

# Strategic Objective 1—Improve the Safety of the Transportation System

*Improve the safety of the transportation system by addressing behavioral, vehicular, and infrastructure safety issues through prevention, mitigation, and response using innovative and effective partnerships, programs, and resources.*

## PERFORMANCE SUMMARY

DOT's top priority is to make the U.S. transportation system the safest in the world. The Nation has made good progress in reducing overall transportation-related fatalities and injuries during the past two decades even though the U.S. population and travel increased significantly. The U.S. Department of Transportation (DOT) must continue to promote safer behaviors, vehicle and equipment designs, and infrastructure that will further reduce risks and minimize injury for all travelers.

DOT will work with its stakeholders—including transportation agencies, elected officials, law enforcement, industry representatives, bicycle and pedestrian groups, safety advocates, drivers, the disability and older adult communities, and the public—to keep the transportation system safe. The Department will use its safety regulatory authority over automobiles, aviation, rail, trucks, motorcoaches, pipelines, and hazardous materials as cost-effectively as possible to reduce crashes and injuries, and implement our expanded regulatory authority for public transit.

DOT will continue to direct federal resources to the highest safety risks and implement program reforms that will advance our safety mission. DOT will address these challenges through multimodal and mode specific strategies targeted toward identified risks, and work to ensure transportation systems are safe for all users.

All DOT Operating Administrations (OAs) contribute to the department's safety goals.

## Roadway Safety (FHWA, FMCSA, NHTSA)

### *DOT- Priority Goal*

- **Reduce roadway fatalities by the end of calendar year 2016 to 1.02 per 100 million vehicle miles traveled.**

#### OVERVIEW

Over the past 10 years, the number of fatalities on the Nation's roadways have dropped by 25 percent. During 2014, 32,675 people died in crashes on the Nation's roadways. The projected fatality rate in 2014 of 1.07 fatalities per 100 million vehicle miles traveled (VMT) represents the lowest rate ever achieved.

The safety of our Nation's transportation system is a top priority of DOT. Within DOT, FHWA, FMCSA, and NHTSA work together to address multiple dimensions of roadway safety. Roadway crashes represent 94 percent of all transportation-related fatalities in the United States. Each DOT OA plays a specific role in addressing pre-crash, crash, and post-crash factors that contribute to injuries and fatalities:






- FHWA improves safe mobility and infrastructure of our Nation's roadways through national leadership and innovation.
- FMCSA aims to reduce commercial motor vehicle (CMV) transportation crashes, injuries and fatalities through education, innovation, regulation, enforcement and partnerships.
- NHTSA develops motor vehicle safety standards and evidence-based safety campaigns and programs. It also conducts advanced vehicle and behavioral safety research, and vehicle defects investigations and enforcement.

These OAs support outreach, education, enforcement, and demonstration programs aimed at the public and specific transportation industries to reduce roadway crashes, injuries, and fatalities, reduce the severity of crashes that do occur; and transport crash survivors as quickly as possible to the appropriate medical facility. The OAs also make extensive use of safety-related data to evaluate the impact of new vehicle and infrastructure technologies, focus inspection activities, prioritize and address risks, and assess enforcement techniques.

In the first 14 years of the 21st century, more than 575,000 people died on the Nation's roadways. While motor vehicle fatalities declined by 25 percent overall during the past decade, among certain age groups, motor vehicle crashes are still the leading cause of death. According to 2011 mortality data from the CDC, this is particularly the case, predominantly for young people between the ages of 8-25. The total economic and social cost of highway crashes is \$871 billion per year, according to [NHTSA estimates](#), an indication of the economic magnitude of highway crashes. DOT's goal is to reduce roadway fatalities by the end of CY 2017 to 1.02 per 100 million vehicle miles traveled (VMT). Only the Federal Government has the authority to establish national safety standards for vehicles, regulate motor carriers, and mandate roadway safety features. However, most of the activities done to address roadway and vehicle safety issues are a partnership between the Federal, State and local governments.

A number of challenges could slow down or even reverse positive trends. Some States continue to face budget shortfalls and are under tremendous pressure to reduce services, resulting in cut backs to roadway safety programs. This could reduce budgets for road repair and maintenance, and programs that improve the roadway safety infrastructure. Cutbacks in State, Tribal, and local law enforcement agency budgets could weaken national enforcement campaigns and local traffic safety enforcement efforts.

## PERFORMANCE REPORT

| Roadway Safety (FHWA, NHTSA, FMCSA)  |       |          |       |          |                |             |             |   |
|--|-------|----------|-------|----------|----------------|-------------|-------------|---|
| Goal Description   | 2010  | 2011     | 2012  | 2013     | 2014           | 2015 Target | 2015 Actual | Performance   |
| <b>DOT PRIORITY GOAL:<br/>Highway fatality rate per 100 million vehicle-miles traveled (VMT)</b> | 1.11  | 1.10 (r) | 1.14  | 1.09 (r) | 1.07 **        | 1.02        |             | Not Met (2014)<br>               |
| <b>Passenger vehicle occupant fatality rate per 100 million VMT</b>                              | 0.89  | 0.84     | 0.81  | 0.79     | 0.69-0.80**    | 0.82        | N/A         | Met (2013)<br>                   |
| <b>Motorcyclist rider fatality rate per 100,000 motorcycle registrations</b>                     | 56.36 | 54.82    | 54.66 | 55.54    | 51.31-56.3 1** | 62          | N/A         | Met (2013)<br>                  |
| <b>Non-occupant (pedestrian and bicycle) fatality rate per 100 million VMT</b>                   | 0.17  | 0.17     | 0.19  | 0.19     | 0.18           | 0.15        | N/A         | Not Met (2013)<br>             |
| <b>Large truck and bus fatality rate per 100 million total VMT</b>                               | 0.122 | 0.137    | 0.142 | 0.142*   | TBD            | 0.114       | N/A         | Potentially Not Met (2014)<br> |

Notes: (r) – revised, \*-Projected, \*\*-Projected range,

### Progress Update-Results

The 2014 fatality rate of 1.07 per 100 vehicle million miles traveled (VMT) is the lowest since NHTSA began collecting this information. The Department attributes the overall decline in roadway fatalities over the last several years to a variety of factors including:

- High visibility enforcement campaigns (HVE) such as *Click It or Ticket* to increase seatbelt use along with other HVE efforts to reduce drunk driving and distracted driving.
- An increase in the spending rate of the Highway Safety Improvement Program (HSIP) and roadway infrastructure improvements such as Safety Edge, Innovative Intersection and Interchange Geometrics, and High Friction Surface Treatments, which are some of

the innovative technologies being deployed as part of the Federal Highway Administration's (FHWA's) *Every Day Counts* (EDC) initiative.

- Enactment of effective traffic safety laws at the State level on seat belts, child passenger safety, impaired driving, distracted driving, and Graduate Driving Licensing (GDL).
- Better oversight of licensing for young drivers and commercial operators.

Safer vehicles also played an important role in reducing crashes, injuries, and fatalities.

Electronic stability control systems (ESC) alone saved an estimated 3,900 lives between 2008 and 2012. This will likely increase each year as more of the overall vehicle fleet is equipped with ESC. Advanced new crash avoidance technology, such as automatic emergency braking systems and vehicle-to-vehicle communications hold great promise and represent the next generation of vehicle safety technology.

The DOT recently adopted the *Towards Zero Death* (TZD) vision as a significant step toward eliminating traffic fatalities across all modes of travel. Rather than accepting a certain number of crashes as unavoidable, a TZD approach commits to working across sectors and using every tool available to systemically analyze and eliminate fatal traffic crashes among all who use the roadways. FHWA, NHTSA and FMCSA provided technical support to a group of organizations that represent professionals with an active role in highway safety that developed National Strategy on Highway Safety Towards Zero Deaths which identifies a platform of options for state agencies, private industry, national organizations, and others to use in developing safety plans that prioritize traffic safety culture and promote the national TZD vision.

The Secretary launched a new pedestrian and bicycle initiative to promote design improvements to ensure safe and efficient routes for pedestrians and bicycles, promote safe behavior, and provide education to help individuals make safer travel choices. This new initiative, "*Safer People, Safer Streets*," has two key components:

- The Mayors' Challenge; and
- Road Safety Assessments.

Over 200 cities signed up for the Mayors' Challenge and a portion of these cities participated in a Mayors' Summit at USDOT in March. Over the next year, these cities aim to make improvements in one or more of seven Challenge Activities. By June 1st, 2015 every State completed a pedestrian/bicyclist safety assessment. DOT field offices are collaborating to convene and lead the assessments. The Office of the Secretary (OST) also established a multi-modal Pedestrian and Bicycle Safety Action Team of the Safety Council that meets regularly to support these two activities and coordinate other efforts to improve pedestrian and bicyclist safety.

## **FHWA**

FHWA continues to construct the MAP-21 performance framework which will allow States to invest resources in projects that achieve State-wide targets. Collectively, the progress all States make toward their goals will help us achieve national goals. FHWA is incorporating these requirements into various performance management and planning regulations. FHWA is also implementing the recommendations from the U.S. Government Accountability Office (GAO) and Office of Inspector General (OIG) evaluations of the Highway Safety Improvement Program (HSIP) to improve a State's ability to meet targets. As part of this effort, FHWA is working with

States to adopt and use a common set of fundamental data elements (i.e., Model Inventory of Roadway Elements). In addition, FHWA worked with NHTSA and the Roadway Safety Foundation to launch the Clearinghouse on Older Road User Safety (ChORUS) as a resource for sustaining mobility and safety.

