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State Safety Oversight Program Annual Report 2003

Office of Safety and Security

U.S. Department of Transportation

Federal Transit Administration

FTA

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The Federal Transit Administration's (FTA) State Safety Oversight Rule (49 CFR Part 659) requires oversight of all rail transit agencies in revenue operation after January 1, 1997. This report summarizes activities performed to implement the State Safety Oversight Program during Calendar Year 2003, analyzes rail fixed guideway system accident statistics using information provided by state oversight agencies, and documents the safety and security performance of the rail transit industry in 2003, including a discussion of the probable causes of accidents and unacceptable hazardous conditions.

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Preface

Since safety requirements for the Federal Transit Administration's (FTA) State Safety Oversight Rule (49 CFR Part 659) went into effect January 1, 1997, rail transit safety oversight in the United States has been transformed. In 1997, there were six designated state oversight agencies (SOAs) overseeing the operations of 12 rail fixed guideway systems (RFGS). By the end of 2003, there were 22 designated SOAs implementing Part 659 requirements for 38 RFGS operating 47 modal systems. Anticipating the implementation of several "New Start" systems beginning revenue service within the next five years, six new state agencies have already assumed oversight roles and begun coordinating with FTA and the new start transit agencies.

A primary objective of FTA's State Safety Oversight (SSO) Program is to create a nationwide infrastructure that provides rail transit with effective safety monitoring and evaluation. Information presented in this *State Safety Oversight Program Annual Report for 2003* demonstrates the success of this program, not only in documenting the activities performed by rail transit agencies that address safety issues, but also in promoting an operating culture more attuned to safety concerns. FTA, SOAs, and RFGS can use this information to quantify the reasons for transit accidents, leading to the identification of safety deficiencies and their ultimate resolution. In this way, all involved parties can work more effectively toward the goal of eliminating transit-related deaths, injuries, and property damage.

The State Safety Oversight Rule affects many different types of rail transit operations, including heavy rail, light rail, cable cars, inclined planes, and automated guideways. The FTA has made every attempt to standardize safety performance measures across a series of service indicators to support industry-based assessments of aggregate data. However, the range of operating requirements and the importance of local operating conditions limit the utility of individual agency comparisons to the industry baselines and averages contained in this report. SOAs and RFGS are advised to use caution when applying these measures.

Note that unless indicated otherwise, "2003" refers to data for calendar year 2003.

Acknowledgments

The *State Safety Oversight Program Annual Report for 2003* represents the cooperative efforts of many people.

For their guidance and technical direction, the authors give special thanks to Mr. Mike Taborn, Mr. Jerry Fisher, Mr. Roy Field, Ms. Vicki Bellet, and Ms. Amy Jernigan of the FTA's Office of Safety and Security; the State Oversight Agencies who implement the State Safety Oversight Program and provide the data, procedures, and policies upon which this report is largely based; and the American Public Transportation Association (APTA), FTA's National Transit Database Program, the Transportation Research Board (TRB), and the National Transportation Safety Board (NTSB), who all provided additional data to support state reports and analysis.

Finally, the authors wish to thank Mr. James Harrison, Mr. Robert Adduci, Mr. Fred Mottley, and Mr. Jerry Powers of the Volpe National Transportation Systems Center for their invaluable contributions of statistical data, insights, and suggestions. Their combined efforts greatly improved the content of this report.

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Executive Summary

Analysis of the 2003 data submitted to the Federal Transit Administration (FTA) by State Oversight Agencies (SOAs) reveal improvements in many areas of rail transit safety and challenges in other areas.

The *State Safety Oversight Program Annual Report for 2003* prepared by the FTA's Office of Safety and Security documents the activities and performance of SOAs and the rail fixed guideway systems (RFGS) within their jurisdictions for calendar year 2003 and includes comparison data from the previous four years. Results from this analysis may assist reporting organizations in addressing 49 CFR Part 659 requirements and in developing management structures and work programs to effectively plan, implement, and evaluate safety and security-related programs for passenger service.

Service Data

- Rail transit agencies affected by 49 CFR Part 659 generate approximately 30 percent of all trips taken on public transportation.
- In 2003, 38 RFGSs operating 47 modal systems provided approximately 2.9 billion passenger trips, a decrease of 2 percent from 2002.
- Light rail transit reported a decrease in annual passenger trips for the first time in the past four years. However, with the planned initiation of revenue service at 11 new light rail systems before 2010, light rail ridership is expected to increase.

Annual Unlinked Passenger Trips: 1999 - 2003

Mode	1999	2000	2001	2002	2003
Heavy Rail	2,609,453,900	2,604,328,600	2,656,231,300	2,650,694,300	2,598,117,500
Light Rail	278,102,600	298,372,100	315,725,820	317,601,400	311,572,353
Other*	19,375,800	19,769,400	20,458,080	20,029,900	18,928,957
Total	**2,906,932,300**	**2,922,470,100**	**2,992,415,200**	**2,988,325,600**	**2,928,618,810**

*includes automated guideways, inclined planes, and cable cars

Safety Data

- Total rail transit fatalities increased by 50 percent to 39 fatalities in 2003 from 26 fatalities in 2002. The 2003 figure is an 8 percent increase from 36 fatalities in 2001, but a 5 percent decrease from 41 fatalities in 2000.
- In 2003, rail transit agencies reported 2,928 accidents across all modes that met the 49 CFR Part 659.5 definition of accident, a decrease of approximately 3 percent from the 2002 total of 3,004 accidents.
- The 2,928 accidents in 2003 resulted in 3,066 injuries, a 5 percent increase from the 2001 total of 2,966, but a 13 percent decrease from the 2000 total of 3,371 injuries.
- Heavy rail service recorded a slight increase in the accident rate to 9.69 accidents per 10M passenger trips in 2003 from 9.65 in 2002.

- Light rail service recorded a 6 percent decrease in the accident rate from 13.92 accidents per 10M passenger trips in 2002 to 13.13 in 2003.
- Combined, other rail modes, such as funiculars, automated guideways, and cable cars, reported just one accident in 2003.

Accidents by Mode and Year

					2003
				2,558	2,518
				442	409
				4	1
				3,004	**2,928**

Accident Rates by Mode and Year

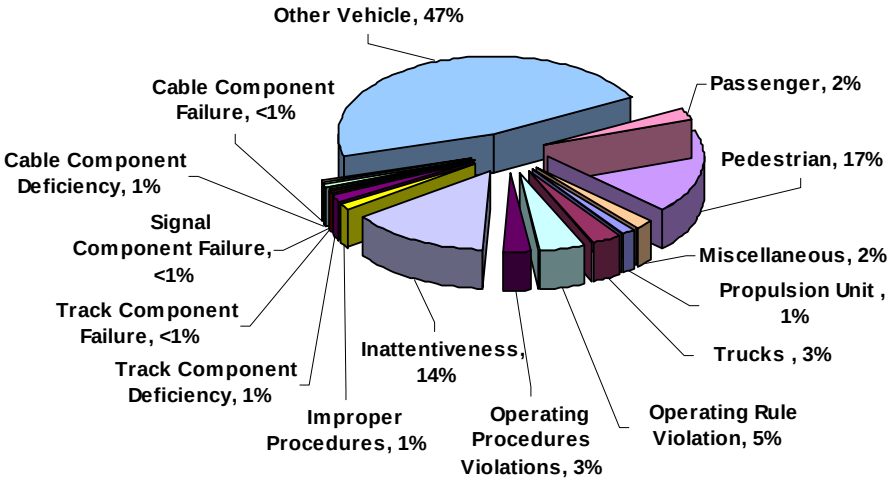
					2003
				9.65	9.69
				13.92	13.13
				2.00	0.53
				10.05	**10.00**

Causal Data*

- The percentage of accidents caused by Other Vehicles decreased slightly from 48 percent in 2002 to 47 percent in 2003.
- The percentage of accidents caused by Pedestrians increased slightly from 16 percent in 2002 to 17 percent in 2003.
- Combined, Pedestrians or Other Vehicles caused 64 percent of total accidents (134 accidents), compared to 64 percent in 2002 (105 accidents), 58 percent in 2001 (83 accidents), and 49 percent in 2000 (86 accidents).
- The percentage of accidents caused by Inattentiveness rose in 2003 to 14 percent from 10 percent in 2002.

* *includes reported Collisions, Derailments, and Fires, and not "Other" accidents*

Determined Probable Causes of Reported Accidents: 2003*



209 Accidents

(includes collisions, derailments, and fires)

**includes the 209 reported Collisions, Derailments, and Fires, and not "Other" accidents*

Introduction

The *State Safety Oversight Program Annual Report for 2003* prepared by the Federal Transit Administration's (FTA) Office of Safety and Security documents the activities and performance of State Oversight Agencies (SOAs) and the rail fixed guideway systems (RFGS) within their jurisdictions for calendar year 2003. Results from this analysis may assist reporting organizations in developing management structures and work programs to effectively plan, implement, and evaluate safety and security-related programs for passenger service.

The *State Safety Oversight Program Annual Report for 2003* prepared by the FTA's Office of Safety and Security documents the activities and performance of SOAs and the RFGS within their jurisdictions for calendar year 2003, and includes comparison data from the previous four years. Results from this analysis may assist reporting organizations in addressing 49 CFR Part 659 requirements and in developing management structures and work programs to effectively plan, implement, and evaluate safety and security-related programs for passenger service.

Organization of this Report

- *State Safety Oversight Overview*—provides an overview of the states and RFGS affected by 49 CFR Part 659, includes information on upcoming additions to the SSO community, and outlines the requirements of Part 659.
- *Service Data*—summarizes and analyzes 2003 annual ridership data and contrasts the totals with data from 1999, 2000, 2001, and 2002.
- *Safety Data*—summarizes and analyzes 2003 safety data, such as accidents, fatalities, injuries, rail grade crossing incidents, and probable causes, and compares findings to 1999, 2000, 2001, and 2002 data.
- *Appendix A*—contains the *2003 Annual Reporting Template.*

Data Sources

FTA used the following data sources in compiling this report:

- **2003 Annual Reports**. The FTA's State Safety Oversight Rule (49 CFR Part 659.45) requires that by March 15 of each year, SOAs must submit an annual report to FTA, summarizing oversight activities for the preceding twelve months and describing the most probable causal factors of accidents and unacceptable hazardous conditions. Prior to 1999, causal data collected for the annual report were descriptive in nature and not quantitative. As a response to congressional concern and National Transit Safety Board (NTSB) recommendations, in 1999 FTA developed the Annual Reporting Template to facilitate the collection of causal data in a format that could be quantified at year's end. FTA updated the Annual Reporting Template prior to 2003 data collection. The revised template refined the manner in which causal factors are reported (Appendix A).
- **2003 National Transit Database Safety and Security Reports**. Over the last decade, rail transit systems reported first safety—then later security—data directly to FTA. All

rail transit agencies receiving direct federal financial assistance under FTA's formula grant program must report these data annually to remain eligible for federal funds. In addition to safety and security-related data, rail transit agency service data reported to the National Transit Database (NTD) are also used to assist in the standardization of safety and security data into rates for modal comparisons and trend analysis.

- **2003 American Public Transportation Association Transit Statistics**. The American Public Transportation Association (APTA) Information Center maintains a collection of reports and studies published by organizations such as the Transit Cooperative Research Program (TCRP), Transportation Research Board (TRB), FTA, and individual transit agencies.
- **SSO Audit Program**. The State Safety Oversight Audit Program allows the FTA to identify the requirements of Part 659 that have been most difficult for SOAs to implement. It also promotes communication between FTA and the states through improved sharing of technical information, the solicitation of best practices, and the development of activities that increase coordination among all stakeholders responsible for identifying and meeting system safety and security objectives each year. Finally, information from audits supports FTA's initiative to provide technical assistance to states and the rail transit industry through guidelines, handbooks, training, newsletters, and other technical outreach mediums.

Acronyms and Glossary

This report uses the following acronyms to refer to key participants in the State Safety Oversight Program:

- APTA – American Public Transportation Association
- DOT – United States Department of Transportation
- FRA – Federal Railroad Administration
- FTA – Federal Transit Administration
- ISTEA – Intermodal Surface Transportation and Efficiency Act (of 1991)
- NTD – National Transit Database
- NTSB – National Transportation Safety Board
- RFGS – Rail Fixed Guideway System, as defined in 49 CFR Part 659.5 (also referred to as rail transit agency or rail transit system)
- SOA – State Safety Oversight Agency, designated to implement 49 CFR Part 659 requirements (also referred to as oversight agency)
- SSO – State Safety Oversight
- SSPP - System Safety Program Plan
- TEA-21 – Transportation Equity Act for the 21st Century
- TEA-3 – Transportation Equity Act (3rd iteration)

State Safety Oversight Overview

Program Background

In response to congressional concern over the potential for catastrophic accidents and security incidents on rail transit systems, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) added Section 28 to the Federal Transit Act (codified at 49 U.S.C. Section 5330). This section required FTA to issue a Rule creating the first state-managed oversight program for rail transit safety and security.

FTA published *Rail Fixed Guideway Systems: State Safety Oversight* on December 27, 1995 (codified at 49 CFR Part 659), subsequently referred to as the State Safety Oversight Rule or Part 659. The rule mandated FTA requirements for improving the safety and security of RFGS. Only those states with RFGS meeting the following definition must comply with the FTA State Safety Oversight Rule.

> "Any light, heavy or rapid rail system, monorail, inclined plane, funicular, trolley, or automated guideway that is included in FTA's calculation of fixed guideway route miles or receives funding under FTA's formula program for urbanized areas and is not regulated by the Federal Railroad Administration (FRA)." (**§659.5**)

The State Safety Oversight (SSO) Program emphasizes using a *systems approach* to address safety and security, and promotes the use of management and engineering principles to identify and resolve safety hazards and security vulnerabilities. Through ongoing implementation of system safety and security programs monitored by SOAs, the rail transit industry is now performing formalized assessments to balance hazards and controls, which ultimately will ensure the maximum protection for passengers, employees, system property, and the environment within the limits of available resources.

