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2023 TRANSIT SAFETY PLAN

Massachusetts Bay Transportation
Authority



Applicability

The development and implementation of this safety plan applies to all MBTA directly operated and contract activities related to:

- Heavy Rail;
- Light Rail;
- Bus; and
- Paratransit Service.

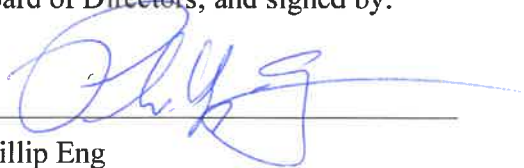
MBTA passenger ferry operations regulated by the United States Coast Guard (USCG), as well as rail fixed guideway public transportation service regulated by the Federal Railroad Administration (FRA) are not subject to the requirements set forth in this safety plan.

This plan is intended to provide information on MBTA's Safety Management System.

Although MBTA's Transit Safety Plan complies with 49 CFR Part 673 and 220 CMR 151, the regulations allow for a multi-year implementation period. During the SMS implementation process, acceptance of this Transit Safety Plan by the Department of Public Utilities and the Federal Transit Administration does not constitute approval or acceptance of any process or component of the SMS. Refer to the SMS Implementation Plan and phases found in the preface of this plan for the status of each SMS process/component. MBTA employees and contractors are required to comply with the policies and procedures as they are being implemented during the SMS phases contained within this plan.

Approvals

The MBTA Transit Safety Plan composed within this document has been reviewed and approved by the MBTA Board of Directors; and signed by:



Phillip Eng

General Manager and SMS Accountable Executive

9/1/23

Date

MBTA's Joint Labor-Management Safety Committee (JLMSC), established in accordance with requirements of the 2021 Bipartisan Infrastructure Law, approved this plan by consensus on August 21, 2023. MBTA's Board of Directors approved this plan by vote on August 24, 2023.

TABLE OF CONTENTS

PRF 1	SAFETY MANAGEMENT POLICY STATEMENT.....	7
PRF 2	MBTA SMS IMPLEMENTATION.....	9
1	INTRODUCTION	12
1.1	MBTA Transit Safety Plan Purpose.....	13
1.2	MBTA Transit Safety Plan Scope.....	13
1.3	Federal, State, and Local Authority	13
1.4	Plan Review, Revision, and Approval	16
2	SMS SUPPORTING ELEMENTS	19
2.1	Safety Culture.....	19
2.2	MBTA Strategic Plan.....	20
2.3	Emergency Management Plan.....	21
2.4	Transit Asset Management Plan.....	21
2.5	Occupational Health and Safety Plan.....	22
2.6	MassDOT/MBTA Railroad System Safety Program Plan.....	22
2.7	Documentation and Records Management	23
2.8	Temporarily Suspension of Safety Programs.....	24
3	SAFETY PERFORMANCE.....	25
3.1	MBTA Safety Performance Targets.....	25
3.2	Safety and State of Good Repair	30
3.3	Coordination with MPOs	30
4	ORGANIZATIONAL STRUCTURE & RESPONSIBILITIES	31
4.1	Key Safety Management Responsibilities.....	31
4.2	Safety Management Committee Structure	34
5	SAFETY RISK MANAGEMENT	38
5.1	Application of Safety Risk Management	38
5.2	Safety Risk Management Process	41
5.3	Hazard Tracking System	50
5.4	Safety Risk Management – Safety Assurance Interaction	51
6	SAFETY ASSURANCE.....	52
6.1	System Operation/Monitoring.....	53

6.2	Data Collection.....	53
6.3	Data Analysis	60
6.4	Safety Performance Assessments.....	61
6.5	Continuous Improvement.....	63
7	SAFETY PROMOTION.....	66
7.1	Safety Culture.....	66
7.2	Safety Communication.....	67
8	SAFETY TRAINING	68
8.1	Personnel Directly Responsible for Safety Oversight.....	68
8.2	Personnel Directly Responsible for Safety.....	70
8.3	MBTA SMS-Related Training Courses	71
	ACRONYMS.....	75
	DEFINITIONS.....	77
	Department SMS Support Plans	85
	BUS MAINTENANCE DEPARTMENT.....	86
	BUS OPERATIONS DEPARTMENT	89
	CAPITAL DELIVERY DEPARTMENT.....	91
	ENGINEERING & MAINTENANCE DIRECTORATE	93
	RAIL VEHICLE MAINTENANCE DEPARTMENT.....	95
	TRANSIT RAIL OPERATIONS DEPARTMENT.....	97
	PARATRANSIT SERVICES.....	101
	SAFETY ASSESSMENT DECISION TOOL.....	102
	MBTA REFERENCE DOCUMENTS	104
	REFERENCED STANDARDS AND GUIDANCE DOCUMENTS	105
	REFERENCED SAFETY STANDARD OPERATING PROCEDURES	106

List of Tables and Figures

Figure 1: Safety Management Decision-making Process 12

Figure 2: Transit Safety Plan Review and Approval Process 17

Figure 3: MBTA Safety-Related Plans 21

Figure 4: FTA’s TAM – SMS Infographic 22

Table 1: SMS Documentation and Recordkeeping 24

Table 2: Summary of Safety Performance Targets for CY2023 & CY2024 26

Table 3: Fatality Safety Performance Targets 27

Table 4: Injury Safety Performance Targets 28

Table 5: Safety Events Performance Targets 29

Table 6: System Reliability Safety Performance Targets 30

Figure 5: Safety Management Committee Structure 35

Figure 6: Safety Management Decision-making Process 38

Table 7: Risk Severity Categories and Levels 44

Table 8: Risk Probability Levels 46

Table 9: Risk Assessment Matrix 47

Table 10: Risk Acceptance Table 49

Figure 7: Safety Management Decision-making Process 51

Figure 8: Safety Management Decision-making Process 52

Figure 9: Safety Training Courses Supporting MBTA’s SMS 71

Table 11: MBTA-Controlled Documents Supporting MBTA’s Overarching Safety Program 104

PRF 1

SAFETY MANAGEMENT POLICY STATEMENT

Presented on the next page

2023 Safety Policy Statement

Massachusetts Bay Transportation Authority (MBTA) is dedicated to providing safe and reliable service to our communities and customers. We are committed to developing, implementing, maintaining, and continually improving our processes to ensure that all transit service delivery activities occur under a balanced allocation of resources that support our safety performance objectives and cultivate a strong organizational safety culture. Overall, our safety objectives include ensuring employee and passenger safety, continually improving safety performance by setting safety performance targets, and implementing our Safety Management System (SMS) program. The SMS provides the foundation for achieving our safety objectives and improving our safety culture.

All levels of management and all employees are accountable for the delivery of exceptional safety performance, starting with the General Manager (GM). MBTA integrates the management of safety among the primary responsibilities of all managers and employees, as defined in all MBTA job descriptions. In addition, our safety committees support SMS through safety risk management, safety assurance, and safety promotion activities. Our highest level safety committees, the Joint Labor-Management Safety Committee and Safety Management Review Committee, foster a cooperative relationship between labor and management to identify safety risk mitigations, set safety performance targets, and review and approve the Transit Safety Plan.

To promote an effective and sustainable safety culture and SMS throughout the entire organization, MBTA is committed to the following:

- **Work** to mature our SMS by enacting changes required by the 2021 Bipartisan Infrastructure Law and 2022 FTA Safety Management Inspection.
- **Support** the management of safety through the provision of appropriate resources, that will result in an organizational culture that fosters safe practices, encourages effective employee safety reporting and communication, and actively manages safety with the same attention to results as the attention to the results of the other management systems of the organization.
- **Deliver** a comprehensive suite of job-specific safety training to the MBTA workforce.
- **Ensure** that all staff are provided with adequate and appropriate safety related information and training, are competent in safety management matters and are allocated only tasks commensurate with their skills.
- **Improve** our hazard identification, reporting, and risk management processes to eliminate and/or mitigate safety risks to achieve continuous improvement of MBTA's safety performance.
- **Improve** and promote employee engagement in hazard identification and reporting, including the communication methods for employees to voluntarily report safety concerns or recommendations without fear of reprisal or disciplinary action. *Willful* disregard for safety is unacceptable and subject to disciplinary action as outlined in MBTA policies and rules.
- **Enhance** our safety investigation efforts and outputs by focusing on full implementation of our Safety Event Investigation Manual and supporting procedures.
- **Improve** the organization and function of our safety committees to support SMS processes.
- **Leverage** safety data technologies and reporting products to support and inform decision-making at all levels of the organization.
- **Establish and maintain** workplace safety programs that meet or exceed state and federal standards.

Approved by:



Date

8/23/23

Phillip Eng

MBTA General Manager and SMS Accountable Executive



PRF 2 MBTA SMS IMPLEMENTATION

In alignment with FTA SMS regulations and guidance material, MBTA is implementing its SMS in three phases. These phases correspond to three components of SMS: Safety Management Policy, Safety Risk Management, and Safety Assurance. The fourth SMS component, Safety Promotion, is embedded throughout these phases because it encompasses safety communication and safety training, ongoing activities that occur throughout all phases of SMS implementation.

Each of the three phases involves tasks and activities that, once completed, will signify that the objectives of that SMS implementation phase have been achieved. Phases 1 through 3 list tasks and activities to be completed in each stage of MBTA's SMS implementation.

In 2022, FTA's Safety Management Inspection (SMI) of the MBTA identified a range of findings and recommended actions related to SMS implementation, including safety risk management and assurance activities, promotion of employee hazard reporting methods, resource allocation to support departmental safety responsibilities, use of safety data to support leadership decision-making, and employee safety meeting outcomes. The tasks identified under each phase of SMS implementation in this plan, as well as in the SMS Implementation Plan, are closely interrelated with the findings, recommendations, and Corrective Action Plans (CAP) emerging from the SMI.

Future stages of MBTA's ongoing response to the SMI may include reorganization, expansion, or consolidation of specific tasks and phases of this SMS implementation process, including via revisions to the SMS Implementation Plan and associated policies, procedures, and programs. Alterations to the three-phase implementation process will be coordinated directly with FTA and DPU via ongoing meetings, deliverable submittals, and site visits to be performed in response to the SMI.

Phase 1 – Planning, Organization, and Policy Development (Completed)

Tasks completed within Phase 1 of SMS implementation included:

- Establishing an SMS Steering Committee (SMRC) and SMS Implementation Team for the implementation of SMS
- Formally designating an SMS Executive/MBTA Chief Safety Officer responsible for SMS implementation
- Conducting a review of existing safety programs at MBTA to new federal and state regulations
- Updating MBTA Safety Policy in accordance with new federal and state regulations and sharing with agency leadership
- Drafting and certifying the initial MBTA Transit Safety Plan in accordance with federal and state regulations.
- Ensuring MBTA's current voluntary, confidential, non-punitive employee safety reporting program meets federal and state regulations
- Identifying SMS accountabilities of MBTA management
- Developing a safety risk matrix to evaluate safety risks associated with service delivery operations



- Outlining essential activities and tools for the Safety Risk Management processes and Safety Assurance processes
- Identifying safety management training requirements
- Developing the infrastructure for safety and safety performance communication throughout MBTA
- Identifying safety assurance and oversight activities performed by external agencies
- Documenting objective evidence of agency leadership's commitment to ensure adequate resources are available to implement SMS
- Reviewing and updating the SMS Implementation Plan for all elements to take the MBTA through phase 3

Phase 2 – Safety Risk Management (Current Phase)

Tasks to be completed within Phase 2 of SMS implementation include:

- Develop, deliver, and document training for employees and relevant contractors on SMS and Safety Risk Management
- Procure a safety data management system and define process owners
- Improve MBTA's voluntary, confidential, non-punitive employee safety reporting program
- Ensure MBTA's Safety Committee structure fulfills the requirements of the Bipartisan Infrastructure Law (BIL) Safety Committee requirements
- Identify and develop parameters to improve Local Safety Committee meetings
- Develop guidance for Senior Management and Safety to determine appropriate risk analysis/assessment
- Refine criteria for the elevation of safety risks to Executive Management
- Develop Safety Risk Management tools for use by MBTA Safety, Executive Management, and Frontline Management
- Develop, deliver, and document training on Safety Risk Management
- Establish a comprehensive safety training program to include job training profiles and dynamic training assignments
- Review and update SMS Implementation Plan for all elements through phase 3

Phase 3 – Safety Assurance (Planning)

Tasks to be completed within Phase 3 of SMS implementation include:

- Refine safety performance monitoring and measurement activities
- Refine safety performance indicators and targets
- Fully implement MBTA's safety data management system and ensure its integration with MBTA's SRM and Safety Assurance processes
- Review and enhance the process to ensure no service delivery operations are initiated in a changed environment before the change has been evaluated for safety impacts
- Develop criteria for SMS continuous improvement
- Refine and enhance internal SMS assessment activities
- Develop, deliver, and document training on Safety Assurance



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REVISION: 3

MBTA Transit Safety Plan

PAGE: 11 of 107

- Communicate the completion of Safety Assurance tasks to relevant MBTA personnel
- Measure employee perceptions of safety and culture at the MBTA, communicate the results, and take actions related to safety culture improvement
- Complete SMS training for employees commensurate with the level of safety-related duties



1 INTRODUCTION

The Massachusetts Bay Transportation Authority (MBTA) Transit Safety Plan is a comprehensive document intended to ensure the safety of customers, employees, contractors, emergency responders, and the general public. MBTA is committed to developing forward-thinking innovation in managerial and technical safety processes. To that end, this Transit Safety Plan establishes Safety Management Systems (SMS) principles as its foundation. The four Safety Management System (SMS) components that apply to all facets of the Authority are:

- 1) **Safety Policy:** to align the entire MBTA under a safety management system for the purpose of prioritizing safety in management decision making.
- 2) **Safety Risk Management (SRM):** to implement processes that will identify, evaluate, and resolve risks; and track risk mitigations.
- 3) **Safety Assurance (SA):** to oversee that all the objectives are met through effective data collection and assessment.
- 4) **Safety Promotion:** to encourage workplace and public confidence in, knowledge of, and engagement with MBTA's commitment to ensuring safety.

These four components are the means to achieve the highest level of safety for MBTA's customers, employees, contractors, emergency responders, and the general public. Figure 1 provides a graphical view of the principal sets of processes of SMS: SRM and SA. Chapter 5 and 6 of this Safety Plan details the two processes of SRM and SA, respectively.

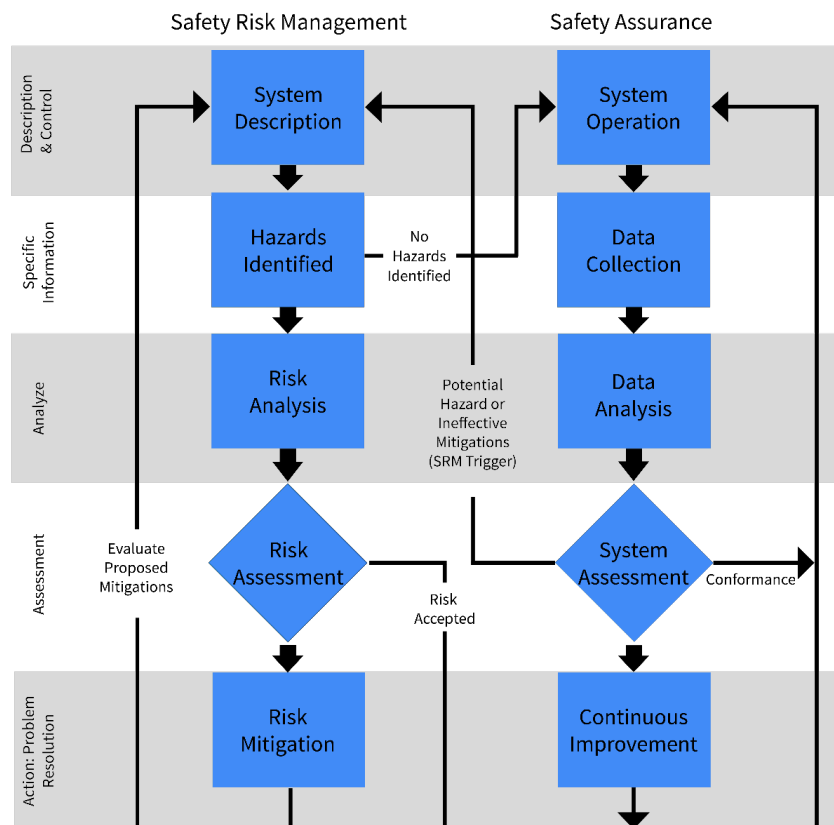


Figure 1: Safety Management Decision-making Process



SMS is a comprehensive, collaborative approach that brings management and labor together to build on MBTA's existing safety foundation to mitigate risk, detect and correct safety problems earlier, share and analyze safety data more effectively, and measure safety performance more carefully. SMS applies resources to risk and is based on ensuring that MBTA has the organizational infrastructure to support decision-making at all levels regarding the assignment of resources.

