadership Committee and promote safety within my agency.

John Cogliano, Secretary
Executive Office of Transportation

SEPT 22, 2006
Date

Luisa Paiewonsky, Commissioner
Massachusetts Highway Department

JUNE 26, 2006
Date

Anne Collins, Registrar
Registry of Motor Vehicles

6/26/06
Date

Paul Cote, Commissioner
Massachusetts Department of Public Health

6/5/06
Date

Mark Delaney, Colonel
Massachusetts State Police

9.19.06
Date

Caroline Hymoff, Director
Governor's Highway Safety Bureau

6-06-06
Date

A. Wayne Sampson

A. Wayne Sampson, President
Massachusetts Chiefs of Police Association

6-9-06
Date

Timothy Brenna

9/21/06
Date

Timothy Brennan, Executive Director
Massachusetts Association of Regional Planning Agencies

Stanley Gee

6/7/06
Date

Stan Gee, Division Administrator
Federal Highway Administration

Philip J Weiser

6/8/06
Date

Philip Weiser, Regional Administrator
National Highway Traffic Safety Administration

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Acronym Guide

AASHTO	American Association of State Highway and Transportation Officials
BAC	Blood Alcohol Content
BAT	Breath Alcohol Test
CDL	Commercial Driver's License
CDS	Crash Data System
CMV	Commercial Motor Vehicles
CPS	Child Passenger Safety
CVISN	Commercial Vehicle Information Systems and Networks
DOT	Department of Transportation
DRE	Drug Recognition Expert
EMS	Emergency Medical Services
EOT	Executive Office of Transportation
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
GHSA	Governors Highway Safety Association
GHSB	Governor's Highway Safety Bureau
HRRRP	High Risk Rural Roads Program
HSIP	Highway Safety Improvement Program
IPCP	Injury Prevention Control Program
ITS	Intelligent Transportation Systems
JOL	Junior Operator Law
LEL	Law Enforcement Liaison
MADD	Mothers Against Drunk Driving
MARPA	Massachusetts Association of Regional Planning Agencies
Mass. DPH	Massachusetts Department of Public Health
MassHighway	Massachusetts Highway Department
MATRIS	Massachusetts Ambulance Trip Record Information System
MCOPA	Massachusetts Chiefs of Police Association
MCSAP	Motor Carrier Safety Assistance Program

Acronym Guide
(continued)

MDAA	Massachusetts District Attorneys Association
MMUCC	Model Minimum Uniform Crash Criteria
MOU	Memorandum of Understanding
MPI	Municipal Police Institute
MPTC	Municipal Police Training Committee
MREP	Motorcycle Rider Education Program
MSP	Massachusetts State Police
MUTCD	Manual on Uniform Traffic Control devices
NCHRP	National Cooperative Highway Research Program
NCSA	National Center for Statistics and Analysis
NHTSA	National Highway Traffic Safety Administration
OUI	Operating Under the Influence
PBIC	Pedestrian and Bicycle Information Center
PI&E	Public Information and Education
PNF	Project Need Form
PRISM	Performance and Registration Information Systems Management
RMV	Registry of Motor Vehicles
RPA	Regional Planning Agency
SADD	Students Against Destructive Decisions
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users
SCARR	State Courts Against Road Rage
SHSP	Strategic Highway Safety Plan
SRTS	Safe Routes To School
STIP	Statewide Transportation Improvement Program
STP	Surface Transportation Program
TBD	To Be Determined
TIP	Transportation Improvement Program
TOPS	Traffic Occupant Protection Strategies
TRCC	Traffic Records Coordinating Committee
VMT	Vehicle Miles of Travel

1.0 Problem Statement

Introduction[1]

Injury is the leading cause of death in the United States for people 1 to 45 years of age; and because it so disproportionately strikes the young, it also is the leading cause of lost years of productive life. Motor vehicle injury is overwhelmingly the largest contributor to these losses and is the leading cause of death for children ages 3 to 14.

Safety improvement requires progress toward reducing the crash experience of drivers, passengers, and other vulnerable road users. Over the past decade the number of traffic fatalities has remained essentially unchanged. The major focus and most visible commitment to transportation safety in the United States over the past two decades has been on vehicle crashworthiness and driver behavior; however, the effectiveness of those strategies has reached a plateau in terms of reducing the *number* of crashes, injuries, and fatalities. In 2003, U.S. Secretary of Transportation Norman Mineta issued a "Call to Quarters" and set a national goal of reducing fatalities to a rate of 1.0 per 100 million vehicle miles traveled (VMT) by 2008. Furthermore, the U.S. Department of Health and Human Services' "Healthy People 2010" objectives for the nation include the reduction of deaths caused by motor vehicles to a rate of 0.8 per 100 million VMT.

In 2005, Congress reauthorized the highway bill and signed the Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) into law. This law raised the visibility of safety, designating it as an individual factor in transportation planning and establishing a new core funding program. Section 148 of the highway bill states that to obligate Highway Safety Improvement Program (HSIP) funds, states must develop and implement a statewide Strategic Highway Safety Plan (SHSP); produce a program of projects or strategies; evaluate the plan on a regular basis; and submit an annual report to the Secretary.

Background

In 2004, 42,636 people died on the nation's roadways and nearly three million were injured in motor vehicle-related crashes. The national fatality rate was 1.46 per 100 million VMT. In this same year, the Massachusetts fatality rate was 0.87 per 100 million VMT.

[1] Unless otherwise noted, data reported in this document was obtained from the Fatality Analysis Reporting System (FARS). At the time the Massachusetts SHSP was drafted, final 2005 FARS data was not available. The SHSP, therefore, includes limited references to 2005 statistics.

This rate was the lowest in the nation and below the national goal of 1.0 set by Secretary Mineta. Massachusetts, however, has continued need for improvement in the area of transportation safety.

- While Massachusetts had the lowest fatality rate in the nation in 2004, its rural roadways experienced a higher rate of fatal crashes than the rural roadways in many other states.
- The number of traffic-related fatalities rose each year from 2002 to 2004.
- In 2005, Massachusetts had one of the lowest safety belt use rates in the country: 65 percent compared to the national average of 82 percent.
- Massachusetts is designated a lead state for lane departure crashes by the American Association of State Highway and Transportation Officials (AASHTO).
- Massachusetts exceeds the national average for fatal crashes involving impaired drivers, intersections, and pedestrians.

■ Massachusetts Fatalities and Injuries

Despite Massachusetts low fatality rate, Massachusetts' statistics reflect an unacceptable loss of life and injury. In 2004, Massachusetts lost 476[2] lives to motor vehicle crashes and travelers experienced 5,554[3] nonfatal traffic-related injuries requiring hospitalizations. The majority of these crashes were preventable.

In 2005, there were 442 people killed in 418 fatal crashes in Massachusetts. Although this reflects a decrease in fatalities from 2004, the Commonwealth has only experienced an overall decrease in fatalities of 0.45 percent since 1994. From 1995 to 2005, the annual number of lives lost in Massachusetts has remained between 400 and 480. Also during this period, no significant decrease in fatalities occurred in any consecutive period, as shown in Figure 1.1. The fatality rate from 1995 to 2004, shown in Figure 1.2, also has remained relatively constant.

[2] Data Source: FARS reports 476 motor vehicle-related fatalities in 2004 in Massachusetts. The Massachusetts Registry of Motor Vehicles (RMV) reports 475 fatalities in 2004. To be consistent with other fatality metrics, the FARS data will be used in reference to fatalities in this report unless otherwise noted by reference.

[3] Data Source: Massachusetts Department of Public Health Motor Vehicle-related Injury Data, 2004.

Figure 1.1 Massachusetts Fatalities
1995 to 2005

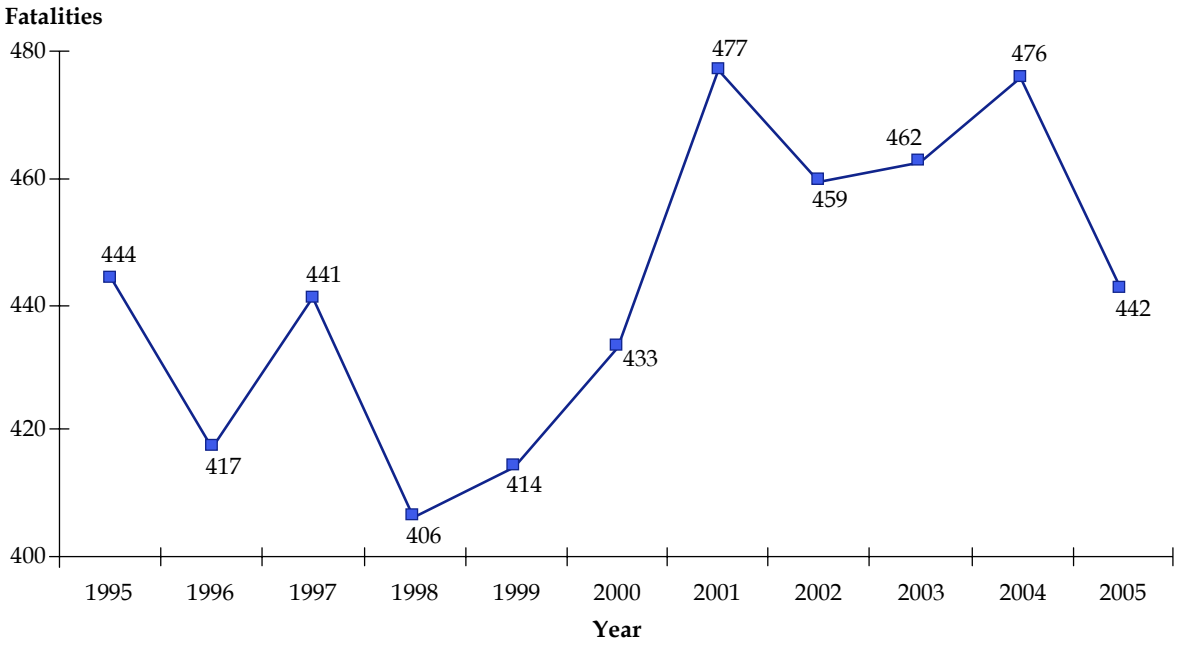
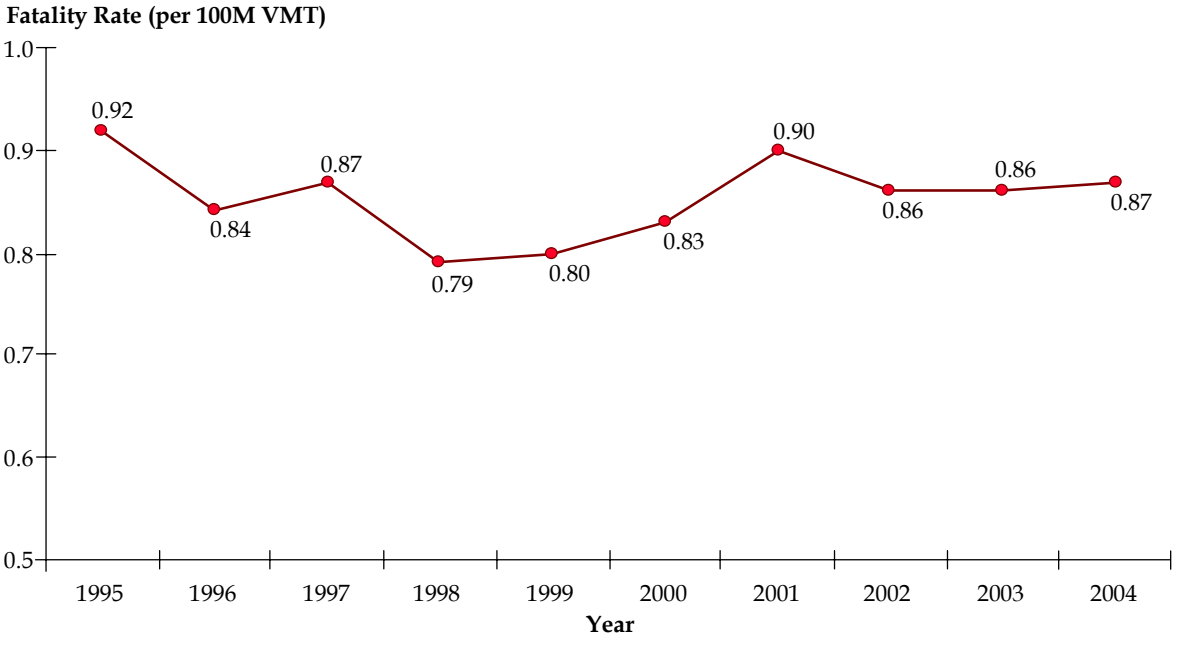


Figure 1.2 Massachusetts Fatality Rate
1995 to 2004



Massachusetts provides an extensive, multimodal system of transportation to its residents and visitors. The various users of the transportation system, however, have different safety needs and levels of exposure to risk. Table 1.1 describes 2005 traffic-related fatalities by user type.

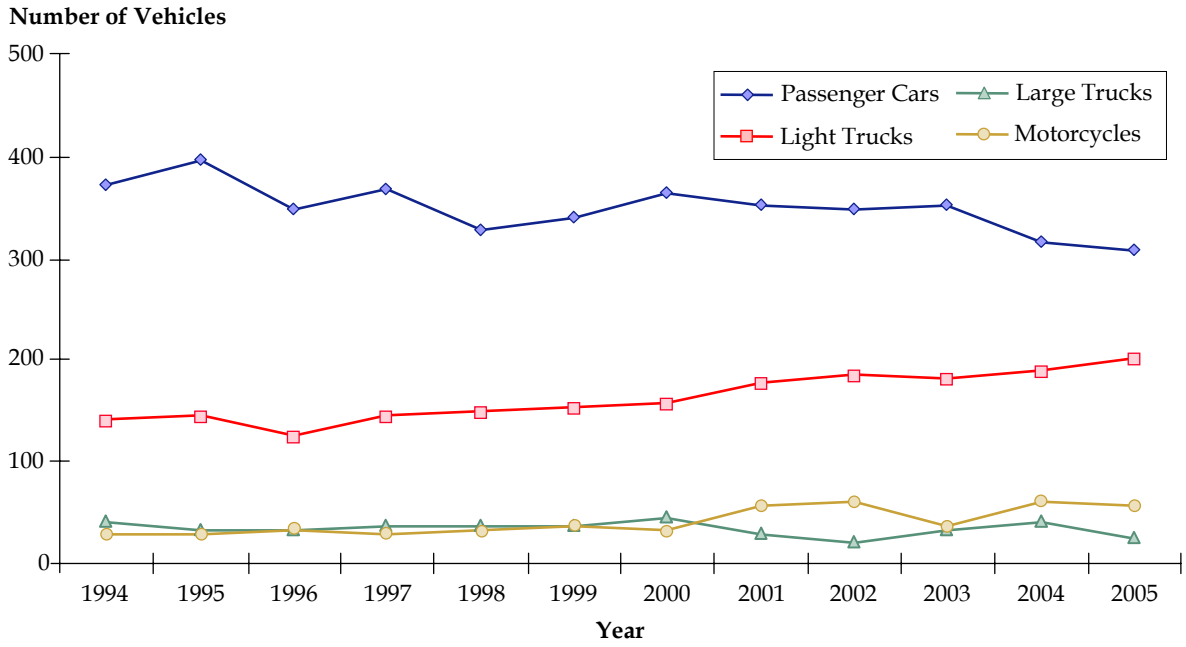
Table 1.1 Massachusetts 2005, Persons Killed in Motor Vehicle Crashes
By Person Type

Person Type	Persons Killed
Vehicle Occupants and Motorcycle Riders	
Driver	287
Passenger	70
Unknown Occupant	0
Subtotal	**357**
Nonmotorists	
Pedestrian	76
Pedal-Cyclist	5
Other/Unknown	4
Subtotal	**85**
TOTAL	**442**

Figure 1.3[4] illustrates the involvement in fatal crashes by vehicle type. From 1999 to 2005, with the exception of 2003, there has been a steady increase in motorcycle involvement in fatal crashes. The percentage of light trucks involved in fatal crashes, 33.5 percent in 2005, also has risen steadily since 1999. In 2005, compact utility vehicles (13.3 percent) and standard pickup trucks (8.7 percent) contributed to the largest portions of light trucks involved in fatal crashes.

[4] Note: This data has not been normalized against vehicle registrations.

Figure 1.3 Vehicles Involved in Massachusetts Fatal Crashes
1994 to 2005



The Massachusetts Department of Public Health (Mass. DPH) reports that more than 92,000 emergency department visits were made in Massachusetts in 2004 due to motor vehicle-related injuries, including nearly 4,000 transportation-related pedestrian visits. The Mass. DPH estimates the combined charges for unintentional motor vehicle traffic hospitalizations and emergency department visits in 2004 to be in excess of $254 million. The Mass. DPH also reports that motor vehicle crashes between 1995 and 2004 accounted for almost one quarter of all traumatic brain injury hospitalizations. From 2002 to 2004, 43 percent of all incapacitating injury crashes were intersection-related and 39 percent of all incapacitating injury crashes involved young drivers (ages 16 to 24).

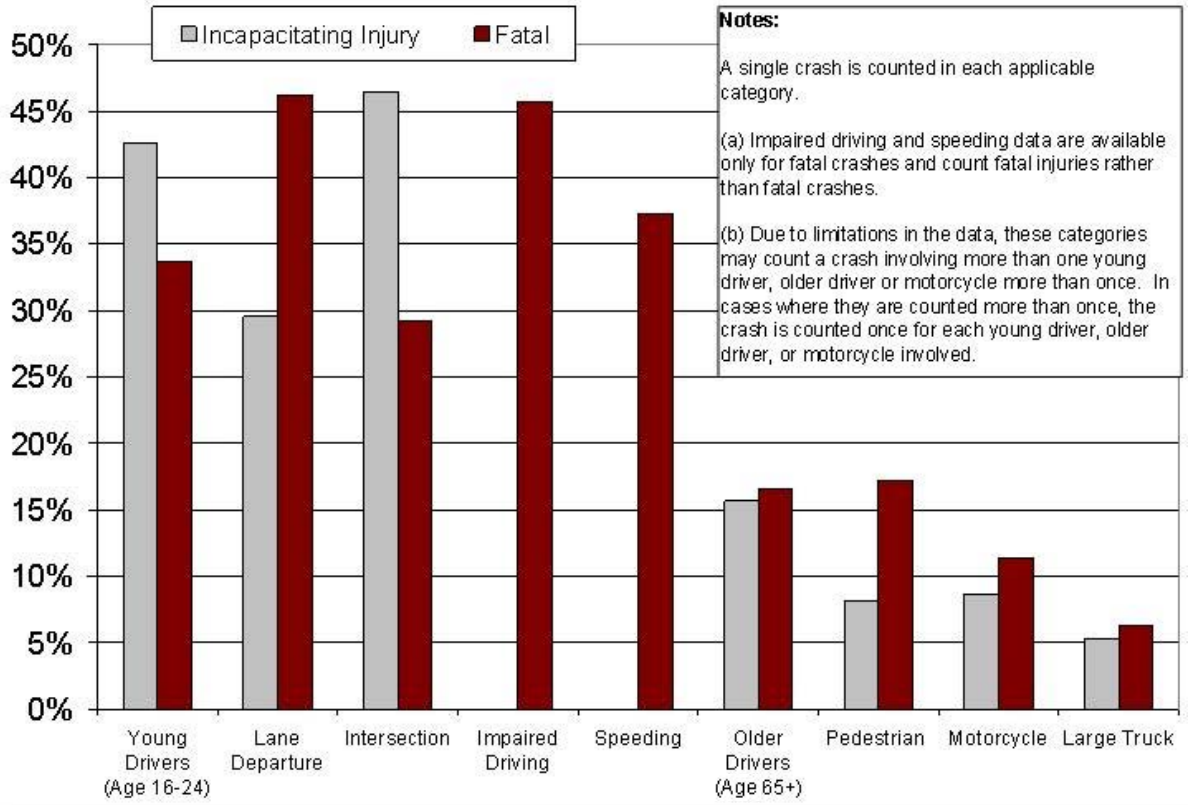
"Injury is a major public health problem in both the United States and Massachusetts and is the leading cause of death for people ages 1-45."

–Maximizing Our Efforts: The Massachusetts State Injury Prevention Plan, 2006, Massachusetts Department of Public Health

■ Crash Characteristics

Based on analysis provided to the Massachusetts Highway Department (MassHighway) by UMassSAFE, the major contributing factors in fatal and incapacitating injury crashes from 2002 to 2004 included lane departures, intersections, impaired driving, speeding, young drivers, pedestrians, older drivers, motorcycles, and large trucks (Figure 1.4). Based on FARS data, lack of occupant restraint use is a contributing factor to the severity of crashes in Massachusetts. Of known belt use in 2004, 65 percent of occupants killed in fatal crashes were unbelted.

Figure 1.4 Massachusetts Fatal and Incapacitating Injury Crash Information
2002-2004



Note: Analysis conducted by and graph created by UMassSAFE at the University of Massachusetts.

Despite having a fatality rate that is significantly lower than the national average, in 2004 the percentage of fatalities by crash type in Massachusetts exceeded the national average in many areas, as shown in Table 1.2.

Table 1.2 Percent of Fatalities by Crash Type, Massachusetts versus National Average
2004[5]

Crash Type	Massachusetts	National Average
Lane Departure	63%	60%
Alcohol-Impaired Driving	43%	39%
Pedestrian	17%	11%
Speeding	33%	31%
Motorcycle	13%	9%

■ Massachusetts Safety Emphasis Areas

Based on analysis of the Commonwealth's crash data, the Massachusetts safety stakeholders determined that the Commonwealth's first comprehensive SHSP should be focused upon six main themes, or emphasis areas, each of which is described in Table 1.3 and the remainder of this section.

