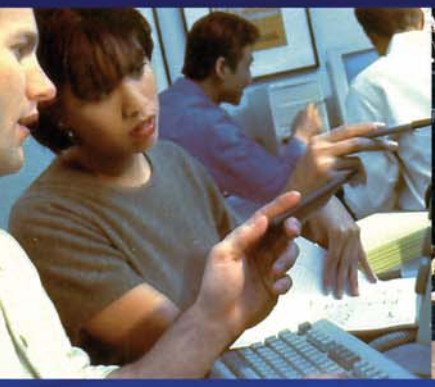
Research and Technology

5-Year Strategic Plan

Fiscal Years 2005 - 2009




U.S. Department of Transportation
Federal Motor Carrier Safety Administration

U.S. Department
of Transportation

**Federal Motor Carrier
Safety Administration**

Administrator

400 Seventh St., S.W.
Washington, D.C. 20590

Introduction to FMCSA
R&T 5-Year Strategic Plan (2005-2009)

Dear Reader:

I am pleased to present the Federal Motor Carrier Safety Administration's (FMCSA's) Research and Technology 5-Year Strategic Plan (2005-2009). This plan supports the Department of Transportation's (DOT's) safety mission and the Department's Research, Development and Technology Plan. It outlines a vision for delivering an appropriately targeted FMCSA research and technology program that will assist in fulfilling our primary mission to reduce crashes, injuries and fatalities involving large trucks and motorcoaches.

Development of this plan was guided by a Steering Committee comprised of representatives from DOT, States and industry. In addition, more than 40 members of the commercial motor vehicle community from industry, government and academia, participated in interviews that resulted in a number of major contributions to the overall plan.

We view this Strategic Plan as a living document and it will be periodically updated based on the Agency's future goals and priorities.

Annette M. Sandberg

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Executive Summary

The Federal Motor Carrier Safety Administration (FMCSA) Research and Technology 5-Year Strategic Plan:

- Establishes the strategic research and technology priorities that help the Agency and department achieve its goals;
- Provides a 5-year perspective and guidance on the research and technology projects FMCSA will pursue and the expected results;
- Helps maintain and improve the overall focus and coherence of research and technology direction;
- Improves the quality and relevance of FMCSA research and technology products;
- Helps to improve the visibility of agency research and technology program outcomes and their impact.

While much of this plan focuses on the Office of Research and Technology, the plan addresses research and technology projects planned and funded throughout the Agency. The plan timeframe is FY 2005-FY 2009 to coincide as closely as possible with the expected surface transportation reauthorization. The research and technology initiatives and projects developed and prioritized for funding over the next 5 years will be based on the following strategic objectives described in this plan:

- *Produce Safer Drivers:* Ensure that commercial drivers are physically qualified, trained to perform safely, and mentally alert;
- *Improve Safety of Commercial Motor Vehicles:* Improve truck and motorcoach performance through vehicle-based safety technologies and infrastructure;
- *Produce Safer Carriers:* Support efforts to improve carrier safety by applying safety management principles, compiling best management practices, communicating best practices, and supporting the Agency's enforcement of carrier-related regulations;
- *Advance Safety Through Information-Based Initiatives:* Improve the safety and productivity of commercial motor vehicle operations through the application of information systems and technologies;
- *Improve Security through Safety Initiatives:* Develop and implement in conjunction with the Transportation Security Administration (TSA) safety initiatives that also have security benefits for truck and motorcoach operations;
- *Enable and Motivate Internal Excellence:* Improve performance to serve the customers of the Office of Research and Technology more effectively and economically.

This Strategic Plan is intended to be a living document and it will adapt to evolving circumstances and priorities. It should be noted that the issues of data quality and improvement of SafeStat are a major focus for FMCSA. They are not included in this plan because they are being addressed by FMCSA organizations outside of research and technology.

This Strategic Plan is constructed to be wide-ranging and thought-provoking. It is not expected that every initiative identified herein will be fully started and completed within the next 5 years. The specific projects in which the Agency will engage are subject to budget availability and resource constraints. By partnering with other organizations, FMCSA intends to share resources and ideas in order to overcome some of those constraints. The Strategic Plan is a living document that provides a roadmap for future program development and will be periodically updated.

Acknowledgements

The Office of Research and Technology expresses its appreciation to the members of the Steering Committee who guided the development of this Strategic Plan:

Rebecca Brewster, American Transportation Research Institute

Lori Cohen, American Association of Motor Vehicle Administrators

Joseph Foster, Maryland Department of Transportation (retired)

Joel Hiatt, Southern Resource Center, FMCSA

Douglas McKelvey, Office of Research and Technology, FMCSA

K. Thirumalai, Research and Special Programs Administration, U.S. DOT

Martin Walker, Office of Research and Technology, FMCSA

Michael Zack, Division of Strategic Planning and Program Evaluation, FMCSA

Ex officio and support:

Mary Powers-King, Director, Office of Research and Technology, FMCSA

Gianluigi Caldiera, Consultant

Richard Weiland, Consultant

In addition, more than 40 members of the commercial motor vehicle community, from industry, government, and academia, participated in interviews that contributed significantly to the development of this Strategic Plan. Their contribution is also gratefully acknowledged.

1. Introduction

The Office of Research and Technology is one of many offices of the Federal Motor Carrier Safety Administration (FMCSA) helping to advance FMCSA's mission to reduce crashes, injuries, and fatalities involving large trucks and motorcoaches. FMCSA is dedicated to improving motorcoach and truck safety and to saving lives. The Agency's goal of reducing commercial motor vehicle (CMV)-related fatalities to 1.65 fatalities per 100 million commercial motor vehicle miles traveled (VMT) by 2008 is reflected in the highway safety goal in the Department of Transportation (DOT) Strategic Plan 2003-2008 (see Figure 1). Progress toward achieving the goal is tracked and reported in DOT's Performance and Accountability Report and FMCSA's integrated performance budget. The Agency's goal of a 1.65 fatality rate by 2008 corresponds with the Department's overall goal of a highway fatality rate of 1.0 fatalities per 100 million VMT. While the Agency and industry have made very significant progress in reducing commercial motor vehicle-related fatalities and the fatality rate for 5 consecutive years (1997-2002), much work remains to be done.

The Role of Research and Technology in FMCSA

The research and technology program performs two fundamental roles for FMCSA—one role contributes to the development of expertise, ideas, and tools to advance the state-of-the-art in commercial motor vehicle safety on the Nation's highways. The other role is an essential part of the development and evaluation of future agency regulations, programs, and methodologies. By collaborating with internal and external customers, the research and technology program balances these two roles to achieve the greatest public safety impact, weighing and considering aspects of feasibility, cost, and the time it will take to realize public benefits. Research activities

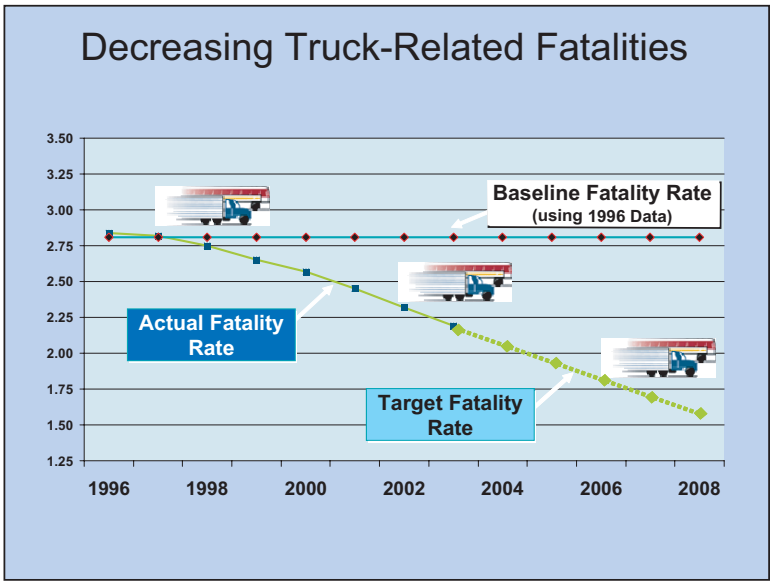

Figure 1 - Decreasing CMV-Related Fatalities

are conducted in several organizations of FMCSA. In this context, the Office of Research and Technology defines its portions of the research and technology activities as follows:

> **Research:** Systematic studies directed toward fuller scientific discovery, knowledge or understanding that will improve safety and security and reduce the number and severity of commercial motor vehicle crashes.
>
> **Technology:** Adopting, testing, and deploying innovative driver and vehicle best practices and technologies that will improve safety and security and reduce the number and severity of commercial motor vehicle crashes.

FMCSA undertakes a wide range of research and technology projects. Research and technology projects are performed by the Agency through contracts, cooperative agreements, and grants.

Structure of the Plan

- A *Vision Statement* that articulates a desired future state that effective research and technology can help to realize;
- A *Mission Statement* that describes the research and technology program's role in moving toward this vision of the future;
- A set of *Guiding Principles* that describes the way research and technology adoption, testing, and deployment are conducted;
- A series of *Strategic Objectives* whose achievement is key to fulfilling the research and technology program's mission and realizing its vision.

Chapter 2 details the series of strategic objectives, characterizing the kinds of challenges that the FMCSA research and technology program is addressing, the rationale for addressing them, and the kinds of strategies and activities that the Agency expects to undertake over the next 5 years to address these challenges.

Chapter 3 provides a logic model of the research and technology program that links the inputs and resources of the program with its results in the form of activity outputs, outcomes, and program impact. The logic model is based on the strategic objectives presented in Chapter 2.

Chapter 4 outlines performance metrics that are being used to establish baselines and goals for the research and technology program as well as to evaluate the entire program. The metrics are based on the logic model and are organized by output, outcome, and impact metrics.

Appendix A outlines the methodology that FMCSA's research and technology program uses to define, prioritize, and select research and technology projects.

This Strategic Plan is intended to be a living document and it will adapt to evolving circumstances and priorities. It will be periodically reviewed internally and by outside stakeholders, and updated to keep current with FMCSA and U.S. DOT directions and the needs of FMCSA stakeholders and customers.

Vision

Vision of U.S. DOT:

Safer, Simpler, Smarter Transportation Solutions

Vision of FMCSA:

FMCSA is the leader in truck and motorcoach safety, innovation, and performance.

Vision of FMCSA Research and Technology:

A research and technology program that leads to the reduction of commercial motor vehicle-related crashes, fatalities, injuries, and losses, and enhances operational efficiency.