Ultimately, establishing and evaluating baseline safety and security performance measures will support oversight and industry programs that:

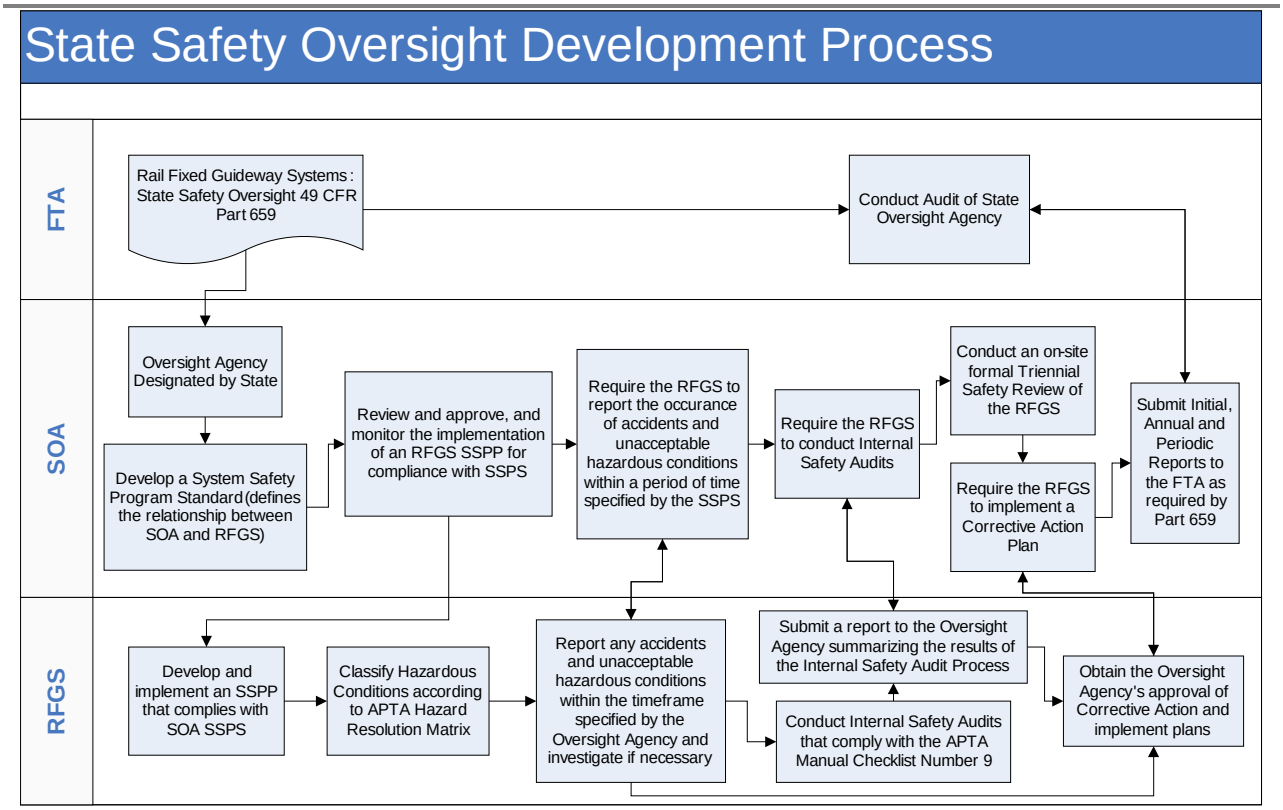
- Establish and ensure compliance with rail transit agency safety and security strategies, objectives, and standards.
- Encourage early integration of safety, security, reliability, maintainability, and quality assurance into rail transit operations.
- Improve methodologies for risk identification and assessment and make recommendations for risk mitigation and acceptance.
- Investigate, analyze, and recommend critical safety and security decisions.
- Sponsor the innovation and rapid transfer of safety, security, reliability, and maintainability; and quality assurance technologies, processes, and techniques for improving system performance.

SSO Program Development

Exhibit 1 illustrates the SSO development process and the roles assumed by participating agencies.

EXHIBIT 1

State Safety Oversight Development Process



FTA's Final Rule for State Safety Oversight requires each state with an RFGS within its borders to designate an Oversight Agency with sufficient legal authority to comply with the minimum requirements established in Part 659. Specifying operational details is beyond the scope of Part 659; each SOA must determine the legal, financial, and procedural mechanisms for providing oversight.

FTA's State Safety Oversight Program outlines seven functions that SOAs must perform to be in compliance with the Final SSO Rule:

- Oversight Agency Designation and Authority (§659.21);
- Oversight Agency Program Management (§659.47, §659.23, §659.31, and §659.45);
- System Safety/Security Program Standard Preparation and Adoption and RFGS System Safety/Security Program Plan Review and Approval Process (§659.31 and §659.33);
- Accident/Unacceptable Hazardous Conditions Investigations and Corrective Actions (§659.39, §659.41, and §659.43);

- Three-year Safety Reviews (§659.37);
- Requiring and Reviewing RFGS Internal Safety Audit Process Reporting (§659.35); and
- Oversight Agency Certification and Reporting to FTA (§659.45 and §659.49).

The state, SOA, and RFGS take on individual responsibilities and work with the other entities to ensure the effective implementation of the State Safety Oversight Program.

- The state designates the Oversight Agency.
- The SOA develops requirements and programs to comply with the FTA's State Safety Oversight Program.
- The RFGS complies with the program developed by the SOA.

The State

The primary responsibility of the state is to designate an Oversight Agency (or agencies) to oversee the safety of the rail transit systems operating within its borders. When a rail system operates within one state only, the designated entity must be an agency of the state. When a rail system operates in more than one state, the affected states may designate a single entity to oversee the system. In neither case can the state designate the rail transit system as the Oversight Agency.

The Oversight Agency

Part 659 requires the designated State Oversight Agency to perform seven distinct functions that constitute the core of FTA's State Safety Oversight Rule. The Oversight Agency must:

- **Develop a System Safety Program Standard (Program Standard)**. This written document defines the relationship between the Oversight Agency and the rail transit system and guides the rail transit system in developing its System Safety Program Plan (SSPP).
    - The Program Standard must, at a minimum, comply with APTA's *Manual for the Development of Rail Transit System Safety Program Plans* (*APTA Manual*) and include specific provisions addressing the personal security of passengers and employees.
- **Require, review and approve, and monitor the implementation of an SSPP that complies with the Oversight Agency's program standard at each rail transit system**. By January 1, 1997, the Oversight Agency must review and approve in writing the rail transit system's SSPP. However, the security provisions of the SSPP do not have to be approved initially by the Oversight Agency until January 1, 1998. After the initial approvals, the Oversight Agency must review the rail transit system's SSPP as necessary and determine whether it should be updated.
- **Require each rail transit system to report the occurrence of accidents and unacceptable hazardous conditions within a period of time specified by the Oversight Agency**. The Oversight Agency must investigate such events in accordance with established procedures. The Oversight Agency may conduct its own investigation, use a contractor to conduct an investigation, or review and approve the investigation conducted by the rail transit system or the NTSB, or use a combination of these methods.

- **Require the rail transit system to implement a Corrective Action Plan**. The Oversight Agency must require the rail transit system to minimize, control, correct, or eliminate hazardous conditions identified during investigations, in accordance with a Corrective Action Plan drafted by the rail transit system and approved by the Oversight Agency.
- **Conduct on-site visits at each rail transit system at a minimum of every three years to perform a formal Safety Review**. In a Safety Review, the Oversight Agency must assess whether the rail transit system's actual safety and security practices and procedures comply with its SSPP. Once this review is completed, the Oversight Agency must prepare a report containing its findings and recommendations, an analysis of the effectiveness of the rail transit system's SSPP, and a determination of whether the SSPP should be updated.
- **Require the rail transit system to conduct safety audits according to the Internal Safety Audit Process detailed in the APTA Manual (Checklist Number 9).** The Oversight Agency must also require the rail transit system to compile and submit an Annual Audit Report for review.
- **Report to FTA**. The Oversight Agency must submit an Initial Submission, an Annual Submission, and a Periodic Submission to FTA.

The Rail Transit System

While the requirements in Part 659 are directed at the states and the Oversight Agencies, the rail transit agencies play an important role in the State Safety Oversight Program. To comply with Part 659, the Oversight Agency must require each rail transit system within its jurisdiction to perform at a minimum the following activities:

- Develop an SSPP that complies with the Oversight Agency's Program Standard.
- Classify hazardous conditions according to the APTA Manual Hazard Resolution Matrix.
- Report any accident or unacceptable hazardous condition within the time frame specified by the Oversight Agency.
- Obtain the Oversight Agency's approval of and implement a Corrective Action Plan that minimizes, controls, corrects, or eliminates the particular unacceptable hazardous condition.
- Conduct safety audits that comply with the Internal Safety Audit Process, *APTA Manual* (Checklist Number 9).
- Draft and submit to the Oversight Agency a report summarizing the results of the safety audit process.

If a state has not met these requirements, or has not made adequate efforts to comply with them, the Secretary of the U.S. Department of Transportation may withhold up to 5 percent of a fiscal year’s apportionment under the FTA’s formula program for urbanized areas (formerly Section 9) attributable to the state or an affected urbanized area in the state.

SSO Community

EXHIBIT 2

Affected State Safety Oversight Community: 2003

				Modal Systems
1	MA	Massachusetts Department of Telecommunication & Energy (MDTE)	Massachusetts Bay Transportation Authority (MBTA)	HR, LR
2	NJ	New Jersey Department of Transportation (NJDOT)	New Jersey Transit Newark City Subway (NCS)	LR
			New Jersey Transit Hudson-Bergen Light Rail (HBLR)	LR
			Port Authority Transit Corporation (PATCO)	HR
	NY	Public Transportation Safety Board (PTSB)	New York City Transit (MTA/NYC)	HR
			Niagara Frontier Transit Authority (NFTA)	LR
3	DC/VA /MD	Tri-State Oversight Committee (TOC)	Washington Metropolitan Area Transit Authority (WMATA)	HR
	MD	Maryland Department of Transportation (MDOT)	Maryland Transit Administration (MTA-MD)	HR, LR
	PA	Pennsylvania Department of Transportation (PennDOT)	Southeastern Pennsylvania Transit Authority (SEPTA)	HR, LR
			Port Authority of Allegheny County (PAAC)	LR, IP, IP
			Cambria County Transit Authority (CCTA)	IP
4	FL	Florida Department of Transportation (FDOT)	Metro-Dade Transit Authority (MDTA)	HR, AG
			Jacksonville Transportation Authority (JTA)	AG
			Hillsborough Area Regional Transit (HART)	LR
	GA	Georgia Department of Transportation (GDOT)	Metropolitan Atlanta Rapid Transit Authority (MARTA)	HR
	TN	Tennessee Department of Transportation (TDOT)	Chattanooga Area Rapid Transit Authority (CARTA)	IP
			Memphis Area Transit Authority (MATA)	LR
5	IL	Regional Transit Authority (RTA)	Chicago Transit Authority (CTA)	HR
	MI	Michigan Department of Transportation (MDOT)	Detroit Department of Transportation (DDOT)	LR
			Detroit People Mover	AG
	OH	Ohio Department of Transportation (ODOT)	Greater Cleveland Regional Transit Authority (GCRTA)	HR, LR
	WI	Wisconsin Department of Transportation (WisDOT)	Kenosha Transit (KT)	LR
6	LA	Louisiana Department of Transportation and Development (DOTD)	New Orleans Regional Transit Authority (NORTA)	LR
	TX	Texas Department of Transportation (TxDOT)	Galveston Island Transit (GIT)	LR
			Dallas Area Rapid Transit (DART)	LR
7	IL	St. Clair County Transit District (SCCTD)	Bi-State Development Agency (BSDA)	LR
	MO	Missouri Department of Transportation (MDOT)		
8	CO	Colorado Public Utilities Commission (CoPUC)	Denver Regional Transit District (RTD)	LR
	UT	Utah Department of Transportation (UDOT)	Utah Transit Authority (UTA)	LR
9	CA	California Public Utilities Commission (CPUC)	Bay Area Rapid Transit (BART)	HR
			Los Angeles County Metropolitan Transportation Authority (LACMTA)	HR, LR
			San Francisco Municipal Railway (Muni)	LR, LR, CC
			San Diego Trolley, Inc. (SDTI)	LR
			Sacramento Regional Transit District (SRTD)	LR
			Santa Clara Valley Transit Authority (SCVTA)	LR
10	OR	Oregon Department of Transportation (ODOT)	Portland Tri-Met (Tri-Met)	LR
	WA	Washington State Department of Transportation (WSDOT)	King County Metro (WFSC)	LR
			Sound Transit (Link)	LR
			Seattle Center Monorail (S Mon)	AG

[1]*HR: Heavy Rail, LR: Light Rail, IP: Inclined Plane, AG: Automated Guideway, CC: Cable Car*

Designation Statistics

This section outlines SOA designations and transit agencies' operated modal systems. For analytical purposes, transit agencies are referred to as RFGS and specific systems under an RFGS are referred to as modal systems.

By 2003, states had designated 22 SOAs to implement Part 659 requirements (see Exhibit 2). Thirty-eight RFGS operated 47 modal systems, including:

- Twelve heavy rail systems,
- Twenty-six light rail systems, and
- Nine other rail systems (four automated guideway/monorail systems, four inclined plane systems and one cable car system).

SOAs have a variety of legal authorities, including safety responsibilities that may exceed FTA minimum requirements. As shown in Exhibit 3, the majority of SOAs are divisions of State Departments of Transportation or Public Utilities Commissions, empowered by enabling legislation or gubernatorial order to implement Part 659 regulations.

EXHIBIT 3

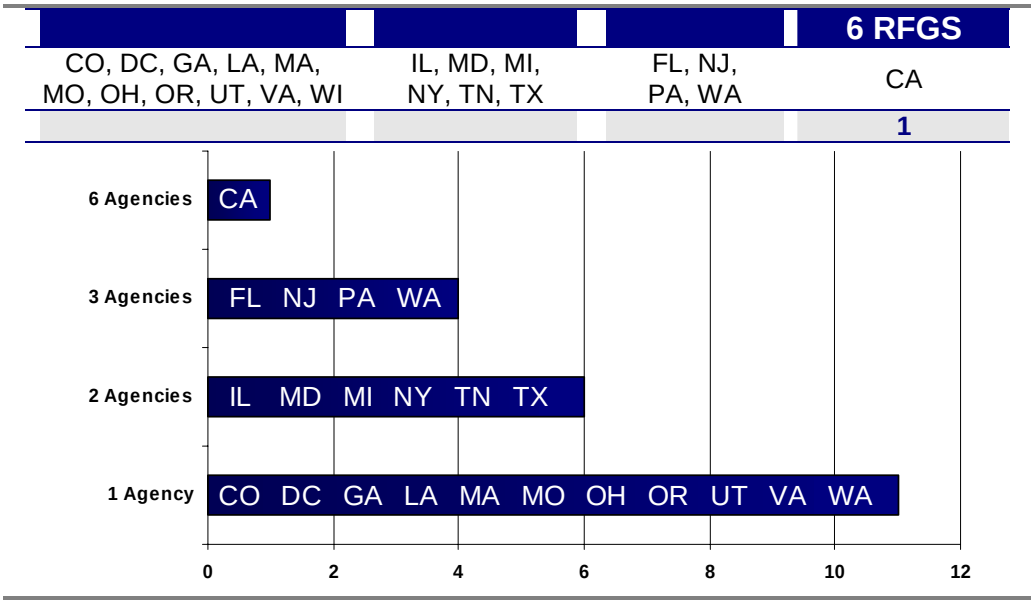
Oversight Agency Designations: 2003

	Number
Department of Transportation	15
Utilities Commission or Regulator	3
Regional or County Transportation Authority	2
Multi-state Oversight Committee	1
Transportation Safety Board	1
Total	**22**

Exhibit 4, on the following page, groups states by the number of transit agencies within their jurisdictions.

EXHIBIT 4

Number of RFGS in Affected States: 2003



Personnel Allocation

Eleven states have designated at least 1.0 full-time equivalent (FTE) to implement 49 CFR Part 659 requirements and eight states have designated 0.5 FTE or less. The average FTE reported in 2003 decreased from 2002, echoing the trend seen from 2001 to 2002. Exhibit 5 presents the allocation of personnel used to implement 49 CFR Part 659 requirements in the years 2001, 2002, and 2003.

EXHIBIT 5

Personnel Allocation: 2003

		g. FTE per State		
Total - SOAs	22	1.48	1.46	**1.41**
SOAs with >1 Transit Agency	8	2.59	2.49	**2.36**
SOAs with 1 Transit Agency	14	0.85	0.86	**0.87**

Note: Eight SOAs designated 0.5 FTE or less

Recent and Upcoming Additions

In 2003, the Central Puget Sound Regional Transit Authority (Sound Transit) initiated the revenue service of the Tacoma Link system. The 1.6-mile, five-station, $80 million modern electric streetcar light rail line connects Tacoma's Broadway theater district, downtown offices, Union Station, the University of Washington in Tacoma, the Washington State History Museum, and the Tacoma Dome.