Table 1.3 Emphasis Areas

Emphasis Area	Primary Focus
Data Systems	Crashes; Roadway; Medical; Vehicle Registration; Driver History; Citations
Infrastructure	Lane Departure Crashes; Intersection Crashes
At-Risk Driver Behavior	Occupant Protection; Speeding; Alcohol/Impaired Driving
Higher-Risk Transportation System Users	Young Drivers; Older Drivers; Pedestrians; Bicyclists; Motorcyclists
Public Education and Media	Statewide Safety Marketing; Media Messages; Public Awareness
Safety Program Management	Process for Institutionalizing the SHSP

[5] Data Source: Statistics reported for lane departure, alcohol impaired driving, and pedestrian crash types was obtained from the Federal Highway Administration (FHWA), 2004 District Fatality Statistics – North Highway Safety Measures. Statistics reported for the speeding and motorcycle crash types was obtained from the National Center for Statistics and Analysis (NCSA) for the National Highway Traffic Safety Administration (NHTSA), Massachusetts Toll of Motor Vehicle Crashes, 2004.

Data Systems Emphasis Area

Data availability and analysis tools were the leading issues identified by stakeholders in relation to transportation safety. Identifying safety problems at the state, regional, or local level requires data and the resources to analyze data. In addition to crash data, roadway, citation, medical, vehicle registration, and driver history data are valuable tools for identifying safety problems, evaluating potential solutions, and measuring performance towards shared goals and objectives. A data-driven approach, therefore, was adopted by MassHighway to develop the SHSP.

In 2006, Massachusetts developed a Strategic Traffic Records Plan. In addition to this plan, the Governor's Highway Safety Bureau (GHSB) and the Traffic Records Coordinating Committee (TRCC)[6] developed the Commonwealth of Massachusetts' application for Section 408[7] grant funding to support traffic records and data quality improvement projects. The data systems goal and strategic projects included in the SHSP are consistent with those identified by the TRCC in 2006. Additional traffic records initiatives are underway or planned and are described in the Commonwealth's Final Application for Funding Under 23 U.S.C. 408.

Infrastructure Emphasis Area

The Infrastructure Emphasis Area Team reviewed crash and injury data and determined that Massachusetts' first SHSP should include countermeasures for reducing intersection-related and lane departure crashes.[8]

Intersection crashes are a significant part of the crash picture in Massachusetts. Of 13,787 motor vehicle-related fatal and incapacitating injury crashes reported into the statewide crash system during 2002 through 2004, 4,979 or 39 percent were intersection-related crashes. Of those crashes, 72 percent occurred on city or town roadways intersecting with other city or town roadways or with driveways/private roadways. Nearly 32 percent of

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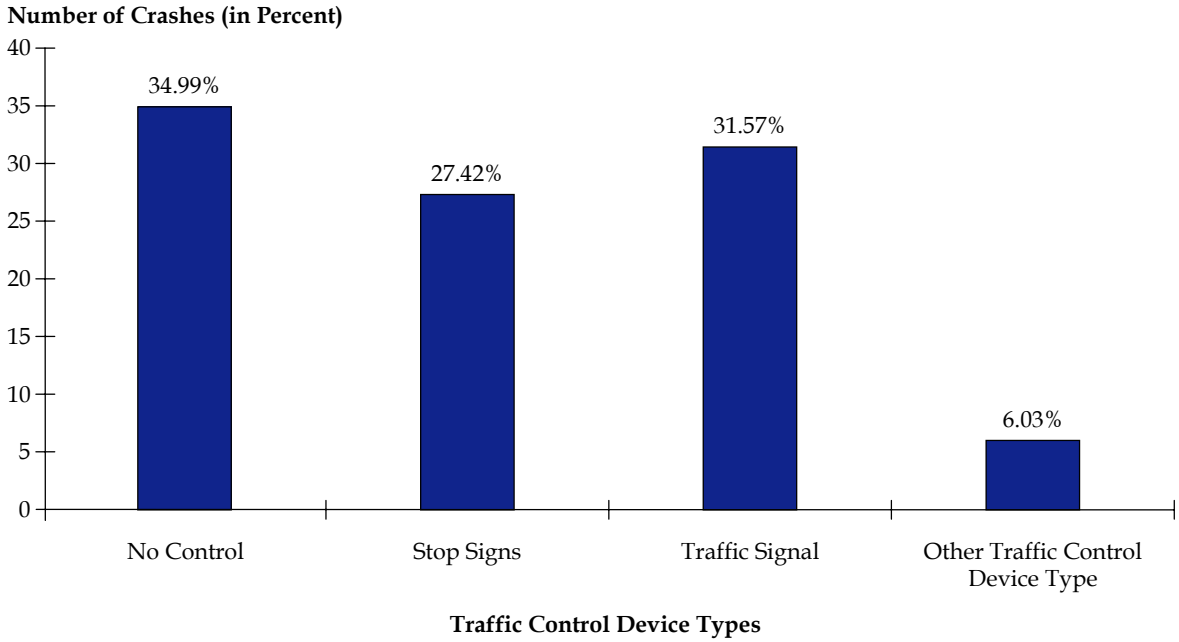
[6] Note: The Massachusetts TRCC is a statewide forum, consisting of state, regional, and local interests from the transportation, law enforcement, criminal justice, and health professions, created to facilitate the planning, coordination, and implementation of projects to improve Massachusetts' traffic records systems.

[7] Note: SAFETEA-LU established this state traffic safety information system improvement grant program. The goal of this program is to help states improve the timeliness, accuracy, completeness, uniformity, integration, and accessibility of safety data.

[8] Note: *High Crash Intersections* – An intersection crash is defined as occurring at a four-way intersection, T-intersection, Y-intersection, or five-point or more (based on the information in the crash report). *Lane Departure Crashes* – Lane departure crashes are made up of single vehicle run-off-road and head-on crashes. Single vehicle run-off-road crashes are non-intersection crashes where the vehicle leaves the roadway but does not strike another moving vehicle. Head-on crashes include head-on collisions with another moving vehicle.

all intersection fatal and incapacitating injury crashes occurred at a traffic signal, as shown in Figure 1.5. Data also indicate that pedestrians and older drivers are overrepresented in intersection-related crashes in Massachusetts.

Figure 1.5 Intersection Fatal and Incapacitating Injury Crashes by Control Device Type
Total 2002-2004



Lane departure crashes are one of the primary fatal crash types in Massachusetts. The Commonwealth exceeds the national average for these types of crashes and was designated a lead state in lane departure crashes by AASHTO. As part of the lead state initiative, MassHighway conducted a study of the problem and found that during 2002 through 2004, lane departure crashes accounted for 25 percent of all incapacitating injury crashes and nearly half, 46 percent, of all fatal crashes. MassHighway's *Massachusetts Lane Departure Crash Data Analysis, 2002-2004*, examined the problem of lane departure crashes. The study concludes that:

- Lane departure crashes were **four times more likely to be fatal** than non-lane departure crashes;

- When considering crashes that occurred during the dark, lane departure incapacitating injury crashes were **two times more likely** to be on unlit roads than all incapacitating injury crashes;

- Incapacitating injury lane departure crashes were **two times more likely** on icy/ snowy/slushy roads than all incapacitating injury crashes;

- In recent years, 2003 to 2004, **speeding was a factor in 44 percent of fatal lane departure crashes** compared to only 32 percent of all fatal crashes; and

- Nearly one-third of all incapacitating injury lane departure crashes involved a **young driver** (16 to 24 years old).

At Risk Driver Behavior Emphasis Area

Speeding, impaired driving, and failure to wear safety belts are significant factors in Massachusetts fatal and serious injury crashes. At this time, Massachusetts is unable to ascertain the exact number of injury-only crashes involving alcohol and speed. These factors are glaringly evident, however, in fatal crashes, as illustrated in Figures 1.6 and 1.7.[9]

Speeding is one of the most prevalent factors in fatal crashes. As shown in Figure 1.6, speed has been a factor in nearly one-third of all fatal crashes in Massachusetts since 1999. In 2004, speed was a factor in 33 percent of all fatal crashes in Massachusetts, which exceeds the national average of 30 percent.

As in many other states, **alcohol impaired driving** is a serious problem in Massachusetts. In 2005, Massachusetts made great progress in the fight against drunk driving with the passage of "Melanie's Bill" which toughens laws against repeat offenders. Enforcement of this law will be critical to decreasing the number of alcohol-related fatalities in Massachusetts. Since 1999, 1,456 people have died on Massachusetts roadways due to alcohol-related crashes. As illustrated in Figure 1.7, alcohol was a factor in nearly half of all fatal crashes from 1999 through 2005. In 2005, Massachusetts experienced a significant decrease in the percentage of alcohol-related fatalities.

Among all states, Massachusetts ranks as one of the lowest for **safety belt use**. Figure 1.8 illustrates the significant difference between the national average and safety belt use in Massachusetts.

[9] Data Source (Figures 1.6 and 1.7): NCAS of the NHTSA, Massachusetts Toll of Motor Vehicle Crashes, 2005.

Figure 1.6 Massachusetts Percentage of Speed-Related Fatalities
1999-2005

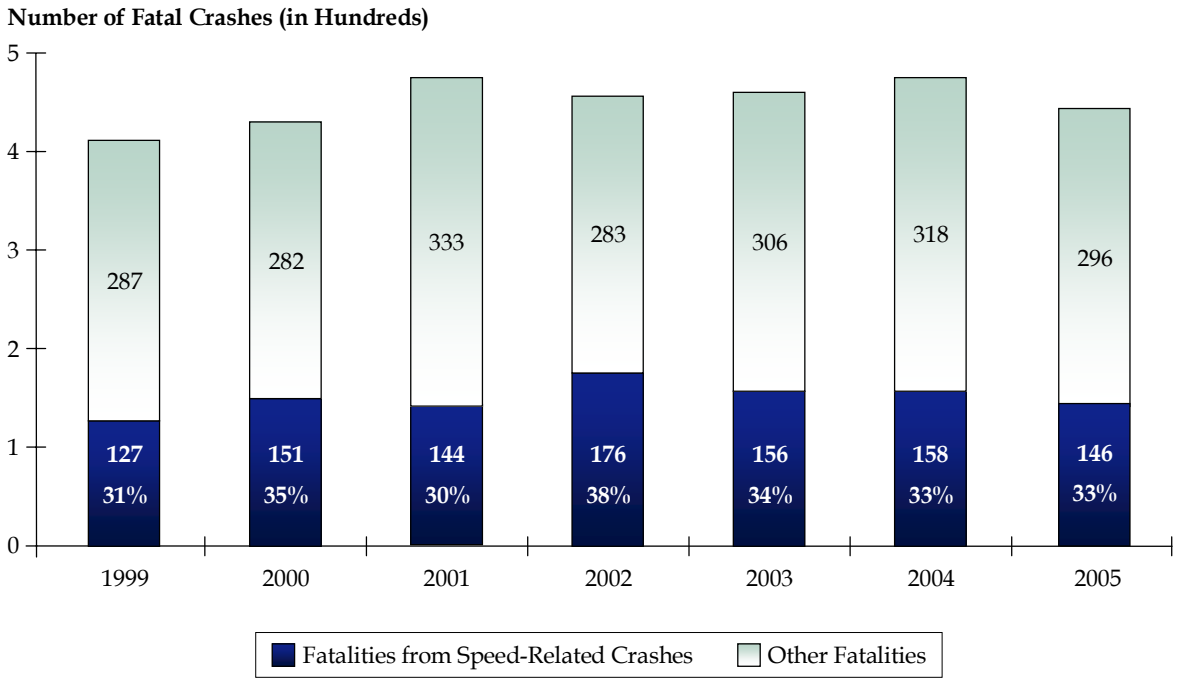


Figure 1.7 Massachusetts Percentage ofAlcohol-Related Fatalities
1999-2005

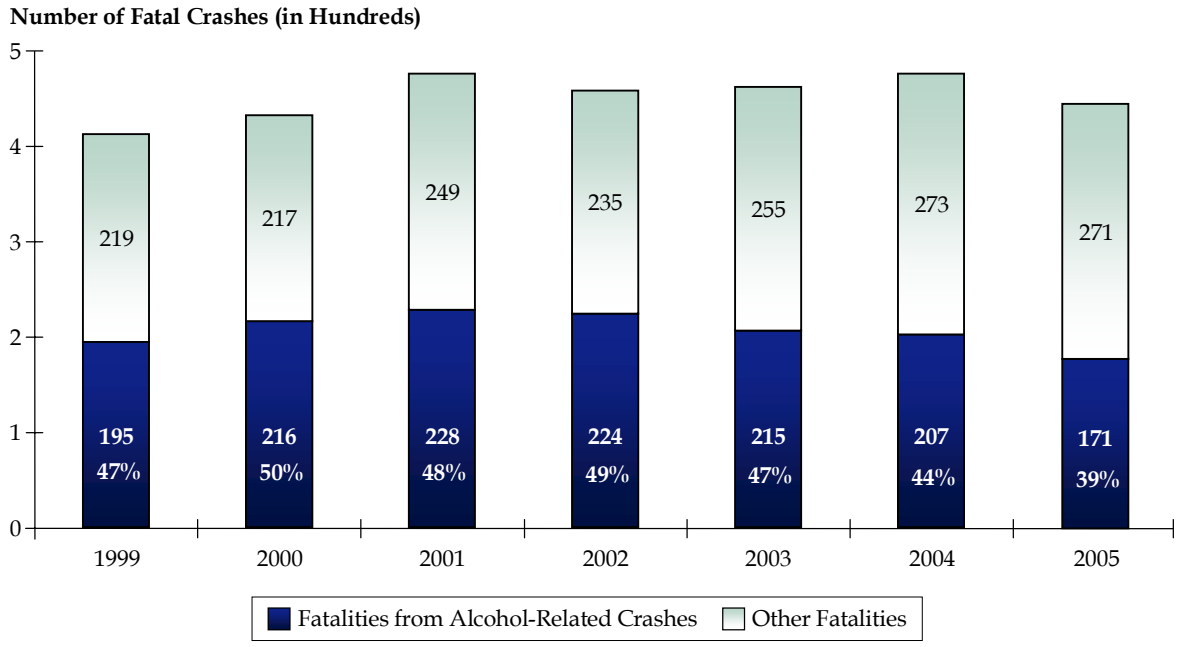
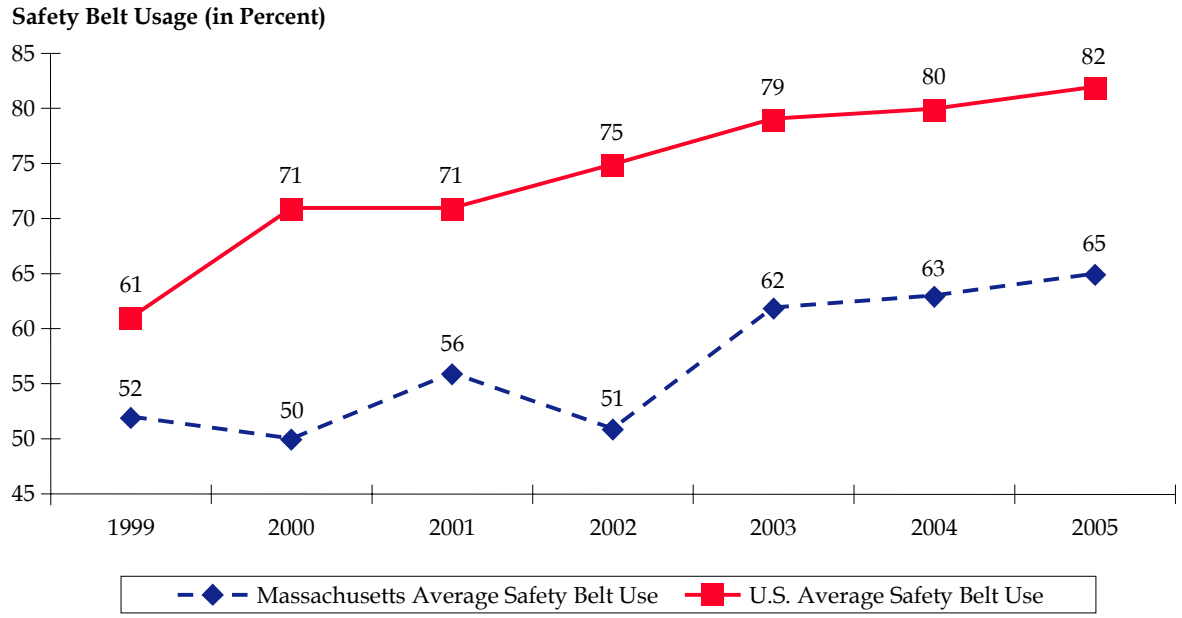


Figure 1.8 Safety Belt Use in Massachusetts Compared to National Average

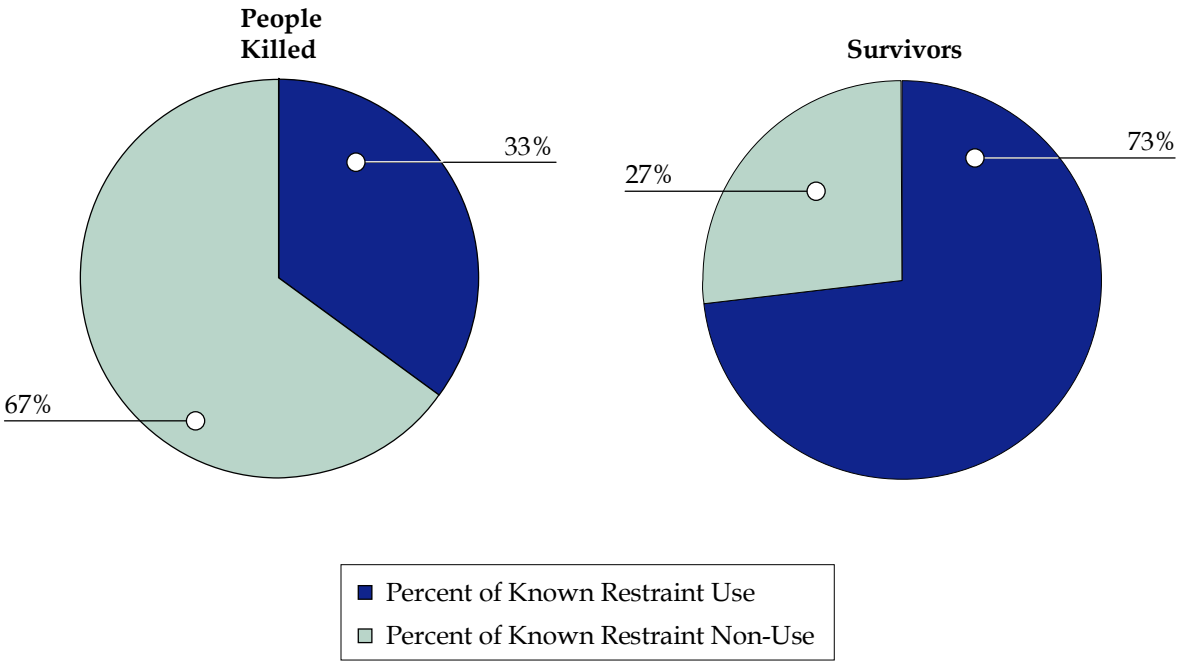


Massachusetts' low statewide safety belt use rate is reflected in the percentage of drivers and occupants who are unrestrained in fatal crashes. Figure 1.9 illustrates the stark contrast in known belt use between survivors and those killed in fatal crashes. In 2005, 73 percent of survivors of fatal crashes were wearing a safety belt; this is more than two times the belt use of those who were killed.[10] In Massachusetts in 2004, 50 percent of children age 15 years and younger killed in motor vehicle crashes were not properly restrained.

Safety belt use is the single most effective means of preventing death or injury in a motor vehicle crash. The NHTSA reports that proper use of safety belts reduces the risk of fatal injury to front-seat passenger car occupants by 45 percent; and proper use of child safety seats reduce the risk of fatal injury by 71 percent for infants (less than 1 year old) and by 54 percent for toddlers (1 to 4 years old). A Federal Motor Carrier Safety Regulation (49 CFR 392.16) requires commercial motor vehicle drivers to wear safety belts.

[10]Note: Restraint use is determined by police and may be over-reported for survivors.

Figure 1.9 Comparison of Belt Use by Survivors and People Killed in Passenger Car and Light Truck Fatal Crashes (Where Belt Use Is Known)
2005



Although the safety belt use rate has increased in Massachusetts from 2003 to 2005, Massachusetts still has one of the lowest safety belt use rates in the country. It is one of 24 states that maintain a secondary enforcement law.[11] In 2006, the Massachusetts legislature considered converting to primary enforcement of the safety belt law, but it was defeated by the House in May. This defeat made Massachusetts temporarily ineligible for a $13.6 million grant offered through the Section 406 incentive program. The GHSB's 2005 annual statewide safety belt observation study revealed that, as in many other states, Massachusetts teens had the lowest safety belt use rate among all age groups.

"It is estimated the passage of a primary safety belt law would annually save 20 lives and prevent approximately $183 million in economic loss in Massachusetts."

–Massachusetts Highway Safety Performance Plan, FFY 2006, Governor's Highway Safety Bureau

[11] Note: Under a primary belt law, motorists can be stopped and ticketed simply for belt nonuse. Under secondary laws, motorists must be stopped for another infraction, such as an expired license tag, in order to be ticketed for belt nonuse.

Higher Risk Transportation System Users Emphasis Area

Motor vehicle crashes are a leading cause of death and injury for young people. From 2002 to 2004, **young drivers**, ages 16 to 24, were involved in 38.5 percent of all incapacitating injury and fatal crashes in Massachusetts. In 2004, young drivers were involved in 34 percent of all fatal crashes in Massachusetts. Approximately 39 percent of all incapacitating injuries involved young drivers in the crash. In 2006, measures for improving young driver safety were brought before the state legislature in amendments to the Junior Operator Law (JOL) and currently are under consideration.

From 2002 to 2004, **older drivers**, age 65 and older, were involved in 14 percent of all fatal and incapacitating injury crashes. In 2004, older drivers in Massachusetts were involved in 17 percent of all fatal crashes, which is significantly higher than the national average of 11 percent. The population age 65 years and older is growing in Massachusetts, as it is nationally. The U.S. Census Bureau estimates that this population made up 13.5 percent of the Commonwealth's population in 2000 and will constitute 20.9 percent of the population by 2030.[12] The number of licensed drivers age 65 and above also is increasing in Massachusetts. Accommodating the safety needs of this growing population will be an important part of transportation planning over the next decade.