By delivering an appropriately oriented research and technology program, the Office of Research and Technology will help to maintain FMCSA leadership in truck and motorcoach safety, innovation, and performance and will help to

spearhead safer, simpler, and smarter transportation solutions.

Mission Statement

U.S. DOT Mission Statement:

The development of transportation policies and programs that contribute to providing fast, safe, efficient, and convenient transportation at the lowest cost.

FMCSA Mission Statement:

To save lives and reduce injuries by preventing truck and motorcoach crashes.

Mission of FMCSA's Office of Research and Technology:

To reduce the number and severity of CMV crashes and enhance the efficiency of CMV operations by:

- *Conducting systematic studies directed toward fuller scientific discovery, knowledge, or understanding;*
- *Adopting, testing, and deploying innovative driver, carrier, vehicle, and roadside best practices and technologies.*

By expanding the knowledge and portfolio of deployable technology, the research and technology program will help FMCSA reduce crashes, injuries, and fatalities and will deliver a program that contributes to a safe and secure commercial transportation system.

Guiding Principles

FMCSA's research and technology program has adopted a set of Guiding Principles[1] that characterize its work, relationships, and intended results. The purpose of these guiding principles is to assure that research and technology personnel understand who their customers and stakeholders are, the scope of their activities, and the relationship between short and long term activities.

Research and Technology Program Guiding Principles

- **Our research and technology program supports the achievement of agency and departmental goals.** We plan and prioritize our research and technology projects from an enterprise perspective, aligning and basing our research and technology investment with the achievement of FMCSA and DOT strategic objectives;
- **Our research and technology program is customer-focused and our customers are internal and external.** We conduct research and deploy technology to meet the needs of our stakeholders and customers, including other offices of FMCSA, other modal administrations at U.S. DOT, State transportation and law enforcement agencies, motor carriers, and commercial drivers;
- **We primarily perform applied research.** Most of the research we do is intended to lead to short (1-2 years) and medium (2-3 years) term deployment. For the most part, we do not conduct fundamental or basic research;
- **We do the research; our customers implement the results.** Consistent with our principle of customer-focused research, the purpose of our research is to provide expertise, ideas, and tools which our stakeholders and customers can use to advance their objectives of commercial motor vehicle safety and productivity;
- **Establishing effective partnerships is key to success.** We recognize that we can produce more effective, more efficient, and more useful results by working cooperatively with our customers and stakeholders who share our goals and interests;
- **Some of our research and technology projects should be long term, even if the risks are higher and the payoffs less immediately obvious.** We recognize that our ability to produce high-quality, near-term and medium term results requires long term vision and that devoting a portion of our resources to long term, higher risk research helps keep us focused on long term objectives.

[1] The Office of Research and Technology expresses its thanks to Mr. Greg Larson of the California Department of Transportation for permission to adapt these Guiding Principles from its work.

Strategic Objectives

Strategic Objectives are broad statements of what an organization intends to achieve in fulfilling its mission and realizing its vision.

U.S. DOT Strategic Objectives[2]

- *Safety:* Enhance public health and safety by working toward the elimination of transportation-related deaths and injuries;
- *Mobility:* Advance accessible, efficient, intermodal transportation for the movement of people and goods;
- *Global Connectivity:* Facilitate a more efficient domestic and global transportation system that enables economic growth and development;
- *Environmental Stewardship:* Promote transportation solutions that enhance communities and protect the natural and built environment;
- *Security:* Balance homeland and national security transportation requirements with the mobility needs of the Nation for personal travel and commerce;
- *Organizational Excellence:* Advance the Department's ability to manage for results and achieve the goals of the President's Management Agenda.

FMCSA Strategic Objectives

- *CMV Safety:* Save lives and reduce injuries by preventing truck and motorcoach crashes;
- *Hazmat Safety:* Reduce hazardous materials incidents involving trucks;
- *Hazmat Security:* Reduce the vulnerability of commercial motor vehicle transportation to threats of violence;
- *Global Connectivity:* Facilitate a more efficient domestic and global transportation system that enables economic growth and development;
- *CMV Productivity:* Promote efficient and economical motor carrier operations to sustain mobility and economic growth;
- *Organizational Excellence:* Support the President's Management Agenda.

FMCSA Research and Technology Strategic Objectives

- *Produce Safer Drivers:* Research techniques that help to ensure commercial drivers are physically qualified, trained to perform safely, and mentally alert;
- *Improve Safety of Commercial Motor Vehicles:* Improve truck and motorcoach performance through vehicle-based safety technologies;
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- *Enable and Motivate Internal Excellence:* Improve performance to serve the customers and stakeholders of the Office of Research and Technology more effectively and economically.

Data quality and the improvement of SafeStat are a major focus for FMCSA, but they are not included in this plan because they are being addressed by FMCSA organizations, outside of research and technology.

This Strategic Plan is constructed to be wide-ranging and thought-provoking. It is not expected that every initiative identified herein will be fully started and completed within the next 5 years. The specific projects in which the Agency will engage are subject to budget availability and resource constraints. By partnering with other organizations, FMCSA intends to share resources and ideas in order to overcome some of those constraints. The Strategic Plan is a living document that provides a roadmap for future program development, and will be periodically updated.

The discussion of initiatives to achieve the research and technology program's strategic objectives are the main body of this Strategic Plan.

[2] DOT Strategic Plan 2003-2008 (available at http://www.dot.gov/stratplan2008/strategic_plan.htm).

2. Strategic Objectives

This chapter contains a series of strategic objectives that characterize the research and technology challenges that the Agency intends to address and the kinds of strategies and activities that the Agency expects to undertake in FY 2005-FY 2009 to address these challenges.

Each strategic objective is described briefly, including the identification of past and current research and technology projects linking to and supporting the objective. Each objective identifies the challenges, describes why it is important to address the challenge, and suggests one or more action-oriented strategies and activities to mitigate the challenge. The document indicates if each strategy is addressed in the short (FY 2004-FY 2005), medium (FY 2006-FY 2007), or long (FY 2008-FY 2009) term. This indication of priority shows the time period of focus. It is in the nature of research and technology, however, to be evolutionary.

The strategic objectives of the research and technology program link and contribute to the FMCSA strategic objectives, and ultimately to the U.S. DOT performance goals and national objectives. Figure 2 illustrates the linkage of FMCSA research and technology program objectives to agency and departmental goals and objectives.

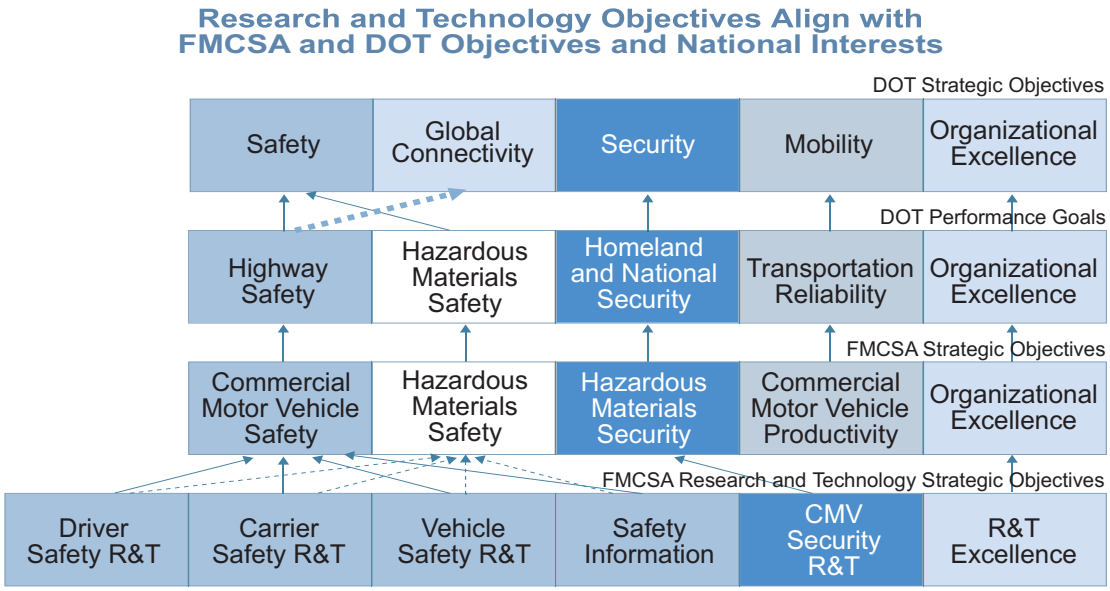

Figure 2 - Alignment of Strategic Objectives

Produce Safer Drivers

The statistics indicate that human error is the single greatest cause of crashes that involve trucks and motorcoaches.[3] Data and analyses indicate that improper actions on the part of non-commercial drivers lead to the majority of crashes involving commercial motor vehicles. There is a growing body of research that supports this statement. Therefore, the single greatest opportunity for improving CMV safety performance is in improving the performance of commercial drivers in the vicinity of non-commercial vehicles and of non-commercial drivers when they operate in the vicinity of a truck or motorcoach. It is also important to understand the differences between truck and motorcoach drivers, and the different kinds of stresses affecting them.

The principal goals of Driver Safety Research and Technology are to: (1) improve the safety behavior of non-commercial drivers in the vicinity of trucks and motorcoaches and ensure that commercial drivers are trained to drive defensively in the vicinity of non-commercial motor vehicles, and (2) ensure that commercial drivers are physically qualified, trained to perform safely, and mentally alert.[4]

The strategies and activities under this objective (see Table 1) focus on developing a better understanding of commercial driver behavior as it relates to safety, including safety belt use, and on issues related to general fitness to drive. These include alertness, health, training, and qualification. There are also strategies and activities on the enforcement of commercial credentials and driving rules and State practices for handling information about commercial drivers. The final strategy addresses the interaction of non-commercial drivers with commercial motor vehicles.