1.1 MBTA Transit Safety Plan Purpose

The MBTA Transit Safety Plan governs and defines the authority, responsibilities, roles, and processes prescribed herein. It assures compliance with and application of federal, state, and local regulations as well as industry best practices. The MBTA Transit Safety Plan, and resulting safety programs, policies, rules, orders, implementation and processes, represents MBTA's commitment to safety as a core value.

1.2 MBTA Transit Safety Plan Scope

The scope of the Transit Safety Plan spans all facets of safety management to systematically achieve the highest practical level of safety for MBTA's transit system. All MBTA employees contribute to safety. This Plan is intended for use by all employees.

MBTA Safety have certain duties for which they have received in-depth specific training, but they alone cannot build safety into all facets of MBTA's operations. It is the responsibility of each employee to consider safety in all of their actions, and to report potential hazards to your supervisor detailing any analysis and correction.

The MBTA Safety Management System (SMS) applies to all MBTA employees, managers, relevant contractors and related service providers who are either directly or indirectly involved in providing transportation services. This includes MBTA bus, paratransit, ferry, and light and heavy rail activities including but not limited to operations, engineering, maintenance, administration, design, and construction; and including all equipment, vehicles, systems, sub-systems, and infrastructure.

1.3 Federal, State, and Local Authority

1.3.1 Federal Transit Administration

The Federal Transit Administration (FTA) administers a national transit safety program and program compliance oversight process to advance the provision of safe, reliable, and equitable transit service through adherence with legislative, policy and regulatory requirements.

In April 2005, the U.S. Congress expanded FTA's regulatory role by granting authority to develop State Safety Oversight Programs, as defined by 49 CFR Parts 659 and 674, "*Rail Fixed Guideway Systems; State Safety Oversight.*"

In July 2012, Congress passed Moving Ahead for Progress in the 21st Century Act ("MAP-21"; Pub. L. 112-141), which created a new Public Transportation Agency Safety Program, and brought about major safety-specific changes to all modes of the transit industry. The key elements of the program include 49 U.S.C. § 5326, "Transit Asset Management" and 49 U.S.C. § 5329, "Public Transportation Safety Program," which resulted in the following FTA rulemakings:



- 49 CFR 625, “*Transit Asset Management*” (final rule effective October 1, 2016)
- 49 CFR 670, “*Public Transportation Safety Program*” (final rule effective September 12, 2016)
- 49 CFR 672, “*Public Transportation Safety Certification Training Program*” (final rule effective August 20, 2018)
- 49 CFR 673, “*Public Transportation Agency Safety Plan*” (final rule effective July 19, 2019)
- 49 CFR 674, “*State Safety Oversight*” (final rule effective April 15, 2016)

49 CFR 673, “*Public Transportation Agency Safety Plan*,” formally requires public transportation systems to develop a Public Transportation Agency Safety Plan based on the Safety Management System approach. The development and implementation of safety plans will help ensure that public transportation systems are safe nationwide.

Reauthorization of the FTA programs occurred in June 2021 when Congress passed the Infrastructure Investment and Jobs Act, (“Bipartisan Infrastructure Law”; Pub L. 117-58). The law authorized funds for several initiatives, including transit programs and other purposes. Although formal FTA rulemaking has yet to take place, key aspects of 49 U.S.C. § 53, “*Federal Transit Law*” as proposed include:

- State safety oversight agencies authority to collect and analyze data and conduct risk-based inspections of rail fixed guideway transportation systems.
- Agency safety plans must be consistent with Centers for Disease Control and Prevention and State health authority guidelines to minimize exposure to infectious diseases.
- The safety plan is developed in cooperation with frontline employee representatives.
- The establishment of a Safety Committee, composed of equal representatives of frontline employees and management, that is responsible for identifying, recommending, and analyzing the effectiveness of risk-based mitigations or strategies to reduce consequences identified in the agencies’ safety risk assessment.
- Development a risk reduction program for transit operations to improve safety by reducing the number and rates of accidents, injuries, and assaults on transit workers based on data submitted to the national transit database, including a reduction of vehicular and pedestrian accidents involving buses that include measures to reduce visibility impairments for bus operators and the mitigation of assaults on transit workers.
- The setting of risk reduction performance targets using a three-year rolling average of the data submitted to the National Transit Database. Performance targets will be established in the next revision to the National Transportation Safety Plan.
- The allocation of not less than 0.75 percent of section 5307 funds to safety related projects. If the performance targets are not met, then this funding must be re-allocated to meet the performance targets, which includes modifications to rolling stock and de-escalation training.
- Maintenance personnel required to meet the existing safety training requirements, and safety, operations, and maintenance personnel to complete de-escalation training.

1.3.2 FTA Safety Management Inspection



In 2022, MBTA demonstrated a pattern of safety incidents which included revenue and nonrevenue derailments, train and grade crossing collisions, fatalities, and other incidents involving both MBTA employees and passengers. In addition, MBTA's safety performance as monitored through data reported to the National Transit Database (NTD) indicated a higher overall rate of safety events and increase in severity of incidents. As a result of these two observations, the FTA conducted a Safety Management Inspection (SMI) in 2022.

FTA's 2022 SMI included a review of rail transit operations, training, vehicle maintenance, signals and train control, and track access. It also covered capital project delivery, traction power, facilities, and safety management. As a result of the inspection, the FTA issued eight Special Directives to the MBTA. In response, MBTA developed Corrective Action Plans (CAP) and Action Items that detail how the Authority will address each FTA Special Directive and implement safety improvements across the organization. Remaining recommendations from the 2019 Safety Panel Report were considered and woven into the CAP process.

1.3.3 Massachusetts Department of Public Utilities

FTA recognizes the Massachusetts Department of Public Utilities (DPU) as the State Safety Oversight Agency (SSOA) for the state of Massachusetts.¹ M.G.L. c. 161A, s. 3(i) empowers the Massachusetts Department of Public Utilities (DPU) to regulate the safety of equipment and operations at MBTA as prescribed in 220 C.M.R. 151.00, et seq., "*Rail Fixed Guideway System: System Safety Program Standard*."

DPU exercises jurisdiction over safety of equipment and operations of MBTA and is responsible for establishing standards for rail safety practices. In addition, DPU oversees the execution of these practices and procedures to ensure compliance by utilizing a broad range of tools and powers.

The Bipartisan Infrastructure Law authorizes SSOAs including DPU to conduct risk-based inspections of the transit agencies they oversee, and to collect and analyze the qualitative and quantitative data required to prioritize inspections in accordance with levels of safety risk. This authority includes the ability of DPU personnel to access MBTA facilities and property both with and without advance notice, and to inspect infrastructure, equipment, records, personnel, and data. To support DPU's risk-based inspection program, MBTA coordinates with DPU on policies and procedures for inspection access and data collection. The policies and programs defining the DPU's authority to carry out a risk-based inspection program are outlined further within the DPU's Program Standard, including but not limited to, conducting risk-based inspections, a description of the types of activities, and data collection. Risk identification, records, and analytical data collected and prepared by MBTA are shared with DPU in accordance with Section 6.2.5.1 of this Plan, On-Going Communication with DPU.

MBTA is required to develop and implement the MBTA Transit Safety Plan to comply with 49 CFR Parts 673 and 674 and 220 CMR 151.00, subject to acceptance by DPU and ultimately FTA.

MBTA's relationship with its SSOA is a safety partnership on many levels through regulation and collaboration. DPU and MBTA's Chief Safety Officer (CSO) meet at least monthly. DPU and MBTA management meet at least

¹ Refer to 49 CFR 674, "*State Safety Oversight*" for detailed regulatory information.



quarterly and DPU meets at least annually with the Accountable Executive and Board of Directors, or equivalent authority.

1.3.4 Public Health Guidelines

As required by the BIL, MBTA follows all guidelines and standards set by the Centers for Disease Control (CDC) and Massachusetts Department of Public Health with regard to preventing the spread of and minimizing exposure to infectious disease such as COVID-19. MBTA follows all applicable federal and state guidelines and requirements, including those regarding face coverings, vaccinations, testing, social distancing, and cleaning and sanitizing of vehicle and facilities. MBTA has joined the American Public Transportation Association (APTA) Health & Safety Commitments Program to publicly pledge to follow all official guidance and prioritize the health of its customers, employees, and contractors. MBTA deploys the appropriate risk management methodology as needed to address identified hazards and risks.

1.4 Plan Review, Revision, and Approval

The plan may require revision due to changes identified during the annual internal review process or when modifications are required off cycle.

Per 220 CMR 151 (4), DPU requires an annual review of the Safety Plan on or before August 1st of every year. If updates to the Safety Plan are required, the Safety Plan and any accompanying procedures and supporting references must be submitted to DPU for approval on or before September 1st. If no update is required, MBTA must notify DPU in writing on or before September 1st. The Authority may request an extension of the deadline for submission, which may be granted or denied at the discretion of DPU.

Modifications may be requested by DPU due to internal audit report results, on-site reviews and investigations, changing trends in accident/incident or security data, or other reasons that may come to the attention of DPU. Modifications may also be necessary where MBTA management identifies necessary updates such as organizational changes, procedural updates, or reassignment of functional responsibilities. If the Safety Plan is revised outside of the annual review cycle, then MBTA must submit the Safety Plan and any accompanying procedures and supporting references to DPU within 30 calendar days of the event requiring an update.

The MBTA Transit Safety Plan will be reviewed using the following internal review process prior to submitting the revised Transit Safety Plan to the DPU for review and approval as required by state regulation 220 CMR 151(4) as illustrated in Figure 2.



Figure 2: Transit Safety Plan Review and Approval Process

1.4.1 MBTA Transit Safety Plan Internal Review

MBTA adheres to the MBTA Transit Safety Plan internal review process, which ensures labor and executive management have reviewed and approved the revised Transit Safety Plan before it is submitted to DPU for review and approval.

1.4.1.1 Joint Labor-Management Safety Committee (JLMSC) Review and Approval

- The SMS Implementation Team submits the MBTA Transit Safety Plan to the JLMSC for review and approval, fulfilling the Bipartisan Infrastructure Law requirement that a joint labor-management safety committee review and approve the Transit Safety Plan. Any substantive changes received from other reviewers in this process must be reviewed and approved by the JLMSC.
- Upon receiving comments and/or corrections from the JLMSC, the SMS Implementation Team will review and update the Safety Plan as applicable. The revised Plan will be resubmitted to the JLMSC for approval.

1.4.1.2 Safety Management Review Committee (SMRC) Review

- The SMS Implementation Team submits the updated MBTA Transit Safety Plan to the SMRC for review for any comments and/or corrections.
- Upon receiving comments and/or corrections, the SMS Implementation Team will review and update the Safety Plan as applicable. The revised Plan will be resubmitted to the JLMSC for approval.

1.4.1.3 Accountable Executive Review and Signature

- The MBTA CSO submits the updated Safety Plan to the Accountable Executive for review and signature.



- Upon receiving comments and/or corrections from the Accountable Executive, the SMS Implementation Team will update the Safety Plan and resubmit the updated Safety Plan to the Accountable Executive for approval and signature. The revised Plan will be resubmitted to the JLMSC for review and approval, and then provided to the Accountable Executive.
- MBTA's Accountable Executive provides certification of compliance with 49 CFR Part 673 and 220 CMR 151 by signing this Transit Safety Plan (and subsequent revisions) and providing the date of their signature as the certification date.

1.4.1.4 MBTA Board of Directors (BOD) Review and Approval

- The signed Safety Plan is first submitted to the Safety, Health & Environment Subcommittee within the MBTA Board of Directors for review, and then to the full Board of Directors for vote of approval prior to its submission to the DPU.
- Upon receiving comments and/or corrections from the BOD or its Safety, Health, & Environment Subcommittee, the SMS Implementation Team will update the Safety Plan, resubmit it to the JLMSC for review and approval, resubmit the updated Safety Plan to the Accountable Executive for approval and signature, and then submit the signed, updated Safety Plan for BOD vote of approval.

1.4.2 DPU Review and Approval

The Safety Plan will be delivered to DPU in electronic format via email. Supporting procedures and referenced materials may be submitted in hard copy, by fax, mail, email, or in-hand delivery. Once the Safety Plan has been approved by DPU, MBTA must submit a copy to DPU in an unalterable format (electronic or hard copy).

Within fifteen (15) calendar days of receipt of the revised MBTA Transit Safety Plan, DPU will issue a response that it approves, conditionally approves, or is unable to approve the Plan, along with the checklist used to review the MBTA Transit Safety Plan. If the Department rejects the document, the Transportation Authority has 20 days from notice of rejection to submit a revised document to the Department for approval. The DPU may grant an extension beyond the 20 days for good cause shown.

If DPU is unable to approve a final document, or to resolve a dispute with the MBTA resulting from the development of the document, DPU must either:

1. Report the areas of disagreement in writing to, and negotiate with, MBTA until the dispute is resolved;
2. Develop its own document according to the requirements of the relevant section, and submit it to MBTA for implementation; or
3. Issue any Order that it deems necessary.



2 SMS SUPPORTING ELEMENTS

SMS is the framework that mitigates and controls safety risk within the organization. The MBTA uses this framework to ensure its employees are safe, who then in turn deliver safe and reliable service to its communities and customers. Many elements within this framework manage safety risk at the MBTA, each of which is described in the following sections. Each supporting element is intended to strengthen safety at the MBTA.

2.1 Safety Culture

MBTA is committed to improving its safety culture through implementation and support of a formal SMS.

MBTA defines its culture as the product of the individual and group values, attitudes, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization's health and safety programs. Organizations with a positive safety culture are characterized by communications founded on mutual trust, shared perceptions of the importance of safety, and confidence in the efficacy of preventative measures.

It is the intention of senior management to institute a positive safety culture throughout the organization. To accomplish this, all employees must be responsible for, and consider the impact of, safety in every task they perform. This approach must be so inherent that it defines MBTA's culture. This safety-centric approach sets the expectations for safe behavior at MBTA.

As part of its SMS implementation, MBTA will measure its safety culture through the use of surveys, or an equivalent method. Having a baseline understanding of employees' perception of safety at the MBTA will help management understand what components of the SMS should be improved and where MBTA has success in implementing SMS to support a positive safety culture.

2.1.1 Informed Culture

In an informed culture, the organization collects and analyses relevant data, and actively disseminates safety information. Management fosters a culture where people understand the hazards and risks inherent in their areas of operation. Personnel are provided with the necessary knowledge, skills, and job experience to work safely, and they are encouraged to identify threats to their safety and to seek changes necessary to reduce or eliminate exposure to these hazards.

2.1.2 Reporting Culture

A reporting culture means cultivating an atmosphere where people have confidence to report safety concerns without fear of blame or reprisal. Employees must know that confidentiality will be maintained and that the information they submit will be acted upon, otherwise they will decide that there is no benefit in their reporting.

The workforce must feel confident that reported hazards will be addressed. They must also be assured that the reporting will not result in retaliation. Any retaliating act against an employee who exercises their workplace rights will be investigated as this type of behavior is not accepted at the MBTA. Violation of any employee workplace rights could lead to action up to and including discharge.

2.1.3 Learning Culture



A learning culture means that an organization is able to learn from its mistakes and make changes. It will also ensure that people understand the SMS processes at a personal level.

