

Railroad Safety Strategy



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Railroad Safety Strategy

Introduction

Section 102 of the Rail Safety Improvement Act of 2008 (RSIA) directed the Federal Railroad Administration (FRA) to develop a Railroad Safety Strategy and submit it at the same time as the President's budget. FRA has incorporated this requirement with the fiscal year (FY) 2011 budget request to ensure consistency between this strategy and funding requests to achieve our safety goals. This report's organization mirrors the legislation language structure.

Section 102 of the RSIA reads as follows:

Railroad Safety Strategy

- a) *Safety Goals – In conjunction with existing federally required and voluntary strategic planning efforts ongoing at the Department and the Federal Railroad Administration as of the date of enactment of this Act, the Secretary shall develop a long-term strategy for improving railroad safety to cover a period of not less than 5 years. The Strategy shall include an annual plan and schedule for achieving at a minimum, the following goals:*
- 1) *Reducing the number and rates of accidents, incidents, injuries, and fatalities involving railroads including train collisions, derailments, and human factors.*
 - 2) *Improving the consistency and effectiveness of enforcement and compliance programs.*
 - 3) *Improving the identification of high-risk highway-rail grade crossings and strengthening enforcement and other methods to increase grade crossing safety.*
 - 4) *Improving research efforts to enhance and promote railroad safety and performance.*
 - 5) *Preventing railroad trespasser accidents, incidents injuries and fatalities.*
 - 6) *Improving the safety of railroad bridges, tunnels, and related infrastructure to prevent accidents, incidents, injuries and fatalities caused by catastrophic failures and other bridge and tunnel failures.*
- b) *Resource Needs. – The strategy and annual plan shall include estimates of the funds and staff resources needed to accomplish the goals established by subsection (a). Such estimates shall also include the staff skills and training required for timely and effective accomplishment of each such goals.*
- c) *SUBMISSION WITH THE PRESIDENT'S BUDGET. – The Secretary shall submit the strategy and annual plan to the Senate Committee on Commerce, Science, and Transportation and the House of Representatives Committee on Transportation and Infrastructure at the same time as the President's budget submission.*

d) *ACHIEVEMENT OF GOALS.* –

- 1) *PROGRESS ASSESSMENT.* – *No less frequently than annually, the Secretary shall assess the progress of the Department toward achieving the strategic goals described in subsection (a). The Secretary shall identify any deficiencies in achieving the goals within the strategy and develop and institute measures to remediate such deficiencies. The Secretary and the Administrator shall convey their assessment to the employees of the Federal Railroad Administration and shall identify any deficiencies that should be remediated before the next progress assessment.*
- 2) *REPORT TO CONGRESS.* – *Beginning in 2009 not later than November 1 each year, the Secretary shall transmit a report to the Senate Committee on Commerce, Science, and Transportation and the House of Representatives Committee on Transportation and Infrastructure on the performance of the Federal Railroad Administration containing the progress assessment required by paragraph (1) toward achieving the goals of the railroad safety Strategy and annual plans under subsection (a).*

This report is our initial strategy as requested by Congress. FRA will provide an evaluation of our performance a year from this budget submission.

Background

FRA promotes and regulates safety throughout the Nation's railroad industry. Most of its regulatory authority is codified under Title 49 Code of Federal Regulations (CFR) Parts 200-299. FRA has numerous enforcement tools under its authority, including defect and deficiency warnings, civil penalties, compliance and emergency orders, special notices, and directives.

FRA executes its regulatory and inspection responsibilities through a diverse staff of railroad safety experts who share their experience with the industry. The staff includes more than 400 inspectors and other safety professionals across the Nation who are assigned to eight regional offices. FRA safety inspectors specialize in five safety disciplines consisting of Track and Structures, Signal and Train Control (S&TC), Motive Power and Equipment (MP&E), Operating Practices (OP), and Hazardous Materials (HM). In addition, FRA's field complement includes program managers for highway-rail grade crossing safety and trespass prevention, bridge structure specialists, and industrial hygienists.

The railroad industry experienced a significant improvement in safety from calendar year (CY) 2000 to 2008, with the total number of all reportable rail-related accidents and incidents declining 26 percent. During this period, train accidents also fell by 18 percent, casualties (deaths and injuries) dropped 24 percent, and highway-rail grade crossing incidents decreased 32 percent. These actual-number results are all the more impressive because they occurred during an era where train miles increased 6 percent.

As remarkable as these numbers are, several major freight and passenger train accidents in 2004 and 2005 raised concerns about railroad safety. In addition to several key national rail safety initiatives that FRA has championed since 2005, the agency has also devoted four of its six safety performance measures to evaluate train accidents under the Government Performance and Results Act of 1993 (GPRA).

Long-Term Strategy Measures

FRA believes that the long-term strategy achievements expected from the RSIA in Sec. 102 and other FRA safety efforts are best evaluated using GPRA results. FRA has been using these goals to measure regional performance and FRA’s overall safety performance since GPRA was officially implemented at the agency.

FRA’s GPRA goals for FY 2012 through FY 2015 at this time only assumes FRA inspector staffing increases of 5FTE/10 positions for FY 2011. When additional field inspectors are hired, the impact on safety improvements is not immediate. Our experience shows to expect at least a 1-year lag in safety improvement from new inspectors. This time is used to train them on performing safety enforcement duties.¹

Increases in headquarters positions focus on ways to achieve safety improvements through rulemakings, enforcement oversight, and alternative methods such as the Risk Reduction Program (RRP). RRP looks for ways to improve safety by identifying areas through industry collaboration that achieve safety results in ways not previously identified. FRA’s GPRA goals are listed in the tables below.

FRA GPRA Goal #1: Grade Crossing Incidents (per million train miles)

	2011	2012	2013	2014	2015
GPRA Goal	3.500	3.350	3.200	3.050	2.900

FRA GPRA Goal #2: Human Factors-Caused Train Accidents (per million train miles)

	2011	2012	2013	2014	2015
GPRA Goal	1.250	1.245	1.232	1.232	1.232

FRA GPRA Goal #3: Track-Caused Train Accidents (per million train miles)

	2011	2012	2013	2014	2015
GPRA Goal	1.12	1.120	1.120	1.120	0.120

FRA GPRA Goal #4: Equipment-Caused Train Accidents (per million train miles)

	2011	2012	2013	2014	2015
GPRA Goal	0.450	0.450	0.450	0.450	0.450

¹ Note: FRA revises its GPRA goals on an annual basis.