### **NHTSA**

As new vehicle technologies develop and mature, NHTSA will continue to keep raising the bar on safety, and accelerate its push on innovation to reduce the toll of motor vehicle crashes through the development of new motor vehicle safety standards, and guidance to the industry and the public. In 2015, NHTSA secured a commitment from ten major vehicle manufacturers to make automatic emergency braking (AEB) a standard feature on all new vehicles built; the agency will also add AEB systems to its New Car Assessment Program (NCAP) 5-star rating system program. NHTSA actively enforces vehicle safety as well. In 2014 alone, NHTSA issued more than \$126 million in civil penalties to auto manufacturers, exceeding the total amount collected by the agency during its 43-year history. NHTSA is also taking steps to strengthen its Office of Defects Investigations (ODI) that addresses OIG recommendations from its June 2015 Audit Report. The agency has created a blueprint, *NHTSA's Path Forward* that lays out lessons learned from recent challenges, and ways to improve performance. To help implement these changes, NHTSA also has created a Safety Systems Team of outside experts

### **FMCSA**

FMCSA regulates approximately 532,000 active interstate (including approximately 12,000 passenger carriers) and hazardous materials motor carriers and 6 million active commercial driver's license (CDL) holders. In 2013, DOT estimated that these companies operated 11 million large trucks and buses, traveling over 290 billion vehicle miles. Over a ten-year period, 2004 through 2013, the number of large trucks involved in fatal crashes decreased from 4,902 to 3,906, a drop of 20 percent. Also, the rate of buses involved in fatal crashes decreased from 4.10 per 100 million VMT to 1.85 per 100 million VMT. Major agency initiatives include the Safety Management System to prioritize motor carriers for interventions and to evaluate a carrier's safety performance; Enhanced Investigative Techniques to improve enforcement rates; and the launch of the National Registry of Certified Medical Examiners (NRCME) in 2014 to provide consistent, standardized medical examinations for all commercial drivers. More than 11,000 examiners are currently listed under the NRCME.

Actions taken in 2015 included:

- **Safety Management System (SMS):** FMCSA's SMS is a tool used by FMCSA and State partners to prioritize motor carriers for interventions and to evaluate a carrier's safety performance. FMCSA updated the SMS by realigning all of the Serious Violations in the safety regulations to better target high-risk carriers. These changes took effect in the SMS as of February 1, 2015. Motor carriers cited with any of these violations saw them reflected in the March SMS data release. FMCSA's June 30, 2015, Motor Carrier Safety Progress Report shows that the Agency transmitted 20,480 Warning Letters in FY 2013 and 20,546 in FY 2014. A total of 14,862 Warning Letters were sent out during the first three quarters of FY2015 (10/01/2014 -

06/30/2015). 10,963 investigations were performed and 10,849 serious violations were cited through the 3<sup>rd</sup> quarter of FY 2015.

- **Enhanced Investigative Techniques (EIT):** EIT training was initially developed for the Motorcoach Safety Initiative known as Quick Strike. All FMCSA field personnel completed EIT training in 2014. FMCSA State partners completed EIT training in FY 2015. Last year, 14 Imminent Hazard, Out of Service orders were served to motor carriers investigated under this initiative. Among all motor carriers that have received this enhanced scrutiny, 26 percent were declared Out of Service and 14 were served Imminent Hazard, Out of Service (OOS) orders.
- **National Registry of Certified Medical Examiners (NRCME):** In 2014, FMCSA successfully launched the National Registry of Certified Medical Examiners (<http://nationalregistry.fmcsa.dot.gov>). All commercial drivers whose current medical certificate expires on or after May 21, 2014, must be examined by a medical professional listed on the National Registry of Certified Medical Examiners. Over 41,000 commercial driver medical examiners are currently registered on the NRCME. More than 4.2 million examinations were completed between May 2014 and May 21, 2015, the first full year of implementation. The Agency will oversee the registry, monitoring medical examiner qualifications and performance. The program sets baseline training and testing standards to equip medical examiners with a thorough understanding of DOT fitness standards to ensure that truck and bus drivers meet the health requirements to operate safely on the Nation’s highways and roads.

### Information Gaps

Measurement of the safety objective does not currently include serious injury data. FHWA has published an NPRM that would establish a single national definition and coding convention for serious injuries and require States to report the number and rate of serious injuries from the state motor vehicle crash database. This rule would allow FHWA to standardize and collect valuable data and obtain a better understanding of serious injuries on a national level.

## PERFORMANCE PLAN

| Roadway Safety (FHWA, NHTSA, FMCSA)  |  |                |                |  |
|--|--|----------------|----------------|--|
| Goal   | Indicator  | FY 2016 Target | FY 2017 Target |  |
| <b>DOT Priority Goal: Reduce the Roadway Fatality Rate Per 100 Million VMT.</b>  | <b>Roadway Fatalities per 100 Million Vehicle Miles Traveled</b>                       | <b>1.02</b>    | <b>1.02</b>    |  |
| <b>Supporting Performance Goal: Reduce the Passenger Vehicle Occupant Fatality Rate Per 100 Million Passenger VMT</b>      | Passenger Vehicle Occupant Fatalities per 100 Million Passenger Vehicle Miles Traveled | 0.82           | 0.81           |  |
| <b>Supporting Performance Goal: Reduce the Non-Occupant (pedestrian and bicycle) Fatality Rate Per 100,000 population.</b> | the Non-Occupant (pedestrian and bicycle) Fatality Rate Per 100,000 population.        | 1.78           | 1.78           |  |

| Goal   | Indicator   | FY 2016 Target | FY 2017 Target |
|--|---|----------------|----------------|
| <b>Supporting Performance Goal: Reduce the Large Truck and Bus Fatality Rate Per 100 Million total VMT</b> | Large Truck and Bus Fatalities per 100 Million total VMT          | 0.144          | 0.144          |
| <b>Reduce Motorcycle Rider Fatalities per 100,000 Motorcycle Registrations</b>                             | Motorcycle Rider Fatalities per 100,000 Motorcycle Registrations. | 62             | 58             |

## *Key Strategies*

DOT emphasizes a data-driven approach to prioritize and determine the most effective ways to reduce crashes and fatalities. Data collection provides the foundation to better understand and quantify the nature of the problem and to develop evidence-based countermeasures as well as develop safer vehicles. Recognizing its importance, DOT will pursue data improvement initiatives in FY 2017 to further enhance and link existing systems. Modernizing and consolidating data programs enables not only DOT to make better traffic safety programming decisions, but allows State and local communities to do the same.

The Fixing America's Surface Transportation Act (FAST Act), which authorizes DOT's oversight of surface transportation, was signed into law by President Obama on December 4, 2015. The FAST Act covers five fiscal years through 2020, and is the first law in over ten years that offers long-term funding certainty to the Federal surface transportation program. States and local governments can now move forward with critical transportation projects, like new highways and transit lines, with the confidence that they will have a Federal partner over the long term. The Act also makes changes and reforms to many Federal transportation programs, including streamlining the approval processes for new transportation projects, providing new safety tools, and establishing new programs to advance critical freight projects. The FAST Act also includes additional motor vehicle safety measures, such as the authority to prohibit rental car companies from knowingly renting vehicles that are subject to safety recalls; increased maximum fines against non-compliant auto manufactures from \$35 million to \$105 million; and streamlines the Federal truck and bus safety grant programs, giving more flexibility to States to improve safety in these areas.

## *FHWA*

FHWA provides Federal, State, and local partners the tools, resources and information necessary to make sound safety investment decisions and coordinates with States to develop Strategic Highway Safety Plans (SHSPs) and implement and improve the safety of roadway infrastructure on all public roads. FHWA continues to implement and oversee the Highway Safety Improvement Program (HSIP), a \$2.4 billion core Federal-aid program. The goal of the program is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads by using a data-driven, performance-based strategic approach to improve highway safety and assists the States in improving their roadway safety data. This includes the following efforts:

- Providing States with guidance for the implementation of safety programs and reporting (including HSIP, Older Driver and Pedestrian Special Rule Interim Guidance, High Risk Rural Roads, and State Safety Data Systems);
- Working with State DOTs to improve the State's obligation of their HSIP funds;
- Providing technical assistance and expertise to research, design, and implement roadway infrastructure improvements; and to modernize highway geometric features and safety hardware as part of road and bridge construction, rehabilitation and restoration projects;
- Managing the Focused Approach to Safety to better address critical infrastructure safety challenges, specifically for roadway departure, intersection-related, and pedestrian crashes;
- Implementing the new regulatory requirements on safety performance management and the updated requirements for HSIP to help States improving roadway and safety data;
- Promoting the latest innovative safety tools and countermeasures as part of Every Day Counts (EDC) initiative, such as Data Driven Safety Analysis (DDSA); and
- Supporting the Secretary's "*Safer People, Safer Streets*" initiative through activities that promotes safe non-motorized transportation. These include: supporting flexible design of pedestrian and bicycle facilities; initiation and implementation of the Bicycle-Pedestrian Count Technology Pilot Program; development of a Handbook for MPO Pedestrian and Bicycle Planning; development of a Decentralized, Public, and Mobile-Based Sidewalk Inventory Tool; and updating pedestrian and bicycle guidance and regulations.

## NHTSA

NHTSA develops safety standards for new motor vehicles and related safety equipment, investigates safety defects in vehicles and oversees recalls, conducts research on advanced vehicle safety systems and on driver behavior, and partners with State Highway Safety Offices and other safety groups to implement evidence-based safety programs. Key highlights include: Implementing an ambitious vehicle research plan to accelerate the enormous potential benefits of connected automated vehicles on U.S. roadways.

- This includes in-vehicle technologies, such as automatic emergency braking, the use of radar, cameras and navigation as well as communications between vehicles;
- Launching a major initiative to strengthen its vehicle defects investigations program to ensure that the agency can better address vehicle safety defects today and into the future;
- Maintaining a comprehensive series of programs to address unsafe driver behaviors particularly through high visibility enforcement (HVE) campaigns. These proven campaigns combine public outreach and intensified enforcement to both catch illegal behavior and serve as a deterrent to others. More than 10,000 State and local law enforcement agencies participate in HVE campaigns each year;
- Engaging stakeholders in developing new and innovative strategies to address traffic injury prevention in the future through a series of events nationwide in 2016;
- Mobilizing a cadre of peer law enforcement liaisons (LELs) to provide ongoing technical assistance to law enforcement agencies at the State and local level, and to support the Data-Driven Approaches to Crime and Traffic Safety (DDACTS) program, conducted in partnership with the Department of Justice;



- Supporting a national network of more than 5,000 child safety seat inspection stations, and over 8,000 certified safety seat technicians and instructors;
- Continuing to implement the *DOT Blueprint for Ending Distracted Driving* and vehicle and behavioral safety research on reducing distracted driving;
- Providing program guidance and technical assistance to States to implement their Highway Safety Plans, which detail how States will use their highway safety grant funds;
- Ongoing data modernization efforts to strengthen the collection and analysis of vehicle crash data through the development of more robust data systems; and
- Providing national leadership to promote and develop effective emergency medical services in all 50 States, and develop a Next Generation 911 system that will improve post-crash care and survival rates by upgrading the capacity of emergency response systems to utilize new forms of electronic communication.

