

**A Report to Congress and the
National Transportation Safety Board**

2015 Annual Report

*The U.S. Department of Transportation's
Status of Actions Addressing the
Safety Issue Areas on the
NTSB's Most Wanted List*

June 2015



U.S. Department of Transportation

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EXECUTIVE SUMMARY

This report describes the activities that the U.S. Department of Transportation (DOT) is undertaking to enhance the safety of the Nation's transportation network for each of the safety issue areas of the National Transportation Safety Board's (NTSB) 2015 Most Wanted List.

Pursuant to section 1135(e)(1) of Title 49, United States Code (U.S.C), the Department is required to review and report the status of actions responding to the NTSB's annual Most Wanted List report. This report fulfills that requirement.

In carrying out our transportation mission, safety is our top priority. The Department is dedicated to improving safety throughout the transportation network, and is taking significant steps to reduce transportation-related fatalities and injuries. This work is carried out by the Office of the Secretary (OST) and the modal administrations. The modal administrations discussed in this report are:

- Federal Aviation Administration (FAA)
- Federal Motor Carrier Safety Administration (FMCSA)
- Federal Railroad Administration (FRA)
- Federal Transit Administration (FTA)
- National Highway Traffic Safety Administration (NHTSA)
- Pipeline and Hazardous Materials Safety Administration (PHMSA)

NTSB Most Wanted List

The NTSB Most Wanted List is designed to increase the public's awareness of, and support for, safety steps that can help prevent accidents and save lives. Because the number of recommendations had expanded over the years, in 2011, NTSB reformatted the list so that rather than individual recommendations, it comprises 10 issue areas that can be expected to change annually. Four of the issues remained on the list from last year: (1) Distraction, (2) Substance Impairment, (3) Positive Train Control, and (4) Mass Transit Safety.

The NTSB's 2015 Most Wanted List consists of the following 10 safety issue areas:

1. Disconnect from Deadly Distractions
2. End Substance Impairment in Transportation
3. Enhance Public Helicopter Safety
4. Implement Positive Train Control in 2015
5. Improve Rail Tank Car Safety
6. Make Mass Transit Safer
7. Prevent Loss of Control in Flight in General Aviation
8. Require Medical Fitness for Duty
9. Strengthen Commercial Trucking Safety
10. Strengthen Procedural Compliance

For each Most Wanted List issue discussed in this report, a summary of the issue area as stated by NTSB appears in italics, followed by the Department's response. The DOT modal administrations have responded to NTSB recommendations and have taken additional steps to enhance transportation safety. Accordingly, the report covers not only those actions that address the NTSB recommendations, but also related activities. Thus, the report provides a comprehensive view of Departmental activities for each issue area.

1. **Disconnect from Deadly Distractions**¹

What is the issue?

Quite simply, drivers do not always have their minds on the road. Even pilots do not always have their minds on vital communications, instruments, or procedures. The same is true of vessel and train operators. Increasingly, the use of portable electronic devices (PEDs) while operating a vehicle are distracting us, posing a real threat in transportation.

New connectivity has enabled new safety technologies. But it has also enabled new forms of distraction, leading to accidents and deaths, even in the most strictly regulated transportation enterprises. Since 2003, the NTSB has found PED distraction as a cause or contributing factor in 11 accident investigations. Those crashes resulted in 259 people injured and 50 people killed. And the NTSB does not investigate the majority of highway crashes. The National Highway Traffic Safety Administration (NHTSA) reports hundreds of such deaths on our highways in 2012 alone. According to NHTSA, drivers engaging in visual-manual tasks, such as dialing or texting, triple their risk of a crash.

Distraction can take many forms. In 2013, the AAA Foundation for Traffic Safety reported that more than two out of three drivers indicated that they talked on a cell phone while driving within the past 30 days. More than one of three drivers admitted to reading a text message or e-mail while driving, and more than one of four drivers admitted to typing or sending a text or e-mail.

In addition, the AAA Foundation reports that hands-free is not risk-free. A driver's level of cognitive distraction is about equal whether using a hands-free or hand-held cell phone. Even voice-based systems may not eliminate distraction, and may have unintended effects on traffic safety.

PEDs are here to stay. We anticipate that distraction will continue to be a problem until regulators, industry, and the public embrace the concept of distraction-free transportation.

What can be done?

The first step toward removing deadly distractions will be to disconnect from non-mission-critical information. For decades, aviation has recognized the need for "sterile cockpit" procedures that restrict activities and conversations to the task at hand. But all modes of transportation need to rise to today's distraction challenges. That's why in December 2012 we called for a ban on all PED use while driving. We have issued similar recommendations for aviation, marine, and rail.

¹ http://www.nts.gov/safety/mwl/Pages/mwl1_2015.aspx

The public agrees. A June 2014 poll by the National Safety Council showed that 73% of drivers think there should be more enforcement of texting laws, while only 22% said the current level of enforcement is fine. And according to a AAA Foundation for Traffic Safety survey the majority of Americans (88.5 percent) feel that a driver talking on a cell phone represents a somewhat or a serious threat to their personal safety. But currently only 14 states and the District of Columbia ban the use of hand-held cell phones while driving. The District of Columbia and 37 states restrict the use of cell phones by novice drivers, and 44 states and the District of Columbia ban text messaging while driving. None ban the use of hands-free devices.

Ultimately, a cultural shift will be required, and it must begin with each of us. Surveys repeatedly show that we know that PED distraction is dangerous while driving, yet we admit to indulging. It's time to do what we know is right, and disconnect from deadly distractions.

Our PEDs make it possible to connect to information anytime and anywhere. But when driving is not the time, and behind the wheel is not the place – nor is the cockpit, the bridge of a vessel, or at the controls of a train.

DOT Response:

The Department agrees with the NTSB and its concerns regarding operator distractions in all modes of transportation. On September 30, 2009, President Obama signed an Executive Order directing all federal employees not to engage in text messaging and also encouraged federal contractors and others doing business with the government to adopt and enforce banning texting while on the job. Since 2009, we have held two national distracted driving summits, banned texting and cell phone use for commercial drivers and rail operators, encouraged states to adopt tough laws, and launched several campaigns to raise public awareness about the issue. Many states now have Graduated Driver Licensing laws that include cell phone and texting bans for young drivers.

Federal Aviation Administration

The flightcrew is strictly prohibited from engaging in specific distracting activities. In 1981, the FAA introduced the “Sterile Cockpit Rule” (§ 121.542) that prohibits distracting personal activities during critical phases of flight, which includes all ground operations involving taxi, take off, and landing, and flight operations below 10,000 feet, except cruise.

The FAA began to specifically prohibit personal use of electronic devices on the flight deck, effective April 14, 2014, for part 121 air carriers, which are regularly scheduled operations having a passenger-seat configuration of 10 seats or more and having greater than 7,500 pounds payload capacity. Section 121.542 (as amended) provides the framework to ensure that certain non-essential activities do not contribute to the challenge of task management on the flight deck or a loss of situational awareness due to attention to non-essential tasks. The use of personal wireless communication devices or laptop computers for personal use, while at a duty station on the flight deck while the aircraft is being operated, is strictly prohibited.

To complement § 121.542, the FAA issued an Information for Operators (InFO) 14006, Prohibition on Personal Use of Electronic Devices on the Flight Deck, on May 20, 2014. InFO 14006 provides information not only to part 121 air carriers regarding the prohibition on personal use of electronic devices on the flight deck, but also encourages directors of safety and training managers for all operators under parts 135, 125, and 91K to include operating procedures in their manuals and crewmember training programs prohibiting flightcrew members from using such devices for personal use during aircraft operation.

Federal Motor Carrier Safety Administration

The FMCSA's primary mission is to prevent commercial motor vehicle (CMV) related fatalities and injuries. To accomplish its mission, the FMCSA works with Federal, State, and local enforcement agencies, the motor carrier industry, labor safety interest groups, and others to improve and ensure awareness of compliance with FMCSA regulations.

The FMCSA has made significant progress in raising awareness about the dangers of distracted driving. The FMCSA and its State partners continue to actively enforce regulations prohibiting texting and using handheld cellular phones while driving CMVs, including motorcoaches and other passenger carrying vehicles.² During Fiscal Year (FY) 2014, there were 1,364 inspections with drivers cited for operating a CMV while texting, a 45 percent increase over the 942 inspections in FY 2013. In addition, in FY 2014, there were 19,452 inspections with drivers cited for using a cell phone while operating a CMV, a 36 percent increase over the 14,282 such inspections in FY 2013.

Driver behavior remains the single most important factor in preventing distracted driver related crashes. In 2007, the FMCSA, in partnership with the Commercial Vehicle Safety Alliance (CVSA), launched Operation Safe Driver to address the problem of improving the behavior of all drivers operating in an unsafe manner—either by, in, or around commercial vehicles—and to initiate educational and enforcement strategies to address drivers exhibiting high-risk behaviors. This annual week-long, continent-wide mobilization features stepped-up traffic safety enforcement aimed at cracking down on distracted driving and other dangerous driving behaviors.

During Operation Safe Driver Week, held October 19-25, 2014, the FMCSA, CVSA, and many other stakeholders called on all drivers to reduce aggressive and distracted driving and save lives. Data were collected by 4,337 law enforcement officials at 1,549 locations across the United States and Canada. There were also numerous outreach events throughout the week at high schools, State capitals, State fairs, truck rodeos, sporting events and other locations. Last year

² Limiting the Use of Wireless Communication Devices, RIN 2126-AB22 59118 Federal Register / Vol. 75, No. 186 / Monday, September 27, 2010 / Rules and Regulations <http://www.fmcsa.dot.gov/rules-regulations/administration/rulemakings/final/Limiting-the-Use-of-Wireless-Communication-Devices.pdf>

Drivers of CMVs: Restricting the Use of Cellular Phones, RIN 2137-AE65 75470 Federal Register / Vol. 76, No. 232 / Friday, December 2, 2011 / Rules and Regulations http://www.fmcsa.dot.gov/rules-regulations/administration/rulemakings/final/Mobile_phone_NFRM.pdf

during Operation Safe Driver Week, 19,980 CMV traffic enforcement contacts were made, compared to 29,048 in 2013, and roadside inspections totaled 24,184 in 2014, compared to 44,882 in 2013. Additionally, Federal and State safety investigators use driver performance data from FMCSA's Safety Measurement System (SMS) algorithm to target motor carriers for on-site interventions. As a result, 193 compliance investigations were conducted and 23 percent of the motor carriers investigated received proposed Unsatisfactory Safety Ratings (versus 15 percent for all of FY 2014), while another 53 percent received proposed Conditional Safety Ratings (versus 28 percent for FY 2014). Forty-six percent of the investigations resulted in enforcement actions (versus 33 percent for FY 2014). Operation Safe Driver continues to increase its impact on highway safety by targeting problem behaviors by all drivers.

In addition to the Operation Safe Driver activities, the FMCSA is conducting two research projects to further understand and help reduce driver distraction in commercial vehicle operations. The first, *Driver Distraction: Eye Glance Analysis and Conversation Workload*, seeks to better understand the relationship of cognitive and visual distraction during mobile phone conversations or interactions while the driver is experiencing real-world driving conditions and pressures. The research team analyzed naturalistic data from commercial trucks and buses (weighing greater than 10,000 lb.) during a four-month period. The report will identify and help further understand the safety risks associated with cognitive distraction and the safety risks of short glances off the forward roadway.

The second research project, *Using Driver Simulations to Measure the Impact of Distracted Driving on Commercial Motor Vehicle Operators*, is using applied research to better quantify the dangers of distracted driving. Using state-of-the-art driving simulators in realistic traffic, this project focuses on the performance of CMV operators while experiencing distractions in several driving scenarios, combined with various attention-stealing distractions. The research design was created to account for real-world phenomena, using touchscreen devices, cell phones, and external distractions while CMV drivers drove a motion-based truck-driving simulator. These actions and the level of distraction inflicted were quantified by simulator, observation, and electroencephalography and electrocardiography data. Both reports are currently under Agency final review and scheduled to be released in late 2015.

The FMCSA will continue to enforce its regulations, provide tools to enhance safe driving practices, and build upon its programs and the national momentum the DOT has spearheaded for the last several years to curb these dangerous behaviors. More information on FMCSA and Distracted Driving can be found on the FMCSA website at: <http://www.fmcsa.dot.gov/rules-regulations/topics/distracted-driving/overview.aspx>.

Federal Railroad Administration

The FRA issued Subpart C to Title 49 Code of Federal Regulations (CFR) Part 220, which regulates the use of electronic devices by on-duty railroad operating employees engaging in safety critical duties, in effect since March 26, 2011. The FRA is also making further efforts to reduce electronic distraction in the railroad industry. Viewing this as part of a larger societal issue, the Rail Safety Advisory Committee (RSAC) established a working group to prescribe mitigation strategies, programs, and processes that would make the use of personal electronic

devices that could cause distractions to railroad employees engaged in safety critical activities socially unacceptable. The RSAC Electronic Device Distraction Working Group (Working Group) identified several strategies that were necessary to address this aspect of railroad safety culture.

First, the Working Group determined that it is necessary to identify the scope of the electronic device distraction problem. In conjunction with the Working Group members, the FRA developed an electronic device usage survey for railroad employees and supervisors. This survey is designed to answer basic questions regarding:

- The scope of electronic device use;
- The extent of electronic device misuse;
- The railroad crafts that are most involved in electronic device usage;
- Why electronic devices are being used;
- The perceived danger of using electronic devices while on duty; and
- What interventions or countermeasures would be most effective in decreasing electronic device use.

The FRA received approval from the Office of Management and Budget to collect qualitative data with the developed survey in winter 2014. The FRA intends to deploy the survey in spring 2015 and then annually thereafter. The data that is collected will initially be used to determine the scope of the problem and evaluate potential countermeasures or interventions. After the initial data collection, information from the annual data will be used to examine how electronic device usage is changing in the industry and to measure the efficacy of interventions and countermeasures being used.

In an effort to get as robust a picture as possible of current usage, the FRA has worked with the Department's Volpe National Transportation Center (Volpe) to conduct an electronic device distraction focus group for railroaders. This focus group effort extends existing Volpe research and provided information about the current baseline electronic device usage in the rail industry.

Second, the Working Group recommended that the industry engage in voluntary pilot programs focused on innovative methods for making it socially unacceptable to use distracting electronic devices. To promote such voluntary programs, the FRA awarded a grant for a peer-to-peer coaching program designed to reduce the amount of electronic device use while railroad employees are on duty. The project's kickoff occurred in November 2012, and an initial implementation meeting at a new pilot location was held in March 2014. The FRA looks forward to working with the railroad grantee to craft an effective program to curb distracting use of electronic devices.

Lastly, the Working Group recommended that all stakeholders develop outreach materials and programs in order to share the critical safety message regarding the distracting use of electronic

devices with all railroad employees. In October 2012, former FRA Administrator Joseph Szabo recorded a message to railroad employees (<http://www.youtube.com/watch?v=tW3p53Tbklc>). This public service message discusses the dangers of electronic device distraction and urges railroad employees to refrain from electronic device usage while working. In addition to developing its own outreach materials, the FRA continues to encourage railroads and labor organizations to develop their own materials.

The FRA views this particular issue as one that requires a long-term commitment. The electronic device distraction outreach programs will need to be refreshed on a frequent basis, and the voluntary projects will need to continue for many years. The FRA is committed to promoting these and future activities, and to evaluating their effectiveness, in order to ensure that the safety problems due to distractions from electronic device usage are curtailed.

Federal Transit Administration

The FTA developed a voluntary 30 minute on-line course for the transit industry entitled, *Curbing Transit Employee Distracted Driving*. This course is designed to raise awareness of distracted driving with the purpose of reducing the risk of distracted driving by public transportation professionals. Elements of the course include: definition of the term "distracted," risks of driving while distracted, typical distractions, prevention tips, applicable regulations, laws, and company policies pertaining to the use of wireless devices. FTA launched the course in 2012. Since that time, more than 8,000 transit operations personnel have completed the E-Learning course, and many transit agencies have added this course to their specific agency training on Distracted Driving.

National Highway Traffic Safety Administration

On April 3, 2014, DOT announced the Department's first-ever, national advertising campaign and law enforcement crackdown to combat distracted driving. As part of the effort, television, radio and digital advertisements used the phrase *U Drive. U Text. U Pay.* ran from April 7-15, which coincided with a nationwide law enforcement crackdown in states with distracted driving bans.

"This campaign puts distracted driving on par with our efforts to fight drunk driving or to encourage seatbelt use," said Secretary Foxx. "Across the country, we're putting distracted drivers on notice: If you're caught texting while driving, the message you receive won't be from your cell phone, but from law enforcement."

- U Drive. U Text. U Pay.

The new ads remind the public of these deadly consequences, as well as the penalties for getting caught violating the state distracted driving laws. The campaign ran in English and Spanish, and can be watched at Distraction.gov.

An \$8.5 million national advertising campaign supported the first-ever national distracted driving high-visibility enforcement (HVE) crackdown, which ran from April 10 to April 15, 2014. Thousands of law enforcement personnel nationwide will use traditional and innovative strategies to crack down on motorists who text and drive.