Current and near-term activities in this area include:

- Commercial Driver Behavior
  - Expand heavy vehicle naturalistic driving study;
  - Define driving performance measures and behaviors using the National Advanced Driving Simulator;
  - Conduct safety risk feasibility study;
  - Validate and assess implications of truck simulators for CMV driving training.
- Driver Alertness and Attentiveness
  - Conduct a review of the CMV driver fatigue program;
  - Test and determine the safety benefits of delivering dynamic parking availability information (and other information) to commercial motor vehicle drivers;
  - Conduct a large-scale field test of a drowsy driver warning system.
- Driver Health and Wellness
  - Assess the level of safety of the medical exemption program;
  - Conduct an evaluation of the current medical certification process for screening CMV drivers;
  - Develop a cost and benefit model for exercise treadmill testing in relationship to the safety of CMV operation;
  - Develop recommendations regarding kidney disease that can be used by medical examiners when screening CMV drivers.
- Driver Training and Qualifications
  - Assess driver and management training needs for small passenger vans.
- Commercial Driver Credentials and Enforcement
  - Conduct the driver safety history measure and enforcement project to assess the safety outcome of using a new commercial driver-based history measure;
  - Develop and pilot test an anti-fraud system for commercial driver's license testing.
- State Practices Regarding Commercial Drivers
  - Assess State-based systems that notify carriers of driver convictions.

[3] According to the University of Michigan Transportation Research Institute, less than 4 percent of fatal crashes involving CMVs result from causes other than driver failure, most often the failure of non-commercial drivers. See http://www.umich.edu/~urecord/9900/Nov08_99/18.htm.

[4] This goal and other goals mentioned later in this Strategic Plan are drawn from the Office of Research and Technology's Fiscal Year 2005 Budget Submission.

Table 1 - Produce Safer Drivers

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
The variables that affect commercial driver behavior are not well known.	Developing programs to improve commercial driver safety behavior is difficult. Programs tend to be one-size-fits-all. Commercial driver working conditions and stressful situations are different for truck and motorcoach drivers.	**Commercial Driver Behavior** Develop a comprehensive understanding of CMV driver behavior and the correlation between driver behavior and safety, including: • Frequent job changes; • Risk taking; • Aggressive driving; • Substance abuse; • Credit history.	Short Term
		Develop a better understanding of the causes of unsafe behavior, so the causes can be addressed along with the behaviors themselves.	Long Term
		Assess the potential impact of incentives on producing safer behavior among commercial drivers.	Long Term
A small fraction of drivers account for a large number of unsafe acts, but it has been difficult to identify unsafe drivers in order to correct the problem.	A small number of unsafe drivers produce an unnecessarily large number of crashes.	Identify characteristics of "safe" and "unsafe" drivers.	Short Term
Commercial drivers and other CMV occupants often do not use safety belts.	There are more fatalities among CMV drivers and occupants.	Analyze use and non-use of safety belts by CMV drivers and occupants, and evaluate strategies and activities to increase usage.	Short Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 1 - Produce Safer Drivers

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
Driver fatigue is one of the major causes of commercial motor vehicle crashes, but fatigue causes are not well understood.	Without addressing all of the influences on a driver's sleep time, fatigue mitigation will remain an elusive goal. Hours-of-Service (HOS) rules and driver-oriented programs can continue to be improved.	**Driver Alertness and Attentiveness** Investigate, via simulator and field studies, the factors affecting fatigue and the recovery time required from various work shifts.	Short Term
		Develop and help implement a comprehensive fatigue management program including sleep disorder screening and training for carrier and shippers, and drivers and their families. Partner with industry associations to publicize and disseminate the program.	Short Term
		Identify and evaluate drivers who show high levels of fatigue to determine root causes such as lifestyle, sleep disorders, and work schedules. Develop programs to remediate these drivers, or get them off the road.	Medium Term
In-vehicle technology intended to promote safety could distract the driver or produce driver dependence or complacency.	Technology intended to produce safety benefits could have counterproductive results.	Participate with the National Highway Traffic Safety Administration (NHTSA) and Federal Highway Administration (FHWA) in explorations of commercial driver focus/ distraction issues.	Short Term
The drowsy driver warning system currently being tested by NHTSA and the Intelligent Vehicle Initiative (IVI) program has limitations.	Only a relatively small fraction of affected drivers can be assisted by the technology.	Work with NHTSA and the Intelligent Transportation Systems (ITS) Joint Program Office (JPO) program to expand the investigation to other measures and technologies for drowsy driver detection/warning.	Medium Term
It is not understood how well truck ergonomics affect safety, particularly safe driving.	Poor ergonomics can impact the ability to drive alertly and safely and unnecessary crashes may result.	Work with NHTSA to study the effects of ergonomics on commercial driver performance and safety, such as: • Air conditioning; • Air ride and other driver seating designs; • Life assists; • Sleeper-berth design; • Configuration and characteristics of displays and controls; • Driver aids such as steering assist, cruise control, and automatic transmission.	Medium Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 1 - Produce Safer Drivers

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
Not enough is known about the relationship of a variety of health issues to safe commercial driver performance.	It is possible that some safe drivers are being unnecessarily disqualified and that some unsafe drivers are being allowed to drive.	**Driver Health and Wellness** Identify and evaluate information that can help guide drivers to address lifestyle and behavior factors that are under their control that make a difference in safety.	Short Term
		Assess new approaches to roadside drug testing using newer and faster diagnostic tools.	Short Term
		With industry and association partners, study the general issue of driver health and qualification, including: • The factors that have consequences for driver health (medical conditions, lifestyle issues, etc.); • The actual safety consequences of various health issues; • The safety impacts of an aging commercial driver population; • The role of the truckstop in improving and maintaining driver health and wellness.	Medium and Long Term
		Study the feasibility and impact of mechanisms to determine fitness to drive at the start of each trip or driving session.	Medium and Long Term
		Investigate the use of a medical registry and its potential impact on safety, such as: • Assess the effect of the registry on reducing crashes due to medical conditions; • Study the potential role of various kinds of medical practitioners.	Medium and Long Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 1 - Produce Safer Drivers

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
The impact of entry level driver training and other safety programs on long term safety performance is not well understood.	Training may have a significant impact on CMV driver performance.	**Driver Training and Qualification** Analyze the impact on safety of more effective driver training and certification. This includes: • Analyze the criteria for getting a Commercial Driver's License (CDL) and the safety impact of adding new criteria; • Investigate innovative mechanisms to ensure qualification and readiness of new drivers; • Assess the impact on safety of ongoing training requirements for experienced operators; • Evaluate the effectiveness of simulators for teaching safe driving skills for both routine and unusual (including emergency) driving conditions; • Evaluate the effectiveness of simulators as an aid to CDL skills testing; • Assess the safety impact of periodic re-testing for all drivers and the appropriate intervals for doing the re-testing; • Identify the areas where training might be valuable and evaluate the cost and benefit of developing and offering such training, including: - Mechanisms for informing drivers more about new truck technology; - The potential impact of specialized training (e.g., the safe operation of double/triple trailers); - The requirements and impact of developing better defensive driving techniques and training;	Medium and Long Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 1 - Produce Safer Drivers

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
		Driver Training and Qualification, continued - The opportunity and impact of training for drivers of limited English proficiency; • Identify ways to make training more effective and persuasive; • Evaluate the cost and benefit of creating carrier and driver incentives for better ongoing driver training; • Study the feasibility of using the CDL program for data mining without invading driver privacy, including the long term safety impact of medications and/or training; • Develop CMV driver performance qualification standards.	

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 1 - Produce Safer Drivers

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
It is difficult for traffic officers to get real-time information to check CDLs and driving records of commercial drivers.	Commercial driver violations may go uncited and safety is potentially impacted.	**Commercial Driver Credentials and Enforcement** Work with State partners and associations to study mechanisms to detect and eliminate CDLs that are fraudulent or obtained fraudulently.	Short Term
		Develop tools for better enforcement of HOS rules. Develop tools to help drivers know when they are about to exceed HOS limits.	Short and Medium Term
		Develop tools and information sources to streamline the process of checking commercial drivers, including an automated field process for checking CDLs and driving records.	Medium Term
		Investigate ways to provide better safety data to State and industry partners on unsafe drivers.	Medium Term
		Identify and assess mechanisms for technology-based speed enforcement.	Long Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 1 - Produce Safer Drivers

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
State practices regarding commercial drivers are inconsistent and interstate and interagency information flows are often poor.	Current and accurate information on commercial drivers is not always available, making enforcement more difficult and less certain.	**State Practices Regarding Commercial Drivers** Identify and evaluate mechanisms for: • Improving the communication among Departments of Motor Vehicles (DMV) on CDL information and driver records; • Improving the communication between courts and DMV on conviction information; • Expanding and encouraging Pull Notices (in which States automatically report convictions to carriers), including better reciprocity among States; • Simplifying conviction codes and making them consistent across States to facilitate interstate reporting; • Helping States to create decision support models and systems to enhance their ability to identify and address problem drivers.	Short and Medium Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 1 - Produce Safer Drivers

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
Non-commercial driver behavior in the proximity of CMVs is not well understood.	Many commercial motor vehicle crashes result from poor driving by the driver of a non-commercial motor vehicle, but it is difficult to prescribe remedies.	**Non-Commercial Driver Behavior and Education** Work with NHTSA to develop a comprehensive understanding of motorist behavior as it relates to safety. FMCSA's portion would focus on motorist behavior around CMVs.	Medium Term
		Study the relationship between better non-commercial driver education and car/truck safety.	Medium Term
		Identify mechanisms to heighten motorist awareness of the importance of safer driving practices and the consequences of unsafe driving in the vicinity of large trucks. Conduct and evaluate pilot tests of innovative methods to increase such awareness.	Medium Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Improve Safety of Commercial Motor Vehicles

Continued diligence in this area is required to maintain commercial motor vehicle safety. The principal goal of this strategic objective is to improve truck and motorcoach safety through vehicle-based research, along with the deployment of technologies, including initiatives focused on: (1) testing, evaluating, and deploying advanced intelligent vehicle safety technologies and other onboard safety technologies, and (2) developing new data and information to improve occupant protection and overall vehicle safety.

The strategies and activities under this objective (see Table 2) support NHTSA by providing better knowledge about greater automobile/truck compatibility (e.g., bumpers at consistent heights for safer interactions), safer trucks and motorcoaches in general, and exploring the ways that new technology can improve safety, including strategies and activities for the wider and more rapid deployment of safety-enhancing technology. These strategies also help FHWA evaluate the impact of various lane configurations on CMV crashes, including dedicated CMV lanes and work zone configurations.