### *FMCSA*

FMCSA regulates all registered CMVs that operate interstate or that carry hazardous materials. There are approximately 532,000 active interstate motor carriers and intrastate hazardous materials motor carriers operating in the United States. FMCSA also regulates all drivers involved in interstate commerce or intrastate transportation of hazardous materials, as well as all Commercial Driver's License drivers both interstate and intrastate. Approximately 6 million CMV drivers operate in the United States.

Over the past 10 years, registrations for large trucks and intercity buses increased 27 percent. Despite this growth in commercial vehicles the number of large trucks involved in fatal crashes decreased from 4,902 in 2004 to 3,906 in 2013, a drop of 20 percent. The rate of buses involved in fatal crashes decreased from 4.10 to 1.85 per 100 million VMT between 2004 and 2014.

FMCSA expects the fatality rate for large trucks and buses to fall as changes in enforcement processes ensure motor carriers are fit, willing and able to comply with all safety regulations. The Agency is modernizing safety programs led by the Compliance, Safety, and Accountability (CSA) initiative. CSA will enhance the efficiency and effectiveness of enforcement activities through early contact with a greater number of motor carriers. FMCSA is implementing Phase III of CSA. Upon completion, all States will be trained and able to use all of the interventions developed for the CSA program to take appropriate enforcement action against unsafe motor carriers and drivers.

Other efforts include:

- Completing a rulemaking to revise 49 CFR Part 385, Safety Fitness Procedures. FMCSA would establish safety fitness determinations based on safety data from inspections and violation history rather than just an investigation;
- Revising the new entrant safety audit program to allow offsite safety audits for new motor carriers that have evidence of compliance, helping States to complete more safety audits in the mandated timeframes;
- Improved information technology used to identify high-risk carriers; and
- Providing safety grant funding opportunities to State and local government agencies.

## *Next Steps*

- Establishing safety performance measures in each State (including number of fatalities and serious injuries and rate of fatalities and serious injuries per 100 million VMT);
- Improved coordination of departmental programs in the implementation of State SHSPs;
- Improved use of the Systemic Approach to Safety to implement safety improvements based on high-risk roadway features correlated with specific severe crash types;
- Analysis and evaluation of the HSIP through review of online reports;
- Support the Secretary's Safety Initiative by developing resources and providing technical assistance to address the safe use of non-motorized transportation;
- Promote EDC Data-Driven Safety Analysis tools and resources to State and local agencies;
- Increase States use of HSIP to implement live-saving infrastructure safety countermeasures;
- Refine and expand technical resources, guidelines and training to State and local organizations seeking to develop or expand highway safety programs and initiatives, working with researchers, associations, and other stakeholders to develop and distribute technical materials;
- Implement the modernized and more robust crash data collection system that will enhance all aspects of motor vehicle and roadway safety research, program development and education;
- Crash test 85 percent of the new model year fleet to provide consumers with more information on the relative safety of new vehicles through its 5-star rating program;
- Conduct four national HVE campaigns in FY 2017 to promote seat belt use, and deter impaired driving, and distracted driving;
- Convene five traffic safety stakeholder summits across the country in early 2016 leading to a national safety summit in Washington, DC in March 2016;
- Develop concrete actions that States and other safety advocates can take to address drowsy driving by holding stakeholder meetings and conducting research to help develop measures of drowsy driving, analyze existing data sources, and examine the potential of new State policies to change awareness and attitudes towards drowsy driving;
- Publish proposals to require vehicle-to-vehicle (V2V) devices on all light new vehicles, and on distraction guidelines that apply to nomadic devices in vehicles;
- Publish the Final Rule on Electronic Logging Devices (ELD) to establish minimum performance and design standards for ELDs; requirements for the mandatory use of these devices by drivers currently required to prepare hours of service (HOS) records of duty status; requirements concerning HOS supporting documents; and measures to address concerns about harassment resulting from the mandatory use of ELDs.

## *Goal Leaders*

Gregory G. Nadeau, Administrator, Federal Highway Administration

Scott Darling, Acting Administrator, Federal Motor Carrier Safety Administration

Mark R. Rosekind, Ph.D., Administrator, National Highway Traffic Safety Administration

# Aviation Safety

## OVERVIEW

### *DOT- Priority Goals*

- **Reduce U.S. commercial aviation air carrier fatalities by 24 percent over a 9-year period (2010–2018), to no more than 6.2 per 100 million persons on board in FY 2018.**
- **Reduce the general aviation fatal accident rate per 100,000 flight hours to no more than one in FY 2018.**
- **Reduce category A&B runway incursions in all airports to a rate of no more than 0.395 per million operations in FY 2016.**

Aviation fatality rates are at historic lows and continue to drop over time. The Federal Aviation Administration (FAA) has an imperative to be smarter about how it assures safety as the aviation industry grows more complex. FAA has more safety data than it has ever had before. This provides an opportunity to be more proactive about safety and use safety management principles to make smarter, risk-based decisions.




FAA focuses on three areas of aviation safety:

- Commercial Aviation;
- General Aviation; and
- Runway Safety.

To continue to improve the current level of safety in the national airspace FAA recognizes the need to address precursors to accidents. In the past, FAA focused on actual incidents and accidents to identify risk within the aviation system. The number of accidents has now dropped to a level in which this is a more difficult activity to assess risk.

FAA is developing alternate methods to identify and address emerging safety risks and accident precursors to reduce the likelihood of such events. The Aviation Safety Information Analysis and Sharing (ASIAS) initiative is one of the key programs maintained by FAA, and frequently partners with the Commercial Aviation Safety Team (CAST) to monitor known risk, evaluate the effectiveness of deployed mitigations, and detect emerging risk. ASIAS has access to multiple data sources across Government and industry, including voluntarily provided safety data, through the participation of 46 Part 121 member air carriers and nine corporate operators. ASIAS has matured to the point that FAA and industry can leverage voluntarily provided safety data from operators that represent 96 percent of U.S. air carrier commercial operations. ASIAS retains access to a wide variety of both public and proprietary data sources, each of which provides information from different parts of the National Airspace System (NAS). CAST leverages data from ASIAS to understand the underlying contributing factors and develop mitigation strategies.

## PERFORMANCE REPORT

| Aviation Safety (FAA)   |       |       |       |       |       |             |             |   |
|---|-------|-------|-------|-------|-------|-------------|-------------|---|
| Performance Measure   | 2010  | 2011  | 2012  | 2013  | 2014  | 2015 Target | 2015 Actual | Target Met or Not Met   |
| <b>DOT PRIORITY GOAL:</b><br>Number of U.S.-registered, commercial air carrier fatalities per 100 million persons onboard | 0.3   | 0.0   | 0.0   | 1.1   | 0.6*  | 6.9         | 0.1*        | Met<br>              |
| <b>DOT PRIORITY GOAL:</b><br>Number of fatal general aviation accidents per 100,000 flight hours                          | 1.104 | 1.12  | 1.09  | 1.11  | 1.09* | 1.04        | 1.03*       | Met<br>              |
| <b>DOT PRIORITY GOAL:</b><br>Category A&B runway incursions per million operations  | 0.117 | 0.138 | 0.356 | 0.220 | 0.282 | 0.395       | 0.302*      | Potentially Met<br> |

### *Progress Update -Results*

#### *Commercial Aviation Safety Team (CAST)*

Commercial aviation continues to be one of the safest forms of transportation. While rare, however, commercial aviation accidents have the potential to result in large loss of life. In FY 2015, with a result of 0.1 fatalities per 100 million persons on board, the FAA achieved its target of not exceeding 7.2 fatalities per 100 million persons on board.

The FAA and the aviation industry agree that partnership is critical to aviation safety. The agency and industry must work together to address risks. Otherwise, safety cannot advance. CAST is a joint industry/government group committed to improving aviation safety, focusing on detecting risk and implementing mitigation strategies before accidents or serious incidents occur.

CAST has evolved and the group is moving beyond the historic approach of examining past accident data to a more proactive approach that focuses on detecting risk and implementing mitigation strategies before accidents or serious incidents occur. The goal over the next decade is to transition to prognostic safety analysis. CAST aims to reduce the U.S. commercial fatality risk by 50 percent from 2007 to 2025.

CAST has developed an integrated, data-driven strategy to reduce the commercial aviation fatality risk in the United States. CAST currently uses 96 safety enhancements to improve safety.

To learn more about CAST, please visit [https://www.faa.gov/news/fact\\_sheets/news\\_story.cfm?newsId=18178](https://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=18178).

### *General Aviation (GA)*

With a result of 1.03 fatal accidents per 100,000 flight hours in FY 2015, FAA was also successful in achieving its goal related to the general aviation (GA) fatal accident rate. The method of setting targets involved using the three safest years in GA history (Fiscal Years 2006 - 2008) as the baseline. Government and industry agreed to a goal of reducing the GA fatal accident rate by 10 percent over a 10-year period from this baseline. Each year's annual target rate has been set in order to achieve the overall 10-percent reduction in 10 years.

Efforts have been intensified to reduce the GA fatal accident rate. The FAA has partnered with industry in the General Aviation Joint Steering Committee (GAJSC) to use a non-regulatory, proactive, and data-driven strategy to get results. To date, the GAJSC has adopted 33 losses of control and engine-related safety enhancements (SE). The GAJSC is evaluating additional SEs for system and component failures related to engines.

The GAJSC is reaching out to the general aviation community to educate pilots and other stakeholders on the benefits of sharing (in a protected, non-punitive manner) collected safety data through our Aviation Safety Information Analysis and Sharing (ASIAS) program. The goal of the program is to assist the GA community in reducing the number of fatal accidents by looking for systemic risks that could potentially lead to fatal accidents. Data submitted to ASIAS is confidential, de-identified, and will not be used for enforcement purposes.

We are taking steps to help improve safety in small aircraft by simplifying design approval requirements for safety systems like Angle of Attack (AOA) indicators. AOA indicators provide the pilot with a visual aid to prevent loss of control of the aircraft in the critical phases of flight. Previously, cost and complexity of indicators limited their use to the military and commercial aircraft. Under the new guidelines, AOA devices can be added to small airplanes to supplement airspeed indicators and stall warning systems, giving pilots an additional tool to avoid a dangerous aerodynamic stall and subsequent loss of control.

To spread safety awareness throughout the aviation community, we conduct live safety seminars, and send email notifications, airmen notices, and FAA Safety Team (FAAST) blasts. Additionally, FAAST has Twitter and Facebook pages as well as airman counseling, and presentations/booths at aviation events. For more information on FAAST, please visit [www.FAASafety.gov](http://www.FAASafety.gov).