The national campaign built on the success of two federally funded distracted driving state demonstration programs that took place in California and Delaware, *Phone in One Hand. Ticket in the Other*. The demonstrations are discussed in the Traffic Tech issued by NHTSA, [“Distracted Driving High-Visibility Enforcement Demonstrations in California and Delaware.”](#)

Also, in 2014, New Mexico and South Dakota became the 42nd and 43rd states to prohibit texting behind the wheel by all drivers. Twelve states, the District of Columbia, Guam and the Virgin Islands prohibit all hand-held cell phone use while driving.

2. End Substance Impairment in Transportation³

What is the issue?

The issue is something you might not realize is happening: The world around you seems to move slower. Your concentration lags. When your brain tells your hand to move, it takes longer for your hand to respond and the movement is clumsy. When you blink, your eyelids stay closed longer. You are feeling the effects of the alcohol you drank earlier, and you are driving a car. But you probably don't even recognize how impaired you are – or the risk that you pose to yourself and others.

This scenario is all too common. In a 2013 AAA Foundation for Traffic Safety survey, 13 percent of drivers said they thought that they had driven close to or over the legal blood alcohol concentration (BAC) limit in the previous year. According to the Centers for Disease Control and Prevention, drivers make about 112 million alcohol impaired trips each year.

According to the National Highway Traffic Safety Administration, the proportion of fatally injured drivers who had drugs in their system rose from 13 percent to 18 percent from 2005-2009. In 2012, 10.3 million people reported driving under the influence of illicit drugs in the past year.

Since 2000, almost 160,000 people have died in motor vehicle crashes involving impaired drivers. And the problem of impairment is not limited to highways.

The NTSB recently studied drug use among fatally injured pilots. The prevalence of potentially impairing drugs increased from an average of 11 percent of fatally-injured accident pilots during the period from 1990-1997 to an average of 23 percent of accident pilots during the period 2008-2012. During the same time periods, positive marijuana results increased from 1.6 percent to 3.0 percent. But the most commonly found impairing substance in fatal crashes was diphenhydramine, a sedating antihistamine found in over-the-counter medications.

Time after time, NTSB investigations have found substance impairment as a cause or a contributing factor in transportation accidents. Complex machinery such as cars, planes, trains, ships, and pipelines require operators to be at their best – not impaired by alcohol or drugs.

Finally, nobody really knows the effect that decriminalizing marijuana will have on transportation safety.

³ http://www.nts.gov/safety/mwl/Pages/mwl2_2015.aspx

What can be done?

We need more and better data to understand the scope of the problem and the effectiveness of countermeasures. In commercial transportation industries, operators and enforcement authorities must not neglect required post-accident testing. Additionally, states should increase collection, documentation and reporting of driver BAC test results following crashes.

Drivers and other transportation operators need good information to make informed decisions. While many recognize the impairment potential of illicit drugs, they may not appreciate the potentially impairing effects of prescribed or over-the-counter medications, especially in combinations. Discuss your transportation activities with your doctor before taking a medication, and discuss the impairing effect of any medical condition as it might increase your risk of having an accident. Treatment should not always exclude you from operating a vehicle, but such conditions and medications need to be monitored. If any medication label warns against operating heavy machinery, that includes vehicles. Also, while the danger of drinking and driving is more broadly understood than that of driving under the influence of drugs, many do not know that even low levels of alcohol can degrade skills and increase crash risk.

Additional countermeasures include stronger impaired driving laws, increased use of high-visibility enforcement, expanded use of existing technology such as ignition interlocks and passive alcohol sensors, development of emerging in-vehicle technology such as the Driver Alcohol Detection System for Safety, and targeted measures for repeat offenders such as the use of DWI Courts.

DOT Response:

For more than 25 years, the Department has focused on addressing substance abuse in transportation to ensure the safety of the traveling public; reduce the demand for illicit drugs; deter the use of illicit drugs and the misuse of alcohol in the transportation industries; and create prevention and treatment opportunities for transportation employers and employees.

Office of the Secretary

The OST Office of Drug and Alcohol Policy and Compliance was established as the principal advisor to the Secretary and leads the Department on rules related to the drug and alcohol testing of safety-sensitive transportation employees in aviation, trucking, railroads, mass transit, pipelines, and other transportation industries. The Office publishes regulations and provides official interpretations on drug and alcohol testing, including how to conduct tests, and the evaluation and treatment procedures necessary for returning employees to duty after testing violations. The Office also coordinates the Department's involvement with the President's National Drug Control Strategy annually.

Employees who are considered to be in transportation safety-sensitive work on roads, rails, water, or in the air, over land and underground are subject to the Department's drug and alcohol testing regulations. These employees are subject to testing under the world's largest workplace

testing program. Safety-sensitive employees who work for specific employers regulated by the FAA, FMCSA, FRA, FTA and the United States Coast Guard⁴ are subject to drug and alcohol testing under ODAPC's regulation, 49 CFR Part 40 (Part 40) and their respective Agency regulations.

Because safety-sensitive employees in the transportation industry know they are subject to DOT required drug and alcohol testing, DOT drug and alcohol programs have proven to be an effective deterrent. The Agency specific regulations identify the employers that must conduct testing and the employees who are subject to testing, as well as when and in what situations testing will take place (i.e., pre-employment, random, post-accident, reasonable suspicion/cause, and required testing after an employee returns to work because of a failed or refused test). By statute, DOT is required to follow the Department of Health and Human Services (HHS) regarding the scientific and technical guidelines of drug testing. HHS certifies laboratories and determines the testing procedures for those laboratories. They also determine the drugs for which we test, which are limited to Schedule I and Schedule II under the Controlled Substances Act. With respect to DOT mandated alcohol testing, a breath alcohol concentration of 0.04 or more on a DOT test is considered a violation of DOT regulations compared to a standard State legal limit of 0.08. Alcohol use in a safety-sensitive function immediately before and on-duty is prohibited.

Part 40 governs how to conduct testing and how to return employees to safety-sensitive duties after a violation of a drug and/or alcohol testing regulation. Safety-sensitive employees who violate drug and alcohol testing regulations are immediately removed from safety-sensitive work. Such an employee is not permitted to return to work until (s)he is evaluated by a qualified Substance Abuse Professional (SAP), complies with the recommendations of the SAP, and has a negative test result on a return-to-duty test. In addition, that employee must undergo unannounced follow-up testing for a minimum of 12 months to ensure compliance. Return-to-duty and follow-up drug tests are conducted under direct observation.

Part 40 also requires a licensed physician to review and verify each drug test result. Employees who test positive for a Schedule II drug on the testing panel may have a legitimate medical explanation (e.g., a prescription) for a positive test result. However, if the physician determines the use is legitimate, but during the course of the verification realizes there is a significant safety risk due to a medical condition or prescribed medication(s), the physician is required to report the risk to the employer, the Medical Examiner, a Substance Abuse Professional, the respective Agency, or the NTSB in the course of an accident investigation. Schedule II drugs not included in the drug testing panel, as well as Schedule III-V drugs and over-the-counter medications that are identified during the verification process must also be reported, if the physician determines they pose a significant safety risk. Through training and outreach, DOT is emphasizing the requirement for physicians to identify and report significant safety risks to make it possible for medical conditions and medications to continue to be monitored.

Federal Aviation Administration

⁴ As a part of the Department of Homeland Security, the Coast Guard would need to respond through its own Department.

The FAA has long-standing regulations and a highly trained inspection force that specializes in inspection of the drug and alcohol testing programs of its regulated employers. The Antidrug and Alcohol Misuse Prevention Programs required of certain certificate holders includes pre-employment, random, reasonable suspicion as well as post-accident testing. Combined with a strong enforcement program, these tests provide a strong deterrence against the illicit use of drugs and misuse of alcohol by the safety-sensitive employees in the commercial aviation industry. Through the Drug and Alcohol Management Information System (DAMIS), the FAA collects valuable testing data in commercial aviation which assists in the evaluation of the effectiveness of its testing program.

Additionally, the FAA conducts post-accident drug and alcohol testing in fatal crashes in commercial and general aviation. Commercial aviation has not had an accident in the last five years related to drug or alcohol.

To better educate air carriers and pilots, the FAA included new questions and answers in the “Frequently Asked Questions” section of the FAA website to raise employer awareness regarding post-accident drug and alcohol testing requirements. These questions can be found online at <http://faa.custhelp.com>.

The FAA is constantly conducting new medical research to better understand substance impairment. Current topics include:

- Analysis of postmortem concentrations in human tissue samples obtained from aviation accidents;
- Development of a method for the analysis of cannabinoids in postmortem samples;
- Development of improved methods to discern between ethanol consumption and postmortem ethanol formation in forensic toxicology tissue samples; and
- Assessment of the prevalence of drugs and alcohol in pilots fatally injured in civil aviation accidents.

The FAA takes substance impairment testing extremely seriously. The FAA penalizes operators, repair shops, and other services that fail to meet the FAA’s strict drug and alcohol testing regulations.

Federal Motor Carrier Safety Administration

The FMCSA is committed to ensuring that only safe commercial drivers and motor carriers are allowed to operate on our roads. FMCSA has inspectors -across the nation- inspect and work with state and local law enforcement to examine drug and alcohol testing programs of regulated trucking employers in order to improve compliance and ensure safety. By improving truck and bus safety through education, regulation, and enforcement, the FMCSA is able to influence motor carrier and driver behaviors and remove dangerous drivers from the Nation's highways.

In FY 2014, 960 violations for use or possession of drug or alcohol were cited against CMV drivers as a result of traffic enforcement activity. Of these violations, 546 were drug related

while 414 were alcohol related. As of January 23, 2015, 270 drug and alcohol violations have been cited against CMV drivers as a result of traffic enforcement activity since October 1, 2014. There has been a steady decline in the number of drug and alcohol violations cited each year since FY 2009 which the FMCSA believes reflects improved behaviors due to the enforcement activity. However, continued enforcement is necessary to maintain a general deterrent as actual drug and alcohol use by drivers cannot be accurately measured.

The FMCSA conducted a drug and alcohol strike force from April 28 through May 9, 2014. The strike force prioritizes motor carriers in violation of Federal drug and alcohol testing requirements and drivers who move from carrier to carrier to evade Federal drug and alcohol testing and reporting requirements. During the strike force, the FMCSA conducted reviews of truck and bus companies and drug and alcohol testing facilities. The information collected was compared with compliance data in the FMCSA's Driver Information Resource database to identify drivers that violated Federal rules and continued to drive a CMV after testing positive for drugs or alcohol.

During the two-week national strike force, nearly 150 federal investigators examined the drug and alcohol safety records of commercial drivers employed by bus and truck companies, including school bus drivers, interstate passenger carriers, hazardous material transporters and general freight long-haul trucking companies. Investigators identified 205 commercial bus and truck drivers and 138 companies operating in violation of drug and alcohol regulations. Civil penalties were issued to all of the commercial driver's license (CDL) holders and companies identified in the national strike force. In addition, approximately 145 of the drivers may be barred from operating a commercial motor vehicle by their State Driver's Licensing Agency for failing to adhere to federal drug and alcohol regulations.

In addition to strike force activities, on February 20, 2014, FMCSA published the Commercial Driver's License Drug and Alcohol Clearinghouse notice of proposed rulemaking (NPRM), which proposes to establish a database under the Agency's administration that will contain drug and alcohol test result information for the holders of CDLs. This rulemaking would create a central database for verified positive controlled substances and alcohol test results for CDL holders and refusals by such drivers to submit to testing. This rulemaking would require employers of CDL holders and service agents to report positive test results and refusals to test into the Clearinghouse. Prospective employers, acting on an application for a CDL driver position with the applicant's written consent to access the Clearinghouse, would query the Clearinghouse to determine if any specific information about the driver applicant is in the Clearinghouse before allowing the applicant to be hired and to drive CMVs. This rulemaking is intended to increase highway safety by ensuring CDL holders, who have tested positive or have refused to submit to testing, have completed the U.S. DOT's return-to-duty process before driving CMVs in interstate or intrastate commerce. It is also intended to ensure that employers are meeting their drug and alcohol testing responsibilities. Additionally, provisions in this rulemaking would also be responsive to requirements of the Moving Ahead for Progress in the 21st Century (MAP-21) Act. The FMCSA is currently drafting the final rule and expects publication of the final rule by January 2016.

The FMCSA is committed to using every resource available to eliminate the dangers of substance impaired driving. The FMCSA will continue targeting high-risk carriers through field oversight efforts such as investigations, safety audits, and roadside inspections to make certain that unsafe commercial drivers are removed from the Nation's highways.

Federal Railroad Administration

The FRA has effective drug and alcohol testing regulations. In conjunction with the Department's industry testing programs under 49 CFR Part 40, and through the use of pre-employment, reasonable suspicion/cause, random, and post-accident testing, the FRA has achieved extremely low positive testing rates. These regulations have been proven effective in deterring and detecting illicit drug use and alcohol misuse amongst safety-sensitive employees. For example, when FRA initiated its post-accident testing program in 1985, the combined positive rate for drugs and alcohol was approximately 6 percent. In contrast, in 2014 the post-accident program had no positive test results for either drugs or alcohol. Similarly, when FRA phased in random drug testing in the early 1990's, the random positive drug testing rate hovered around 2 percent; in 2013, that rate had dropped to 0.41.

The FRA testing program has the additional positive effect on the personal behavior of covered crewmembers due to the deterrent effect of random, reasonable suspicion, and post-accident testing, thus avoiding the negative overall societal effects of drug abuse upon individuals and their families. FRA also requires railroad employers to have self-referral and co-worker Employee Assistance Program referrals which act as "force multipliers" to the actual testing requirements in rehabilitating troubled, covered employees.

In 1991, Congress enacted the Omnibus Transportation Employee Testing Act of 1991 (Omnibus Act or Act), which mandated testing procedures and standards for DOT and modal transportation workplace testing. As noted above, however, the implementation of FRA's post-accident testing program pre-dated the Omnibus Act by six years, and the Act specifically exempted FRA post-accident testing for this reason. FRA therefore has independent authority in its post-accident testing program (49 CFR Part 219 Subpart C) to conduct laboratory analyses for a much wider panel of prescription (Rx) and OTC drugs than authorized in the standard Part 40/DHHS 5-panel test. The FRA post-accident testing also requires the collection of blood samples, in addition to urine samples, which avoids the problems of substituted and adulterated urine samples as well as "shy-bladder" issues. Blood sample analysis allows FRA to perform impairment analysis of a crewmember at the time of the accident as the substance metabolites in blood indicate a closer real-time usage of a particular substance. The FRA post-accident testing is also the only DOT program that allows for post-mortem testing and both the surviving and post-mortem testing of crewmembers is frequently used by the NTSB in lieu of performing its own testing in railroad accidents.

Drugs and Alcohol as a Contributing Factor to Accidents and Data

Again, FRA has seen post-accident positive rates drop from consistently over 6 percent in the late 1980s to 0 to 1.5 percent in recent years. As a result of the deterrence of usage and the detection of usage through 28 years of testing, less impairment amongst railroad covered

employees has been a major factor in reducing actual qualifying accidents from 179 in 1987 down to 73 in 2014.

The FRA post-accident testing includes many drug types and classes that are not included in regular DOT Part 40 testing including Rx benzodiazepines (e.g., Xanax, Valium, Adavan), synthetic opioids (e.g., Vicodin, OxyContin, Dilaudid, Demerol), barbiturates, Tramadol, methadone, and OTC sedating antihistamines such as diphenhydramine that was cited in the NTSB text. Any Rx laboratory positive that is identified must be downgraded to a negative result when supported by a valid Rx or is deemed a positive by the licensed physician and FRA.

FRA procures a certified laboratory to analyze the specimens as well as an independent oversight contractor to ensure the laboratory procedures and legal defensibility of each post-accident testing event. The post-accident testing program requires FRA to maintain over 10,000 toxicological testing kits distributed across the country. The FRA post-accident testing is accomplished with significant effort and at a cost of over \$500,000 each year. FRA constantly analyzes Rx and OTC drug use and trends and expands the testing panel as needed. FRA published a Part 219 amendment adding Tramadol and sedating antihistamines to the Part 219 Subpart C post-accident testing panel on March 5, 2013. In short, FRA expends significant funding and effort to procure the required expertise on post-accident testing and is proud of the program and the results it has achieved.

Medical Review of Rx-OTC Medications With Regards to Transportation Activities

FRA anticipated Rx and OTC drugs as a critical safety factor when promulgating what was the first DOT testing regulation in 1985—49 CFR Part 219. Unique amongst the DOT modal testing regulations, Part 219 dealt with Rx-OTC medications specifically prescribed or authorized dosage

Thus, FRA recognized these issues 15 years before the NTSB issued Rx-OTC medication recommendations and continues to recognize that Rx and OTC drug use by railroad covered employees requires medical review and knowledge of the employee's duties by the treating physician or the railroad's occupational health physician. The regulation also overtly did not restrict the development of policy by the railroads requiring covered employees to report their Rx and OTC drug use to the railroad for review, approval, or restrictions. Many of the large Class I railroads have in fact enacted Rx and OTC drug notification, review, and restriction policies.