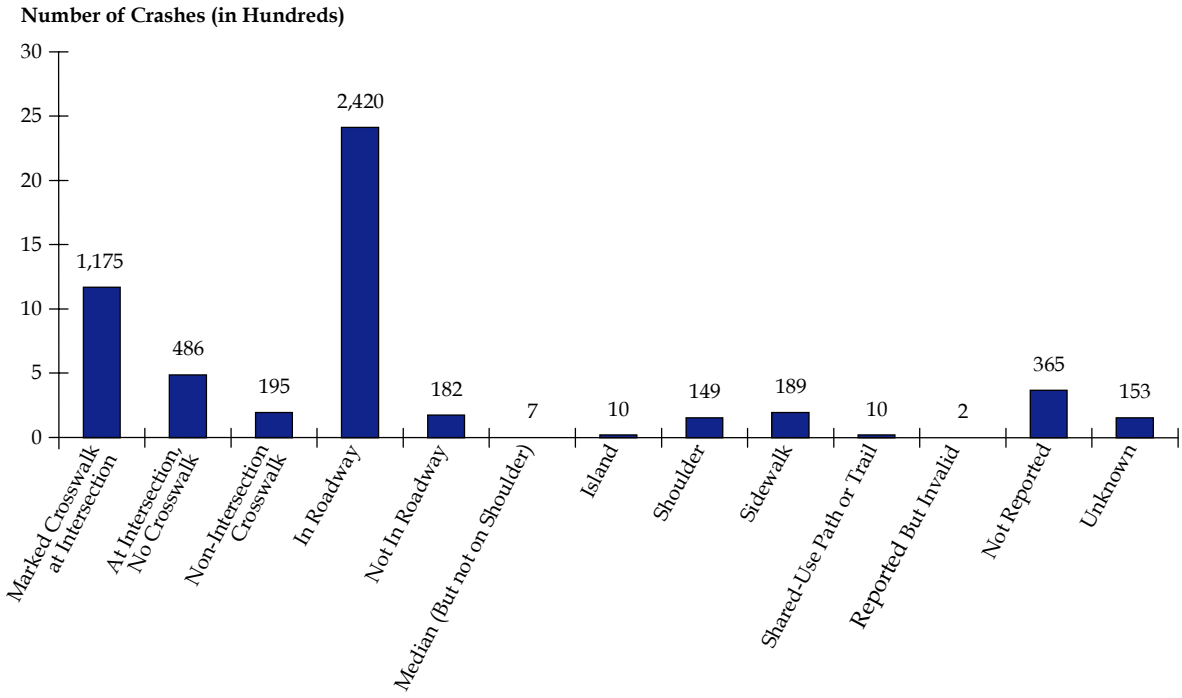
Walking and bicycling are popular modes of travel in Massachusetts and provide environmental and personal health benefits. These users of the transportation system, however, are more susceptible to some risks. Massachusetts far exceeds the U.S. average in **pedestrian**-related fatal crashes, 17 percent versus 11 percent nationally in 2004 and 2005. As shown in Figure 1.10, the majority of pedestrian crashes from 2002 to 2004 occurred with pedestrians in the roadway (45.3 percent) or at marked crosswalks at intersections (21.3 percent).

> *"Walking brings with it a host of benefits for the community and the user. However, walking can involve risk where roadway design or poor driving and walking habits jeopardize the safety of pedestrians."*
>
> *–Massachusetts Pedestrian Transportation Plan, 1998, Massachusetts Highway Department*

Although fatal crashes involving **bicyclists** do not make up a significant portion of all fatal crashes in Massachusetts, the Commonwealth encourages this mode of travel and will need to implement educational and infrastructure-related strategies to enhance the safety of these users. Over the past five years, the percentage of bicyclists involved in fatal crashes were higher in Massachusetts (with the exception of 2002) than the national average. Bicycle-related fatalities made up 2.2 percent of fatal crashes in Massachusetts during the years of 2000 and 2004. Ensuring the safety of bicyclists, particularly in the urban centers where traffic by all modes is particularly dense, will be imperative to mitigate bicycle-automobile conflicts and to encourage bicycle travel.

[12]http://www.census.gov/population/www/projections/projectionsagesex.html.

Figure 1.10 Massachusetts Pedestrian Crashes by Location
January 1, 2002-December 31, 2004



Due to the vulnerability **motorcyclists** are exposed to on the roads of Massachusetts, for the purposes of the SHSP, they are considered higher risk transportation system users. From 2002 to 2004, 11.6 percent of Massachusetts fatal crashes involved a motorcycle. In the late 1990s, the percentage of motorcyclists involved in fatal crashes averaged approximately 5.53 percent. Since 2001, however, the five-year average has nearly doubled to 8.72 percent. A number of these fatal crashes were reported as unhelmeted riders, however, helmet use in crashes may be underreported in crash statistics due to helmet loss during crashes. Massachusetts does have a mandatory helmet law.

Although not called out as a separate emphasis area, crashes involving **large trucks** is another area of concern in Massachusetts. From 2002 to 2004, large trucks were involved in 6.3 percent of Massachusetts fatalities. Although this is a relatively small percentage of total crashes, there were significant increases in fatal crashes involving large trucks from 2002 to 2004. Crashes involving large trucks tend to be severe particularly in collisions with passenger cars. Large truck crashes also may result in severe secondary effects, such as hazardous material spills, unexpected traffic congestion, or secondary crashes.

Public Education and Media Emphasis Area

During a January 2006 SHSP project stakeholder kickoff meeting, participants suggested that the SHSP include public education- and media-related strategies. Participants of this Emphasis Area Team identified the need to better educate the public, legislators, and other opinion leaders to encourage safer behavior on Massachusetts' roadways. Strategies discussed by this team focused on raising the awareness of safety and the importance of crafting and delivering specific messages to targeted audiences.

"While heavy trucks are over-represented in fatal crashes because of their size, weight, and stiffness, analysis of driver-related factors in crashes between large trucks and passenger vehicles indicates that passenger vehicle driver errors or other driver factors are cited in more than two-thirds of the crashes. Compared with passenger cars, when a heavy truck is involved in a crash, it is about 2.6 times as likely to result in a fatality."

-A Guide for Reducing Collisions with Heavy Trucks, NCHRP 500, Vol. 13

Safety Program Management Emphasis Area

The Safety Program Management Emphasis Area Team was formed to help determine a process for how the SHSP will be implemented in Massachusetts. Throughout the planning process, stakeholders identified a need to raise challenging issues to those in decision-making positions across all agencies. The Safety Program Management Team identified roles and responsibilities of the Executive Leadership Committee and Steering/Advisory Committee during implementation of the SHSP. The comments of this group led to the development of a Memorandum of Understanding among several state agencies. Details of the SHSP implementation process are provided in Section 4.0.

2.0 Strategic Safety Planning Process

Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users

In July 2005, Congress reauthorized the highway bill, and in August the Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) was signed into law. Section 148 of the highway bill provides guidance and funding for the Highway Safety Improvement Program (HSIP). To obligate HSIP funds, states must:

- **Develop and implement a State Strategic Highway Safety Plan;**
- **Produce a program of projects or strategies;**
- **Evaluate the plan on a regular basis; and**
- **Submit an annual report to the Secretary**.

The Act codifies the American Association of State Highway and Transportation Officials' (AASHTO) recommendation that all states develop a Strategic Highway Safety Plan (SHSP). This Act calls for state departments of transportation (DOT) to work collaboratively with multiple safety stakeholders to develop the SHSP. The plans are to be data-driven and based on problems identified on all public roads. States are required to establish a system that identifies hazardous locations, sections, and elements "using such criteria as the State determines to be appropriate, establish the relative severity of those locations, in terms of accidents, injuries, deaths, traffic volume levels, and other relevant data." SAFETEA-LU establishes a clear set of process and content requirements for the SHSP, including:

- Use different types of crash data;
- Establish a crash data system with the ability to perform problem identification and countermeasure analysis;
- Address engineering, management, operation, education, enforcement, and emergency medical services elements;

"By making use of new technologies, targeting locations of frequent vehicle crashes, and implementing the techniques of safety-conscious planning, the Massachusetts transportation agencies will continue to take positive steps to save lives, prevent injuries, and improve the overall safety of travel."
-Draft A Framework for Thinking – A Plan for Action: Transportation in the Commonwealth of Massachusetts, 2005, Massachusetts Executive Office of Transportation

- Identify hazardous locations, sections, and elements and establish criteria that indicate relative crash severity of these locations;
- Adopt strategic and performance-based goals that address the broad spectrum of safety improvements (including behavioral improvements), focus resources on the areas of greatest need, and coordinate with other highway safety programs;
- Advance the State's capabilities for traffic records data collection, analysis, and integration with other sources of safety data and include information on all public roads;
- Consider the results of state, regional, and local transportation and highway safety planning processes;
- Set priorities for corrective action on high-hazard locations, segments, and elements;
- Identify opportunities for preventing the development of new hazardous locations;
- Establish an evaluation process to assess the results achieved by the highway safety improvement projects;
- Produce a program of projects that is consistent with the statewide transportation improvement program (STIP); and
- Obtain approval by the Governor or the appropriate state agency.

Additional information regarding SHSP requirements, eligible funding categories, planning partners, and reporting requirements is included in Appendix A.

■ Massachusetts' SHSP Planning Process

Development of the Massachusetts SHSP was a collaborative and iterative process involving numerous safety-related Federal, state, regional, and local public sector and private sector agencies. The process involved data analysis, review of existing plans and programs, and multiple meetings designed to encourage the exchange of expertise and innovative ideas.

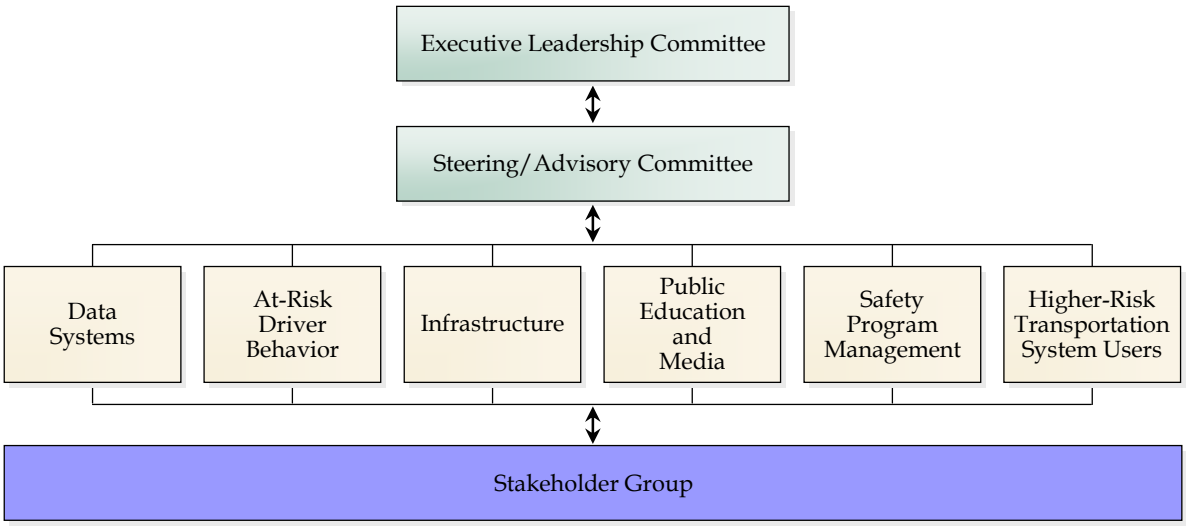
Participation

The Massachusetts Highway Department (MassHighway) assumed responsibility for development of the SHSP. To ensure that all necessary safety stakeholders were involved, MassHighway developed a tiered management approach which requires a constant flow of information between stakeholders and leadership. This structure is illustrated in Figure 2.1 and described below. A complete listing of all SHSP planning participants is provided in Appendix B. The SHSP **Executive Leadership Committee** provided oversight of the planning process. The Committee addressed issues relating to dedication of

resources and funding during development of the SHSP. Members of the Executive Leadership Committee agreed to provide further executive oversight for the implementation of the SHSP and committed to raising the visibility of safety within each of their respective agencies through a Memorandum of Understanding (MOU). The Executive Leadership Committee is comprised of commissioner or administrator-level stakeholders from the following agencies:

- Executive Office of Transportation;
- Massachusetts Highway Department (MassHighway);
- Office of Transportation Planning;
- Registry of Motor Vehicles (RMV);
- Governor's Highway Safety Bureau (GHSB);
- Massachusetts State Police (MSP);
- Massachusetts Department of Public Health;
- Massachusetts Chiefs of Police Association (MCOPA);
- Massachusetts Association of Regional Planning Agencies (MARPA);
- Federal Highway Administration (FHWA);
- Federal Motor Carrier Safety Administration (FMCSA); and
- National Highway Traffic Safety Administration (NHTSA).

Figure 2.1 Participation in the SHSP Planning Process



The **SHSP Steering/Advisory Committee** was established as a multidisciplinary team of senior-level staff with extensive experience and expertise in safety, transportation, and strategic planning. The Steering/Advisory Committee was responsible for driving the development of the SHSP and has dedicated numerous hours to reviewing data, existing efforts and strategies, current safety research, and potential safety countermeasures. Members of this committee served as leaders of emphasis area teams and as liaisons between the large stakeholder group and the Executive Leadership Committee. These members worked closely together and ensured that a collaborative and comprehensive planning process was used in Massachusetts. In addition to representatives from the agencies noted above, the Steering/Advisory Committee is comprised of representatives of:

- Boston Police Department (invited);
- Office of Elder Affairs;
- Department of Education; and
- Massachusetts Regional Planning Agencies – Southeastern Regional Planning and Economic Development District; Old Colony Planning Council; Central Massachusetts Regional Planning Commission; Franklin Regional Council of Government; Pioneer Valley Planning Commission.

As priority emphasis areas emerged, members of these committees formed six **Emphasis Area Teams**. Some of the teams addressed multiple user needs or behaviors as described in Table 2.1. Emphasis Area Teams met multiple times either in person or via teleconference. The Teams discussed current initiatives pertaining to their respective issues, developed goals for each area, and identified potential strategies for further consideration. Emphasis Area Teams evaluated the level of effectiveness of those strategies and determined which strategies should be considered by the Executive Leadership Committee for inclusion in the SHSP.

Participation in development of the SHSP was open to anyone interested in transportation safety. The **Stakeholder Group**, therefore, consisted of many interested safety practitioners as well as members of the Executive Leadership Committee, Steering/Advisory Committee, and Emphasis Area Teams. MassHighway extended formal invitations to participate in the SHSP planning process to multiple agencies and organizations, including all modes of surface transportation, safety advocacy groups, and local and regional transportation agencies.

Table 2.1 Emphasis Area Teams and Focus Areas

Emphasis Area Team	Primary Focus
Data Systems	Crashes; Roadway; Medical; Vehicle Registration; Driver History; Citation
Infrastructure	Lane Departure Crashes; Intersection Crashes
At-Risk Driver Behavior	Occupant Protection; Speeding; Alcohol/Impaired Driving
Higher-Risk Transportation System Users	Young Drivers; Older Drivers; Pedestrians; Bicyclists; Motorcyclists
Public Education and Media	Statewide Marketing of Safety; Media Messages; Public Awareness
Safety Program Management	Developing Process for Institutionalizing the SHSP

Massachusetts' Mission, Vision, and Goals

The Mission, Vision, and Goals of the Massachusetts SHSP were drafted during the initial Stakeholder/Advisory Committee meeting in January 2006. These statements were debated and refined by stakeholders in multiple meetings. Stakeholders strongly agreed that these statements should focus on saving lives, rather than reflecting purely numerical or regulatory standards. The Mission, Vision, and Goals of the SHSP provide guiding principles for development of the SHSP strategies and are in agreement with Guiding Principle Six of the Romney Administration's long-range transportation plan, which states: *The transportation system of the Commonwealth of Massachusetts shall be safe both for users and nonusers*.

Mission

Develop, promote, implement, and evaluate data-driven, multidisciplinary strategies to maximize safety for users of the roadway system.

Vision

Provide the safest roadway system in the country and promote its safe use.

Goal

Reverse the increasing trend of traffic-related fatalities and injuries upon implementation of the Massachusetts SHSP (towards zero fatalities and injuries).

Measurable Goals

- Achieve a 20 percent reduction from 476[1] (2004) lives lost in traffic-related fatal crashes by 2010.

- Achieve a 20 percent reduction from 5,554[2] (2004) in nonfatal traffic-related injuries requiring hospitalizations by 2010.

Schedule

In March 2005, MassHighway along with its Federal partners hosted a Safety Conscious Planning Forum. This forum brought safety stakeholders from multiple disciplines together to discuss transportation safety, demonstrate how safety fits within traditional transportation planning processes, and identify the most significant safety issues facing the Commonwealth. MassHighway also is participating in the AASHTO Lead State Initiative for lane departure crashes and is conducting an extensive study of this issue. Formal planning for the Commonwealth's SHSP began in January 2006. The SHSP will be signed by a designated representative of the Governor and submitted to the FHWA Division Office for process approval by September 30, 2006.

- **January 2006 –** On January 19, 2006, MassHighway hosted meetings of the Executive Leadership and the Steering/Advisory Committees to initiate the development of the Massachusetts SHSP. These meetings were attended by representatives of FHWA, FMCSA, NHTSA, Office of Transportation Planning, MSP, Mass. DPH, GHSB, RMV, MCOPA, the Office of Senator Baddour, and MARPA represented by Pioneer Valley Planning Commission and Southeastern Regional Planning and Economic Development District. With facilitation by a representative of FHWA's Office of Safety and a preliminary review of crash data, participants developed a comprehensive list of transportation safety-related issues facing the Commonwealth and impediments to mitigating those problems, such as legislative needs and flexibility of current funding mechanisms. The dialogue resulted in identification of six main themes, or emphasis areas, each of which included multiple safety issues or needs. The Steering/Advisory Committee then drafted a mission statement, a vision, and goals to guide development of the plan.

- **February 2006 –** During February, MassHighway solicited volunteers to serve on Emphasis Area Teams. Each team consisted of professional staff from several different disciplines and was charged with further identifying problems, developing an inventory of existing plans and programs, reviewing data, and identifying potential strategies for decreasing fatalities and incapacitating injuries. Each Emphasis Area Team

[1] Data Source: Registry of Motor Vehicle Crash Data.

[2] Data Source: Department of Public Health Motor Vehicle-related Injury Data.

met during February to begin progress on these tasks. They also commented on the draft mission statement, vision, and goals.

Following the series of Emphasis Area Team meetings, the Project Managers reported progress to the Executive Leadership Committee and discussed how implementation of the SHSP depends upon their commitment to work collaboratively and contribute resources. The Executive Leadership Committee members reached consensus on SHSP emphasis areas, and advised the Safety Program Management Emphasis Area Team to develop a proposed management structure, process for implementation of the SHSP, and MOU between state agencies for institutionalizing the SHSP.

The Executive Leadership Committee also provided suggestions on the mission statement, vision, and goals. The Committee agreed that a 20 percent reduction in both traffic-related fatalities and injuries is an ambitious and attainable goal for Massachusetts. Like many of the Steering/Advisory Committee members who helped draft the goals, the Executive Leadership Committee debated how the number of lives saved should be presented. Several participants suggested that the goals should reflect the positive, i.e., lives saved. Quantifying the number of lives saved, however, would be impossible due to the number of unknown variables involved in motor vehicle crashes. Also, actual progress towards these goals will be measured by the number of fatal and serious injury crashes. The Committee asked the Project Team Leaders to edit the goal statements and present them for final consideration at the March 23 Stakeholder Meeting.

- **March 2006 –** MassHighway Commissioner Luisa Paiewonsky and RMV Registrar Anne Collins kicked off the first full Stakeholder Meeting on March 23. Representatives of each Emphasis Area Team presented data to illustrate the problem and need for change; provided a preliminary review of current activities; and welcomed new stakeholders to join one or more teams. Based on the recommendations of the Executive Leadership Committee, the revised mission statement, vision, and goals were presented to the stakeholders. During afternoon Emphasis Area Team meetings, stakeholders reacted to and confirmed these statements as guiding principles for the Massachusetts SHSP. Stakeholders also began to develop individual emphasis area goals and identify potential strategies based on (but not limited to) the National Cooperative Highway Research Program (NCHRP) Report 500 series, NHTSA's *Countermeasures That Work* guide, and other strategies as identified by team members that could either be enhanced or adopted to help improve safety.

  Data systems emerged as a major emphasis area of the SHSP. As many people who volunteered to serve on the Data Systems Emphasis Area Team already were engaged in development of the Commonwealth's Strategic Traffic Records Plan, stakeholders agreed that the SHSP should reflect the goals and objectives of that plan. Meetings of the Data Systems Emphasis Area Team were postponed to avoid duplication of effort. The section of the SHSP relating to data systems, therefore, was developed in coordination with the strategic plan for traffic records.

- **April 2006 –** The At-Risk Driver Behavior, Infrastructure, Public Education and Media, Safety Program Management, and Higher-Risk Transportation System Users Emphasis

Area Teams met again in April either in person or via teleconference. During these meetings participants reached consensus on individual emphasis area goals and identified broad or policy-level strategies.

From the initial meetings in January through the meetings held in March, a significant theme continually arose among the various stakeholder groups. Participants identified the need for a process to prioritize safety projects. They were interested in elevating safety projects in the traditional transportation planning processes. Following many discussions, particularly during emphasis area team meetings the week of April 3, 2006, stakeholders agreed that Massachusetts needs a safety investment policy or process that will elevate safety to an equal level with other planning factors.

The MassHighway Project Management and Consultant Team drafted a "process" to highlight safety as a major factor in project selection and programming. The process was presented to the Emphasis Area Teams for consideration. Participants provided comments on the draft process, criteria for selecting safety projects, as well as overall roles and responsibilities for execution of the SHSP. MassHighway continues to work towards development of data-driven project selection criteria that place strong emphasis on quantifiable safety improvements. Although this particular draft selection process may only apply to infrastructure projects funded by MassHighway, it is a model that could be adopted by other agencies that intend to contribute to safety improvement projects.