### *Runway Safety*

FAA's top priority is maintaining safety in the NAS. Safety in the NAS hinges on maintaining integrity, security, and efficiency where multiple safety responsibilities converge—the Nation's airports. FAA's runway safety efforts focus on preventing and decreasing the severity of runway incursions and serious surface incidents. In FY 2015, with a result of 302 Category A and B runway incursions per million operations, FAA continued its success in achieving the target for serious runway incursions at a rate of no more than 0.395 per million operations.

Aligned with the FAA Administrator’s Priority Initiatives, Runway Safety is building on past successes by migrating from event-based safety to risk-based safety using multiple data sources and stakeholder subject matter experts to assess current risk, predict future risk, and establish relevant metrics that measure the reduction in risk. The risk-based approach incorporates the rapidly expanding availability of FAA data, analytical capabilities and training applications within a robust SMS.

On June 24, 2015, the FAA held a Runway Safety Call to Action to address an increase in the number of runway incursions. The meeting was attended by 108 representatives from industry, labor, and government. The event focused on mitigating visual, communication, and procedural challenges that occur on the surface environment. There were a total of 32 recommendations received at the end of the day which included efforts that require an FAA, union and industry partnership to complete. A summary of the event, along with the recommendations, were published in a report on July 31, 2015 as Phase 1 - Runway Safety Call to Action. FAA and industry partners used the recommendations to develop implementation plans detailing short, medium and long-term corrective actions including dates for implementation. A Phase 2 – Runway Safety Call to Action report will be available by the end of 2015.

## PERFORMANCE PLAN

| Aviation Safety (FAA)  |   |                |                |  |
|--|---|----------------|----------------|--|
| Goal   | Indicator   | FY 2016 Target | FY 2017 Target |  |
| <b>DOT Priority Goal: Reduce US commercial aviation air carrier fatalities by 50 percent over an 18-year period (2008-2025) to no more than 6.2 per 100 million persons on board in FY 2018.</b> | Number of US commercial aviation air carrier fatalities per 100 million persons on board. | 6.7            | 6.4            |  |
| <b>DOT Priority Goal: Reduce the general aviation fatal accident rate per 100,000 flight hours to no more than 1 in FY 2018.</b>   | Number of general aviation fatalities per 100,000 flight hours.                           | 1.02           | 1.01           |  |
| <b>DOT Priority Goal: Reduce category A&amp;B runway incursions in all airports to a rate of no more than 0.395 per million operations in FY 2014.</b>   | Category A&B runway incursions per million operations (takeoffs and landings).            | 1.78           | 1.78           |  |

### *Key Strategies*

**Safety Management System Rule:** In January 2015 a final FAA rule was published that requires a Safety Management System (SMS) for U.S. air carriers operating under 14 Code of Federal Regulations (CFR) part 121. SMS is the formal, top-down, organization-wide approach to managing safety risk and assuring the effectiveness of safety risk controls. The rule requires airlines to implement an SMS within three years. They were required to submit their

implementation plans to the FAA within six months. The rule also requires a single accountable executive to oversee SMS. In making this rule, the FAA reviewed more than 100 accidents of U.S. commercial carriers between 2001 and 2010 and determined that if SMS had been in place, many of these tragedies may have been prevented.

An SMS is a set of processes and procedures that everyone follows so safety can be enhanced. This happens by having a structured approach to collect and analyze data from airline operations. This data can help identify patterns and trends that could possibly lead to a problem. Having this information enables the industry to take action before there is a problem. In the past, the focus to improve safety was to identify and address the causes of accidents after they occur. As a result, aviation safety has continuously improved and, fortunately, today U.S. air carriers have very few accidents. However, the ultimate goal is to prevent accidents from happening at all.

An SMS includes processes to collect and analyze data systematically to identify hazards, assess the risk associated with those hazards, and take actions to mitigate that risk before an incident or accident occurs. An SMS can be scaled to the size of an airline's operation. It is NOT one size fits all. The FAA encourages airlines to create the system that best fits their operations. An SMS does NOT replace FAA oversight or inspections, but it DOES help foster a stronger safety culture within an airline and it ensures that the airline has the necessary processes and procedures to manage the safety of its operations.

To learn more about SMS, please visit <https://www.faa.gov/about/initiatives/sms/>.

**Risk-Based Decision Making:** The aviation landscape has changed dramatically over the last decade. Several factors are increasing the complexity of the industry and introducing different types of safety risk into the aerospace system. These factors include new aerospace designs and technologies (e.g., Unmanned Aircraft Systems), changes in FAA's surveillance and oversight model (e.g., designee management programs), and different business models for the design and manufacture of aircraft and products (e.g., supply chains).

The FAA has built the foundation to address the challenges created by this complexity and diversity by developing and implementing an SMS. Risk-Based Decision Making is one of four Strategic Initiatives identified by the FAA Administrator as a top priority. The initiative contains activities to help to further safety management in the FAA.

The Risk-Based Decision Making initiative will enable the FAA to make smarter decisions to improve safety in the aerospace system. Safety data will be shared among FAA organizations, industry, and international peers, leading to a broader spectrum of available data. The data will be analyzed using safety management principles to identify emerging hazards and predict the associated safety risk. The resulting information will be coordinated and shared with the people who are in the best position to manage the safety risk and make the aerospace system even safer. The Risk-Based Decision Making initiative includes the implementation of tools and processes that will enable the FAA to proactively address emerging safety risks using consistent, data-informed approaches to support system-level decisions.

In order to do this, FAA needs to establish data taxonomies to allow better sharing of safety data across the agency and with industry constituents and international peers. This will enhance cross-organizational communication and collaboration and prevent duplication of efforts, as well as allow the FAA to expand its sources of safety data. By working together across the FAA, combined safety data will be analyzed to identify emerging crosscutting hazards, predict the risk associated with those hazards, and develop mitigations to address the risk. The focus will be to look across the system rather than in individual segments in order to get a more comprehensive view. Decisions will be based on safety risk information and responses will be measured, coordinated, and focused on reducing safety risk. The FAA will also evolve its oversight model to be more efficient and effective using safety management principles and leveraging industry's implementation of SMS to target the application of resources to the areas of greatest safety risk.

### *Next Steps*

**Transitioning to a Compliance Philosophy:** As aviation evolves, the FAA's oversight model must evolve with it. The FAA's new philosophy on compliance is one of the key activities under the Risk-Based Decision Making initiative. This new approach ensures that FAA decisions affecting industry are made with safety risk fully considered and that oversight models are properly aligned with SMS in industry organizations. It is fully understood that the revised model will require a cultural change in how the FAA views and conducts oversight. In support of this change, the FAA Administrator signed the FAA Compliance Philosophy Order in June 2015. FAA organizations are currently updating their internal policies and training their workforce to align with the Compliance Philosophy.

In 2016, an FAA level oversight policy will be developed to enable a consistent, proactive, and collaborative regulatory approach that is aligned with safety management principles. Using this approach, the FAA and industry will cooperate to actively manage safety risk in the aerospace system. FAA oversight decisions (frequency, depth, and focus) will be based on safety risk and the performance of industry organizations, and oversight resources will be focused on areas of highest safety risk.

**Identifying and Addressing Significant Safety Issues:** The FAA has established processes to identify and prioritize cross-organizational Significant Safety Issues (SSIs). It is expected that each FAA Line of Business (LOB) will identify SSIs within their area of responsibility and submit a subset of those issues for FAA-level consideration. These issues are consolidated and prioritized into an FAA SSI List. The purpose of the FAA SSI list is to create a decision-making tool for FAA executives and assist them in prioritizing the application of FAA resources based on safety risk.

The FAA SSI List contains crosscutting issues, which means that the issues are potentially systemic and would be most effectively treated by cross-organizational teams. An issue is considered crosscutting if it could affect more than one FAA organization, or if its mitigations require more than one FAA organization to implement. SSIs can indicate ineffective performance and their identification and prioritization will support management's decision making to implement necessary improvements in the system. This process will also increase cross-organizational communication and awareness.

The FAA SSI List will be updated annually. Once the list is finalized, safety assessment teams will be established to conduct Safety Risk Management (SRM) on the issues in the priority



established by the list. In 2016, SRM will be applied to at least two FAA level SSIs. Since this is a new process, it is expected that the FAA will become more efficient at conducting these agency-level assessments. So it is expected that the number of FAA-level safety assessments that are conducted will increase in future years.

**Hazard Identification, Risk Management & Tracking Tool:** With the increasing complexity and interconnectivity of the National Airspace System (NAS), the FAA identified the need for a single integrated tool that provides a consistent and standardized methodology to manage and track hazards. Development of the Hazard Identification, Risk Management and Tracking (HIRMT) web-based tool was an activity under the Risk-Based Decision Making initiative. The initial capability of the HIRMT tool is scheduled for agency-wide deployment in January 2016.

While many organizations have hazard tracking systems in place, there has not been such a system at the FAA level. HIRMT is not intended to track every hazard across the entire FAA and will not replace existing organizational systems and processes. Instead, FAA will use HIRMT to track safety management efforts for the agency's most complex, critical, and/or cross-organizational safety concerns. These Aerospace System Level (ASL) safety issues will be managed in HIRMT in accordance with the FAA's Safety Risk Management Policy.

FAA personnel are currently being trained on the use of the HIRMT tool. The plan is to evolve the tool, with successive releases after the initial launch, to increase its functionality, as well as the information that it captures. Three such releases are planned for 2016, with a similar schedule expected in the coming years.

**Ongoing Air Traffic System Modernization:** FAA will continue to develop and deploy technologies to use U.S. airspace in safer, more efficient, and more environmentally sound ways. NextGen is a comprehensive overhaul of our NAS to make air travel more convenient and dependable. NextGen is providing air traffic managers and pilots with the tools to proactively identify and mitigate weather and other potential flight conflicts. Automatic Dependent Surveillance-Broadcast, or ADS-B, moves air traffic control from ground-based radar surveillance to a point-to-point broadcast surveillance.

### **Runway Safety**

In alignment with RBDM, FAA uses safety data from multiple sources, including voluntary safety reports, to proactively identify safety topics to be incorporated into mandatory, semi-annual Recurrent Training that reaches all FAA air traffic controllers. The training implements a dynamic curriculum via web-based and instructor led courses. Past runway incursion prevention topics include risks of using runways as taxiways and hearback and readback error mitigation. In January 2016, a web based course will be delivered focusing on the top errors made by controllers and runway incursion hot spots.