FRA is developing an optional training module with a test and certificate for Part 219-regulated employees that may be downloaded from the FRA website. This will ensure awareness of the potential on the hazards of using specific medications while performing railroad covered safety-sensitive duties. The module will provide the following information and should be published and available in early 2015.

FRA has ensured that multiple crewmembers operate railroad locomotives, and that has a positive effect with regards to monitoring potential impairment. In addition, there is a regulatory coworker report policy that protects the job of the impaired and the identity of the reporter to encourage use of the coworker report mechanism. FRA has a longstanding Rule G impairment

check requirement of crewmembers, as well as reasonable suspicion testing where a railroad supervisor may order testing when he or she detects potential signs or symptoms of drug use or alcohol misuse.

FRA has standard disqualifications of locomotive engineers and conductors in the certification rules (49 CFR Parts 240 and 242) that define the escalating consequences of disqualification time for multiple violations.

Lastly, the FRA intends to issue a rulemaking to propose to include Maintenance of Way (MOW) employees as a new category of safety-sensitive employee. Including MOW employees in regulated railroad testing programs would be a significant stride forward in improving transportation safety.

Federal Transit Administration

Over the past 18 years, FTA has developed training and published over 30 publications, reports, studies, technical reports, technical assistance documents and guidelines addressing how transit agencies can detect, deter, and prevent drug use and alcohol misuse in the transit environment. Annually, FTA conducts approximately 60 audits of transit providers implementing 49 CFR Part 655 (Prevention of Alcohol Misuse and Prohibited Drug Use in Transit Operators), and up to 120 clandestine unannounced inspections of drug and alcohol collection testing vendors implementing 49 CFR Part 40 (Procedures for Transportation Workplace Drug and Alcohol Testing Programs). In April 2015, FTA sponsored its 10th Annual Drug and Alcohol National Program Conference. This three-day conference provided attendees with substantial training and technical assistance on 49 CFR Part 40 and 49 CFR Part 655.

The technical assistance available to the transit industry leads to a positive impact on safety, and provides transit properties with tools to more effectively comply with 49 CFR Part 655. The technical assistance materials provided by the FTA have enabled the capacity of transit agencies in their detection and prevention of drugs and alcohol. FTA's regulations (49 CFR Part 655.45) require employers to conduct random drug tests annually at a rate equivalent to at least 50 percent of their total number of safety-sensitive employees for prohibited drug use and at least 25 percent for the misuse of alcohol. Due to drug positive rates at or below 1.0 percent and alcohol violation rates at or below 0.5 percent for the past two-years, the annual percentage rate of testing safety-sensitive employees has been reduced from 50 percent to 25 percent, a provision of the regulation (Preamble of 49 CFR Part 655). The industry has been at the lower testing rates since 2007, which is an indication of the success the FTA has had in helping to deter drug and alcohol misuse. The FTA believes some of this low rate can be attributed to the robust technical assistance and outreach to transit providers.

Since the 1997 implementation of the Compliance Audit Program, the FTA has addressed emerging issues identified during audits of transit industry through the production of videos, laminated decision cards, toolkits and guidance documents specifically targeting these identified emerging issues.

For example, the Post-Accident Threshold laminated cards were created to address the increase in post-accident testing surpassing, or not reaching, the FTA thresholds. Over the last two years of audits, FTA has recorded a reduction in both under and over-testing after post-accidents.

Additional information and educational materials produced by the FTA to help prevent drug use and alcohol misuse in the regulated industries includes:

FTA-provided Drug and Alcohol Technical Assistance:

Technical Assistance - <http://www.fta.dot.gov/12567.html>

FTA Newsletters- Drug & Alcohol Program - Regulation Update Newsletters:

http://www.fta.dot.gov/TS0/12533_12600.htm118

FTA Training:

Transit Safety and Oversight (TSO) <http://transitsafety.fta.dot.gov/DrugAndAlcohol/Training>

FTA Publications:

<http://transit-safety.fta.dot.gov/publications/order/default.asp>

National Highway Traffic Safety Administration

The nation's decades-long campaign to combat drunk driving continues to make our roads safer, but use of marijuana and prescription drugs is increasingly prominent on the highways, creating new safety concerns, according to a pair of ground-breaking studies

(<http://www.nhtsa.gov/About+NHTSA/Press+Releases/2015/nhtsa-releases-2-impaired-driving-studies-02-2015>) released by NHTSA.

One study, the latest version of NHTSA's *Roadside Survey of Alcohol and Drug Use by Drivers*, found that the number of drivers with alcohol in their system has declined by nearly one-third since 2007, and by more than three-quarters since the first Roadside Survey in 1973. But that same survey found a large increase in the number of drivers using marijuana or other illegal drugs. In the 2014 survey, nearly one in four drivers tested positive for at least one drug that could affect safety.

“America made drunk driving a national issue and while there is no victory as long as a single American dies in an alcohol-related crash, a one-third reduction in alcohol use over just seven years shows how a focused effort and cooperation among the federal government, states and communities, law enforcement, safety advocates and industry can make an enormous difference. At the same time, the latest Roadside Survey raises significant questions about drug use and highway safety. The rising prevalence of marijuana and other drugs is a challenge to everyone who is dedicated to saving lives and reducing crashes.”

- Mark Rosekind, NHTSA Administrator

The National Roadside Survey, conducted five times over the last 40 years, is a completely voluntary, anonymous survey that gathers data in dozens of locations across the country from

drivers who agree to participate. Drivers are alerted by multiple roadside signs that a voluntary survey site is ahead, and researchers gather data from those who volunteer. Drivers are notified that the survey is completely voluntary and that collected information is entirely anonymous. NHTSA has worked with research experts, law enforcement agencies and privacy advocates to refine procedures and address any potential concerns.

The latest edition of the survey shows that the prevalence of alcohol use by drivers continues to drop. About 8 percent of drivers during weekend nighttime hours were found to have alcohol in their system, and just over 1 percent were found with 0.08 percent or higher breath alcohol content – the legal limit in every state. This is down by about 30 percent from the previous survey in 2007 and down 80 percent from the first survey in 1973.

But even as drinking and driving continues to fall, use of illegal drugs or medicines that can affect road safety is climbing. The number of weekend nighttime drivers with evidence of drugs in their system climbed from 16.3 percent in 2007 to 20 percent in 2014. The number of drivers with marijuana in their system grew by nearly 50 percent.

A second survey, the largest of its kind ever conducted, assessed whether marijuana use by drivers is associated with greater risk of crashes. The survey found that marijuana users are more likely to be involved in accidents, but that the increased risk may be due in part because marijuana users are more likely to be in groups at higher risk of crashes. In particular, marijuana users are more likely to be young men – a group already at high risk.

This was the most precisely controlled study of its kind yet conducted, but it measured the risk associated with marijuana at the levels found among drivers in a large community. Other studies using driving simulators and test tracks have found that marijuana at sufficient dosage levels will affect driver risk.

“Drivers should never get behind the wheel impaired, and we know that marijuana impairs judgment, reaction times and awareness. These findings highlight the importance of research to better understand how marijuana use affects drivers so states and communities can craft the best safety policies.”

- Jeff Michael, NHTSA’s Associate Administrator for Research and Program Development

The study, conducted in Virginia Beach, Virginia, gathered data over a 20-month period from more than 3,000 drivers who were involved in crashes, as well as a comparison group of 6,000 drivers who did not crash. The study found that drivers who had been drinking above the 0.08 percent legal limit had about 4 times the risk of crashing as sober drivers and those with blood alcohol levels at 0.15 percent or higher had 12 times the risk.

NHTSA plans a series of additional studies to further understand the risk of drugged driving, including the Washington State Roadside Survey, which will assess risk in a state where marijuana has recently been legalized, and a simulator study with the National Institute on Drug Abuse to assess how drivers under the influence of drugs behave behind the wheel.

Researchers have developed a deep body of knowledge about the link between drinking, driving and risk. The Department knows drunk driving kills. The combined message of these two surveys is that our work to understand and combat drunk driving is paying off, but that we have much to learn about how illegal drugs and prescription medicines affect highway safety – and that developing that knowledge is urgent, because more and more drivers have these drugs in their systems.

Pipelines and Hazardous Materials Safety Administration

For more than 25 years, PHMSA has required operators under 49 CFR Part 199 to conduct drug and alcohol testing of covered employees who perform operation, maintenance, or emergency-response functions regulated by 49 CFR Parts 192, 193, or 195. Through inspections, outreach, and education, PHMSA has continued to successfully promote transportation safety through prevention of illegal drug use and alcohol misuse.

In a February 2012 Federal Register Advisory about post-accident testing, PHMSA reminded operators that, if a covered employee's performance cannot be completely discounted as a contributing factor to the accident or incident, the employee must be tested for the potential substance abuse or misuse of both drugs and alcohol. In the Advisory, operators and contractors are encouraged to review and update, where necessary, plans and procedures governing post-accident substance abuse/misuse testing and train all those involved with ensuring that such testing is performed promptly and in an effective manner.

3. **Enhance Public Helicopter Safety**⁵

What is the issue?

The safety of public helicopter operations is often overlooked.

Every day, hundreds of federal, state, and local helicopter pilots fly emergency medical service, law enforcement support, and search and rescue missions, as well as a host of other public operations. The public trusts these operators and relies on them to conduct the mission safely; the public often needs this transportation to survive. And each of these helicopter operations requires planning, training, and support. Unfortunately, not all of the pilots complete their missions.

On September 27, 2008, a Maryland State Police (MSP) helicopter, Trooper 2, received a medevac flight request to pick up two patients involved in an automobile accident. Trooper 2 reached the accident site, loaded the patients, but never reached the hospital.

On June 9, 2009, a New Mexico State Police (NMSP) helicopter pilot received a request for an aerial search for a lost hiker. The NMSP pilot landed the helicopter, located the hiker, departed from the mountain, but did not make it back to base.

A very similar situation occurred on March 30, 2013. The Alaska Department of Public Safety (ADPS) helicopter pilot received a request to rescue a stranded snowmobiler. The pilot landed the helicopter, located the snowmobiler, departed from the frozen lake, but did not reach the designated landing zone.

Prior to accepting their missions, both the MSP and NMSP pilots expressed concern about weather conditions. Although the pilot of the ADPS helicopter did not discuss the weather with anyone, he should have been aware of the deteriorating conditions. However, all three pilots accepted and attempted to complete the missions even when faced with poor weather at night. And tragically, the helicopters crashed before reaching their destinations, killing a total of nine people.

Crashes involving public helicopters are not just limited to those used by law enforcement agencies. On January 5, 2010, a California Department of Fish and Game helicopter sustained substantial damage when it collided with power lines during a deer-surveying mission. The NTSB determined that the pilot's failure to maintain positive control of the helicopter caused the crash.

Since 2004, the NTSB has investigated more than 130 accidents involving federal, state, and local public helicopter operations, including the 4 mentioned above. Fifty people lost their lives

⁵ http://www.nts.gov/safety/mwl/Pages/mwl3_2015.aspx

and nearly 40 were seriously injured in these accidents. The lessons learned as a result of these investigations have the potential to make federal, state, and local public helicopter operations safer.

What can be done?

Because public operator safety is not generally governed by Federal Aviation Administration regulations, a safety net does not necessarily exist; the safety decisions and programs are solely the responsibility of the public operators. Yet these operators often carry passengers, and they owe it to the public, who they serve, to operate in the safest manner possible. The NTSB is concerned that, absent a concerted effort to enhance helicopter safety in public operations, accidents involving public helicopters will continue. These could lead to more injuries and loss of life in search and rescue operations and emergency medical service flights, as well as other operations by federal, state, and local entities.

Based on our accident investigations, the NTSB has identified a number of actions that public operators can take to address operational, pilot, and helicopter factors.

Operational factors hold great promise because they impact the overall safety of the operation. Operational improvements include developing and implementing safety management systems that include sound risk management practices, particularly flight risk evaluation programs and formalized dispatch and flight-following procedures. Operators can also implement best practices for flight crews that include scenario-based training and fatigue management. In particular, given the heightened risk associated with flight in bad weather, helicopter operators should employ training scenarios that expose pilots to inadvertent flight into instrument meteorological conditions.

Helicopter technology also plays a significant role in mitigating risk to thousands of pilots and passengers each year. The NTSB has recommended that helicopter operators install radio altimeters, night vision imaging systems, and terrain awareness warning systems.

Finally, the NTSB advocates for crash-resistant flight recorder systems for all aircraft. These recorders can be used to enhance the safety culture within the public agency by allowing the operators to identify and address safety issues before a crash occurs. Further, if an accident does occur, crash-resistant flight recorder systems can assist investigators, regulatory agencies, and operators to quickly identify what went wrong and how to prevent it from happening again.

DOT Response:

Helicopter operations are an integral part of modern American society. Their role in transporting critically ill patients, police operations, news gathering, logging, firefighting, oil platform operations, surveying, border security, sightseeing, and other uses is increasing at a collective annual rate of 2.6 percent fleet growth and 2.8 percent hours flown. In FY 2013, we saw an increase in fatal accidents not experienced since 1994 (19 in FY 2012 compared to 37 in FY

2013). Our efforts to reduce these accidents have proven effective. In FY 2014, we saw 21 fatal helicopter accidents, a 43 percent decrease from FY 2013.

Federal Aviation Administration

Educating the Helicopter Community

Each of the eight FAA Flight Standards regions now has a Regional FAAS Team Office dedicated to improving the Nation's aviation accident rate by conveying safety principles and practices through training, outreach, and education, while establishing partnerships and encouraging the continual growth of a positive safety culture within the aviation community.

This unique safety program is managed by the Regional FAAS Team Manager (RFM). Based on the makeup of the aviation community in each region, the RFM has selected a group of FAAS Team Program Managers (FPM) with specific aviation specialties and assigned them to geographic areas of responsibility within the region. FPMs do not report to work where the RFM resides. They are "hosted" at FAA facilities within their assigned geographic area but they still report directly to the RFM.

The FAAS Team is a leader in improving helicopter safety. As part of the FAAS Team's yearly performance plan requirements, each FPM must conduct one regional helicopter safety meeting. The FPM will partner with a regional helicopter subject matter expert and other industry partners, such as the Helicopter Association International (HAI), to offer educational outreach to individual airman and helicopter operators, which includes public helicopter operators. The goal of these safety meetings is to discuss helicopter safety awareness, risk factors, and risk mitigation strategies.

In addition, the FAAS Team's performance plan requires the FPM to conduct a PowerPoint presentation entitled, *Autorotate and Live*. The presentation analyzes an actual helicopter accident and the causal factors that led to three fatalities. The presentation contains a video produced by HAI on the common misconceptions of performing an autorotation and the need for improving the instructional and performance standardization of autorotation training. The target audience is anyone involved in helicopter operations and in need of an effective risk identification and mitigation strategy.

Last year, the FAA established the United States Helicopter Safety Team (USHST). This important regional member of the International Helicopter Safety Team continues to play an active role in supporting the helicopter industry. It does so by focusing on educational, procedural, and technologically-based solutions to common hazards within the rotorcraft community. The FAA continues to play a key role in the USHST's efforts. The success of this program demonstrates what can be accomplished through effective government-industry collaboration in helping to reduce accidents.

In April 2015, the FAA will host the International Helicopter Safety Conference in Hurst, Texas. The conference focuses on three industry subgroups, which have historically accounted for over 50 percent of the helicopter accidents each year:

- Personal/private operations;
- Training operations; and
- Aerial application operations.

The FAA's Non-Required Safety Enhancement Equipment (NORSEE) Policy will be discussed at this conference. The FAA's goal with NORSEE is to encourage use of optional, non-required, safety enhancing equipment in rotorcraft and provide guidance and criteria to allow a reduction in the design assurance levels for systems that can be shown to improve overall rotorcraft safety. This will lower equipment development costs, allow for more rotorcraft to be equipped with NORSEE, and establish limitations for NORSEE installations.

Public Aircraft and Helicopter Air Ambulances

On February 12, 2014, the FAA issued AC 00-1.1A, Public Aircraft Operations (PAO), to clarify the roles and responsibilities of all stakeholders, including contractors, operators, the FAA, and U.S. Government entities conducting PAO. The AC made clear that PAO determinations are made on a flight-by-flight basis in accordance with FAA's statutory mandate. Multiple industry groups, including HAI, were briefed by the FAA regarding the specifics of the revised AC.

On February 21, 2014, the FAA published the Helicopter Air Ambulance, Commercial Helicopter, and Part 91 Helicopter Operations Final Rule (79 FR 9932). This final rule requires new operational procedures and additional equipment for helicopter air ambulance operations. It also revises requirements for equipment, pilot testing, and alternate airports for commercial operators. It increases weather minimums for all GA helicopter operations.

The FAA has initiated an NPRM titled, *Helicopter Air Ambulance Pilot Training and Operational Requirements*. This rulemaking proposes training requirements for crew resource management, flight risk evaluation, and operational control of the aircraft, as well as developing standards for the use of flight simulation training devices and line-oriented flight training. Additionally, this rulemaking would establish requirements for the use of safety equipment for flight crewmembers and medical crewmembers.