FRA GPRA Goal #5: Signal/Misc. Train Accidents (per million train miles)

	2011	2012	2013	2014	2015
GPRA Goal	0.590	0.585	0.580	0.575	0.570

FRA GPRA Goal #6: Non-Accident Hazmat Releases

	2011	2012	2013	2014	2015
GPRA Goal	0.780	0.760	0.740	0.720	0.700

FRA also has an overall performance measure that reports on accidents/incidents per million train miles as part of the U.S. Department of Transportation (DOT) Safety Performance Goals. These goals, like other safety goals, are based on available data for analysis. Programs such as the National Safety Program Plan (NSPP), the National Inspection Plan (NIP), rulemakings, RRP, and inspections contribute to achieving these safety goals.

DOT Safety Performance Goals: Rail Accidents/Incidents per Million Train Miles*

	2011	2012	2013	2014	2015
DOT Goal	16.40	16.25	16.05	15.80	15.50

*This projection assumes that all five of the Automatic Track Inspection Program (ATIP) cars will be in service (including T17, T19, and T20) and that the Track Integrity Group will be fully staffed by 2010.

RSIA Safety Goals

Goal #1: Reducing the number and rates of accidents, incidents, injuries, and fatalities involving railroads, including train collisions, derailments, and human factors.

National Safety Program Plan (NSPP)

The NSPP is the FRA Office of Railroad Safety’s annual (fiscal year) document designed to ensure the sound implementation of the National Safety Program, including identification of recurring and nonrecurring special-emphasis activities for the year. The NSPP provides a mechanism for planning recurring activities (e.g., dispatch-center assessments performed triennially on a rotating basis). At the national level, it identifies emphasis areas based on data analyses, including interregional initiatives directed at particular system-level issues of concern for major railroads operating in multiple regions. The NSPP for FY 2010 integrates safety planning for all elements of the Office of Railroad Safety into a single document.

National Inspection Plan (NIP)

In December 2004, the Office of Inspector General (OIG) recommended that FRA submit to the Secretary of the Department of Transportation a comprehensive rail safety plan for implementing a program that, among other things, makes meaningful use of available data on which to focus inspection activities. In 2005, FRA issued the National Rail Safety Action

Plan, which contains the development and implementation of a new NIP. Under this approach, FRA inspectors focus their efforts on locations that, according to data-driven models, are likely to have safety problems.

The purpose of the NIP is to optimize FRA's ability to reduce the rates of various types of train accidents, releases of hazardous materials, and casualties from human factor (HF) errors. The plan provides guidance to each regional office on how its inspectors, who each specialize in one of the five inspection disciplines, should divide their work by railroad company and State.

The NIP is a process that involves three steps. In the first step, FRA headquarters produces an initial baseline plan for each of the agency's eight regions. In the second step, the regional administrators may adjust the goals for their respective regions based on local knowledge and emerging issues. In the third step, once the fiscal year starts, FRA monitors how the regions are meeting their inspection goals. The NIP is implemented through a Web-based interface that allows FRA headquarters and the regions to monitor progress in field inspections during a fiscal year.

Dashboard

In 2008, FRA deployed a Dashboard tool on its secure Web site to provide its leadership, regional management, and inspection workforce multiple views of the agency's current and historical enforcement efforts. Inspection data from the field is compiled in near-real time fashion and a nightly process creates the data stores to display detail and aggregated data graphically (bar graphs and gauges). The Dashboard is also used as an effective performance management tool. It maintains over 15 different metrics (e.g., inspection days, defect ratios, violations) at the inspector, discipline, and regional levels. Finally, the Dashboard serves as a central launch pad for several complex query and report programs that have been integrated into the output displays and allows users to "drill down" when additional detail is required. It is a useful decision support tool in managing limited inspection resources when scheduling enforcement activities such as focused inspections and audits. It also allows FRA headquarters managers to monitor inspection activities in the regions to ensure that enforcement and compliance policy is applied uniformly.

Staff directors of the various disciplines at FRA headquarters conduct regularly occurring Web meetings with regional specialists in their respective disciplines to go over the data that is compiled in the Dashboard. Using the Dashboard "cube," an online analytical processing data-mining tool, headquarters staffers are able to view inspections summarized by activity category (Top 10 categories) and correlate this with information on what types of accidents and incidents are occurring in the region. This allows headquarters and the regions to jointly address where the safety hazards are being identified and plan inspection activities accordingly. The regional managers also use the compiled data to ensure that each discipline and each inspector is maintaining the goals and to address outliers in the data.

Rulemakings

Railroad Safety Advisory Committee (RSAC)

Through its RSAC, FRA works collaboratively with Government entities, railroads, unions, trade associations, suppliers, and other stakeholders to fashion mutually satisfactory solutions on safety regulatory issues. Recent RSAC efforts include rules regarding passenger train emergency systems, accident/incident reporting, and railroad operating rules. Its schedule for 2009 included additional protection for roadway workers, passenger equipment crashworthiness, medical standards for safety-critical personnel, hours of service recordkeeping, bridge safety standards, and advanced signal and train control technology (i.e., positive train control).

FRA has worked to implement several other new regulations through the traditional rulemaking process. These recent rulemakings include: electronically controlled pneumatic brakes, poison inhalation hazard (PIH) tank car crashworthiness (with the Pipeline and Hazardous Materials Safety Administration (PHMSA)), and rail-routing rule for hazardous materials (also with PHMSA).

FRA has also begun a rulemaking that establishes minimum training standards for each class or craft of safety-related employee and equivalent railroad contractor and subcontractor employee, as specified in Section 401 of the RSIA.

Rail Route Analysis Requirements for Security Sensitive Materials

The Implementing Recommendations of the 9/11 Commission Act of 2007 required DOT to issue a final rule that would require rail carriers of security-sensitive hazardous materials to “select the safest and most secure route to be used in transporting” those materials, based on the rail carrier’s analysis of the safety and security risks on primary and alternate transportation routes. On November 25, 2008, PHMSA, in close consultation with FRA, published a final rule implementing these requirements. FRA administers the PHMSA rule and may force a carrier to use routes other than those selected if it finds that: (1) the carrier failed to conduct an adequate analysis; or (2) the carrier failed to select the safest and most secure route. This action would only be taken after consulting with PHMSA, the Transportation Security Administration, and the Surface Transportation Board.