Current and near term activities in this area include:

- Impact of new technologies
  - Test and deploy safety technologies developed by FMCSA's research and technology program and the U.S. DOT Intelligent Vehicle Initiative (IVI), including the roll advisor and control system for preventing rollover crashes, a rear-end collision avoidance system, electronically controlled brakes, a lane tracking and lane departure warning system, an in-cab advisory system to alert drivers to potentially hazardous situations, and an automatic crash notification system;
  - Test and evaluate advanced side and rearward visibility systems;
  - Develop functional specifications for crash event data recorders (with NHTSA);
  - Develop designs and concepts for low-cost electronic onboard recorders to provide accurate records.
- Vehicle design
  - Examine different configurations of cargo tank motor vehicles and rollover protection;
  - Validate findings of FHWA's vehicle dynamics study of cargo tank rollover;
  - Study and identify methods to improve lateral stability of cargo tanks;
  - Conduct hazardous materials cargo tank damage tolerance analysis;
  - Conduct compliance testing on large truck air brakes;
  - Test and evaluate enhanced rear signaling for commercial motor vehicles to prevent rear-end crashes;
  - Develop operational requirements for hydrogen fuel systems for commercial motor vehicles;
  - Participate in the U.S. DOT Hydrogen Fuels Working Group;
  - Participate in the 21st Century Truck partnership to improve fuel efficiency, reduce emissions, enhance safety, and reduce commercial motor vehicle operating costs.

Table 2 - Improve Safety of Commercial Motor Vehicles

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
Improve vehicle design with respect to safety.	Design issues can result in higher fatalities or greater injuries.	**Vehicle Design** Work with other U.S. DOT modes to identify and assess mechanisms to increase truck conspicuity, including both passive mechanisms (better reflectors) and active mechanisms (lights that flash, horns that sound if a car is approaching too rapidly from behind).	Short Term
		Work with NHTSA to investigate more effective safety belt designs to increase commercial driver use.	Short Term
		Support NHTSA in exploring the impact of better truck/car compatibility.	Medium Term
		Work with NHTSA to address motorcoach passenger safety issues.	Medium Term
Truck tires that come apart and truck wheel spray on wet pavement are hazards to other vehicles.	Poor tire integrity and excessive wheel spray can cause crashes.	Work with NHTSA to evaluate the impact of revising truck tire standards to improve their integrity.	Medium Term
		Identify and evaluate better ways to deal with spray and to create incentives for their use.	Medium Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 2 - Improve Safety of Commercial Motor Vehicles

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
The potential impact of new technologies is not well understood.	Lack of understanding of new technologies delays deployment and potentially impacts safety.	**Impact of New Technology** Evaluate the safety impact of new technologies, such as: • Onboard data recorders; • Use of transponders in trucks; • Other mechanisms for electronic vehicle identification numbers or electronic license plates; • Crash mitigation technology (in cooperation with FHWA and NHTSA); • Collision warning and avoidance systems (in cooperation with FHWA and NHTSA); • Road/lane departure warning and avoidance systems (in cooperation with FHWA and NHTSA); • Video-based virtual mirrors; • Stability and traction enhancement products; • Drowsy driver detection and warning systems.	Short and Medium Term
		Study: • Feasibility, cost, and benefit of creating incentives to get newer, safer technology into the fleet more rapidly and retire older, less safe trucks; • Opportunities for technology transfer from automobiles, such as night vision systems, run-flat tires, side airbag curtains, etc.	Medium Term
		Develop and implement deployment strategies and monitor the deployment of onboard safety systems that have been tested and shown to improve safety.	Medium Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 2 - Improve Safety of Commercial Motor Vehicles

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
On the highway, trucks are generally restricted to the rightmost lanes, although these lanes present the greatest exposure to exiting and entering vehicles.	Current lane restrictions may contribute to crashes.	**Impact of Physical Road Configuration** Support FHWA in exploring the impact of various commercial motor vehicle lane configurations on crashes. Similarly, assess the impact of dedicated truck lanes on crash frequency, including entering and exiting these lanes.	Long Term
Roads are primarily designed for car traffic and for uses of smaller CMVs than are in use today.	Road designs that are poor fits for CMVs can cause crashes, particularly rollovers. A disproportionate number of crashes near work zones involve CMVs.	Work collaboratively with FHWA to identify problem designs and recommend remedies ranging from advisory signs to road reconstruction and study the relationship between various roadway configurations including work zones and commercial motor vehicle crashes.	Long Term
		Identify and assess opportunities to improve CMV safety at traffic intersections, grade crossings, entrance/exit ramps, and work zones.	Medium and Long Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Produce Safer Carriers

Carriers are organizations that employ or lease drivers, set their schedules, often provide them with vehicles to drive, and generally set the tone for the kind of driving behavior, culture, and safety performance that is expected. Many safe, conscientious carriers want to see an expanded program of carrier compliance checking, so that all carriers are held to the appropriate standard and operate on a level playing field.

The principal goals of Carrier Safety Research and Technology are to: (1) support the Agency's enforcement of carrier-related Federal Motor Carrier Safety Regulations, and (2) support efforts to improve carrier safety by applying principles of safety management science from other industries, by compiling best management practices from both the motor carrier and these other industries, and by communicating these best practices to motor carrier managers.

The strategies and activities under this objective (see Table 3) focus on improving carrier compliance reviews and truck inspections, enabling better performance practices for carriers and shippers, continuing the development and deployment of Commercial Vehicle Information Systems and Networks (CVISN), and supporting carrier enforcement.

Current and near term activities in this area include:

- Improve truck inspections
  - Test and demonstrate wireless driver and vehicle roadside safety inspections;
  - Develop and validate portable digital assistant (PDA) based technology to enhance the roadside inspection process;
  - Assess the feasibility of establishing a real-world test laboratory at a weigh station.
- Enable better information and practices for carriers and shippers
  - Initiate research on incentive strategies that promote the use of proven safety technologies and concepts.
- Expand CVISN
  - Conduct a national CVISN Deployment Forum to share lessons learned among all stakeholders;
  - Provide assistance to the States to expand their CVISN deployment programs;
  - Explore electronic screening using transponders to focus on high-risk carriers.
- Support carrier enforcement
  - Develop a hazardous materials shipper prioritization program to help focus limited field resources on shippers with performance problems and hazardous materials posing the highest risks.

Table 3 - Produce Safer Carriers

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
The carrier compliance review process is slower than desired and based on manual processing.	More carriers could get reviewed each year and new entrants could be processed more quickly. Some motorcoach and truck companies may be operating without active operating authority.	**Improve Carrier Compliance Review** Develop tools, technology, and alternate approaches to streamline and improve the carrier compliance review process, with emphasis on streamlining processes for new entrant review: • Automate manual processes and assess the impact of introducing innovative review methods; • Identify and assess patterns that can help conduct more effective, but less exhaustive, reviews; • Assess tools for carrier self-evaluation, both for their own improvement process and to provide upfront data to accelerate reviews; • Identify and assess the impact of other certification programs like "Partners in Compliance" in Alberta, and the "Trusted Carrier Program" in Oregon.	Short, Medium, and Long Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 3 - Produce Safer Carriers

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
More trucks could be inspected.	Trucks that should get taken Out-of-Service (OOS) may not get inspected.	**Improve Truck Inspections** Identify and assess ways to improve the number of inspections and the quality of truck inspection data.	Short Term
Trucks may be able to bypass inspection points.	Trucks that are more likely to fail inspections may be able to avoid them.	Complete the deployment of CVISN core capabilities in all States.	Short, Medium, and Long Term
Truck inspections could take less time.	Fewer trucks are inspected than desired.	Evaluate virtual and remote weigh station technologies.	Medium Term
		Identify and assess opportunities for technology transfer, including the Bureau of Customs and Border Protection's use of Radio Frequency Identification technology for checking containers.	Short Term
		Support the review and update of regulations and standards for truck identification so that trucks can be more readily selected upstream for inspection and more quickly processed at inspection stations. This includes: • Assess the impact of requiring standard size, font, placement, etc. for DOT numbers to facilitate machine reading; • Assess the impact of electronic vehicle identification, including the possibility of having the mechanism built into next generation trucks;	Short and Medium term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 3 - Produce Safer Carriers

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
		Improve Truck Inspections, continued • Evaluate and develop tools and technologies to streamline the truck inspection process; • Make more complete information on motor carriers and vehicles readily available at inspection sites; • Develop better technology for inspectors, such as wireless portable devices which will provide information to inspectors, guide the inspection, look up specifications, and serve as a data entry device; • Work with NHTSA and truck manufacturers to develop vehicle diagnostics and sensors relevant to OOS criteria.	
		Identify, evaluate, and develop relatively inexpensive portable/virtual inspection weigh stations that would not be tied to particular locations.	Medium Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 3 - Produce Safer Carriers

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
Carriers do not have enough timely information about the drivers they hire, especially substance abuse history.	Responsible carriers will sometimes unintentionally hire drivers with bad records.	**Enable Better Information and Practices for Carriers and Shippers** Assess the impact of establishing a commercial driver database accessible to carriers that includes tickets, crashes, worker compensation claims, certifications, etc.	Short Term
		Work with associations and States to streamline the process of getting conviction and other information into driver records and to carriers.	Short Term
The impact of many carrier practices (compensation practices, vehicle age, in-cab environment/ergonomics, etc.) on safety is not well understood.	It is difficult to provide effective guidance to carriers on adopting practices that could have positive benefits on safety, including insights on the cost tradeoffs.	Identify a relevant collection of carrier best practices and study the relationship between these practices and the safety results.	Short Term
Carriers are not always aware of vehicle technology that could improve safety. Safety systems may be expensive.	Safety-enhancing technology is not marketed or deployed as soon or as widely as it could be.	Explore mechanisms for better dissemination of information about new truck technology and its costs and benefits to the industry.	Short and Medium Term
		Assess the impact of creating carrier incentives for adopting safety technology.	Medium Term
Carriers have insufficient information on traffic conditions, road conditions, weather, work zones, etc.	Efficiency is impacted, potentially resulting in safety issues.	Assess the impact of including CVO-specific information and features in 511 projects.	Medium Term
The relationship between shipping practices and safety is not well understood.	The absence of this understanding and of best practices may have an adverse affect on safety.	Assess the impact of various shipping practices and patterns, such as broker loads, on safety. Develop better tools for shippers to help them work within the rules and move goods efficiently and safely. Assess the impact of just-in-time delivery and other shipper constraints on congestion and crashes.	Long Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 3 - Produce Safer Carriers