In addition, FAA gathered a full fiscal year of runway safety data using the Surface Risk Analysis Process such as, but not limited to, the safety barriers that were in place during the time of the event and the rate of closure between two aircraft or vehicles. FAA will analyze the gathered data and develop a risk based metric by July 31, 2016. The metric will allow the FAA to set a baseline target to meet every fiscal year by October 1, 2016 and monitor the effectiveness of the programs, processes, and procedures related to surface safety.

Finally, FAA has undertaken a new Compliance Philosophy that includes a Runway Incursion Remedial Training (RT) program for pilots. RT was implemented in October 2015 and uses

education to allow airmen who have committed an inadvertent deviation from regulatory standards to enhance their knowledge and skills. FAA intends that the RT program will bring an aviation safety incident to the attention of the airman and encourage future compliance thereby enhancing safety in the NAS.

### Goal Leaders

Michael P. Huerta, Administrator, Federal Aviation Administration

Margaret Gilligan, Associate Administrator for Aviation Safety, Federal Aviation Administration

Teri Bristol, Chief Operating Officer Air Traffic Organization, Federal Aviation Administration

## Railroad Safety

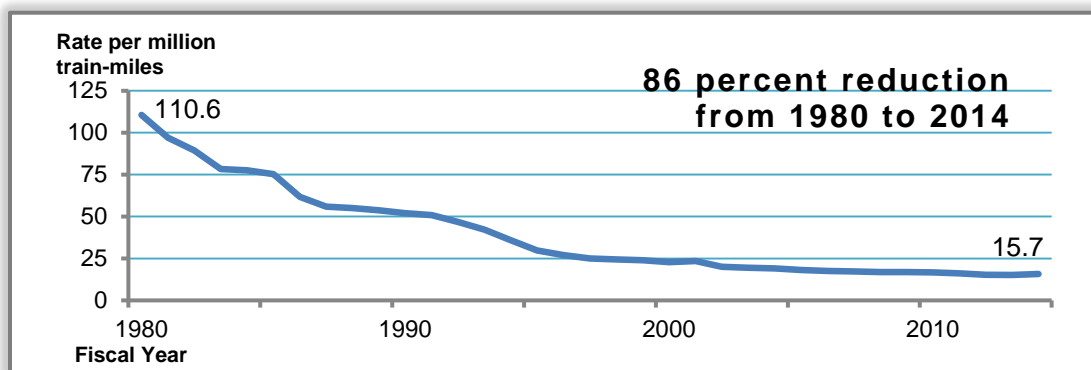
### OVERVIEW

FRA's mission is to enable the safe, reliable, and efficient movement of people and goods for a strong America, now and in the future. FRA executes this mission through development and enforcement of safety regulations, investment in passenger and freight rail services and infrastructure, and research and technology development. FRA's activities, and those of the rail industry, have resulted in one of the safest decades ever.

To make further gains, FRA is focused on continuous safety improvement, which requires a comprehensive strategy based on:


- A strong, data-driven oversight and inspection program.
- Proactive approaches for early identification and mitigation of risk.
- Strategic capital investments and a robust research and development program.

### Train Accidents and Incidents (1980 to 2014)



## PERFORMANCE REPORT

Rail Safety (FRA)

| Goal Description   | 2010   | 2011   | 2012   | 2013   | 2014   | 2015 Target | 2015 Actual | Performance  |
|--|--------|--------|--------|--------|--------|-------------|-------------|--|
| Rail-related accidents and incidents per million train-miles | 16.697 | 16.072 | 15.194 | 15.028 | 16.160 | 15.900      | 14.624*     | Met<br> |

The effectiveness of FRA’s and the rail industry’s activities is demonstrated by the following statistics—the number of rail-related accidents and incidents declined by 16 percent between FY 2005 and FY 2014; train accidents dropped by 46 percent; casualties fell by 8 percent; and highway-rail grade crossing incidents decreased by 24 percent.

These results are especially noteworthy because more Americans are choosing rail transportation every day. Amtrak ridership reached 31 million passengers in FY 2014, almost 29 percent higher than in FY 2005. In addition, U.S. rail intermodal freight traffic in FY 2014 exceeded 13 million containers and trailers—5 percent more than FY 2013, the previous peak year.

Although safety performance has improved, significant risks remain in the rail transportation system. The rate of safety improvement has slowed and current safety strategies are approaching their effectiveness limits.

Priority rail safety activities for FRA in 2015 included:

- Leading a multimodal, DOT campaign to strengthen safety awareness and enforcement at highway-rail grade crossings.
  - Phase 1: called on local law enforcement agencies to increase their presence at grade crossings, issue citations to drivers that violate crossing rules, and rapidly adopt best practices.
  - Phase 2: asked railroads, state departments of transportation, and rail authorities to use the U.S. DOT National Highway-Rail Crossing Inventory to identify crossings that would benefit greatly from safety improvement, focus their efforts on grade crossings with the highest likelihoods of collisions, and implement education and enforcement initiatives.
  - Subsequent phases will focus on smart use of technology; awareness about the most dangerous crossings in each state; improved signage, and partnerships with States and local safety agencies.
- Taking more than two dozen actions to ensure the safe transportation of energy products by rail, including issuing emergency orders and safety advisories, voluntary agreements with industry, and improving regulations.

On May 1, 2015, DOT issued the high-hazard flammable train rule, which institutes requirements to reduce accident risks for trains carrying large amounts of flammable liquids and to mitigate consequences of accidents that occur.

## PERFORMANCE PLAN

| Rail Safety (FRA) |           |                |                |  |
|-------------------|-----------|----------------|----------------|--|
| Goal              | Indicator | FY 2016 Target | FY 2017 Target |  |

| Goal  | Indicator   | FY 2016 Target | FY 2017 Target |
|---|---|----------------|----------------|
| <b>Performance Goal: Reduce Rail-related accidents and incidents.</b> | Rail-related accidents and incidents per million train-miles. | 15.890         | 15.880         |

### *Key Strategies and Next Steps*

While maintaining ongoing safety programs, FRA is targeting today's most pressing rail transportation safety challenges:

- **Passenger Rail:** Commuter and intercity passenger railroads lack capital to deploy life-saving positive train control (PTC) technology and other safety improvements;
- **Grade Crossings and Pedestrian Safety:** Motor vehicle drivers and pedestrians continue to face significant risks at highway-rail grade crossings and around railroad rights of way;
- **Critical Assets:** Aging major infrastructure, including bridges and tunnels, on the Northeast Corridor; and
- **Energy Products:** Hazards from large volumes of crude oil and other energy products, including ethanol and liquefied natural gas, moving by rail.

**Passenger Railroad Safety:** While railroads have made remarkable safety progress in recent decades, an accident like the May 12, 2015 Amtrak derailment makes clear that hard work remains. The good news is that technology exists today that can prevent some catastrophic accidents on passenger routes. Positive train control (PTC) would have prevented the 2013 Metro-North derailment that killed four people when an engineer operated a train too quickly around a curve.<sup>1</sup>

The *Rail Safety Improvement Act of 2008* (RSIA) mandated that certain railroads implement the technology.<sup>2</sup> FRA estimates that the mandate applies to about 68,000 route miles. Most major freight railroads do not expect to implement PTC systems fully until 2017 or later, according to public statements. Most Amtrak-owned routes are already equipped with functional PTC systems. Commuter railroads vary widely in their implementation status.

FRA regulations are the framework for the national PTC deployment. Before using PTC technologies in revenue service, each implementing railroad must submit its PTC safety plan to FRA and then receive FRA system certification. The certification process focuses on ensuring that railroads have (1) the capability to deploy the technology correctly, (2) established adequate training and maintenance programs, and (3) implemented technology that performs mandated functions safely and reliably.

Both before and since this derailment, FRA worked to help railroads plan and implement this critical, Congressionally mandated, life-saving technology. FRA issued a \$967 million loan to

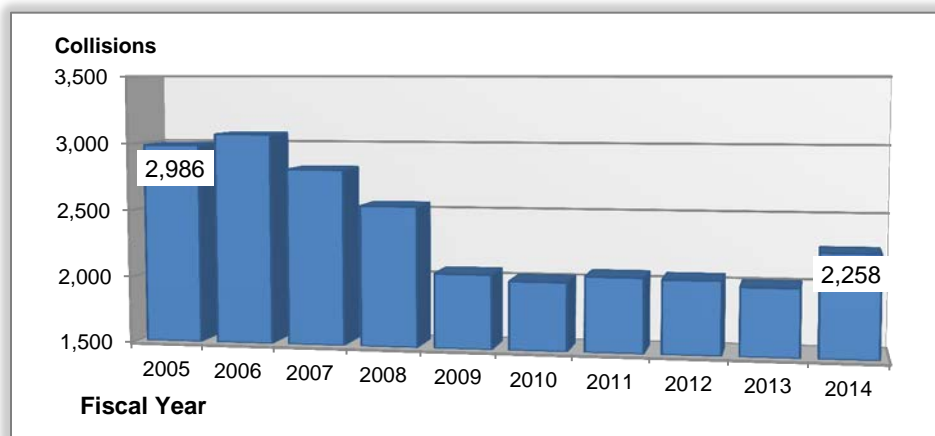
<sup>1</sup> Metro-North is the second largest commuter railroad in the United States, serving New York, Connecticut, and New Jersey, with an annual ridership of almost 83 million people.

<sup>2</sup> All Class I railroad lines that carry poisonous by inhalation hazardous material and 5 million gross tons or more of annual traffic, and on any railroad's main line tracks over which intercity or commuter rail passenger train service is regularly provided. A main line is a line over which 5 million or more gross tons are transported annually.

the New York Metropolitan Transportation Authority, the nation's largest commuter rail service provider, for PTC deployment.

**Highway-Rail Grade Crossing and Pedestrian Safety:** Improving safety at the almost 130,000 public highway-rail grade crossings is one of FRA's top priorities. Each crossing is the location of a potential collision between a train and motor vehicle. In fiscal year 2014, the number of grade crossing incidents increased by 12 percent from the previous year, while the number of fatalities was unchanged. The risk of highway-rail grade crossing incidents will likely grow with future train and highway traffic increases.