FTA expects that 14 additional New Start transit agencies will initiate revenue service by 2010. Consequently, six states have designated new oversight agencies to provide safety oversight and meet Part 659 requirements during this period. Exhibit 6 on the following page lists the recent and upcoming transit agency additions to the state safety oversight community and the designated oversight agencies.

EXHIBIT 6

Additions to the SSO Community: 2003 to 2009

				SOA
Tacoma, WA	Tacoma Link Light Rail	8/2003	2,000	Washington State Department of Transportation (WSDOT)
Houston, TX	Houston METRORail	1/2004	40,000	Texas Department of Transportation (TxDOT)
Camden, NJ	NJ Transit River Line	3/2004	8,500	New Jersey Department of Transportation (NJDOT)
Charlotte, NC	Charlotte Trolley	5/2004	21,100	**North Carolina Department of Transportation, (NCDOT)**
Minneapolis, MN	Metro Transit Hiawatha Corridor LRT	6/2004	19,300	**Minnesota Department of Public Safety/State Patrol (DPS)**
Little Rock, AK	Central Arkansas Transit Authority River Rail	11/2004	1,000	**Arkansas State Highway and Transportation Department (AHTD)**
San Juan, PR	Tren Urbano	12/2004	113,300	**Puerto Rico State Emergency and Disaster Management Agency (PREMA)**
Charlotte, NC	Charlotte Area Transit System South Corridor	1/2007	21,100	**North Carolina Department of Transportation (NCDOT)**
San Diego, CA	North County Transit District Sprinter	12/2007	16,000	California Public Utilities Commission (CPUC)
Phoenix, AZ	Regional Public Transportation Authority East Valley Corridor	12/2008	48,000	**Arizona Department of Transportation (ADOT)**
Las Vegas, NV	Las Vegas Resort Corridor Fixed Guideway (*extension*)	5/2009	38,800	**Nevada Department of Transportation (NDOT)**
Seattle, WA	Central Link Light Rail	7/2009	42,500	Washington State Department of Transportation (WSDOT)
San Diego, CA	Orange County Transportation Authority CenterLine LRT	12/2009	28,400	California Public Utilities Commission (CPUC)
Seattle, WA	Seattle Popular Monorail Authority	2009	69,000	Washington State Department of Transportation (WSDOT)

[1]projected

***BOLD* = New Oversight Agency**

Service Data

RFGS provided over 2.9 billion passenger trips in 2003, roughly 30 percent of all public transportation passenger trips. Rail transit ridership declined in 2003 for the second consecutive year. Despite this decrease, ridership growth is expected throughout the decade as substantial increases in federal funding under TEA-21 continue to translate into the initiation of service at new start rail transit agencies and the expansion of existing rail transit systems.

There are several possible reasons for ridership decline over the past two years. One may be the terror attacks of September 11, 2001, and the resulting economic downturn that affected not only rail transit, but also much of the transportation industry around the nation. Over the past three years there have been significant reductions in funding at state and local levels for many transit systems. These cuts have impacted public transportation service in general, forcing modes such as public bus service to reduce routes in many regions.

> A rail fixed guideway system is: "Any light, heavy or rapid rail system, monorail, inclined plane, funicular, trolley, or automated guideway that is included in FTA's calculation of fixed guideway route miles or receives funding under FTA's formula program for urbanized areas and is not regulated by the Federal Railroad Administration (FRA)." (**§659.5**)

Modal Distinctions

For analysis purposes, the State Safety Oversight Program organizes agency service data into three modal categories.

- *Heavy Rail* – metros, subways, rapid rail, usually has multiple-car trains on fixed, exclusive rights of way, is characterized by high speed and rapid acceleration, and often uses sophisticated signaling systems.
- *Light Rail* – lightweight passenger rail cars traveling singly or in short two-car trains on a fixed right of way, usually not separated from on-street traffic for much of the way. Trains usually are electrically powered.
- *Other Rail* – includes inclined planes/funiculars, automated guideways, and cable cars.

Heavy Rail

Nationwide, heavy rail systems annually account for between eight and nine times more passenger trips than light rail and other rail service. The ridership difference is due in part to the way the systems were designed and integrated into their respective metropolitan areas. Heavy rail systems are generally older than their light rail counterparts—except for the restored historic trolleys that are considered light rail—and were developed around the needs of a metropolitan area transit system.

Cities such as New York, Chicago, and Boston are home to older heavy rail systems and are good examples of this dense transit development that has grown with the expansion of metropolitan transit needs. The ridership difference can also be attributed in part to the extremely

high ridership totals of MTA-NYC. New York City's heavy rail system alone was responsible for 60 percent of all rail transit ridership in 2003.

Light Rail

The nation's 26 light rail systems currently provide only 12 percent of the level of ridership provided by heavy rail service. However, the growth in light rail transit ridership over the last five years is unmatched across the industry. As development around U.S. cities has spread, planning organizations have sought commuting options to eliminate traffic challenges caused by increasing sprawl. Light rail transit offers the ability to connect outlying areas to metropolitan centers in a cost-effective manner; as a result growing municipalities are increasingly turning to light rail.

In recent years, there have been major expansions of light rail systems at transit agencies such as Dallas Area Rapid Transit (DART) in Dallas, Bay Area Rapid Transit District (BART) in San Francisco, Bi-State Development Agency (BSDA) in St. Louis, Missouri. These developments, as well as the initiation of revenue service at Sound Transit in Tacoma, have helped to increase ridership totals over recent years and are a large reason why light rail recorded a smaller decrease in 2003 ridership than heavy and other rail modes. Light rail ridership growth is expected as FTA anticipates the initiation of revenue service for nine new light rail transit systems by 2010.

Other Rail

The other rail systems included in the State Safety Oversight Program include four automated guideway/monorail systems, four inclined plane or funicular systems, and one cable car system. Although ridership levels for these systems are substantially lower than the heavy rail and light rail modes, the importance of safety oversight and the need for analysis cannot be overlooked.

Ridership Statistics

> An ***Unlinked Passenger Trip*** is a trip on one transit vehicle regardless of the type of fare paid or transfer presented. A passenger is counted each time he/she boards a vehicle even though he/she may be on the same journey from origin to destination.

- In 2003, the SSO community experienced a decline in annual unlinked passenger trips for the second consecutive year (Exhibit 8).
- Heavy rail service ridership declined by 2 percent; light rail service ridership by 1.9 percent; and other rail service ridership by 5.5 percent in 2003 (Exhibit 9).
- Light rail service experienced its first ridership decline in five years (Exhibit 9).
- Heavy rail and other rail modes reported the lowest ridership in five years (Exhibit 9).
- For transit agency acronyms, refer to Exhibit 2.

EXHIBIT 7

Annual Unlinked Passenger Trips: 2003

	HR							**7,306,500**
	HR	**249,326,100**		HR	14,318,500		HR	4,605,100
		187,909,100		AG	6,978,900		LR	2,701,400
	HR	123,939,500	-		**19,961,900**		LR	**5,556,000**
	LR	63,969,600		HR	12,452,100		LR	**5,466,500**
	HR	**150,319,600**		LR	7,509,800		LR	**4,897,500**
		104,935,600		LR	**16,952,000**		AG	**2,104,432**
	HR	86,953,800		LR	**14,612,800**		AG	**716,700**
	LR	17,981,800		LR	**10,636,000**		LR	**704,600**
	HR	**94,914,600**		LR	**10,085,900**		LR	**458,700**
	HR	**69,272,000**		LR	**9,669,600**		LR	**403,600**
					9,119,500		IP	**385,900**
	HR	27,465,100		LR	4,812,300		LR	**266,600**
	LR	28,623,300		LR	4,307,200		AG	**157,697**
		50,315,059		HR	**8,863,700**		IP	**70,000**
	LR				**8,254,413**		LR	**67,200**
	CC	7,418,790		IP	778,622		LR	**18,109**
	LR	**26,427,700**		IP	317,916		LR	**10,900**
	LR	**25,379,100**		LR	7,157,875	**TOTAL**		**2,928,618,810**

EXHIBIT 8

Annual Unlinked Passenger Trips by Mode: 1999 to 2003

					2003
				2,650,694,300	
				317,601,400	311,572,353
				20,029,900	18,928,957
				2,988,325,600	**2,928,618,810**

*includes automated guideways, inclined planes, monorails, and cable cars

EXHIBIT 9

Changes in Annual Unlinked Passenger Trips by Mode

				2002-'03
	-	-	-2.19%	-1.98%
			-1.32%	-1.90%
	-	-	-7.47%	-5.50%
			-2.13%	**-2.00%**

*includes automated guideways, inclined planes, monorails, and cable cars

EXHIBIT 10

Heavy Rail Unlinked Passenger Trips: 2003

	NY	1,755,687,400
	DC	249,326,100
	IL	150,319,600
	MA	123,939,500
	CA	94,914,600
	PA	86,953,800
	GA	69,272,000
	CA	27,465,100
	FL	14,318,500
-	MD	12,452,100
	NJ	8,863,700
	OH	4,605,100
TOTAL		2,598,117,500

EXHIBIT 11

Light Rail Unlinked Passenger Trips: 2003

	MA	63,969,600
	CA	42,896,269
	CA	28,623,300
	OR	26,427,700
	CA	25,379,100
	PA	17,981,800
	TX	16,952,000
	MO	14,612,800
	CO	10,636,000
	UT	10,085,900
	CA	9,669,600
-	MD	7,509,800
	PA	7,157,875
	NY	5,556,000
	CA	5,466,500
	LA	4,897,500
-	NJ	4,812,300
-	NJ	4,307,200
	OH	2,701,400
	TN	704,600
	FL	458,700
	WA	403,600
	WA	266,600
	WI	67,200
	TX	18,109
	MI	10,900
TOTAL		311,572,353

EXHIBIT 12

Other Rail Unlinked Passenger Trips: 2003

		CA	7,418,790
		FL	
		WA	
		PA	
		FL	
		TN	
		PA	
		MI	
		PA	70,000
TOTAL			18,928,957

A comparison with 2002 ridership data shows a decrease of annual passenger trips for all rail transit modes. Seventy-five percent of heavy rail systems experienced a decline in unlinked passenger trips in 2003. Fifty percent of light rail systems and 78 percent of other rail systems also experienced a ridership decline in the same year. LACMTA (-14.6 percent), MTA-MD (-10.7 percent), and MARTA (-10.5 percent) were the heavy rail agencies with the largest declines in ridership in 2003 (see Exhibits 13-15 below).

EXHIBIT 13

Largest Percent Declines in HR Unlinked Passenger Trips: 2002 to 2003

			% Decline
		28,623,300	-18.1%
-		12,452,100	-10.7%
		69,272,000	-10.5%

EXHIBIT 14

Largest Percent Declines in LR Unlinked Passenger Trips: 2002 to 2003

			% Decline
		5,466,500	-21.5%
		2,701,400	-13.0%
		42,896,269	-9.2%

Minimum trips: 1,000,000

EXHIBIT 15

Largest Percent Declines in OR Unlinked Passenger Trips: 2002 to 2003

			% Decline
		7,418,690	-9.4%
		778,662	-8.8%

Minimum trips: 300,000

Safety Data

Rail transit reports less than 6 percent of all public transportation's accidents, while providing close to 32 percent of all public transportation's passenger trips. This low ratio of accidents-to-provided service gives the public a high level of confidence in the safety of rail transit service and makes rail transit one of the safest modes of public transportation. Only commuter rail offers a lower ration of accidents-to-provided service (Exhibit 16).

EXHIBIT 16

Public Transit Safety, Accidents per passenger mile: 2000

Ridership (passenger miles)			839 *1.8%*	15,200 *31.8%*		792 *1.7%*
Accidents			4,386 *8.7%*	2,933 *5.9%*		705 *1.4%*
Ratio						**0.89**

Source: 2000, National Transit Database, Federal Transit Administration

Accident Categories

This section analyzes FTA-reportable rail transit accident data reported by transit agencies to their SOAs. Analysis focuses not only on modal distinctions in collected data, but also on trends by accident type. Accident data are grouped into four categories:

- Collision
- Derailment
- Fire
- "Other" (all other reportable accidents such as suicides, trespassing, assault, and slips, trips, and falls in the station)

> ***Accident*** means any event involving the revenue service operation of a rail fixed guideway system if as a result: (1) an individual dies; (2) an individual suffers bodily injury and immediately receives medical treatment away from the scene of the accident; or (3) a collision, derailment, or fire causes property damage in excess of $100,000.

"Other" accidents make up the majority of FTA-reportable accidents, due to the fact that transit agencies are required to report any accident in which "an individual suffers bodily injury and immediately receives medical treatment away from the scene." The added safeguards of some transit agencies can attribute to the relatively high numbers for this statistic. In New York City the transit system operates its own staffed first-aid stations and requires incidents where any medical treatment is administered to be reported. As a result of this diligence, an incident that may easily go unreported at another transit agency is reported.

Many of the "Other" accidents reported are caused by negligence on the part of a passenger. Some events cannot realistically be prevented by a transit agency. Nonetheless, the collection of these data can be very important to the safety of all rail transit passengers. For example, the collection of slip, trip, and fall data has led to large-scale studies of stairwells and escalators, prompting modifications to the escalator technology and proving that valuable steps can be taken toward improving safety through the analysis of reported "Other" accident data.

Reported Safety Data

Data is organized into the following subsections:

- Industry-wide Totals
- Heavy Rail Data
- Light Rail Data
- Other Rail Data
- Modal Comparisons
- Causal Data

Industry-wide Totals

Accidents

- In 2003, RFGS reported 2,928 incidents that met the FTA's definition of accident, a decrease of 3 percent from 3,004 accidents in 2002 (Exhibit 17). The accident rate decreased by 1 percent in 2003 to 10.00 accidents per 10M passenger trips, from 10.05 in 2002 (Exhibit 18).
- "Other" accidents decreased 4 percent to 2,719 accidents in 2003 from 2,839 in 2002 (Exhibit 20).
- "Other" accidents represented 93 percent of reported accidents with 9.28 "Other" accidents reported per 10M passenger trips in 2003 (Exhibit 22).
- Rail transit collisions increased 15 percent to 169 collisions in 2003 from 147 in 2002 (Exhibit 19). The collision rate for 2003 was 0.58 per 10M passenger trips, its highest level in five years (Exhibit 21).