PHMSA’s rail routing rule requires rail carriers of security-sensitive hazardous materials to annually compile traffic data on shipments of these materials. The Department of Homeland Security (DHS) and DOT have determined that security-sensitive materials are bulk shipments of PIH materials; certain explosive materials that pose a hazard of mass explosion, fragment projectile, or a fire hazard; and certain high-level radioactive material shipments. Railroads are required to annually analyze and assess the safety and security of the routes used to transport these security-sensitive materials and all available practicable alternative routes over which they have authority to operate, and to solicit input from State, local and tribal officials regarding security risks to high-consequence targets along or in proximity to the routes. The route assessment must consider a minimum of 27 risk factors, including rail infrastructure characteristics along the route, proximity to iconic targets, environmentally

sensitive or significant areas, population densities, and emergency response capabilities. After considering mitigation measures to reduce safety and security risks, the railroads are to select the practicable routes that pose the least overall safety and security risks. Railroads can elect to make their initial routing decisions by September 1, 2009, based on analysis of 6-month data (from July to December 2008), or make their decisions by March 31, 2010 (based on calendar year 2008 data).

Using funding from DHS, the Railroad Research Foundation developed a risk management tool that will assist rail carriers in performing the safety and security analyses mandated by the RSIA. The Rail Corridor Risk Management System (RCRMS), a Web-based interactive tool, will enable rail carriers to identify route characteristics using the 27 factors and to weigh safety and security impacts. The RCRMS thus provides a standardized, consistent approach to the process of selecting the rail routes posing the least overall safety and security risks for security-sensitive hazardous materials.

Railroad Operating Rules (ROR)

The ROR final rule is already making a significant impact in the improvement of railroad transportation safety at the national, State, and local levels, while dramatically enhancing the safety of all railroad employees. The new rule directly addresses 49 percent of the HF accident causes and enhances transportation safety for railroad employees and the public by bringing responsibility and accountability for compliance with critical railroad operating rules to the industry.

The final rule covers both railroad operational testing programs and railroad operating practices related to the handling of equipment, switches, and fixed derails. The rule establishes greater accountability for implementation of sound operating rules necessary for safety. The theme of the final rule is accountability. It embodies a broad strategy intended to promote better administration of railroad programs, on the one hand, and a highly targeted strategy designed to improve compliance with railroad operating rules addressing three critical subject matters, on the other. Within this framework, FRA is taking responsibility to set out certain requirements heretofore left to private action and will be monitoring compliance with those requirements through appropriate inspections and audits. Railroad management is held accountable for putting in place appropriate rules, instructions, and programs of operational tests. Railroad supervisors are held accountable for doing their part to administer operational tests and establish appropriate expectations with respect to rules compliance. Railroad employees are held accountable for complying with specified operating rules and will have a right to challenge if they are instructed to take actions that, in good faith, they believe would violate the rules. This framework of accountability is intended to promote good discipline, prevent train accidents, and reduce serious injuries to railroad employees.

In CY 2004, 32 people were injured as a result of 646 accidents, but by 2007, the number of injuries was reduced to 5. For 2004, the industry suffered \$30,458,185 in damages as a result of HF-caused accidents, but through 2007, the total cost to the industry was \$18,801,398. The 2008 figures through April (117 HF-caused accidents, 0 injuries or deaths, and

\$4,888,372 in damages) bode well for continued improvement. Furthermore, the reduction of HF-caused accidents and employee injuries was a key objective of FRA and DOT's National Safety Plan, and the team's activities over the last 3.5 years have accelerated the drive to accomplish this primary objective.

Electronically Controlled Pneumatic (ECP) Brakes

In CY 2005, 14 percent of train accidents on mainline track caused by human error involved the improper handling or misuse of the automatic braking system. Today's air-brake systems are built on 19th century pneumatic technology that has been progressively refined to support current railroad operations. Broad agreement exists among railroads, suppliers, and users of these systems that they have serious limitations that cannot be remedied with further incremental changes.

In 2006, FRA released the final report, "ECP Brake System for Freight Service." The study addresses the issues surrounding this technology, presents alternative plans for ECP brake implementation, and offers a recommended approach.

On October 16, 2008, FRA issued revisions to regulations governing freight power brakes to provide for and encourage the safe implementation and use of ECP brake systems. This rule allows railroads to take advantage of productivity-enhancing technologies to achieve very significant long-term cost savings. This technology has the potential to alleviate congestion on many rail corridors and, thus, increase rail capacity and economic growth for the Nation. The economic analysis and information collection package were key to obtaining Office of Management and Budget clearance for issuance of this rule. The MP&E Division had processed this rulemaking on an expedited basis starting in FY 2007. The new rule has encouraged the safe implementation and use of new ECP brake systems by providing specific requirements relating to the design, interoperability, training, inspection, testing, handling defective equipment and periodic maintenance related to ECP brake systems. Since the issuance of the new rule, FRA has continued to meet with the railroads and provide safety oversight for new ECP brake-equipped train starts. To date, BNSF Railway has successfully deployed two ECP brake-equipped standalone "pilot" coal trains (Alabama to Wyoming), Norfolk Southern Railway has two such trains (in Pennsylvania and West Virginia) and Union Pacific Railroad has one intermodal ECP brake-equipped train (Long Beach, CA to Dallas, TX). These ECP brake-equipped trains provide for significantly enhanced safety which includes shorter stopping distances (up to 30 percent reduction), reduced train slack action, reduced brake shoe/rigging wear, and better train handling as well as enhanced energy conservation/fuel savings.

Positive Train Control (PTC)

FRA is continuing to support national deployments of advanced signal and train control technology to improve the safety, security, and efficiency of freight, intercity passenger, and commuter rail service through regulatory reform, project safety oversight, technology development, and financial assistance. "Positive Train Control" refers to technology that is capable of preventing train-to-train collisions, overspeed derailments, and casualties or

injuries to roadway workers (e.g., maintenance-of-way workers, bridge workers, signal maintainers) operating within their limits of authority. PTC systems vary widely in complexity and sophistication based on the level of automation and functionality they implement, the system architecture utilized, and the degree of train control they are capable of assuming. Current PTC system designs either act as a safety overlay for existing methods of rail operations or provide the functionality necessary to implement new methods of rail operations. PTC technology also has the potential capability to limit adverse consequences of events such as hijackings and runaways that are of special concern in an era of heightened security. Because of the requirements of the RSIA, FRA has tasked the RSAC with a new Federal regulation requiring each Class I railroad and any entity that provides regular scheduled intercity or commuter rail passenger transportation to submit a plan for implementing a PTC system.