Learning throughout MBTA is seen as more than a requirement for initial skills training as it is valued as a continuous process. Employees are encouraged to develop and apply their skills and knowledge to enhance organizational safety. Safety reports are shared amongst employees so that they can learn from the findings associated with the near miss or incident.

2.1.4 Just Culture

In a just culture, errors and unsafe acts will not be punished if the error was unintentional. However, those who act recklessly or take deliberate and unjustifiable risks will still be subject to disciplinary action.

A just culture is described as an atmosphere of trust in which people are encouraged, and even rewarded, for providing essential safety-related information, but also are clear about where the differences between acceptable and unacceptable behavior. Throughout MBTA's SMS implementation, employees should begin to perceive that atmosphere of trust for coming forward with safety concerns and issues.

While a non-punitive environment is fundamental for a good reporting culture, all employees must know what is acceptable and what is unacceptable behavior.² Reckless, or intentional violations will not be tolerated, even in the non-punitive environment. MBTA's just culture will recognize that, in certain circumstances, there may be a need for punitive action and management will define the line between acceptable and unacceptable actions or activities.

Safety culture is the product of personal dedication and accountability of all employees. Individual efforts alone do not necessarily result in the desired outcome. MBTA realizes that a positive safety culture only develops with an aggregate attitude that is manifested by a pervasive type of safety thinking. This type of organizational thinking will permit employees to have an inherently questioning attitude, a resiliency to complacency, a commitment to excellence, and a sense of personal accountability. Senior management provides a vibrant, encouraging atmosphere in which individual growth is recognized and rewarded.

In order to further promote a positive safety culture throughout MBTA, senior management has instituted an employee SMS recognition program (Safety Awards) to honor individuals who make a significant contribution to safety.

2.1.5 Flexible Culture

A flexible culture is one where the organization and the people in it are capable of adapting effectively to changing demands.

2.2 MBTA Strategic Plan

The MBTA Strategic Plan is a blueprint for continuous improvement that will fulfill the vision of the MBTA that is needed to support the Authority's broader goals.

² Different MBTA departments have specific rulebooks that address prohibited acts for employees.



Figure 3 documents the different safety plans that work together to inform one another and support the Board of Directors' MBTA Strategic Plan.

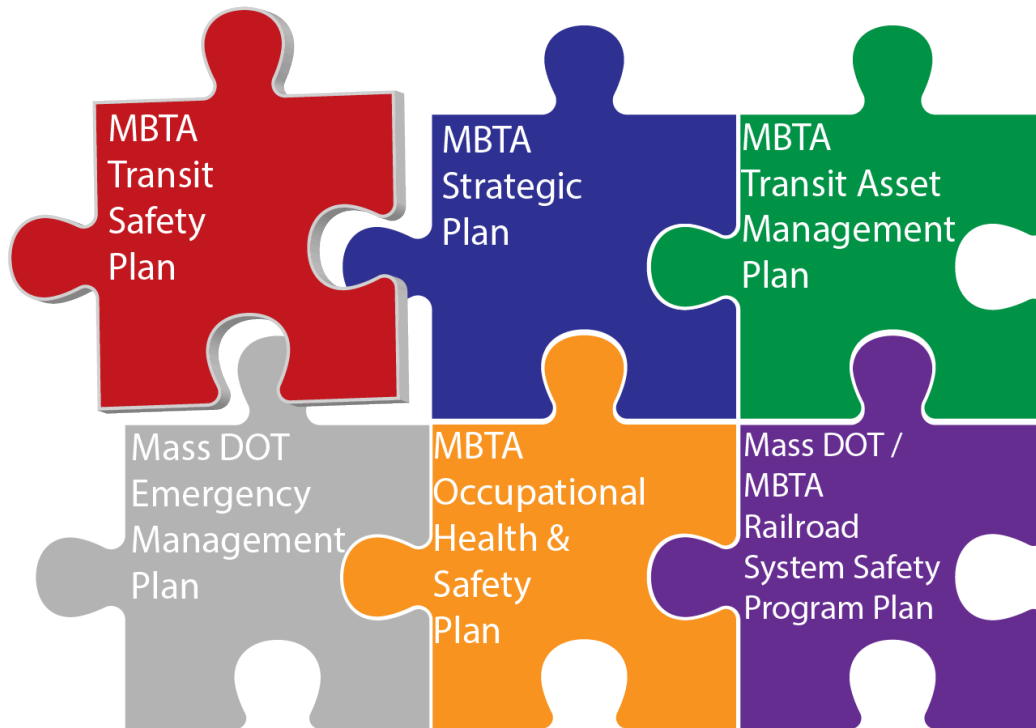


Figure 3: MBTA Safety-Related Plans

2.3 Emergency Management Plan

While MBTA has taken every precaution to avoid emergency events and situations, it is inevitable that incidents/accidents may still occur. In order to deal with these unexpected situations in a predefined manner, an Emergency Management Plan (EMP) has been developed and is maintained by the MassDOT/MBTA Security Department. Furthermore, facility evacuation procedures are located on-site across the MBTA.

Transit evacuation drills take place at least annually at the MBTA. Coordination between MBTA departments and first responders provides a proactive approach to effectively managing safety risks. Lessons learned from real and simulated evacuations are reviewed for ineffective risk mitigations, which initiates the Safety Risk Management process described in Chapter 5 of this Transit Safety Plan.

The MBTA EMP satisfies FTA's requirement to include or incorporate by reference an emergency preparedness and response plan or procedures that addresses, at a minimum, the assignment of employee responsibilities during an emergency; and coordination with Federal, State, regional, and local officials with roles and responsibilities for emergency preparedness and response in the transit agency's service area.

2.4 Transit Asset Management Plan

MBTA's Transit Asset Management (TAM) Plan describes: the capital asset inventory; condition of inventoried assets; TAM performance measures, targets, and prioritization of investments aligned with the agency's TAM and State of Good Repair (SGR) policy, strategic goals and objectives; as well as the strategies, activities, and



resources required for delivering the plan (including decision support tools and processes); and other agency-wide approaches to continually improve TAM practices. Figure 4 is an infographic FTA created to illustrate the nexus between TAM and SMS components.

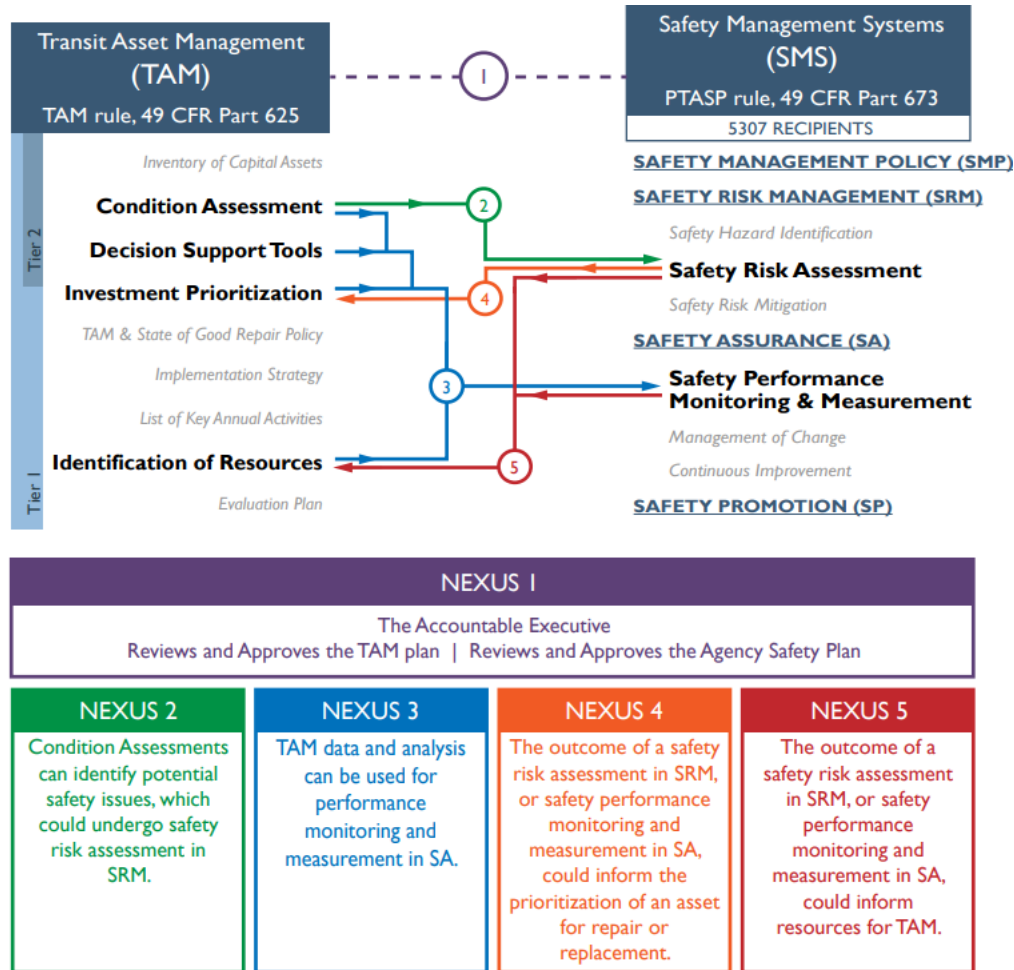


Figure 4: FTA's TAM – SMS Infographic

2.5 Occupational Health and Safety Plan

MBTA has transformed its occupational health and safety programs as part of Accountable Executive initiatives and state legislation requiring MBTA to comply with Federal OSHA standards. As MBTA implements SMS, occupational health and safety programs will also be implemented using SMS processes and procedures documented in this Plan. MBTA developed an Occupational Health & Safety (OHS) Plan and is located on the MBTA intranet. MBTA describes workplace safety programs, such as Hazardous Communication/Materials, in the OHS Plan. The Massachusetts Department of Labor Standards provides oversight to workplace safety programs and the OHS Plan.

2.6 MassDOT/MBTA Railroad System Safety Program Plan

MassDOT/MBTA's Railroad System Safety Program (SSP) Plan is regulated under 49 CFR Part 270 and is not subject to review by the Federal Transit Administration, however, it supports the Strategic Plan, which is MBTA's



blueprint for continuous improvement. The SSP Plan provides MBTA’s strategic and management goals to affirm and execute its commitment to provide a safe, reliable, and sustainable commuter rail transportation service and ensures compliance with federal, state, and local regulations, and appropriate industry best practices.

MBTA’s commuter rail and transit rail management teams coordinate to address safety issues common to both systems, including management of maintenance and construction in corridors with adjacent transit rail and commuter rail.

2.7 Documentation and Records Management

MBTA maintains critical files, important, records, and other information as dictated by regulatory compliance and good operating practice. These files are maintained using hard copy and/or electronic files. All records are maintained in structured systems that provide legibility, original dates, revision dates, and easy retrieval.

49 CFR 673.31 requires a transit agency to maintain documents related to this Safety Plan, including those related to the implementation of the SMS, and results from SMS processes and activities, for a minimum of three years after they are created. FTA, any other Federal entity, and the DPU have access to any SMS documentation maintained by the MBTA, upon request. Regulatory agencies may perform on-site visits to review any SMS documentation.

Table 1 lists SMS records that are retained in accordance with state and federal standards:

SMS Record	Bus/Rail	
	Transit Unit Interfaces	Key Reports or Actions Required
Internal Safety Audits	All	Final Internal Audit/Review Report, which is submitted to DPU annually.
Reporting Data to NTD	TPD	Electronically submitted to NTD monthly and certified for accuracy annually.
Annual Revision of MBTA Transit Safety Plan	GM	MBTA Transit Safety Plan submitted to DPU.
Safety Data Analysis Report (SDAR)	All MBTA management	SDARs are distributed to all MBTA management monthly.
Emergency Management Plan	All	MBTA’s emergency preparedness and response plan.
Transit Asset Management (TAM) Plan	All	MBTA TAM Plan certified by the Accountable Executive.
Board Monthly Safety Report	GM, Legal, Board of Directors	Monthly report detailing high-level safety data, significant incidents/injuries, State of Good Repair, and regulatory updates
Safety Certification of Capital Infrastructure Projects	Capital Delivery, and other affected departments	Certification letter sent to MBTA GM at completion of project including final signed Certified Items List (CIL) and open items log.
Safety Certification of Systems and Vehicle Procurements and Overhauls	Vehicle Engineering, and other affected departments	Certification letter sent to MBTA GM prior to system or vehicle entering revenue service. Signed CIL completed and Certificates of Conditional Safety Certification completed for each vehicle.



Bus/Rail		
SMS Record	Transit Unit Interfaces	Key Reports or Actions Required
Root Cause Analysis	Transportation, E&M, CD, Vehicle Maintenance	Conducted for certain safety event investigations. Safety works with other departments to develop report and attainable corrective actions.
Assessments	JLMSC as applicable	Formal reports are finalized and retained, or submitted to other departments, DPU, or outside agencies as applicable.
SRM Outputs/Products	JLMSC as applicable	Formal reports are finalized and retained, or submitted to other departments, DPU, or outside agencies as applicable.
Accident/Incident/Injury Investigation	Transportation, E&M, CD, Vehicle Maintenance	Formal deliverables are submitted to DPU (or DLS, for employee injuries) through a preliminary notification within one business day and a final report submitted with sixty days.
Respond to FTA and NTSB advisories and regulations	JLMSC as applicable	Formal responses are submitted to DPU and/or the relevant federal or state agency.

Table 1: SMS Documentation and Recordkeeping

2.8 Temporarily Suspension of Safety Programs

In the case of unforeseen circumstances (e.g., COVID-19) that interfere with MBTA’s ability to perform safety activities described in this Transit Safety Plan, MBTA may take the unusual step of temporarily suspending a Safety Program (e.g., Safety Rules Compliance Program) associated with those activities. MBTA will notify DPU within two business days of any safety-related program suspension. An explanation will be provided to DPU as to why a particular Safety Program is suspended. A plan will be developed within 30 calendar days of Safety Program suspension to understand when MBTA may be able to proceed with its Safety Program requirements.



3 SAFETY PERFORMANCE

FTA has established safety performance criteria standards (for fatalities, injuries, safety events and system reliability) in the National Public Transportation Safety Plan that all transit agencies must meet at a minimum. This section of the Safety Plan establishes MBTA's specific safety performance targets. The Accountable Executive reviews the Safety Plan and incorporates updated safety performance targets annually for approval.

The MBTA will allocate at least 0.75 percent of Section 5307 funds to safety-related projects. If performance targets are not met, these funds will be allocated towards meeting the performance targets.

MBTA Safety facilitates a monthly Executive Safety Performance Management Session meeting which is attended by Authority leadership and senior management representatives from all impacted departments and functions. This recurring meeting is dedicated to review and discussion of safety performance, key recent events, and notable trends and patterns; results from the Session inform management decision-making performed via SMS processes and the formal SMS-based safety meeting structure.

3.1 MBTA Safety Performance Targets

The MBTA Transit Safety Plan provides collaborative strategic and management performance objectives to affirm and execute its commitment to provide a safe, reliable, and sustainable regional transportation service, and to ensure compliance with federal, state, and local regulations and appropriate industry best practices.

MBTA safety performance targets assist management in determining the status of the SMS and making informed safety-related decisions for resource allocation, management oversight, and intervention. Safety performance targets are reviewed monthly in the Safety Data Analysis Report (SDAR) and discussed routinely within the safety committee structure (see chapter 4) and at the MBTA Board of Directors' Safety, Health, and Environmental subcommittee.

In accordance with new FTA regulations within the Bipartisan Infrastructure Law, required performance criteria will be specified in an updated National Transportation Safety Plan, at which point MBTA's current safety performance criteria will be amended in accordance with those specified. The JLMSC and SMRC will then establish new performance targets using the 3-year rolling average of data submitted to the National Transit Database.

Operations and maintenance departments establish performance commitments that are discussed in the relevant appendices.

Table 2 provides information on the safety performance targets MBTA sets for Calendar Years (CY) 2023 & 2024:



Safety Performance Targets

Safety performance targets based on the safety performance measures established under the National Public Transportation Safety Plan.