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
The truck inspection process in most parts of the U.S. is still manual.	The inspection process can be slow, reducing the number of trucks that can be inspected. Resources need to be focused on the carriers and trucks most likely to be a problem.	**Expand CVISN** Continue to deploy CVISN in the States: • Quantify the benefits in cost and safety that CVISN provides, and obtain outreach support to promote CVISN. Assess the impact, cost, and benefit of universal CVISN deployment; • Study with stakeholders the business case for the additional functionality that CVISN could provide (such as security issues, oversize/overweight permitting, heavy vehicle use tax (HVUT), automated checks on driver qualification, fitness, and HOS, checks for operating authority and insurance status, etc.); • Leverage support for CVISN from State and association partners; • Identify and assess mechanisms to reduce carrier (and State) paperwork to facilitate compliance; • Assess ways to help States deploy CVISN via best practices and lessons learned by States that have already deployed CVISN.	Short and Medium Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 3 - Produce Safer Carriers

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
The general population of traffic officers does not have a good base of CMV knowledge and does not have good tools for on-the-spot inspections.	Commercial motor vehicle violations may go uncited and safety is potentially impacted.	**Support Carrier Enforcement** Enable more inspections on more roads: • Provide the general traffic officer population with a better base level of CMV knowledge; • Develop tools and information sources to streamline the process of checking commercial trucks; • Develop tools to migrate CMV-specific knowledge to the general officer population; • Develop tools to capture more detail on the information gathered at roadside inspections and better classify problems found.	Short and Medium Term
State practices for managing information about commercial motor vehicles are inconsistent, and interstate and interagency information flows are often poor.	Current, accurate information on vehicles is not always available, making enforcement more difficult and less certain.	Identify and assess: • Mechanisms to expand and encourage Pull Notices (in which States automatically report convictions to carriers), including better reciprocity among States; • Tools to help States create decision support models and systems to enhance commercial motor vehicle safety; • The feasibility and impact of tracking and reporting intrastate crashes; • With State partners and associations, opportunities to improve the interoperability and functionality of carrier identification and certification systems.	Short Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Advance Safety through Information-Based Initiatives

The strategies and activities under this objective (see Table 4) focus on conducting research that potentially helps to support agency rulemaking and enforcement activities. This can be done in several ways. The current crash causation study can be used to highlight areas for additional investigation. Also, the overall business, economic, and technical trends in the commercial motor vehicle industry can be investigated to understand and respond to their impact on safety. The feasibility and utility of using multiple measures as a basis for calculating crash statistics and setting safety goals can be explored as well. Finally, commercial motor vehicle interests can be incorporated in the Vehicle Infrastructure Integration (VII) initiative being led by the American Association of State Highway and Transportation Officials (AASHTO), the vehicle manufacturers, and U.S. DOT.

Current and near term activities in this area include:

- Build on the crash causation study
  - Complete the current Large Truck Crash Causation study (with NHTSA);
- Alternate approaches to measurement
  - Develop a computer model for the assessment of new technologies and concepts that reduces fatalities and injuries from CMV crashes and supports efficient CMV operations;
- Explore industry trends
  - Demonstrate and evaluate new, promising concepts and technologies that reduce the number of CMV fatalities and injuries.

Table 4 - Advance Safety Through Information-Based Initiatives

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
Trucks and infrastructure exist as isolated systems in some cases.	Crashes occur that could be prevented by better cooperation between vehicles and the infrastructure.	**Vehicle Infrastructure Integration** Assess the opportunities and challenges of communications- and ITS-enabled vehicle infrastructure integration (VII).	Short and Medium Term
Not enough is known about the relative impact and effectiveness of safety regulations.	Deployment of enforcement resources by Federal and State authorities may not be optimal.	**Support Regulatory and Enforcement Excellence** Support regulatory development, evaluation, and enforcement.	Medium Term
Crash causation needs to be better understood. The results of the crash causation study currently underway will provide a rich collection of insights not previously available. However, more can be done to understand why crashes occur and what can be done to prevent them.	Without an in-depth understanding of crash causation, it is difficult to focus resources appropriately.	**Build on Crash Causation Study** Use the current crash causation study and other data to provide NHTSA with information on areas where additional investigation needs to be done: • Identify the questions and problems that need to be addressed and the mechanisms that are needed for developing the answers; • Evaluate opportunities to fold insurance industry claims data into crash analysis research; • Study the relationship between crashes/fatalities and carrier characteristics (size, age, cargo and business type, location, etc.); • Study the relationship between crashes/fatalities and driver characteristics (age, experience, health, etc.)	Medium Term
		Work with FHWA to investigate the reasons for the disproportionate number of truck crashes in and near work zones.	Medium Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 4 - Advance Safety Through Information-Based Initiatives

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
The CMV industry is going through significant changes, but the direction, magnitude, and consequences of these changes (particularly for safety) are not well understood.	A better understanding is needed to be able to focus resources, anticipate problems, develop projects proactively, and take early action to address issues before they become serious problems.	**Study Industry Trends** Study industry trends and transformations, potentially in cooperation with other public and private organizations: • Study industry/market/economic/demographic trends related to trucking and how they relate to safety (this includes increases in number of trucks, aging infrastructure, driver population, and technology challenges); • Assess carrier perceptions of the financial, business, and legal tradeoffs between adherence to regulations and the acquisition of new truck safety technology; • Evaluate the need for and impact of indemnifying new safety technologies promoted by FMCSA to mitigate liability concerns associated with early adoption; • Assess the impact of parking availability on congestion and crashes; • Assess the impact of the closure of inspection and weigh stations at ports of entry; • Develop a better understanding of the motorcoach industry, including: demographics, crash/fatality causation, and gaps in the current safety system.	Medium Term
VMT is the traditional yardstick for measuring CMV safety performance and the impact and utility of changing the yardstick from VMT to other measures is not understood.	Safety and regulatory programs based on VMT may not be as well-focused as desired on the issues most relevant to commercial vehicle safety.	**Alternate Approaches to Measurement** Study the feasibility and impact of using alternative (or additional) measures for crash statistics and setting safety goals.	Long Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Improve Security through Safety Initiatives

Safety and security are inextricably intertwined. Many of the technologies that help to assure safety will also help to improve security, and vice versa. U.S. DOT's 2003-2008 Strategic Plan includes a strategic security objective to "*Balance homeland and national security transportation requirements with the mobility needs of the Nation for personal travel and commerce,*" and it states the expectation that each of the surface transportation modes will implement "steps that would prepare them for a rapid recovery of transportation from intentional harm and natural disasters."

The cooperation between FMCSA and the Transportation Security Administration (TSA) is expected to be specified in a Memorandum of Understanding between the two agencies.

The strategies and activities under this objective (see Table 5) focus on supporting security through appropriate safety activities and leveraging investment in safety to enhance security. Another part of this objective includes supporting TSA by identifying and coordinating opportunities to improve safety that also have a security benefit. Additionally, the strategies explore innovative approaches to address these opportunities, coordinate measures to improve the safety and security of motorcoaches and their passengers and cargo, and provide input on mechanisms to assure that trucks contain the right cargo, are traveling along the right route, and are being driven by the right person. The strategies also include exploring opportunities to adapt and apply modern information technology methods, tools, and systems to the management of some kinds of hazardous cargo that could be used by terrorists as a weapon.

Current and near term activities in this area include:

- Improve the management of some hazardous materials
  - Implement radiation detection equipment at weigh stations in States that have high levels of hazardous materials transportation;
  - Support hazmat operational tests and deployment.
- Mitigate security risk through safety measures
  - Test the Untethered Trailer Tracking Security system, to provide untethered trailer connection and disconnection activities, location and mapping of trailers, geofencing, unscheduled movement notification, and remote sensing of a loaded or empty trailer, door sensors and alarms.

Table 5 - Improve Security through Safety Initiatives

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
Threats to the security of passengers or freight are also threats to safety.	Safety and security are closely linked. Safety initiatives can also improve security.	**Mitigate Security Risks through Safety Measures** As potential threats of intentional violence to passengers and freight are identified, investigate and develop safety measures that can also address these threats.	Short and Medium Term
		Evaluate the feasibility and utility of using off-the-shelf technologies to improve vehicle and cargo tracking, driver identification, and risk mitigation.	Short Term
		Work with TSA to identify opportunities to improve safety that can also improve security while preserving or enhancing productivity.	Medium Term
The tracking of some types of extremely hazardous materials does not take advantage of recent advances in technology.	The potential misuse of certain high-hazard hazardous materials represents a significant safety and security threat.	**Improve the Management of Some Hazardous Materials (Hazmat)** In collaboration with TSA, study the feasibility, cost, and benefit of applying information technology methods, tools, and systems to the management of hazardous cargo that could be used as a weapon, through such activities as: • Issuing hazmat permits at the load/trip level rather than annually; • Deploying electronic cargo seals; • Global Positioning System (GPS) tracking of hazardous cargo; • Centralized tracking of hazmat shipments; • Updating and standardizing hazmat registration practices.	Short Term
		Study cargo security issues for intermodal transfers at ports. In general, investigate international aspects of hazmat with Canada and Mexico. Leverage the interest in border crossing safety and security to develop partnerships for conducting international research of mutual interest.	Short Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 5 - Improve Security through Safety Initiatives

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
Trucks, tractors, and trailers can be used for terrorist activities.	Misuse of trucks can cause major loss of life and property.	**Misuse of Commercial Motor Vehicles** In collaboration with TSA, study the feasibility, cost, and benefit of mechanisms to assure that a truck contains the right cargo, is proceeding along the right route, and is being driven by the right person, including: • Exploring smart CDL plus mechanisms for the positive identification of drivers (biometrics, keyboard pass codes, etc.); • Geofencing, to detect if trucks are off-route or are approaching sensitive areas; • Electronic cargo seals, supply chain manifests, and wireless communications; • E-screening and e-toll infrastructure to monitor/track high risk loads; • Provide access to real time data on vehicles carrying high risk loads, integrate with incident response infrastructure, and border and port systems.	Short and Medium Term
Motorcoaches could be used to transport dangerous substances.	Misuse of motorcoaches can put passengers, vehicles, and surroundings at risk. Risks include loss of life, property damage, environmental damage, and economic consequences.	**Motorcoach Security** In collaboration with TSA, study the feasibility, cost, and benefit of additional motorcoach security measures for both cargo and passengers, taking into account the specific operational needs of the motorcoach industry and the needs of the traveling public.	Medium Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Enable and Motivate Internal Excellence

The Office of Research and Technology is always working to improve its performance and its approach to more effectively and more economically serve its customers within U.S. DOT, at State agencies, and in the industry.

The strategies and activities under this objective (see Table 6) focus on ensuring the relevance, quality, and performance of research and technology activities and developing efficient methods to respond quickly and flexibly to agency needs.