- **May 2006 –** In May, the Project Management and Consultant Team gave a progress report to the Executive Leadership Committee. The proposed SHSP implementation process, draft MOU, and emphasis area goals and strategies were presented for review. One suggestion was that the Executive Leadership Committee be presented with a list of strategies that will require their specific involvement or decision-making authority.

  The Steering/Advisory Committee met in May to develop a list of specific strategies for consideration in the SHSP. These strategies will be evaluated for effectiveness and applicability in Massachusetts by the Emphasis Area Teams during June and July. The strategies that show potential for progress towards the goal of reducing motor vehicle fatalities and incapacitating injuries will be recommended to the Executive Leadership Committee for inclusion in the SHSP.

- **June and July 2006 –** Significant planning activities occurred during June and July. The *Guiding Principles for the Massachusetts Strategic Highway Safety Plan* was presented at a Stakeholder Meeting on June 14, 2006. Members of the Executive Leadership Committee signed the MOU. Stakeholder comments on the guiding principles were submitted.

- **July 2006 –** During late June and July, Emphasis Area Teams met to evaluate and confirm final lists of proposed strategies. These strategies were presented to the Executive Leadership Committee on July 25. The Executive Leadership Committee reviewed the final strategies recommended by the Emphasis Area Teams and prioritized strategies into two groups, Tier I (strategies to be implemented within the first year or two

following SHSP approval). The Executive Leadership Committee members also identified Tier I strategies their agencies could lead or support.

- **August 2006 –** In August, the final list of Tier I and II strategies was distributed to the Executive Leadership Committee for final review. The draft *Massachusetts Strategic Highway Safety Plan* was developed and posted on MassHighway's web site for stakeholder review and comment.

- **September 2006 –** The SHSP will be submitted to the Governor or his designee for review and signature in September. The signed SHSP will be submitted to the FHWA Division Office prior to the October 1, 2006 deadline.

- **Fall 2006 –** MassHighway and Cambridge Systematics will work with lead agencies to develop action plans for all Tier I strategies.

Massachusetts Existing Plans and Programs

Prior to the enactment of SAFETEA-LU, many public- and private-sector agencies were engaged in activities to improve safety throughout the Commonwealth. When identifying potential strategies, MassHighway and its partner agencies referred to several existing agency plans and programs. As the SHSP is implemented and updated, a goal of the continued planning process will be to develop one statewide, coordinated approach to improving safety and maximizing resources across all agencies. As agreed upon by the signatories of the MOU, other agencies will begin to consult the SHSP when updating or developing their plans and programs. Over time, the SHSP will serve as an umbrella document that unifies the Commonwealth's overall approach to improving safety on all public roads. A summary of current activities is provided in Appendix C. Development of the SHSP, however, requires MassHighway to reach out to a broad spectrum of safety stakeholders to identify opportunities for these agencies to work collaboratively. Through the use of data, these agencies will be able to make informed decisions on how and where to invest Massachusetts' safety resources.

In addition to developing an inventory of current safety-related initiatives and activities, the Massachusetts SHSP was developed through consultation and consideration of existing state transportation planning documents, including:

- *A Framework for Thinking – A Plan for Action: Transportation in the Commonwealth of Massachusetts*;

- *Massachusetts Highway Safety Performance Plan*;

- *Maximizing Our Efforts: The Massachusetts State Injury Prevention Plan*;

- *Project Development and Design Guidebook*;

- *Massachusetts Pedestrian Transportation Plan*;

- *Massachusetts Statewide Bicycle Transportation Plan*;
- *Strategic Plan for Traffic Records Improvements*;
- *Commonwealth of Massachusetts Commercial Vehicle Safety Plan*; and
- *Multiple Metropolitan Planning Organization Transportation Improvement Program (TIP) reports.*

Additional resources used in development of the Massachusetts SHSP, include the NCHRP Report 500 *Guidance for Implementation of the AASHTO Strategic Highway Safety Plan*; NHTSA's *Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices*; and FHWA and Pedestrian and Bicycle Information Center's *How to Develop a Pedestrian Safety Action Plan*. A complete list of resources used in preparation of the SHSP is provided in Appendix D.

3.0 Goals, Performance Measures, and Strategies

■ Emphasis Area Goals and Performance Measures

Table 3.1 includes the goals set by each Emphasis Area Team and identifies performance measures for tracking progress towards these goals. Performance measures also will be set for each Strategic Highway Safety Plan (SHSP) project following plan approval. A sample project action plan is provided at the end of this section.

Table 3.1 Emphasis Area Goals and Performance Measures

Emphasis Area	Goal	Annual Performance Measure(s)
Data Systems	*Provide accessible, accurate, complete, consistent, integrated, and timely traffic records data to aid decision-makers working to reduce transportation-related fatalities, injuries, and economic loss in Massachusetts.*	• Average timeframe from crash date to crash report submittal to the Registry of Motor Vehicles (RMV), by community and by police type • Number of police departments contacted regarding underreporting • Number of accurately linked data sets that can provide effective safety data to decision-makers on the causes of motor vehicle crashes • Number of trauma registry centers included in the statewide trauma registry • Number of crash reports electronically submitted to the RMV • Number of interagency data sharing agreements/ arrangements pertaining to transportation-related injuries
Infrastructure	*Reduce the number of fatalities and incapacitating injuries resulting from intersection and lane departure crashes and expedite safety-related infrastructure projects.*	• Number of intersection crashes - Number of fatalities resulting from intersection crashes - Number of incapacitating injuries resulting from intersection crashes[1]

[1] "Incapacitating injuries" data are captured on the police report form. The Mass. DPH captures data on motor vehicle-related injuries, but does not distinguish crash location types (i.e., lane

(Footnote continued on next page...)

Table 3.1 Emphasis Area Goals and Performance Measures (continued)

Emphasis Area	Goal	Annual Performance Measure(s)
Infrastructure (continued)	*Reduce the number of fatalities and incapacitating injuries resulting from intersection and lane departure crashes and expedite safety-related infrastructure projects.*	• Number of lane departure crashes - Number of fatalities resulting from lane departure crashes - Number of incapacitating injuries resulting from lane departure crashes • Number of Project Need Forms submitted with completed safety data information provided[2]
At-Risk Driver Behavior	*Reduce the number of fatalities and incapacitating injuries involving unbelted drivers and passengers, speeding, and impaired driving.*	• Number of fatalities involving unbelted (or unhelmeted) drivers by vehicle type (passenger car, truck, or motorcycle) • Number of fatalities involving unbelted (or unhelmeted) occupants by vehicle type (passenger car, truck, or motorcycle) • Statewide safety belt use rate • Number of fatalities involving speed • Number of fatalities involving alcohol
HIGHER-RISK TRANSPORTATION SYSTEM USERS		
Young Drivers	*Reduce the number of fatalities and incapacitating injuries involving young drivers and encourage greater compliance with the Massachusetts Junior Operator Law.*	• Number of fatalities involving drivers age 16-24 • Number of incapacitating injuries involving drivers age 16-24 • Number of nonfatal motor vehicle-traffic injury hospital stays (inpatient and observation) involving drivers 16-24 years (using Mass. DPH data) • Number of citations issued to drivers in violation of JOL requirements
Older Drivers	*Reduce the number of fatalities and incapacitating injuries involving older drivers and encourage statewide implementation of infrastructure and system improvements that better accommodate older driver needs.*	• Number of fatalities involving drivers age 65+ • Number of incapacitating injuries involving drivers age 65+ • Number of nonfatal motor vehicle-traffic injury hospital stays (inpatient and observation) involving drivers 65 years and older (using Mass. DPH data)
Pedestrians	*Design and manage the roadway system to reduce the risk to pedestrians and reduce pedestrian fatalities and injuries requiring hospitalizations.*	• Number of fatalities involving pedestrians • Number of nonfatal motor vehicle-traffic injury hospital stays (inpatient and observation) involving pedestrians (using Mass. DPH data)

departure or intersection); therefore it is not currently possible to monitor injuries requiring hospitalizations for these types of crashes.

[2] Note: Massachusetts needs to begin collecting this information to determine objective criteria for identifying safety deficiencies.

Table 3.1 Emphasis Area Goals and Performance Measures (continued)

Emphasis Area	Goal	Annual Performance Measure(s)
Bicyclists	*Design and manage the roadway system to reduce the risk to bicyclists and reduce bicyclist fatalities and injuries requiring hospitalizations.*	• Number of fatalities involving bicyclists • Number of nonfatal motor vehicle-traffic injury hospital stays (inpatient and observation) involving bicyclists (using Mass. DPH data)
Motorcyclists	*Raise the public awareness of motorcycle safety, educate riders and officials of the special vulnerabilities of motorcycle operation, and ultimately decrease the number of crashes involving motorcyclists.*	• Number of fatalities involving motorcyclists • Number of incapacitating injuries requiring involving motorcyclists • Number of nonfatal motor vehicle-traffic injury hospital stays (inpatient and observation) involving motorcycle drivers (using Mass. DPH data) • Number of citations issued to motorcyclists in violation of the Massachusetts helmet law
Public Education and Media	*Broaden the awareness of safety issues through dissemination of messages to the public and elected officials; assist other Emphasis Area Teams with implementation of their education- or media-related strategies; and assist the Executive Leadership Committee with roll-out of the SHSP.*	• Development and distribution of public information and education campaign regarding safe protocol for obtaining roadside assistance • Number of traffic safety mailings distributed annually (coordinate with RMV) • Number of public service announcements aired related to traffic safety
Safety Program Management	*Work with the Executive Leadership Committee to **institutionalize the SHSP** through a Memorandum of Understanding (MOU) among agencies that includes a commitment to meet regularly to address safety issues raised by the Steering/Advisory Committee and to communicate how safety is being addressed within each individual agency.*	• Signed Memorandum of Understanding Regarding the Massachusetts SHSP • Number of agencies reporting progress of individual agency safety initiatives at quarterly meetings

■ Emphasis Area Strategies

In July 2006, the Executive Leadership Committee reviewed all final strategies recommended by the Emphasis Area Teams and identified strategies their agencies could lead or support within the first two years following SHSP approval. Tier I strategies, identified in Table 3.2, are those that were identified as priority projects and will be pursued within one to two years following SHSP approval. Many of these strategies are low-cost strategies or strategies also identified in other agency plans, such as the Governor's Highway Safety Bureau's (GHSB) FFY 2007 Highway Safety Plan. Detailed descriptions of Tier I strategies are included in the remainder of this section. Tier II

strategies, shown in Table 3.3, will remain in the SHSP. Each year, as data analysis is conducted and the SHSP is updated, these strategies will be revisited to determine their relevance to immediate (or emerging) safety issues and the availability of necessary project resources. Additional strategies or revisions to existing strategies may be incorporated as changing trends are identified and priorities shift. Descriptions of all Tier II strategies are included in Appendix E[3].

Just as there are multiple characteristics and causation factors associated with any one crash, a single strategy may impact safety in multiple ways. Several strategies approved by the Executive Leadership Committee cut across multiple emphasis areas and hold promise for positive results in more than one area of safety. These strategies are identified in Tables 3.2 and 3.3 as Cross-Cutting Safety Strategies. Many of the strategies recommended by stakeholders and selected by the Executive Leadership Committee also span multiple safety disciplines, including engineering, enforcement, education, emergency response, operations, and management.

While all strategies are intended to improve safety, it is important to note that improving data systems will almost certainly result in increasing crash reports, i.e., the appearance of higher numbers of crashes. This may not, however, be indicative of a growing trend or failure of other safety countermeasures but rather due to improved crash data reporting. On the other hand, better data leads to more precise and accurate problem identification, countermeasure selection, and evaluation; therefore, in the long run, safety will improve as a result of the effort.

Table 3.2 Massachusetts SHSP Tier I Strategies

	Strategy Description	Supporting Agency	Lead Agency
CROSS-CUTTING SAFETY STRATEGIES			
I-1.	Increase high-visibility enforcement of alcohol impaired driving, speeding, and occupant protection of all motorists, including drivers of passenger vehicles, commercial vehicles, and motorcycles	Massachusetts State Police (MSP), Massachusetts Chiefs of Police Association (MCOPA)	GHSB
I-2.	Provide data, analysis, and research to the legislature and other elected officials as they consider traffic safety legislation and issues	All agencies as needed and appropriate	GHSB
I-3.	Expand availability and distribution of safety-related educational materials for all transportation system users with emphasis on personal responsibility and prevention	All Agencies as called upon	MassHighway and RMV

[3] Note: Strategies listed in Tables 3.2 and 3.3 are numbered strictly for the purpose of identification and tracking, not as a means of prioritizing within each tier.

Table 3.2 Massachusetts SHSP Tier I Strategies (continued)

Strategy Description		Supporting Agency	Lead Agency
CROSS-CUTTING SAFETY STRATEGIES (CONTINUED)			
I-4.	Incorporate education on the safety needs of higher risk transportation system users in statewide law enforcement training programs, including the needs of young drivers, older drivers, pedestrians, bicyclists, and motorcyclists	MSP (Municipal Police Institute (MPI), Municipal Police Training Committee (MPTC))	GHSB
I-5.	Include pedestrian, bicyclist, motorcyclist safety information in comprehensive practitioner and driver education		RMV
I-6.	Improve infrastructure security	All agencies as called upon	MassHighway
DATA SYSTEMS EMPHASIS AREA STRATEGIES[4]			
I-7.	Outreach to Local and State Police (regarding completeness of crash report form)	GHSB	RMV
I-8.	Police Training on Crash and Citation Reporting	GHSB	UMassSAFE
I-9.	Massachusetts Ambulance Trip Record Information System (MATRIS) and Statewide Trauma Registry	GHSB	Mass. DPH
I-10.	Increase electronic submission to the Crash Data System	GHSB	RMV
I-11.	Commonwealth-wide process for sharing data	GHSB	RMV
I-12.	Standard Massachusetts Highway Safety Data Reports	GHSB	UMassSAFE
INFRASTRUCTURE EMPHASIS AREA STRATEGIES			
I-13.	Incorporate stronger safety criteria into project selection	Metropolitan Planning Organizations (MPO)	MassHighway
I-14.	Identify top lane departure and intersection crash locations and work at the local and regional levels to develop and implement location-specific strategies to mitigate the safety deficiencies	Federal Highway Administration (FHWA), Regional Planning Agencies (RPA), GHSB	MassHighway
I-15.	Incorporate safety elements in routine maintenance projects		MassHighway
I-16.	Work zone safety for workers and drivers		MassHighway

[4] The projects listed in this section are consistent with the GHSB's FFY06 Section 408 Grant Application to the National Highway Traffic Safety Administration and are pending funding as of August 2006. Multiple other traffic records projects are ongoing or planned throughout the Commonwealth.

Table 3.2 Massachusetts SHSP Tier I Strategies (continued)

Strategy Description	Supporting Agency	Lead Agency
AT-RISK DRIVER BEHAVIOR EMPHASIS AREA STRATEGIES		
I-17. Increase seat belt use in Massachusetts	FHWA, NHTSA, and others as needed	GHSB
I-18. Increase the number and enhance current programs to educate parents on the proper use of child restraints and all adult passengers; and support child restraint loan programs in targeted areas	Mass. DPH, MCOPA	GHSB
I-19. Increase the awareness of the dangers of speeding and conduct Speed Management Workshops for facilitators	GHSB, MassHighway, MCOPA	NHTSA, FHWA, Federal Motor Carrier Safety Administration (FMCSA)
I-20. Support Drug Recognition Expert (DRE) training programs to assist in identifying driver drug use and providing expert testimony in court	MSP	GHSB
HIGHER RISK TRANSPORTATION SYSTEM USERS EMPHASIS AREA STRATEGIES		
I-21. Evaluate before and after Junior Operator Law (JOL) data for crashes involving teen drivers	Mass. DPH	RMV
I-22. Educate parents on JOL responsibilities	Mass. DPH	RMV
I-23. Support and participate in the Healthy Aging Coalition and contribute to the development of their Strategic Plan for Healthy Aging	Mass. DPH	RMV
I-24. Identify the top pedestrian and bicycle crash locations and work at the local and regional levels to develop and implement location-specific strategies to mitigate the safety deficiencies	RPAs and MPOs, Mass. DPH	MassHighway
I-25. Expand the Safe Routes to School Program	Mass*RIDES*, Mass. DPH	Executive Office of Transportation (EOT)
I-26. Develop and execute a campaign regarding driving safely around motorcycles and encourage participation in motorcycle education programs		RMV

Table 3.3 Massachusetts SHSP Tier II Strategies

Strategy Description
CROSS-CUTTING SAFETY STRATEGIES
II-1. Develop a Safety Toolbox to provide technical assistance to local communities
II-2. Tailor messages regarding speed, alcohol-impaired driving, and occupant protection to specific audiences, particularly in high-risk locations or communities
II-3. Conduct an evaluation of traffic violations, convictions, penalties, dismissals, and pleas bargains in Massachusetts courts for offenses related to speeding, failure to wear seat belts, and alcohol impairment
II-4. At the state and local levels, encourage greater knowledge and use of Massachusetts and national design guidelines
DATA SYSTEMS STRATEGIES
II-5. Support activities to improve data collection procedures and data quality, including the use of electronic license swiping equipment for police officers
INFRASTRUCTURE EMPHASIS AREA STRATEGIES
II-6. Develop a safety problem assessment checklist
II-7. Evaluate the benefits of a statewide access management policy
AT RISK DRIVER BEHAVIOR STRATEGIES
II-8. Explore the possibility of developing and maintaining a web-based statewide safety calendar
II-9. Support the statewide deployment of the State Courts Against Road Rage Program
II-10. Coordinate clearinghouses of safety materials (GHSB and Mass. DPH)
HIGHER-RISK TRANSPORTATION SYSTEM USERS STRATEGIES
II-11. Conduct literature/program review to identify existing sources of information regarding best practices in prevention and driver behavior modification methods
II-12. Develop statewide guidance on infrastructure improvements that accommodate older driver needs
II-13. Conduct an assessment of the mobility needs of older persons in Massachusetts
II-14. Develop and disseminate an awareness campaign to encourage planning for future mobility needs
II-15. Publicize pedestrian and bicyclist safety resources
II-16. Provide input to the safety chapter of the updated Massachusetts Pedestrian Transportation Plan
II-17. Consider providing reasonable bicycle and pedestrian accommodations in new roadway and bridge projects
II-18. Publicize motorcycle safety resources
II-19. Conduct detailed analysis of motorcycle crash problem in Massachusetts
PUBLIC EDUCATION AND MEDIA STRATEGIES
II-20. Use information on best practices from states and locals to enhance media campaign materials

The first step in implementation of Massachusetts SHSP will be to develop detailed action plans for each Tier I strategy. MassHighway will work with the lead agency of each strategy to ensure that action plans are developed immediately following SHSP approval. The action plans will include:

- Strategy Name and Description;
- Lead Agency;
- Necessary Partners;
- Expected Effectiveness/Outcome;
- Action Steps with Timeline;
- Funding and Resource Requirements;
- Strategy-Specific Performance Measures; and
- Project Evaluation.

A sample action plan is provided at the end of Section 3.0. Detailed data analysis of problems at specific locations will be conducted prior to implementation of any strategies. Lead agencies will be responsible for using performance measures to evaluate projects and providing quarterly project updates to the Executive Leadership Committee.

■ Tier I Strategy Descriptions

Cross Cutting Strategies

I-1. Increase high-visibility enforcement of alcohol impaired driving, speeding, and occupant protection of all motorists, including drivers of passenger vehicles, commercial vehicles, and motorcycles. Massachusetts State and local police agencies conduct multiple efforts each year related to the enforcement of impaired driving, speeding, and occupant protection. Many of these efforts are coordinated with education campaigns implemented by the GHSB. This strategy will involve collaboration among law enforcement and state and Federal partners to identify ways to expand or target enforcement activities in communities with high violations in these areas. It also will involve detailed data analysis and close coordination with the GHSB's Highway Safety Plan.

I-2. Provide data, analysis, and research to the legislature and other elected officials as they consider traffic safety legislation and issues. State agencies can serve as valuable sources of information and expertise. Through this strategy, SHSP partner agencies will provide data, analyses, research, best practices, and other forms of evidence-based information to key decision-makers, as requested to improve evidence-based decision-making.

Policy

- Develop policy on traffic signal preemption for emergency responders [Intelligent Transportation Systems (ITS) applications].
- Develop policy on traffic signal preemption, full gates, and improved sight distance at railroad crossings.
- Develop, revise, and implement policies to prevent placing or replacing poles within recovery areas.
- Develop policy that encourages increasing access to public transportation, particularly to reduce congested roadways.
- Develop policy to maintain safe speeds in areas where there are significant numbers of pedestrians or bicyclists or disproportionate exposure to risk for some roadway users.

Legislative

- Enforce variable speed limits when conditions require alternate speeds.
- Examine the use of automated speed and red light running technology to monitor suspected high-crash locations (along with other types of ITS). Consider use of data collected to determine the problem at each location, identify potential causes of crashes, and determine if infrastructure or enforcement strategies may be needed at those locations.
- Review intersection automated enforcement methods (e.g., red light running and speed cameras) and best practices in other states.
- Examine the potential impact of aggressive driving legislation in Massachusetts.
- Screen all convicted operating under the influence (OUI) offenders for alcohol dependency and require appropriate treatment.
- Consider expansion of the use of ignition interlock devices in vehicles to restrict driving by intoxicated persons.
- Increase enforcement and penalties for violations that endanger pedestrians and bicyclists and violations by pedestrians and bicyclists.
- Require parents or guardians to sign an agreement acknowledging their responsibility to enforce JOL (particularly regarding the number of underage passengers); institute fines for parents in violation of the agreement.

I-3. Expand availability and distribution of safety-related educational materials for all transportation system users, with emphasis on personal responsibility and prevention. This strategy will include information on safe protocol for obtaining roadside assistance;

updates on new legislative changes that impact drivers; how to safely use new roadway features; and safety tips or reminders to educate drivers throughout their driving careers.