Calendar Year 2024

Mode of Transit Service	Fatalities (Total)	Fatalities (Rate per 1 million revenue miles)	Injuries (Total)	Injuries (Rate per 1 million revenue miles)	Safety Events (Total)	Safety Events (Rate per 1 million revenue miles)	System Reliability (Revenue miles traveled per major mechanical failure)
Heavy Rail	0	0	170	8.13	23	1.11	49,000
Light Rail	0	0	79	14.04	27	4.74	7,900
Bus	0	0	252	11.3	88	3.93	28,500
The RIDE	0	0	23	2.53	29	3.28	25,900

Calendar Year 2023

Mode of Transit Service	Fatalities (Total)	Fatalities (Rate per 1 million revenue miles)	Injuries (Total)	Injuries (Rate per 1 million revenue miles)	Safety Events (Total)	Safety Events (Rate per 1 million revenue miles)	System Reliability (Revenue miles traveled per major mechanical failure)
Heavy Rail	0	0	180	7.99	24	1.07	44,500
Light Rail	0	0	79	14.35	27	4.94	7,650
Bus	0	0	286	12.23	98	4.21	29,500
The RIDE	0	0	27	2.27	20	1.74	62,500

Table 2: Summary of Safety Performance Targets for CY2023 & CY2024

The following safety performance measures are not an exhaustive list of all MBTA safety-related performance indicators but includes the agency’s overarching goals.

3.1.1 Safety Performance Measure: Fatalities

MBTA fatality rates vary across transportation modes due to distinct operating environments and the inherent safety risk exposure associated with each. MBTA is committed to reducing the number of fatalities across its system to zero. Every year, MBTA partners with Operation Lifesaver, which is a national nonprofit dedicated to educating the public on the dangers of trespassing on railway properties, with the goal of reducing the number of collisions, fatalities, and injuries on or near railroad tracks. In addition to partnering with Operation Lifesaver, MBTA partners with Samaritans, a nonprofit dedicated to preventing suicides. MBTA continues to invest in proactive solutions to reduce the number of fatalities to zero.

Fatalities are reported to the National Transit Database (NTD) and are defined as a death due to a collision, derailment, fire, hazardous material spill, act of God, personal security event, or other safety events. Fatalities



that occur due to an illness or other natural causes are not reportable. In accordance with FTA guidance, trespassing and suicide-related fatalities are also excluded for this fatality safety performance measure. Table 3 presents MBTA’s average number of fatalities, and average rate of fatalities per 1,000,000 revenue miles traveled over the past three years.

Fatality Performance Targets						
Mode	Three-Year Total Number of Fatalities ³	Performance Target Count for CY2023	Performance Target Count for CY2024	Rate per 1 Million Vehicle Revenue Miles	Performance Target Rate for CY2023	Performance Target Rate for CY2024
Heavy Rail	1	0	0	0.02	0	0
Light Rail	0	0	0	0	0	0
Bus	2	0	0	0.03	0	0
The RIDE	0	0	0	0	0	0

Table 3: Fatality Safety Performance Targets

3.1.2 Safety Performance Measure: Injuries

Any harm to persons that requires immediate medical attention away from the scene because of a reportable event is considered a reportable injury. MBTA reports to NTD anytime a person is transported away from the scene for medical attention as an injury, whether the person appears to be injured. For this performance measure, injuries resulting from assaults and other crimes have been excluded.

For rail mode events, in addition to injuries requiring transport from the scene, injuries defined as serious are automatically reportable. Individuals with serious injuries may or may not have been transported away from the scene for medical attention. NTD defines a serious injury as one that:

- Requires hospitalization for more than 48 hours within 7 days of the event;
- Results in a fracture of any bone (except simple fractures of fingers, toes, or nose);
- Causes severe hemorrhages, or nerve, muscle, or tendon damage;
- Involves an internal organ; or
- Involves second- or third-degree burns, or any burns affecting more than five percent of the body surface.

For bus and other non-rail events, an individual seeking medical care several hours or days after an event is not reportable as an injury. A reportable injury also requires that the individual receive medical attention at a location other than the location of the event. This distinction serves to exclude injuries that are treated only with first aid or other minor medical assistance at the scene.

³ At the time of performance target development, data available included 2020 thru 2022 statistics.



Table 4 presents MBTA’s average number of reportable⁴ injuries, and average rate of reportable injuries per 1,000,000 revenue miles traveled over the past three years. MBTA’s performance target for CY2024 is set using a 2% reduction in the average rate of reportable injuries per revenue miles traveled.

Injury Performance Targets						
Mode	Three-Year Average Total Number of Reportable Injuries ⁵	Performance Target Count for CY2023	Performance Target Count for CY2024	Three-Year Average Rate per 1 Million Vehicle Revenue Miles	Performance Target Rate for CY20233	Performance Target Rate for CY20244
Heavy Rail	173	180	170	8.3	7.99	8.13
Light Rail	180	79	79	14.33	14.35	14.04
Bus	257	286	252	11.53	12.23	11.3
The RIDE	24	27	23	2.58	2.27	2.53

Table 4: Injury Safety Performance Targets

MBTA safety committees continually meet to identify trends and analyze data to support injury reduction. Through Occupational Health and Safety (OHS) initiatives in the workplace, MBTA invests significant resources in employee health and safety.⁶

3.1.3 Safety Performance Measure: Safety Events

NTD defines a safety event involving one or more of the following:

- Collisions
- Fires (suppression)
- Derailments (mainline and yard) including non-revenue vehicles
- Hazardous Material Spills
- Acts of God
- Other Safety Events (events that do not fall into any of the other categories, yet meet a reporting threshold other than immediate transport for medical attention for one person)⁷

The safety events measure captures events meeting NTD reporting thresholds that occur on MBTA right-of-way or infrastructure, at a revenue or maintenance facility, in a rail yard, during the performance of maintenance activities, or that involve a transit revenue vehicle. NTD reporting thresholds include fatalities, injuries

⁴ Further information regarding the thresholds for “reportable” injuries are defined in the NTD Safety and Security Reporting Manual.

⁵ At the time of performance target development, data available included 2020 thru 2022 statistics.

⁶ Refer to the MBTA OHS Plan for further details regarding workplace safety initiatives and performance targets.

⁷ The NTD Safety and Security Reporting Manual further define the term safety event and threshold reporting requirements.



requiring immediate medical attention away from the scene, derailment, substantial damage, and evacuation for life safety reasons.

Table 5 presents MBTA’s average number of safety events, and average rate of safety events per 1,000,000 revenue miles traveled over the past three years. MBTA’s performance target for CY2024 is set using a 2% reduction in the average rate of safety events per revenue miles traveled.

Safety Events Performance Targets						
Mode	Three-Year Average Total Number of Safety Events ⁸	Performance Target Count for CY2023	Performance Target Count for CY2024	Three-Year Average Rate per 1 Million Vehicle Revenue Miles	Performance Target Rate for CY2023	Performance Target Rate for CY2024
Heavy Rail	23	24	23	1.13	1.07	1.11
Light Rail	27	27	27	4.83	4.49	4.74
Bus	89	98	88	4.01	4.21	3.93
The RIDE	30	20	29	3.35	1.74	3.28

Table 5: Safety Events Performance Targets

Through proactive and reactive safety risk management (SRM), MBTA strives to reduce the rate of safety events, which will support efforts to reduce fatalities and injuries, as well as damages to transit assets.

3.1.4 Safety Performance Measure: System Reliability

The system reliability measure expresses the relationship between safety and asset condition. The rate of vehicle failures in service, defined as mean distance between major mechanical failures, is measured as vehicle revenue miles operated divided by the number of major mechanical failures.⁹ MBTA continues to invest in and plan for a highly reliable, safe operation of its public transportation system, and will strive to maintain the highest level of system reliability for CY2024.

The following system reliability targets were calculated reviewing an average of major mechanical failures and revenue miles traveled from 2020 - 2022.

⁸ At the time of performance target development, data available included 2020 thru 2022 statistics.

⁹ Major Mechanical System Failures: Major mechanical system failures prevent a vehicle from completing or starting a scheduled revenue trip because actual movement is limited or because of safety concerns. Examples of major bus failures include breakdowns of brakes, doors, engine cooling systems, steering, axles, or suspension.



System Reliability Performance Targets		
Mode	Performance Target Rate for CY2023	Performance Target Rate for CY2024
Heavy Rail	47,500 revenue miles	4949,000 revenue miles
Light Rail	7,500 revenue miles	7,900 revenue miles
Bus	25,000 revenue miles	28,500 revenue miles
The RIDE	60,000 revenue miles	25,900 revenue miles

Table 6: System Reliability Safety Performance Targets

3.1.5 Additional Safety Performance Measures

In addition to FTA-required safety performance targets, MBTA measures specific event types such as:

- Derailments
- Collisions
- Fire/Smoke Events

MBTA uses the Safety Data Analysis Report (SDAR) to trend safety performance measures against their associated targets.

3.2 Safety and State of Good Repair

State of Good Repair (SGR) standards are defined by the National Safety Program and National Transit Asset Management (TAM) System, found in 49 CFR Part 625. These set forth conditions when safety risk analysis must be performed on capital assets such as equipment, rolling stock, infrastructure, and facilities. MBTA documents safety performance objectives in the Transit Assessment Management (TAM) Plan based on this definition and makes informed investments to strive for SGR for all its assets.

3.3 Coordination with MPOs

MBTA disseminates and makes available safety performance targets to MassDOT and Metropolitan Planning Organizations (MPOs) to aid in the planning process. MBTA coordinates safety performance targets with the Boston Region MPO to the maximum extent practicable to assist Massachusetts and MPOs with the selection of Commonwealth-wide and regional safety performance targets. MBTA will meet with MPOs on an annual basis for discussion of MBTA's safety performance targets.



4 ORGANIZATIONAL STRUCTURE & RESPONSIBILITIES

Effective implementation of SMS requires senior management's commitment to safety. Agency Leadership is committed to the goal of making MBTA as safe as it can be for everyone, starting with transforming the core values of the organization into a positive safety culture.

4.1 Key Safety Management Responsibilities

4.1.1 MBTA Board of Directors (Board of Directors)

The MBTA Board of Directors consists of seven members, including the Secretary of Transportation and one member with municipal government experience. The rest are appointed by the Governor, and they include a rider and resident of an environmental justice population, and a person recommended by the President of the AFL-CIO.

The MassDOT Board of Directors was informed of its role and responsibility in this Safety Plan.

The MBTA Board of Directors is required to approve the Safety Plan and its subsequent revisions using written verification.¹⁰

4.1.2 Accountable Executive

The Accountable Executive, General Manager of the MBTA, is responsible for reviewing and approving the Safety Plan, ensuring there is sufficient human and capital resources to develop and maintain the Safety Plan, adoption of safety performance objectives, reviewing ongoing safety data reports, reviewing summary reports related to safety events, and overseeing MBTA's safety management system (SMS). The Accountable Executive is accountable for ensuring action is taken to address substandard performance in MBTA's SMS.

The Accountable Executive may delegate risk management decisions to senior management; however, they are ultimately responsible for accepting safety risks or hazards at MBTA. Only the Accountable Executive may accept residual risk factors that are considered High in relation to MBTA's safety risk acceptance criteria.

4.1.3 MBTA Chief Safety Officer

The GM has delegated to the MBTA Chief Safety Officer (CSO) the authority and responsibility to govern, administer, oversee, and monitor the safety plans and resulting safety programs, policies, rules, orders, implementation, and processes. The MBTA CSO reports directly to the Accountable Executive on matters related to MBTA's SMS.

The MBTA CSO collaborates with MBTA management to ensure safe work practices, and interfaces with federal, state, and local authorities, and industry professional organizations. The MBTA CSO does not serve in other operational or maintenance capacities.

When an immediate and serious safety risk exists, the MBTA CSO has the authority and responsibility to order hazardous conditions corrected to acceptable levels or eliminated altogether. Accordingly, the MBTA CSO is also empowered to order the cessation of unsafe activities or operations that are evaluated as creating immediate

¹⁰ E.g., meeting minutes, video evidence of approval, etc.



and serious safety risks within the system. The MBTA CSO is authorized to conduct mandatory internal safety audits to determine conformance with this Safety Plan. The MBTA CSO may also perform announced or unannounced audits, reviews, inspections, or assessments for the purpose of identifying and eliminating unsafe practices, operations, or conditions not immediately corrected by MBTA management.

4.1.4 Agency Leadership

Agency leadership, including direct reports to the General Manager other than the MBTA CSO, who oversee aspects of the organization that have a direct interface with safety-related matters include the following:

- Deputy General Manager
- Chief Administrative Officer
- Assistant General Manager for Engineering and Capital
- Senior Advisor for Capital, Operations, and Safety
- Chief of Capital Programs
- Chief of Stations
- Chief Legal Counsel
- Chief of Transit Police

Only the Accountable Executive and agency leadership may accept residual risk factors that are considered Serious in relation to MBTA's safety risk acceptance criteria.

4.1.4.1 Deputy General Manager

The MBTA Deputy General Manager is responsible for the complete oversight for all modes and all associated support departments for bus, paratransit, ferry, light, heavy and regional rail services. All operational and maintenance departments at the MBTA report to the Deputy General Manager. The Deputy General Manager is responsible for all Engineering & Maintenance (E&M) functions at MBTA. E&M is responsible for design, complying with the safety and security certification, workplace safety and supervision of E&M projects, system maintenance, improvement, and modernization programs associated with facilities, track, signals, communications, and power systems; contract administration; and station, facility, power, track, signal, communication, and security systems engineering and maintenance.

4.1.4.2 Chief Administrative Officer

The MBTA Chief Administrative Officer (CAO) is responsible for MBTA's financial and administrative functions. The CAO oversees finance, human resources, labor relations, and other administrative departments.

4.1.4.3 Assistant General Manager for Engineering and Capital

MBTA's Assistant General Manager for Engineering and Capital is responsible for the safe engineering and delivery of the MBTA capital program, including project planning, engineering, and execution of the Authority's infrastructure programs in the Capital Investment Plan.

4.1.4.4 Senior Advisor for Capital, Operations, and Safety



The Senior Advisor for Capital, Operations, and Safety is responsible for leading decision-making within the Rail Operations function on matters related to capital, operations, and safety.

4.1.4.5 Chief of Capital Programs

The MBTA Chief of Capital Programs is responsible for helping program and project managers deliver the MBTA's Capital Investment Plan (CIP) with the goal of achieving on-budget and on-time performance. These investments include repair, modernization, expansion, and acquisition of the Authority's infrastructure, facilities, revenue vehicles and other capital investments including IT, fare collection, security and communications systems, non-revenue vehicles, major equipment and other capital investments.

4.1.4.6 Chief of Stations

MBTA's Chief of Stations is responsible for developing and implementing strategies to maintain and improve station conditions across all modes, including coordination with MBTA's maintenance and capital functions.

4.1.4.7 Chief Legal Counsel

The MBTA Chief Legal Counsel provides strategic direction, business partnership, and day-to-day legal counsel, representation and support to the MBTA's General Manager and senior management team involving a broad range of complex legal, business and operations issues. The Chief Legal Counsel is responsible for all legal matters involving the MBTA as well as labor negotiations and contracts.

4.1.4.8 Transit Police Chief

The MBTA Transit Police Chief is responsible for providing public safety, security, and law enforcement services to MBTA. The MBTA Transit Police Department (TPD) is a civil service police department with full police powers within the cities and towns in the MBTA's service area.

4.1.5 MBTA Executive Management¹¹

MBTA executive management is responsible for the implementation, success, and continual monitoring of the Safety Plan objectives and ensuring integration of SMS processes within all MBTA divisions, departments, working groups, committees, and activities. MBTA executive management personnel may serve as members of the SMRC, JLMSC, DAGs, and other relevant committees. They are responsible to continuously review safety performance and trends, assess and monitor identified risks, and recommend data-driven solutions in line with MBTA goals and objectives.

Only the Accountable Executive, agency leadership, and executive management may accept residual risk factors that are considered Medium in relation to MBTA's safety risk acceptance criteria.