Risk Reduction Program (RRP)

The RRP is an FRA-led, industrywide initiative to reduce accidents and injuries, and build strong safety cultures by developing innovative methods, processes, and technologies to identify and correct individual and systemic contributing factors using “upstream” predictive data. RRP will incorporate developing knowledge of precursors to actual accidents, confidential reporting, effective problem analysis, and corrective actions. The adoption of new non-regulatory approaches creates the opportunity for accelerated improvement but does not supersede current regulatory approaches. Since FRA initiated this program on its own, the RSIA has mandated it and made it mandatory by October 2012.

FRA envisions a wide variety of projects that could fit under the RRP umbrella. Some examples include the close-call reporting systems, peer observation programs, management development systems, and the Collision Hazard Analysis currently in place on some commuter railroads. In addition, use of the Track Quality Index or innovative use of wayside equipment monitors and sensors for predictive maintenance or capital investment might qualify as RRP programs. In fact, any innovative use of predictive data could be seen as a potential pilot.

In addition to the voluntary programs, by October 2012, FRA will implement a regulation requiring certain railroads to develop and implement risk reduction programs, and to file RRP plans with the FRA. Once the regulation is in effect, FRA will approve the plans and will monitor railroads’ compliance with the plans to ensure that railroads proactively identify and address risks. Given that this program is in its infancy and will not be an industrywide requirement for several years, the ability to estimate or predict the impacts on future improvements on safety are difficult to accomplish. Also, given that this program will not be required industrywide, it might take several years for the benefits to materialize.

Passenger Rail Division

In 2009, FRA formally established the Passenger Rail Division (PRD) to support the RSIA initiative for the development of passenger rail programs throughout the United States by October 16, 2012, and the American Recovery and Reinvestment Act of 2009 (ARRA) to

support high-speed rail (HSR) and commuter/passenger rail development. The PRD is coordinating and maintaining FRA safety policies, regulations, and guidance for all matters related to HSR, intercity rail, commuter rail, and shared-use rail operations.

The primary focus of the PRD will be to develop new Federal standards for rail passenger equipment, training, and operations. The program will also help to evaluate proposed rail operations to determine if they are safe and whether the proposed equipment meets Federal standards.

More specifically, this division will concentrate on the many issues associated with the selection, implementation, and evaluation of passenger rail projects pertaining to System Safety and Emergency Response Plans, and the PRD will also address the many issues associated with the selection, implementation, and evaluation of “new start” railroads and the associated planning and determination of compliance with existing Federal regulations. The division’s responsibilities would also include a focus on pilot projects that involve application of new technologies to improve safety.

Some of the most important work administered by the PRD is passenger rail system safety. The PRD directs an outreach program to provide passenger railroads training and information on system safety techniques. PRD staff also collaborates with the American Public Transportation Association (APTA) to conduct system safety audits on passenger rail operations. System safety for passenger rail operations is currently a voluntary program. PRD staff, however, is working with an RSAC group to develop a System Safety Regulation that will require all passenger railroads to develop and implement System Safety Programs (SSP) that satisfy the RSIA requirements for a risk reduction program.

System safety uses innovative hazard management techniques to proactively identify and address safety issues before accidents occur. Use of system safety supports the FRA Railroad Safety Strategy in that the hazard management techniques can reduce the number, frequency, and severity of all passenger rail related accidents, injuries, and fatalities, including those related to trespassing and highway-rail grade crossings.

The PRD goals include completion of the RSAC portion of the System Safety Regulation by February 2010 and issuing a notice of proposed rulemaking (NPRM) for the System Safety Regulation by September 2010.

The division will continue to provide training and information on system safety and FRA requirements to all passenger rail new starts. The PRD goal is for all passenger rail new starts to have adequate training and information to establish its own SSP.

Another important initiative for the PRD is to provide program management for the development of HSR standards, regulations, and rules of particular applicability, and to address HSR mandates contained in RSIA and ARRA for HSR corridors. FRA regulations for HSR currently support maximum train speeds of 150 mph. The HSR vision contained in the RSIA and ARRA contemplates train speeds of up to 220 mph.

The PRD is currently working with two potential HSR operators, DesertXpress and California HSR, to identify appropriate safety requirements for those applications. The PRD goal is to have requirements fully defined for DesertXpress and California HSR by 2011. However, identification and funding of additional projects in the coming year may require the PRD to both broaden and focus its efforts to address the variety of projects that may eventually be funded.

Goal #2: Improving the consistency and effectiveness of enforcement and compliance programs.

Industrial Hygiene

The Industrial Hygiene Division has a dual role within FRA. The division is responsible for performing activities in support of Administration enforcement in the railroad industry as well as for implementing internal Occupational Safety and Health Administration compliance programs in safety and health for the benefit of our coworkers.

In regulatory enforcement, the Division has primary responsibility for ensuring compliance with the regulations governing occupational noise exposures in locomotive cabs and exposures to contaminants in the cabs of maintenance-of-way equipment. As the Occupational Noise Exposure regulation for the locomotive cab occupants gets fully implemented, more enforcement efforts are expected to take place there. The Division supports the MP&E, Track, OP, HM, and Signal disciplines in the areas of the use of fall protection for railroad bridge work, diesel exhaust in locomotive cabs, and non-occupational noise rules; as well as Environmental Protection Agency noise rules from 40 CFR Part 201 under 49 CFR Part 210, and 49 CFR Section 229.129, *Audible warning device*. In the future, the Division will also play a role in the enforcement of a future regulation on fitness-of-duty (medical standards) of railroad safety employees.

The Division also has primary responsibility for FRA internal safety and health compliance programs including bloodborne pathogens, confined space entry, hearing conservation, radiation protection, and injury and illness reporting. The Division develops the structure of the programs, develops and provides the training associated with them, provides guidance for compliance, and maintains all necessary records.