I-4. Incorporate education on the safety needs of higher risk transportation system users in statewide law enforcement training programs, including the needs of young drivers, older drivers, pedestrians, bicyclists, and motorcyclists. State and local police training should include guidance on the importance of traffic laws that affect the safety of young drivers, older drivers (e.g., age-related driving impairments), pedestrians, bicyclists, and motorcyclists. Also incorporate education on the use of American National Standard for High Visibility Safety Apparel (ANSI/ISEA 107 1999 (reflective safety vests, jackets, and other safety garments to decrease roadside worker death). This strategy may require coordination with GHSB's existing Statewide Law Enforcement Training Program, the RMV, and the Massachusetts State Police Academy.

I-5. Include pedestrian, bicyclist, and motorcyclist safety information in comprehensive practitioner and driver education. Training for drivers and local public works departments should include information on pedestrian, bicyclist, and motorcyclist safety and the *Project Development and Design Guide*.

I-6. Improve infrastructure security. Increase statewide efforts to inspect, monitor, and provide surveillance on our roadway infrastructure. Continue and expand upon state agency efforts to coordinate planning for security-related major events/mass evacuations in the event of a major emergency.

Data Systems Strategies

I-7. Outreach to Local and State Police. Identify changes to the crash report forms, the crash data systems, and related processes to improve the timeliness, completeness, quantity, and accuracy of crash report forms. The project includes a police survey, police crash reporting manual, and the Model Minimum Uniform Crash Criteria (MMUCC) Compliance Committee.

I-8. Police Training on Crash and Citation Reporting. Develop on-line training course to 1) help police understand which fields have missing data in the citation database; and 2) provide them with information on how to effectively complete those fields; and serve as a beta test for an Internet-based system. This project will include a pilot test of the on-line course instruction.

I-9. Massachusetts Ambulance Trip Record Information System (MATRIS) and Massachusetts Trauma Registry. Create the infrastructure for a new statewide Massachusetts prehospital database utilizing the Massachusetts NEMSIS compliant minimum data elements pertaining to each EMS call; and implement statewide population-based collection of Trauma Registry data.

I-10. Increase Electronic Submission to the Crash Data System (CDS). Currently, the RMV receives about seven percent of crash reports electronically and from only three

places. This project would pay vendors, build middleware solution, or build CJIS network process. This would allow the RMV to monitor the electronic submission process and provide and implement feedback after implementation. Benefits of electronic submission of crash reports are improved data quality, timeliness, less effort, and availability of an electronic version of the diagram and narrative.

I-11. Commonwealth-wide Process for Sharing Data. Currently, it is difficult to distribute crash data in its raw form to data analysts. The RMV has several custom and inefficient methods for providing data to third parties, but they are inflexible and cannot easily be used to distribute data to others. This project will develop and implement a plan for a Commonwealth-wide process for sharing crash data in a raw form. The new process will be flexible, efficient, inexpensive, and available to any and all authorized users.

I-12. Standard Massachusetts Highway Safety Data Reports. Expand the access to standardized highway safety data from all applicable datasets, with a focus on data for stakeholders with limited analysis skills or resources, by providing basic statistical information and detailed "fact sheets."

Infrastructure Safety Strategies

I-13. Incorporate stronger safety criteria into project selection. The process will use defined criteria to ensure safety-related projects are considered equally with other key planning factors. The process for determining the criteria for high-crash locations and corridors will be documented and a checklist will be implemented to expedite the decision and implementation processes. Data fields will be added to MassHighway's Project Need Form (PNF) so that information on safety deficiencies will be apparent. In 2006, MassHighway will be implementing a project to provide design assistance to expedite safety-related projects that have been approved by the Project Review Committee, but have not been initiated. Each MPO also may develop its own safety project prioritization process. Safety project prioritization would incorporate processes for:

- Using crash rates developed with exposure data to evaluate high-crash locations;
- Identifying problem intersections in each community;
- Initiating and participating in road safety audits;
- Developing a procedure for law enforcement officers to request engineering assessments at crash sites;
- Raising public awareness of the transportation decision-making process and the consequences of funding shortfalls;
- Providing targeted enforcement to reduce traffic violations; and
- Providing targeted public information and education on safety problems at specific intersections.

I-14. Identify lane departure and intersection high-crash locations and work at the local and regional levels to develop and implement location-specific strategies to mitigate the safety deficiencies. MassHighway, as part of its involvement in AASHTO's Lead State Initiative, will be implementing a project to address lane departure crashes at the regional and local levels. Because a significant majority of the fatal and incapacitating lane departure crashes occur on non-state highways, it is necessary to have a local road component to meet the goal. The program encourages the Lead States to promote coordination and cooperation with MPOs and RPAs in the development of the action plan and recognize and address regional differences in the size and scope of the emphasis area problem.

MassHighway, with the support of UMassSAFE, analyzed lane departure crashes and prepared a statewide fact sheet, as well as fact sheets and maps for each of the RPAs. Beginning in late summer and early fall of 2006, a series of meetings will be held around the State to discuss the lane departure crash specifics at a more regional and local level. In summer 2006, FHWA and GHSB agreed to partner with MassHighway on this project to help provide insight on possible driver behavior issues at these locations. Bringing together the engineering, enforcement, emergency medical services (EMS), and education communities to discuss the crashes and develop more localized/regionalized strategies, the lane departure program holds promise for addressing the issues. MassHighway and GHSB currently are working with the RPAs to schedule these meetings. A key element of this strategy will be to collect data at each location *after* strategy implementation, so that the effectiveness of treatments can be measured.

This strategy includes a related MassHighway project to conduct Road Safety Audits at high-crash intersections throughout the Commonwealth.

I-15. Incorporate basic safety elements in routine maintenance projects. Develop a list of safety factors and strategies that all agencies with responsibility for roadways in Massachusetts (state or locally managed) should consider when conducting routine maintenance, such as repaving or restriping, hardware updates, or brush removal. The strategies may include:

- Develop, revise, and implement policies to prevent placing or replacing poles within the recovery area;
- Install mile markers for improved emergency response;
- Replace and install bicycle-safe drain grates on all roads open to bicycles;
- Upgrade signage; and
- Improve pavement markings.

I-16. Work zone safety for workers and drivers. Draft standards of practice for law enforcement personnel based on construction work zone activity; and ensure compliance with the Federal Register for Work Zone Safety and Mobility Ruling by October 12, 2007. This involves advance planning and public outreach for large construction projects.

Expand the use of ITS technology for work zone coverage to provide more details to the motoring public and to track traffic capacity conditions. Develop an employee training program for field personnel on safe activity in the work zone. Ensure MassHighway compliance with the September 2005 Massachusetts Highway Department's *Commissioner's Directive on Personal Protective Safety Equipment Directive for MassHighway Personnel* and the July 2006 MassHighway *Engineering Directive on Personal Protective Safety Equipment Directive for Contractor Personnel*.

At-Risk Driver Behavior Strategies

I-17. Increase safety belt use in Massachusetts. According to the data, Massachusetts has one of the lowest safety belt use rates in the nation. Throughout the SHSP development process stakeholders expressed the need to increase safety belt use to reduce roadway fatalities. This strategy will require detailed planning by multiple state and Federal partners to determine how Massachusetts, in addition to its many existing efforts, can attack this critical safety issue. This strategy will be coordinated with the NHTSA Occupant Protection Assessment requested by GHSB and with input from key stakeholders in early 2007.

I-18. Increase the number and enhance programs to educate parents on the proper use of child restraints and all adult passengers; and support child restraint loan programs in targeted areas, including areas displaying the lowest rates of child passenger safety (CPS) restraint use. Increase the number of bilingual and multilingual CPS technicians in communities where a high percentage of households speak a language other than English.

I-19. Increase the awareness of the dangers of speeding and conduct Speed Management Workshops for facilitators. In addition to conducting Speed Management Workshops for facilitators, this strategy will involve enhancing existing speed-related public information and education campaigns and targeting messages in high-risk areas.

I-20. Support Drug Recognition Expert (DRE) programs to assist in identifying driver drug use and testify to that use in court. DREs are able to make highly accurate assessments of persons who may be under the influence of drugs.

Higher-Risk Transportation System Users Strategies

Young Driver Strategies

I-21. Evaluate before and after (JOL) data for crashes involving teen drivers. This study will help assess the effectiveness of JOL in Massachusetts and serve as a model for the use of data to determine effective strategies for improving the safety of young drivers.

I-22. Educate parents on JOL responsibilities. Informing parents about the costs associated with JOL violations. Analyze the data and illustrate the dangers to teen drivers in violation of JOL restrictions, e.g., the impact of teen passengers on teen driver crash

risk. Consider an additional strategy to inform parents of their child's progress during teen driver education.

Older Driver Strategy

I-23. Support and participate in the Healthy Aging Coalition and contribute to the development of their Strategic Plan for Healthy Aging. Participate on the Steering/ Advisory Committee of the Healthy Aging Coalition to provide transportation safety-related data, analysis, and information for the Coalition's strategic plan for healthy aging. This committee also will work with the Coalition on strategies such as: establishing a community resource, possibly in coordination with Massachusetts Council on Aging, to inform older adults and people with disabilities of safe mobility options and resources; and providing outreach to older adult drivers and people with disabilities.

Pedestrian Strategies

I-24. Identify the top pedestrian and bicycle crash locations and work at the local and regional levels to develop and implement location-specific strategies to mitigate safety deficiencies. MassHighway has conducted a preliminary assessment of high-crash locations. Further analysis will be needed, but this information could be shared with the MPOs for consideration during their annual project planning process. Further work will be needed to determine exposure rates.

I-25. Expand the Safe Routes to School (SRTS) Program in Massachusetts Communities. SRTS programs are an effective way to motivate a wide variety of community actors in pedestrian safety, including local police, school personnel, parents, school neighbors, and children. SRTS encourages mode change and safety for all system users. This program also may help identify and provide school route improvements.

Motorcyclist Strategies

I-26. Develop and execute a campaign regarding driving safely around motorcycles and encourage participation in motorcycle education programs. Promote sharing the road and driving safely around motorcycles. Identify ways to increase participation in motorcycle education programs.

Safety Program Management Strategy

The Safety Program Management Emphasis Area Team was formed to help determine a process for implementing the SHSP. Throughout the planning process, stakeholders identified a need to raise challenging issues to those in decision-making positions across all agencies. This team identified roles and responsibilities of the Executive Leadership Committee and Steering/Advisory Committee during implementation of the SHSP. The comments of this group led to the development of a MOU among state agencies. Details of the SHSP implementation process are provided in Section 4.0.

■ Sample Action Plan

Strategy I-14: Identify top lane departure locations and work at the local and regional levels to develop and implement location-specific strategies to mitigate the safety deficiencies.

Description

The Massachusetts Highway Department (MassHighway) is a partner in the American Association of State Highway and Transportation Officials (AASHTO) Lead State Initiative because a significant majority of the fatal and incapacitating crashes in Massachusetts involve lane departures. The program encourages the Lead States to promote coordination and cooperation with metropolitan planning organizations (MPO) and regional planning agencies (RPA) in the development of the action plan and recognize and address regional differences in the size and scope of the emphasis area problem. This component is imperative because so many of the lane departure crashes occur on local roads.

The Federal Highway Administration (FHWA) and the Governor's Highway Safety Bureau (GHSB) agreed to partner with MassHighway on this project to help provide insight on possible driver behavior issues at these locations. A key element of this strategy will be to collect data at each location *before and after* strategy implementation, so that the effectiveness of treatments can be measured.

Lead Agency

Massachusetts Highway Department

Necessary Partners

- MassHighway headquarters and district offices
- FHWA
- RPAs
- GHSB
- State and Local Police
- EMS Community
- Local Departments of Public Works
- UMassSAFE

Expected Effectiveness/Outcome

By bringing together the engineering, enforcement, EMS, and education communities to discuss lane departure crash locations and developing localized strategies, this multidisciplinary approach holds promise for addressing Massachusetts' lane departure problems at specific locations.

Action Steps/Timeline

Action Step	Responsible Agency	Timeline
Analyze the lane departure crashes statewide and develop location-specific fact sheets and maps for each of the RPAs	MassHighway with UMassSAFE	Completed Spring 2006
Schedule meetings with RPAs and members of engineering, enforcement, EMS, and education communities	MassHighway	August-September 2006
Conduct meetings with RPAs and multidisciplinary teams	MassHighway	Fall 2006
Determine location-specific potential countermeasures	Multidisciplinary teams	Fall 2006
Analyze each countermeasure for potential effectiveness	Multidisciplinary teams	Fall/Winter 2006
Secure funding for selected safety countermeasure	Multidisciplinary teams	TBD
Implement selected safety countermeasure	Multidisciplinary teams	TBD, pending funding
Conduct data collection (minimum of three years) of before and after conditions at treated locations	RPAs with MassHighway	Ongoing
Report progress and results to SHSP Executive Leadership Committee on annual basis; share evaluation results with all districts and RPAs	MassHighway	Ongoing

Funding and Resource Requirements

MassHighway will fund data analysis, technical assistance, and facilitation for this project using multiple funding sources. Funding for location-specific treatments will need to be identified by the multidisciplinary teams with support from MassHighway and GHSB.

Performance Measures

- Reduction in fatal crashes at location.
- Reduction in incapacitating injury crashes at location.

Project Evaluation

This project will include an evaluation to assess the safety impacts at treated locations. MassHighway will assist the RPAs with this evaluation as they implement location specific strategies to determine before and after effects. As data becomes available, the RPAs will report to MassHighway and the SHSP Executive Leadership Committee regarding the safety improvements to those locations using before and after crash data. The Executive Leadership Committee will identify and promote best practices.

4.0 SHSP Implementation Process

The goal of the Safety Program Management Emphasis Area Team was to help institutionalize the Commonwealth's Strategic Highway Safety Plan (SHSP). This team defined the roles and responsibilities of the Executive Leadership Committee and Steering/ Advisory Committee for implementation of the Strategic Highway Safety Plan (SHSP). This effort led to the development and signing of the *Memorandum of Understanding (MOU) Regarding Massachusetts Strategic Highway Safety Plan* by agencies of the Executive Leadership Committee. In the MOU, agencies committed to quarterly meetings to address safety issues raised by the Steering/Advisory Committee and to communicate how safety is being addressed within each individual agency. The roles and responsibilities of participating agencies, as defined by the Safety Program Management Emphasis Area Team, are described below.

■ SHSP Program Management

Development of the SHSP has included more than 100 stakeholders from around the Commonwealth, and implementation of the SHSP strategies, evaluation of progress, and future updates to the plan will require a comprehensive, strategic grouping of people and agencies to make decisions and follow through with tasks. Stakeholders identified a management structure to include an Executive Leadership Committee and a Stakeholder/ Advisory Committee. Formal meetings of the emphasis area teams may not be necessary following plan approval and development of strategy action plans, but many of those stakeholders and/or additional subject matter experts will be called upon to help implement specific strategies.

Executive Leadership Committee

The SHSP Executive Leadership Committee consists of:

- Commissioner, Massachusetts Highway Department (MassHighway);
- Registrar, Registry of Motor Vehicles (RMV);
- Director, Governor's Highway Safety Bureau;
- Colonel, Massachusetts State Police;
- Commissioner, Massachusetts Department of Public Health;

- President, Massachusetts Chiefs of Police Association;
- Executive Director, Massachusetts Association of Regional Planning Agencies;
- Division Administrator, Federal Highway Administration (FHWA);
- Division Administrator, Federal Motor Carrier Safety Administration; and
- Regional Administrator, National Highway Traffic Safety Administration.

Executive Leadership Committee Responsibilities

- Executive Leadership Committee member agencies developed and executed an MOU confirming their commitment to safety planning and identifying what their agency can contribute to the safety planning process. (Steering/Advisory Committee members will be responsible for updating Executives on progress.)

- The Executive Leadership Committee will meet quarterly to review progress towards the shared SHSP goals and provide updates on agency-specific safety initiatives.

- Members of the Executive Leadership Committee have appointed staff member(s) to the SHSP Steering/Advisory Committee and will dedicate staff expertise towards the shared SHSP goals.

- The Executive Leadership Committee will provide guidance to the Steering/Advisory Committee on transportation safety-related issues as needed.

- Each member of the Executive Leadership Committee will consider the SHSP when developing or updating individual agency plans and budgets.

Steering/Advisory Committee Membership

The Steering/Advisory Committee consists of:

- Representative(s) of each agency on the Executive Leadership Committee and/or designated leader of each SHSP Emphasis Area Team (may be one and the same); and

- Initial leadership of the Steering/Advisory Committee will be provided by a designated employee of MassHighway.

Steering/Advisory Committee Member Responsibilities

- Members of the Steering/Advisory Committee will keep their superiors, specifically members of the Executive Leadership Committee, informed on current safety projects, safety-related initiatives, legislative proposals, and research. They will be responsible for keeping safety on their agency's agenda.

- The Steering/Advisory Committee members will communicate with and among the Executive Leadership Committee and the safety stakeholders.
- Members will work with media experts to promote safety accomplishments and share safety project evaluations with the Executive Leadership Committee.
- Members will meet bimonthly and/or in advance of any Executive Leadership Committee Meeting.
- Members will conduct regularly scheduled review and update to the Commonwealth's SHSP with guidance from MassHighway and the FHWA Division Office.
- Members who have agreed to lead implementation of SHSP strategies will provide project progress reports, and as applicable evaluation reports, to MassHighway and the Executive Leadership Committee on a quarterly basis to assist MassHighway with the Commonwealth's annual SHSP reporting requirement.
- Members will promote awareness of implemented SHSP safety strategies.
- The Steering/Advisory Committee will disseminate research that pertains to achieving the SHSP goals.

■ Funding/Resources

FHWA apportionments to Massachusetts are shown in Table 4.1, however allocation of those resources among projects is undetermined at this time. It will be critical to maximize the use of all available resources to establish a comprehensive highway safety improvement program (HSIP) for Massachusetts.

Table 4.1 FHWA Projected SAFETEA-LU Funding Apportionments

FY 2006	FY 2007	FY 2008	FY 2009
$13.6 million	$13.9 million	$14.1 million	$14.4 million

The Massachusetts Statewide Transportation Improvement Program (STIP) has allocated a line item specifically for statewide safety improvement projects in the amount of $9.25 million per year for fiscal years 2007 to 2010. While these funds will be allocated to larger projects that involve either statewide actions or interregional projects, many more safety projects will be addressed at the regional level. Metropolitan Planning Organizations (MPO) also prioritize and implement safety projects and are responsible for evaluating

safety as a component of all project types listed on the transportation improvement program (TIP). MassHighway has worked closely with the MPOs to develop project evaluation criteria that place emphasis on safety improvement. MassHighway's own project selection criteria place added weight to safety projects. Other state agencies also receive state and Federal funds to execute their safety responsibilities and programs. Commitments from other agencies, e.g., the State Police, the Governor's Highway Safety Bureau, etc. to align resources with the SHSP will produce additional support for SHSP implementation. Appendix F describes safety funding programs in addition to Section 148.

Strategy Implementation

The first step to implementing the Commonwealth's SHSP will be to develop detailed action plans for each Tier I strategy. As reported in Section 3.0, MassHighway will work with lead agencies to develop detailed action plans for all Tier I strategies. MassHighway estimates completion of this task by December 30, 2006.

Annual Reporting and Evaluation

MassHighway, in close coordination with the SHSP Executive Leadership Committee and Steering/Advisory Committee, will assume responsibility for annual reporting to the Secretary of Transportation and will comply with the reporting requirements of the HSIP as outlined in 23 U.S.C. §148(g) and described in Appendix A. MassHighway will submit its annual report to the FHWA Division Office on or before August 31 of each year.

Each year following SHSP approval, MassHighway will conduct detailed traffic safety data analysis to monitor progress towards achievement of the plan goals; determine the relevance of Tier I and II strategies to immediate (or emerging) safety issues; determine if additional strategies or revisions to existing strategies may be incorporated as changing trends are identified and priorities shift; and track emphasis area performance measures identified in Table 3.1 of this report. On an annual basis, the Executive Leadership Committee will determine if necessary staff and project funding resources are available to implement additional strategies.

To evaluate the effectiveness of the SHSP, MassHighway will need input from all agencies that agree to lead strategy implementation. Action plans for each strategy will include defined performance measures and an evaluation component. Representatives of the Steering/Advisory Committee will be responsible for reporting on the progress of their agencies' SHSP programs and projects on a quarterly basis. MassHighway will review the specific project evaluations with the Executive Leadership Committee when evaluating the overall effectiveness of the SHSP. This evaluation will include a process for determining the effect that the HSIP projects have in reducing the number of fatalities and

incapacitating injuries resulting from motor vehicle crashes. As recommended in FHWA's *Guidance to Supplement SAFETEA-LU Requirements (April 5, 2006)*, and as after-project data is collected, MassHighway and the Steering/Advisory Committee (or strategy lead agencies) will evaluate:

- The cost of the safety countermeasures implemented and the benefits resulting from the countermeasures;
- A record of crash experience before and after strategy implementation; and
- A comparison of crash numbers, rates, and severity observed after strategy implementation with those expected without the strategy treatment.

Appendix A
SAFETEA-LU Requirements

Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)

In July 2005, Congress reauthorized the highway bill, and in August the Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) was signed into law. Section 148 of the highway bill provides guidance and funding for the Highway Safety Improvement Program (HSIP). To obligate HSIP funds, states must:

- **Develop and implement a State Strategic Highway Safety Plan;**
- **Produce a program of projects or strategies;**
- **Evaluate the plan on a regular basis; and**
- **Submit an annual report to the Secretary**.

The Act codifies AASHTO's recommendation that all states develop a Strategic Highway Safety Plan (SHSP). This Act calls for state departments of transportation (DOT) to work collaboratively with multiple safety stakeholders to develop the SHSP. The plans are to be based on problems identified on all public roads. States are required to establish a system that identifies hazardous locations, sections, and elements "using such criteria as the State determines to be appropriate, establish the relative severity of those locations, in terms of accidents, injuries, deaths, traffic volume levels, and other relevant data."