4.1.6 MBTA Frontline Management¹²

MBTA frontline management reports to their department's executive management and may also be members of DAGs, Local Safety Committees, task teams, and roundtable discussions. At an individual level they are model examples of management committed to valuing safety and are expected to manage safety issues brought forth by

¹¹ E.g., chiefs, deputy chiefs, department managers, directors, and deputy directors.

¹² E.g., facility managers, forepersons, inspectors, and frontline or facility supervisors.



employees and contractors on a daily basis. Frontline management is responsible for developing, implementing, and maintaining SMS processes within his/her area of responsibility which includes:

- Hazard identification and safety risk assessment
- Assuring the effectiveness of safety risk mitigations
- Promoting safety
- Reviewing and monitoring safety performance through data and trends
- Escalating issues that cannot be resolved and decisions that cannot be made at their level

When a safety concern is brought to management, the issue must be seriously considered and, if warranted, investigated. Thus, MBTA management is empowered to utilize safety risk management techniques and implement risk mitigation strategies to preserve safe operation of the system on a daily basis.

Only the Accountable Executive, agency leadership, executive management, frontline management, and trained Safety personnel may accept residual risk factors that are considered Low in relation to MBTA's safety risk acceptance criteria.

4.1.7 MBTA Safety

MBTA Safety staff are responsible for corporate oversight of the safety processes and objectives described within the Safety Plan, and for providing corporate safety guidance to MBTA management, labor, and contractors in working to achieve safety performance objectives.

4.1.8 All MBTA Employees & Contractors

All employees and contractors are responsible for safety within MBTA. Every employee and contractor, whether senior management or a new-hire, must consider the safety implications of everything she/he does. Employees and contractors are expected to promptly report any hazards, unsafe conditions, incidents, accidents or injuries while on the job through the appropriate investigation forms, the safety hotline number, or the safety notifications email address. Employees and contractors are also encouraged to submit safety recommendations for improvement without fear of reprisal or disciplinary action.

4.2 Safety Management Committee Structure

Safety communication is an essential SMS principle that establishes a two-way feedback loop between frontline employees and management about safety information. As demonstrated in Figure 5, MBTA uses a committee structure, in coordination with the Accountable Executive, to ensure communication is achieved at all levels of the Authority.

Meetings for the safety committees have strategic as well as tactical purposes, depending on the level of the committee. All employees, from frontline to executive management, are encouraged to attend safety committees at all levels. Each safety committee utilizes an agenda balanced around relevant SMS components, as such, topics covered in each committee vary based on the committee's charter. Examples of agenda items include open safety concerns, safety promotions materials, safety risk management activities, SRM workshop reviews, and safety investigations.



Figure 5: Safety Management Committee Structure

4.2.1 Safety Management Review Committee (SMRC)

The purpose of the SMRC, MBTA's senior-most safety committee, is to collaboratively review, discuss, analyze, and address safety concerns, findings, regulations or programs, and other safety-related issues brought to them by the various working groups and committees as well as matters assigned to them by the JLMSC and/or the GM. The SMRC functions as the senior technical review of safety matters affecting or having the potential to affect the MBTA. The SMRC may direct the formation of committees and/or working groups to evaluate safety-related matters and report back to the SMRC.

The SMRC provides a summary of their review and recommendations to the GM. Where Agency Leadership approval is required, the SMRC requests approval from the GM. Similarly, the SMRC provides direction to the JLMSC for implementation on safety issues that are within their sphere of influence.

The committee is facilitated by the MBTA Chief Safety Officer (CSO) and is comprised of high level executive management. The MBTA CSO ensures meeting agendas and minutes are documented and distributed, and safety items are logged, and resolutions are tracked. Representatives from interdepartmental working groups provide summary updates on issues and progress to the SMRC and submit proposed plans, procedures, policies, reports for review and approval.

The SMRC meets regularly (typically every month but the schedule may be adjusted based on needs) and reports updates, recommendations, and requests for approval to the GM.¹³

¹³ Refer to the SMRC Charter for further information about committee organization and structure.



4.2.2 Joint Labor-Management Safety Committee (JLMSC)

The Transportation JLMSC is an interdepartmental level group of equal executive management and union representation whose meetings are scheduled and facilitated by a Director (or equivalent) within Safety. Additional non-voting members may be appointed to the JLMSC to lend professional expertise. They meet to discuss cross-departmental safety issues and to review findings, recommendations, and trends escalated from mode- and department-specific DAGs.

The primary mission of the JLMSC is to reinforce safety as a core value at the executive management level and demonstrate a commitment to SMS principles by: convening meetings to review and discuss issues related to the safety of operating vehicles and related facilities (e.g., NTSB recommendations; hazards); evaluating safety performance against stated objectives; making data-driven decisions and recommendations; ensuring implementation of the MBTA Transit Safety Plan; maintaining an action item matrix; recording meeting minutes; conducting reviews and safety assessments; developing solutions; and making recommendations to the SMRC.

The JLMSC fulfills the role of the safety committee defined by the Bipartisan Infrastructure Law. As such, the JLMSC establishes MBTA's performance targets using the 3-year rolling average of the data submitted to the National Transit Database. It is responsible for identifying and analyzing the effectiveness of risk-based mitigations or strategies to reduce consequences identified in MBTA's SRM process and recommending solutions to improve their effectiveness. The JLMSC must review and approve the Transit Safety Plan annually (and after any updates), prior to approval by the MBTA Board of Directors.

4.2.3 Data Analysis Groups / Accident Reduction Committees (DAGs)

DAGs are organized around a mode or departmental division – such as Rail (Subway Accident Reduction Committee or SARC), Bus (Bus Accident Reduction Committee or BARC), or Engineering & Maintenance (E&M Data Analysis Group) – whose meetings are scheduled and facilitated by a Deputy Director within Safety in coordination with mode or division management. They meet to review safety performance indicators and trends that are aggregated by data analysts and that may be elevated from the Local Safety Committee level. These groups, made up of a combination of departmental executive management, frontline management, and data analysts, review and analyze safety statistics against key performance indicator goals, safety performance objectives and targets, investigations and findings, risk assessments, corrective action plans, system changes, training offerings, and safety communications. When issues cannot be addressed at this level, or if they are determined to possibly affect multiple modes or departments, key findings from specific DAGs may be elevated to the JLMSC for further consideration or resolution as needed. Findings, decisions, and information that are produced as an output of DAGs are also distributed back down to Local Safety Committees for information sharing purposes with frontline management and frontline staff.

4.2.4 Local Safety Committees

Local Safety Committees are formed to discuss safety-related issues at the management-labor level, and are often organized around and held at a specific area, line, or facility. Regular meetings are scheduled and facilitated by the respective frontline management and/or their designee at employee locations and include supervisors,



**MASSACHUSETTS BAY
TRANSPORTATION AUTHORITY**



REVISION: 3

MBTA Transit Safety Plan

PAGE: 37 of 107

forepersons, officials, union representatives, and employees. Meeting minutes and action items are recorded and tracked by each respective department to resolution, using a consistent format implemented and overseen by the Safety Department. Local Safety Committees address those items for which they have authority and then raise issues that cannot be resolved at this level or that are identified as a safety trend or performance issue to the appropriate DAG or Accident Reduction Committee for further review. Local Safety Committees also act as a vehicle of communication to frontline employees by reporting out relevant information shared from higher level committees regarding hazards, risks, safety performance, and mitigations.

Safety Department staff are responsible for monitoring the performance of Local Safety Committee meetings, ensuring that meetings are consistently held according to defined schedules, ensuring that meetings are adequately promoted to employees in each respective work area or location, and ensuring that all meetings are fully documented through preparation of meeting minutes and action item tracking logs. MBTA's safety communication activities include ongoing promotion of the Local Safety Committee structure, opportunities for participation, and elevation of case studies to demonstrate program effectiveness.



5 SAFETY RISK MANAGEMENT

Safety Risk Management (SRM) is a formal process to identify hazards and analyze, assess, and mitigate safety risk, when necessary, to prevent future accidents and incidents.

SRM identifies hazards and mitigates risk during operation, including hazards resulting from subsequent system extensions, modifications, operational or environmental changes, or hazards discovered during reviews, inspections, or investigations. The SRM process is reactive, proactive, and predictive. The process can also be used to prioritize the resulting process improvements to ensure the best allocation of our resources.

An effective SRM process is important in order to understand the safety impacts of operations and maintenance procedures, engineering change proposals, construction change orders, operational equivalencies, and the issuance of temporary permits and certificates. Hazard information will be managed through the entire SRM process as described in the left column in Figure 6.¹⁴

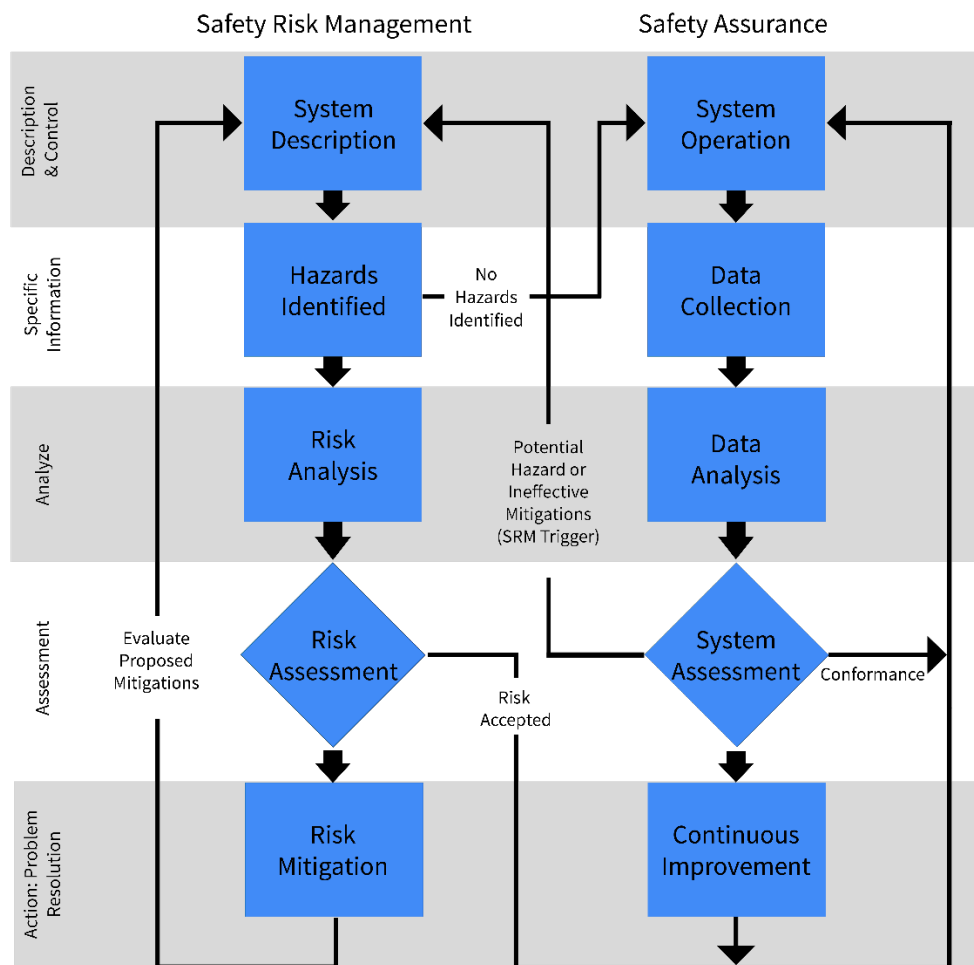


Figure 6: Safety Management Decision-making Process

5.1 Application of Safety Risk Management

¹⁴ Refer to the Safety Risk Management Standard Operating Procedure (SOP) for further information into the step-by-step SRM process.



MBTA departments must apply SRM to the following (the ten triggers) throughout all elements of the transit system:

1. Design and implementation of new systems, equipment, and capital projects
2. Changes to existing systems, equipment, and infrastructure
3. New operations of service to the public
4. New operations or maintenance procedures
5. Changes to operations or maintenance procedures
6. Organizational changes, including Agency Leadership and Accountable Executive changes
7. Procurement process
8. Identification of hazards or ineffective risk mitigations through safety assurance activities.
9. Safety issues escalated by the Safety department from the Employee Safety Reporting Program
10. Safety issues escalated from the Local Safety Committee process

5.1.1 Design and Implementation of New Systems and Other Capital Projects

Technology and innovation are changing the way people interact with their transit system. MBTA is in a constant state of design and implementation of new systems and other capital projects. MBTA's Safety Certification Program addresses the comprehensive SRM process used when new systems or other capital projects are proposed on or near the MBTA transit system.

5.1.2 Changes to Existing Systems

MBTA's SRM worksheet process and Safety Certification Program (depending on the scope of the change) address the change management process when existing systems are being updated/changed on or near the MBTA transit system. MBTA departments, such as Vehicle Engineering, conform to these SRM processes as well as their internal process.

5.1.3 New Operations of Service to the Public

Prior to beginning new operations of service to the public, MBTA departments will be required to use a methodology for conducting SRM consistent with this Plan to ensure hazards and risks are identified and controlled to an acceptable level of safety. This is addressed through the SRM worksheet process.

5.1.4 New Operations or Maintenance Procedures

MBTA departments implementing new operations or maintenance procedures will be required to use a methodology for conducting SRM consistent with this Plan to ensure hazards and risks are identified and controlled to an acceptable level of safety. The Job Hazard Analysis (JHA) Program or SRM worksheet process may be used when MBTA employees or contractors use new equipment or perform new job tasks.¹⁵

5.1.5 Changes to Operations or Maintenance Procedures

¹⁵ Refer to the MBTA JHA Program for further information.



MBTA departments periodically review and update existing operations and maintenance procedures to ensure an acceptable level of safety is achieved at all times. Changes to these procedures are addressed through the SRM worksheet process and/or JHA program, as appropriate.

5.1.6 Organization Changes, Including Agency Leadership and Accountable Executive Change

MBTA organizational changes may have an impact on the SMS. For instance, MBTA procuring new Contractor services may result in a review of the Contractor's SMS; and triggers the SRM worksheet process.

Agency Leadership and Accountable Executive changes prompt MBTA Safety to perform a transition action plan to allow new agency leadership or Accountable Executive personnel to fully understand their role in the SMS. Agency Leadership and Accountable Executive changes prompt a review of the departing employee's safety management responsibilities and ensure new personnel are trained in SMS and understand their accountability in the SMS.

5.1.7 Procurement Process

The procurement process ensures new vehicles, rolling stock, systems, equipment, and other materials are systematically reviewed for compliance with safety requirements and verified prior to purchase, implementation, and use. The procurement process is documented through the MBTA Procurement Manual and, depending on procurement scope, may use the Safety Certification Program, SRM worksheet, or internal procurement processes to complete SRM.

5.1.8 Identification of Hazards or Ineffective Risk Mitigations Through Safety Assurance Activities

MBTA deploys different safety assurance activities throughout the Authority. When a hazard or ineffective risk mitigation is identified through compliance or performance based safety assurance activities, the MBTA department will be required to use a methodology for conducting SRM consistent with this Plan to ensure hazards and risks are identified and controlled to an acceptable level of safety. MBTA's management safety committees, in coordination with safety oversight staff and meeting facilitators, are responsible for initiating SRM when safety performance data indicates a deviation from acceptable safety outcomes.

5.1.9 Safety issues escalated by the Safety department from the Employee Safety Reporting Program

MBTA applies the SRM process to notable issues, trends, and patterns identified through the Employee Safety Reporting Program. In consultation with Safety staff, and in consideration of risk ratings applied to the reports, the Deputy Director of Safety Assurance & Promotion conducts an initial review of the event or events to determine whether a Job Hazard Analysis, safety certification activity, or SRM workshop may be warranted.

5.1.10 Safety issues escalated from the Local Safety Committee process

MBTA applies the SRM process to notable issues, trends, and patterns identified through the Local Safety Committee structure. The Deputy Director of Safety Assurance & Promotion, in consultation with Safety management and more-senior safety committees including Accident Reduction Committees and the JLMSC, conducts an initial review to determine whether a Job Hazard Analysis, safety certification activity, or SRM workshop may be warranted.