**Highway-Rail Grade Crossing Collisions (2005 to 2014)**



The safest crossing is a closed crossing; therefore, increased funding for capital investment is critical. FRA would dedicate funds to local communities for safer highway-rail grade crossings, mitigation of adverse impacts of rail operations. FRA also would provide capital assistance to help resource-constrained short line railroads improve their infrastructure. In addition, FRA is exploring options for delivering effective highway-rail grade crossing grants. Combining DOT's grade crossing resources will increase their effectiveness. FRA proposes new research, development, and technology, including field testing new technologies and developing an intelligent rail systems proof-of-concept for passively protected grade crossings. Additional money will fund a study of blocked highway-rail grade crossings and development of technologies other than conventional inductive loops to detect blocked crossings

**Critical Assets:** The Northeast Corridor (NEC) is the 457-mile rail backbone of the Northeastern United States that connects the Washington, D.C.; Baltimore, Maryland; Philadelphia, Pennsylvania; New York, New York; and Boston, Massachusetts, metropolitan areas. These areas collectively—

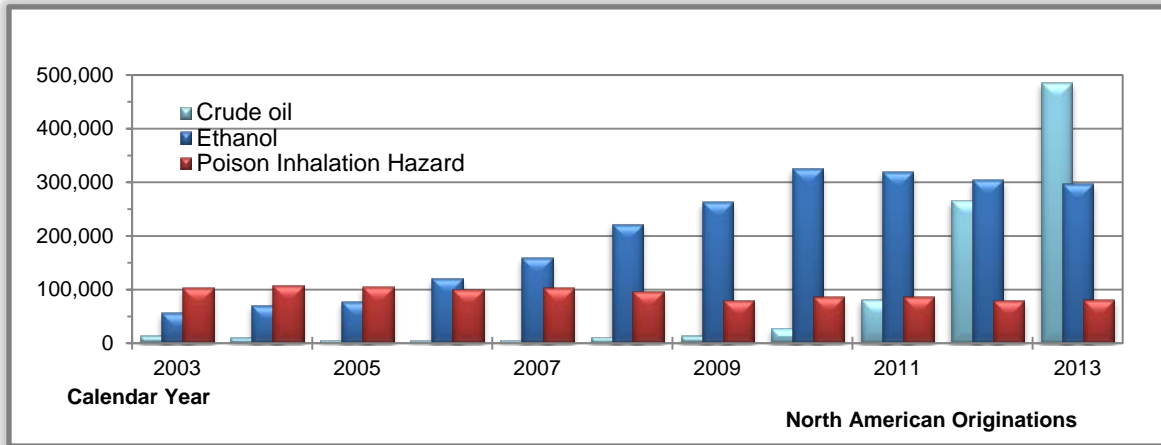
- Generate about 20 percent of U.S. economic output (gross domestic product).
- Have 51 million residents and will likely have 58 million residents by 2040.
- Choose rail for nearly 70 percent of combined air and rail travel in the Washington –New York market; and more than 50 percent of combined air and rail travel in the New York - Boston market.

- Support 2,200 passenger trains with approximately 720,000 intercity and commuter riders, every day on average.
- Average 70 freight trains daily.

In April 2015, the multi-party Northeast Corridor Infrastructure and Operations Advisory Commission released the first joint 5-year capital plan for investing in the corridor. The plan identified a nearly \$14 billion backlog of major infrastructure assets (primarily bridges and tunnels) that have remained in service well beyond their expected useful life, require extensive maintenance and rehabilitation, and are major sources of corridor delays. The average age of these bridges and tunnels is over 100 years and failure of these infrastructure assets could cripple travel on the NEC. The Commission's 5-year plan identified \$366 million in unfunded work for FY 2017.

**Movement of Crude Oil and Other Energy Products:** Rail transportation of crude oil increased significantly and rapidly, driven by new production from the North Dakota Bakken oil fields and imports from Canada. Ethanol and liquefied natural gas transportation by rail also increased significantly during the last decade. This is a national transportation phenomenon as energy products move from production areas to refineries on the East, West, and Gulf Coasts.

## Crude Oil, Ethanol, and Poison Inhalation Hazardous Materials Incidents 2003-2013



Source: Association of American Railroads, *Annual Report of Hazmat Transported by Rail, 2014*.

An accident involving large volumes of crude oil can be catastrophic. The 2013 Lac-Mégantic derailment killed 47 people. Since then, trains carrying crude oil have had 22 major accidents in the United States. As the safety and environmental risks grow with increasing shipments of energy products, Congress and the public are demanding rapid and effective remedies.

FRA will use new resources to expand FRA's Automated Track Inspection Program, which complements and extends human inspection capabilities to locate problems before they lead to derailments. FRA plans to use these resources to increase automated inspection mileage with existing systems, rehabilitate some equipment, and invest in a new platform with integrated track inspection technologies and rail defect detection systems. The funds will also help FRA advance its analytical capability and increase the flow of actionable information for targeted inspections.

FRA also will fund new research, development, and technology to mitigate rail transportation risks of crude oil and other energy products. Focus areas include tank car and rail integrity and developing the scientific and engineering foundation to continue revamping of FRA's track safety regulations. These funds will also help the Short Line Safety Institute develop and expand, with an executive director and training director. Insurance companies, vendors, and shippers will also provide resources. FRA's partnership with the Institute's sponsor, the American Short Line and Regional Railroad Association, will increase our understanding of small railroads' unique safety challenges and options for resolving them. FRA also plans to investigate the use of unmanned aircraft systems (UAS) to inspect railroad assets, anticipating that railroads intend to use UAS technologies in variety ways including inspecting tracks and bridges.

### Goal Leaders

Robert C. Lauby, Associate Administrator for Railroad Safety and Chief Safety Officer, Federal Railroad Administration

Paul Nissenbaum, Associate Administrator for Railroad Policy and Development, Federal Railroad Administration


John Tunna, Director of Research and Development, Federal Railroad Administration

# Transit Safety

## OVERVIEW

According to the National Safety Council, passengers on the Nation’s bus, rail and commuter rail systems are 40 times less likely to be involved in a fatal accident than passengers in cars and trucks. Despite this record of safety, each year there are more than 200 fatalities related to public transportation. We can do better. In 2013, 266 fatalities were reported on public transportation, an increase from 2009 to 2012 when fatalities totaled between 220 and 260. FTA is committed to pursuing a flexible SMS approach in order to help a safe industry become even safer, by fostering sound safety policy, more efficient practices for risk management and safety assurance, and a strong safety culture at every transit system, whatever its size or mode of operation.

## PERFORMANCE REPORT

| Transit Safety (FTA)   |       |       |       |       |        |             |             |  |
|--|-------|-------|-------|-------|--------|-------------|-------------|--|
| Goal Description   | 2010  | 2011  | 2012  | 2013  | 2014   | 2015 Target | 2015 Actual | Performance  |
| <b>Transit fatalities per 100 million passenger-miles traveled</b> | 0.533 | 0.535 | 0.604 | 0.609 | 0.523* | 0.52        | 0.518*      | Potentially Met<br> |

*\*Preliminary data*

## Progress Update – Results

Over the past year, the Federal Transit Administration (FTA) has made great strides in carrying out the new Moving Ahead for Progress in the 21st Century Act (MAP-21) safety responsibilities, reflecting the most significant program change in the agency’s history. Since passage of MAP-21, FTA has established its new Office of Transit Safety and Oversight, and hired its first Associate Administrator for Safety and has increased staffing to more than 25 total employees.

FTA also embarked on substantial rulemaking and program guidance. The cornerstone is the National Public Transportation Safety Program, which was published for notice-and-comment in August 2015. The National Public Transportation Safety Program establishes a Safety Management Systems approach as the framework for continuous improvement in transit safety. FTA also published a Notice of Proposed Rulemaking (NPRM) enhancing its State Safety Oversight Program as well as interim provisions for safety training certification in February 2015. The interim provisions created the first-ever Federal training requirements for Federal and State personnel who conduct safety audits and examinations. In June 2015, FTA also released a safety advisory for inspections of tunnel ventilation systems and tunnel evacuation procedures, in light of the tragic fatality that occurred on the Washington (DC) Metro after smoke filled a tunnel. FTA continues to develop additional supporting rules, including those for the National Public Transportation Safety Plan and for the Public Transportation Agency Safety Plans.

Finally, FTA has successfully aided 29 States in developing work plans to achieve MAP-21 safety compliance. FTA has published a final apportionment notice making approximately \$66 million in grants available to those States and awarded 27 State Safety Oversight Formula Grants.



## PERFORMANCE PLAN

| Transit Safety (FTA)   |  |                |                |  |
|--|--|----------------|----------------|--|
| Goal   | Indicator  | FY 2016 Target | FY 2017 Target |  |
| <b>Performance Goal: Reduce transit fatalities to 0.491 per 100 million passenger miles traveled by FY 2018.</b> | Transit fatalities per 100 million passenger miles traveled. | 0.51           | 0.50           |  |

### Key Strategies

FTA is working diligently to stand up the National Public Transportation Safety Program under MAP-21. To fulfill our commitment to developing an effective regulatory safety oversight program for the transit industry, FTA continues to strengthen the State Safety Oversight Program, develop a comprehensive SMS-focused training program, broaden the charter for the Transit Advisory Committee for Safety and kick-off the study of fatigue and operator assault prevention measures that will inform future safety rulemakings. FTA also issued three safety advisories covering vintage trolley operation, right-of-way worker protection and safe stopping distances for rail transit. In addition, FTA published a very comprehensive Advanced Notice of Proposed Rulemaking (ANPRM) for public comment on safety and transit asset management in October 2013. FTA also initiated a first-of-its kind safety examination that will help provide a path forward for highlighting best practices using SMS.