Discipline-Specific Technical Training

The Safety Improvement and Development Team (SIDT) is staffed with discipline-specific trainers that train inspectors throughout the year on FRA safety regulations. The primary mission of the SIDT is to manage the Office of Railroad Safety's Technical Training Program for the 600 Federal and participating State railroad safety inspectors and specialists of the five technical disciplines. To accomplish this mission, the team designs, develops, and delivers specialized internal courses, and administers contract training from external sources as necessary. A test is given before and after each class to confirm that inspectors are learning skills to effectively enforce safety regulations. Classroom training using established training modules includes enforcement directives from newly issued technical bulletins,

enforcement manuals, and rule modifications. This focus improves uniformity of enforcement nationwide and is a way of determining that FRA inspectors meet agency qualification requirements.

Technical training is based on organizational needs and is therefore considered mandatory. Various types of analyses are performed to determine the organizational needs, including feedback from headquarters, the regions, and the inspectors. On average, the team manages approximately 45 classes in 22 different courses of study each year. SIDT also develops and delivers general training to all Federal and State employees who may be assigned to perform accident investigations or write specialized reports, and to meet special agency needs such as steam locomotive inspections, using radar to monitor train speeds, and fatigue-related assessments for safety-related railroad employees. On average, new inspectors attend 7 weeks of classroom training during their first 2 years of employment, and all inspectors and regional specialists attend at least 1 week of classroom training per year.

The SIDT also develops and administers on-the-job training standards for new railroad safety inspectors and inspector trainees. These standards, based on a model used by the Department of Defense, are specific to FRA inspection tasks. They are designed to ensure that the tasks are fully described, that conditions for learning transfer are present, and that standards of proficiency are met before an inspector is deemed qualified.

FRA held discipline-specific training conferences focused on uniformity of enforcement for all five disciplines in FY 2009. The guidance provided reduces variations among inspectors in their enforcement of Federal safety regulations.

Technical Bulletins

Technical bulletins are internal documents (usually memoranda) issued to FRA's regional personnel by FRA's Director for Safety Assurance and Compliance. The bulletins provide interpretive guidance and they help clarify specific issues under the rail safety regulations and other safety issues. Technical bulletins improve the awareness of inspectors and industry persons in terms of what is expected from them when enforcing or complying with existing safety regulations. The intermediate outcome is more uniform compliance, which improves the quality of compliance and data used to measure achievement of safety goals. Newly produced bulletins are immediately distributed to inspectors by e-mail, added to REG-Trieve disks every quarter (which are distributed to inspectors for easy access to these documents on their laptop computers), and incorporated into training classes.

Compliance Manuals

The Office of Railroad Safety uses six manuals to establish and clarify organizational expectations for railroad safety inspectors, safety specialists, and regional managers. All of the manuals are primary source documents for both classroom and on-the-job training.

The General Manual describes the organization of DOT, of FRA generally, and of the Office of Railroad Safety specifically. This manual includes step-by-step instructions that regions

and inspectors must use when performing accident investigations, clarifies general expectations for use of enforcement and other compliance tools, explains in general terms other safety mechanisms and investigations the Office of Railroad Safety uses to ensure a higher level of safety in the United States, and provides interviewing guidance.

The Office of Railroad Safety also publishes compliance manuals for the five railroad safety inspection disciplines. These manuals establish organizational expectations for inspection tasks, establish specialized investigation requirements, and explain application of FRA safety regulations.

Performance Evaluations

Performance evaluations for regional administrators include GPRA safety goals. Quarterly progress reports are provided to regions showing their progress toward their share of annual national goals. The intermediate outcome provides a means for evaluating what the region is doing to improve safety and a way to check on what their region is doing to succeed at making a difference in safety.

Rail Integrity

The Rail Integrity Group within the Track and Structures Division was established to provide FRA oversight on railway non-destructive inspection programs and other rail-related maintenance programs. The Rail Integrity Group maintains FRA safety policies and provides guidance for all rail-related issues as determined by 49 CFR Part 213, Track Safety Standards. The group is the primary representative for the Office of Railroad Safety and other FRA divisions concerning rail-related incidents that impact railway safety.

The purpose of the Rail Integrity Group is to provide expert advice and assistance to headquarters, regional safety staff and regional administrators on safety issues relating to management, inspection, and maintenance of railroad rail; railroad safety issues related to rail and components; and issues concerning rail defect development, rail failure, and rail-caused train accidents.

The Rail Integrity Group analyzes the current non-destructive rail inspection programs and processes, rail maintenance programs, and make recommendations on those analyses. They perform onsite inspections, investigations, and/or evaluations to determine the effectiveness of railroad safety programs which address the inspection, maintenance, and replacement of rail. They also provide oversight into the capabilities of the various non-destructive detection systems, the training and experience of the flaw detector car operators, and the accuracy of the defect verification process utilized by the test car operator.

Automated Track Inspection Program (ATIP)

In the field of technology, FRA oversees a fleet of track geometry rail cars under its ATIP. These advanced, specially designed cars provide accurate track geometry data to assess compliance with our Federal Track Safety Standards. Currently, the fleet inspects roughly

30,000 miles a year out of approximately 220,000 miles of track, with major priorities given to passenger, hazardous materials, and defense-related routes. With the full production of the new geometry cars, ATIP intends to increase survey miles to approximately 100,000 miles per year. The track data collected under ATIP is used by FRA's railroad inspectors and by railroads to ensure track safety and to assess track safety trends within the industry. The railroads often use ATIP data as a way of checking quality assurance on their inspection and maintenance. To facilitate use of the collected data, ATIP intends to originate and distribute quarterly survey reports to agency and railroad managers to promote consistent application. ATIP will place additional emphasis on Amtrak and commuter routes to promote passenger safety. To support this goal, ATIP intends to identify track segment locations based on quality index for additional attention by ATIP, regions and railroads.

Goal #3: Improving the identification of high-risk highway-rail grade crossings and strengthening enforcement and other methods to increase grade crossing safety.

During the past 6 calendar years for which complete data is available, grade crossing incidents have decreased 20 percent, from 2,977 in 2003 to 2,373 in 2008. Casualties have likewise declined, with fatalities and injuries down 14 percent and 12 percent, respectively. While these are encouraging trends, the number of accidents and casualties remains a concern for FRA.

FRA will promote and enhance public safety over the next 5 years by reducing rail-related deaths and injuries due to collisions at highway-rail grade crossings. This will be achieved by using additional public outreach and educational programs, and increasing law enforcement partnerships.