5.2 Safety Risk Management Process

MBTA uses several methodologies for conducting SRM based upon the type of trigger referenced above. These are outlined in more detail in the Safety Assessment Decision Tool in Appendix H. The SRM process consolidates all hazard information developed pursuant to the various methodologies for identifying and assessing safety risks into a single Hazard Tracking System (HTS).

For all transit accidents, incidents, near misses, safety risks, and capital projects (including infrastructure, facility, equipment, and systems projects, procurements, and acquisitions), MBTA uses the following process.

5.2.1 Document the System Description and Task Analysis

SRM begins with a system description, which includes a task analysis. A system is defined as operational components used to deliver transit related services. Systems may include hardware, software, people, procedures, resources, or functions directly related to the delivery of rail transit services.

The first step is to understand the aspects of the operation that might cause harm. When documenting the system description and task analysis, one may consider:

1. Ambient environment (e.g., physical conditions, weather);
2. Equipment (hardware and software);
3. External services (e.g., contract support, electric, telephone lines);
4. Human-machine interface;
5. Human operators;
6. Maintenance procedures;
7. Operating environment (e.g., temporary speed restrictions, automatic train control);
8. Operational procedures;
9. Organizational culture;
10. Organizational issues; and
11. Policies/rules/regulations.

Describing the system or task should completely explain the functions and interactions among the hardware, software, people, departments, and environment that make up the system in sufficient detail to identify hazards and perform risk analyses. Simple brainstorming sessions with working groups or committees of subject matter experts are often the most effective means of performing this step in the SRM process.

5.2.2 Identify and Document Hazards

The purpose of hazard identification is to allow for an analysis of the risks associated with the hazard and the subsequent elimination of the hazard or the reduction of its risks to an acceptable level. While the identification of every conceivable hazard is impossible, all employees must exercise due diligence to identify hazards related to their operations. These hazards can be existing or foreseeable.



Hazards are identified considering system hardware and software, system interfaces (to include human interfaces), and the intended use or application and operational environment. Consider and use safety event/near miss data; relevant environmental and occupational health data; user physical characteristics; user knowledge, skills, and abilities; and lessons learned from legacy and similar systems. The hazard identification process considers the entire system lifecycle and potential impacts to personnel, infrastructure, systems, the public, and the environment. Identified hazards are documented in the HTS.

5.2.2.1 Reactive Hazard Identification

MBTA has reactive methods of hazard identification that may have contributed to an incident or accident. These reactive processes include the conduct of investigations into accidents, incidents, occurrences, close call reports, and regulatory violations. MBTA's reactive methodologies are shown below:

- Mandatory DPU-reportable events described in this Plan
- Employees reporting hazards through the voluntary employee reporting system described in this Plan (e.g., Form B: "Notification to MBTA Safety," the Safety Hotline, Safety Notification email)
- Safety event investigation documentation and procedures
- Findings from external audit process described in this Plan (FTA, DPU, APTA)
- TAM Assessments

5.2.2.2 Proactive Hazard Identification

MBTA also has proactive methods of hazard identification. Proactive methods attempt to identify and analyze hazards before they have resulted in an incident or accident. MBTA's proactive methodologies include:

- SRM worksheets
- Safety Certifications
- Configuration Management
- Employee Safety Reporting Program
- QA/QC data and inspections
- Monthly Safety Data Analysis Report
- Job Hazard Analyses (JHAs)
- Safety Rules Compliance Program (SRCP)
- Safety quality assurance audits
- The internal safety audit process described in this Safety Plan
- Reports from other properties, outside consultants, DPU, APTA, FTA, NTSB, and the FRA
- TAM Assessments



- Continuous review of operational data and trend analyses to proactively identify hazards as described in this plan¹⁶

If the group conducting the SRM cannot identify any hazards to the system, document the disposition at which point a safety assurance activity should be considered.

5.2.3 Risk Analysis

Trained personnel, including subject matter experts from impacted functions and/or Safety Department staff, will evaluate each identified hazard, and the system state(s) in which it exists, to determine what the worst-case, most reasonable, believable consequence(s) may be that stems from the hazard. Risk analysis will include events or conditions that could cause a consequence that reduces system operability or safety levels (triggering mechanism). Each hazard will be analyzed to determine its potential consequence(s) to cause damage or harm, known as risk.

The severity of each consequence is determined by its worst credible (reasonable or believable) outcome. MBTA employees trained in SRM will select the most appropriate severity category based upon the potential consequence identified. For instance, if the potential consequence is a collision, the severity category would be “Safety Event (Accident/Incident/Occurrence).” After a severity category is identified, the trained employee(s) would select the description of the severity level that most closely matches the potential consequence. This exercise should be used for each potential consequence documented for each hazard.

It is important that the likelihood of the severity of the consequence not be considered at this time. A chart explaining the severity levels is shown in Table 7.

¹⁶ Operational data may include, but is not limited to: OCC daily logs, passenger reports, and personnel reports.



Severity (Most reasonable, believable, worst-case scenario)					
Regulatory (e.g., Internal/ External Audits, Non-Compliance)	Serious safety concern attributable to a direct non-compliance with regulations that will affect safety.	Finding which results from a direct non-compliance with regulations applicable to MBTA that could affect safety.	Finding which results from a non-compliance with MBTA policy and procedures that reference regulations applicable to MBTA (i.e., a requirement derived from a directly applicable Rule.)	General safety concern that may lead to non-compliance with MBTA policy or procedure(s).	No Findings.
Safety Event (Accident, Incident, Occurrence)	Persons: 1-10 fatality and/or 2+ serious injuries. Property: Unrepairable damage or damage > \$15M.	Persons: 1+ serious injury. Property: Damage that disrupts operations and costs < \$15M.	Persons: Non-serious injury requiring medical transport. Property: Damage that disrupts operations and costs < \$1M.	Persons: Non-serious injury requiring first aid or minor medical treatment on-scene. Property: Damage that disrupts operations and costs < \$500K.	Persons: Non-serious injury requiring no medical treatment, or no reported injury. Property: Damage that does not disrupt operations.
Operational Event or Near Miss (Not Meeting Safety Event Criteria)	Event resulting in emergency operational conditions, impacting the immediate safe operation of a vehicle. Accident potential.	Event resulting in abnormal conditions, impacting the continued safe operation of a vehicle. Potential for Incident with injury.	Event resulting in abnormal conditions with potential to impact the safe operation of a vehicle. Potential for Incident without injury.	Event resulting in abnormal conditions with potential to impact the safe operation of a vehicle. Occurrence potential.	Event resulting in normal conditions with potential to impact the safe operation of a vehicle. Safety margin degraded.
Severity Category / Severity Level	Catastrophic (1)	Critical (2)	Moderate (3)	Minor (4)	Low (5)

Table 7: Risk Severity Categories and Levels

The likelihood of outcomes is determined by quantitative analysis, historical event information, or by expert opinion in the absence of other data. When quantitative frequency or rate data is not available, reliance upon the qualitative text descriptions in Table 8 is necessary and appropriate. When determining the probability level, consider how often the selected consequence's severity level will occur when the identified hazard is present/encountered. For example, if a severity level of Catastrophic is selected for a derailment (consequence) related to conflicting speed signs (hazard), the individual/group must then determine how often the Catastrophic



**MASSACHUSETTS BAY
TRANSPORTATION AUTHORITY**



REVISION: 3

MBTA Transit Safety Plan

PAGE: 45 of 107

derailment will occur when conflicting speed signs are encountered by a Motorperson. A chart explaining the likelihood and mitigation effectiveness definitions is shown in Table 8.

Note that the Eliminated (F) likelihood category is used only when a potential hazard has been identified and eliminated (e.g., through design/engineering). This will generally only occur in design work for planned capital projects and is unlikely to be used for hazards identified within the operational environment.



Events (a consequence which already occurred) (Mitigation Effectiveness)		Conditions (a potential consequence that may occur) (Likelihood)	
What was the effectiveness of the remaining mitigations within this event and the most reasonable, believable, worst case scenario?	Not Effective (A): Remaining mitigation were ineffective, or no mitigations remained. The only thing separating this event from a fatal accident was pure luck or exceptional skill, which is not trained or required.	Frequent (A): Likely to occur (Will occur in most circumstances, not surprised if it happened) or Occurs \geq to 1 in 100 times.	How often will the selected consequence's severity level occur when the identified hazard is present/encountered?
	Minimal (B): Some mitigations left but their total effectiveness was minimal	Probable (B): Possible to occur (Might occur in some circumstances) or occurs 1 in 100 to 1,000 times.	
	Limited (C): An abnormal situation, more demanding to manage, but with still a considerable remaining safety margin	Occasional (C): Unlikely to occur (Could occur in some circumstances, surprised if it happens) or Occurs 1 in 1,000 to 10,000 times.	
	Adequate (D): Consisting of several good mitigations	Remote (D): Rare to occur (May occur but only in exceptional circumstances, may happen but it would be highly unexpected) or Occurs 1 in 10,000 to 1,000,000 times.	
	Effective (E): All mitigations in place and working as intended	Improbable (E): Almost inconceivable to occur	
		Eliminated (F): Incapable of occurrence because the potential hazard has been identified and eliminated.	

Table 8: Risk Probability Levels

The risk severity and risk probability levels presented in Tables 7 and 8 are specifically tailored for the MBTA operational environment. Capital projects may elect to define modified risk severity and risk probability level thresholds that more appropriately reflect risk to the specific project scope.

Risk determination follows a simple three step process of: 1) condition (hazard); 2) potential consequence (worst case (reasonable/believable) scenario); and 3) risk (severity and likelihood/mitigation effectiveness of the potential consequence).



5.2.4 Risk Assessment

Assessed risks are expressed as a risk factor which is based on a combination of one severity level and one probability level as assigned in Table 9. For example, a Catastrophic severity level and a Frequent probability level equates to a High risk factor.

Assessment	Catastrophic (1)	Critical (2)	Moderate (3)	Minor (4)	Low (5)	Events
Frequent (A)	High	High	Serious	Serious	Medium	Not Effective (A)
Probable (B)	High	Serious	Medium	Medium	Medium	Minimal (B)
Occasional (C)	High	Serious	Medium	Medium	Low	Limited (C)
Remote (D)	Serious	Medium	Medium	Low	Low	Adequate (D)
Improbable (E)	Medium	Medium	Low	Low	Low	Effective (E)
Eliminated (F)	Eliminated					

Table 9: Risk Assessment Matrix

- High Risk (Red): Severity-probability levels of 1A, 1B, 1C, and 2A
- Serious Risk (Orange): Severity-probability levels of 1D, 2B, 2C, 3A, and 4A
- Medium Risk (Yellow): Severity-probability levels of 1E, 2D, 2E, 3B, 3C, 3D, 4B, 4C, 5A, and 5B
- Low Risk (Green): Severity-probability levels of 3E, 4D, 4E, 5C, 5D, and 5E

5.2.5 Risk Mitigations & Acceptance

After hazards, consequences, and risks are fully understood from the preceding steps, risk mitigations must be designed and implemented, if necessary. MBTA operational and maintenance departments responsible for implementing risk mitigations will participate in the development of those risk mitigations. These may be additional or changed procedures, new supervisory controls, addition of hardware or software aids, changes to training, additional, or modified equipment, changes to staffing arrangements, or any number of other system changes.

The goal should always be to eliminate the hazard, if possible. When a hazard cannot be eliminated, the associated risk should be reduced to the lowest acceptable level within the constraints of cost, schedule, and performance by applying the hierarchy of risk mitigations.

5.2.5.1 Hierarchy of Risk Mitigations

The order of preference for the means to be used in resolving hazards at MBTA is as follows:

- **Design to Eliminate Hazard:** Design, redesign, refurbish, or retrofit to eliminate the hazards through design selection. This may be accomplished through the use of fail-safe devices and principles in design, the incorporation of high-reliability systems and components, and the use of redundancy in hardware and software design.



- **Substitution:** Replace the system or equipment that produces a hazard with a system or equipment that does not produce a hazard. To be an effective risk mitigation, the new substitute system or equipment should not produce a different hazard more dangerous than the initial hazard.
- **Engineering Controls:** Hazards that cannot be eliminated or substituted is controlled to an acceptable level through the use of fixed, automatic, or other protective safety design feature or device. Examples of safety devices include interlock switches, protective enclosures, or machine guards. Care must be taken to ascertain that the operation of the safety device reduces the loss or risk and does not introduce an additional hazard. Safety devices also permit the system to continue to operate in a limited manner. Provisions are made for periodic functional checks of safety devices.
- **Warning Devices:** When neither design nor safety devices can effectively eliminate nor control an identified hazard, devices are used to detect the condition and generate an adequate warning signal to correct the hazard or provide for remedial action such as evacuation. Warning signals and their application are designed to minimize the probability of incorrect personnel reaction to the signals are standardized within similar systems.
- **Procedures and Training:** Where it is impossible to eliminate or adequately control a hazard through design selection or use of safety and warning devices, procedures and training are used to control the hazard. Procedures may include the use of personal protective equipment. Precautionary notations are standardized as specified by MBTA Safety. Safety critical tasks and duties and activities throughout MBTA, such as rail vehicle operators' duties, require organizational certification of personnel proficiency.
- **Personal Protective Equipment (PPE):** PPE is the least effective means of controlling hazards and should only be used in addition to other risk mitigations. PPE may be used if MBTA cannot feasibly design, substitute, or control a hazard to an acceptable level.

5.2.5.2 Residual Risk

MBTA personnel who are trained in SRM and fully understand the nature of the specified hazard must evaluate whether the risk will be acceptable with the proposed safety risk mitigation applied, before the safety risk mitigation is implemented. Prior to the risk mitigation implementation, personnel trained in the SRM process will document an anticipated residual risk, which is what personnel believe the risk factor will be after a risk mitigation is implemented. Once the risk mitigation is implemented and evaluated for effectiveness (using safety assurance activities) personnel can then document the actual residual risk.¹⁷

If no risk mitigation is implemented, the original baseline risk assessment becomes the residual risk and is documented within the hazard tracking system.

5.2.5.3 Substitute Risk

¹⁷ MBTA operational or maintenance departments, as well as MBTA Safety, may be responsible for assuring the risk mitigation(s) was effectively implemented. During the development of the risk mitigation, the MBTA department responsible for implementation and MBTA Safety will determine how to effectively evaluate the risk mitigation, who will evaluate it, and at what interval(s) will the risk mitigation be evaluated.



Even when highly effective mitigations are used, they may present new risks themselves. After these mitigations are designed but before the system is placed into operation, an assessment must be made of whether the mitigations are likely to be effective and/or if they introduce new hazards to the system. The latter condition is referred to as “substitute risk,” and should initiate a subsequent SRM process.

5.2.5.4 Risk Acceptance

MBTA has authorized key staff¹⁸ trained in SRM to document the process used to identify hazards, assess risk, and determine effective risk mitigations. Table 10 identifies what management authority level accepts certain residual risk factors. Residual Low risks may be accepted in the frontline by trained Safety personnel and frontline management but may require ongoing safety assurance activities that are monitored by DAGs. Residual Medium and High risks are reviewed and accepted by the corresponding safety committee, while residual High risks must be reviewed and accepted by the Accountable Executive.

Risk Acceptance Table		
Residual Risk Factor	Action(s) required to accept risk	MBTA Authority Accepting Risk
Low	No further action is required	Frontline Management (DAGs / Accident Reduction Committees)
Medium	No immediate action required, but must identify relevant existing safety assurance/monitoring activities and implement new assurance/monitoring activities if deemed necessary	Executive Management (JLMSC, SMRC)
Serious	Justification must be provided	Agency Leadership
High	Justification must be provided	Accountable Executive

Table 10: Risk Acceptance Table

MBTA Safety personnel will facilitate the SRM process and guide operational management and leadership throughout the risk acceptance phase. The MBTA employee authority level or committee with authority to accept specific safety risks will be noted in the Hazard Tracking System. For example, an operational rule change that identifies certain safety risks would be accepted by the appropriate operational manager/leader or safety committee with the authority to accept the residual risk factor.