The FAA's Civil Aerospace Medical Institute (CAMI) Night Imaging Training Environment (NITE) facility fully demonstrates the capabilities of night vision goggles (NVG), a technology used by many night-time operators, such as helicopter air ambulances. Since its inception, the NITE facility has hosted hundreds of students from CAMI's physiology training courses, and has actively contributed to training AFS's Airworthiness (Avionics/Maintenance) Aviation Safety Inspectors undergoing NVG familiarization at the FAA's Mike Monroney Aeronautical Center. A new helicopter simulator is being acquired, and research in rotorcraft low-visibility operations and head-worn displays for flight-path guidance and obstacle avoidance is planned.

4. **Implement Positive Train Control in 2015**⁶

What is the issue?

Positive Train Control (PTC) can stop many rail accidents before they happen. Congress has mandated that railroads implement it by December 31, 2015. Public safety demands that the railroads comply.

Imagine the engineer of a freight train suffering from the symptoms of the cold he has been fighting for three days. Although he feels a little better this morning, he is still coughing and tired. He does not notice a red signal, and does not stop the train. What happens next?

With PTC, the train stops anyway.

Without PTC, real-world results have been tragic. PTC is a system of functional requirements for monitoring and controlling train movements to provide increased safety. While the NTSB has called for a system like this for over 45 years, it still has not been fully implemented in our commuter, intercity, and freight trains. Without it, everybody on a train is one human error away from an accident.

For example, in September 2008, a Metrolink commuter train collided head-on with a Union Pacific freight train in Chatsworth, California. Twenty-five people were killed and more than 100 were injured. The NTSB's investigation revealed that the engineer was texting. He ran past a red stop signal and crashed into an oncoming train.

PTC would have prevented the accident, had it been monitoring the trains that collided. In the five years since the Chatsworth collision, the NTSB has completed investigations of numerous other railroad accidents that involved human error.

The need for PTC to protect against human error was driven home again on December 1, 2013. As people headed home from their Thanksgiving weekend, or downtown for holiday shopping, a Metro-North commuter train derailed in the Bronx, killing four and injuring dozens of others. The train's engineer had fallen asleep and failed to slow the train from over 82 miles per hour (mph) to the maximum authorized speed of 30 mph as it entered a curve.

What can be done?

In the aftermath of the Chatsworth tragedy, Congress enacted the Rail Safety Improvement Act of 2008. The Act requires each Class 1 rail carrier and each provider of regularly-scheduled intercity or commuter rail passenger service to implement a PTC system by December 31, 2015. Progress is being made toward this lifesaving goal. Metrolink became the first commuter rail

⁶ http://www.nts.gov/safety/mwl/Pages/mwl4_2015.aspx

system to implement PTC, when it began a revenue service demonstration on the BNSF Railway. This demonstration project is a step in the right direction, and Metrolink reports it will implement PTC fully throughout its entire system before the Congressionally mandated deadline.

It has been more than 45 years since the NTSB first recommended the forerunner to PTC. In the meantime, more PTC-preventable collisions and derailments occur, more lives are lost, and more people sustain injuries that change their lives forever.

Yet there is still doubt when PTC systems will be implemented nationwide as required by law.

Each death, each injury, and each accident that PTC could have prevented, testifies to the vital importance of implementing PTC now.

DOT Response:

Positive Train Control technology is the single most important railroad safety technological development in more than a century. The Rail Safety Improvement Act of 2008 (RSIA) mandated that the technology be implemented on certain railroads and routes by December 31, 2015. The Department fully understands that the deadline of December 31, 2015 is an important mandate for the implementation of PTC and we intend to enforce it.

Federal Railroad Administration

FRA has worked diligently to support railroads with PTC implementation planning and execution by meeting regularly with the railroads, hiring staff oversee the implementation of the technology, urging the timely submission of PTC safety and implementation plans, inquiring with railroads and the Association of American Railroads, and working with the FCC to resolve issues related to spectrum. FRA will continue to do so until every Class 1, intercity passenger, and commuter railroad has implemented PTC successfully. FRA's PTC Implementation Team aggressively pushing the railroads and stakeholders to implement by the deadline this critical, Congressionally-mandated safety technology that will reduce the risk of human factor caused accidents and save lives.

For more than three years, FRA has been sounding the alarm that most railroads have not made sufficient progress to meet the December 2015 deadline. FRA has noted that the certification and installation of PTC systems are significant undertakings. FRA highlighted its concerns about PTC implementation in its August 2012 PTC report to Congress, as well as in the GROW AMERICA Act.

FRA has long stated that a lack of public sector funding could delay fully implementing PTC. To address this shortfall, FRA has requested funding for PTC development and implementation grants in every budget request since FY 2011. For the past two years, as part of the GROW AMERICA Act, FRA has requested \$825 million to assist commuter railroads with the implementation of PTC, as well as additional funding to aid with the implementation of PTC on Amtrak's national network.

Despite a lack of funding directed to commuter railroads, FRA is using the resources it has available now to assist railroads in implementing PTC. For example, FRA issued a \$967.1 million loan through the Railroad Rehabilitation and Improvement Financing program to the New York Metropolitan Transportation Authority, the nation's largest commuter railroad provider, to facilitate the deployment of the technology.

In recent months, stakeholders and the Congress have asked FRA for guidance on how to approach concerns about railroads not meeting the mandated deadline. To address those concerns, the GROW AMERICA Act the Department submitted to Congress in April 2014 and March 2015 proposed that FRA be granted authority to review, approve, and certify PTC Safety Plans on a railroad by railroad basis. FRA asked for this authority to ensure railroads were raising the bar on safety and have appropriate back stops in place even as they continue to work towards full implementation. FRA believes that railroads must improve safety in the interim as work to meet the Congressionally-mandated deadline.

FRA recognizes the significant safety improvement that will be achieved by implementation of PTC for the designated passenger and freight railroads. It remains committed to facilitating its rapid implementation. FRA will use the regulatory oversight and enforcement tools at its disposal to facilitate PTC deployment.

Federal Transit Administration

FTA has actively supported the FRA lead role in implementing PTC requirements. FTA has done so through research and technical assistance initiatives.

FTA funded a Transit Cooperative Research Program (TCRP) Project through the Transportation Research Board (TRB) on PTC. The research focused on three critical areas: "Technology Enforcement of FRA Separation Waiver Rules for Shared Track Operations," "Evaluation of Communication-Based Train Control for a Heavy and Light Rail Transit System," and "Positive Train Control for Commuter and Regional Rail Systems." These reports brought awareness of the potential for shared-use operations to the transit industry, the various safety regulatory and oversight organizations, and the research and professional community by identified the advantages and disadvantages of shared-use operations and the issues and barriers that can arise in the course of implementation to include available and emerging technology, operating procedures, and techniques that could be used to minimize the risks associated with sharing of track between non-FRA-compliant public transit rail vehicles and freight railroad operations. In many instances, the documents included descriptions and sources of real-world examples of these applications.

The "Technology Enforcement of FRA Separation Waiver Rules for Shared-Track Operations" research project has recently been completed and the final research report is published on the FTA website (http://www.fta.dot.gov/documents/FTA_Report_No._0062.pdf). The project evaluated the risk and reliability of current PTC technology and identified the enhancements needed to enforce the FRA Waiver Separation Rules for FRA-Compliant (often heavy-in-weight) equipment and lighter-weight equipment operating in shared-track operations, which may

include both freight and passenger railroad systems. The research project was a continuation of the “Safe Transit in Shared Use” research project completed in July 2011.

FTA published the final research report on the FTA website (http://www.fta.dot.gov/documents/FTA_Report_No._0008.pdf).

The “Evaluation of Communication-Based Train Control for a Heavy and Light Rail Transit System” research project was recently completed and the final research report has been published on the FTA website

(http://www.fta.dot.gov/documents/FTA_REPORT_No._0045.pdf). This research study assessed the benefits of Communication-Based Train Control (CBTC) technology, and determined the ability of CBTC to supplant the functionality (operational, safety, etc.) provided by track circuits in conventional rail signaling systems. The research was conducted during the documentation and evaluation of the implementation of CBTC technologies at MTA/New York City Transit and Southeastern Pennsylvania Transportation Authority. The research included the evaluation of current CBTC technologies, documentation of implementation issues and lessons learned from a comparative evaluation of the specific CBTC functional, performance and safety requirements against industry standards, and the needs for further research in Rail Transit Signal and Train Control applications. This project was a continuation of the “Communications-Based Train Control Before/After Cost Effectiveness Study” completed in March 2011 ([http://www.fta.dot.gov/documents/CBTC_before-after_cost_effectiveness_study_-_Report_FTA-TX-26-7005_2010_01_-_101025_final_draft1_\(3\).pdf](http://www.fta.dot.gov/documents/CBTC_before-after_cost_effectiveness_study_-_Report_FTA-TX-26-7005_2010_01_-_101025_final_draft1_(3).pdf)).

The “Positive Train Control for Commuter and Regional Rail Systems” research project is currently being conducted by the University of Southern California (USC) Viterbi School of Engineering. With the agreement and collaborative support of the Southern California Regional Rail Authority (SCRRA - the agency that provides commuter rail service in the Los Angeles region), USC will study the implementation of a new PTC system deployed by the SCRRA. The goal of this research is to evaluate and promote the development of new technologies that will improve the safety and efficiency of rail transit system operation in the United States. The project will study the current state of PTC technology and the decision-making processes used by the U.S. rail transit agencies for implementing a PTC system in the commuter rail and regional rail operating environment. The research will include the evaluation of current PTC technology, the documentation of implementation issues, and the needs for further research in Rail Transit Signal and Control Systems (RTSCS) for commuter and regional rail operations.

5. **Improve Rail Tank Car Safety**⁷

What is the issue?

More crude oil and ethanol than ever is moving across America's rails. But accidents demonstrate that the DOT-111 tank cars moving these flammable liquids are not up to the task.

Changes to the North American energy landscape have pressed the railroads into service as never before as carriers of energy products. In 2009, more than 10,000 tank cars transported crude oil. In 2013, that number increased to nearly 500,000. And, in 2013, more than 290,000 tank cars transported ethanol. The routes from new crude oil extraction sites are not connected by pipeline to refineries but were built decades ago to accommodate yesterday's energy map.

So the crude oil used to make the gasoline or diesel fuel powering your car or the fuel oil heating your home, increasingly, gets to the refinery by rail. The ethanol that is blended with your gas gets there by rail too. Often providers ship them in "unit trains" which can be a mile long that travel alongside highways and houses.

These changes to the North American energy landscape provide many more chances for fires, explosions, and releases of flammable liquids, and the proliferation of unit trains provides more fuel for any fire that does happen.

DOT-111 tank cars, the "workhorse" of the industry, are the most common rail tank car in use. The NTSB has identified a number of vulnerabilities in DOT-111 tank car design with respect to tank heads, shells, and fittings. These vulnerabilities create the risk that, in an accident, hazardous materials could be released and, in the case of flammable liquids such as crude oil and ethanol, could ignite and cause catastrophic damage.

On July 6, 2013, a 4,700-foot-long train that contained 72 DOT-111 tank cars loaded with crude oil from the Bakken fields derailed in Lac-Mégantic, Quebec. At least 60 cars released an estimated 1.6 million gallons of crude oil, which triggered an intense fire. The fire engulfed the surrounding area and completely destroyed buildings and property. Forty-seven people died.

The NTSB assisted Canada's Transportation Safety Board with its investigation of this event, and has investigated many other accidents involving the rupture of DOT-111 tank cars carrying hazardous materials here in the U.S.

For example, on December 30, 2013, a BNSF Railway Company crude oil unit train derailed near Casselton, North Dakota, after striking another train. Several DOT-111 tanks cars ruptured resulting in violent, fiery eruptions. The toxic smoke forced a temporary evacuation of the town.

⁷ http://www.nts.gov/safety/mwl/Pages/mwl5_2015.aspx

On June 19, 2009, a train derailed and caught fire in Cherry Valley, Illinois, killing one person, injuring nine others, and forcing the evacuation of 600 houses. Thirteen of 19 derailed DOT-111 tank cars ruptured, releasing about 324,000 gallons of ethanol.

These are just two examples of many accidents that have occurred. Regulators and industry must act to prevent more, and to enable the best emergency response to any such accidents that occur.

What can be done?

With more than 100,000 DOT-111 cars currently in use according to the Railway Supply Institute, it's crucial to strengthen existing rail tank cars and new rail tank car regulatory requirements. The NTSB recommends enhanced tank head and shell puncture-resistance systems and top fittings protection.

Preventing tragedies similar to Lac-Mégantic and Cherry Valley will require a systems approach that keeps trains from derailing, especially in sensitive areas, and preserves tank car integrity if a derailment occurs. Adequate emergency preparedness is also crucial.

One of the first steps industry can take is to appropriately plan and select routes to minimize the amount of hazardous materials that travel through highly populated areas. And the use of rail technologies such as positive train control can help keep the train on the track.

Regulators, industry, and emergency responders must prepare to handle the consequences of a rail tank car rupture. Regulators have taken steps toward enhancing the testing and classification of hazardous materials, and have required railroads to provide more information to State Emergency Response Commissions.

But ultimately, without robust safety modifications, using the same tank cars that carry corn oil to carry crude oil endangers the people who live or travel alongside the tracks, as well as railroad workers themselves.

DOT Response:

The Department understands the significant risks associated with the transportation of hazardous materials and the impacts of timely and effective regulatory actions. On May 8, 2015, we issued the “Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains” final rule. Our approach recognizes that improvements in tank car integrity are only one component of a more comprehensive rail safety approach.

Operational changes that prevent train accidents are essential for the protection of communities and the environment. We are working closely with our Canadian colleagues to promote a North American response that will enhance the safe transportation of flammable liquids by rail. In addition to the regulatory initiatives underway in both countries, we have taken aggressive action

on multiple fronts to mitigate risks and ensure the safe transportation of crude oil and other flammable liquids by rail.

Federal Railroad Administration

HM-251

The FRA was actively involved in the development of the technical aspects of PHMSA's rule for "Enhanced Tank Car Standards and Operational Controls for High Hazard Flammable Trains" (HM-251). The FRA used information/data gathered in the enforcement, accident investigation and research efforts described below to inform this critical rulemaking.

Tank Car Facility/Owner Audits

The FRA is the lead enforcement authority for tank car facilities. Tank car facilities are those entities that manufacture, modify, repair, and inspect tank cars. To meet this enforcement requirement, the FRA established a Tank Car Quality Assurance Team that was fully constituted in 2010. Since then, the team has audited over 400 tank car facilities at least once (many more than once) and inspected thousands of tank cars. Because of these activities, approximately one-quarter of the facilities inspected made the decision to withdraw their registration or certification, and over 1,000 tank cars were recalled by the facility for corrective repair or additional inspections. The team has developed a data-driven, risk-based inspection prioritization protocol. The data used for the risk-based prioritization includes inspection data, along with one-time movement approval (OTMA) data, and non-accidental release (NAR) data. A plan is developed for each team member and is updated throughout the year as a result of emerging safety issues. Since the promulgation of HM-216B (77 FR 37961) in 2012, the team also audits tank car owners. Tank car owners are responsible for developing and monitoring the adherence to a qualification and maintenance plan for their tank cars. This plan provides inspection for how their cars are to be inspected and repaired, and was developed based on structural analyses and service history. Here, the team also uses the OTMA and NAR data to inquire as to how tank car owners are modifying their plans to account for in-service failures.

Tank Car Forensics

The FRA sends at least one Hazardous Materials inspector to any derailment involving rail cars carrying hazardous materials. For incidents in which hazardous materials are released, the FRA performs a forensics analysis. This analysis includes documenting behavior of tank cars involved in the incident. Specifically, the FRA documents the organization of the pile-up, damage to each car, and possible damaging objects. This data is used to calibrate models, understand derailment dynamics, and identify failure modes and mechanisms. This information is ultimately used in the design considerations of puncture resistance design enhancements.

Research

The FRA has been very active in tank car research for many years. Research includes projects related to critical flaw size, shelf couplers redesign/height mismatch effects, tank car pressure

relief devices, tank car steel, tank car closures, thermal integrity of tank cars, and intermodal tank integrity. Additionally, the FRA is a member of the Advanced Tank Car Collaborative Research Project. As the name suggests, this is an industry government collaborative effort. The industry matches government funding for research projects agreed to by members of the group. The FRA funded a project analyzing different impactors and impact conditions⁸ (http://www.fra.dot.gov/eLib/Find#p1_z10_IRT_s23). The results of this research have been used in subsequent research and model development to evaluate the effects of tank car design enhancements, speed, and brake systems on the survivability of tank cars involved in derailments.

Pipeline and Hazardous Materials Safety Administration

PHMSA's Office of Hazardous Materials Safety has been working on the issue of improving the safety of railroad transportation of energy products through a wide range of initiatives, including outreach to railroad operators, emergency responders, and local and state governments.