During the 5-year period, FRA will partner with national organizations (e.g., Operation Lifesaver, Inc. (OLI)), the Federal Motor Carrier Safety Administration (FMCSA), the Federal Highway Administration (FHWA) and the National Highway Traffic Safety Administration (NHTSA), and non-Federal law enforcement agencies, to increase awareness and enforcement of highway-rail grade crossing violations. The following is a brief description of some of the organizations and how FRA will work with them:

OLI	A nonprofit, international, continuing public education program first established in 1972 to end collisions, deaths, and injuries at places where roadways cross train tracks, and on railroad rights-of-way. FRA will provide funding and assistance in program development.
FMCSA	Focuses on reducing crashes, injuries, and fatalities involving large trucks and buses. FRA will join forces with FMCSA outreach efforts and activities to prevent collisions at highway-rail grade crossings.

Law Enforcement	Increases partnerships between FRA and law enforcement through FRA's Law Enforcement Liaison Program. In addition, works with the National Sheriffs' Association and the International Chiefs of Police Association to foster a better relationship with law enforcement.
FHWA, NHTSA	FRA will continue to work with these agencies and FMCSA to encourage Departmental advocacy for improving crossing safety.

Prior to FY 2011, FRA will have:

- Updated the *Compilation of State Laws and Regulations Affecting Highway-Rail Grade Crossings*.
- Issued a direct final rule of particular applicability that identifies the 10 States with the most collisions over the past 3 years and required them to develop State action plans with specific solutions for improving safety at highway-rail grade crossings.
- Worked with FRA's Office of Chief Counsel to update model legislation for highway-rail grade crossing violations.
- Issued a rule that requires each railroad carrier to establish and maintain a toll-free telephone service for rights-of-way over which it dispatches trains for the reporting of emergencies or other problems.
- Provided two grant programs (assuming funding is provided as authorized) for States to improve crossing safety.

One grant is for enhanced public education and enforcement programs to reduce crossing collisions and reduce trespassing. The other grant is to provide priority funding for crossing safety improvements (e.g., signals, gates, four-quadrant gates, medians, traffic signals, lighting, signs, and crossing surfaces). These programs will continue through 2013.

During FY 2011, FRA will:

1. Study the effectiveness of various highway-rail grade crossing treatments on designated high speed-rail corridors (e.g., Northeast Corridor, North Carolina, and Michigan) and evaluate the economic benefits of the treatments. The purpose of this study is to demonstrate the benefits of making improvements at crossings where passenger and commuter train speeds are being increased.

In FY 2012, FRA will:

1. Revise the DOT Crossing Inventory Form FRA F 6180.71 to include new fields that will enhance the ability of States, railroads, FRA, and others to evaluate safety at crossings. We anticipate that a rulemaking will be necessary for the new form and accompanying guides.
2. Explore issuing a rulemaking mandating the periodic updating of the Inventory by both railroads and States, per the RSIA.
3. Issue rules or establish policy and guidance on responsibility for safety at private crossings. This is an action identified in the 2004 Secretary's Action Plan and a continuation of efforts began in 2006.

4. Update the *Compilation of State Laws and Regulations Affecting Highway-Rail Grade Crossings*. This publication compiles the existing State laws concerning highway-rail grade crossings and will be made available to the public.

In FY 2013, FRA will:

1. Research the risk reduction associated with commonly used Alternative Safety Measures in quiet zones (e.g., escape medians) to determine appropriate standard effectiveness rates. This study will potentially expand the approved Supplementary Safety Measures while eliminating the cumbersome review process of Alternative Safety Measures.
2. Work with FRA's Office of Chief Counsel to update model legislation for highway-rail grade crossing violations.

In FY 2014, FRA will:

1. Conduct a study determining the effectiveness of the new Manual on Uniform Traffic Control Devices requirement for all passive crossing to be equipped with either stop or yield signs.

Goal #4: Improving research efforts to enhance and promote railroad safety and performance.

FRA Research and Development

The primary goal of the FRA Research and Development (R&D) program is to enhance railroad safety for conventional and HSR operations. The R&D program is managed by the FRA Office of Research and Development (OR&D) within the Office of Railroad Development. In order to improve the effectiveness of the FRA R&D program, a rigorous process for selecting and evaluating R&D projects has been established and an annual review of the entire research program is conducted by the independent Transportation Research Board (TRB). Priorities for project selection include areas which present significant safety risks or unacceptable safety trends, where technology is most likely to have a positive impact to both safety and performance, and where there is a clear path to real-world implementation.

The R&D project evaluation and selection process has been used to identify those projects that have the potential for *significant safety impact, a positive impact on performance and appropriate technology available*. For those projects, selected emphasis is placed on producing the maximum possible real-world impact at the earliest possible time. To accomplish this, OR&D seeks to establish the partnerships with appropriate stakeholders including railroads, rail labor, suppliers and technology providers early in the life of the project. This minimizes the time between a successful research and development “proof of concept” and the application in the field. Close collaboration with Office of Railroad Safety assures early identification and remediation of potential regulatory barriers to innovation.

FRA OR&D has expanded the use of targeted grants and cooperative agreements, involving both railroads and technology providers, to provide a fast start to establish stakeholder buy-in and demonstrated real-world impact at the earliest possible time.

High-Speed Rail

Fostering the development of HSR in the United States has been an important part of FRA's work since its creation in 1967. During the 1980s and 1990s, FRA played a central role in managing or facilitating the growth of high-speed service on the Northeast Corridor. Acting in response to the Intermodal Surface Transportation Efficiency Act of 1991, FRA began the formal process of designating HSR corridors for future development and providing limited funding for corridor improvements primarily directed at safety. With the passage of the ARRA, which provides \$8 billion in capital assistance for HSR corridors and intercity passenger rail service, and following President Obama's announcement of a Strategic Plan for High-Speed Rail ("*Vision for High-Speed Rail in America*"), FRA now takes on the important work of helping to make HSR a reality in markets across the Nation.

On June 17, 2009, FRA's Administrator issued a notice of funding availability and interim program guidance for the HSR Passenger Rail Program. The guidance identified transportation safety and safety planning as evaluation criteria for merit consideration of proposed projects and programs. This strategy describes how FRA will provide specificity and additional safety guidance for development of HSR systems.