Current and planned activities in this area include:

- Ensure relevance of research and technology program
  - Broaden participation of partners and stakeholders and the use of their expertise in FMCSA research and technology activities through expanded industry/academia partnerships, including minority institutions of higher education and research cooperative agreements;
  - Broaden participation of the Transportation Research Board and the use of their expertise in FMCSA research and technology activities.
- Ensure impact of research and technology program
  - Support FMCSA initiatives through proactive research and technology program management;
  - Implement technology transfer projects with industry partners and other stakeholders.

Table 6 - Enable and Motivate Internal Excellence

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
There are often fewer resources available than are needed to address research and technology programs.	Agency managers must be able to articulate why each research and technology investment is important, relevant, and appropriate and to align the portfolio of investments with agency priorities.	**Ensure Relevance of the Research and Technology Program** Align research and technology initiatives with agency strategic objectives and U.S. DOT priorities. Coordinate with FMCSA offices, U.S. DOT, other modes, and other Federal agencies to help ensure that these initiatives are not redundant or duplicative of other efforts. Actions include: • Utilize the stakeholder forums and the FMCSA Research Executive Board to prioritize initiatives to ensure linkage of research and technology investment to agency objectives; • Participate in the DOT Research and Technology Coordinating Council; • Expand public-private partnerships; • Collaborate with States and industry on research and technology projects and initiatives; • Align project requests with agency strategic and performance goals.	Short Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 6 - Enable and Motivate Internal Excellence

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
There is a need to improve the effectiveness of policies, programs, and rulemaking and assure they are based on sound science, quality information, and analysis.	Policies and programs need to be based on current, quality science, data, and analysis.	**Ensure Quality of the Research and Technology Program** Conduct regular reviews and evaluations of the research and technology program. Conduct an open and transparent program, and work on close collaboration with customers and stakeholders in order to: • Involve customers and stakeholders throughout the process; • Employ independent reviews where applicable; • Continue to employ competitive contracting to maintain quality; • Evaluate research and technology projects on an ongoing basis; • Solicit and conduct peer reviews of research and technology initiatives where applicable; • Seek independent evaluation of the research and technology program; • Evaluate performance of contractors in terms of quality, schedule, and cost; • Validate research program impacts on outcomes.	Short and Medium Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 6 - Enable and Motivate Internal Excellence

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
There is a need to manage research and technology projects more effectively.	Accurate and timely results are required to support FMCSA's safety objectives.	**Ensure Performance of the Research and Technology Program** Develop performance goals, measures, strategies, and initiatives to improve research and technology performance management, and promote benefits to the public. Develop and use performance assessment tools and measures to provide an environment of continuous improvement in research and technology projects: • Determine methods to assess customer satisfaction; • Establish measures of efficiency (i.e., timeliness of project completion) and quality indicators; • Track contracts and deadlines; • Monitor results of measures and analyze performance management information; • Provide support to pursue agency-wide performance improvement initiatives.	Short and Medium Term
		Pursue research and technology process improvement. Review all aspects of the research and technology program lifecycle and recommend improvements: • Identify and assess mechanisms to streamline the conduct of research and the deployment of technology; • Identify new ways of getting input from State and local agencies; • Identify and assess mechanisms to speed up the report approval process without adversely impacting quality; • Establish practices for acting more expeditiously on the results of research;	Short Term

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

Table 6 - Enable and Motivate Internal Excellence

Challenge	Why It Is Important To Address This Challenge	Strategies/Activities To Address This Challenge	Priority
		Ensure Performance of the Research and Technology Program, continued • Establish mechanisms to more quickly disseminate research results both within FMCSA and to the industry; • Review and streamline the interactions among FMCSA offices for research and technology initiatives; • Establish mechanisms for better research and technology coordination and information exchange in the U.S. DOT; • Work with other organizations to communicate and promote more focus on commercial driver issues and the effects of driving conditions; • Maximize the integration of Federal, State, and industry initiatives; • Better communicate the results of the FMCSA research and technology program.	

Short Term: FY 2004-FY 2005 (many projects began in FY 2004); Medium Term: FY 2006-FY 2007; Long Term: FY 2008-FY 2009

3. Program Logic Model

This chapter provides a logic model for FMCSA's research and technology program. A logic model is a systematic and visual depiction of how a program works, and a mechanism to help define metrics for performance, quality, and relevance of the program. As the next figure illustrates, a logic model shows how program resources and activities are linked to the short and long term results (outputs, outcomes, and impacts), which the program expects to achieve.

By focusing attention on the connections between inputs and results, a logic model is a useful tool for explaining the theory underlying a program and for tracking and evaluating program success. The model helps communicate to customers and stakeholders what the program is about and how the parts work together to help make a case for supporting the program.

The next table (Table 7) provides a basic logic model template. Reading from left to right, the logic model outlines the "Why" chain of reasoning for the program. It successively answers the question of *why* the R&T program does what it does. For example, why is a certain research project on fatigue necessary to improve driver alertness and attentiveness and why is improved driver alertness and attentiveness key to reducing CMV-related crashes? The logic model can also be developed or read from right to left. From right to left, the model answers the question of *how* the R&T program brings about impacts on motor carrier safety: "How does the R&T program achieve its ultimate goal of reducing CMV-related crashes?","How do short and long term outcomes contribute to this goal?", and "How do program outputs lead to the desired outcomes?"

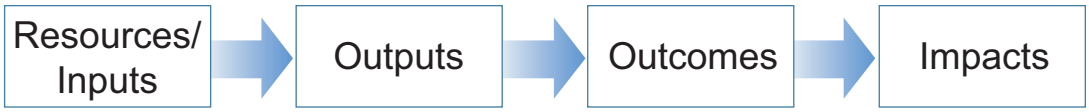

Table 7 - Basic Logic Model

Resources/Inputs	Outputs	Short and Long Term Outcomes	Impacts
In order to fulfill its mission, the research and technology program will need the following items.	The research and technology program expects that once completed or underway these activities will produce the following evidence of service delivery.	The research and technology program expects that once completed or underway, these activities will lead to the following changes.	The research and technology program expects that if completed these activities will lead to the following changes in 5-10 years.

The following table (Table 8) shows a logic model for the entire research and technology program. The activities are implicit in the outputs they produce. As the logic model demonstrates, the expected outcomes of the research and technology program correspond to the research and technology strategic objectives detailed in Chapter 2: safer drivers, safer carriers, safer commercial motor vehicles, advancing information-based projects, improved security through safety initiatives, and organizational excellence. The model portrays the major research and technology products and services that are expected to lead to these outcomes and the key resources/inputs that the research and technology program utilizes to deliver these products and services. The model also shows the organizational and societal changes (long term impacts) that the research and technology program expects as direct or indirect consequences of its program activities. Outcomes are closely related to research and technology projects. For instance, successful fatigue management research should have as output more studies and papers on tools to manage fatigue and as outcome better fatigue management by the drivers. Impacts reflect the consequences of research and technology projects at a societal level, in combination with other factors. Therefore, in our example, an impact would be a reduction in crashes that have fatigue among their root causes.

Table 8 - Research and Technology Logic Model

Resources/ Inputs	Outputs	Outcomes	Impacts
• Budget • Staff - Federal staff; - Contractors conducting research and technology projects; - Support contractors. • Equipment and facilities - Federal; - State; - Industry. • Information - Studies from non-agency sources; - Safety databases; - Law enforcement databases; - Technical and scientific literature. • International network of transportation experts • Technology market - Products; - Prototypes. • Laws and mandates • Rules • Customer/ stakeholder requirements and needs	• Research reports and studies • Technology reports and studies - Field operational tests. • Journal and conference papers and presentations - Peer-reviewed; - Invitational; - Informational and outreach. • Cost/benefit studies • Metrics, models, and algorithms • Technology transfer products - Functional requirements; - Usage data; - Outreach and Education materials; - Other. • Risk assessments • FMCSA products - Enforcement; - Rulemaking; - Outreach; - Field. • Partnership and data sharing agreements • Recommendations for future research • Peer review reports • Awareness and educational materials • Prototypes and software	• Improved understanding and awareness of: - Root causes of crashes; - Driver behavior and health; - Industry practices (carriers, shippers, and manufacturers); - Vehicle safety; - Security issues. • Drivers - Safer commercial driver behavior; - Improved driver alertness and attentiveness; - Improved driver health and wellness; - More effective driver training and certification practices; - More effective commercial driver credentialing and enforcement; - Improved State practices regarding commercial drivers; - Safer non-commercial driver behavior with respect to commercial motor vehicles. • Carriers - Improved carrier compliance review; - Improved truck inspections; - Improved information and practices for carriers and shippers; - Expanded E-government services (CVISN); - More effective carrier enforcement. • Vehicles - Enhanced vehicle inspection system; - Better understanding of impacts, costs, and benefits of new technologies; - Proof of concept of new technologies. • Vehicle-roadway interaction - Roadway configurations that improve safety (curves, sight distances, intersections, etc.); - Enhanced vehicle-infrastructure integration (e.g., dedicated short range communications). • Security through safety - Reduction of security risks through safety measures; - Better monitoring of hazmat shipments; - Reduction in risk of commercial motor vehicle misuse; - Improved motorcoach security. • Research and technology organizational excellence - Alignment of research and technology initiatives with the Agency's strategic objectives and DOT priorities; - More effective and efficient research and technology performance; - Improved customer and stakeholder satisfaction.	• Fewer CMV-related crashes • Decreased CMV-related fatality rate • Improved FMCSA (HQ and field) and State performance • Widespread acceptance and diffusion of safety technologies and products

4. Performance Metrics

Logic models provide a framework for determining what is most important to measure in order to monitor and evaluate the effectiveness of a program. Metrics can be designed to measure service delivery (output metrics), the extent to which products and services result in changes in attitude, behavior, and knowledge (outcome metrics), and the extent to which the program contributes to wider societal and organizational changes (impact metrics). The following table (Table 9) shows a list of output, outcome, and impact metrics for the research and technology program.

These metrics, taken together, help demonstrate the extent to which the research and technology program is meeting the President's investment criteria of relevance, quality, and performance. The output metrics in the first column are primarily quantitative measures that answer the question, "How many?" For example, how many reports and studies are produced and how many technologies are under selection, evaluation, or deployment, which address program *performance*. The outcome metrics in the middle column focus more on *quality* of current and past research and technology projects, answering the question, "How well?" These metrics include how customers, stakeholders, and experts feel about program performance. The final column answers the question, "What impact?" the research and technology program will have in the long term—the number of CMV-related injuries and fatalities—thereby addressing the issue of *relevance* to FMCSA, U.S. DOT, and other national goals.