Each risk acceptance decision is documented in the hazard tracking system.

5.2.6 Risk Mitigation Tracking

After a risk mitigation is implemented, MBTA will use safety assurance activities that consider any changes to the interfaces, users, hardware and software, and event/incident data. Procedures will be in place to ensure risk

¹⁸ Refer to the Key Staff section in chapter 4 of this Plan for further information on Key Staff responsibilities.



management personnel are aware of these changes, e.g., by being part of the configuration control process. MBTA Safety and the user community maintain effective communications to collaborate, identify, and manage new hazards and modified risks. If a new hazard is discovered or a known hazard is determined to have a higher risk level than previously assessed, the new or revised risk must be analyzed and mitigated or formally accepted by the appropriate authority using the SRM process documented in this chapter.

Actions associated with risk mitigation tracking include:

- Verification of risk mitigation implementation measures and validation of their effectiveness through appropriate analysis, testing, demonstration, or inspection.
- Documentation of the verification and validation in the Hazard Tracking System.

5.2.6.1 Risk Mitigation & Monitoring Plan

The risk mitigation and monitoring process ensures the effectiveness of safety risk mitigation activities performed by key MBTA departments under formally documented Corrective Action Plans (CAPs) and/or the SRM process. Management level safety committees periodically assess the success of risk mitigations, and re-initiate the Safety Risk Management process as required when mitigation efforts are insufficient. Through objective verification activities, risk mitigation and monitoring, confirm that mitigations are effectively implemented, performing their intended functions, and ultimately safeguarding the MBTA, its personnel, contractors, and the public from hazards.¹⁹

MBTA uses both compliance- and performance-based monitoring activities to ensure the effectiveness of risk mitigations. Mitigations related to safety rules and procedures, accidents, employee or customer injuries, and operational performance are primarily monitored via performance-based activities and Safety Performance Indicator monitoring. Mitigations related to programs and procedures, training and certification, and regulatory findings are primarily monitored via compliance-based activities such as internal audits.

5.3 Hazard Tracking System

All identified hazards will be monitored by MBTA Safety through the Hazard Tracking System (HTS).²⁰ An HTS is used for tracking the SRM process. The HTS allows MBTA to prioritize hazards based on the level of risk identified in the SRM process. Additional documentation, such as comprehensive CAPs or risk mitigation and monitoring plans, is developed for those hazards requiring complex and multifaceted resolutions.

MBTA has developed an HTS that reflects the consolidation of information in the SRM process by listing all identified hazards.

Applicable MBTA departments access a system to track hazards and assessment information, which includes, but is not limited to:

- Hazard tracking number
- Type of hazard

¹⁹ Refer to the Risk Mitigation and Monitoring SOP for further information.

²⁰ DPU's Program Standard refers to a Hazard Tracking Log, which is incorporated into MBTA's Hazard Tracking System.



- Source from which it was identified, or element of the MBTA's operation affected by the hazard
- Requirements for ongoing reporting to the DPU regarding hazard management activities
- Status of the hazard
- Follow up Activity (risk mitigation/CAP evaluation)

5.4 Safety Risk Management – Safety Assurance Interaction

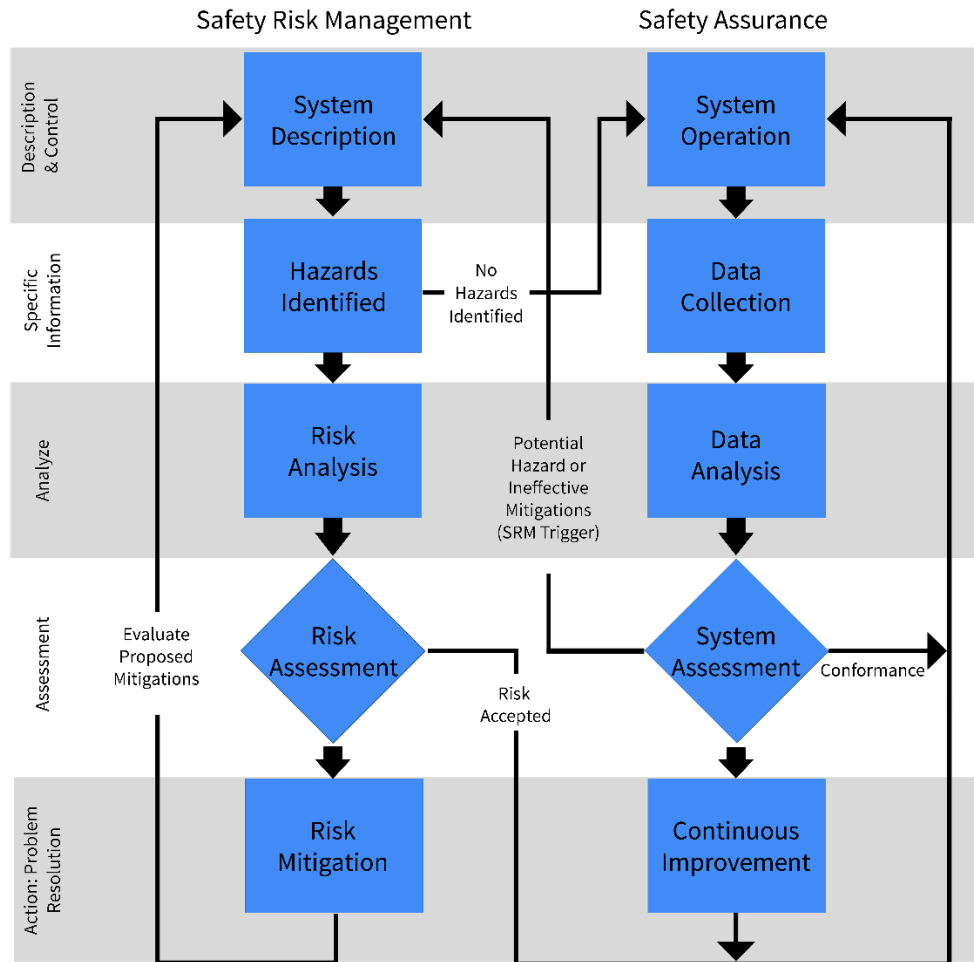


Figure 7: Safety Management Decision-making Process

MBTA SRM and safety assurance activities and interactions are summarized in Figure 7. Risk assessments may require risk mitigations, however, if deemed an acceptable level of risk, system monitoring may be the appropriate activity found in the safety assurance column.

System assessments may result in:

- Continuous improvement activities
- System Monitoring
- SRM process



6 SAFETY ASSURANCE

Safety Assurance provides MBTA with the necessary process to ensure that its public transportation system is meeting safety objectives and that risk mitigations, corrective actions, and safety recommendations developed under Safety Risk Management are working. Safety Assurance requires measuring safety outcomes of operational processes through compliance- or performance-based measures, with the aim of continuously improving the level of safety performance. Fully developed safety assurance processes will yield information used to continuously improve safety at MBTA.

Safety Assurance consists of the following:

- System Operation/Monitoring
- Data Collection
- Data Analysis and Measurement
- Safety Performance Assessment
- Continuous Improvement

The following diagram's right column depicts how safety assurance information flows in order for MBTA to continuously improve its public transportation system.

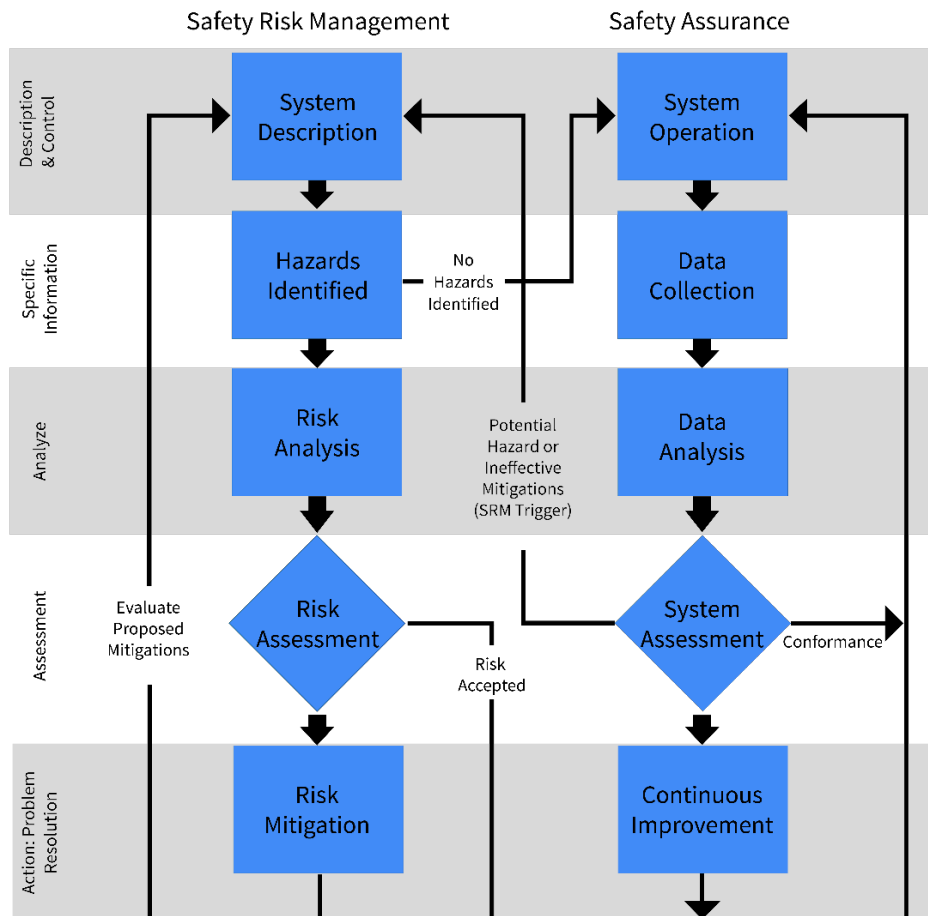


Figure 8: Safety Management Decision-making Process



6.1 System Operation/Monitoring

System operation/monitoring includes the monitoring of operational and maintenance processes and the operational environment of the public transportation system. Monitoring operational processes is the observation of the day-to-day, trip-by-trip, job-by-job performance of operational systems and their associated risk mitigations. This is done on a day-to-day basis by MBTA management.

MBTA's Operations Control Center (OCC) department actively monitors the transit system for issues and defects using the Incident Reporting Information System (IRIS) and Maintenance Control and Reporting System (MCRS). Information obtained from operators, engineering & maintenance employees, and other employees are logged in a centralized database and communicated to MBTA management and the DPU in real-time. Events involving potential DPU-reportable thresholds are investigated immediately.

6.2 Data Collection

Every business day, MBTA Safety personnel review IRIS to document safety-related events that occurred from the previous day(s) operation. Safety event information is collected for tracking and trending purposes, and to proactively monitor the operations to identify any safety risk mitigations that may be ineffective, inappropriate, or were not implemented as intended.

Information relevant to safety performance can be acquired from a variety of sources, including but not limited to:

1. Internal Quality Assurance/Quality Control by MBTA departments
2. Internal Safety Audits
3. External Audits
4. Maintenance Inspections
5. Facility and Equipment Inspections
6. Accident and Incident Investigations
7. Hazardous Conditions Investigations
8. Mandatory Reporting Programs
9. Voluntary Reporting Programs
10. Drug and Alcohol Program²¹
11. Frontline-based Safety Observations and Inspections

6.2.1 Internal Quality Assurance/Quality Control (QA/QC) by MBTA departments

MBTA departments monitor their processes and policies for compliance with, and sufficiency of, the Authority's procedures for operations and maintenance. Internal QA/QC by MBTA departments is a tool employed to monitor and measure department's procedures for operations and maintenance activities.

²¹ MBTA complies with all federal and state regulations regarding drug and alcohol testing. MBTA maintains drug and alcohol policies for all employees and contractors.



Through effective safety management, internal QA/QC assists in the assurance of MBTA safety commitments by utilizing the industry's best practices to:

- Establish rules compliance oversight and verification of effective implementation for both existing and updated rules, procedures, and policies
- Continuously train employees on applicable rules
- Ensure regular review and analysis of performance indicators, and other safety-related data found during rules compliance audits in order to identify, resolve, and track hazards related to rules compliance
- Communicate the purposes of safety-related rules and consequences of noncompliance to employees and contractors working on MBTA property

MBTA departments have internal policies and procedures to collect safety-related data, which is documented in the applicable appendix to this Plan. Elements of the QA/QC process for operations, Engineering & Maintenance, and vehicle maintenance departments are documented in the MBTA Safety Rules Compliance Program (SRCP). Elements of safety assurance-related data collection processes for MBTA's Capital Programs function are described within department manuals and program documents, and Capital Programs staff meet regularly with Safety to coordinate sharing of data, program development, and quality assurance activities. Capital Programs Safety Assurance Leads, Managers, and Data Analysts perform on-site safety assurance and contractor oversight.

6.2.2 Maintenance Inspections

MBTA maintenance inspections monitor and evaluate the overall safety of vehicle, facility, and infrastructure maintenance practices, both preventive and corrective. These inspections are used to evaluate:

- Conformance with safety requirements, standards, regulations and best practices
- Knowledge and implementation of safety rules and procedures
- Adherence to required routine maintenance schedules
- Effectiveness of established routine maintenance schedules

6.2.2.1 Vehicle Maintenance

In order to ensure compliance with the prescribed vehicle maintenance for each subway revenue vehicle, the Quality Assurance/Quality Control Division (QA/QC) staff visit each line in Subway Operations once per month and audit the inspection reports of a randomly chosen list of vehicles. The compliance inspection focuses mainly on verifying that periodic safety inspections are done in accordance with the Equipment Engineering and Quality Assurance (EE&QA) Manual.

6.2.2.2 Facility Maintenance

Audits and inspections of both routine and corrective facility maintenance are conducted regularly by Engineering and Maintenance (E&M) management and/or their contractors. E&M supervisors and forepersons ensure that maintenance to their facilities are completed successfully and documented, and that compliance with all applicable rules, regulations, and best practices is achieved.



6.2.2.3 Infrastructure Maintenance

Audits and inspections of infrastructure maintenance will be conducted regularly by Engineering and Maintenance management and/or their contractors. Supervisors and forepersons will ensure that maintenance to infrastructure is completed successfully and documented, and that compliance with all applicable rules, regulations, and best practices is achieved.

6.2.3 Facility and Equipment Inspections

All MBTA infrastructure, facilities, and equipment are subject to safety inspections. Facilities, infrastructure, and equipment subject to inspection include the following:

6.2.3.1 Facility Inspections

Facility safety inspections are conducted in all facilities to identify and document hazards and/or safety issues, as well as to monitor system-wide compliance with established policies and procedures. Compliance with fire protection requirements is verified through emergency drills, fire/life safety inspections, incident investigations, and periodic testing of fire protection and fire suppression systems. Additionally, MBTA's insurance company employs loss control engineers who routinely and periodically inspect all of MBTA's insured facilities, and issue reports and recommendations for improvement with respect to attaining and maintaining Highly Protected Risks status. Facilities subject to inspection include:

- Stations: Transit stations, parking lots, and surrounding customer circulation routes are periodically inspected for cleanliness, safety, and customer service issues. This includes scheduled inspections of all station equipment, stairs, platforms, restrooms, dead-ends, escalators, and elevators; routine monitoring of lighting levels on platforms, stairways, concourses, restrooms, and station entrance ways; and inspections of Police/Customer call boxes.
- Maintenance Facilities: Facility supervisors conduct inspections of environmentally sensitive areas and processes such as chemical storage areas, hazardous waste storage areas, chemical process areas, fuel dispensing areas, paint booths, spill containment, and personal protective equipment. These inspections also pertain to maintenance facilities equipment, such as lifts and cranes. These inspections may be conducted by contractors under MBTA oversight.

6.2.3.2 Vehicle Equipment Inspections

Safety inspections are regularly conducted for all vehicle equipment, including revenue and non-revenue vehicles, to identify and document hazards and/or safety issues, as well as to monitor system-wide compliance with established policies and procedures.