The hallmark of world-class, high-speed rail is safety. FRA believes that railroads conducting HSR operations in the United States can provide service as safe as, or safer than, any HSR operation being conducted elsewhere. In anticipation of such service, and to promote public safety, FRA has developed a *High-Speed Passenger Rail Safety Strategy*. The final version of the Safety Strategy was issued in November 2009 and is now available on the FRA Web site. The Strategy includes: (1) establishing safety standards and program guidance for HSR, (2) applying a system safety approach to address safety concerns on specific rail lines, and (3) ensuring that railroads involved in passenger train operations can effectively and efficiently manage train emergencies. This strategy endeavors to achieve uniformly safe rail passenger service, regardless of speed. Since the severity of collisions and derailments increases with speed, safety performance targets for preventive measures are tiered to become more stringent as speed increases.

The strategy divides the safety issues into four categories: prevention, mitigation, emergency management, and SSPs. Each category includes FRA initiatives to address the corresponding safety issues. Some initiatives are fully developed with specific goals in place to address issues. For example:

- Vehicle Track Interaction (VTI) and key safety issues related to track and structures will be addressed through a VTI final rule scheduled to be published in the first quarter of CY 2010.
- Standards for PTC systems that define increased functionalities for higher speeds will be identified during 2010.
- Structural standards for Tier I trainsets (up to 125 mph) are under review in the RSAC Engineering Task Force. Initial guidance will be issued during the first quarter of CY 2010.

- Structural standards for Tier II and above will commence in CY 2010 after Tier I guidelines are completed.

System safety is also identified as a Safety Strategy component. HSR systems and other new passenger rail service require development and evaluation of SSPs. SSPs seek to integrate the process of identifying safety needs and managing them over time. One key to success is effective hazard identification, which focuses attention on opportunities for risk reduction in the particular circumstances of the specific passenger railroad. The purpose of an SSP is to improve railroad safety through a structured, proactive program developed and implemented by passenger railroad operators. The SSP can also support development of a strong safety culture and requires processes and procedures to identify and manage hazards inherent to the passenger railroad.

Requirements for SSPs on HSR systems will be included in HSR Rules of Particular Applicability and will be formalized for all passenger operations in ongoing rulemaking activity. The goals for System Safety include completion of the RSAC portion of the System Safety Regulation by February 2010 and issuing an NPRM for the System Safety Regulation by September 2010.

Longer-term initiatives that address specific issues related to the Safety Strategy will be developed throughout 2010. Work on these initiatives will commence as other projects are completed and technical resources become available.

Goal #5: Preventing railroad trespasser accidents, incidents, injuries and fatalities.

Deaths among trespassers on railroad rights-of-way (2,496 in the 5-year period 2000-2004, or approximately 500 annually) are the leading cause of fatalities attributable to railroad operations in the United States. From a study completed in May 2008, FRA learned that trespassers who die are an average of 38 years old and are most often Caucasian males. Approximately two-thirds were under the influence of alcohol and/or drugs. Coroners described the activity of more than 43 percent of the decedents as walking, standing, sleeping, lying, reclining, lounging, or sitting on the track or in the gauge, i.e., between the rails. Seven percent were walking or running across the track. Other activities included riding a recreational vehicle (all-terrain vehicle, dirt bike, snowmobile, etc.), standing outside the gauge but obviously too close, riding or getting on or off a train, driving a highway vehicle, or being on a bridge or trestle. Tunnels were not mentioned.

Future Trespassing Strategies

FRA's future trespassing strategies include the following:

- Promote and enhance public safety by reducing rail-related deaths and injuries due to trespassing on railroad rights-of-way and other property, using increased public outreach and education programs. (Ongoing throughout the 5 years.)
- Partner with national organizations to increase awareness and enforcement of railroad trespassing, including OLI. In addition, FRA will partner with Drug Abuse

Resistance Education (D.A.R.E.) America to develop graffiti prevention programs with special focus on railroad trespassing.

Prior to FY 2011, FRA staff will have reviewed and evaluated existing local, State, and Federal laws that address rail trespassing, vandalism, and violations at highway-rail grade crossing signal warning devices. In addition, FRA will have developed and made available to States model prevention and enforcement strategies. By 2011, FRA will have developed a Web site for educators and law enforcement officials that outlines specific facts, lesson plans, and State laws designed for them.

In FY 2011, FRA will:

1. Host a Right-of-Way Trespass Reduction workshop that will take an indepth look at the issues surrounding one of the more significant risk areas facing the rail community: trespassing and fatalities on the railroad rights-of-way. The goal of the workshop will be to identify and share existing industry-leading practices and explore new strategies that the rail industry could pursue to reduce the number of right-of-way and trespasser incidents and fatalities.
2. Conduct a demographic study of profiles collected by the rail industry to provide information regarding the at-risk audience to be target for additional education and outreach activities.
3. Seek additional funding to provide two additional grade crossing managers to assist with the growing needs of trespassing-related issues.
4. Review and update trespass and vandalism prevention strategies.

In FY 2012, FRA will continue to promote and enhance public safety by reducing rail-related deaths and injuries due to trespassing on railroad rights-of-way and other property, using increased public outreach and education programs by:

1. Using data collected by the railroads and working with the Geographic Information System to plot each trespassing incident and fatality. This information will be useful to direct additional outreach, educational resources, and law enforcement activities to areas in need.
2. Updating the *Compilation of State Laws and Regulations Affecting Highway-Rail Grade Crossing*.

In FY 2013, FRA will:

1. Review and update model trespass legislation and vandalism model legislation.

In FY 2014, FRA will:

1. Review and update trespass and vandalism prevention strategies.

In FY 2015, FRA will:

1. Host a Right-of-Way Trespass Reduction workshop (as in 2011).
2. Conduct a demographic study of profiles (as in 2011).

Goal #6: Improving the safety of railroad bridges, tunnels, and related infrastructure to prevent accidents, incidents, injuries, and fatalities caused by catastrophic failures and other bridge and tunnel failures.

FRA Bridge Safety Program

FRA has been conducting evaluations of railroad bridge management programs since the 1980s, before the Bridge Safety Policy was issued as an interim statement in 1995 and in final form in August 2000. This Policy issues guidelines by which railroads should implement bridge safety management programs, and by which FRA evaluates those programs. FRA issued a revised bridge policy statement in January 2009 to add recommendations developed by the Railroad Bridge Working Group of the RSAC in 2008.