EXHIBIT 17

Reported Accidents: 1999 to 2003

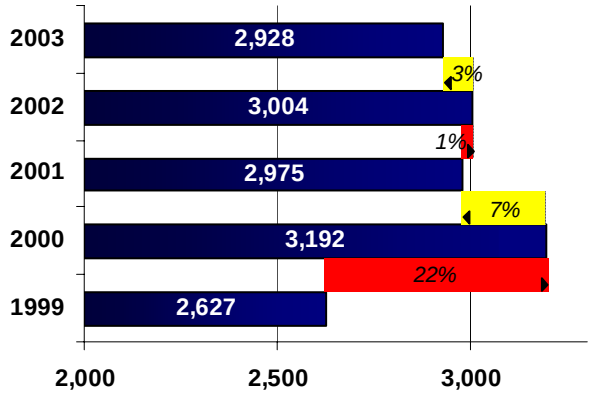


EXHIBIT 18

Accident Rates: 1999 to 2003, per 10M Passenger Trips

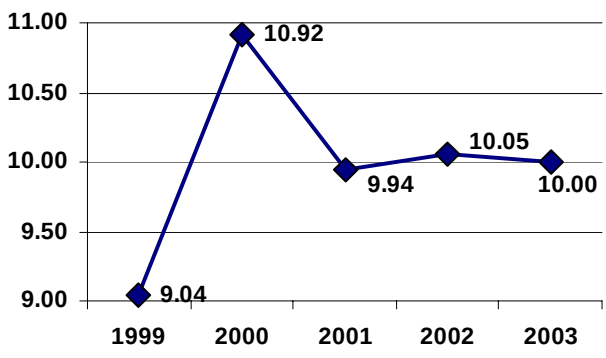


EXHIBIT 19

Reported Accidents by Type: 1999 to 2003

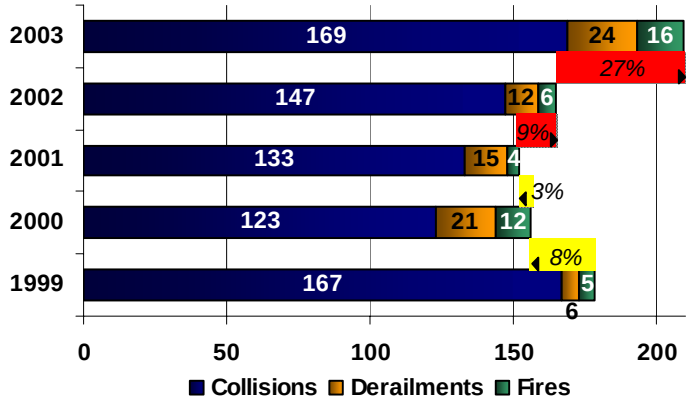


EXHIBIT 20

"Other" Accidents: 1999 to 2003

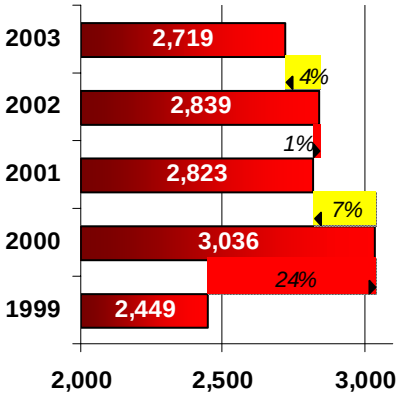


EXHIBIT 21

Accident Rates by Type: 1999 to 2003, per 10M Passenger Trips

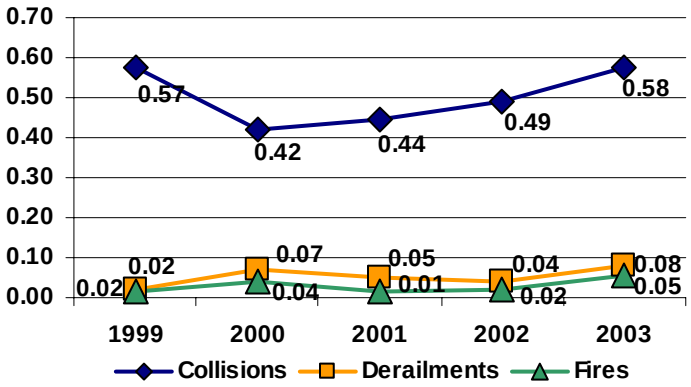
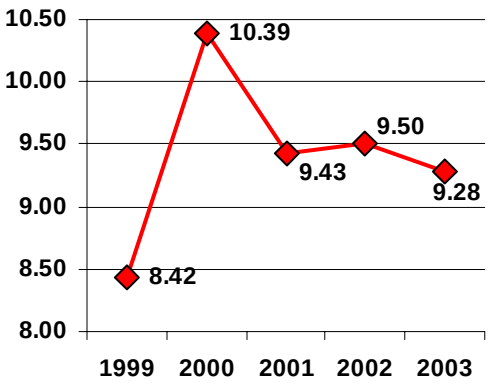


EXHIBIT 22

"Other" Accident Rates: 1999 to 2003, per 10M Passenger Trips



Fatalities

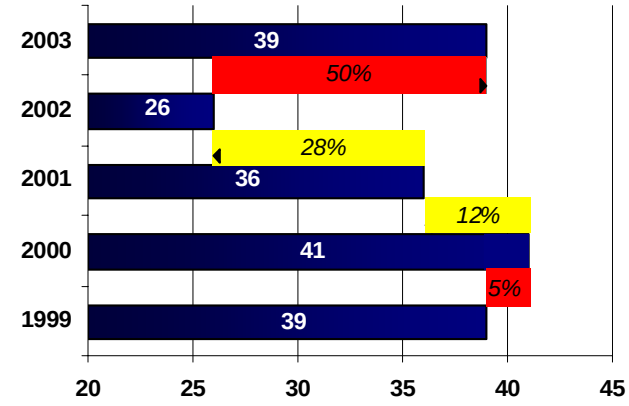
For this analysis, reported fatalities are divided into two categories, *in-service* and *suicides*. The *suicides* category includes suicides and trespassing-related fatalities. These events fall into the SSO category of "Other" accidents. Unless otherwise stated, the analysis in this section focuses on in-service fatalities and does not develop conclusions based upon suicide and trespassing-related deaths.

- In 2003, the rail transit fatality rate increased by 44 percent in 2003 to 0.13 fatalities per 10M passenger trips from the 2002 rate of 0.09 (Exhibit 24).
- Total fatalities increased by 50 percent to 39 fatalities in 2003 from 26 in 2002. The 2003 total is an 8 percent increase from 36 fatalities in 2001 (Exhibit 23).
- The 39 fatalities in 2003 reversed the downward trend of the previous three years (Exhibit 23).

- A five-year high of 26 fatalities caused by "Other" accidents is a large reason for the fatality increase in 2003 (Exhibits 25 and 26).
- In 2003, the 13 fatalities caused by collisions were well below the five-year average of 18.8 fatalities (Exhibit 25).

EXHIBIT 23

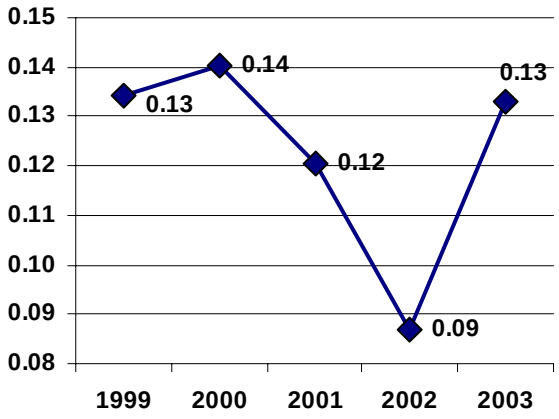
Reported Fatalities*: 1999 to 2003



** excluding suicides and trespassing-related deaths*

EXHIBIT 24

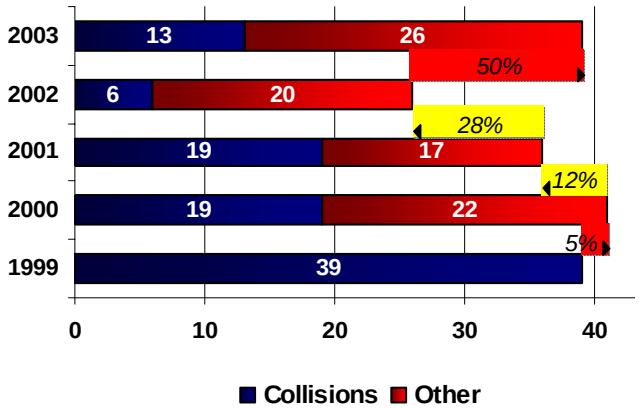
Fatality Rates*: 1999 to 2003, per 10M Passenger Trips



** excluding suicides and trespassing-related deaths*

EXHIBIT 25

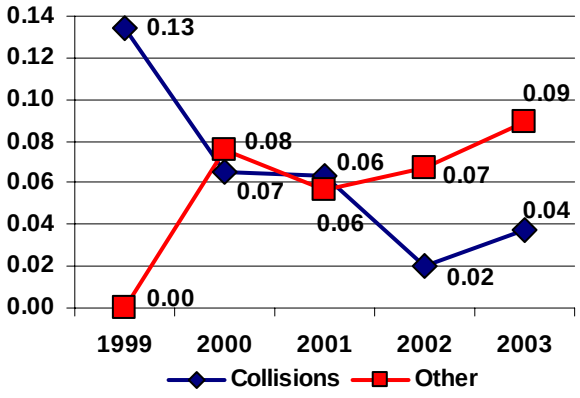
Reported Fatalities* by Type: 1999 to 2003



** excluding suicides and trespassing-related deaths*

EXHIBIT 26

Fatality Rates* by Type: 1999 to 2003, per 10M Passenger Trips



** excluding suicides and trespassing-related deaths*

Injuries

- In 2003, reported injuries increased 3 percent to 3,066 from 2,966 in 2002. The 2003 total is still below the five-year average of 3,082 injuries (Exhibit 27).
- Rail transit averaged 10.47 injuries per 10M passenger trips in 2003, still below the industry's injury rates in 2000 and 2001 (Exhibit 28).

- Injuries from collisions increased by 34 percent to 219 injuries in 2003 from 164 in 2002. The 2003 total is still 20 percent lower than the 273 collision-related injuries reported in 2001 (Exhibit 29).
- Injuries caused by "Other" accidents continued a three-year decline. The 2003 mark of 2,659 injuries is a 14 percent decline from the 3,104 injuries in 2000 (Exhibits 30 and 32).
- There were no injuries resulting from derailments in 2003 (Exhibits 29 and 31).
- Injuries caused by fires reached a five-year high of 188 in 2003. A major cause of this figure was one transit agency reporting two fires injuring 175 passengers. Prior to 2003, the highest number of fire-related injuries was 61 in 1999 (Exhibit 29).

EXHIBIT 27

Reported Injuries: 1999 to 2003

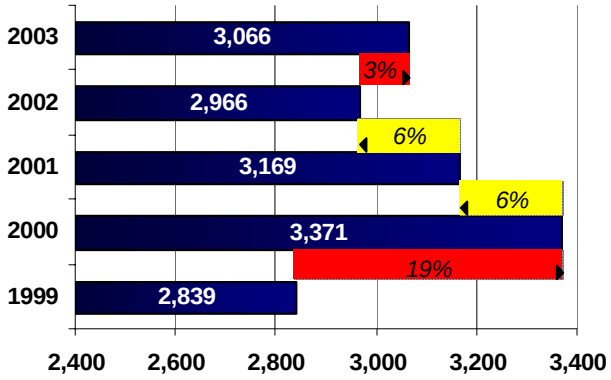


EXHIBIT 28

Injury Rates: 1999 to 2003, per 10M Passenger Trips

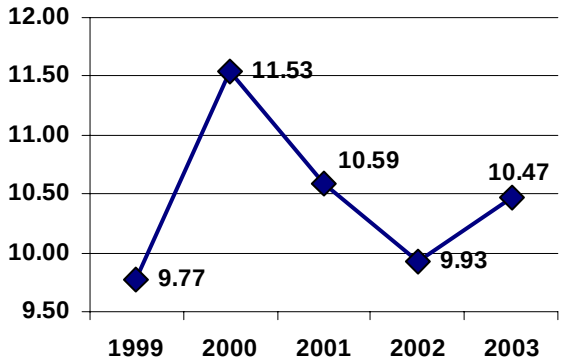


EXHIBIT 29

Reported Injuries by Type: 1999 to 2003

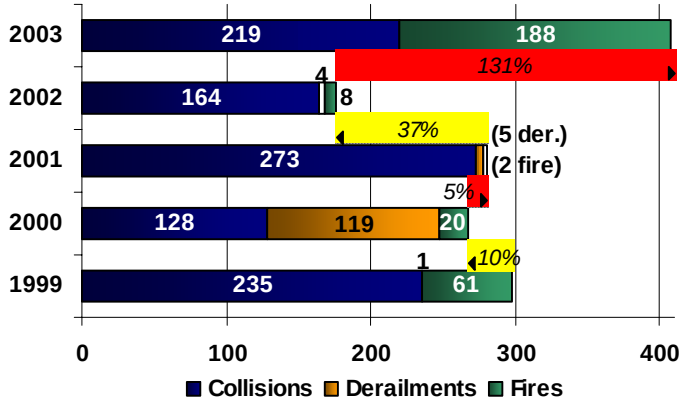


EXHIBIT 30

Reported Injuries due to "Other" Accidents: 1999 to 2003

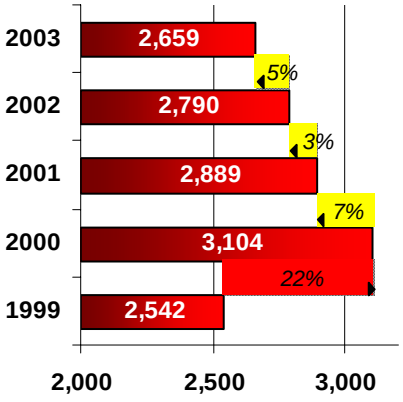


EXHIBIT 31

Injury Rates by Type: 1999 to 2003

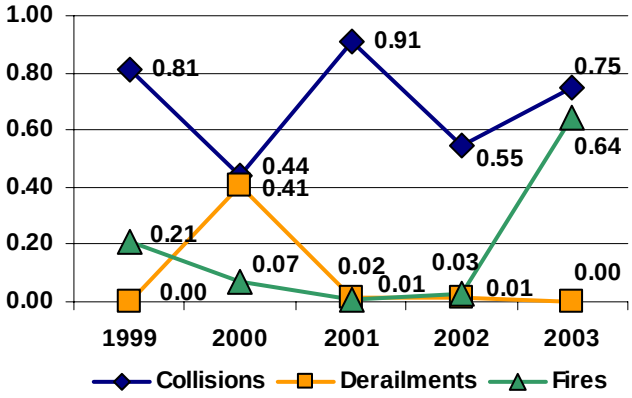
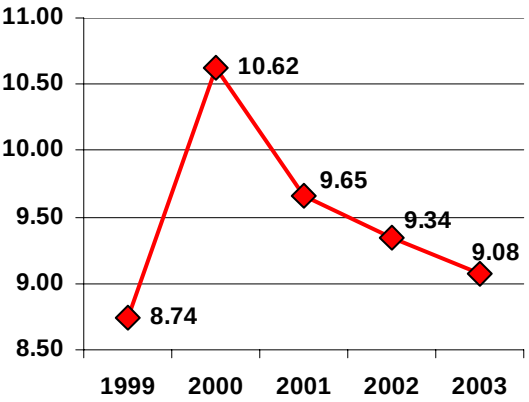


EXHIBIT 32

Reported Injuries due to "Other" Accidents: 1999 to 2003



Heavy Rail

- Heavy rail accidents decreased by 2 percent to 2,518 accidents in 2003 from 2,558 in 2002 (Exhibits 33 and 34).
- Heavy rail collisions, derailments, and fires increased in 2003 (Exhibits 33 and 35).

Heavy rail includes metros, subways, and rapid rail; usually has multiple-car trains on fixed, exclusive rights of way; is characterized by high speed and rapid acceleration; and often uses sophisticated signaling systems.

- Even though heavy rail collisions increased in 2003, the collision total of 14 still remains below the five-year average of 22.2 collisions per year (Exhibit 33).
- Heavy rail "Other" accidents decreased for the third straight year. The 2003 total of 2,479 accidents is a 14 percent decrease from 2,888 in 2000 (Exhibits 34 and 36).