SAFETEA-LU also requires MassHighway to submit to the U.S. Secretary of Transportation an annual report, which, among other requirements must include a description of not less than 5 percent of locations exhibiting the most severe safety needs, with an assessment of potential remedies for the identified hazardous locations, estimated costs associated with remedies, and impediments to implementation other than cost. The reports must be made available to the public through the MassHighway web site.

Planning Partners

Section 148 makes it clear that the DOT is expected to lead this effort and provides a list of required partners which include:

- State Highway Safety Office;
- Regional transportation planning organizations and metropolitan planning organizations;
- Major modes of transportation;
- State and local traffic enforcement officials;
- State persons responsible for administering the Federal rail-grade crossing program;
- Operation Lifesaver;
- State Motor Carrier Safety Assistance Program (MCSAP) administrators;
- State motor vehicle administrators; and
- Major state and local stakeholders.

Specific Requirements of the Strategic Highway Safety Plan

SAFETEA-LU establishes a clear set of process and content requirements for the SHSP as described below:

- Use different types of crash data;
- Establish a crash data system with the ability to perform problem identification and countermeasure analysis;
- Address engineering, management, operation, education, enforcement, and emergency medical services elements;
- Identify hazardous locations, sections, and elements and establish criteria that indicate relative crash severity of these locations;
- Adopt strategic and performance-based goals that address the broad spectrum of safety improvements (including behavioral improvements), focus resources on the areas of greatest need, and coordinate with other highway safety programs;
- Advance the State's capabilities for traffic records data collection, analysis, and integration with other sources of safety data and include information on all public roads;
- Consider the results of state, regional, and local transportation and highway safety planning processes;
- Set priorities for corrective action on high-hazard locations, segments, and elements;
- Identify opportunities for preventing the development of new hazardous locations;
- Establish an evaluation process to assess the results achieved by the highway safety improvement projects;

- Produce a program of projects that is consistent with the statewide transportation improvement program (STIP); and
- Obtain approval by the Governor or the appropriate state agency.

Eligible Funding Categories

Section 1401 of SAFETEA-LU amended Section 148 of Title 23 U.S.C. creates a new HSIP as a "core" FHWA program with separate funding, replacing the Hazard Elimination Program in 23 U.S.C. Section 152, effective October 1, 2005. The purpose of the HSIP as stated in Section 148(b)(2) is to reduce traffic fatalities and serious injuries on public roads. States may be allowed some flexibility in how safety funds are used. As per Federal guidance and Section 148 (e):

> Flexible Funding for States With a Strategic Highway Safety Plan –
>
> (1) In general. To further the implementation of a state strategic highway safety plan, a state may use up to 10 percent of the amount of funds apportioned to the State under section 104(b)(5) for a fiscal year to carry out safety projects under any other section as provided in the state strategic highway safety plan if the State certifies that
>
> > (A) the State has met needs in the State relating to railway-highway crossings; and
> >
> > (B) the State has met the State's infrastructure safety needs relating to highway safety improvement projects.
>
> (2) Other transportation and highway safety plans. Nothing in this subsection requires a state to revise any state process, plan, or program in effect on the date of enactment of this section.

Based on approval of the Commonwealth's SHSP and the certifications requested under Section 148 (e), the following types of projects may be eligible for funding:

- Intersection safety improvements;
- Pavement and shoulder widening (including addition of a passing lane);
- Installation of rumble strips or other warning devices as long as they do not affect the mobility of bicyclists;
- Pedestrians and the disabled;
- Installation of skid-resistant surfaces at an intersection or to other high-crash locations;
- An improvement for bicycles or pedestrian safety or the safety of the disabled;

- Elimination of hazards at railroad grade crossings (including grade separations);
- Construction of a rail-highway grade crossing feature (including the installation of protective devices);
- Traffic enforcement activity at a rail-highway grade crossing;
- Construction of traffic calming features;
- Elimination of a roadside obstacle;
- Improvement of highway signage or pavement markings;
- Installation of a priority control system at signalized intersections for emergency vehicles;
- Installation of traffic control or other warning devices at high-crash locations;
- Safety conscious planning;
- Improvements in the collection and analysis of crash data;
- Planning emergency communications;
- Work zone operational improvements or traffic enforcement activities;
- Guardrail installation;
- Barriers and crash attenuators;
- Structures or other measures to eliminate or reduce accidents involving wildlife;
- Installation and maintenance of signs at pedestrian/bicycle crossings and in school zones;
- Signage and construction of pedestrian/bicycle crossings and at school zones;
- Construction and operational improvements on high-risk rural roads; and
- Improvement projects on any public roadway or publicly owned bike or pedestrian pathway or trail.

Reporting Requirements

Sections 148 (g) and 152 (g) of Title 23 U.S.C. require each state to submit to the Secretary a HSIP report. The State is required to submit the report to the FHWA Division Office on or before August 31. This report will include the reporting requirements of §148 (g) as described below along with the requirements of the Hazard Elimination Program §152 (g) and the High-Risk Rural Roads Program (HRRRP).

Section 1401 of SAFETEA-LU includes the following reporting requirements for the HSIP under 23 U.S.C. §148 (g):

A state shall submit to the Secretary a report that –

A. Describes progress being made to implement highway safety improvement projects under this section;

B. Assesses the effectiveness of those improvements; and

C. Describes the extent to which the improvements funded under this section contribute to the goals of –

   i. Reducing the number of fatalities on roadways;

   ii. Reducing the number of roadway-related injuries;

   iii. Reducing the occurrences of roadway-related crashes;

   iv. Mitigating the consequences of roadway-related crashes; and

   v. Reducing the occurrences of crashes at railway-highway crossings.

In addition to the above stated requirements and based upon FHWA's guidance, the annual report to the Secretary also will:

- Describe the progress that has been made in implementing HSIP projects;
- Demonstrate the effectiveness of the HSIP in terms of general highway safety trends; overall effectiveness of the HSIP; and a summary of the effectiveness of the HRRRP;
- Use data to evaluate the effectiveness of HSIP-funded projects for the purpose of specific safety goals, including benefit/cost analysis of such projects; and
- Report on the HRRRP portion of the HSIP by describing program implementation, methodologies used to identify HRRR locations; and project assessments.

Appendix B
Strategic Planning Participant Lists

Table B.1 Executive Leadership Committee Members

Name	Agency
Bates, Rich	Federal Motor Carrier Safety Administration
Brennan, Timothy	Massachusetts Association of Regional Planning Agencies
Cogliano, John, Secretary of Transportation	Executive Office of Transportation
Collins, Anne (Co-chair)	Registry of Motor Vehicles
Cote, Paul	Massachusetts Department of Public Health
Delaney, Mark	Massachusetts State Police
Gee, Stan	Federal Highway Administration
Hymoff, Caroline	Governor's Highway Safety Bureau
Paiewonsky, Luisa (Co-Chair)	Massachusetts Highway Department
Sampson, A. Wayne	Chiefs of Police Association
Weiser, Phil	National Highway Traffic Safety Administration

Table B.2 Steering/Advisory Committee Members

Name	Agency
Barron, Jenny	Governor's Highway Safety Bureau
Blundo, John	Massachusetts Highway Department
Boudreau, Neil	Massachusetts Highway Department
Carlisle, Jonathan	Executive Office of Transportation
Chipman, Brook	Governor's Highway Safety Bureau
Conard, Richard	Massachusetts Highway Department
Costine, Sharon	Massachusetts State Police
Damiata, Mario	National Highway Traffic Safety Administration
Diotte, Shirley	Federal Motor Carrier Safety Administration
Donatelli, Rebecca	Governor's Highway Safety Bureau
Dreyer, Paul	Department of Public Health
Flynn, Denise	Registry of Motor Vehicles
Fogerty, Sally	Department of Public Health
Guarino, Raymond	Old Colony Planning Council
Hadfield, Jim	Southeastern Regional Planning and Economic Development District
Hendrigan, Rod	Massachusetts State Police
Herbel, Susan	Cambridge Systematics, Inc.
Hobbs, Sylvia	Department of Public Health
Hume, Beth	Department of Public Health
Inzana, Jennifer	Massachusetts Highway Department
Jones, Je'Lesia	Office of Elder Affairs
Kearney, Robert	Governor's Highway Safety Bureau
Krasnow, David	Registry of Motor Vehicles
Krause, Diane	National Highway Traffic Safety Administration
Lalancette, Robin	Registry of Motor Vehicles, FARS Representative
Lawton, Sam	Cambridge Systematics, Inc.
LePage, Suzanne	Central Massachusetts Regional Planning Commission
Lupo, Filomena	Massachusetts State Police
McCarthy, Robert	Federal Highway Administration
McCarthy, Steven	Massachusetts State Police
Mohler, David	Executive Office of Transportation

Table B.2 Steering/Advisory Committee Members (continued)

Name	Agency
O'Hearn, Amie	Registry of Motor Vehicles
Ojamaa, Lea	Department of Public Health
O'Keefe, Jerry	Department of Public Health
Osgood, Herbert	Registry of Motor Vehicles
Otaluka, Promise	Federal Highway Administration
Paragona, Laurann	Registry of Motor Vehicles, FARS Representative
Pearson, Karen	Office of Transportation Planning
Perduyn, Karen	Registry of Motor Vehicles
Perlman, Heidi	Department of Education
Polin, Bonnie	Massachusetts Highway Department
Rodgers, Cindy	Department of Public Health
Roux, Gary	Pioneer Valley Planning Commission
Silva, Ed	Federal Highway Administration
Smiley, Sylvia	Massachusetts Highway Department
Sullivan, Peg	Massachusetts State Police
Syrniotis, Maria	Office of State Senator Baddour
Szala, Scott	Massachusetts State Police
Twarog, Lisa	Office of Representative Joseph Wagner
Umbs, Rudy	Federal Highway Administration, Office of Safety
Walsh, Thomas	Massachusetts State Police
Whalen, Matthew Sgt.	Boston Police Department
White, Timothy A.	Federal Highway Administration
Wilson, Keith	Franklin Regional Council of Governments
Woodley, Casey	Cambridge Systematics, Inc.

Table B.3 Invited Stakeholders

Agency	Name
AAA Southern New England	Kinsman, Arthur
AARP Massachusetts	Desmond, Charlie
AARP Massachusetts	Widelo, Christopher
American Traffic Safety Services Association	White, Kevin
Attorney General's Office	Rawding, Nathan
Attorney General's Office	Reilly, Thomas
Berkshire Regional Planning Commission	Karns, Nat
Berkshire Regional Planning Commission	Lenton, Andrew
Berkshire Regional Transit Authority	McNeil, Charles
Boston Police Department	Whalen, Matthew
Boston Public Schools, Safety Office	Jacobs, Richard
Boston Public Schools, School Police	Hickey, Bill
Brockton Area Regional Transit Authority	Ledoux, Ray
Cambridge Systematics, Inc.	Herbel, Susan
Cambridge Systematics, Inc.	Lawton, Sam
Cambridge Systematics, Inc.	Woodley, Casey
Cape Cod Commission	Fenn, Margo
Cape Cod Commission	Leclerc, Priscilla
Cape Cod Commission	Malakhoff, Lev
Cape Cod Regional Transit Authority	Potzka, Joe
Center for Insurance Research	D'Amato, Steve
Central Massachusetts Regional Planning Commission	Adams, Lawrence
Central Massachusetts Regional Planning Commission	Hellstrom, Carl
Central Massachusetts Regional Planning Commission	LePage, Suzanne
Central Massachusetts Regional Planning Commission	Rydant, Rich
Central Transportation Planning	Daly, Sean
Central Transportation Planning	Dantas, Lourenco
Central Transportation Planning	Jacob, Kathy
Central Transportation Planning	McGahan, Anne
Central Transportation Planning	Moore, Bill
Central Transportation Planning	Pagitsas, Efi
Central Transportation Planning	Snead, Sam
Chiefs of Police Association	Collins, Jack
Commonwealth of Massachusetts, House of Representatives	Wagner, Joseph – Rep.
Commonwealth of Massachusetts, State Senate	Baddour, Steven
Department of Education	Perlman, Heidi
Department of Homeland Security	Magrini, Joel F.
Department of Homeland Security	McCarthy, Thomas F.
Department of Public Health, Office on Health and Disability	Albright, Anita
Department of Public Health	Dreyer, Paul
Department of Public Health	Fogerty, Sally
Department of Public Health	Hackman, Holly
Department of Public Health	Hobbs, Sylvia
Department of Public Health	Howe, Lewis
Department of Public Health	Hume, Beth
Department of Public Health	Keel, Steve
Department of Public Health	Ojamaa, Lea
Department of Public Health	O'Keefe, Jerry

Table B.3 Invited Stakeholders (continued)

Agency	Name
Department of Public Health	Rodgers, Cindy
Department of Telecommunications and Energy	Celucci, Elizabeth
Department of Telecommunications and Energy	Davis, Tim
Department of Telecommunications and Energy	Frey, Frank A.
Drug Recognition Expert	Sergeant Decker
Executive Office of Transportation	Abell, Erik
Executive Office of Transportation	Bain, Rachel
Executive Office of Transportation	Carlisle, Jonathan
Executive Office of Transportation	Cope, Jim
Executive Office of Transportation	Denniston, Sean
Executive Office of Transportation	Fichter, Katherine
Executive Office of Transportation, Massachusetts Bicycle and Pedestrian Advisory Board	Lehman, Joshua
Executive Office of Transportation	Miller, Kenneth
Executive Office of Transportation	Mohler, David
Executive Office of Transportation	Pearson, Karen
Executive Office of Transportation	Telegen, Joanne
Federal Highway Administration	Gee, Stan
Federal Highway Administration	McCarthy, Robert
Federal Highway Administration	Otaluka, Promise
Federal Highway Administration	Silva, Ed
Federal Highway Administration	White, Timothy
Federal Highway Administration, Office of Safety	Umbs, Rudy
Federal Motor Carrier Safety Administration	Bates, Richard
Federal Motor Carrier Safety Administration	Carter, Kevin
Federal Motor Carrier Safety Administration	Diotte, Shirley
Franklin Regional Council of Governments	Dunlavy, Linda
Franklin Regional Council of Governments	Mullaney, Maureen
Franklin Regional Council of Governments	Wilson, Keith
Franklin Regional Transit Authority	Wallenius, Denise
Governor's Highway Safety Bureau	Chipman, Brook
Governor's Highway Safety Bureau	Hanley, Jessica
Governor's Highway Safety Bureau	Hymoff, Caroline
Governor's Highway Safety Bureau	Kearney, Robert
Governor's Office	Romney, Mitt
Governor's Office	Healey, Kerry
Greater Attleboro Taunton Regional Transit Authority	GATRA
Greenfield-Montague Transportation Area	GMTA
Hingham Police Department	Carlson, Steven D.
Judicial Institute of Mass Trial Court	Lewis, Vicki
Legislative Aid	Riviera, Cheryl
Liberty Mutual	Cashman, John
Liberty Mutual	Melton, David
Liberty Mutual	Money, David
Livable Streets Alliance	Rosenblum, Jeffrey L.
Lowell Regional Transit Authority	Scanlan, James
MARTA, Executive Director	Orsino, Jeannette

Table B.3 Invited Stakeholders (continued)

Agency	Name
Martha's Vineyard Commission	Sattoor, Srivinas
Martha's Vineyard Commission	London, Mark
Massachusetts Association of Community Development Corporations	Kriesberg, Joseph
Massachusetts Bay Transportation Authority	Ruggiero, Gerry
Massachusetts Bay Transportation Authority, Railroad Operations	Stoetzel, Bob
Massachusetts Bicycle Coalition	Watson, David
Massachusetts Brain Injury Association	Berquist, Rosalie
Massachusetts District Attorneys Association	Nardone, Andrea
Massachusetts Fire Service Commission	Travers, Timothy
Massachusetts Highway Association	Taylor, Greg
Massachusetts Highway Department	Blundo, John
Massachusetts Highway Department	Boudreau, Neil
Massachusetts Highway Department	Conard, Richard
Massachusetts Highway Department, District 1	Dindio, Ross
Massachusetts Highway Department	Inzana, Jennifer
Massachusetts Highway Department	Johnson, Mark
Massachusetts Highway Department	Kulenthirarajan, Rajadurai
Massachusetts Highway Department, District 4	Leavenworth, Patricia
Massachusetts Highway Department	Maffeo, Michelle
Massachusetts Highway Department, District 5	McCourt, Bernard
Massachusetts Highway Department, District 3	Mistretta, Chuck
Massachusetts Highway Department	Moore, Mark
Massachusetts Highway Department	Paiewonsky, Luisa
Massachusetts Highway Department	Polin, Bonnie
Massachusetts Highway Department	Smiley, Sylvia
Massachusetts Highway Department, District 2	Stegemann, Albert
Massachusetts League of Community Health Centers	Mason, Scott
Massachusetts Motor Transportation Association	Christello, Tricia
Massachusetts Motor Truck Association	Lynch, Anne
Massachusetts Motorcycle Association	Cote, Paul
Massachusetts Municipal Association	Beckwith, Geoff
Massachusetts Municipal Association	Feher, Matthew
Massachusetts State Police	Costine, Sharon
Massachusetts State Police	Delaney, Mark
Massachusetts State Police	Eubanks, Richard
Massachusetts State Police	Hendrigan, Rod
Massachusetts State Police	Lupo, Filomena
Massachusetts State Police	McCarthy, Steven
Massachusetts State Police	Robbins, Thomas
Massachusetts State Police	Sullivan, Peg
Massachusetts State Police	Szala, Scott
Massachusetts State Police	Walsh, Tom
Massachusetts Turnpike Authority	Sterling, Charles
MassRIDES	Eisenberg, Davida

Table B.3 Invited Stakeholders (continued)

Agency	Name
Merrimack Valley Planning Commission	Burke, Gaylord
Merrimack Valley Planning Commission	Komornick, Tony
Merrimack Valley Regional Transit Authority	Constanzo, Joe
Metropolitan Area Planning Council	Draisen, Marc
Metropolitan Area Planning Council	Gallagher, Jim
Metropolitan Area Planning Council	Hurwitz, Andrea
Metropolitan Area Planning Council	Ingram, Wendy
Metropolitan Area Planning Council	Lucas, Barbara
Montachusett Regional Planning Commission	Harris, Brad
Montachusett Regional Planning Commission	Michaud, Laila
Montachusett Regional Transit Authority	Khan, Mohammed
Mothers Against Drunk Driving	Harrington, Barbara
Nantucket Planning and Economic Development Commission	Vorce, Andrew
Nantucket Planning and Economic Development Commission	Burns, Mike
Nantucket Regional Transit Authority	Leary, Paula
National Grid	Mulligan, Thomas
National Highway Traffic Safety Administration	Damiata, Mario
National Highway Traffic Safety Administration	Krause, Diane
National Highway Traffic Safety Administration	Scynski, Christine
National Highway Traffic Safety Administration	Weiser, Phil
National Safety Council	Riemer, Joel
National Safety Council	Whitehead, Aletha
New England Bus Association	McDonough, John
Northern Middlesex County Council of Governments	Flynn, Robert
Northern Middlesex County Council of Governments	Howard, Justin
Northern Middlesex County Council of Governments	Woods, Beverly
Office of Elder Affairs	Jones, Je'Lesia
Office of Emergency Medical Services	Abdullah Rehayem
Office of State Senator Baddour	Syrniotis, Maria
Office of the Secretary of Health and Human Services	Rheaume, Donna
Old Colony Planning Council	Ciaramella, Pat
Old Colony Planning Council	Guarino, Raymond
Old Colony Planning Council	Kilmer, Charlie
Operation Lifesaver	Bua, Dom
Operation Lifesaver	Mulhern, Fran
Operation Lifesaver	O'Connor, Edward
Pioneer Valley Planning Commission	Brennan, Timothy
Pioneer Valley Planning Commission	Roscoe, Dana
Pioneer Valley Planning Commission	Roux, Gary
Pioneer Valley Regional Transit Authority	Shepard, Gary
Professional Driver Education Association of Massachusetts	Greaney, Paul
Professional Driver Education Association of Massachusetts	Labonte, Henry
Regional Transit Authority	Gay, Fran
Regional Transit Authority	Talmot, Paul
Registry of Motor Vehicles	Collins, Anne
Registry of Motor Vehicles	Dupille, Judith
Registry of Motor Vehicles	Ellicks, Michele
Registry of Motor Vehicles	Evans, Steve

Table B.3 Invited Stakeholders (continued)

Agency	Name
Registry of Motor Vehicles	Flynn, Denise
Registry of Motor Vehicles	Krasnow, David
Registry of Motor Vehicles, FARS Representative	Lalancette, Robin
Registry of Motor Vehicles	O'Hearn, Amie
Registry of Motor Vehicles	Osgood, Herbert
Registry of Motor Vehicles, FARS Representative	Paragona, Laurann
Registry of Motor Vehicles	Perduyn, Karen
Registry of Motor Vehicles	Poirier, Matthew
Representative Wagner's Office	Twarog, Lisa
Southeastern Regional Planning and Economic Development District	Hadfield, Jim
Southeastern Regional Transit Authority	Pettine, Lou
Somerville Bicycle Committee and MassBike	Moore, Alan
State Courts Against Road Rage	Sergeant Eubanks
Students Against Destructive Decisions	Cushing, Julie
Students Against Destructive Decisions	Egan, Chris
Students Against Destructive Decisions	French, Kristen
Safe Routes to School	Smallwood, Donna
Southeastern Regional Planning and Economic Development District	Hebert, Roland
Southeastern Regional Planning and Economic Development District	Smith, Steve
UMassSAFE	Knodler, Michael
UMassSAFE	Riessman, Robin
UMassSAFE	Rothenberg, Heather
Vineyard Transit Authority	Gompert, Angela
WalkBoston	Landman, Wendy
WalkBoston	Sloane, Bob
Worcester Regional Transit Authority	MacInnes, Mary