No single metric can be used to represent the entire program; therefore, FMCSA will identify a combination of measures for each strategic objective to manage and evaluate the program and its achievements. Baselines will be defined and targets set for the program using these metrics. It is expected that more refined metrics will be identified in the future for FMCSA research and technology programs.

Table 9 - Research and Technology Performance Metrics

Output Metrics (Performance)	Outcome Metrics (Quality)	Impact Metrics (Relevance)
• Percent of research and technology projects completed within budget and schedule • Number of peer-reviewed papers in journals and conferences • Number of reports and studies managed and completed by the research and technology program • Number of models (cost benefit, risk, etc.) developed or updated • Number of prototypes developed or updated • Number of technologies under selection, evaluation, or deployment • Number of active partnership agreements with prominent organizations in the U.S. and internationally • Number of nationally prominent committees and boards on which the research and technology program is represented • Number of awards received by the research and technology program personnel or projects • Number of rules, policies, outreach programs, and field initiatives sponsored by the research and technology program • Results of peer reviews and scientific value of reports and studies	• Number of commercial motor vehicles equipped with advanced safety technologies demonstrated by the research and technology program • Number of carriers participating in safety projects initiated by the research and technology program • Number of drivers participating in safety projects initiated by the research and technology program • Number of States participating in safety projects initiated by the research and technology program • Number of States with demonstrated CVISN capabilities • Number of carriers using CVISN services • Results of customer and stakeholder feedback on quality, performance, and relevance of the research and technology program • Results of peer reviews of quality, performance, and relevance of the research and technology program	• Number of CMV-related fatalities per hundred million commercial VMT • Number of people injured in commercial motor vehicle crashes • Number of fatalities in commercial motor vehicle crashes • Number of commercial motor vehicle crashes caused by unsafe commercial driver behavior, unsafe private driver behavior, and vehicle failures

Appendix A: Research and Technology Project Selection Methodology

The previous sections have documented the broad spectrum of interests and the goals of the FMCSA research and technology program. In order to provide a complete picture of the program strategy, this section will briefly document the process through which the program translates those interests and goals into projects to be funded annually.

The research and technology program has developed a methodology for identifying and selecting candidate research and technology projects. The methodology is illustrated in the following chart.

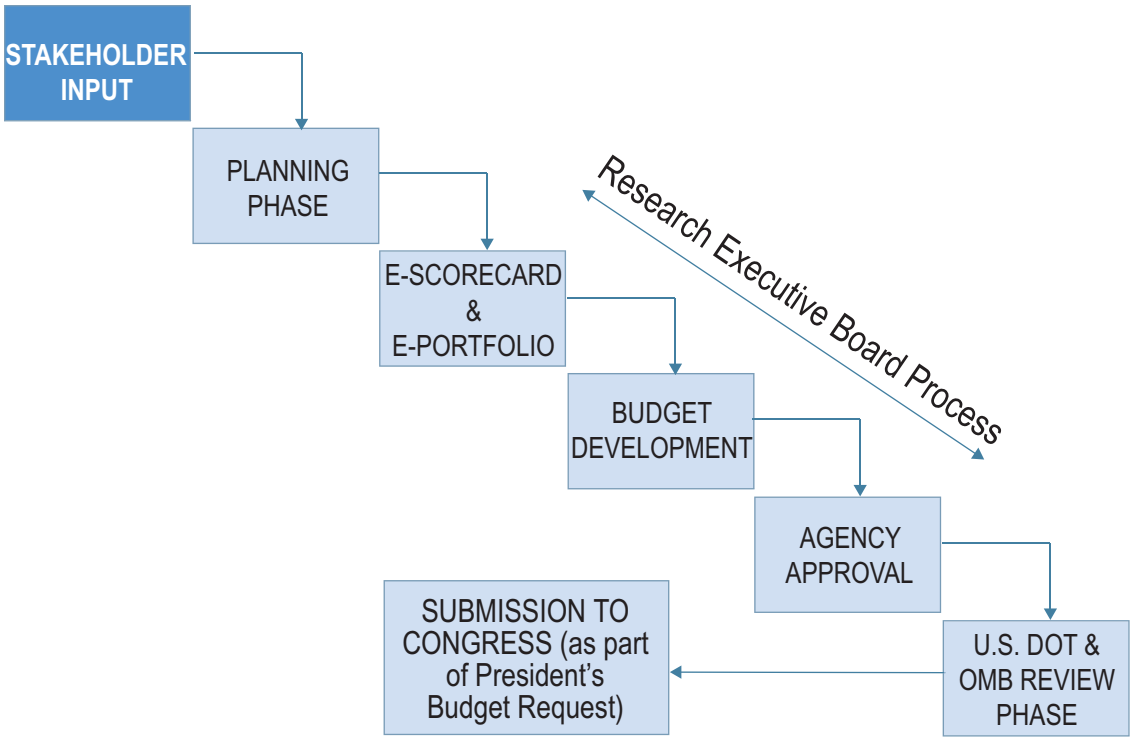

Figure 3 - Research Executive Board Process

The stakeholder input is collected in annual meetings in which external stakeholders from industry, States, and academia provide their ideas regarding the factors that affect commercial motor vehicle safety and the research and technology initiatives that should be conducted to address them. The annual meetings feature roundtable discussions to identify safety concerns and possible solutions and draw participants from the following groups: trucking industry, motorcoach operations, insurance companies, State enforcement and regulatory agencies, safety advocacy groups, academia, safety consultants, and vendors with systems and services tailored for commercial motor vehicle safety and improvement. The meetings are publicized on the FMCSA website and are open to the public. The following

diagram shows the steps followed by FMCSA to work with the stakeholders and identify the most relevant research areas. The starting point is represented by the analysis of data and experience from the transportation world. Then root causes of accidents are documented and potential countermeasures specified and evaluated. Based on this evaluation, FMCSA and the stakeholders identify relevant research and technology areas.

Based on stakeholder input and on the concepts and priorities developed within the Agency and

- Evaluating, prioritizing, and approving submitted research and technology proposals;
- Adding approved projects to FMCSA's Research Portfolio;
- Ensuring that proposals in the portfolio are aligned with agency priorities and are consistent with budget objectives.

The REB meets approximately three times per year during the annual budget formulation process to prioritize and approve proposal submissions and to develop the Agency's research and technology fiscal year budget

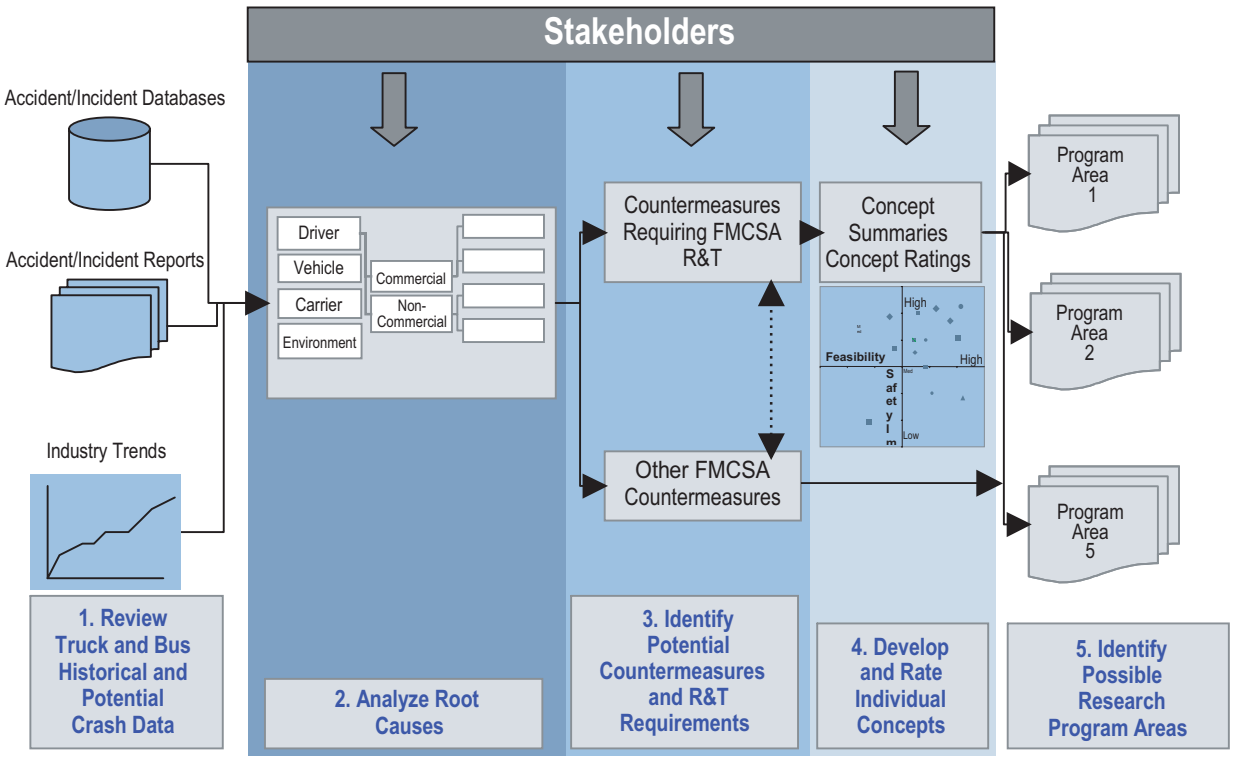

Figure 4 - FMCSA and Stakeholder Review of Potential Research Areas

the Department, FMCSA program managers develop research and technology proposals. The FMCSA Research Executive Board (REB) is a committee of representatives from many FMCSA organizations that have research and technology interests. Members of the REB are representatives from FMCSA Headquarters and Field offices and, if needed, representatives from other U.S. DOT Agencies and modes. The REB is responsible for:

submission. An FMCSA intranet-based tool, called E-Portfolio, supports the process and provides a scorecard that evaluates safety impact (or security risk), feasibility, and cost for each proposed project. The measures used by the scorecard are based on current data from safety databases like NHTSA's Fatality Analysis Reporting System and the FMCSA Motor Carrier Management Information System Crash File.

When a study is completed, the REB makes recommendations that result in further research or specific actions and recommendations that may influence policies, rules, standards, enforcement, or outreach actions. Recommendations of the REB are presented to FMCSA senior management.