EXHIBIT 33

Heavy Rail Accidents by Type: 1999 to 2003

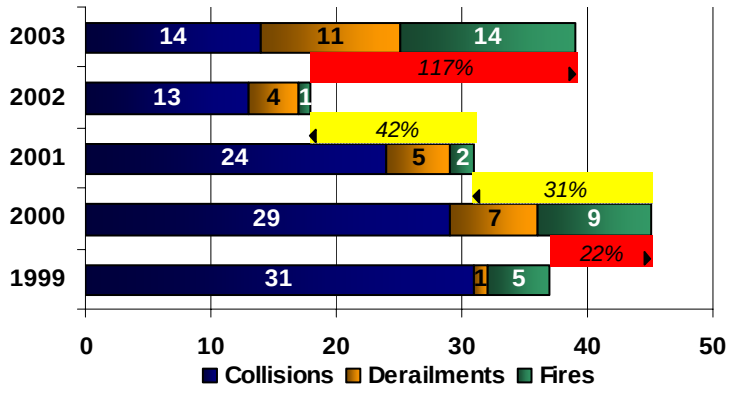


EXHIBIT 34

Heavy Rail "Other" Accidents: 1999 to 2003

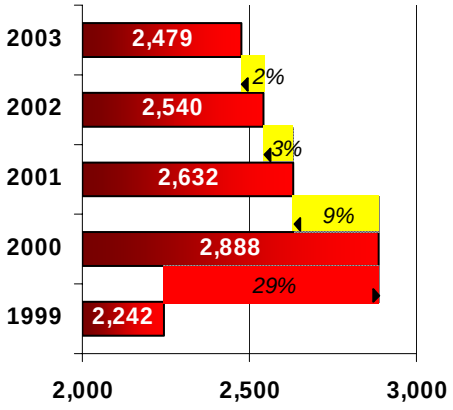


EXHIBIT 35

Heavy Rail Accidents by Type: 1999 to 2003 per 10M Passenger Trips

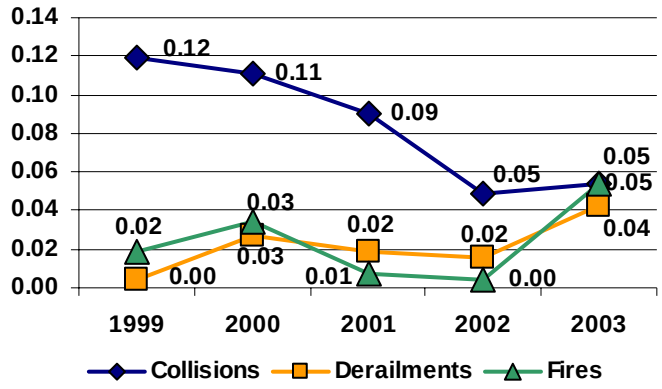
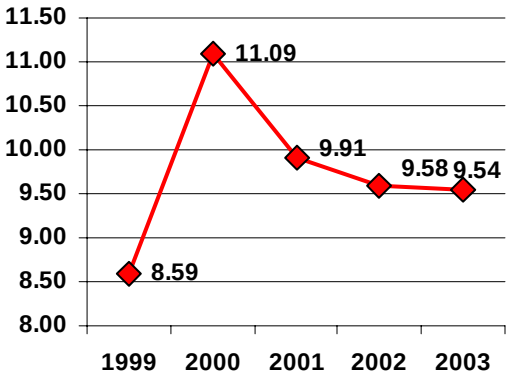


EXHIBIT 36

Heavy Rail "Other" Accidents: 1999 to 2003 per 10M Passenger Trips

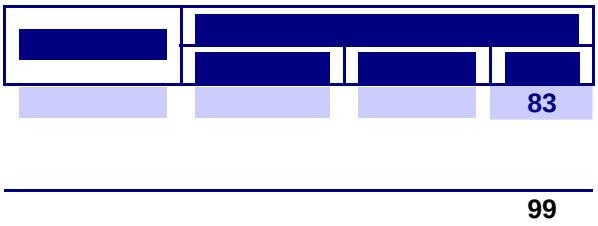


Fatalities

- In 2003, there were four heavy rail fatalities resulting from collisions, an increase from 2002, but still below the five-year average of 5.4 fatalities per year (Exhibit 39).
- There were no heavy rail fatalities caused by derailments or fires over the last five years (Exhibit 39).
- Heavy rail fatalities caused by "Other" accidents increased by 30 percent to 26 fatalities in 2003, from 20 fatalities in 2002 (Exhibit 39).

EXHIBIT 37

Heavy Rail Fatalities Table: 2003



** Includes suicides and trespassing-related deaths*

EXHIBIT 38

Heavy Rail Fatalities: 2003

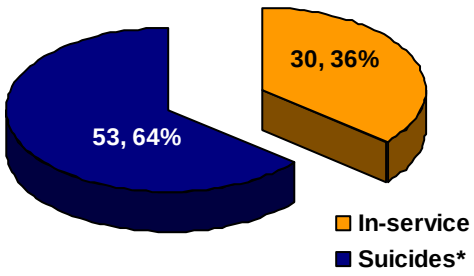
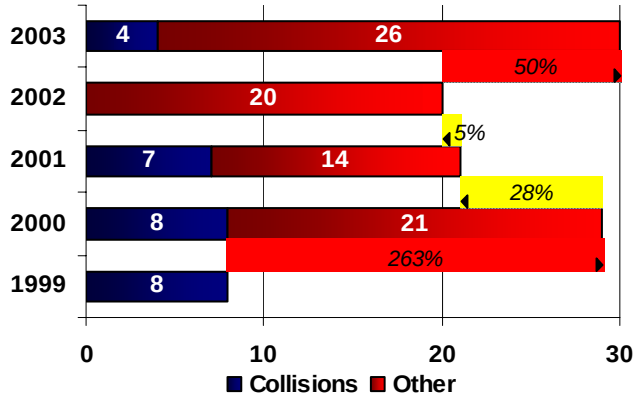


EXHIBIT 39

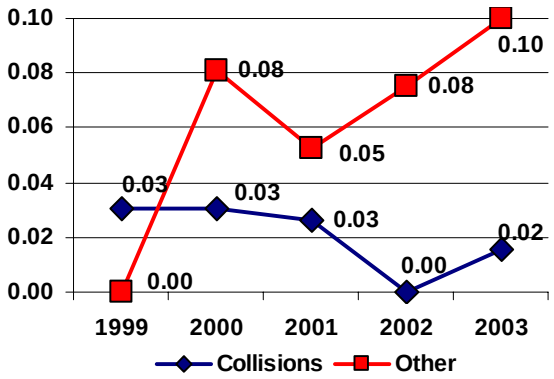
Heavy Rail Fatalities* by Accident Type: 1999 to 2003



** excluding suicides and trespassing-related deaths*

EXHIBIT 40

Heavy Rail Fatalities* by Accident Type: 1999 to 2003 per 10M Passenger Trips



** excluding suicides and trespassing-related deaths*

Injuries

- The heavy rail collision injury rate declined for the second straight year. The 2003 rate of 0.04 injuries per 10M passenger trips is a 33 percent decrease from 0.06 in 2002 and a 93 percent decrease from 0.61 in 2001 (Exhibit 43).
- The 10 collision-related injuries in 2003 is the lowest total in the past five years, a decline of 94 percent from 2001 (Exhibit 41).
- Heavy rail service injuries caused by fires reached a five-year high of 188 in 2003. This was due to one transit agency reporting two fires injuring 175 passengers (Exhibit 41).
- In 2003, there were no heavy rail service injuries caused by derailments for the second straight year (Exhibit 41).
- Injuries caused by "Other" accidents for heavy rail service decreased for the third straight year to 2,418, an 18 percent decrease from 2,964 in 2000 (Exhibits 42 and 44).

EXHIBIT 41

Heavy Rail Injuries by Accident Type: 1999 to 2003

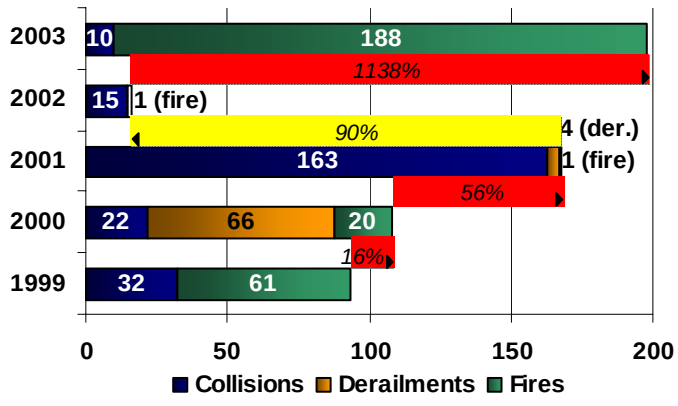


EXHIBIT 42

Heavy Rail Injuries due to "Other" Accidents: 1999 to 2003

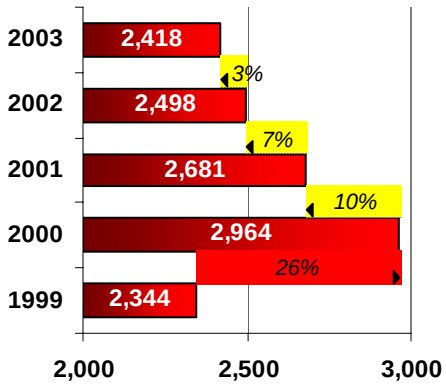


EXHIBIT 43

Heavy Rail Injuries by Type: 1999 to 2003 per 10M Passenger Trips

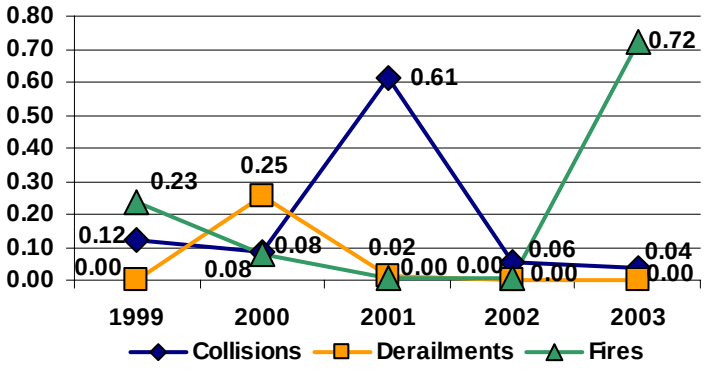
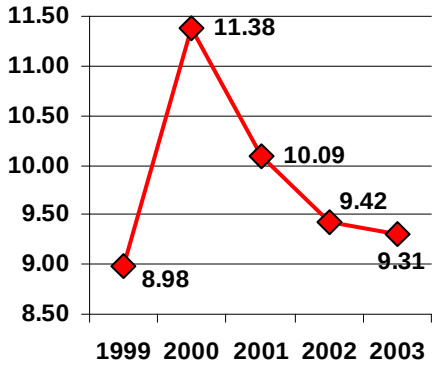


EXHIBIT 44

Heavy Rail Injuries due to "Other" Accidents: 1999 to 2003 per 10M Passenger Trips



Light Rail

Light rail includes lightweight passenger rail cars traveling singly or in short two-car trains on a fixed right of way, usually not separated from on-street traffic for much of the way. Trains are usually electrically powered.

- Light rail accidents decreased by 7 percent to 409 accidents in 2003 from 442 in 2002 (Exhibits 45 and 46).
- The light rail collision rate increased for the third straight year in 2003. The 2003 rate of 4.97 injuries per 10M passenger trips is an 18 percent increase from 4.22 in 2002 (Exhibit 47).
- While light rail derailments increased by 63 percent in 2003, the total still represents a decrease from 2000 derailment totals (Exhibits 46 and 48).
- Light rail fires decreased by 60 percent to two fires in 2003 from five in 2002 (Exhibit 46).
- Light rail "Other" accidents decreased by 19 percent to 239 accidents in 2003 from 295 in 2002 (Exhibit 45).

EXHIBIT 45

Light Rail Collisions and "Other" Accidents: 1999 to 2003

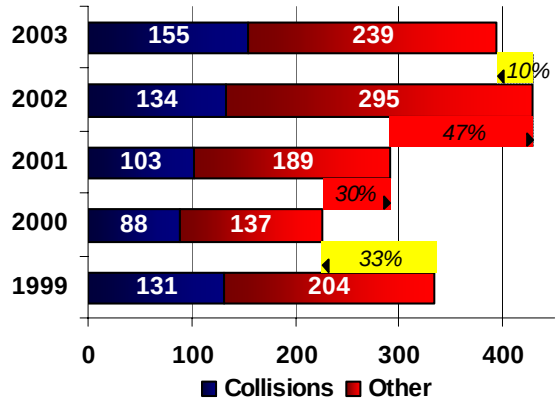


EXHIBIT 46

Light Rail Derailments and Fires: 1999 to 2003

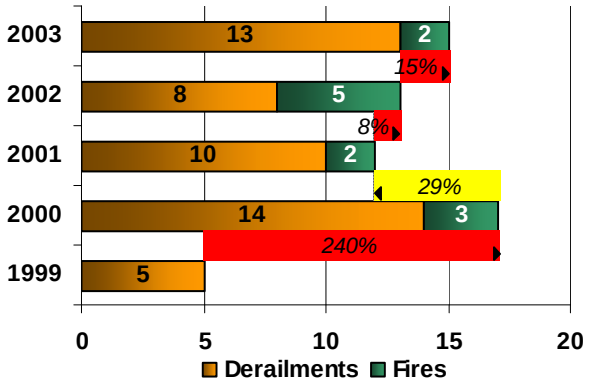


EXHIBIT 47

Light Rail Collisions and "Other" Accidents: 1999 to 2003, per 10M Passenger Trips

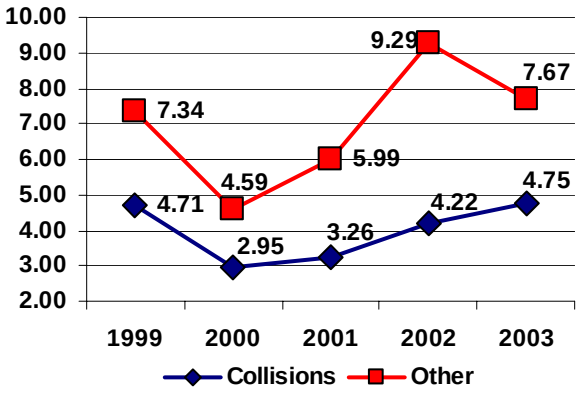
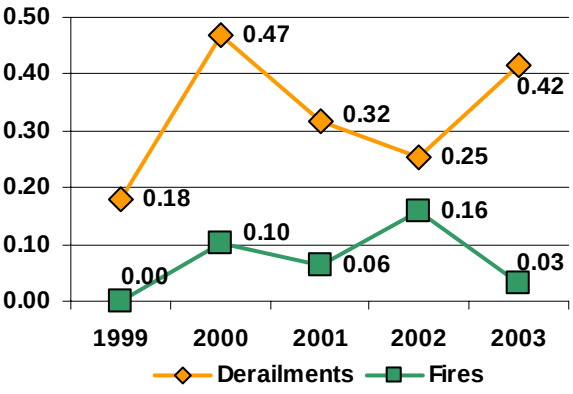


EXHIBIT 48

Light Rail Derailments and Fires: 1999 to 2003, per 10M Passenger Trips



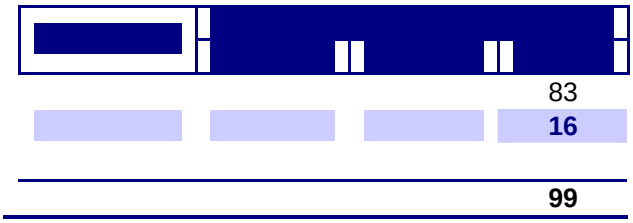
Fatalities

- In 2003, the nine "in-service" light rail fatalities total was well below the five-year average of 14 fatalities per year (Exhibit 49).
- In 2003, there were nine collision-related fatalities for light rail service; a 17 percent increase from 2002. This total is still lower than the five-year light rail collision-related fatality average of 13.2 fatalities per year (Exhibit 51).
- There were no light rail in-service fatalities caused by "Other" accidents in 2003 or 2002 (Exhibits 51 and 52).
- There were no light rail fatalities caused by derailments or fires over the last five years (Exhibits 51 and 52).