Table B.4 Emphasis Area Team Members

Data Systems Emphasis Area Team

Neil Boudreau, MassHighway
Brook Chipman, GHSB
Richard Conard, MassHighway
Mario Damiata, NHTSA
Shirley Diotte, FMCSA
Ray Guarino, Old Colony Planning Council
Holly Hackman, Mass. DPH
Jim Hadfield, SRPEDD
Sylvia Hobbs, Mass. DPH
Beth Hume, Mass. DPH
Jennifer Inzana, MassHighway
Bob Kearney, GHSB
Dave Krasnow, RMV
Diane Krause, NHTSA
Samuel Lawton, CS
Robert McCarthy, FHWA
Steven McCarthy, MSP
Herbert Osgood, RMV
Promise Otaluka, FHWA
Karen Pearson, EOT
Karen Perduyn, RMV
Bonnie Polin, MassHighway
Robin Riessman, UMassSAFE
Heather Rothenberg, UMassSAFE
Keith Wilson, Franklin Regional COG
Casey Woodley, CS

Infrastructure Emphasis Area Team

Neil Boudreau, MassHighway
Domenic Bua, OLI
Mike Burns, NRTA
Kevin Carter, FMCSA
Richard Conard, MassHighway
Stephen D'Amato, Center for Insurance Research
Lourenco Dantas, CTPS
Jim Gallagher, MAPC
Raymond Guarino, Old Colony Planning Council
Jim Hadfield, SRPEDD
Justin Howard, NMCOG
Rod Hendrigan, MSP
Kathy Jacob, CTPS
Mark Johnson, MHD
Mike Knodler, UMassSAFE
Raj Kulen, MassHighway
Mark LaFrance, RMV
Bao Lang, MassHighway
Sam Lawton, CS
Andrew Lenton, BRPC
Suzanne LePage, CMRPC
Lev Malakhoff, Cape Cod Commission
Robert McCarthy, FHWA
Mark Moore, MassHighway
William Moore, CTPS
Tom Mulligan, National Grid
Lea Susan Ojamaa, Mass. DPH
Herbert Osgood, RMV
Karen Pearson, EOT
Efi Pagitsas, CTPS
Bonnie Polin, MassHighway
Guy Rezendes, MassHighway
Gary Roux, PVPC
Ed Silva, FHWA
Sylvia Smiley, MassHighway
Chuck Sterling, MTA
Scott Szala, MSP
Tim White, FHWA
Keith Wilson, Franklin Regional COG
Casey Woodley, CS

At-Risk Driver Behavior Emphasis Area Team

Neil Boudreau, MassHighway
Richard Bates, FMCSA
Steve Carlson, Hingham Police
John Cashman, Liberty Mutual
Julie Cushing, SADD
Mario Damiata, NHTSA
Shirley Diotte, FMCSA
Steve Evans, RMV
Denise Flynn, RMV
Barbara Harrington, MADD
Caroline Hymoff, GHSB
Steve Keel, Mass. DPH
Diane Krause, NHTSA
Robert McCarthy, FHWA
Steven McCarthy, MSP
Jose Morales, Mass. DPH
Herbert Osgood, RMV
Bonnie Polin, MassHighway
Robin Riessman, UMassSAFE
Ed Silva, FHWA
Sylvia Smiley, MassHighway
Lee Whitehead, National Safety Council
Casey Woodley, CS

Higher-Risk Transportation System Users Emphasis Area Team

Anita Albright, Mass. DPH
Jenny Barron, GHSB
Neil Boudreau, MassHighway
Brook Chipman, GHSB
Dorrie Clark, (formerly) MassBike
Mario Damiata, NHTSA
Judith Dupille, RMV
Chris Egan, SADD
Davida Eisenberg, MassRIDES
Michele Ellicks, RMV
Steve Evans, RMV
Denise Flynn, RMV
Jim Gallagher, MAPC
Barbara Harrington, MADD
Sarah Hughes, Mass. DPH
Wendy Ingram, MAPC
Jennifer Inzana, MassHighway
Diane Krause, NHTSA
Wendy Landman, WalkBoston
Sam Lawton, CS
Josh Lehman, EOT
Robert McCarthy, FHWA
Jerry O'Keefe, Mass. DPH
Promise Otaluka, FHWA
Herbert Osgood, RMV
Matthew Poirier, RMV
Ross Panacopoulos, MSP
Bonnie Polin, MassHighway
Joel Riemer, National Safety Council
David Watson, MassBike
Chris Widelo, AARP
Casey Woodley, CS

Safety Program Management Emphasis Area Team

Neil Boudreau, MassHighway
Shirley Diotte, FMCSA
Jennifer Inzana, MassHighway
Kevin Kelly, MSP
Mike Knodler, UMassSAFE
Diane Krause, NHTSA
Sam Lawton, CS
Suzanne LePage, CRMPC
Robert McCarthy, FHWA
Jerry O'Keefe, Mass. DPH
Herbert Osgood, RMV
Karen Pearson, EOT
Bonnie Polin, MassHighway
Robin Riessman, UMassSAFE
Cindy Rodgers, Mass. DPH
Ed Silva, FHWA
Tim White, FHWA
Casey Woodley, CS

Public Education and Media Emphasis Area Team

Erik Abell, EOT
Neil Boudreau, MassHighway
Kevin Carter, FMCSA
Brook Chipman, GHSB
Sharon Costine, MSP
Mario Damiata, NHTSA
David Deiuliis, MADD
Sean Denniston, MHD
Michele Ellicks, RMV
Kristin French, SADD
Jim Gallagher, MAPC
Lewis Howe, Mass. DPH
Jennifer Inzana, MassHighway
Diane Krause, NHTSA
Henry Labonte, Professional Driver Education Association of Massachusetts
Sam Lawton, CS
Robert McCarthy, FHWA
Edward O'Connor, Operation Lifesaver
Amie O'Hearn, RMV
Herbert Osgood, RMV
Promise Otaluka, FHWA
Bonnie Polin, MassHighway
Casey Woodley, CS

Appendix C
Existing Safety Strategies

Recognizing that multiple agencies are actively engaged in efforts to improve safety throughout the Commonwealth, development of a strategic highway safety plan requires an inventory of current safety-related plans and programs. The purpose of the *Massachusetts Strategic Highway Safety Plan* is to encourage collaboration among agencies and informed safety investments. The SHSP does not replace any existing plans or programs. The following tables include current strategies being implemented in the Commonwealth relating to speeding, alcohol/impaired driving, occupant protection, lane departure and intersection-related crashes, public education and media, young drivers, older drivers, pedestrians, and bicyclists. These tables include safety strategies identified by state agencies during development of the SHSP and do not include all safety initiatives being implemented within the Commonwealth.

Table C.1 Current Strategies for Addressing Risky Driver Behaviors

Strategies	Responsible Agency
Engineering Strategies	
Pavement markings	Massachusetts Highway Department (MassHighway)
Recessed reflectorized pavement markings	MassHighway
Rumble strips on full access control highways and other state highways with posted speed limit of 40 mph or greater, if the roadway is not in a residential area	MassHighway
Illumination is considered when ratio of night to day crashes is 3:1	MassHighway
Illumination is installed at any substandard ramps	MassHighway
Intelligent Transportation Systems (ITS)	MassHighway
Education Strategies	
Drunk Driving. Over the Limit. Under Arrest. Paid and Earned Media	Governor's Highway Safety Bureau (GHSB) with contractors, state police, and local police
Road Respect Paid and Earned Media	GHSB with contractors, state police, and local police
Community Spot Speed Survey Program	GHSB with contractor and local law enforcement
Speed Evaluation	GHSB with contractor
Click It or Ticket Safety Belt Educational Initiatives	GHSB with local law enforcement, universities, and colleges
Click It or Ticket Paid and Earned Media	GHSB with contractors, state police, and local police

Table C.1 Current Strategies for Addressing Risky Driver Behaviors (continued)

Strategies	Responsible Agency
Education Strategies (continued)	
Click It or Ticket Community Photo Album	GHSB, web site, and local law enforcement and communities
Occupant Protection Statewide Usage Surveys	GHSB with contractors
Youth Grant Programs: Impaired Driving, Speed, Belts	GHSB with Mother's Against Drunk Driving (MADD)
Youth Grant Programs: Impaired Driving, Speed, Safety Belts "A Call To ACTION"	GHSB with Students Against Destructive Decisions (SADD)
Youth Program Presentations on Safe Driving/Safe Decisions	GHSB with contractor with local, state police, and fire personnel
Occupant Protection Trainings and Conferences	GHSB with state and local law enforcement
School Bus Trainings re Safety Belts	GHSB with contractor and local, state police, fire, and health care providers
Elder Driver Program – Safety Belt Educational Training	GHSB with Registry of Motor Vehicles (RMV), AARP, and AAA
Traffic Occupant Protection Strategies (TOPS) Trainings	GHSB with contractor and local fire and law enforcement
Child Passenger Safety (CPS) Program, including mini-grants	GHSB with cities and towns
CPS Trainings and Conferences	GHSB with contractor, local, state police, fire, and health care providers
Prosecutor Trainings – Impaired Driving	GHSB with Massachusetts District Attorneys Association (MDAA)
Judicial Training – Impaired Driving	GHSB with Massachusetts Trial Court, The Judicial Institute
Statewide Traffic Safety Resource Prosecutor	GHSB with MDAA
New England Association of Drug Court Professionals Conference	GHSB with law enforcement, prosecutors, probation, judges
Massachusetts Law Enforcement Challenge	GHSB with state and local law enforcement
Enforcement Strategies	
Law Enforcement Liaison (LEL) Program	GHSB
Law Enforcement Conference	GHSB with state and local law enforcement
Click It or Ticket Mobilizations	GHSB with state and local law enforcement
Road Respect (Includes speeding and aggressive driving) (ENF and EDUC) Enforcement Mobilization and Campaign	GHSB with state and local law enforcement agencies
Drunk Driving. Over the Limit. Under Arrest. Enforcement Mobilizations and Campaign	GHSB with state and local law enforcement agencies
Sobriety Checkpoint Grant Program	GHSB with state and local law enforcement
Statewide Breath Test Unit Upgrade (ENF and EDUC)	GHSB with state police, RMV, MDAA, and local law enforcement

Table C.1 Current Strategies for Addressing Risky Driver Behaviors (continued)

Strategies	Responsible Agency
Enforcement Strategies (continued)	
Breath Alcohol Test (BAT) Mobile Unit (ENF and EDUC)	GHSB with state and local police
Drug Evaluation and Classification Program (ENF and EDUC)	GHSB with state and local police
Underage Drinking Program (ENF and EDUC)	GHSB with local law enforcement and state liquor enforcement agency (ABCC)
Underage Drinking Grant Program (ENF and EDUC)	GHSB with state and local colleges and universities, and law enforcement
College/University Alcohol, Education, Equipment, and Enforcement Program (ENF and EDUC)	GHSB with state and local colleges and universities, and law enforcement
Statewide Law Enforcement Training Programs (ENF and EDUC) RE: speeding and impaired driving	GHSB with State Municipal Police Training Committee and local police
Emergency Response Strategies	
None reported.	

Table C.2 Current Strategies for Addressing Lane Departure and Intersection-Related Crashes (Infrastructure)

Strategy	Responsible Agency
Engineering Strategies	
Pavement markings	MassHighway
Recessed reflectorized pavement markers	MassHighway
Snowplowable raised pavement markers	MassHighway
Ten-year upgrade program for freeway signs. Every year 10 percent of signs are replaced	MassHighway
Sign letter heights meet national standards	MassHighway
Rumble strips on full access control highways and other state highways with posted speed limit of 40 mph or greater, if the roadway is not in a residential area	MassHighway
New installation of guardrail end treatments are NCHRP approved. Existing end treatments are retrofitted as standards change	MassHighway
Illumination is considered when ratio of night to day crashes is 3:1	MassHighway
Illumination is installed at any substandard ramps	MassHighway
Install interactive truck rollover signing	MassHighway
Education Strategies	
None reported.	
Enforcement Strategies	
None reported.	
Emergency Response Strategies	
Install mile marking postings to improve location identification for emergency response	MassHighway
Install traffic signal preemption for emergency responders in appropriate areas	MassHighway

Table C.3 Current Safety-Related Public Education and Media Strategies

Strategy	Responsible Agency
Engineering Strategies	
None reported	
Education Strategies	
Press Releases/Advisories	Massachusetts State Police (MSP)
Traffic Programs Safety Belts/Rollover Presentations	MSP and GHSB
Traffic Programs Child/Passenger Safety Presentations	MSP and GHSB
Safe Driving Programs for Elder Drivers and Caregivers	RMV
Safe Driving Program for Teens	RMV, MSP, and GHSB
Telephone Surveys	Executive Office of Public Safety (EOPS)/GHSB
Public Safety Web Portal	EOPS/GHSB
Public Service Announcements on Bicycle, Motorcycles, and Pedestrians	EOPS/GHSB
Drunk Driving. Over the Limit. Under Arrest. Paid and Earned Media	GHSB with contractors, state police, and local police
Road Respect Paid and Earned Media	GHSB with contractors, state police, and local police
Click It or Ticket Paid and Earned Media	GHSB with contractors, state police, and local police
Passenger Safety Article in School Health Updates Bulletin	Massachusetts Department of Public Health
Safe Routes to School	EOT/MassRIDES
Enforcement Strategies (all are education strategies as well)	
April Road Respect Campaign	GHSB and MSP
May and November Click It or Ticket Campaign	GHSB and MSP
June Operation Combined Accident Reduction Effort	MSP and other New England state police agencies
July, August, September, and December Drunk Driving. Over the Limit. Under Arrest. Mobilization	GHSB and MSP
Holiday "Operation Zero Tolerance" Patrols	MSP
Emergency Response Strategies	
Highway Safety Training Courses for EMTs: Winter Driving Safety, Emergency Driving/Massachusetts Laws, Driving – Urban Jungle, Defensive Driving, Driver Training-Collision Avoidance, Emergency Reaction Driving, Driver Awareness during Emergency Vehicle Operations, Driver Training-Geography, Emergency Vehicle Driving Training, Driving Skills Review, Drunk Driving Prevention, Opticom System/Safe Driving, Advanced Driver Training, Driving with Emergency Lights/Siren, and Ambulance Procedures and Driving	Mass. DPH, Office of Emergency Medical Services

Table C.4 Current Strategies for Addressing the Needs of Young Drivers, Older Drivers, Pedestrians, and Bicyclists

Strategy	Responsible Agency
Engineering Strategies	
Safe Routes to School Program (Infrastructure Improvements/ Education/Incentives)	MassRIDES
Pavement markings	MassHighway
Recessed reflectorized pavement markers	MassHighway
Sign letter heights meet national standards	MassHighway
Rumble strips on full access control highways and other state highways with posted speed limit of 40 mph or greater, if the roadway is not in a residential area	MassHighway
Illumination is installed at any substandard ramps	MassHighway
Illumination is considered when ratio of night to day crashes is 3:1	MassHighway
Education Strategies	
Teen and Elderly Outreach Program	RMV
National Safety Council Behavior Modification Course	RMV
Driver Education Program	RMV
Parent Mailing to Junior Operator License (JOL) Drivers	RMV
Motorcycle Rider Education Program (MREP)	RMV
Distribution of Educational Brochures: Road Warrior/Road Hog and Bicycling Street Smarts	MABPAB
Public Service Announcements on Bicycle, Motorcycles, and Pedestrians	EOPS/GHSB
Bicycle safety rodeos	Mass. DPH, CPS staff on Injury Prevention Control Program (IPCP) staff
Bike Safety Courses for Adults (On-road bike safety education and training)	MassBike
Bike Safety Courses for Children	Hub on Wheels (Skills/safety workshops)
Bicycle Helmet Distribution Program	GHSB and cities and towns
Distribution of pedestrian and bicycle materials and posters	GHSB
Active Living by Design (Safety and infrastructure audits, education, physical activity, incentives and promotion)	Groundwork Somerville
Child Safety Seat Checkpoints	Mass. DPH, CPS staff on IPCP, and GHSB
Training for Fire and Life Safety Personal, Health, and Child Care Providers	Mass. DPH
Car-Safe (Toll-free line) (Answers questions of callers and refers to relevant partnering programs, such as WIC, School Health, Elder Health, and Physical Activity Promotion)	Mass. DPH, IPCP
Four Partnership for Passenger Safety Meetings	IPCP
Task Force on Transportation-Related Traumatic Brain Injury	IPCP

Table C.4 Current Strategies for Addressing the Needs of Young Drivers, Older Drivers, Pedestrians, and Bicyclists (continued)

Strategy	Responsible Agency
Education Strategies (continued)	
Update of Educational Materials (Car Seat Loan and Distribution Program List, CPS Fact Sheet, Booster Seat Use Guide, Massachusetts CPS Resource Guide, and Summer Safety Tips Sheets)	IPCP
Annual Moving Together Conference (Statewide bicycle/ pedestrian conference, October 2005)	IPCP (helped plan); GHSB Cosponsor
2005 Lifesavers Conference	IPCP staff attended; GHSB attended
Child Passenger Safety Materials/Guidance	WIC and GHSB
National Child Passenger Safety Week and National Buckle Up America Week activities	Mass. DPH and GHSB
Massachusetts Injury Prevention State Plan (Includes section on traffic safety)	Mass. DPH
Promote Safe Routes to School Program	EOT/MassRIDES, Mass. DPH with GHSB, School Health and Physical Activity Promotion Programs
Safe Routes to School Program (Infrastructure Improvements/ Education/Incentives)	MassCommute
Distributed CPS Materials to All Public School Nurses Statewide	Mass. DPH with School Health Program
Quarterly Mailings of CPS Information	Mass. DPH (to over 400 providers)
Data Collection and Analysis (Motor vehicle crashes and pedestrian injuries)	Mass. DPH
Youth Grant Programs: Impaired Driving, Speed, Belts	GHSB with MADD
Youth Grant Programs: Impaired Driving, Speed, Safety Belts "A Call To ACTION"	GHSB with SADD
Youth Program Presentations on Safe Driving/Safe Decisions	GHSB with contractor with local, state police, and fire personnel
Motorcycle Rider Education Program, 2007 Strategic Plan	RMV
Enforcement Strategies	
Underage Drinking Program (ENF and EDUC)	GHSB with local law enforcement and state liquor enforcement agency (ABCC)
Underage Drinking Grant Program (ENF and EDUC)	GHSB with state and local colleges and universities, and law enforcement
College/University Alcohol, Education, Equipment, and Enforcement Program (ENF and EDUC)	GHSB with state and local colleges and universities and law enforcement
Emergency Response Strategies	
None reported	

Appendix D
Resources

In addition to stakeholder input, several resources were used in development of the *Guiding Principles for the Massachusetts Strategic Highway Safety Plan* and are noted below.

Executive Office of Public Safety, Governor's Highway Safety Bureau (GHSB), *Commonwealth of Massachusetts Application for Funding Under 23 U.S.C. 408*, prepared for National Highway Traffic Safety Administration (NHTSA), June 15, 2006.

Fatality Analysis Reporting System (FARS), http://www-fars.nhtsa.dot.gov/main.cfm.

Federal Highway Administration (FHWA), 2004 District Fatality Statistics – North Highway Safety Measures.

FHWA and Pedestrian and Bicycle Information Center (PBIC), *How to Develop a Pedestrian Safety Action Plan*, FHWA-SA-05-12, 2006.

FHWA, Road Departure Safety Web Page, http://safety.fhwa.dot.gov/roadway_dept/.

GHSB, *Massachusetts 2005 Highway Safety Annual Report*, 2005.

GHSB, *Draft Commonwealth of Massachusetts 2005 Strategic Plan for Traffic Records Improvement*, prepared by Data Nexus, Inc., 2005.

GHSB, *Commonwealth of Massachusetts 2005 Final Traffic Records Assessment Report,* prepared by Data Nexus, Inc., 2005.

GHSB, *Massachusetts Highway Safety Performance Plan*, 2006.

Massachusetts Department of Public Health, *Maximizing Our Efforts: The Massachusetts State Injury Prevention Plan*, 2006.

Massachusetts Executive Office of Transportation, *Draft A Framework for Thinking – A Plan for Action: Transportation in the Commonwealth of Massachusetts*, 2005.

Massachusetts Executive Office of Transportation, *Massachusetts Pedestrian Transportation Plan*, 1998.

Massachusetts Executive Office of Transportation, *Massachusetts Statewide Bicycle Transportation Plan*, 1999.

Massachusetts Highway Department (MassHighway), *Massachusetts Lane Departure Crash Data Analysis, 2002-2004*, prepared by MassSAFE at the University of Massachusetts, 2006.

MassHighway, *Project Development and Design Guidebook*, 2006.

Massachusetts State Police, *Commonwealth of Massachusetts Commercial Vehicle Safety Plan*, FY 2006.

National Center for Statistics and Analysis, NHTSA, Massachusetts Toll of Motor Vehicle Crashes, 2004 and 2005.

NHTSA and Institute for Traffic Safety Management and Research, *Analysis of Fatal Crash Data Massachusetts 1999-2003*.

NHTSA, *Countermeasures That Work: A Highway Safety Countermeasure Guide*, 2005.

Transportation Research Board, *National Cooperative Highway Research Program (NCHRP) Report 500: Guidance for Implementation of the AASHTO Strategic Highway Safety Plan*, Volumes 1-17, 2005.

UMassSAFE, *Massachusetts Fatal and Incapacitating Injury Information by Emphasis Area*, 2002-2004.

Appendix E
Tier II Strategies and Safety Toolbox Detail

Tier II Strategy Descriptions

The strategies described below are numbered strictly for the purpose of identification and tracking, not as a means of prioritization within Tier II.

Cross Cutting Strategies

II-1. Develop a Safety Toolbox to provide technical assistance to local communities. Massachusetts' Safety Toolbox will be developed as a web-based tool for use by those who manage local roads. As stated in Massachusetts Highway Department's *Project Development and Design Guide,* the Toolbox will encourage practitioners, "to ensure that the safety and mobility of all users of the transportation system (pedestrians, bicyclists, drivers, etc.) are considered equally through all phases of a project."

