InfoBrief

Research and Technology in the Federal Motor Carrier Safety Administration

FMCSA Mission

As the Federal Government's chief commercial vehicle safety agency, the Federal Motor Carrier Safety Administration's (FMCSA), Office of Research and Technology (R&T) focuses on saving lives and reducing injuries by helping to prevent crashes involving large trucks and motorcoaches. The FMCSA will achieve this result by developing its expertise in regulation and enforcement, education and outreach, data collection and analysis, and research and technology transfer (i.e., encouraging other government agencies and the private sector to use innovative R&T products to promote safe transportation).

This Info Brief describes the organization and focus of the R&T Program and how its efforts support the Agency's mission and safety goal.

The Issues

The potentially catastrophic results of commercial motor vehicle crashes underscore the significance of FMCSA's task. Between 1980 and 1999 more than 106,000 citizens lost their lives in motor carrier-related crashes. Based on 1997 data, large truck crashes cost approximately $24 billion each year.

The growing demand for commercial trucking services and the changing nature of the industry pose significant safety challenges for the FMCSA. Commercial vehicle travel is expected to increase by about 20 percent during the next 10 years but the capacity of U.S. highways will expand only slightly.

Over the next decade an upsurge is projected in the number of commercial vehicle registrations and carriers—particularly new entrant carriers. The number of registrations and volume of travel for private passenger vehicles are expected to increase, as well as the percentage of non-commercial drivers in the highest at-risk age groups (under 25 and over 65 years of age). These demands, along with other traffic and industry trends, could have a significant impact on commercial and passenger vehicle safety.

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FMCSA 2010 Safety Goal & Strategic Objectives

The FMCSA has established a safety goal of reducing the number of deaths and injuries resulting from truck- and motorcoach-related crashes by 50 percent by the year 2010. Using a 1998 baseline, this goal translates into approximately 2,500 lives saved and 65,000 injuries prevented each year.

Research and Technology Priorities

The FMCSA's Research and Technology Program is a key element in achieving the Agency's safety goal and meeting the related strategic objectives. Recognizing that highway crashes often stem from several interrelated factors and not just a single cause, the Agency's R&T Program provides critical data and research to identify and address those causal factors. The Program supports the Agency's diverse safety initiatives and emphasizes delivering safety in new ways, particularly through the development, evaluation, and deployment of advanced safety technologies.

The R&T Program consists of five focus areas. This section describes each focus area and lists the corresponding FMCSA 2010 strategic objective.

1. Driver Safety Performance

This area focuses on ensuring that commercial drivers are physically qualified and trained to operate commercial motor vehicles safely while staying mentally alert. It also seeks to foster the safe behavior of non-commercial vehicle (e.g., passenger car) drivers in the vicinity of large trucks and motorcoaches. Examples of commercial driver programs include driver health and wellness, fatigue management, and improving training and licensing standards. R&T efforts target non-commercial drivers via education and outreach, enforcement activities, and preventive technologies. This focus area is made up of four parts:

- Non-Commercial Driver Performance Enhancement;
- Commercial Driver Performance Enhancement;
- Commercial Driver Fatigue; and
- Commercial Driver Physical Qualifications.

Related FMCSA 2010 strategic objectives: *(1) All commercial motor vehicle drivers are fully qualified, safe, alert, and healthy. (2) Improve the safety and performance of non-commercial drivers with respect to trucks.*

2. Commercial Vehicle Safety Performance

This area focuses on improving truck and motorcoach performance through industry adoption of vehicle-based safety technologies. Initiatives include developing, testing, and deploying advanced vehicle safety systems, and supporting the development of policies and standards to promote the use of new vehicle technologies.

R&T vehicle projects are intended to prevent crashes by improving industry compliance with regulations, and helping commercial drivers compensate for hazardous conditions and errors. These efforts include the Commercial Vehicle platform of the Intelligent Vehicle Initiative, which is funded by the U.S. Department of Transportation's (DOT) Joint Program Office for Intelligent Transportation Systems (ITS).

Related FMCSA 2010 strategic objective: *Commercial motor vehicles have optimum safety performance.*

3. Carrier Compliance and Safety

This area focuses on improving the safety of all motor carriers—particularly high-risk carriers—by ensuring compliance with safety performance regulations set forth by FMCSA. Enforcement efforts are directed toward the industry's worst offenders and are fundamental elements of the Agency's safety strategy. This program seeks to improve carrier compliance by collecting and communicating best management practices to motor carrier managers, improving enforcement of Federal regulations, and by applying safety management principles to improve overall motor carrier safety.

Related FMCSA 2010 strategic objective: *Facilitate improvement in the overall safety performance of the motor carrier industry through refined and enhanced safety management systems.*

4. Safety Systems and Technologies

This area focuses on identifying, testing, evaluating, and deploying new technologies and operational concepts to improve commercial vehicle safety and target high-risk carriers for enforcement and compliance action. The DOT's Joint Program Office for ITS provides funds to support these activities.

Two key areas support this effort:

- **Safety Technologies for 2010**—supports accelerated research and testing of new safety technologies and operational concepts at a real-world smart laboratory site.
- **Commercial Vehicle Information Systems and Networks (CVISN) Deployment**—promotes electronic information exchange among States, the motor carrier industry, and the FMCSA along with electronic screening to improve the targeting of high-risk carriers and the overall effectiveness of Federal and State enforcement programs.

Related FMCSA 2010 strategic objective: *Develop a dynamic and focused motor carrier research and technology program.*

5. Crosscutting Safety Initiatives

Crosscutting safety activities improve the effectiveness of the overall R&T Program by increasing the program's knowledge base, enhancing the tools necessary for improving customer outreach, and by establishing partnerships with key organizations. These crosscutting activities address significant aspects of vehicle safety, driver safety, and carrier safety, including the environment in which they operate. The program seeks to gain a deeper and broader understanding of driver, carrier, vehicle, and roadway factors that place motor vehicle drivers at risk. By identifying the gaps in the understanding of crashes and the countermeasures used to prevent them, the program can achieve a better understanding of the factors involved with motor carrier safety. These crosscutting activities not only will support FMCSA's goals and objectives, but will foster R&T partnerships with other organizations in the motor carrier safety community as well.

Related FMCSA 2010 strategic objective: *Develop a dynamic and focused motor carrier research and technology program.*

Research and Technology Methods

To accomplish its objectives, the R&T Program will employ the following methods:

- Continually align program to directly contribute to the FMCSA safety goal;
- Conduct research to meet the needs of all FMCSA programs;
- Facilitate the use of technologies that reduce crashes;
- Improve partnerships within and outside of the DOT; and
- Accelerate the use of results through technology transfer.

Safety Results

FMCSA R&T efforts will result in:

- **Qualified Drivers** who are mentally alert, medically fit, technologically trained, knowledgeable of safety regulations, and highly capable of operating the latest technology-equipped commercial motor vehicles and safety equipment;
- **Smart Commercial Vehicles** equipped with integrated technologies that monitor the actions and conditions of the vehicle, driver, cargo, and roadway; and
- **Smart Roadside Facilities** that use information systems and technologies to improve safety and compliance and to manage and monitor commercial motor vehicle traffic while providing timely information.

These three elements will lead to safe motor carriers, which will further the accomplishment of all three safety results.

Conclusion

The five focus areas of the R&T Program address driver, vehicle, carrier, technology, and crosscutting issues directly related to commercial motor vehicle crashes. Working to meet FMCSA's 2010 strategic objectives, the R&T Program provides critical support to the Agency as it strives to achieve its safety goal.

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