- Suicides and trespassing-related accidents accounted for 44 percent of light rail fatalities in 2003 (Exhibit 50).

EXHIBIT 49

Light Rail Fatalities Table: 2003



** Includes suicides and trespassing-related deaths*

EXHIBIT 50

Light Rail Fatalities: 2003

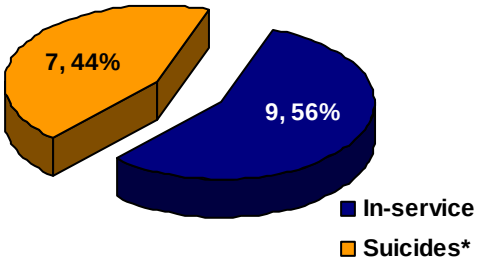
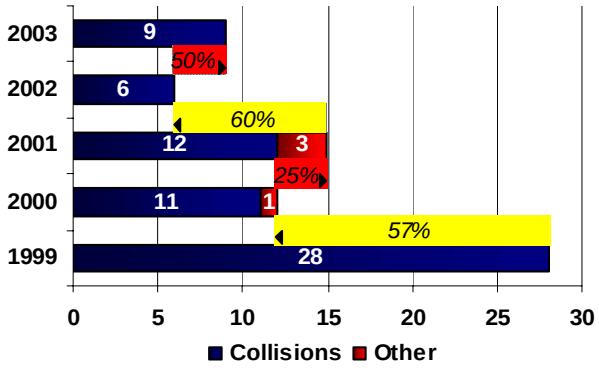


EXHIBIT 51

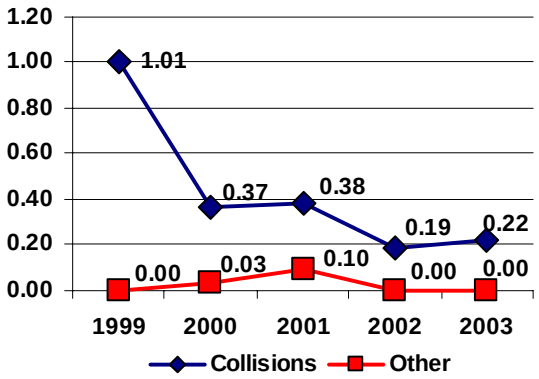
Light Rail Fatalities* by Type: 1999 to 2003



**excluding suicides and trespassing-related deaths*

EXHIBIT 52

Light Rail Fatalities*: 1999 to 2003, per 10M Passenger Trips



**excluding suicides and trespassing-related deaths*

Injuries

- Light rail service collision injuries increased for the third straight year to 209 in 2003, a five-year high (Exhibit 53).
- In 2003, there were no injuries resulting from derailments or fires (Exhibits 54 and 56).
- Injuries caused by "Other" accidents decreased to 231 accidents in 2003, a 20 percent decrease from 288 in 2002 (Exhibit 53).
- The light rail collision injury rate rose to 6.71 injuries per 10M passenger trips in 2003, an increase of 43 percent from 4.69 in 2002 (Exhibit 55).

EXHIBIT 53

Light Rail Injuries by Accident Type: 1999 to 2003

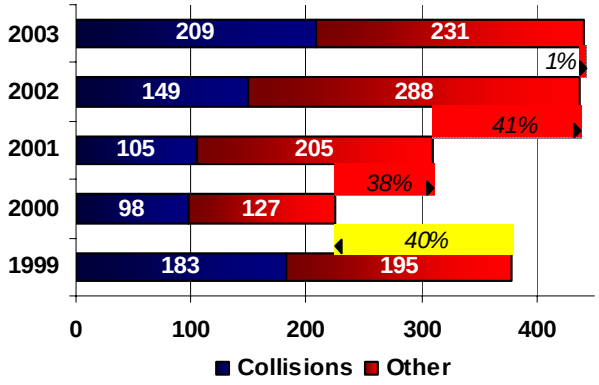


EXHIBIT 54

Light Rail Injuries due to "Other" Accidents: 1999 to 2003

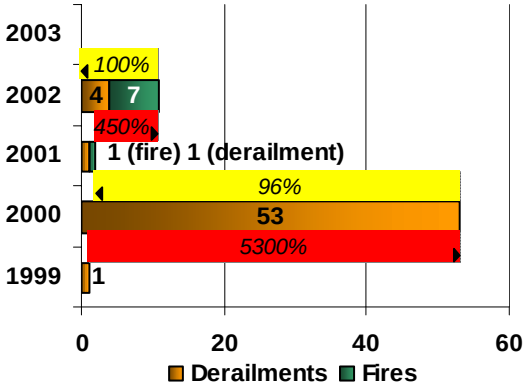


EXHIBIT 55

Light Rail Injuries by Type: 1999 to 2003, per 10M Passenger Trips

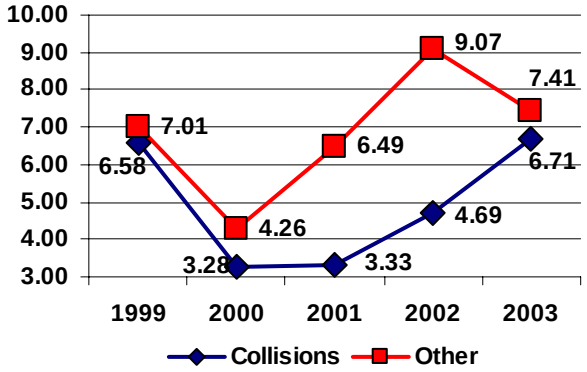
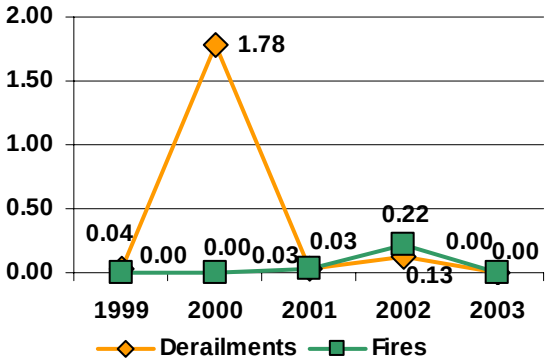


EXHIBIT 56

Light Rail Injuries by Type: 1999 to 2003, per 10M Passenger Trips



Rail Grade Crossings

Rail Grade Crossing means an intersection of highway roads, railroad tracks, or dedicated transit rail tracks that run either parallel or across mixed traffic situations with motor vehicles, light rail, commuter rail, heavy rail, trolleybus, or pedestrian traffic.

Unlike heavy rail systems, which operate largely within exclusive right-of-ways, the majority of light rail transit systems operate portions of their systems within exclusive right-of-ways on city streets, in mixed traffic, within median strips in city streets, and in pedestrian malls. This situation frequently results in numerous, roadway-light rail grade crossings. In some cases, light rail systems share grade crossings with mainline railroads.

- In 2003, there were 111 rail grade crossing accidents on light rail service, an increase of 52 percent from 73 accidents in 2002 (Exhibit 57).

- Nine fatalities in 2003 were caused by rail grade crossing accidents on light rail service. This is an increase from four fatalities in 2002, but is still 50 percent lower than the 18 fatalities reported in 1999 (Exhibit 57).
- Light rail service injuries at rail grade crossings have increased for the past three years, from a four-year low of 50 injuries in 2000 to 103 in 2003 (Exhibits 57 and 58).

EXHIBIT 57

Rail Grade Crossing Statistics: 1999 to 2003

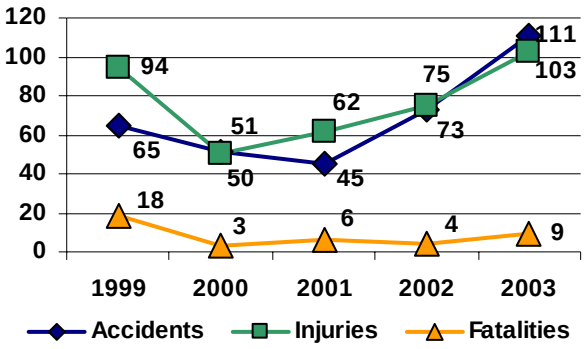
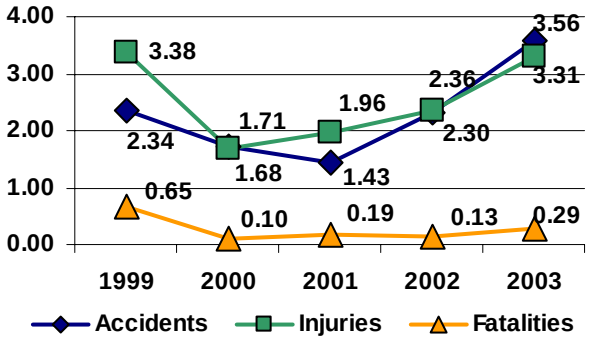


EXHIBIT 58

Rail Grade Crossing Statistics: 1999 to 2003, per 10M Passenger Trips



For reporting purposes, FTA classifies rail grade crossings into three groups:

- *Protected* – A rail grade crossing equipped with urban traffic control devices. These devices could include gates, signals, signs, bells, and other warning indicators.
- *Traffic Controlled* – An intersection of street and light rail tracks, located in a mixed traffic roadway, where the light rail vehicle follows vehicular traffic lights to govern movement through the intersection.
- *Unprotected* – An intersection of street and light rail tracks, located in a mixed traffic roadway, where the light rail vehicle does not use traffic lights or other traffic-control devices to guide movement through the intersection.

The following exhibits summarize accidents, fatalities and injuries for light rail systems at rail grade crossings (RGX) *by type of crossing* over the past three years. Highlights include:

- In 2001, 2002, and 2003, the majority of accidents and injuries occurred at traffic-controlled crossings (Exhibits 59, 60, 63, and 60).
- In 2003, fatalities at all crossing types increased (Exhibits 61 and 62).
- In 2003, injuries at protected crossings increased by 68 percent, traffic-controlled crossing injuries increased by 9 percent, and unprotected crossing injuries increased by 333 percent (Exhibit 63).

EXHIBIT 59

RGX Accidents by Crossing Type: 2001 to 2003

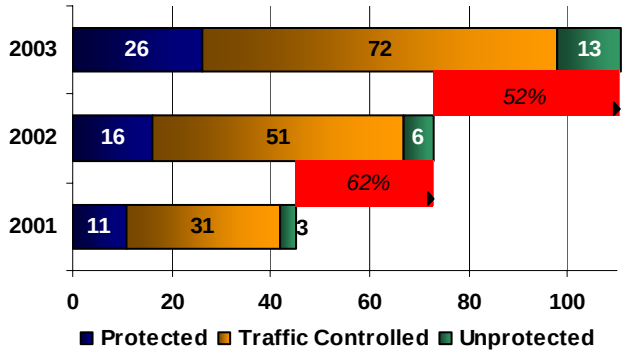


EXHIBIT 60

RGX Accident Rates by Crossing Type: 2001 to 2003, per 10M Passenger Trips

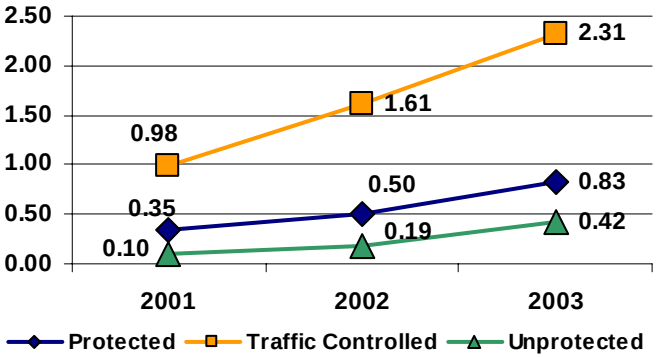


EXHIBIT 61

RGX Fatalities by Crossing Type: 2001 to 2003

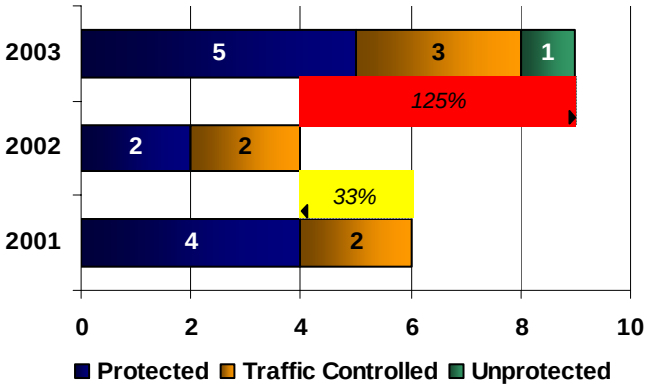


EXHIBIT 62

RGX Fatalities by Crossing Type: 2001 to 2003, per 10M Passenger Trips

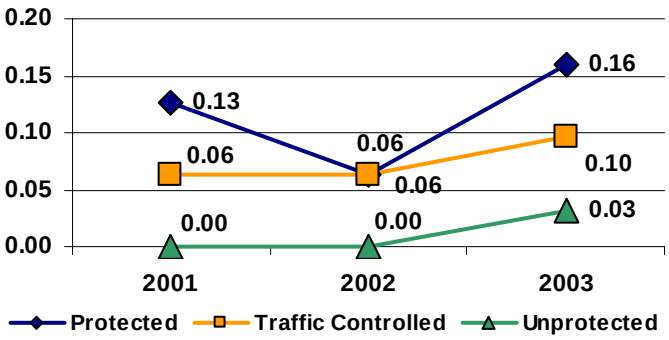


EXHIBIT 63

RGX Injuries by Crossing Type: 2001 to 2003

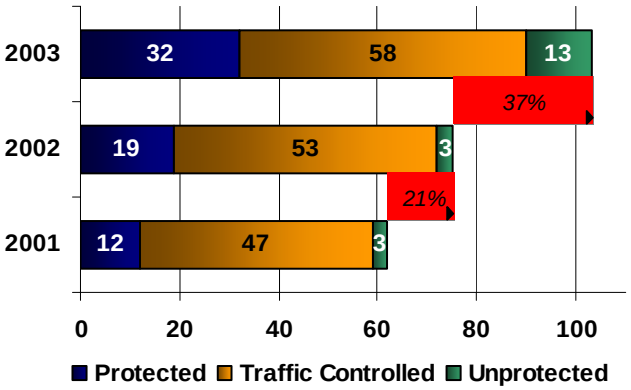
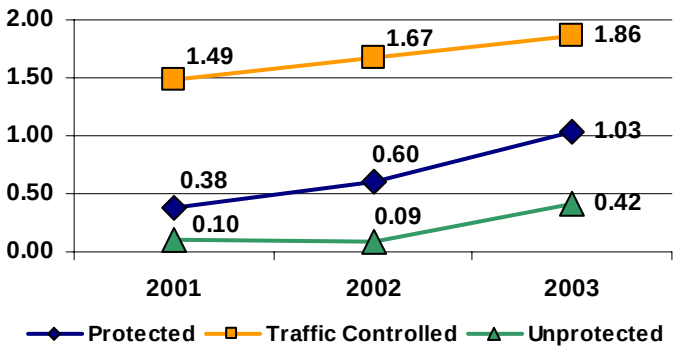


EXHIBIT 64

RGX Injuries by Crossing Type: 2001 to 2003, per 10M Passenger Trips



Other Rail

- In 2003, other rail systems reported only one accident categorized as "other" and reported no collisions, derailments, or fires (Exhibit 65).