- A printed Desk Reference Guide of the Toolbox could be developed, but for ease of updating, the tool would be primarily web-based. The Safety Toolbox will contain contact information for specific inquiries and may house the State Safety Calendar. It will contain information on potential countermeasures for mitigating specific safety issues. This information will be drawn from the *Manual on Uniform Traffic Control Devices* (MUTCD), MassHighway's *Project Development and Design Guide*, national as well as Massachusetts-specific best practices, National Cooperative Highway Research Program (NCHRP) Report *500 Guidance for Implementation of the Strategic Highway Safety Plan*, Governors Highway Safety Association (GHSA) and National Highway Traffic Safety Administration's (NHTSA) *Countermeasures That Work: A Highway Safety Countermeasure Guide*, and other guidance documents as appropriate. Initially, the Toolbox will focus on possible countermeasures for dealing with lane departure and intersection crash locations due to the high percentage of these types of crashes that occur on locally managed roads.

- The Safety Toolbox will contain detailed information on potential strategies for dealing with specific safety hazards or problems. To begin this process, a series of guidance fact sheets could be developed and distributed to the districts, RPAs, local communities, police departments, and others. Examples of strategies to be included in

the Toolbox are described below. A comprehensive list of potential countermeasures would need to be developed as part of the implementation of this strategy.

- **Technical Assistance –** The Toolbox will provide information on how to obtain technical assistance from the state or district engineers, planners, law enforcement, and others. The Toolbox will encourage consultation with a multidisciplinary team of professionals (e.g., law enforcement, public health, emergency response, and others) for site-specific problems. Multidisciplinary site reviews or assessments may be offered to any community through cooperative agreements among agencies or statewide on-call contracts with contractors or universities.

II-2. Tailor messages regarding speeding, alcohol impaired driving, and occupant protection to targeted audiences, particularly in high-risk locations or communities. Integrate public health and prevention messages with traditional transportation-related public information and education (PI&E) campaigns, as well as the use of crash and driver data to determine target locations and populations. Collaborate with Federal partners to identify best practices and national models for targeted educational and enforcement campaigns as well as the prevailing research on changing the culture in terms of risk taking behavior. It will result in an action plan to implement a speed campaign in Massachusetts and may rely upon the use of variable message signs and other intelligent transportation system (ITS) tools, e.g., ITS could be used to minimize or eliminate the external triggers of aggressive driving by reducing and providing better delay information. Finally, the strategy will try to identify additional partners to work with the Governor's Highway Safety Bureau (GHSB) and Massachusetts Department of Public Health as they conduct targeted educational campaigns.

II-3. Conduct an evaluation of traffic violations, convictions, penalties, dismissals, and plea bargains in Massachusetts courts for offenses related to speeding, failure to wear occupant protection (safety belts, child protective seats, helmets), and alcohol impairment. Interview judicial members and conduct a survey of judges to determine the number of dismissed traffic violations, convictions, penalties, and plea bargains. Evaluate the extent to which plea bargains to non-alcohol offenses are used in association with impaired driving and other types of traffic violations. The goal of this study will be to determine if additional outreach and training with the judicial community is needed to support enforcement of traffic citations.

II-4. At the state and local levels, encourage greater knowledge and use of Massachusetts and national design guidelines.

Data Systems Strategies

II-5. Support activities to improve data collection procedures and data quality, including the use of electronic license swiping equipment for police officers. It is anticipated that the Merit Rating Board will apply for Section 408 funding for this project in FFY 2007.

Infrastructure Strategies

II-6. Develop a safety problem assessment checklist. Develop a checklist for local cities, towns, elected officials, and others without access to engineering and planning expertise who need to make quick assessments regarding potential transportation-related safety problems and locations. The Checklist will inform the user of the MINIMUM factors and minimum data for assessing a potential "hot spot" or safety problem. It will help users assess the existence and magnitude of the problem and indicate when and how to seek additional analysis or expertise.

II-7. Evaluate the benefits of a statewide access management policy. Although this will take considerable time to implement, participants identified the need to begin the evaluation process through the SHSP. Adoption of a statewide access management policy may require: developing a stakeholder group and action steps; evaluating the potential benefits and costs of a policy; evaluating the outcomes in Massachusetts communities that have instituted access management policies; designing and executing a pilot study with before and after data in specific locations (zoning overlay districts); and developing a "lessons learned" report for educating other communities and the legislature.

At-Risk Driver Behavior Strategies

II-8. Explore the possibility of developing and maintaining a web-based statewide safety calendar. This calendar will include information by all stakeholders regarding safety-related meetings, special events, and safety campaigns. It will assist safety stakeholders statewide and may identify opportunities for collaboration among agencies and programs.

II-9. Support the statewide deployment of the State Courts Against Road Rage (SCARR) Program. Expand the SCARR program to additional county courts. The purpose of this program is to educate and reduce recidivism among drivers charged with aggressive driving violations.

II-10. Coordinate clearinghouses of safety materials [GHSB and Mass. DPH]. Coordinate materials, distribution, and target populations of both clearinghouses to maximize resources.

Higher Risk Transportation System Users

Young Drivers

II-11. Conduct literature/program review to identify existing sources of information regarding best practices in prevention and driver behavior modification factors. Conduct a literature review of how previous cultural changes have been achieved by such organizations as MADD. In addition to a literature review, this strategy will involve

evaluation of (and distribution of findings) current programs, such as MassMemorial's intervention programs, the National Safety Council's Defensive Driving Course – Alive at 25, and the Oregon Department of Transportation's (DOT) highly successful driver education program.

Older Drivers

II-12. Develop statewide guidance on infrastructure improvements that accommodate older driver needs. This guidance will build upon the MassHighway's *Project Development and Design Guide*, the *MUTCD*, and FHWA's *Older Driver Highway Design Handbook* and encourage safety-related infrastructure design standards at the time of new construction, and infrastructure repair. (See Infrastructure, No. 2.)

II-13. Conduct an assessment of the mobility needs of older persons in Massachusetts. This study will examine the availability and safe access to public transportation and other modes of travel for older people. On June 29, 2006, the Transportation Research Needs Committee of the Executive Office of Transportation, Office of Transportation Planning provided recommendations on research problem statements for the Calendar Year 2007 SPR II Research Work Program. The project entitled "Coping with the Aging Driver Population" is one of the projects recommended by the Committee to move forward. During the next several months, the Research Section of the Office of Transportation Planning will be working with the RMV to find a Principal Investigator, develop a scope and budget, and take steps necessary to include the project into the 2007 Work Program. The earliest possible start date will be January or February 2007.

II-14. Develop and disseminate an awareness campaign to encourage planning for future mobility needs. This PI&E campaign will be aimed at persons of all ages and encourage drivers to plan ahead for their mobility needs as they age or should they become disabled. Campaign materials could be distributed through RMV mailings. Mobility planning messages could reference financial planning as a type of future planning that most Americans will relate to (e.g., for 40 years you plan for retirement – but what good is retirement if you can't move around?).

Pedestrians and Bicyclists

II-15. Publicize pedestrian and bicyclist safety resources. Heighten the awareness and availability of the Massachusetts Pedestrian Transportation Plan and other relevant pedestrian safety resources, such as the FHWA and Pedestrian and Bicycle Information Center's How to Develop a Pedestrian Safety Action Plan.

II-16. Provide input to the safety chapter of the updated Massachusetts Pedestrian Transportation Plan. Work collaboratively with those updating the plan.

II-17. Consider providing reasonable bicycle and pedestrian accommodations in new roadway and bridge projects. Consider bicycle accommodations in new projects in accordance with the MassHighway Project Development and Design Guide and national standards.

Motorcyclists

II-18. Publicize motorcycle safety resources. The SHSP will identify a strategy, to heighten the awareness and availability of the DOT/NHTSA *National Agenda on Motorcycle Safety*, the RMV's *Statewide Motorcycle Safety Plan* (anticipated fall 2006), and other relevant motorcycle safety resources.

II-19. Conduct detailed analysis of motorcycle crash problem in Massachusetts. Examine data regarding motorcycle registrations, citations, crashes, and fatalities to better understand the crash problem and identify effective safety countermeasures.

Public Education and Media Strategies

II-20. Use information on best practices from states and locals to enhance media campaign materials. Work with Federal partners to identify existing best practices.

■ Safety Toolbox Details

At a minimum, the Safety Toolbox will include guidance on the countermeasures described below.

- **Lane Departure**
  - Provide and distribute contact information of the Safety Official in each of MassHighway's Districts.
  - Use crash rate data/exposure data to evaluate all crash locations.
  - Modify roadside clear zone in the vicinity of trees.
  - Delineate trees in hazardous locations.
  - Install centerline rumble strips for two-lane roads.
  - Reallocate total two-lane roadway width (lane and shoulder) to include a narrow "buffer median."
  - Provide targeted enforcement to reduce traffic violations.
  - Provide enhanced shoulder or in-lane delineation and marking for sharp curves.
  - Provide improved highway geometry for horizontal curves.
  - Design safer slopes and ditches to prevent rollovers.
  - Remove/relocate objects in hazardous locations.
  - Delineate trees or utility poles with retro reflective tape.

- Improve design of roadside hardware (e.g., bridge rails). Redundant to next item.
- Upgrade design and application of barrier and attenuation systems.
- Expand installation of shoulder rumble strips (to help reduce fatigue-related crashes) and install warning signs for motorcyclists.
- Install rumble strips and guardrail end sections that pass NCHRP 350 crash testing where possible.
- Evaluate need and types of median treatments.
- Expand installation of interactive truck rollover signage.
- Incorporate Share the Road information into driver materials and through print and electronic media.

- **Intersections**
  - Provide and distribute contact information of the Safety Official in each of MassHighway's Districts.
  - Use crash rate data/exposure data to evaluate crash locations.
  - Improve visibility of intersections by providing enhanced signing and delineation.
  - Implement lighting/crosswalk illumination measures.
  - Provide improved maintenance of all signs.
  - Examine use of roundabouts at appropriate locations.
  - Provide targeted enforcement to reduce traffic violations.
  - Provide targeted public information and education on safety problems at specific intersections.
  - Increase law enforcement at high-crash intersections.
  - Improve retro reflectivity of signs.
  - Evaluate effectiveness of signal retiming (coordinate activities with MassHighway's Corridor Signal Timing Upgrade).

- **Older Drivers**
  - Provide advance warning signs.
  - Provide advance guide signs and street name signs.
  - Increase size and letter height of roadway signs.
  - Provide all-red clearance intervals at signalized intersections.
  - Provide more protected left-turn signal phases at high-volume intersections.
  - Provide offset left-turn lanes at intersections.

- Improve lighting at intersections, horizontal curves, and rail road grade crossings.
- Improve roadway delineation.
- Review methods of channelization.
- Consider reducing intersection skew angle to improve safety at specific locations.
- Improve traffic control at work zones.

- **Pedestrian Safety**

  - Develop roadway design and enforcement strategies and programs to slow vehicle speeds in areas where there are significant numbers of pedestrians or disproportionate exposure to risk.
  - Install or upgrade traffic and pedestrian signals.
  - Expand lighting/crosswalk illumination measures.
  - Further eliminate screening by physical objects.
  - Improve conspicuity of pedestrians.
  - Implement road narrowing measures where appropriate.
  - Implement enforcement campaigns.
  - Support mixed use zoning.
  - Implement Safe Routes to School Program and provide web site address and manual.

- **Bicyclist Safety**

  - Properly place and sign rumble strips, where appropriate, to safely accommodate all roadway users.
  - Create a program to downsize existing rotaries and convert them into modern roundabouts.
  - Create a program to identify diagonal railroad track crossings and add warning signs and additional pavement width to facilitate bicycles crossing at a right angle.
  - Create a program to identify bridges with metal decks and retrofit them to be bicycle-safe where possible and add warning signs.
  - Place warning signs whenever steel plates are in use on a road.
  - Consider use of regulatory signs at high-speed locations where there is insufficient room for both cars and bicycles.
  - Create a Massachusetts Sign Manual that conforms with the MUTCD and require that all jurisdictions post only signs that conform with the manual.

  - Implement Safe Routes to School Program and provide web site address and manual.

  - Incorporate Share the Road information into driver materials and through print and electronic media.

- **Motorcyclist Safety**

  - Rider education and training.
  - Protective gear.
  - Licensing.
  - Crash avoidance skills.
  - Motorcyclists alcohol and other impairments.
  - Motorist awareness.
  - Motorcycle design, braking, vehicle modifications, and lane use.

Appendix F
Safety Funding Opportunities

■ Traffic Records (Section 408)

Access to timely and complete crash data is a high priority. The data are necessary to clearly identify safety problems, evaluate alternative countermeasures, track progress, measure performance, and keep the Executive Leadership Committee, the public, and safety partners informed. Good data also is needed to support funding applications.

Section 408 provides for a new grant to states for traffic records systems improvements. The data grants are larger than previous allocations. To qualify, states must establish an active Traffic Records Coordinating Committee with representation from all agencies with responsibility for collecting, managing, and analyzing traffic data, have had a recent (within five years) traffic records assessment, and write a strategic traffic records improvement plan. After satisfying these criteria and demonstrating progress in performance measures, Massachusetts will be eligible for an annual apportionment over the next four years. *Note: Section 148 funding also may be used to improve traffic records and other safety data systems.*

■ Railway Highway Crossings (Section 130)

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) contains a $220 million per year set aside for addressing safety at railway highway crossings. In the new funding formula 50 percent is based on the surface transportation program (STP) formula factors, and 50 percent is based on the number of public railway-highway crossings. The minimum amount any state will receive is 0.5 percent of the program funds.

Fifty percent of the State's apportionment is designated for the installation of protective devices. Up to 2 percent of these funds can be used for data analysis and compilation for an annual report to the Secretary. A report to Congress is required every two years beginning April 1, 2006. *Note: Section 130 activities also are eligible under the Highway Safety Improvement Program (Section 148).*

■ High-Risk Rural Roads

SAFETEA-LU contains a $90 million per year set aside for addressing high-risk rural roads. These funds may be used on any roadway functionally classified as a rural major collector, a rural minor collector, or a rural local road. States must demonstrate that the selected location experiences an accident rate for fatalities and incapacitating injuries that is greater than the statewide average. The funds must be used for construction and operational improvements, but flexibility is allowed if the State certifies it has met all its needs relating to high-risk rural roads.

■ Safe Routes to School (SRTS)

The Massachusetts SRTS program maintains a focus on educating elementary school students, parents, and community members on the value of walking, bicycling, carpooling, and taking public transit and the school bus for travel to and from school. Successful SRTS initiatives include the five Es: education, encouragement, enforcement, engineering, and evaluation. By engaging students in healthy alternative trip options, the initiative hopes to reduce congestion and air pollution and increase physical activity among children. Schools partnering with Mass*RIDES* on education and encouragement activities become eligible for infrastructure projects specifically targeting to enhancing safe access to schools. Selected schools will serve diverse socioeconomic communities, in urban, suburban, and rural environments statewide, all committed to implementing ongoing SRTS initiatives Massachusetts plans to engage an on-call team of school engineers, planners, and bicycle/pedestrian experts to plan, design, and construct targeted infrastructure improvements enhancing access to the Commonwealth's schools serving students in grades K-8.

The Massachusetts SRTS program offers schools technical assistance designing, implementing, marketing, and evaluating initiatives tailored to each school's needs and priorities. Participating schools receive free promotional materials to initiate and promote the SRTS program, plus no-cost educational materials targeted to students, parents, and community leaders. Available training prepares school stakeholders to identify school access challenges and design solutions.

In August 2005, the SAFETEA-LU transportation legislation allocated Federal funds for statewide SRTS initiatives. As a result, states now have dedicated funds to encourage and enable students to walk and bicycle to and from school through program activities and infrastructure improvements. Mass*RIDES*' partner schools implementing education and encouragement activities become eligible for infrastructure projects specifically targeted to enhancing safe access to schools.

■ Road Safety Improvements for Older Drivers and Pedestrians

SAFETEA-LU provides incentives for states to adopt the recommendations contained in the G*uidelines and Recommendations to Accommodate Older Drivers and Pedestrians* (Federal Highway Administration (FHWA), October 2001). The Act specifically mentions improved traffic signs and pavement markings. These projects are 100 percent Federally funded, but no specific apportionment is set aside to support this category. A thorough analysis of the Census and crash data might reveal regions, corridors, or areas where the size and characteristics of the crash problem among older road users would address the State's safety problem.

■ Education and Enforcement

Section 402 of the highway bill is the base funding program for education and enforcement projects. The Governor's Highway Safety Bureau is responsible for the distribution of these funds. In general, the priorities are impaired driving, occupant protection, traffic records, and speeding; but a wide variety of other programs are funded as well. These funds can be used for training, equipment, program delivery, overtime enforcement, and many other activities. Projects in support of SHSP implementation may be programmed into the annual Highway Safety Performance Plan.

■ Incentive/Transfer Programs

The following list of incentive grants and transfer programs in SAFETEA-LU, some of which were carried over from TEA-21. These are included as an "FYI" for MassHighway staff. Further analysis would be required to determine the exact situation in Massachusetts and the availability of transfer funds through the various programs.

Section 164: Minimum Penalties for Repeat Offenders for Driving While Intoxicated or Driving Under the Influence

Section 164 provides for a transfer penalty if states do not enact and enforce a law having certain minimum penalties for repeat intoxicated drivers. If a state does not have in effect or is not enforcing the law, 3 percent of the funds apportioned to the State for that fiscal year from the NHS, STP, and IM apportionments, shall be transferred to the State's 402 program. States may use the transferred funds for alcohol impaired driving countermeasures or for any activities eligible under the Highway Safety Improvement Program. The Commonwealth of Massachusetts is in compliance with Section 164 and will not have funds transferred beginning fiscal year 2007.

Section 405 and 406: Occupant Protection

Section 405 provides occupant protection incentive grants up to 100 percent of the FY 2003 Section 402 apportionment for occupant protection programs. In addition to the base Section 402 program which primarily provides resources for education and enforcement programs, new programs are announced in SAFETEA-LU. Section 406 provides large incentives for states that have passed a primary or standard safety belt law after 2002 or have achieved 85 percent safety belt use rates for two consecutive years beginning with 2006. Incentives also are provided to states that had the law in place prior to 2002. These funds may be used to support the implementation of the SHSP. *Note: Highway safety funds may **not** be used for **lobbying**, but they **can** be used for **educating** officials and the public.*

Section 2011: Child Safety and Child Booster Seat Incentive Grants

Section 2011 is a new grant program to improve booster seat use. To be eligible, a state must enact and enforce laws requiring booster seats, meeting the requirements of Anton's Law, the Federal requirement for child passenger restraint up to the age of eight.

Section 410: Alcohol Impaired Driving Countermeasure Incentive Grants

Section 410 provides funding for impaired driving programs. The programmatic eligibility criteria include high-visibility enforcement, prosecution and adjudication outreach, increased blood alcohol content (BAC) testing of drivers in fatal crashes, high-risk drivers programs, alcohol rehabilitation or driving under the influence (DUI) court programs, underage drinking prevention, administrative license suspension or revocation, and self-sustaining impaired driving prevention programs.

Section 2010: Motorcycle Safety Grants

Section 2010 is a new grant program to improve motorcycle safety. Eligibility criteria include statewide motorcycle training courses, motorcycle awareness programs, and impaired motorcycle driving programs.

■ Other Transportation Programs

Various programs under SAFETEA-LU provide funding to states and metropolitan areas for the construction and maintenance of transportation facilities. Safety improvements are an eligible use of funds under these programs.

National Highway System (NHS)

The NHS program funds construction and improvement of the National Highway System, which consists of the Interstate System and other nationally important routes.

Surface Transportation Program (STP)

The STP program funds construction, improvement, and other transportation-related projects on roads functionally classified as Interstates, Principal Arterials, Minor Arterials, and Major Collectors, but not on roads functionally classified as local or Minor Collectors (with some exceptions, including safety projects). STP funds are suballocated for Transportation Management Areas (metropolitan areas with a population greater than 200,000), Transportation Enhancement projects, and the Safety Program. Selection of STP projects is mandated to be a cooperative effort between state and local government entities. STP funding may be used for:

- Preliminary engineering;
- Right-of-way acquisition;
- Construction, reconstruction, rehabilitation, resurfacing, restoration, and operational improvements;
- Bicycle projects and pedestrian walkways; and
- Safety improvements for highways, transit, railway-highway grade crossings, and mitigation of hazards caused by wildlife.

Motor Carrier Safety Programs

Motor Carrier Safety Assistance Program (MCSAP) (Section 4101)

MCSAP is a Federal grant program, authorized by SAFETEA-LU, that provides financial assistance to States to reduce the number and severity of crashes and hazardous materials incidents involving commercial motor vehicles (CMV).

Federal Motor Carrier Safety Grants (Section 4106)

This program provides safety grants to states that provide "accurate, complete, and timely" safety data and "participate in a national motor carrier safety data correction system" (DataQs). States will include information on driving around commercial vehicles in

the manuals for noncommercial vehicle drivers, enforce registration regulations, conduct high-visibility traffic enforcement operations, enforce drug regulations, and enforce traffic regulations in conjunction with safety operations.

High-Priority Activities (Section 4107)

This program provides a set aside for state and local agencies to improve commercial vehicle safety, increase compliance, increase public awareness and education, demonstrate new technologies, and reduce the number and rate of accidents involving commercial motor vehicles.

Performance and Registration Information Systems Management (PRISM) Grant Programs (Section 4109)

Provides PRISM implementation grants to states. The PRISM program determines the fitness of the motor carrier prior to issuing license plates and encourages carriers to improve their safety performance.

Commercial Driver's License (CDL) Program Improvement Grants (Section 4124)

This discretionary grant program provides funding for improving implementation of the State's CDL program, including expenses for computer hardware and software, publications, testing, personnel, training, and quality control.

Commercial Vehicle Information Systems and Networks (CVISN) (Section 4126)

This program funds core CVISN activities up to $2.5 million per state and expanded CVISN activities up to $1 million per state. CVISN is the collection of state, Federal, and private sector information systems and communications networks that support safe commercial vehicle operations.

Safety Data Improvement Grants (Section 4128)

This program provides grants to states to improve accuracy, timeliness, and completeness of motor vehicle safety data. States must complete a comprehensive audit of its commercial vehicle safety data system within preceding two years. States must develop a plan that identifies and prioritizes its commercial vehicle safety data needs and goals.