We are taking a comprehensive approach to improving rail transportation safety. Updated regulations are just part of the answer. We are also:

- Addressing operations, planning and outreach;
- Conducting unannounced inspections;
- Testing samples of crude oil; and
- Leading talks between industry and emergency responders to improve safe transport of hazardous materials by rail.

On August 1, 2014, PHMSA and the FRA issued a proposed rule to establish more stringent tank car specifications and operational controls (*e.g.*, speed restrictions) for trains carrying large volumes of flammable liquids and an advance notice of proposed rulemaking (ANPRM) seeking to establish more substantial oil spill prevention and response plan requirements for railroads that transport large quantities of crude oil.

Public interest regarding this issue is unprecedented. The Department reviewed and analyzed more than 3,200 public comments representing over 182,000 signatories in response to the August 1, 2014, proposed rule. The final rule was issued on May 8, 2015.

We have also taken the following actions:

- FRA Emergency Order 28 (EO 28) implementing enhanced attendance and securement requirements for trains transporting certain hazardous materials by rail, including crude oil and ethanol (78 FR 48218 (EO 28) (August 7, 2013)).
- The agencies' joint safety advisories published on August 7, 2013 (78 FR 48224) and November 20, 2013 (78 FR 69745) stressing the importance of safety and security

⁸ Kirkpatrick, S., "Detailed Puncture Analysis of Tank Cars – Analysis of Different Impactor Threats and Impact Conditions," DOT/FRA/ORD-13/19, April 2013

planning and proper characterization and classification of hazardous materials being shipped.

- The initiation of a comprehensive review of operational factors that affect the transportation of hazardous materials by rail (see 78 FR 42998 (July 18, 2013)).
- The referral of safety issues related to EO 28 and the joint safety advisories to FRA's Railroad Safety Advisory Committee.
- The initiation of *Operation Classification*, also known as *The Bakken Blitz* (involving joint activities at all phases of transportation to investigate how shippers are classifying crude oil and what actions they are taking to determine the characteristics of the material).
- PHMSA's January 2, 2014, Safety Alert, which warned of crude oil variability and emphasized that unprocessed crude oil may affect the integrity of packaging or present additional hazards related to corrosivity, sulfur content, and dissolved gas content.
- On February 25, 2014, the Department issued an Emergency Order requiring stricter standards to transport crude oil by rail.
- To provide further clarity for shippers and to prevent attempts to circumvent the requirements in the February 25, 2014 Emergency Order concerning the safe transport of crude oil by rail, on March 6, 2014, the Department issued an amended version that specifies which tests are required, while also prohibiting shippers from switching to an alternate classification that involves less stringent packaging.
- The Department's May 7, 2014, Emergency Restriction/Prohibition Order requiring all railroads that operate trains containing 1 million gallons of Bakken crude oil to notify State Emergency Response Commissions about the operation of these trains through their States.
- FRA and PHMSA's May 7, 2014, joint safety advisory recommending that offerors and carriers of Bakken crude oil use tank car designs with the highest level of integrity available in their fleets.
- On May 13, 2014, Secretary Foxx dispatched a letter to 48 state governors and select city mayor's alerting them about the issuance of Emergency Order OST-2014-0067 and urging them to facilitate coordination between the rail industry, State Emergency Response Commissions and local first responders.

6. **Make Mass Transit Safer**⁹

What is the issue?

Every day, millions of people take some form of mass transit to get to or from shopping, work, classes, or other destinations. According to the American Public Transportation Association (APTA) the role of mass transit is growing – faster than population growth and faster than highway travel. Mass-transit systems must constantly be monitored and improved to maintain and enhance safety, to catch small problems before they become big ones, and to provide extra layers of protection against disasters. There are just too many opportunities for the worst to happen.

Big metropolitan areas like Seattle, Washington, D.C. and New York City are especially dependent on mass transit. And mass transit accidents, especially those occurring on rails and subways, often have catastrophic consequences.

In June 2009, two Washington Area Metropolitan Transit Authority Metrorail trains collided, killing 9 people and injuring 52. In a ten-month period from May 2013 to March 2014, Metro-North Railroad was involved in five accidents in New York and Connecticut that killed six people and injured 126.

But mass transit accidents and incidents are not limited to the railways. For example, the January 2013 allision of the Seastreak Wall Street resulted in 80 injuries. It was the third significant ferry accident to occur in the New York Harbor area in the last 10 years.

What can be done?

Mass transit comprises light rail, commuter rail, subways, ferries, streetcars, buses and trolley buses. Although each system has unique equipment, operating environments, and challenges, all can benefit from strengthening their organizational safety cultures. Deploying advanced technologies will also make mass transit safer.

Mass transit agencies should work to identify, define, prioritize, and mitigate the safety risks that threaten their operations and, therefore, threaten public safety. It is important to ensure efficient and effective communications and coordination among all stakeholders (for example, top and middle management, line supervisors, workers, unions, and support contractors) who are responsible for the design, maintenance, operation, and safety of the system.

Moreover, it is important to ensure that system safety trends are identified accurately and that improvements are implemented rapidly with appropriate consideration given to the affected system elements (training, maintenance/inspection schedules).

⁹ http://www.nts.gov/safety/mwl/Pages/mwl6_2015.aspx

Mass transit agencies also need to continually improve their understanding of the role of human error in accidents and near-accident scenarios. The improved knowledge should be put to work by refining and strengthening operational policies, practices, and procedures to manage and mitigate the safety risks. Some known successful management practices include fatigue management systems and confidential near miss reporting systems.

For example, the Metropolitan Atlanta Rapid Transit Authority (MARTA) has a no-nonsense answer to one big source of operator distraction. MARTA has a zero-tolerance policy for operator use of personal electronic devices. And MARTA means business: a leading cause for termination of MARTA's operators is operator distraction.

But other technologies can save lives, and mass transit agencies should not overlook them. Examples include collision warning systems for buses, positive train control for rail and subway systems, and fire detection and suppression systems for vessels. Video and data recorders can assist both in monitoring employee compliance with regulations and policies improving operational efficiencies and investigating incidents and accidents. Organizations will need to ensure that these technologies are properly and safely integrated.

DOT Response:

Every day, people use buses and trains to get to work, school, medical appointments, visit museums, and socialize. Transit systems are a part of the fabric of our nation—weaving our urban and rural environments together and encouraging economic development. Our national well-being is dependent upon the provision of safe, efficient, and reliable public transportation.

According to the National Safety Council, the lifetime odds of dying as an occupant of either a rail car or a bus are significantly lower than the lifetime odds of dying as an occupant of a passenger car, as a pedestrian, or as a bicyclist. Notably, the average annual rate of accidents for rail transit systems has remained more or less stable for the past 5 years. Although transit's safety record is a significant achievement, there is no room for complacency. In calendar year 2013, public transit systems across the Nation provided 10.8 billion trips—the highest annual ridership number in 58 years—with the number of trips exceeding 10 billion for the 7th year in a row. Moreover, there is reason to believe that this is just the beginning of a sustained period of growing demand for public transportation as the population of elderly individuals increases and as more people move to urban areas. To keep up with growing demand, transit operators will need to balance competing priorities to expand service, operate existing service, and replace and maintain existing capital assets, all while ensuring that operations are safe for their employees and the riding public.

Federal Transit Administration

MAP-21 became effective on October 1, 2012 and this legislation requires a comprehensive new National Public Transportation Safety Program in 49 U.S.C. 5329. For the first time in history, Congress provided FTA with safety regulatory authority for the public transportation industry. FTA established the new Office of Transit Safety and Oversight in July 2013 and since that time has been working diligently to implement our new responsibility with two main goals in mind: to

make a safe mode of travel safer; and to avoid a one-size-fits-all approach in favor of a flexible approach that matches the needs of a diverse public transportation industry.

Recognizing that implementing regulatory changes can be a long process, FTA worked with the existing State Safety Oversight agencies that provide safety oversight of rail transit agencies within their jurisdictions under 49 CFR Part 659 to identify gaps between their existing programs and the new statutory requirements. As required by MAP-21, on October 1, 2013, the FTA determined which state programs could be certified as meeting the MAP-21 requirements. As a result, FTA worked with states to prepare and agree to Certification Work Plans to meet the more robust program requirements. At this time, two of the thirty state programs are compliant with the MAP-21 statutory requirements, and another 26 have approved Certification Work Plans in place. In February 2015, the FTA issued an NPRM that reflects the statutory requirements of MAP-21 would replace the existing State Safety Oversight Program regulation, 49 CFR Part 659.

In May 2013, FTA issued a Dear Colleague Letter from then-Administrator Peter Rogoff adopting SMS as FTA's approach to improving transit safety. In October 2013, FTA sought public comment on an ANPRM on its transit asset management and transit safety programs. During calendar year 2015, we plan to issue several NPRMs related to MAP-21 authorized safety provisions. The FTA has embarked on a tremendous rulemaking endeavor to translate our new statutory safety mandate into practical, commonsense regulations. The cornerstone of this regulatory effort is the National Public Transportation Safety Program. The National Public Transportation Safety Program rule will give form and function to a variety of supporting guidance such as the National Safety Plan and supporting rules such as the Public Transportation Agency Safety Plan, the Safety Certification Training Program, and the State Safety Oversight Program. The NPRMs also require that transit agencies adopt the principles of SMS if SMS is not already in place.

Later in 2015, FTA will issue a call for participation in an upcoming SMS pilot program for both bus and rail agencies of all sizes, and we'll need volunteers to participate and ultimately pioneer best practices for the industry. Collectively, these SMS pilots will provide transit agencies with tools to identify, define, prioritize, and mitigate the safety risks that impact their operations, and will ensure efficient and effective communications and coordination among all stakeholders who are responsible for the design, maintenance, operation and safety of each system. We will have the ability to collaboratively work with pilot agencies to enhance their safety competencies and capabilities and reduce or eliminate safety risks.

In February 2015, FTA issued its interim provisions for the Public Transportation Safety Certification Training Program, which include, in part, required SMS coursework for State Safety Oversight Agency staff who conduct audits and examinations of public transportation systems. In early to mid-2015, we will begin to offer SMS training and make every effort to train and embed qualified safety experts in States and transit agencies throughout the United States and in our own ranks to build safety knowledge and skills.

In preparation for a series of NPRMs, our Transit Advisory Committee for Safety (TRACS) working groups issued recommendations on the National Safety Program and the Agency Safety Plan in November 2013 (http://www.fta.dot.gov/13099_12502.html), and continues to meet on

major safety issues, including transit worker assault prevention and fatigue management, and will issue recommendations in the fall. TRACS brings together a diverse set of safety and transportation experts from the transit industry, advocacy organizations, labor unions, and academia to provide recommendations to the FTA Administrator and the Secretary of Transportation on various topics of concern.

Additionally, the FTA has been actively involved in the continuing operation safety of the nation's transit systems, focused on the safety of both the public and transit workers. The FTA has led a first-of-its kind safety examination of a major transit agency to enhance safety for transit workers and passengers, address safety deficiencies, and highlight best practices aligned with SMS principles. Recently, the FTA also conducted a safety management inspection of a major transit agency's operations in direct response to a recent high profile incident. Finally, FTA participated in three NTSB-led investigations, issued Dear Colleague letters on safety, issued Safety Advisories (http://www.fta.dot.gov/tso_15922.html) to address immediate concerns, and provided support to large and small transit properties around the country.

Federal Railroad Administration

Safety Culture and Safety Risk Reduction

The FRA's System Safety Program (SSP) rule, currently under final review by OST and the Office of Management and Budget will require passenger railroads to:

- Identify/discuss the railroads' approach to developing/maintaining a strong safety culture.
- Develop/implement a robust hazard management process and conduct specific hazard assessments of their system.

The FRA, through the Passenger Rail Division (PRD), is developing a "first stage" Safety Culture Program that will be deployed to FRA Office of Railroad Safety field and headquarters staff in 2015. The program will be offered to all passenger railroads, beginning in the fourth quarter of 2015. Subsequent stages of the Safety Culture Program will include measuring and sustaining a culture of safety. The Safety Culture Program will be supported by a nationally recognized educational institute.

While the pending SSP rule will require all passenger railroads to develop a robust hazard management (risk management) program, the FRA grant program, and the FRA/Federal Transit Administration new start passenger rail programs currently require that all new starts and grantees develop a hazard management (risk management) program. PRD works with all grantees and new starts to develop and implement their programs. Additionally, PRD has developed hazard management training that will be offered to all passenger railroads once the SSP rule is final.

Technology

The RSIA requires all railroads to develop a 10-year technology implementation plan. The FRA determined that this requirement will be part of a passenger railroad's SSP.

The requirement is for passenger railroads to investigate technology opportunities, conduct a risk assessment to determine which technologies have potential, and then develop an implementation plan. As SSPs are submitted, the FRA will assess the results of this work.

Human Factors Programs

The FRA has several human factors initiatives underway. One initiative is the Confidential Close Call Reporting System (C³RS). C³RS is a partnership between the National Aeronautics and Space Administration (NASA), the FRA, participating railroad carriers, and labor organizations. It is designed to improve railroad safety by collecting and studying reports detailing unsafe conditions or events in the railroad industry. Employees can report safety issues or “close calls” voluntarily and confidentially. By analyzing these events, potential lifesaving information can be obtained and can help prevent more serious incidents in the future. A C³RS implementation team including members from FRA, Volpe, and NASA is promulgating the program at numerous railroads nationwide.

Another initiative is the Clear Signal for Action (CSA). The CSA is a behavior-based safety program that uses peer coaches that have been trained in making behavior observations. These peer coaches observe employees in the workplace and confidentially record the task being completed, the behaviors that do not conform to the rules or best practices, and the environmental conditions that the task is being completed within. This data is then analyzed to determine what antecedents existed to drive the behavior and measures are taken to eliminate or reduce those drivers. The CSA is currently in its pilot stage.

Lastly, FRA is also working on fatigue management. The RSIA (Public Law 110–432, Division A, 122 Stat. 4848-4906, enacted October 16, 2008) requires under Section 103 that certain railroads develop a risk reduction program (RRP). 49 U.S.C. § 20156. Section 103(d)(2) of the RSIA requires a railroad to include a fatigue management plan in its RRP that meets the requirements of subsection (f). 49 U.S.C. § 20156(d)(2). The RSIA further dictates that the Secretary annually conducts a review of a railroad’s RRP to ensure the railroad is complying with its plan. Furthermore, under RSIA, railroads will be required to review and revise their fatigue management plans at least once every 2 years. Currently FRA, based on input from a working group from the Rail Safety Advisory Committee, is working on a regulation that is responsive to the requirements outlined in RSIA. Additionally, once the final rule is issued, FRA will also publish a fatigue risk management programs (FRMP) guidance document for the railroads that outlines the components of an FRMP, the steps to establishing an FRMP, and evaluation requirements.

Monitor Mass Transit to Catch Problems before they Become “Big Issues”

The FRA has a rigorous inspection program staffed with inspectors covering all disciplines (track, signal, hazardous materials, operations, mechanical, and bridges). The FRA annually develops a National Inspection Program based on data from previous years.

Following four serious, high-profile accidents on Metro-North Railroad (Metro-North), the FRA organized a massive assessment program known as “Deep Dive.” Fourteen teams composed of more than 60 inspectors and specialists spent 60 days assessing Metro-North’s safety culture, training, organizational structure, regulatory compliance, and more. The results of this work produced an extensive list of safety improvement opportunities that went beyond the routine inspections conducted by regional inspectors.

Based on the results of the Deep Dive-type assessment at Metro-North and a similar effort at Metra, the FRA is working to make Deep Dive-type assessments a regular part of the oversight program. The FRA has requested eight new positions within PRD in the FY 2016 budget. These positions will make up the nucleus of a group that will organize and implement regular Deep Dive-type assessments of all passenger railroads.

7. Prevent Loss of Control in Flight in General Aviation¹⁰

What is the issue?

While airline accidents have become relatively rare in the U.S., pilots and passengers involved in general aviation (GA) operations still die at alarming rates every year due to loss of aircraft control by the pilot.

Losing control hundreds or thousands of feet above the ground presents unique and at times, fatal challenges; between 2001 and 2011, over 40 percent of fixed wing GA fatal accidents occurred because pilots lost control of their airplanes.

GA pilot proficiency requirements are much less rigorous than those of airline pilots. GA pilots are much more likely to have longer intervals between training sessions and longer intervals between flights.

GA pilots typically need to complete a flight review, consisting of 1 hour of ground training and 1 hour of flight training, every 24 months. They almost exclusively maintain and improve skills on their own, and their conduct of safe flight depends more on individual abilities and judgment, potentially leaving them unprepared for situations that can lead to loss of control.

Statistically, approach to landing, maneuvering, and climb are the deadliest phases of flight for loss of control accidents.