> ***Other Rail*** systems included in the State Safety Oversight Program include four automated guideway/monorail systems, four inclined plane or funicular systems, and one cable car system.

- Other rail service systems have not experienced a single derailment or fire during the past five years (Exhibits 65 and 66).
- All accident types reported by other rail service systems have decreased dramatically in each of the past three years. In 2003, there was one accident, a 94 percent decrease from 17 accidents in 2000 (Exhibits 65 and 66).

EXHIBIT 65

Other Rail Accidents by Type: 1999 to 2003

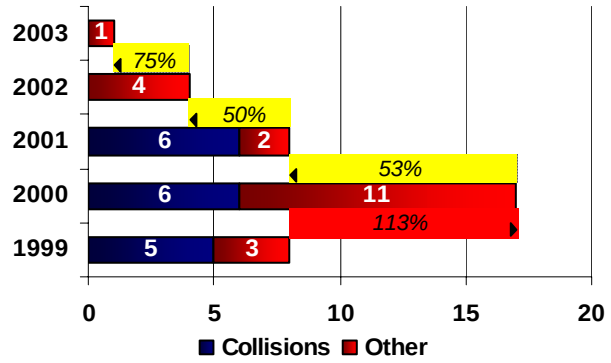
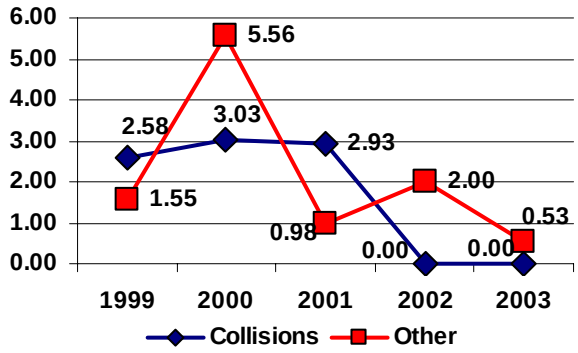


EXHIBIT 66

Other Rail Accidents by Type: 1999 to 2003, per 10M Passenger Trips



Modal Comparisons

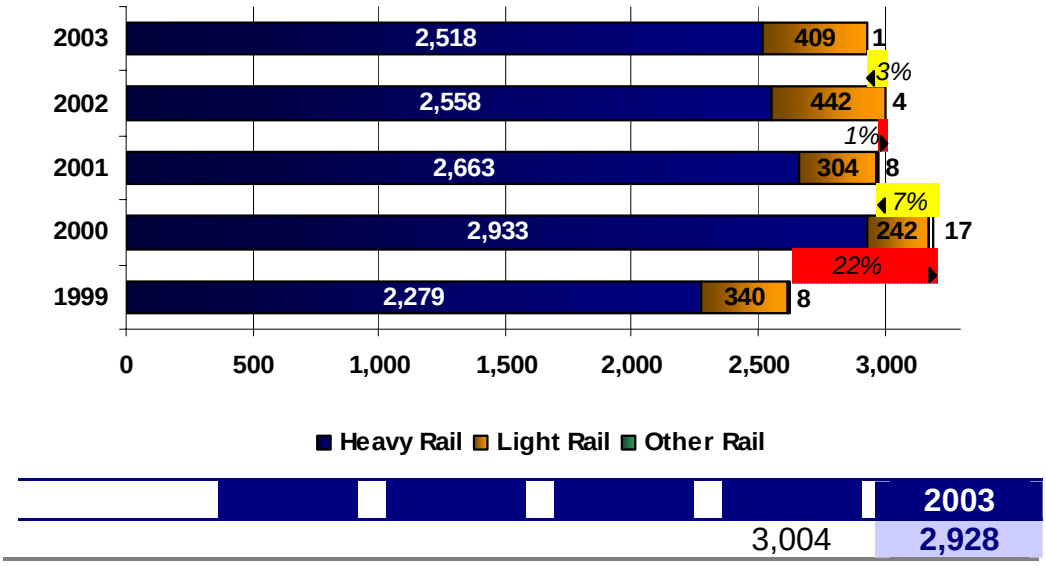
Accidents

- Heavy rail, light rail, and other rail services reported a decrease in accidents in 2003, continuing the trend of 2002 and 2001 (Exhibit 67).
- Modal comparisons of accident figures standardized by passenger trips reveal a higher rate of accidents on light rail service than heavy rail service for the second consecutive year (Exhibit 68).
- Collisions make up 38 percent of all accidents reported for light rail service and less than 1 percent of all accidents reported for heavy rail service (Exhibit 69).
- "Other" accidents account for 58 percent of the reported accidents for light rail service in 2003, a decrease of 67 percent from 2002 (Exhibit 71).

- As in 2001 and 2002, over 99 percent of heavy rail accidents are classified "Other" in 2003 (Exhibit 71).
- The one reported accident for "other" rail service (inclined plane, monorail/ automated guideway, cable car) in 2003 is classified as "Other" (Exhibit 71).

EXHIBIT 67

Reported Accidents by Mode: 1999 to 2003



2003
3,004
2,928

EXHIBIT 68

Reported Accident Rates by Mode: 1999 to 2003, per 10M Passenger Trips

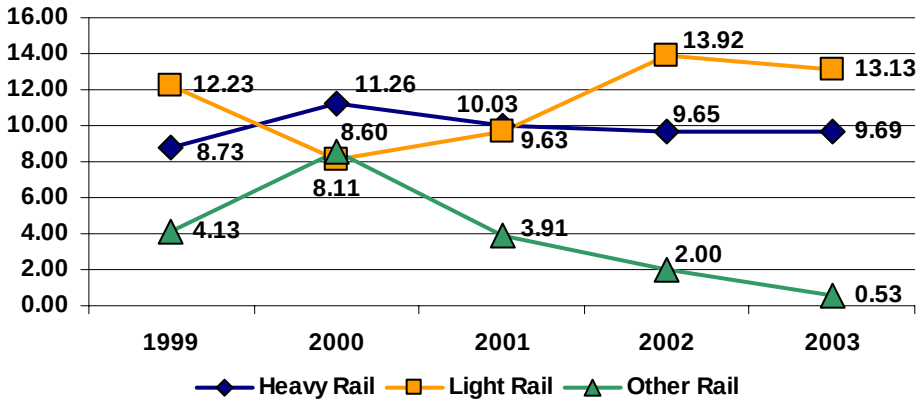


EXHIBIT 69

Collision and "Other" Accident rates by Mode: 2003, per 10M Passenger Trips

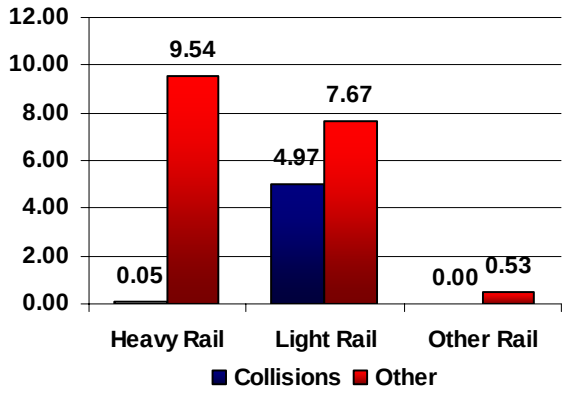


EXHIBIT 70

Derailment and Fire rates by Mode: 2003, per 10M Passenger Trips

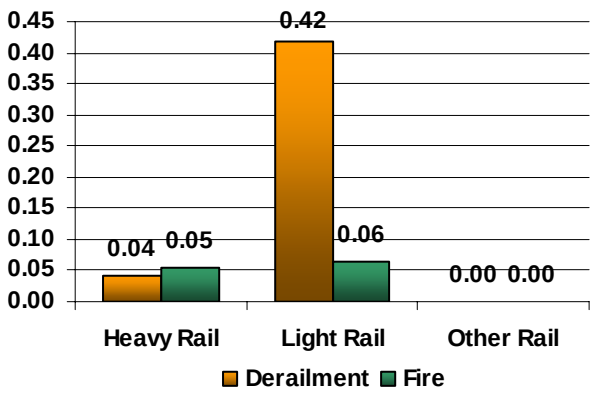
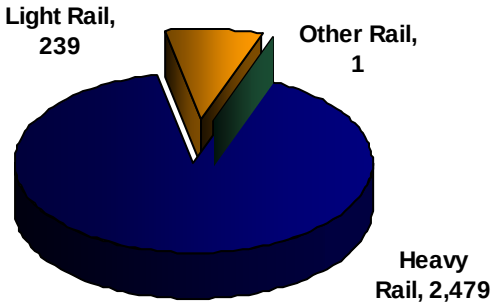


EXHIBIT 71

"Other" Accidents by Mode: 2003



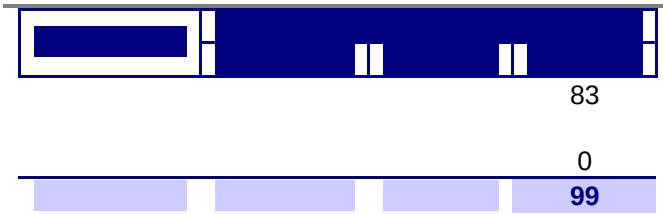
Fatalities

- In 2003, there were 39 in-service fatalities resulting from reportable accidents across all modes, a 50 percent increase from 26 fatalities in 2002 (Exhibit 72).
- In 2003, there were 60 suicides or trespassing-related events across all modes (Exhibit 72).
- Suicides or trespassing-related events accounted for 53 fatalities or 64 percent of the total heavy rail reported fatalities in 2003 (Exhibit 72).
- Suicides or trespassing-related events accounted for 7 fatalities or 44 percent of the total light rail fatalities in 2003 (Exhibit 72).
- Heavy rail service reported a 50 percent increase in in-service fatalities in 2003 from 20 fatalities in 2002 to 30 (Exhibit 73).
- Light rail service also reported an increase in in-service fatalities from 6 in 2002 to 9 in 2003, a 50 percent increase (Exhibit 73).

- Other rail service reported no fatalities for the fourth consecutive year after a fatality rate of 1.55 fatalities per 10M passenger trips (three deaths) in 1999 (Exhibits 73 and 74).
- The 2003 light rail fatality rate stayed well below its 1999 level of 1.01 per 10M passenger trips, but heavy rail fatality rate figures have been higher over the past 4 years, compared to the 1999 fatality rate of 0.03 (Exhibit 74).

EXHIBIT 72

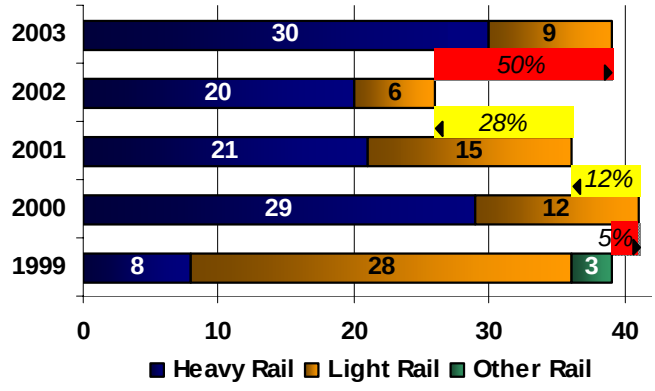
Fatalities, All Modes: 2003



** Includes suicides and trespassing-related deaths*

EXHIBIT 73

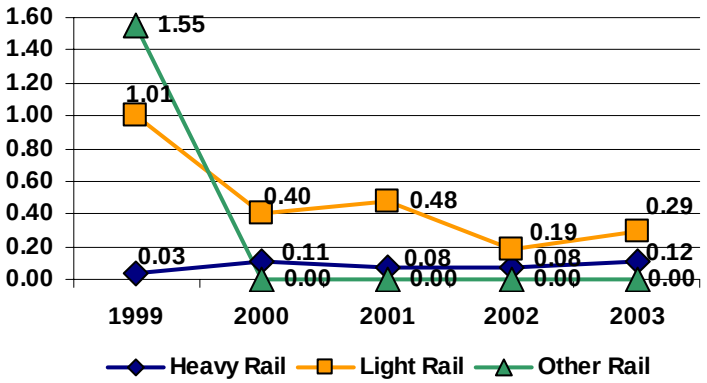
Reported Fatalities* by Mode: 1999 to 2003



** excluding suicides and trespassing-related deaths*

EXHIBIT 74

Fatality Rates* by Mode: 1999 to 2003



** excluding suicides and trespassing-related deaths*

Injuries

- In 2003, heavy rail injuries increased by 4 percent to 2,616 injuries from 2,514 in 2002, but still remained below the five-year average of 2,698 (Exhibit 75).
- Light rail injuries decreased by 2 percent to 440 injuries in 2003 from 448 in 2002 (Exhibit 75).
- For the second consecutive year, the 2003 light rail injury rate of 14.12 injuries per 10M passenger trips was higher than the heavy rail injury rate of 10.07. This trend is the opposite of 2000 and 2001 figures, when heavy rail reported more injuries per passenger trip than light rail (Exhibit 76).
- The other rail injury rate for 2003 increased by 260 percent to 5.20 injuries per 10M passenger trips from the 2002 rate of 2.00. This increase is due to the mode's one

reported accident of 10 injuries, which severely impacted the injury rate because of the mode's small ridership numbers (Exhibit 76).

- There were no injuries caused by derailments in 2003 (Exhibits 77 and 78).
- In 2003, light rail systems reported that 48 percent of injuries were collision-related (209 collisions). Heavy rail reported that less than 1 percent of injuries were collision-related (10 collisions) (Exhibit 77).
- Heavy rail systems reported 2,418 injuries that were the caused by "Other" accidents in 2003. This total represents over 99 percent of all injuries reported by heavy rail systems (Exhibit 78).