In September 2007, FRA also issued Safety Advisory 2007-03 to further explain and amplify important aspects of the agency's bridge safety policy and to re-emphasize the need for railroads to adopt and implement safe maintenance practices to prevent bridge failures.

Following enactment of the RSIA, FRA's RSAC undertook the task of developing a recommended text for a Federal railroad bridge safety regulation which would govern railroads' bridge management programs. The RSAC Working Group completed that task in April 2009. In August 2009, FRA published an NPRM based on the RSAC recommendation.

Meanwhile, FRA continues to evaluate bridge management practices on a representative sampling of the Nation's railroads, including Class I, II, and III freight railroads, and passenger carriers. The evaluations generally compare a railroad's program with the guidelines in the FRA Bridge Safety Policy, and include observations of individual bridges to determine their general condition, as well as the accuracy of the railroad's inspection reports. Most large railroads generally conform to the FRA guidelines, but FRA has discovered instances where management had not adequately evaluated or addressed critical items delineated in railroad bridge inspection reports before they developed into critical failures or near-failures. Many of the smaller railroads evaluated also conformed generally to the guidelines, but a considerable number either fell short by a large degree or showed no evidence of bridge inspection, management, or maintenance.

FRA has examined reports from January 1, 1982, through December 31, 2006, of 51 train accidents caused by the catastrophic structural failure² of railroad bridges, an average of two per year. During that 25-year period, two people were injured and no fatalities were attributed to structural bridge failure. Since that period, four instances have been reported to FRA in which lack of adherence to the guidelines in the Bridge Safety Policy resulted in trains operating over structural deficiencies in steel bridges that could very easily have resulted in serious train accidents.

² It should be noted that FRA uses the term "catastrophic failure" to describe an incident in which a bridge collapses or directly causes a train accident. A "bridge failure" is a situation in which a bridge is no longer capable of safely performing its intended function.

In CY 2007, five train accidents occurred due to catastrophic structural failure of bridges, all of which were timber trestles. The most severe of those accidents occurred on the M&B Railroad near Myrtlewood, AL, where a train of solid fuel rocket motors derailed when a timber trestle railroad bridge collapsed under the train. Several cars, including one car carrying a rocket motor, rolled onto their sides and six people were injured. FRA also recently evaluated the bridge management practices of several small railroads and found that some had no bridge management or inspection programs whatsoever.

In CY 2008, FRA had reports of two train accidents due to catastrophic structural failure of bridges, both of which were timber trestles. One railroad employee was injured from this cause.

Besides the development of regulations and the evaluation of railroad bridge management programs, FRA is cooperating with the American Short Line and Regional Railroad Association and all of the large railroads in the development of model programs that can be adopted by small railroads to enable the safe, effective, and efficient management of their bridges.

Resources Needed

The resources needed to meet the safety programs and goals in this strategy plan for FY 2011 are found in other sections of FRA’s budget request for FY 2011.

Progress Assessment

A historic review of FRA’s safety program using information from GPRA measures over a 5-year period are provided for this initial strategy. FRA is providing these results to show the progress made leading up to the RSIA requirements.

FRA Safety Performance Measures

1. Grade Crossing Incidents per Million Train-Miles

Year	Incidents	Train-Miles (000)	Actual Rate	GPRA Goal
2004	3,076	764,846	4.02	NA
2005	2,978	785,882	3.79	3.90
2006	3,069	805,008	3.81	3.85
2007	2,804	793,631	3.53	3.75
2008	2,524	781,449	3.23	3.75
2009 *	1,860	629,667	2.95	3.65

2. Human Factors-Caused Train Accidents per Million Train-Miles

Year	Accidents	Train-Miles (000)	Actual Rate	GPRA Goal
2004	1,315	764,846	1.72	NA
2005	1,295	785,882	1.65	1.66
2006	1,112	805,008	1.38	1.66
2007	1,034	793,631	1.30	1.66
2008	952	781,449	1.22	1.66
2009 *	621	629,667	0.99	1.35

3. Track-Caused Train Accidents per Million Train-Miles

Year	Accidents	Train-Miles (000)	Actual Rate	GPRA Goal
2004	1,004	764,846	1.31	NA
2005	1,099	785,882	1.40	1.27
2006	1,065	805,008	1.32	1.27
2007	1,001	793,631	1.26	1.15
2008	854	781,449	1.09	1.15
2009 *	615	629,667	0.98	1.15

4. Equipment-Caused Train Accidents per Million Train-Miles

Year	Accidents	Train-Miles (000)	Actual Rate	GPRA Goal
2004	418	764,846	0.547	NA
2005	392	785,882	0.499	0.521
2006	348	805,008	0.432	0.521
2007	333	793,631	0.420	0.521
2008	338	781,449	0.433	0.521
2009 *	223	629,667	0.354	0.450

5. Other (Signal & Misc.) Train Accidents per Million Train-Miles

Year	Accidents	Train-Miles (000)	Actual Rate	GPRA Goal
2004	527	764,846	0.689	NA
2005	557	785,882	0.709	0.647
2006	517	805,008	0.642	0.647
2007	401	793,631	0.505	0.647
2008	395	781,449	0.505	0.647
2009 *	313	629,667	0.497	0.647

6. Non-Accident Rail Hazmat Releases per Million Train-Miles

Year	Releases	Train-Miles (000)	Actual Rate	GPRA Goal
2004	669	764,846	0.875	NA
2005	684	785,882	0.870	0.965
2006	639	805,008	0.794	0.940
2007	700	793,631	0.882	0.915
2008	690	781,449	0.883	0.900
2009 *	547	629,667	0.869	0.800

* FY 2009 data for 11 months

Conclusion

FRA's Railroad Safety Strategy includes a variety of approaches to achieve industry safety improvements. The NSPP is focused on critical safety projects that are designed to advance safety improvements. The NIP focuses Federal inspector inspection efforts toward areas on railroads needing the most attention and monitors progress made achieving inspection goals. Rulemakings are improving industry actions by providing improved methods to achieve safety advancements. The RRP is a process that brings industry and FRA together to build a strong safety culture. Highway-rail grade crossing and trespass prevention programs promote enhancing public safety through public outreach, educational programs, and increased law enforcement partnerships. FRA's research and development has potential for significant safety impact, a positive impact on performance, and identifying promising available technology. Emphasis is placed on producing the maximum possible real-world impact at the earliest possible time.