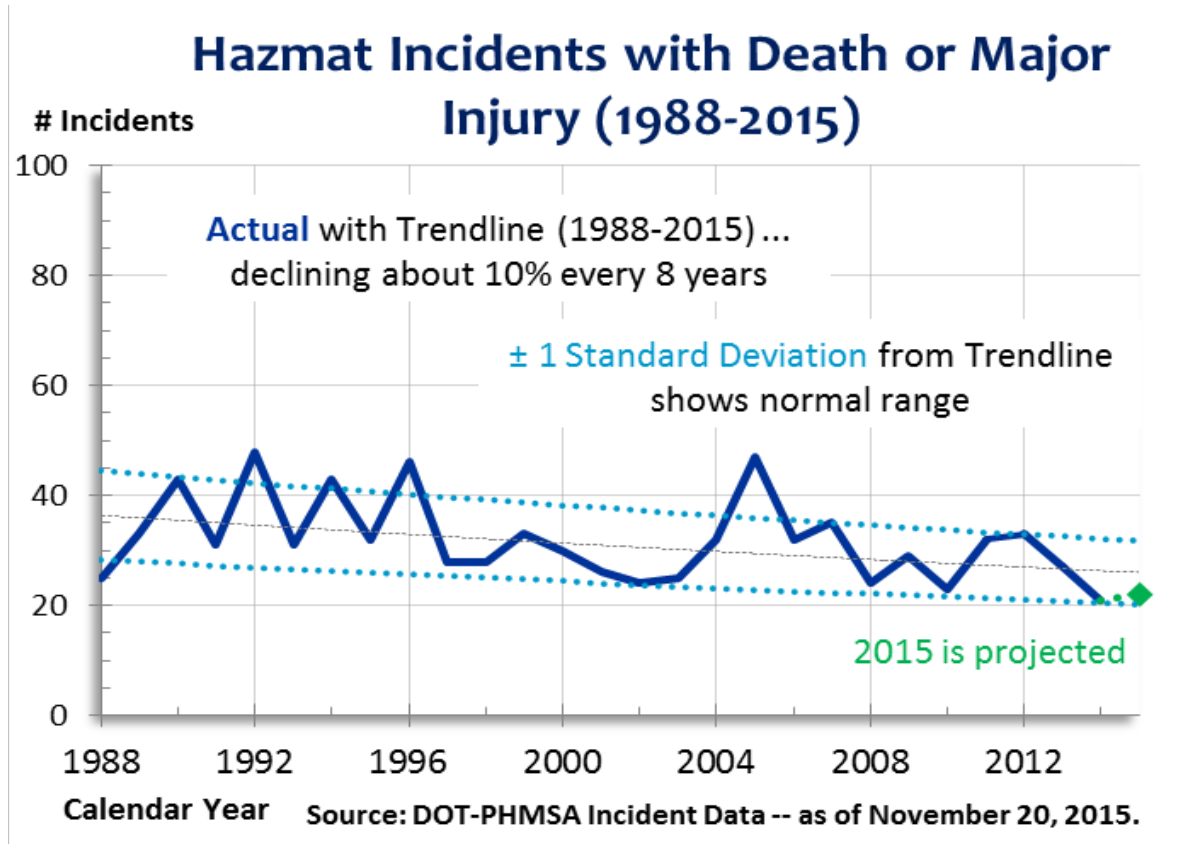
### Next Steps

In 2015, FTA plans to publish rules for comment for a stronger, more effective State Safety Oversight Program and a Public Transportation Safety Certification Training Program to prepare qualified safety experts for audits and examinations. FTA will issue a National Public Transportation Safety Plan, subject to public notice and comment, to set forth FTA's vision and intentions for a National Public Transportation Safety Program. In the first quarter of 2015, FTA will initiate an SMS pilot program for transit agency implementation.

### Goal Leader

Thomas Littleton, Assistant Administrator, Office of Safety, Federal Transit Administration

## Hazardous Materials Safety



### Overview

PHMSA's mission is to protect people and the environment from the risks of hazardous materials transportation. Every year, more than 2.5 billion tons of regulated hazardous materials—including explosive, poisonous, corrosive, flammable, and radioactive materials—valued at about \$2.3 trillion are moved 307 billion miles on the nation's transportation network.<sup>3</sup> These shipments move through densely populated or sensitive areas where the consequences of an incident could be loss of life or serious environmental damage.

Despite the risk, transporting hazardous materials underpins the United States' economy and quality of life. Oil and natural gas are used to heat and cool homes and businesses, transport commercial products and people, and produce electricity. Hazardous materials are also used in processes like water purification, fertilizing crops, producing medicines, and manufacturing many other products. Therefore, it is critical that the work PHMSA does to keep the public, property, and the environment safe from hazardous materials during transport also ensures that these products can move easily through the marketplace to meet public demands.

<sup>3</sup> 2012 Commodity Flow Survey, Research and Innovative Technology Administration (RITA), Bureau of Transportation Statistics (BTS). See [http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=CFS\\_2012\\_00H01&prodType=table](http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=CFS_2012_00H01&prodType=table)

PHMSA’s hazardous materials strategic goal is “to improve public health and safety by reducing transportation-related deaths and injuries.” This goal is aligned with PHMSA’s mission of protecting people and the environment from the risks of hazardous materials transportation. Accordingly, PHMSA measures the number of incidents with death or major injury involving the transport of hazardous materials against annual performance targets.

## PERFORMANCE REPORT

| Hazardous Materials Safety (PHMSA)                                   |      |      |       |       |      |             |             |  |
|--|------|------|-------|-------|------|-------------|-------------|--|
| Goal Description   | 2010 | 2011 | 2012  | 2013  | 2014 | 2015 Target | 2015 Actual | Performance  |
| <b>Hazardous materials incidents involving death or major injury</b> | 23   | 32   | 33(r) | 27(r) | 23   | 31          | 22*         | Met<br> |

*(r) revised*

### Progress Update

Based on preliminary data, PHMSA is projected to beat its target of 31 hazardous materials incidents involving death or major injury in 2015, with 22 incidents projected by the end of the year. PHMSA has implemented a risk-based systems approach that uses data to help drive program priorities, improve its ability to direct emerging risks and target its resources toward prevention activities. This approach has contributed to an overall downward trend in the number of incidents involving death or major injury, which have declined an average of approximately 10 percent every eight years over the long term (1988-2015). The relatively low number of annual deaths and injuries is due to PHMSA’s mission effectiveness, particularly considering that the number of hazardous materials shipments have increased dramatically in recent years.

PHMSA uses risk management principles and data visualization technologies to identify potential incidents. By using new and existing data in new ways, PHMSA is identifying emerging trends and enhancing its understanding of the hazardous materials transportation system. Leveraging data and risk management principles allows PHMSA to allocate resources based on acuity, and better to support programs that promote the safe transportation of hazardous materials. Additionally, using measurable results guides PHMSA’s actions in a more meaningful way.

For instance, PHMSA applies this data-driven, risk-based approach when:

- Evaluating policy and regulations;
- Developing risk models for areas of future interest;
- Establishing training curricula and outreach programs based on high consequence events; and
- Identifying safety and budgetary priorities.

The success in reducing the number of hazardous materials incidents involving death or major injury is a result of PHMSA’s commitment to its safety mission. To reflect that commitment,

PHMSA established the following priorities in its Office of Hazardous Materials Safety (OHMS) strategic plan:<sup>4</sup>

- **Streamline and Improve our Regulatory System** – Focus on modernizing and streamlining our internal processes and harmonizing regulations to reduce the burden of regulatory actions.
- **Enhance Risk Management Principles and Encourage the Use of Safety Management Systems** – Continue to build a risk assessment methodology based on a multidisciplinary approach, including developing better commodity flow data; improving incident report data and damage estimates (particularly environmental damages); and applying statistical analysis, data modeling, and predictive analytics.
- **Increase Compliance, Training, and Outreach** – Remain vigilant through ongoing inspections, investigations and enforcement efforts to ensure that carriers/shippers of hazardous materials understand, prioritize and address their safety risks. PHMSA will continue to educate and empower its stakeholders, the American public, and first responders.
- **Improve Preparedness and Response** – Take a focused approach to increasing community awareness and preparedness regarding hazardous materials in transportation. This would include utilizing the grants program to the fullest extent.
- **Foster Robust Research and Development, and Innovation** – Improve Information Technology (IT) functionality and web-based accessibility through an ongoing effort within IT Modernization. This would focus on implementing innovative safety solutions that are data-driven, forward looking, and transparent.

## Information Gaps

PHMSA reports on its Strategic Performance Indicators on a calendar year cycle for consistency with a wide array of stakeholders, which creates a three month delay in completing reporting. Additionally, the number of hazardous materials incidents with death or major injury for 2015 is estimated due to data lags. Title 49 of the Code of Federal Regulations (49 CFR Parts 171-180) requires that certain types of hazardous materials incidents be reported to PHMSA. Section 171.16 requires a written report for certain types of hazardous materials incidents within 30 days of the incident, and a follow-up written report within one year of the incident, based on certain circumstances. Incident reports for all hazardous materials incidents with death or major injury in 2015 will not be received until the end of January 2016. There are also reporting delays in practice, as many companies do not file incident reports on time.

## PERFORMANCE PLAN

### Hazardous Materials Safety (PHMSA)

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<sup>4</sup> The current plan runs through 2013-2016 and is available at [http://www.phmsa.dot.gov/pv\\_obj\\_cache/pv\\_obj\\_id\\_831686A536E88748B9AF7F73F8EFD39FAB5E1700/filename/PHMSA\\_Strategic\\_Plan\\_2013\\_2016Final.pdf](http://www.phmsa.dot.gov/pv_obj_cache/pv_obj_id_831686A536E88748B9AF7F73F8EFD39FAB5E1700/filename/PHMSA_Strategic_Plan_2013_2016Final.pdf).

| Goal   | Indicator  | FY 2016 Target | FY 2017 Target |
|--|--|----------------|----------------|
| <b>Performance Goal: Reduce natural gas and hazardous materials pipeline incidents involving death or major injury..</b> | Hazardous materials incidents involving death or major injury. | 20-31          | 20-31          |

### *Key Strategies and Next Steps*

PHMSA works to protect people and the environment throughout the transportation system. Accurate and sufficient incident data is necessary to overcome challenges identified in PHMSA's OHMS strategic plan. These include:

1. *Safe transportation of energy products by rail.* The emergence of the United States as a leading energy producer has changed our transportation system and presented new challenges for PHMSA. The growing reliance on trains to transport large volumes of flammable liquids poses a significant risk to life, property, and the environment. In recent years, rail incidents involving flammable liquid releases and resulting fires with severe consequences have occurred with increasing frequency (e.g., Arcadia, OH; Plevna, MT; Casselton, ND; Aliceville, AL; Lynchburg, VA; Mount Carbon, WV, and Galena, IL). To lessen the frequency and consequences of train incidents, PHMSA has promulgated regulations that:
  - Implement new operational requirements for certain trains transporting a large volume of Class 3 flammable liquids such as routing requirements, speed restrictions, and information for local government agencies;
  - Adopt new tank car standards that 1) Improve puncture resistance; 2) Improve thermal protection and survivability; and 3) Protect equipment;
  - Require enhanced tank car standards and an aggressive, risk-based retrofitting schedule for older tank cars transporting large volumes of flammable liquids; and
  - Revise the general requirements for offerors to ensure proper classification and characterization of mined gases and liquids.