EXHIBIT 75

Reported Injuries by Mode: 1999 to 2003

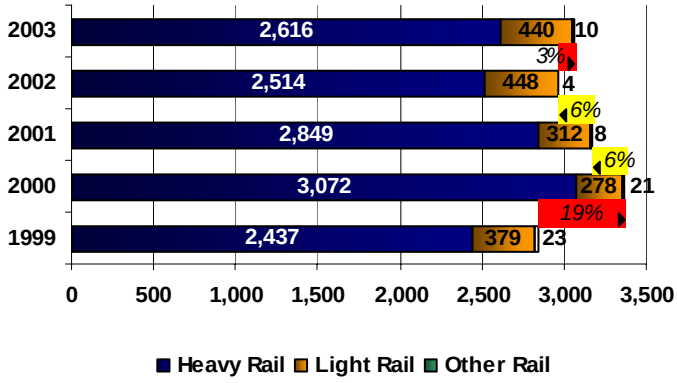


EXHIBIT 76

Injury Rates by Mode: 1999 to 2003, per 10M Passenger Trips

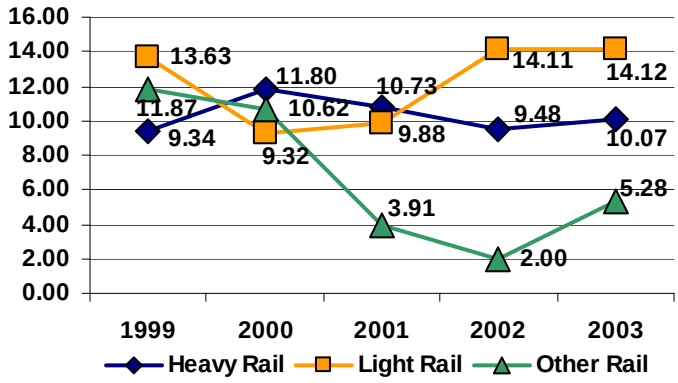
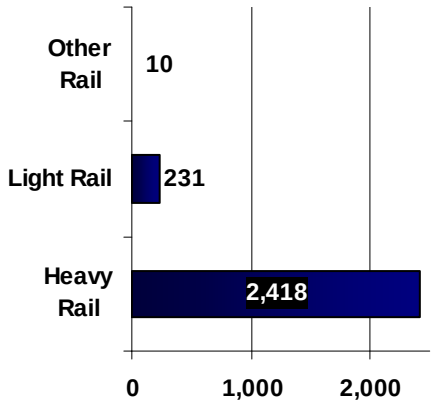


EXHIBIT 77

Reported Injuries due to Collisions and Fires by Mode: 2003

EXHIBIT 78

Reported Injuries due to "Other" Accidents by Mode: 2003

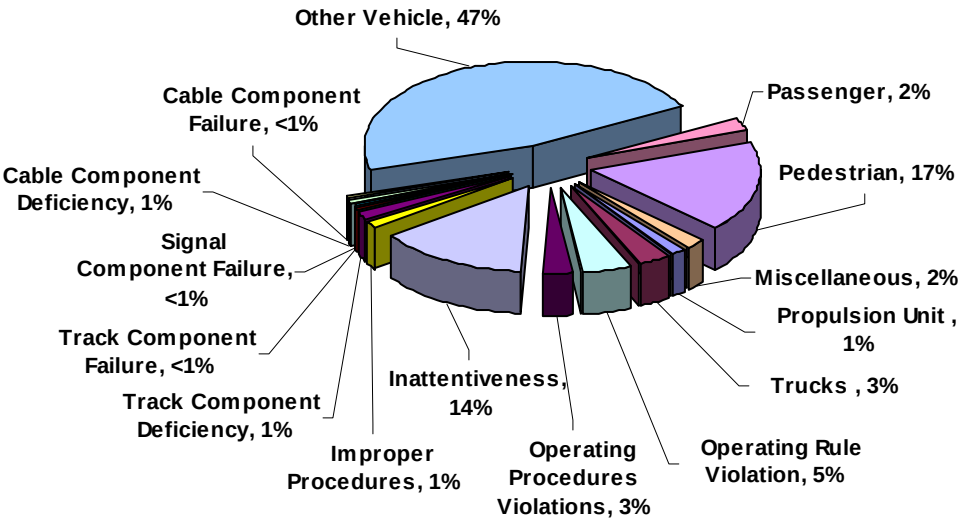


Probable Cause

Exhibit 79 illustrates probable causes for all 209 reported Collisions, Derailments, and Fires. The chart does not include "Other" accidents.

EXHIBIT 79

Determined Probable Causes of Reported Collisions, Derailments, and Fires: 2003



209 Accidents

(includes collisions, derailments, and fires)

- The percentage of collisions, derailments and fires caused by Other Vehicles decreased slightly from 48 percent in 2002 to 47 percent in 2003.
- The percentage of collisions, derailments, and fires caused by Pedestrians increased slightly from 16 percent in 2002 to 17 percent in 2003.
- Pedestrians and Other Vehicles caused 64 percent of total collisions, derailments, and fires, compared to 64 percent in 2002 (105 accidents), 58 percent in 2001 (83 accidents), and 49 percent in 2000 (86 accidents).
- The percentage of collisions, derailments, and fires caused by Inattentiveness rose in 2003 to 14 percent from 10 percent in 2002.

Exhibit 80 is a more detailed analysis of the probable causes of the 209 reported collisions, derailments, and fires in 2003.

EXHIBIT 80

Determined Probable Causes of Reported Collisions, Derailments, and Fires by Mode: 2003

						0%
Propulsion Unit						**50%**
						0%
Human Failure						0%
						0%
Drug/Alcohol Violation						0%
						0%
Inattentiveness						0%
						0%
Improper Procedures						0%
						0%
Track Component Failure						0%
						0%
Signal Component Failure						0%
						0%
Cable Component Failure						**50%**
						0%
Passenger						0%
						0%
Miscellaneous						0%
						2

- In 2003, Pedestrians and Other Vehicles caused 80 percent of all light rail collisions (123 collisions) a slight increase from 77 percent in 2002 (103 collisions), and still greater than 71 percent in 2001 (96 accidents).
- Human Failure (includes Operating Rule Violations, Operating Procedures Violations, and Inattentiveness) caused only 7 percent of all heavy rail collisions in 2003 (one accident), a decrease of 45 percent from 2002 (6 accidents).
- Operating Rule Violations caused 38 percent of light rail derailments in 2003 (five accidents) and operating procedures violations caused 45 percent of heavy rail derailments (5 accidents).
- Propulsion Units caused two heavy rail fires (14 percent) and one light rail fire (50 percent) in 2003.
- There were no reported accidents attributed to the following probable causes in 2003:
  - Car Body
  - Drug/Alcohol Violation
  - Fatigue
  - Crowd Control
  - Signals Component Deficiency

"Other" accidents account for 93 percent of all accidents reported to FTA in 2003. Exhibit 81 lists "Other" accident probable causes by mode.

EXHIBIT 81

Fatalities and Injuries due to "Other" Accidents by Mode: 2003

				65, 2%
Slips, Trips, and Falls in Station	1601, 65%	95, 40%	0, 0%	1696, 62%
				46, 2%
Car Door Injuries	28, 1%	18, 8%	0, 0%	46, 2%
				201, 7%
Homicides/Assaults	6, 0%	3, 1%	0, 0%	9, 0%
				31, 1%
Other	593, 24%	31, 13%	1, 100%	625, 23%
				2719

U. S. Department of Transportation
Federal Transit Administration
Office of Safety and Security

State Safety
Oversight
Program

ANNUAL REPORTING TEMPLATE

2003

1. State Safety Oversight Contact Information

Please complete Tables 1 and 2, providing your agency's contact information.

Table 1 – State Contact Information	
Name of Agency:	**Name of Safety Contact:**
Title:	**Mailing Address:** **Physical Address (if different from mailing address):**
Phone: **Fax:** **Email:**	

Table 2 – RFGS Contact Information					
Name of Agency (acronym)	**Safety Contact**	**Mailing Address**	**Phone Number**	**Fax Number**	**Email**
Name of Agency (acronym)	**Security Contact**	**Mailing Address**	**Phone Number**	**Fax Number**	**Email**

2. State Safety Oversight Program Resources

Table 3 – Program Resources	
Personnel Resources	**Response**
What was the Level of Effort (LOE) devoted by your State Safety Oversight Agency, in terms of Full-time Equivalents (FTEs), to implementing 49 CFR Part 659 requirements in 2003?	*Please specify to the nearest decimal place. For example, one FTE is 1.0; one-and-a-half FTEs is 1.5; two-and-a-quarter FTEs is 2.25, etc.* _____ FTE(s)
In 2002, did your Agency use contractors to support implementation of your Program?	*Please circle appropriate answer*: Yes No
If your Agency used contractors in 2003, what functions did they perform?	*Please list activities performed by consultants*:

3. State Safety Oversight Program Documentation

Please provide the date of the current version of your agency's Program Standard. Also, in the space below, please provide dates of the current versions of the System Safety Program Plan and Security Plan of the RFGS(s) in your jurisdiction.

Date of latest System Safety Program Standard revision: _____

Table 4 – RFGS Program Documentation Revisions		
RFGS / Mode	**Date of Latest Revision of System Safety Program Plan**	**Date of Latest Revision of Security Plan**

4. FTA Reportable Accidents

In the tables below, please provide the total number of accidents that meet the FTA threshold for reportable accidents for each RFGS in your jurisdiction. If a transit agency operates more than one mode (light rail and heavy rail, for example) then give the results for each mode.

Table 5 – Calendar Year 2003 FTA Reportable Accidents

RFGS	Mode	Collisions[1]	Derailments	Fires	Other[2]	Total
Accident Totals:						

[1] Includes collisions that occur at rail grade crossings and elsewhere on the system: train to train; train to vehicle; train to object; and train to individual collisions – **Does not include suicide or trespassing-related accidents**.

[2] Includes suicide and trespassing-related accidents; slips, trips, and falls in the station; boarding/deboarding accidents; door injuries; escalator/stairwell-related accidents; homicides; assaults; and other single-person accidents that are not considered a Collision, Derailment, or Fire.

5. Rail Grade Crossing Collisions

Of the Collisions reported in Table 5, some of the accidents may have occurred at rail grade crossings. Please indicate the total number of rail grade crossing collisions for each RFGS in your jurisdiction by type of grade crossing and include the total number of resulting injuries and fatalities.

Table 6 – Location of FTA Reportable Rail Grade Crossing Collisions

RFGS / Mode	Protected Rail Grade Crossing			Traffic-controlled Rail Grade Crossing			Unprotected Street-Running Grade Crossing			Totals		
	Accidents	Injuries	Fatalities	Accidents	Injuries	Fatalities	Accidents	Injuries	Fatalities	Accidents	Injuries	Fatalities
Totals												

Protected Rail Grade Crossing -- A rail grade crossing equipped with urban traffic control devices. These devices could include gates, signals, signs, bells, and other warning indicators.

Traffic-controlled Rail Grade Crossing -- An intersection of street and light rail tracks, located in a mixed traffic roadway, where the light rail vehicle follows vehicular traffic lights to govern movement through the intersection.

Unprotected Street-running Grade Crossing -- An intersection of street and light rail tracks, located in a mixed traffic roadway, where the light rail vehicle does not use traffic lights or other traffic-control devices to guide movement through the intersection.

6. Probable Cause

Please complete one table for each RFGS mode of service. **For example, if an RFGS provides both heavy and light rail service, please complete one table for the agency's heavy rail service and one for the agency's light rail service. For each probable cause table, please provide the total of number of accidents associated with each probable cause type. "Other" accidents reported in Table 5** are not reported in this table.

Table 7 – Probable Causes of FTA Reportable Collisions, Derailments, and Fires

RFGS:	Collisions			Derailments			Fires			Total*		
Mode:	Accidents	Injuries	Fatalities	Accidents	Injuries	Fatalities	Accidents	Injuries	Fatalities	Accidents	Injuries	Fatalities
Car Equipment Failure												
Body (including doors, frame, stairs)												
Propulsion Unit (power unit failure)												
Trucks (wheel/brake failure)												
Human Failure												
Operating Rule Violation												
Operating Procedures Violations												
Drug/Alcohol Violation												
Fatigue												
Inattentiveness												
Operations												
Crowd Control												
Improper Procedures												
Track												
Track Component Deficiency												
Track Component Failure												
Signal												
Signal Component Deficiency												
Signal Component Failure												
Cable												
Cable Component Deficiency												
Cable Component Failure												
Other Vehicle												
Passenger												
Pedestrian												
Not listed above (specify)												
Accident Category Totals:												

* **Does not include "Other" FTA Reportable Accidents – enter this information in Table 9.**

6a. Probable Cause of Rail Grade Crossing Collisions

Of the Collisions and respective Probable Causes reported in Table 7, some of the accidents may have occurred at rail grade crossings. Table 8 collects the probable cause data for this subset of Collisions. Please complete one table for each RFGS mode of service that reported any rail grade crossing collisions.

Table 8 – Probable Causes of Rail Grade Crossing Collisions

RFGS:	Protected Rail Grade Crossing			Traffic-controlled Rail Grade Crossing			Unprotected Street-Running Grade Crossing			Totals		
Mode:	Accidents	Injuries	Fatalities	Accidents	Injuries	Fatalities	Accidents	Injuries	Fatalities	Accidents	Injuries	Fatalities
Car Equipment Failure												
Body (including doors, frame, stairs)												
Propulsion Unit (power unit failure)												
Trucks (wheel/brake failure)												
Human Failure												
Operating Rule Violation												
Operating Procedures Violations												
Drug/Alcohol Violation												
Fatigue												
Inattentiveness												
Operations												
Crowd Control												
Improper Procedures												
Track												
Track Component Deficiency												
Track Component Failure												
Signal												
Signal Component Deficiency												
Signal Component Failure												
Cable												
Cable Component Deficiency												
Cable Component Failure												
Other Vehicle												
Passenger												
Pedestrian												
Not listed above (specify)												
Rail Grade Crossing Totals:												

6b. Probable Cause of "Other" Accidents

Please complete one table for each RFGS mode of service. For example, if an RFGS provides both heavy and light rail service, please complete one table for the agency's heavy rail service and one for the agency's light rail service. For each probable cause table, please provide the total of number of accidents associated with each probable cause type. **Accidents reported in this table SHOULD NOT BE REPORTED in Table 7 or Table 8.**

Table 9 – Probable Causes of "Other" Accidents

NOTE: Please complete one table for each RFGS mode of service. For example, if an RFGS provides both heavy and light rail service, please complete one table for the agency's heavy rail service and one for the agency's light rail service.

RFGS:	"Other" Accidents		
Mode:	**Accidents**	**Injuries**	**Fatalities**
Suicides			
Suicide Attempts			
Slips, Trips and Falls in Station			
Boarding/Deboarding Train			
Car Door Injury			
Escalators/Stairwells			
Homicides			
Assaults			
Trespassing			
Other (specify)			
Total Other Accidents			

* should equal the total for "Other" Accidents in Table 5.

7. Unacceptable Hazardous Conditions

For each RFGS mode of service, please report each hazardous condition determined to be unacceptable and the identified probable cause.

Table 10 – Unacceptable Hazardous Conditions and Probable Causes		
RFGS and Mode	**Unacceptable Hazardous Condition**	**Identified Probable Cause***

* For example: maintenance issue, design issue, procedural issue, etc.

8. State Safety Oversight Program Administration and Corrective Actions

Did your Agency conduct a Three-year Safety Review of any RFGS within your jurisdiction in Calendar Year 2003?	(Circle)	*Yes*	*No*
If "yes," for which RFGS did your Agency conduct this Review?	Please list:		
Did your Agency receive an Annual Report from each RFGS within your jurisdiction describing the Internal Safety Audit Process conducted in 2003?	(Circle)	*Yes*	*No*
If "no," please explain why this report was not received.	*Explanation:*		

In Tables 12, 13, and 14, please give the number of Corrective Action Plans (CAP) that your agency required and approved and the number of CAPs that have been implemented as a result UHC Investigations, Three-Year Safety Reviews, and the Internal Safety Audit Process.

Table 12 – Corrective Action Plans Resulting From Accident And Unacceptable Hazardous Conditions Investigations

RFGS	Number of CAPs your agency required for 2003 FTA-reportable Accidents	Number of CAPs Received and approved	Number of CAPs implemented to completion

Table 13 – Corrective Action Plans Resulting From Three-Year Safety Reviews			
RFGS	**Number of CAPs your agency required for 2003 resulting from 3-year Safety Reviews**	**Number of CAPs Received and approved**	**Number of CAPs implemented to completion**

Table 14 – Corrective Action Plans Resulting From Internal Safety Audit Process			
RFGS	**Number of CAPs your agency required for 2003 resulting from ISAP**	**Number of CAPs Received and approved**	**Number of CAPs implemented to completion**