For example, on August 9, 2013, in East Haven, Connecticut, while attempting a circling approach in and out of clouds during gusty wind conditions, a Rockwell International 690B entered an inadvertent aerodynamic stall/spin and crashed into a house, resulting in the deaths of two children in the house. In another example, on December 12, 2013, near Collbran, Colorado, while maneuvering at low altitude looking for lost cattle, a Piper PA 24-250 entered an inadvertent aerodynamic stall/spin and impacted terrain, resulting in three fatalities onboard the airplane. And, on December 29, 2012, near Lakeside, California, while the non-instrument-rated pilot was climbing an experimental amateur-built Lancair IV-P through cloud layers, the airplane entered an inadvertent aerodynamic stall/spin and completed seven 360-degree revolutions before impacting the ground, resulting in three fatalities onboard the airplane.

What can be done?

Pilots should avoid conditions that can lead to an aerodynamic stall, especially situations approaching wing critical angle of attack (AOA) and/or decreasing airspeed. This is particularly true at low altitudes, where pointing the nose of the airplane down – an effective recovery technique at higher altitudes – can be a limited option for recovery.

¹⁰ http://www.nts.gov/safety/mwl/Pages/mwl7_2015.aspx

Pilots should seek training to ensure that they fully understand stall phenomena, including AOA concepts, and how elements such as weight, center of gravity, turbulence, maneuvering loads, and other factors affect an airplane's stall characteristics.

Pilots should:

- *be prepared to recognize the warning signs of an impending stall, and be able to apply appropriate recovery techniques before stall onset.*
- *be honest with themselves about their knowledge level of stalls, and their ability to recognize and handle them.*
- *utilize aeronautical decision making (ADM) techniques and flight risk assessment tools during both preflight planning and inflight operations.*
- *manage distractions so that they do not interfere with situational awareness.*
- *understand, properly train, and maintain currency in the equipment and airplanes they operate. They should take advantage of available commercial trainer, type club and transition training opportunities.*

Airplane owners should consider installing an AOA indicator, which, coupled with pilot understanding and training on how to best use it, can enhance situational awareness during critical or high-workload phases of flight. FAA, aviation advocacy groups, type clubs, and manufacturers, including kit manufacturers, should create and maintain educational initiatives that include general principals, best practices, and operational specifics as they relate to loss of control.

All stakeholders should recognize the importance of their roles in the reduction of loss of control accidents. However, individual pilots remain the critical pieces to that reduction, with both the ultimate responsibility and the ultimate opportunity to reduce these needless accidents through ongoing education, flight currency, self-assessment, and vigilant situational awareness in the cockpit.

DOT Response:

General Aviation (GA) fulfills our innate desire to experience one of America's last great frontiers: the open-sky. This American pastime continues to command the FAA's efforts to reduce the current fatality rate among GA pilots and their passengers. Loss of control (LOC) accounts for the number one cause of GA fatal accidents.

Federal Aviation Administration

Identify Risks through Data

The FAA and industry are working together to use data to identify risks, pinpoint trends through root cause analysis, and develop safety strategies. We are moving toward using de-identified GA operations data in the Aviation Safety Information Analysis and Sharing (ASIAS) program to

help identify risks before they become accidents. On March 31, 2014, we announced the start of a one-year project to illustrate the value, capabilities, and benefits of the ASIAs program for the GA community. The project is exploring potential new information sources such as GA Flight Data Monitoring, voluntary safety reports, manufacturer reports, and information collected from avionics using new common technologies including personal electronic devices. Data from these programs will be used by the GA Joint Steering Committee (GAJSC) – a government and industry group – whose aim is to improve GA safety. The GAJSC is reaching out to the GA community directly and through several GA associations to educate pilots and other stakeholders on the benefits of sharing collected safety data with ASIAs. The GAJSC will work with the GA community to incorporate GA data into ASIAs so that it may be used to identify risk and develop safety enhancements (SEs).

The GAJSC implements primarily non-regulatory, proactive, and data-driven strategies to get results. It relies on voluntary commitments to focus limited government and industry resources. The GAJSC has proposed a total of 29 SEs to address LOC to date. The GAJSC working groups reviewed around 180 LOC accidents across all phases of flight, which were determined to be a statistically significant set. The SEs developed for LOC are a mixture of training, technology, procedures, and aircraft design.

On February 5, 2014, the FAA, through the GAJSC, took an important step to help improve safety in small aircraft by simplifying design approval requirements for an angle of attack (AOA) indicator. AOA devices, common on military and large civil aircraft, can be added to small planes to supplement airspeed indicators and stall warning systems, alerting pilots of low airspeed conditions before a dangerous aerodynamic stall occurs, especially during takeoff and landing. Although they have been available for some time, the effort and cost associated with gaining installation approval has limited their use in GA. The streamlined requirements are expected to lead to greater use of devices and increased safety in GA.

In conjunction with the GAJSC, the FAA has also committed to improving guidance and advisory materials in order to promote stabilized approaches, particularly in GA piston powered aircraft weighing less than 6,000 pounds. The goal is for pilots to maintain full control of the aircraft and minimize deviations from the approach criteria elements during the critical final segment of the approach. Criteria for stabilized approaches in GA piston powered aircraft will be included in the next version of the FAA's Aviation Instructor's Handbook, Airplane Flying Handbook, Instrument Procedures Handbook, and Instrument Flying Handbook.

Dissemination of Pilot Weather Reports (PIREP) as a means to improve weather forecasts has been a topic of interest for the GAJSC since 2004. The FAA established PIREPs and the Weather Forecast Taskforce to address stakeholders' concerns that the PIREP dissemination process needed improvement. The taskforce aims to improve the dissemination process of PIREPs and pursue a systematic and collaborative approach to ensure appropriate guidance is available to the workforce.

Educating GA Pilots

The FAA is engaged in a coordinated outreach campaign to the GA community on LOC-related topics. Comprised of nearly 100 FAA employees and 2,500 trained volunteer representatives, the FAA Safety Team (FAASTeam), the FAA's GA educational outreach arm, sponsors an average of 250 local safety seminars or webinars each month. On average, these events attract 26,000 airmen per month. The FAASTeam also engages airmen by sending them safety information via email. The FAASTeam sends an average of 3 million email messages to airmen each month. These grass-root initiatives target the GA community and cover topics of particular interest to these pilots, including LOC prevention.

The FAASTeam has dedicated 90 percent of FY 2014 and FY 2015 GAJSC "Topics of the Month" safety seminars to SEs developed by the GAJSC. LOC has also figured prominently in the FAASTeam National Performance Plan (NPP) for the last 4 years. The FY 2015 NPP requires at least 12 LOC outreach events per FAA Flight Standards District Office.

Addressing LOC through Regulations and Official Guidance

The FAA is working with industry and other civil aviation authorities to develop a performance based approach to airworthiness standards for part 23 airplanes, of which GA is a part. The part 23 rulemaking rewrite project has proposed new requirements to demonstrate that new small airplanes lack the tendency to stall, depart controlled flight, and inadvertently spin. These airplanes range from small, piston powered airplanes to complex high-performance executive jets. The goal is to set an international standard that improves safety and reduces certification costs.

Transport category aircraft are operated under all operating parts (91K, 135, and 121), including what is considered GA. In the Airplane and Engine Certification Requirements in Supercooled Large Drop, Mixed Phase, and Ice Crystal Icing Conditions Final Rule (79 FR 65508), published on November 4, 2014, the FAA addressed LOC by amending the airworthiness standards applicable to certain transport category airplanes certified for flight in icing conditions and the icing airworthiness standards applicable to certain aircraft engines. The final rule improves safety by addressing:

- Supercooled large drop icing conditions for transport category airplanes most affected by these icing conditions;
- Mixed phase and ice crystal conditions for all transport category airplanes; and
- Supercooled large drop, mixed phase, and ice crystal icing conditions for all turbine engines.

Additionally, the FAA is considering rulemaking that would require applicants to show that their airplanes are protected from loads induced by pilot commanded pedal reversals.

The FAA has also published, or is taking action to publish, the following guidance documents addressing LOC accidents.

- The FAA is updating Advisory Circular (AC) 61-83G, Nationally Scheduled, FAA-Approved, Industry Conducted Flight Instructor Refresher Course (FIRC), originally

published on September 30, 2011. A revision was posted for public comment and is currently in coordination within the FAA, and would add LOC as a required core topic of instruction. FIRC provider courses that are approved under the updated AC would need to have this element as part of the curriculum.

- The FAA is updating AC 61-98B, Currency Requirements and Guidance for the Flight Review and Instrument Proficiency Check, originally published on April 30, 2012. This update would introduce a chapter titled, *Reducing General Aviation Accidents*, with a focus on LOC. The AC encourages pilots to train on manual flight following automation failure, and provides strategies to avoid an overreliance on automation.
- The FAA published AC 61-136A on November 17, 2014. The AC, FAA Approval of Aviation Training Devices (ATD) and Their Use for Training and Experience, promotes the practice of recovery following a flight automation failure (such as failure of the autopilot) and other LOC recovery procedures. The AC encourages instructors to adopt these items into their training curriculum when instructing in an ATD.
- The FAA updated AC 90-109, Airmen Transition to Experimental or Unfamiliar Airplanes, on March 30, 2011, based on recommendations from the Amateur-Built Flight Standardization Board. This AC provides guidance and training experience recommendations to owners, pilots, and flight instructors who fly experimental airplanes.
- The FAA published AC 120-109, Stall and Stick Pusher Training, on August 6, 2012. The goal of this AC is to provide best practices and guidance for training, testing, and checking for pilots, within existing regulations, to ensure correct and consistent responses to unexpected stall warnings and stick pusher activations. This AC emphasizes reducing the AOA at the first indication of a stall as the primary means of approach-to-stall or stall recovery. Additionally, this AC provides guidance for operators and training centers in the development of stall and stick pusher event training. The FAA is revising AC 120-109 to ensure correct responses to impending and full stalls.
- The FAA plans to publish a new AC on upset prevention and recovery, AC 120-UPRT. This AC would provide recommended practices and guidance for academic and flight simulation training device training for pilots to prevent developing upset conditions and ensure correct and consistent recovery responses to upsets.
- The FAA published InFO 14010 on July 25, 2014. This InFO discusses (and is also titled) the *Installation, Training, and Use of Non-required/ Supplemental AOA Based Systems for GA Airplanes*. AOA indication may improve pilot situational awareness to avoid exceeding the critical AOA, reducing the risk of an inadvertent stall. The FAA believes that the GA community can reduce LOC accidents through widespread acceptance, training, and appropriate use of AOA-based systems.
- FAA Order 7110.65, Air Traffic Control, will be updated near the end of 2015 to clarify that there is no distinction between a manned and an unmanned aircraft with regard to emergency

procedures. This action will be followed by many others to promote a regulatory environment conducive to the orderly introduction of Unmanned Aerial Systems.

The FAA expects to see LOC become a decreasing share of the primary cause of fatal aviation accidents with time. Our approach to this issue will help ensure that GA becomes a safer, more forgiving American pastime.

8. **Require Medical Fitness for Duty**¹¹

What is the issue?

Some pilots, vessel and train operators, and drivers are not medically fit to operate vehicles. Those suffering from impairing medical disorders should not be at the controls unless they receive medical treatment that mitigates the risk to the public.

When you boarded your last flight, ferry, train or commuter bus to work, you may have wondered if the aircraft was safe for flight, if the ferry was recently inspected, if the train tracks were properly aligned, or if the motorcoach tires were in good condition. But the condition of the pilot, captain, train engineer, or bus driver is just as important.

Medical certification processes for safety-critical personnel vary widely across modes of transportation. For the railroads, required medical examinations cover only vision and hearing standards.

For mariners, the U.S. Coast Guard requires comprehensive medical examinations at regular intervals but like other modes, relies on the mariner to fully report medical conditions and medication use.

For commercial drivers, the Federal Motor Carrier Safety Administration has recently required training and certification for health care providers who perform medical examinations. However, there is no mechanism to ensure recommended guidelines are followed. Moreover, chiropractors with no experience with prescribing medications are considered acceptable medical examiners.

The aviation medical certification system may be the most robust, but pilots are increasingly testing positive for over-the-counter sedating medications. Moreover, although the NTSB has found that obstructive sleep apnea has been a factor in multiple accidents, all transportation modes still lack a complete screening process for this condition.

The NTSB has investigated numerous accidents in which it found that the medical condition of the vehicle operator contributed to the cause of a crash. In two train accidents – one in 1996 in Secaucus, New Jersey, and one in 2012 in Goodwell, Oklahoma – the engineers lacked the ability to accurately see and interpret wayside signals due to inadequate color vision.

In the 2013 train derailment in Bronx, New York, the engineer's sleep apnea was undiagnosed until the week following the derailment, despite many visits for occupational and personal health care. With a change in his work patterns, the combination of the untreated sleep apnea and fatigue from his disrupted sleep schedule led to his fatigue at the time of the accident. Since

¹¹ http://www.nts.gov/safety/mwl/Pages/mwl8_2015.aspx

2001, the NTSB has identified obstructive sleep apnea as a factor in at least nine accidents in four transportation modes.

What can be done?

Medical conditions and treatments that impair transportation professionals' performance directly affect safety. To mitigate the risk to the public, the NTSB has made recommendations for a comprehensive medical certification system for safety-critical transportation personnel, including these features:

- a complete medical history of the applicant, taken at prescribed intervals, that includes medications, conditions, and treatments as well as a physical examination
- specific historical questions and physical examination procedures to identify applicants at high risk for sleep disorders
- identification of specific conditions, treatments, and medications that initially disqualify applicants for duty, with certification contingent on further testing (specific to each condition)
- explicit and uniform processes and criteria for determining when the applicant has a treated but otherwise disqualifying condition
- certificates that are good only for a limited time for applicants with conditions that are currently stable but known to be likely to deteriorate, to ensure appropriate retesting
- medical examiners who
 - are licensed or registered to both perform examinations and prescribe medication in a given state;
 - are specifically trained and certified to perform medical certification exams; and
 - have ready access to information regarding disqualifying conditions and required further evaluation
- a review system for medical examiners' work product(s) with both the information and capacity to identify and correct errors and substandard performance
- the capacity to prevent applicants who have been deferred or denied certification from finding another provider who will certify them
- a process for dealing with conditions which could impair safety and are diagnosed between certification exams.

The goal is simple: to ensure that safety-critical professionals are medically fit for duty.

DOT Response:

The Department strives to ensure safety-critical transportation professionals are medically fit for duty.

Federal Aviation Administration

The FAA is responsible for protecting the safety of people who fly as well as the lives and property of people on the ground. The FAA is continuously researching the interaction between medicine, medical conditions, and the ability of a member of the flightcrew or private pilot to safely perform their duties. The FAA's top medical priorities are described below:

- Evaluation of trends in missed diagnoses during medical certification processes based on forensic toxicology data;
- Evaluation of diabetes, including insulin-dependent pilots, to determine effectiveness of current medical certification processes;
- Assessment of pilots with waivers for macular degeneration, central retinopathy, and glaucoma to determine their characteristics, involvement in specific accidents, and associations with all-cause accident risk;
- Evaluation of the impact of in-flight medical incapacitation on safety;
- Evaluation of the impact of advanced prosthetic devices as they relate to the medical certification process;
- Assessment of the characteristics and outcomes for "Statement of Demonstrated Ability" type aeromedical waivers;
- Evaluation of the use of over-the-counter antihistamines, drugs that can cause significant drowsiness, by GA pilots involved in fatal aircraft accidents and the implications to aviation safety;
- Assessment of fatal accidents to determine reporting accuracy of medical certification applications and insight on possible corrective measures;
- Evaluation of the introduction of medical conditions for which Aviation Medical Examiners (AMEs) can issue a medical certificate – impact of CACI (Conditions AMEs Can Issue) procedures to aviation safety; and
- Qualitative and quantitative assessment of the use of Selective Serotonin Reuptake Inhibitors in aviation.

Obstructive Sleep Apnea (OSA) inhibits restorative sleep and is another major focus of the FAA. It has significant safety implications because it can cause excessive daytime sleepiness, cognitive impairment, cardiac dysrhythmias, sudden cardiac death, personality disturbances, and hypertension. OSA is nearly universal in obese people who have a Body Mass Index over 40.

AMEs are the key element in the medical certification process, ensuring that airmen meet the medical standards prescribed in the regulations and are medically fit to perform safety-related duties. These private doctors, who are FAA-approved, require FAA oversight. The FAA initiated two significant processes that enhance AME procedural compliance, detailed below:

1. Modification of the Surveillance Program Analyst Critical Reject Queue.

Surveillance Program Analyst positions were established to verify AMEs are adhering to requirements contained in parts 61 and 67 and FAA Order 8520.2G, in order to determine certificates that may have been inappropriately issued by AMEs.

2. CACI SMS Quality and Safety Assurance.

The CACI program allows AMEs to use their clinical experience to process applicants at the time of their exam, and to issue regular certificates to airmen with common conditions, when they meet specific requirements. Each year, we survey the exams that had at least one CACI condition to determine whether the AMEs issued certificates to airmen appropriately or not. From the analyses, we were able to conclude that adding the CACI protocol does not increase safety concerns of AME exam issuance.