PHMSA continues to address the risks associated with the rail transport of energy products and improve emergency preparedness and communication through outreach efforts and further future regulation.

2. *Bulk Transportation of Hazardous Materials that are Toxic by Inhalation (TIH)* presents a very low-probability, very high-consequence risk in many modes of transportation. PHMSA's strategy for addressing these issues is to:
  - Develop standards for loading and unloading of bulk hazardous materials, including TIH;
  - Advance rail tank car design; and
3. Assess the risks associated with railroad transportation of hazardous chemicals through urban centers.

*Hazardous Materials that Present a Risk of Fire Aboard Aircraft:* An aircraft in flight is

particularly vulnerable to the risk of fire, and the consequences can be catastrophic. PHMSA's strategy for dealing with this challenge is to:

- Strengthen rules/standards for transporting lithium batteries and other hazardous materials by air;
  - Stay in touch with advances in technology through outreach, research, and applications for permits and approvals; and
4. Continue to work with modal partners and international regulatory bodies to strengthen global requirements.

*Rollover Crashes Involving Tank Trucks Carrying Gasoline and Other Flammable Liquids* are the leading cause of injuries and deaths from hazardous materials transportation incidents. PHMSA's strategy for dealing with this challenge is to:

- Develop new standards for electronic stability control for trucks; and
- Work with other DOT operating administrations to improve driver training and to reduce driver fatigue.

### **Goal Leaders**

Magdy El-Sibaie, Associate Administrator for Hazardous Materials Safety (PHMSA).

## **Pipeline Safety**

### **Overview**

Natural gas and hazardous liquid pipelines supply more than two-thirds of the fuel used to heat, cool, and operate American homes, cars, and businesses—including most of the energy for transportation—through a network of 2.7 million miles of pipelines. While pipelines are by many measures the safest mode of transportation for these materials, the nature of the cargo is inherently dangerous, and because of the large volumes transported, it presents a risk of low-probability, high-consequence failure.

Pipeline incidents with death or major injury (serious incidents) have declined an average of 10 percent every three years between 1988 and 2015. At the same time, most measures of risk exposure—U.S. population, pipeline mileage, and pipeline ton-miles—have increased.

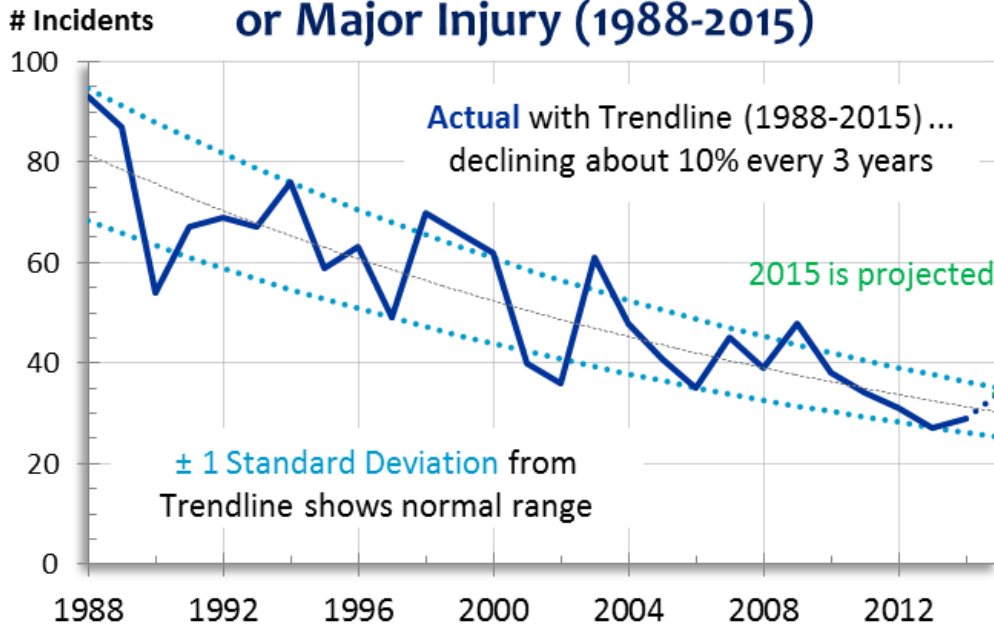
Most of the risk (about 80 percent of the incidents with death or major injury) occurs on natural gas distribution systems, which provide direct services to over 67 million households and businesses. Since 1988, this risk has dropped from about 1.5 serious incidents per million services to 0.5 per million services.

PHMSA oversees the safety and environmental protection of pipelines through the execution of the following key priority areas:

- Analysis of data;
- Damage prevention;
- Education and training;
- Rulemaking;
- Enforcement of regulations and standards;
- Research and development;
- Grants for States' pipeline safety programs and communities;


- Pipeline mapping;
- Community assistance and outreach; and
- Emergency planning for response to accidents.

## Pipeline Incidents with Death or Major Injury (1988-2015)



Calendar Year Source: DOT-PHMSA Incident Data -- as of November 20, 2015.

### PERFORMANCE REPORT

| Pipeline Safety (PHMSA)                            |      |      |       |       |      |             |             |  |
|--|------|------|-------|-------|------|-------------|-------------|--|
| Goal Description                                   | 2010 | 2011 | 2012  | 2013  | 2014 | 2015 Target | 2015 Actual | Performance  |
| Pipeline incidents involving death or major injury | 38   | 34   | 31(r) | 27(r) | 29   | 36          | 34*         | Met<br> |

(r) revised, \* projected

### Progress Update

Based on preliminary 2015 data, PHMSA projects that there will have been 34 pipeline incidents involving death or major injury, which is below the target of 36. While pipelines are by many measures the safest mode for transporting hazardous liquid and natural gas, the nature of their products is inherently dangerous. To address this hazard, PHMSA has designed and implemented a strong, risk-based, systems approach to protect the safety, security, and reliability of the Nation’s pipeline infrastructure. PHMSA also recognizes the importance of strong engagement with stakeholders and the continued focus on excavation or construction-related damage.

Coordination with State pipeline agencies and execution of these critical programs have played an important role in reducing the number of deaths and injuries resulting from pipeline incidents.

Pipeline corrosion and material failure are the two leading causes of transmission pipeline incidents. PHMSA's ongoing efforts to address these challenges are to integrate, target, and expand safety inspections based on the most serious risks and focus pipeline safety research on methods that might be used to improve identification of defects.

Excavation damage is the leading cause of distribution pipeline reportable incidents and the leading cause of harm to people and property for all pipeline incidents. For more than a decade, PHMSA has been an active participant in national, regional, and State efforts to improve excavation damage prevention. PHMSA continues to advance the "811—Call Before You Dig" public awareness campaign, expand geospatial data collection and analysis to help identify high-risk areas, and will gradually expand the risk-based inspection program to address the risk of excavation damage. Furthermore, PHMSA's final rule on excavation damage enforcement issued in 2015 directly

targets improved performance and the reduction of excavation damage to pipelines through the enforcement of damage prevention laws. PHMSA is developing proposed rules to strengthen the hazardous liquids and gas transmission regulations to positively impact the safety of all pipelines from these risks.

Additionally, PHMSA is working to promote Safety Management Systems (SMS) and safety culture in the pipeline industry. This requires a commitment to safety on every level of an organization, and integrity management plays a role. Specifically, PHMSA helped develop the American Petroleum Institute's new pipeline SMS standard—Recommended Practice (RP) 1173 published in July 2015. PHMSA also held a series of workshops to review RP 1173 and discuss successful aspects and best practices of SMS and safety culture in multiple industries.

PHMSA will remain vigilant through ongoing inspections, investigations and enforcement efforts to ensure that operators understand, prioritize and address their safety risks, and build a national safety culture. PHMSA will continue its efforts to enhance outreach presence among the public and communities by engaging, educating and empowering the public and first responders to become more involved in pipeline safety.

PHMSA learns from past incidents while also using preventive practices to mitigate future risk. We are developing and providing key performance indicators for individual pipeline companies. PHMSA also looks to address shortcomings in pipeline safety technologies by promoting and expanding research and development within the pipeline industry and academia.

### *Information Gaps*

PHMSA reports on its Strategic Performance Indicators on a calendar year cycle for consistency with a wide array of stakeholders, which creates a 3-month delay in completing reporting. Additionally, the number of pipeline incidents with death or major injury for 2015 is estimated due to data lags. Title 49 of the Code of Federal Regulations (49 CFR Parts 191, 195) requires pipeline operators to submit incident reports within 30 days of a pipeline incident or accident. Based on the 30 day lag for reports in December, accident/incident reports for all pipeline incidents with death or major injury in 2015 will not be received until the end of January 2016.



## PERFORMANCE PLAN

| Pipeline Safety (PHMSA)  |   |                |                |
|--|---|----------------|----------------|
| Goal   | Indicator   | FY 2016 Target | FY 2017 Target |
| <b>Performance Goal: Reduce natural gas and hazardous liquid pipeline incidents involving death or major injury.</b> | Pipeline incidents involving death or major injury. | 24-33          | 23-32          |

### *Key Strategies and Next Steps*

High risk, aging and obsolete pipeline infrastructure: Over 700,000 miles of pipelines were installed before 1970. Some of these pipelines were built with bare steel, iron, copper, or “other” materials that are more vulnerable to deterioration and failure than the materials commonly used today. Our strategy for dealing with this challenge is to:

- Work with State pipeline safety programs and pipeline operators to assure that the identification, repair, rehabilitation, requalification, or replacement of the highest risk pipelines is accelerated;
- Enhance pipeline integrity management programs to cover more miles of gas transmission and hazardous liquid pipeline systems;
- Inspect gas distribution integrity management programs to ensure the integrity requirements in PHMSA regulations are being implemented; and
- Investigate new technologies for improving the assessment, detection and control of pipeline risks.

Excavation and other outside force damage that compromises pipeline integrity remain the two leading causes of incidents involving gas transmission and gas distribution systems resulting in death or major injury. Our strategy for dealing with these challenges is to:

- Enhance the “811—Call Before You Dig” program at the State and local levels to prevent pipeline damage from excavation;
- Promote awareness and use of recommended practices for land use planning and development near transmission pipelines;
- Support state damage prevention legislative initiatives; and
- Promote awareness and use of the national pipeline mapping system.

### *Goal Leaders*

Jeff Wiese, Associate Administrator for Pipeline Safety (PHMSA).