The research and technology initiatives and projects that will be developed and prioritized for funding over the next 5 years are based on the strategic objectives described in Chapter 3 of this plan. The Strategic Plan was deliberately constructed to be wide-ranging and thought-provoking, and it is not expected that every strategic initiative identified will be fully completed in the next 5 years. At the same time, it is certainly possible that the need will arise for some strategies and activities that were not anticipated in this version of the Strategic Plan. The specific projects in which the Agency will engage are subject to budget and resource constraints, FMCSA priorities, project results, and the evolving needs of agency customers. The formulation of the annual budget for the Office of Research and Technology provides a regular opportunity to adjust current and anticipated needs. The Strategic Plan is a living document that provides guidance for project selection but that also adapts to feedback received.

Appendix B: Glossary

511

A telephone number designated by the Federal Communications Commission for nationwide use to obtain traveler information. "511" also refers to the programs to deliver traveler information to callers via this telephone number.

AAMVA

American Association of Motor Vehicle Administrators (see definition)

AASHTO

American Association of State Highway and Transportation Officials (see definition)

American Association of Motor Vehicle Administrators (AAMVA)

The American Association of Motor Vehicle Administrators is a tax-exempt, nonprofit organization striving to develop model programs in motor vehicle administration, police traffic services and highway safety. http://www.aamva.org

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO is a nonprofit, nonpartisan association representing highway and transportation departments in the 50 States, the District of Columbia and Puerto Rico.

http://transportation.org/aashto/organization.nsf/homepage/overview

CDL

Commercial driver's license

CMV

Commercial motor vehicle

Conspicuity

Literally "obviousness." In this context, refers to the visibility of commercial vehicles, particularly by the drivers of non-commercial vehicles.

CVISN

Commercial Vehicle Information Systems and Networks (CVISN), helps solve institutional issues and technical problems related to providing electronic access to timely and accurate motor carrier safety and other credentials information. CVISN deployment provides an overall technical framework, or an architecture, for States, the Federal Government and private stakeholders to follow for electronically collecting and exchanging motor carrier safety and interstate registration and tax payment information, and for making that information available at the roadside in support of electronic screening. http://www.itsdeployment.its.dot.gov/cvisn/

DOT Number

A number issued to a commercial motor carrier by U.S. DOT to signify that the carrier is properly registered as an interstate carrier. This number must appear on the truck operated by the carrier.

E-Portfolio

An FMCSA intranet-based tool which supports the process of project selection, providing a scorecard that evaluates safety impact (or security risk), feasibility, and cost for each proposed project.

Federal Highway Administration (FHWA)

An administration of U.S. DOT "charged with ... ensuring that America's roads and highways continue to be the safest and most technologically up-to-date...We provide financial and technical support ... for constructing, improving, and preserving America's highway system." http://www.fhwa.dot.gov

Federal Motor Carrier Safety Administration (FMCSA)

An administration of U.S. DOT whose "primary mission is to reduce crashes, injuries, and fatalities involving large trucks and buses." http://www.fmcsa.dot.gov

FHWA

Federal Highway Administration (see definition)

FMCSA

Federal Motor Carrier Safety Administration (see definition)

Geofencing

An onboard system which prevents vehicles from entering restricted areas

GPS System

Global Positioning Satellite System: A network of earth orbit satellites operated by the U.S. Department of Defense which allows receivers to determine their geographic location to within an accuracy of about 16 meters.

Grade Crossing

The intersection of a road and railroad tracks at the same elevation.

Guiding Principles

Fundamental operating principles that guide the way an organization conducts its business. The guiding principles of the Office of Research & Technology at FMCSA describe the way research and technology adoption, testing, and deployment are conducted.

HazMat

Hazardous materials or HM. Cargo which is intrinsically or potentially dangerous, for example, radioactive materials, explosives, flammable liquids, etc. The transportation of hazmat by commercial vehicles is specially regulated.

Heavy vehicle

Truck classes 7 and 8.

HOS

Hours-of-Service (see definition)

Hours-of-Service Rules

Regulations promulgated by FMCSA that prescribe the maximum number of hours that a commercial vehicle driver can work before being required to rest.

HVUT

Heavy Vehicle Use Tax: An annual Federal tax on vehicles operating on public highways at a gross weight of 55,000 lbs. or more, used to defray the cost of highway construction and maintenance.

Intelligent Vehicle Initiative (IVI)

A program of the U.S. DOT to reduce crashes through the application of in-vehicle technology.

ITS

Intelligent Transportation Systems, the application of information technology to surface transportation issues.

ITS Joint Program Office

An intermodal agency of U.S. DOT that addresses the development and use of Intelligent Transportation Systems.

IVI

Intelligent Vehicle Initiative (see definition)

JPO

The ITS Joint Program Office (see definition)

Medical Exemption Program

An FMCSA program which allows some drivers to operate commercial motor vehicles in interstate commerce who would otherwise be prohibited from doing so based on medical conditions (e.g., Type I Diabetes). Exemptions are granted on a case-by-case basis based on applications from affected drivers.

Medical Registry

A proposed FMCSA program under which medical practitioners, in order to be allowed to conduct medical fitness examinations of commercial drivers, would have to be pre-qualified and entered onto a register of qualified examiners.

Mission Statement

A high level description of how an organization intends to move toward and realize its vision of the future.

NADS

National Advanced Driving Simulator (see definition)

National Advanced Driving Simulator

The National Advanced Driving Simulator (NADS) is a highly sophisticated research driving simulator, developed by NHTSA and located at The University of Iowa in Iowa City, IA. Its primary mission is research that leads to a better understanding of the complex driver-vehicle-roadway interaction in critical driving situations. http://www-nrd.nhtsa.dot.gov/departments/nrd-12/NADS/

National Highway Traffic Safety Administration (NHTSA)

NHTSA is an administration of U.S. DOT "responsible for reducing deaths, injuries and economic losses resulting from motor vehicle crashes. This is accomplished by setting and enforcing safety performance standards for motor vehicles and motor vehicle equipment, and through grants to State and local governments to enable them to conduct effective local highway safety programs." http://www.nhtsa.dot.gov

Naturalistic Driving Study

An extended study of driver behavior under actual driving conditions (vs. via simulation). In a naturalistic driving study, the vehicle is instrumented with a variety of sensors and recorders to track actual driving behavior under a variety of real-world conditions.

NHTSA

National Highway Traffic Safety Administration (see definition)

Night Vision System

An advanced driver assistance system which (typically) uses an infrared camera to improve the driver's vision in the dark. A night vision system can provide visibility distances of 2-3 times that of headlights.

Onboard data recorders

In-vehicle devices that record vehicle and driver behavior either to support record keeping or to assist analysis, for example in post-crash situations.

OOS

Out-of-Service. Commercial vehicles can be taken out of service by inspectors for violations of safety rules or for inadequate credentials.

Pull Notices

Notices which are automatically sent by State authorities to motor carriers notifying them of traffic convictions received by their drivers.

R&T

Office of Research and Technology

REB

Research Executive Board (see definition)

Research & Technology Coordinating Council (RTCC)

A U.S. DOT-wide council which shares information, facilitates joint research, reduces duplication, and serves as a forum for sharing results. The RTCC leads the preparation of the DOT Research, Development, and Technology Strategic Plan based upon U.S. DOT's Strategic Plan and annual performance plans.

Research Executive Board (REB)

A committee of representatives from all FMCSA offices that have research and technology interests. A management-level, cross-organizational forum that reviews proposed studies based on technical and investment analysis, contribution to FMCSA's mission, and ability to meet department priorities.

Research

In FMCSA context: systematic studies directed toward fuller scientific discovery, knowledge or understanding that will improve safety and security and reduce the number and severity of commercial motor vehicle crashes.

SafeStat

Short for Motor Carrier Safety Status Measurement System, SafeStat is an automated data-driven system that calculates the safety fitness of interstate motor carriers.

Small Passenger Vans

In FMCSA context: a van designed or used to transport between 9 and 15 passengers in interstate commerce.

Strategic Objectives

A statement of high level goals whose achievement is key to fulfilling an organization's mission and realizing its vision.

Surface Transportation Reauthorization

The law, which is revised every 6 years, defines the activities and funding of the U.S. DOT. The 1991 version was the Intermodal Surface Transportation Efficiency Act (ISTEA). The 1998 version is the Transportation Equity Act for the 21st Century (TEA-21). The next version, original expected to be passed in 2003, is still being developed by Congress.

Technology

In FMCSA context: Adopting, testing, and deploying innovative driver and vehicle best practices and technologies that will improve safety and security and reduce the number and severity of commercial motor vehicle crashes.

Transponders

Communications devices used to communicate between vehicles and nearby points in the infrastructure. The widest use of transponders is in electronic toll collection systems. In FMCSA context, transponders are used by commercial vehicles to support automated pre-clearance at weigh stations and inspection points and to facilitate information exchange with roadside authorities.

Transportation Security Administration (TSA)

An administration of the Department of Homeland Security whose mission is to protect the nation's transportation systems to ensure freedom of movement for people and commerce. http://www.tsa.dhs.gov

TSA

Transportation Safety Administration (see definition)

U.S. DOT

The United States Department of Transportation, one of the cabinet-level departments reporting directly to the President of the United States. U.S. DOT's mission, as stated in Section 101 of Title 49, United States Code, is as follows:

The national objectives of general welfare, economic growth and stability, and the security of the United States require the development of transportation policies and programs that contribute to providing fast, safe, efficient, and convenient transportation at the lowest cost consistent with those and other national objectives, including the efficient use and conservation of the resources of the United States.

Vehicle Infrastructure Integration (VII)

A jointly operated program of U.S. DOT, the American Association of State Highway Transportation Officials (AASHTO), and automakers, aimed at using wireless communications between the vehicle and infrastructure for a range of applications including the delivery of real-time information and the enhancement of traffic safety. http://www.nawgits.com/icdn/vii_trb04.html

VII

Vehicle Infrastructure Integration (see definition)

Vision Statement

A statement that articulates a desired future state that an organization and its activities can help to realize.

VMT

Vehicle miles traveled. This is the conventional measure for calculating crash (and other) statistics, based on the total number of miles traveled by relevant vehicles.

Weigh Stations

Checkpoints along the road, typically near State border crossings, at which commercial vehicles are checked for compliance with weight limitations and other safety and operating rules.




For more information on the
Federal Motor Carrier Safety Administration
and the Office of Research and Technology,
check our website at www.fmcsa.dot.gov.