Federal Motor Carrier Safety Administration

The FMCSA is committed to ensuring that only physically qualified commercial drivers operate on our nation's roadways. On May 21, 2014, a new regulation (<http://www.gpo.gov/fdsys/pkg/FR-2012-04-20/pdf/2012-9034.pdf>) took effect requiring all interstate CMV drivers to receive a Medical Examination Certificate (MEC) from qualified professionals listed on the FMCSA's National Registry of Certified Medical Examiners. To become certified, qualified medical examiners must be trained and tested on the FMCSA's driver physical qualification standards. The medical examiner certification requirement will make our roads safer by ensuring the examiners qualifying drivers know the minimum Federal physical qualifications. This will raise the bar for the CMV industry by holding to a higher and consistent standard of driver fitness.

Upon publishing the rule, the FMCSA estimated that by May 2015, approximately 40,000 medical examiners would be needed to support the 5.2 million CMV drivers across the United States. As of May 4, 2015, there are 41,016 certified medical examiners on the National Registry. An additional 23,000 medical professional have registered to become certified. With approximately 150 medical examiners per week registering to take the certification test, this incredible success far exceeded the Agency's expectations.

Under the authority granted by 49 U.S.C. 31149(c)(2), the FMCSA may void an MEC issued to a CMV driver if it finds either that a medical examiner (ME) has issued a certificate to a driver "who fails to meet the applicable physical qualification standards at the time of the examination" or "that a ME has falsely claimed to have completed training in physical and medical examination standards." The FMCSA is the only entity with authority to "disqualify or restrict a driver's medical certification" once a MEC is issued to a driver. The FMCSA has implemented this authority on a case-by-case basis as appropriate to the circumstances and the State Driver Licensing Agency (SDLA) is notified when FMCSA discovers violations that result in a driver's medical disqualification.

The FMCSA has already uncovered several instances where commercial drivers were issued an MEC inappropriately. Working with State enforcement officials and the U.S. Department of Transportation's Office of Inspector General, the Agency took action to void over 3,000 MECs and notified the SDLAs to take appropriate action. Based on this experience and the knowledge that there are a variety of scenarios identified that may result in a driver's MEC being invalidated or voided, the FMCSA is developing a policy memorandum defining action steps, assigning roles, and informing staff of the expectations for reporting invalid and/or voided MECs to the SDLAs so the driver's CDL can be downgraded. The internal memorandum is in the final stage

of development and provides guidance on steps FMCSA staff must take when confronted with a report that a driver's MEC is invalid or fraudulent.

On May 10, 2013, the FMCSA published the NPRM, "Medical Examiner's Certification Integration." The purpose of the proposed rule is to facilitate the electronic transmission of MEC information from the FMCSA's National Registry to the SDLAs, thereby reducing, to the greatest extent possible, the potential for the submission of falsified MECs. For holders of CDLs and commercial learner's permits (CLP), the FMCSA proposed to electronically transmit driver identification, examination results, and restriction information from the National Registry to the SDLAs. Notifications would include medical examinations that have been voided by the FMCSA because it finds that an ME has certified a driver who does not meet the physical certification standards or the ME is not qualified. It also proposed to transmit to the SDLAs information about MECs for CDL and CLP drivers that have been invalidated because a subsequent examination has found that the driver is not physically qualified. The SDLAs would record the driver's status on the Commercial Driver's License Information System (CDLIS) driver record as "not certified" and begin the process of downgrading the CDL in accordance with existing procedures. The driver would be required to be medically re-examined and certified before operating a CMV after previous certifications have been invalidated because of a driver not being physically qualified. The FMCSA published the Medical Examiner's Certification Integration final rule on April 23, 2015.

The remarkable success of the National Registry program has raised the safety bar by ensuring CMV drivers meet minimum physical qualifications to keep our roads safe.

9. **Strengthen Commercial Trucking Safety**¹²

What is the issue?

Commercial trucking is integral to our economy, but crashes, injuries, and deaths involving commercial trucks have been increasing over the past several years. In 2012 alone, nearly 4,000 people were killed and more than 100,000 people were injured in truck crashes.

We rely on commercial trucks to deliver food and goods to our local grocery stores, medical supplies to our pharmacies and hospitals, and packages to our loved ones. But because of their sheer size, weight and physical properties, commercial trucks introduce a disproportionate hazard to passenger vehicle occupants in a crash.

The safety of the commercial trucking industry gained national media attention on June 7, 2014 when comedian Tracy Morgan was critically injured and another passenger died in a crash involving a commercial truck. The limousine bus in which they were traveling was struck by a truck-tractor and semitrailer combination vehicle.

While it was the uncommon involvement of a celebrity that focused attention on this crash, the commercial truck crashes are anything but rare. The NTSB is presently investigating a crash in which a tractor-trailer crossed a median and collided with a motorcoach in Orland, California, on April 10, 2014 that took 10 lives and injured 40 others. Also in 2014, the NTSB completed the investigation of the collapse of a span of the Skagit River Bridge in Mount Vernon, Washington, due to a high-load strike by a commercial truck. In addition, we completed our investigation into a truck-train collision in Rosedale, Maryland, resulting in the derailment of a freight train, a post-crash fire, and a subsequent explosion.

Improving the safety of truck operations will not only save lives, but improve the public's confidence in this vital, and visible, industry.

What can be done?

Commercial truck safety is a multifaceted issue involving the vehicles, the companies that operate them, the drivers, and the oversight agencies. Any successful effort to strengthen commercial trucking safety must be a collaborative effort.

The NTSB has a long history of calling on the regulators, the Federal Motor Carrier Safety Administration (FMCSA), and the National Highway Traffic Safety Administration (NHTSA), to improve their oversight of operators, drivers, and vehicles. It starts with improving the system for determining a trucking company's safety compliance, including both driver and vehicle factors. Stronger oversight is needed to ensure that new carriers address any safety deficiencies

¹² http://www.nts.gov/safety/mwl/Pages/mwl9_2015.aspx

in a timely fashion, and are swiftly placed out of service if they fail to improve. Furthermore regulators need a comprehensive system for ensuring that bad operators do not return to the industry under another name.

Regulators have taken initial steps by maintaining science-based hours of service rules and are in the process of rulemaking mandating electronic logging devices that can help assure that drivers are adequately rested. Other important rulemaking initiatives include requirements to screen drivers for obstructive sleep apnea, other potentially impairing medical conditions, and potentially impairing drugs.

To address vehicle factors, regulators must promote proper fleet maintenance and proven life-saving technology. Vehicle inspections should be required during compliance reviews, and vehicle safety equipment and technology, such as collision warning technology, tire pressure monitoring systems, rollover stability control systems, and lane departure warning systems, should be mandated across the entire industry. Regulators should also develop performance standards for front and side underride protection systems to improve highway vehicle crash compatibility with passenger vehicles.

Trucking is a diverse segment of the economy, and trucking companies range from thousands of trucks to single-truck owner operators. FMCSA and NHTSA regulations establish minimum requirements, not the gold standard. In recent crash investigations the NTSB has found that crashes happen even when an operator is doing everything “by the book.” To manage their safety risks, trucking companies must go beyond securing regulatory compliance from all their employees, and proactively identify operational hazards and potential solutions.

DOT Response:

Safety is the Department’s top priority. Any and all safety results the Department achieves are only possible because of the investment made in the Department’s resources and in its State and local law enforcement partnerships. Always on the front lines for safety, we will strengthen partnerships and leverage resources to create a safety culture based on data driven safety rules, strong enforcement programs, and comprehensive education and outreach. We will continue to raise the bar for safety and make the roads safe for everyone.

Federal Motor Carrier Safety Administration

A recent upward trend in the number of people killed in large truck and bus crashes has created an added urgency to press forward on the FMCSA’s vision for a crash free transportation life cycle. While the FMCSA continues to accomplish a great deal in the name of safety, its work in preventing deadly truck and bus crashes is far from over. The President’s FY2016 budget includes funding for FMCSA to improve safety on our Nation’s roadways by reducing crashes and saving lives.

The following is an overview of key priorities in the FMCSA’s FY 2016 budget, organized by focus areas in its Strategic Plan.

Commercial Motor Vehicle Safety First Culture

Developing and delivering programs that address safety deficiencies with carriers, drivers and other service providers emphasizes accountability and responsibility. The FMCSA will strengthen and intensify its programs that will have the effect of raising the bar on CMV safety across the transportation life cycle, fostering a safety culture in the industry, and embracing individual and corporate accountability.

The FMCSA will continue to focus on making investments to improve the registration process. For example, enhancing the process for examining new entrant motor carriers and conducting new approaches for safety audits will help the Agency deliver the type of activities that impact safety standards. The FMCSA's ability to effectively focus efforts on carriers and drivers that commit safety violations depends on our ability to strengthen registration requirements and screening.

Progress made by the FMCSA's Motorcoach Safety Initiative must advance so that the Agency may reach its ultimate goal of one level of safety for all passengers. The FMCSA has trained all of its investigators to use enhanced investigative techniques and conduct analyses to maintain a high level of oversight over the passenger carrier industry. The Agency is currently working with its State partners to provide this training. In addition, the FMCSA will expand its range of oversight efforts to ensure that bus transportation is safe by investigating all motorcoach companies every three years.

The FMCSA's efforts also continue to increase stakeholder engagement and consumer outreach on the importance of safety. The FMCSA continues to engage all carriers and drivers to understand and correct safety compliance issues. Full implementation of the National Registry of Certified Medical Examiners has been in progress and the FMCSA continues to reach out to health care practitioners to register as a certified medical examiner.

The FMCSA's Protect Your Move website (<http://www.fmcsa.dot.gov/protect-your-move>) has become a valued consumer information tool for moving fraud prevention, protecting the millions of Americans who move households each year. The FMCSA develops more partnerships with Federal and State enforcement agencies to expand its reach and improve consumer protection in the moving industry.

The FMCSA's SMS is very effective at identifying carriers that are more likely than others to have crash, because the company is engaging in risk behaviors. All of the SMS categories have a direct relationship to the likelihood of future crashes of for-hire trucking companies operating CMVs. The FMCSA is working hard to address these high risk companies in the most efficient manner possible, and to engage the companies before they have a crash.

The FMCSA is also working toward the publication of a proposed rule on Safety Fitness Determination that will increase the use of inspection data in making safety fitness determinations for motor carriers. This rule will include a definitive failure standard and will

take into account the need for larger amounts of data to make accurate determinations as to a carrier's fitness to operate.

Exponential Safety Power

Collaborative partnerships are supported by the Motor Carrier Safety Assistance Program (MCSAP) grants. Through the MCSAP grants, the FMCSA supports state enforcement of safety regulations through roadside inspections, traffic enforcement, carrier interventions, and a robust data collection system that provides the information we need to identify problem areas and direct priorities. An increase of funding for these enforcement grant programs will help the FMCSA fully implement CSA, its cornerstone program, by providing more state resources to conduct carrier interventions and safety inspections necessary to evaluate safety performance.

Expanding partnerships also allows the FMCSA to engage more local law enforcement activities on unsafe trucks and buses, conduct more strike forces, and expand inspection capabilities. FMCSA has implemented training in partnership with the International Association of Chiefs of Police (IACP) to educate local law enforcement on CMV safety issues. The agency expects the training will assist law enforcement officers and increase enforcement against CMV drivers from operating in an unsafe manner.

The FMCSA advances a common safety agenda and grows its collective safety power by establishing new partnerships and developing policies and programs that promote collaborative opportunities with all safety stakeholders.

Comprehensive Data Utilization & Leveraging Technology

The FMCSA's safety programs are highly dependent on timely, accurate, consistent and complete data for monitoring carriers and driver safety in order to measure safety performance, analyze regulatory initiatives and identify safety issues. Because data is so important to its safety mission, the FMCSA has developed and must maintain strong data quality standards and promote continuous improvement. The FMCSA leverages new technologies by conducting transformative research that focuses on risk safety risk factors and technologies to inform and enhance enforcement and compliance records. The FMCSA's information technology systems are critical to its data-driven enforcement and compliance program and provide real-time access to data for the enforcement community, industry, stakeholders and the public. The FMCSA's technology program adopts, develops, tests and deploys advanced integrated information technology solutions and innovative on-board commercial vehicle driver and roadside technologies.

One FMCSA

As "One FMCSA" the Agency focuses its efforts to develop an environment where every employee understands common safety goals and how it is working collectively toward them. Through this inspired vision, the FMCSA seeks the leadership, management and services needed by its employees to ensure the success of our core safety mission.

In pursuit of its safety mission, the FMCSA enforcement activities at the U.S./Mexico border require safe resources for the on-site staff. The current lack of adequate facilities and poor conditions at the border makes truck and bus safety investigations and inspections a hazardous undertaking for the FMCSA.

The pursuit of “One FMCSA” must build on the Agency’s recruitment and retention efforts to maintain an experienced and committed workforce. One part of that effort is the improvement of its professional and leadership development programs to ensure the Agency’s employees have a high skill level and to provide a pool of future leaders through succession planning.

FMCSA Safety Program Overview

The primary mission of the FMCSA is saving lives by preventing CMV crashes, fatalities and injuries. The Agency fulfills this mission through education, innovation, regulation, enforcement, financial assistance and full accountability. The core principles of the agency are:

- “Raising the bar” to enter the commercial motor vehicle industry.
- Requiring operators to maintain high safety standards to stay in the industry.
- Removing high-risk carriers, vehicles, drivers, and service providers from operation.

The FMCSA prevents crashes involving large trucks and buses through a comprehensive regulatory and enforcement program that leverages the effectiveness of state law enforcement officers while providing a single set of cohesive national safety standards. Roughly half of FMCSA’s appropriation is channeled to state agencies and FMCSA exercises oversight of these state programs to ensure uniform administration of the law. There are 12,000 state personnel that enforce the rules along with 800 FMCSA’s field enforcement personnel (of 1,100 total staff). Through its rule making authority FMCSA establishes standards for the safe operation of truck and bus companies, vehicles and drivers. Companies are required to register with FMCSA, have insurance and certify that they are fit, willing and able to follow the safety standards. Vehicles must be properly registered and insured with the state of domicile and are subject to random and scheduled inspections by both state and federal agents. Drivers must have a valid CDL issued by their state of residence and pass a physical examination as evidenced by a current valid medical card every two years. Through this program of regulation, registration and enforcement FMCSA achieves its mission.

The FMCSA also enforces standards for special programs such as the transportation of Hazardous Materials, including oversight of cargo tank manufacturers; and transportation of Household Goods, enforcing consumer protection standards. The FMCSA seeks to influence safe transportation choices by addressing all aspects of the transportation lifecycle including shippers, brokers and freight forwarders and partners with other DOT modes such as the FHWA and NHTSA to align programs.

Value to the Public

The FMCSA regulates approximately 539,000 active interstate freight motor carriers, 12,000 passenger carriers, 5,000 intrastate hazardous materials carriers and approximately 4 million

active CDL holders. In 2012, the Department estimates that:

- There were 11 million U.S. registered large trucks and buses, traveling more than 283 billion vehicle miles.
- Total miles traveled by all vehicles grew 4 percent from 2002 to 2012.
- Large truck- and bus-related mileage grew 28 percent from 2002-2012, while registrations for large trucks and buses increased by about 31 percent.

Despite this continued growth in commercial vehicle traffic, there was a 23 percent reduction in fatalities in crashes involving large trucks and buses, from 5,539 in 2005 to 4,251 in 2013. This reflects a 40 percent reduction from 1979, the year with the most fatalities involving large trucks and buses. The rate of injuries in crashes involving large trucks and buses has also declined over the last two decades. The decline in injuries and fatalities is due in part to the safety efforts of the FMCSA and its partners:

- In FY 2013, FMCSA conducted approximately 3.5 million truck and bus roadside inspections. 21 percent of trucks inspected were put out of service, 7 percent of buses inspected were put out of service, and 5 percent of drivers inspected were put out of service.
- Safety Investigators conducted more than 17,000 investigations in FY 2013. As a result of these investigations, 4,985 Notice of Claims (NOC), 771 Unsatisfactory/Unfit Out-of-Service (OOS) Orders and 37 Imminent Hazard OOS Orders were issued.
- Safety Auditors also conducted 32,890 new entrant safety audits.

The FMCSA's roadside inspection and traffic enforcement programs are premised on the notion that correcting serious driver and vehicle violations at the roadside prevents future crashes, and hence, saves lives. Based on models that assess the number and type of violations found each year at the roadside, the agency estimates that it prevents roughly 19,000 crashes per year as a result of these programs, and saves about 600 lives per year. External factors such as demographics, economic conditions, gas prices, and the increased use of public transportation have also had an impact on the reduction of injuries and fatalities.

More than 3 million inspections are done annually. If its grant programs were not in place, it is estimated that less than 600,000 inspections could be conducted each year, which could result in 80 percent more unsafe vehicles on the roadway; based on state inspection behavior prior to 1985.

In 2013, 4,251 people were killed in large truck and bus crashes and approximately 133,000 individuals were injured. The estimated costs of CMV crashes resulting in fatalities and injuries exceeded \$81 billion in 2013.

Top priorities and policy initiatives

The FMCSA's FY 2016 budget request of \$669.5 million establishes a solid baseline leading to a multi-year plan to fully fund and fully staff its safety programs to strategically meet Congressional mandates including MAP-21. The FMCSA's request is field-centric (where

approximately 75 percent of the Agency's staff work). This is important because saving lives is about changing company and driver behavior. That change happens when a federal or state inspector, investigator, or auditor has contact with an entity.

Program Changes

- Implementing enhanced investigations processes around motorcoach carriers developed under FMCSA's Quickstrike initiative. The request is for \$9.0 million and 51 full-time equivalents (FTE) to implement these more productive, but more resource intensive reviews year round.
- A total of \$22.4 million is requested to address FMCSA's facility needs. This includes \$15.9 million for increased work on improving our border facilities to address critical safety and efficiency issues. Funds totaling \$6.0 million are requested to provide for renovation/move activities at FMCSA posts within the U.S., activity not included in the agency's base 2015 budget. Additionally, 2 FTE and \$0.5 million is requested to improve the agency's ability to manage its extensive facilities, including coordinating renovation and rehabilitation of facilities, but also addressing critical issues like physical security.
- \$9.8 million in new resources requested for information technology, including \$8.0 million for information management to support important improvements to core FMCSA systems, and \$1.8 million to support 12.5 additional FTE in information technology specialists to support FMCSA's programs. The requested funds for information management support increased development activities, including: continuing development of system functionality in support of MAP-21 requirements and our future rulemaking agenda, continuing migration of legacy applications to the portal environment, operational support and maintenance of aging field infrastructure, and mitigate/eliminate existing security weaknesses identified in our audit of compliance with the Federal Information Security Management Act (FISMA) and other statutory requirements.
- A total of \$9.9 million is requested in new funding and 21.5 FTE for a number of critical enforcement initiatives, including focus on the transport of energy products, improvements to the Safety Measurement System, the North American border initiative, enhancements to new entrant audit resources and Safety Fitness Determination.
- Other program changes:
 - Enhancing FMCSA's Medical Review program, \$2.2 million.
 - Enhanced Registration activities, 4.2 million.
 - Improved Statistics support for FMCSA's operations, \$3.9 million.
 - Increased support to our National Training Center, \$1.1 million and 4 FTE.
 - Enhancing our state program staffing in field locations to improve grants processing and oversight, \$0.7 million and 5 FTE.
 - Strengthening financial management within FMCSA, \$1.4 million and 4 FTE.
 - Increase legal support for FMCSA's regulatory processes, \$0.3 million and 1 FTE.
- Research and Technology - \$0.7 million is requested in program changes to support increased research and technology activities addressing topics such as driver fatigue, motorcoach safety, and wireless roadside inspection technology.

- A net increase of \$26.3 million in increased grants funds are requested, including CDL and MCSAP Basic, Incentive, and High Priority grants.

National Highway Traffic Safety Administration

NHTSA completed a two-year research study with the University of Michigan Transportation Research Institute (UMTRI) to collect and analyze crash data on rear underride in fatal truck crashes. The study was expanded to analyze the incidence of side underride crashes through a clinical review of cases in the Large Truck Crash Causation Survey. The UMTRI evaluation recorded the occurrence of a light vehicle underriding the side of a cargo body or trailer in 52 of the 411 cases. However, the full dynamics of the crash event were unknown, and a full crash investigation was not performed. In response, the agency recently completed a more detailed analysis of the cases and determined that additional research was warranted.

In 2015, NHTSA is planning a research study to evaluate the efficacy of side underride guards in preventing vehicle underride into heavy trailers. Specifically, the agency is looking into how side guard designs (of reduced weight) may assist in reducing underride relative to passenger car orientation, speed and impact location. Upon completion of this study, we will make a determination as to whether there is a need to regulate side underride guards, or whether further research is warranted. Factoring into this decision will be information about cost and weight. A recent SAE International paper, 2014-01-0565, estimated the weight of side underride guards for trailers to be 853 pounds. We would also like to note that the agency's efforts in this area are a secondary priority to upgrading Federal motor vehicle safety standards for rear impact guards. See 79 FR 39362.

10. Strengthen Procedural Compliance¹³

What is the issue?

Good people have bad days. But if you're a pilot, that bad day can become the worst – and potentially the last – of your life.

Picture the things that you should have done but didn't do at work on your worst day. Now picture a “day at the office” for a pilot. Pilots should not have non-critical conversations during critical phases of a flight – but what's the harm of a joke or two between colleagues? Pilots should run checklists and monitor instruments at specific times in the flight. But if you've made similar flights many times, it can be tempting to think of a requirement as a formality – perhaps not every time, but this time. Pilots should make callouts so that a captain and a first officer understand each other's actions and the status of the flight, and first officers should question captains' actions where they might compromise safety. But perhaps one of them misses a callout, or the first officer is tired or distracted and never asks the question.

When a pilot has a “bad day at the office,” if everything else is fine, the lapse may be inconsequential. But any lapse can be the lapse that matters.

The issue is finding ways to strengthen procedural compliance, from rooting out inadequate company procedures, to ensuring comprehensive training, to reemphasizing and reinforcing crew compliance.

Recent accidents underscore the importance of procedural compliance. In 2013 there were two major controlled flight into terrain (CFIT) accidents in which crews did not follow company procedures - one in San Francisco, California, and one in Birmingham, Alabama. Continuing investigations into two other airline runway excursion accidents and two wrong airport landing incidents are examining how procedural compliance may have played a role. Over the last 10 years, the NTSB has investigated more than a dozen airline or commercial charter accidents involving procedural, training or compliance issues.

Such accidents can be prevented through collaborative efforts by crews, operators, and the regulator. Working together, they can develop effective procedures and training, and ensure that crews do what they are trained to do.

Sometimes crews do not comply with air carriers' standard operating procedures, such as flying stabilized approaches, making required callouts, maintaining quiet (or sterile) cockpits, and monitoring critical flight parameters like airspeed.

¹³ http://www.nts.gov/safety/mwl/Pages/mwl10_2015.aspx

But other times, the procedures themselves aren't good enough. For example, an airline that did not require crews to calculate landing distance on arrival at the airport had an airplane run off the end of the runway. This is only one of many such cases. In other cases, training does not adequately prepare crews.

Both air carrier management and professional pilots must put safety first. Collective and collaborative leadership of company officers, pilots, and especially captains is needed to promote and reinforce a culture of compliance – a culture essential to safety.

What can be done?

The NTSB has made recommendations that would strengthen compliance by ensuring that air carrier procedures are adequate, that air carriers adequately train pilots on those procedures, and that crews follow the procedures. The Federal Aviation Administration (FAA) and industry still have work to do.

Good procedures ensure standard pilot actions, enhancing safety. The NTSB has recommended procedural improvements, including:

- *requiring pilots to conduct landing distance assessments,*
- *revising the procedures for handling thrust reverser lockout after landing, and*
- *in non-precision approaches, discontinuing so-called dive-and-drive approaches in favor of continuous descent final approaches.*

Appropriate training ensures that commercial aviation professionals understand the procedures, how to implement them, and how they contribute to safe operations. Improved stall training, dual engine loss training and gusty crosswind training are some examples.

The FAA also should require pilot training programs that emphasize monitoring skills and workload management, and establish best practices for conducting single and multiple emergency and abnormal situations training.

Air carriers should also strengthen assertiveness training for first officers and initial operating experience training for Part 135 pilots.

Every fatal accident is a tragedy. Pilots complying with good procedures for which they were trained, every flight, every day, makes such a tragedy preventable. Aviation demands high professional standards, day-in and day-out. Better procedures, training, and compliance can help ensure a culture of safety.

DOT Response:

Our mission today, just like every day, is to safely keep America moving forward. We are in a period of American aviation that is safer, faster, and more accessible than any time in our past.

However, we understand the outcomes of our mission are neither guaranteed nor easily produced. Our vigilance of the ever-expanding demands put on the National Airspace System (NAS) requires smarter thinking, more efficient operations, and robust redundancies.

Federal Aviation Administration

Today, 30,000 flights will race the sun to the West Coast, traverse the Great Lakes, tower over the Rockies, and fly to every corner of the United States and beyond; two million passengers will meet loved ones, conduct business, and explore what makes America unique; and these flights will make it to their destinations safely. This is made possible by the efforts of the FAA, airlines, and other partners that support the safe operation of the NAS.

Automatic Dependent Surveillance-Broadcast

With Automatic Dependent Surveillance-Broadcast (ADS-B), both pilots and controllers can see radar-like displays of next to real time, non-degrading traffic, and access weather and flight information services. ADS-B is becoming a greater reality as the FAA has completed the baseline installation of a nationwide network of radio stations that provide ADS-B coverage, including areas not covered by radar, such as the Gulf of Mexico and portions of Alaska. ADS-B is expected to be connected and operating at all 230 air traffic facilities across the country by 2019, up from the more than 100 facilities currently connected and operating. Pilots flying aircraft equipped with ADS-B technology are able to see what controllers see – other aircraft in the sky around them – as well as bad weather and terrain. They also receive flight information, including pilot reports and flight restrictions. The FAA first deployed ADS-B in southwest Alaska, equipping GA aircraft with cockpit displays that showed pilots where they were in relation to bad weather, terrain, and other aircraft. As just one example, United Parcel Service (UPS) in partnership with the FAA equipped/upgraded its aircraft with ADS-B avionics. Other airlines that have equipped some of their fleets with ADS-B include United, USAir, and JetBlue. A final rule issued by the FAA on May 28, 2010, mandates that all aircraft flying in certain controlled airspace be equipped with ADS-B Out avionics beginning January 1, 2020 (75 FR 30160). The agency also published AC 20-165 on November 7, 2012, that provides installation guidance for ADS-B Out systems.

The implementation of ADS-B is further supported by Technical Standard Order (TSO) C195, revision B, Avionics Supporting ADS-B Aircraft Surveillance Applications, published on September 29, 2014. TSO-C195b contains standards for an ADS-B based traffic advisory application. This ADS-B application, termed ADS-B Traffic Awareness System, is intended to address GA's need for a low-cost traffic advisory system. This system is appropriate for installation on both fixed wing aircraft and rotorcraft.

Commercial Aviation Safety Team

The Commercial Aviation Safety Team (CAST) – a government and industry group – has analyzed numerous accident categories and developed nearly 100 SEs since 1997. Over the course of this work, a number of CAST studies have evaluated the role Standard Operating Procedures (SOPs), particularly those pertinent to flightcrew actions, play in the mitigation of

hazards that can lead to aviation accidents. CAST stakeholders generally agree that well-defined, consistent, and clearly written SOPs contribute significantly to improved safety. Historically, CAST has periodically made recommendations for new or improved SOPs through SEs developed after each study of an accident category. Over time, the portfolio of SEs related to SOPs has grown and become more complicated and overlapping, making implementation and monitoring more challenging.

In August 2013, CAST approved SE 194, Standard Operating Procedures Effectiveness and Adherence, as a mitigation against Airplane State Awareness (ASA) problems. In August 2014, CAST agreed to broaden the applicability of SE 194 to other problem areas of high fatality risk beyond the specific issues of ASA. SE 194 now acts as an overall SOP mitigation under which all other related CAST SEs on SOPs are managed. SE 194 provides for this by recommending that air carriers:

1. Perform an initial review of their current SOPs against historical CAST SEs related to SOPs, as well as against manufacturer recommendations and air traffic control procedures;
2. Develop a process for prioritizing SOPs based on relevance to CAST fatality risk, and then develop data monitoring programs to assess adherence rates of high priority SOPs; and
3. Develop an ongoing internal process using the programs developed in step 2 to address causes of low adherence rates to high priority SOPs through training and revision of SOPs, and to periodically update SOPs and their priority based on updates to the CAST Safety Plan and CAST risk formula.

Safety Management Systems

The *Safety Management Systems for Domestic, Flag, and Supplemental Operations Certificate Holders* Final Rule (80 FR 1308), issued on January 8, 2015, requires each part 121 air carrier to develop and implement a SMS to improve the safety of its aviation-related activities, effective March 9, 2015. Full SMS implementation is required by March 9, 2018. SMS is a comprehensive, process-oriented approach to managing safety throughout an organization. SMS includes an organization-wide safety policy; formal methods for identifying hazards; controlling and continually assessing risk and safety performance; and promotion of a safety culture. SMS stresses not only compliance with technical standards but also increased emphasis on the overall safety performance of the organization.

Supporting the concept of SMS, the FAA published Notice 8900.132, *Work Program Development for Part 135 Certificate Holders*, on August 12, 2010, which requires principal operations inspectors to use the Surveillance Priority Index (SPI) when planning their work programs. The FAA has also established the System Approach for Safety Oversight Program Office to develop and implement a comprehensive system safety approach to the oversight of aviation entities. The FAA Flight Standards Service's (AFS) Safety Assurance System (SAS) is the combination of people, processes, and technology that will be AFS's safety assurance capability. In 2015, AFS SAS will become the new oversight system for part 135 operations. SAS will be the safety assurance component of SMS and will serve as the safety tool to replace the use of SPI.

Improved FAA Regulatory and Policy Framework

Improved training supports an air carrier's ability to safely operate. From in the air to in the maintenance hangar, improving the training of a pilot, mechanic, and other critical positions ensures that a flight will safely land at its destination.

On November 12, 2013, the FAA published the *Qualification, Service and Use of Crewmembers and Aircraft Dispatchers* Final Rule (79 FR 12937). This final rule revises the training requirements for pilots in air carrier operations. The regulations enhance air carrier pilot training programs by emphasizing the development of pilots' manual handling skills and adding safety-critical tasks such as recovery from stall and upset. The FAA expects these changes to contribute to a reduction in aviation accidents.

The FAA issued the Air Carrier Training (ACT) Aviation Rulemaking Committee (ARC) charter on January 21, 2014. In April 2014, the ACT ARC met to evaluate best practices from across the industry, review recommendations from previous FAA rulemaking advisory committees on training issues, and examine newly identified areas of risk in order to develop voluntary training guidelines for air carriers. The ACT ARC will make recommendations for enhancements to first officer qualification requirements, crew resource management, and training requirements for pilots, flight attendants, and dispatchers. The FAA invited the National Air Disaster Alliance/Foundation (an organization founded by air crash survivors and victims' family members to raise the standard of aviation safety) to become a member of the ACT ARC, filling the vacancy left by the Flight Safety Foundation.

On July 10, 2014, the FAA published the *Flight Simulation Training Device Qualification Standards for Extended Envelope and Adverse Weather Event Training Tasks* NPRM (79 FR 39462). The comment period closed on January 6, 2015, and the rulemaking team is currently reviewing and dispositioning public comments in preparation of drafting the final rule. The anticipated publication date for the final rule is March 2016.

The FAA is working on a NPRM titled, *Pilot Professional Development*. This rulemaking will propose that air carriers establish or modify training programs to address mentoring, leadership and professional development of flight crewmembers in part 121 operations. This rulemaking is required by the Airline Safety and Federal Aviation Administration Act of 2010. The FAA is also updating AC 120-71, *Standard Operating Procedures for Flight Deck Crewmembers*, originally published on February 27, 2003.

The FAA has initiated an NPRM titled, *Air Carrier Maintenance Training Program*. This rulemaking proposes FAA approval of maintenance training programs of air carriers that operate aircraft type certificated for a passenger seating configuration of 10 seats or more (excluding any pilot seat). The intent of this proposed rule is to reduce the number of accidents and incidents related to improper maintenance, inspection, and repair practices. The FAA is also working on a final rule titled, *Air Carrier Contract Maintenance Requirements*. This rulemaking proposed requirements for carriers to include specific guidance in their maintenance manuals to ensure that

all outsourced maintenance is performed in accordance with a carrier's own maintenance program.

In addition to rulemaking, the FAA is updating FAA Order 8900.1, Flight Standards Information Management System, to strengthen flightcrew actions:

- Concepts of Instrument Procedures (volume 3, chapter 19, section 3, paragraph 3-1145, section H of this paragraph) is being modified to include “Missed Approach/Go-Around callouts and immediate compliance by either Pilot Flying (PF) and/or Pilot Monitoring (PM).”
- Aircraft Checklists for 14 CFR Parts 121/135 (volume 3, chapter 32, section 12) is being modified to clarify that crewmembers should verify and verbalize the actual flap setting rather than using generic terms such as “set” or “as required.”

CONCLUSION

Safety is the U.S. Department of Transportation's top priority. The DOT is committed to working proactively with stakeholders to seek legislation, promote regulations, provide guidance, and educate the public on reducing risks of fatalities and injuries.

The DOT's efforts to assure transportation safety extend to all aspects of transportation, with the goal of making safety a part of the culture for all those who manufacture, maintain, and operate US transportation systems.

As demonstrated in this report, DOT actively pursues and evaluates safety in many areas, including those identified by NTSB, to enable the safest transportation system in the world—the U.S. transportation system. Not only has DOT responded to NTSB recommendations, but it also has been vigorous in implementing additional programs that ensure a safe transportation network.

As the world leader in transportation safety, DOT is committed to continuing to make possible the social, economic, and national security ideals that a safe and effective transportation system enables.