6.2.3.3 Infrastructure Inspections

MBTA-owned infrastructure and systems subject to routine inspections include the following:

- Bridges: Routine inspections of bridges are performed at established cycles using approved guidelines. The Authority has developed the Railroad Operations Commuter Rail Design Standards Manual to ensure compliance with the inspection and rating guidelines established in the FRA's "Statement of Agency Policy on the Safety of Railroad Bridges," which also incorporates bridge inspection and rating requirements for transit. The Authority also uses the Federal Highway Administration (FHWA) Pontis bridge management software as well as MassDOT's 4D database system that incorporates inspection forms for Authority-owned highway, transit, and railroad bridges; loadings for highway, transit, and railroad cars; and other relevant information pertaining to highway, transit, and railroad bridges.



- Signals and Communication Systems: Inspections include but are not limited to train stop, car-borne Automatic Train Operation (ATO), two-way radio system, third rail heater system, and switch obstruction tests. DPU-required testing on vital relays is performed in-house on an ongoing basis. New signal installations undergo comprehensive verification testing prior to being placed into service. Signal engineers provide technical oversight for the testing program.
- Power Systems: Inspections include but are not limited to manhole, third rail, feeder cables, and inspections of overhead catenary systems (OCS).
- Track: Track inspections are regularly conducted in accordance with MBTA track standards manuals, which complies with DPU requirements in 220 CMR 151.11, Track Inspections.

6.2.4 Safety Event Investigations

Safety event (Accident, Incident, and Occurrence) investigations use a defined process of determining the causal and contributing factors of an accident, incident, or hazard, for the purpose of preventing recurrence and mitigating risk. Safety event investigations use a standard consistent with federal and state regulation as well as industry best practices. Although safety event investigations take place after an event has occurred, MBTA's ultimate goal is to identify and correct hazards and deficiencies before any injuries or property damage can occur.

The MBTA Safety Event Investigation Manual describes the process for an investigation at MBTA properties, Right of Way (ROWs), equipment, environment, rolling stock, personnel, and facilities where an accident, incident, or occurrence may occur or has already occurred. The investigation process includes the following:

- Site inspection and investigation
- Notification requirements
- Causal factor identification
- Lessons learned
- Corrective Action Plan development and implementation
- Communication and distribution of lessons learned

All pertinent information is obtained prior to MBTA investigators formally documenting causal factors. The classification of causal factors presents a systematic, multidimensional approach to error analysis and event prevention. MBTA investigators use the Human Factors Analysis & Classification System (HFACS) including the applicable HFACS attributes in the event analysis. Refer to MBTA's Safety Event Investigation Manual for further information on causal factors identification.

6.2.4.1 DPU and FTA Investigation Requirements

MBTA notifies the DPU and FTA within two hours of any accident occurring on the MBTA rail system. MBTA provides a written notice to the DPU of a hazard, accident or similar event, to the extent possible under the circumstances, includes:

1. Name and title of person reporting;
2. Event type;
3. Location, time, and date of event;
4. Fatalities;



5. Injuries;
6. MBTA vehicle(s) involved (type, number);
7. Other vehicle(s) involved (type, number);
8. Property damage estimate;
9. NTSB reportable;
10. FTA reportable;
11. MBTA primary person (i.e., Lead Investigator) conducting the investigation (name, title, phone and fax numbers, email address);
12. Description of the event;
13. Immediately implemented and/or planned corrective actions;
14. Name and telephone number of person from whom additional information may be obtained;
15. Method and time of notice to the DPU.

DPU oversees and monitors MBTA's investigation process. MBTA provides DPU access to documentation, investigation sites, and fact-finding activities. The MBTA and DPU coordinate to ensure investigation findings are analyzed prior to finalizing investigative reports. Coordination between MBTA and DPU is described in Section 6.3.4.1.

DPU may conduct its own investigation according to the requirements of 220 CMR 151.09 and submit the final report and subsequent findings to MBTA. MBTA reviews the DPU final report to assess its safety performance which may result in MBTA using its SRM process described in Chapter 5. If a corrective action plan (CAP) is required, MBTA will follow the CAP process described in Section 6.55.1 and 220 CMR 151.07. DPU allows MBTA an opportunity to file a written dissent.

6.2.5 Hazardous Conditions Investigations

Pursuant to 220 CMR 151.06(4), DPU shall be notified by MBTA Safety when any condition meeting the two highest risk levels is assessed within the Risk Assessment Matrix. MBTA notifies the DPU within two hours after the Safety Risk Assessment (see section 5.2.4) is completed and will provide the SRM worksheet/process used to determine that a High or Serious risk(s) exists.

After initial notification, the Department may require MBTA to conduct further activities in order to provide more detailed information, including conducting an investigation pursuant to 220 CMR 151.09(3) through (9).

6.2.5.1 Investigation Procedures for Hazardous Conditions

In the event DPU requires an additional investigation into the hazardous condition, MBTA will use the accident and incident investigation process described in section 6.33.4 of this Transit Safety Plan and documented in the Safety Event Investigation Manual.

6.2.5.2 On-Going Communication with DPU

In addition to the initial notification requirements, MBTA Safety also maintains ongoing communication with DPU regarding other identified hazards and safety risks. This ongoing communication is facilitated in several ways:



1. DPU access to MBTA's hazard tracking system
2. DPU receives OCC pages via mobile communication
3. DPU attendance and participation in standing Safety Committees (i.e., SRCP, Derailment, etc.)
4. Corrective Action Plans (CAPs)
5. Monthly meetings, which include a discussion of:
 - Newly identified hazards
 - CAP statuses
 - Coordinated responses to FTA Safety Advisories and/or Proposed Rulemakings
 - Updates on accident, incident, or employee injury investigations
 - Updates regarding changes to the SMS
 - Key findings from the SRM process

MBTA and DPU work collaboratively to ensure that ongoing communication is taking place throughout the investigation process, and MBTA will continue to update DPU on the status of any outstanding CAPs at each monthly meeting and as requested.

6.2.6 Mandatory Safety Reporting Programs

MBTA participates in several mandatory reporting programs. These reports are now incorporated into MBTA's SMS. This means that all reports will still be made to the FTA, DPU, or other regulatory bodies per standard procedures, but copies of the reports will also be supplied for inclusion into the SRM process as appropriate.

6.2.6.1 State and Federal Reportable Events

- Fatality at the scene or occurring within 30 days following the accident;
- One or more persons suffering serious injury or an injury requiring transport away from the scene;²²
- Substantial property damage resulting from a collision involving a transit vehicle or the derailment of a rail transit vehicle;²³
- Evacuation due to life safety reasons or to the rail right-of-way;
- A mainline or yard derailment of revenue or non-revenue vehicles;
- Run-away train
- Collision with an individual or an object resulting in Serious Injury or fatality;
- Collision between a rail transit vehicle and second rail transit vehicle or a rail transit non-revenue vehicle;

²² Utilizing the FTA definition of "serious injury" in 49 CFR 674 and 220 CMR 151: "Any injury which: (a) requires hospitalization for more than 48 hours, commencing within seven days from the date that the injury was received; (b) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (c) causes severe hemorrhages, nerve, muscle, or tendon damage; (d) involves any internal organ; or (e) involves second- or third-degree burns, or any burns affecting more than 5% of the body surface."

²³ Utilizing the FTA definition of "substantial damage" from the National Transit Database: "Physical damage to transit or non-transit property including vehicles, facilities, equipment, rolling stock, or infrastructure. Substantial damage includes damage which adversely affects the structural strength, performance, or operating characteristics of the vehicle, facility, equipment, rolling stock, or infrastructure requiring towing, rescue, onsite maintenance, or immediate removal prior to safe operation. Substantial damage excludes damage such as cracked windows, dented, bent or small punctured holes in the body, broken lights, mirrors, or removal from service for minor repair or maintenance, testing, or video and event recorder download."



- Collision at grade crossing (NTD) resulting in Serious Injury or fatality (DPU, FTA);
- Fires resulting in Serious Injury or fatality.
- System & Personal Security Event (only NTD)
- Suffered a work-related hospitalization
- Amputation
- Loss of an eye
- Fire originating on the bus with visible flames needing extinguishment
- Collision with a person or bicyclist requiring transport to a medical facility
- Bus collision resulting in a serious injury
- Event resulting in substantial damage
- Collision at a grade crossing

6.2.7 Voluntary Safety Reporting Programs

MBTA's voluntary, confidential, non-punitive employee reporting program allows for the submission of information related to observed hazards, sole-source safety events, or inadvertent errors without an associated legal or administrative requirement to report.²⁴ Reported information should be used solely to support the enhancement of safety.

Voluntary reporting is non-punitive because it affords protection to reporters, thereby ensuring the continued availability of such information to support continuous improvements in safety performance. The intent is to promote an effective reporting culture and proactive identification of potential safety deficiencies. Reports will not be accepted into the voluntary, confidential, non-punitive employee reporting program if one of the following conditions are met:

- Criminal Activity;
- Substance Abuse;
- Use of Prohibited Substances;
- Falsification of employee report; or
- *Willful* Disregard for Safety.

Reports that are rejected for any of the reasons mentioned above will be archived and the appropriate state or federal authority will be notified.

Voluntary reporting systems are confidential, which protects the reporter from being identified. The reporter's identity is only known to the system's gatekeepers to allow for follow-up action. All personnel, including all members within the Safety department, exposed to confidential information are required to sign a confidentiality agreement.

²⁴ Within the context of MBTA's voluntary employee safety reporting program, relevant contractors may also use any method necessary to report safety concerns without fear of reprisal.



Voluntary safety reports are archived and de-identified once any necessary follow-up actions are taken. De-identified reports can support future trending analyses to track the effectiveness of risk mitigation and to identify emerging hazards.

To be effective, safety reporting tools are readily accessible to operational personnel. Operational personnel are educated on the benefits of MBTA's voluntary, confidential, non-punitive employee reporting program and provided with positive feedback regarding remedial actions taken in response to the report. Within the context of SMS, the employee promptly reports hazards to the manager, who will then notify appropriate parties and complete the communication loop by following up with the employee. The alignment of reporting system requirements, analysis tools, and methods can facilitate exchange of safety information as well as comparisons of certain safety indicators.

MBTA currently uses the following methods as a way for employees to report safety concerns to senior management without fear of reprisal or disciplinary action:

- Safety Hotline: (617) 222-SAFE (7233)
- Safety Notification email: SafetyNotification@mbta.com
- Direct reporting to an MBTA Safety official
- Form B "Notification to MBTA Safety;" forward to MBTA Safety office or fax form: (617) 222-5127

6.3 Data Analysis

A critical component of SMS is tracking and analyzing safety data to make inferences about MBTA's safety performance and enhance awareness of potentially hazardous situations. MBTA collects and analyzes safety data as described in this Safety Plan and supports the sharing of the data to continually improve the level of safety.

Key parties within MBTA responsible for generating, maintaining, and reporting safety-related data include Plans and Schedules, OCC, Operations Analytics, Operations and Maintenance Training, Procurement, and MCC. Safety coordinates with outside parties on issues related to safety data management primarily through the Data Governance Committee, a multidisciplinary team established to develop organization-wide policies and procedures regarding the MBTA's usage of data. Tasked with reviewing roles and responsibilities of collecting, analyzing, storing, and sharing of safety data; the Data Governance Committee's objective is to evaluate processes and best practices to establish policies, procedures, and standards for data quality, privacy, security, and compliance.

MBTA's data analysis process prioritizes delivery of clear, actionable information to management safety committees and executive leadership to support informed safety decision-making. MBTA Safety is committed to continuously developing and refining all data analysis reports and products in support of this aim, including through collection of end-user feedback and implementation of new software, tools, and technologies.

Every month, MBTA Safety disseminates a Safety Data Analysis Report (SDAR) that documents safety performance indicators, performance patterns and trends, and emerging issues of interest to Authority management. The SDAR serves as a repository and authoritative summary of data reported by Safety to other business units through other daily, weekly, and monthly analysis reports.



Data analysis is used to identify hazards and verify the effectiveness of implemented risk mitigations. Data analysis also identifies areas where safety could be improved.

6.3.1 Performance Targets

The Joint Labor-Management Safety Committee establishes MBTA's performance targets using the 3-year rolling average of the data submitted to the National Transit Database. These targets establish the basis of the risk reduction program for transit operations to improve safety by reducing the number and rates of accidents, injuries, and assaults on transit workers. The JLMSC specifically will focus on:

- Reducing the number of vehicular and pedestrian accidents involving buses, including by measures to reduce visibility impairments for bus operators that contribute to accidents
- The mitigation of assaults on transit workers, when a risk analysis performed by the safety committee determines that additional measures would reduce assaults on and injuries to transit workers.

6.3.2 Management of Change

MBTA safety assurance activities serve as a check on the SRM process. The procedures are designed to ensure that safety risk mitigations are effective, to collect safety performance data that will help MBTA predict future safety events and mitigate or eliminate them, and to analyze the potential safety risks of any new practices or procedures adopted by MBTA. As such, MBTA has management of change processes in place for identifying, evaluating, and approving proposed changes that may introduce new hazards or impact MBTA's safety performance. These processes ensure MBTA documents and analyzes the efficacy of implementation changes to the public transportation system and/or safety critical aspects of MBTA's system, including operations, processes, administrative policies and procedures, rules, infrastructure, vehicles, and training.

6.3.2.1 MBTA Safety Certification Program

MBTA has a process to ensure major capital projects that: rehabilitate; replace; extend; or modify infrastructure, systems, vehicles, and equipment are safe, and that hazards and safety risks are adequately addressed prior to use. Several activities are conducted to assure that designs incorporate and achieve safety requirements. MBTA Safety reviews all facilities and system designs for safety input. Disposition of comments are resolved through MBTA design review process. In addition, designs are formally certified and safety items are identified through standards and requirements. Industry standards and experience are also used to evaluate unique issues related to transit safety. In several cases, special studies or analyses are performed to address specific safety issues. In the case of new capital projects, the MBTA Safety works with both the Capital Delivery department and the Transit Police to develop a Safety and Security Management Plan as required by FTA.²⁵

6.4 Safety Performance Assessments

MBTA's safety management committees assess outputs from the safety data collection and analysis process to determine whether MBTA's safety performance is effective. The assessment process primarily includes evaluation of whether MBTA is meeting its safety objectives and targets, but may also be applied when safety

²⁵ Refer to the MBTA Safety Certification Program (SAFE1.09.00) for further information.



data analysis indicates an undesirable trend or pattern and an applicable objective, target, or performance indicator has not yet been established.

System assessments can have the following general outcomes:

- Performance is acceptable
 - Process returns to Safety Assurance's first step: System Monitoring.
- Conformity with risk mitigations, corrective actions, and regulations appears to be satisfactory, however, desired results are not being obtained
 - SRM process would be warranted to determine potential risk mitigations.
- Performance is not acceptable
 - Corrective Action Plan or SRM process would be warranted. MBTA must develop and carry out a plan, under the direction of the Accountable Executive, to address safety deficiencies identified.

Additionally, if new or uncontrolled hazards are discovered during the course of safety performance assessments, the SRM process would be initiated.

6.4.1 Corrective Action Plan

MBTA may develop a written corrective action plan (CAP) to address hazardous conditions and sub-standard safety performance. Circumstances that may require a CAP include, but are not limited to:

- NTSB Recommendations
- FTA Safety Advisories
- DPU Independent Assessments
- DPU unannounced on-site oversight activities
- DPU inspections
- MBTA Chief Safety Officer Directives
- Good Faith Safety Challenges
- External/Internal Audit Findings
- Safety Event Investigations
- Non-conformance with and sufficiency of MBTA rules and procedures
- Trends or changes identified through the SRM process and hazard identification

When the determination is made that an event/hazard requires a CAP, MBTA Safety and all affected departments collaborate to determine what sub-standard safety performance must be corrected. A CAP may be developed if the risk(s) of the identified hazard(s) warrant a risk mitigation. The affected departments draft a CAP to ensure a risk mitigation(s) is appropriate and feasible to mitigate the risk to an acceptable level.

CAPs are formally sent to DPU for review and acceptance within sixty (60) days from the identified event/hazard, as required by 220 CMR 151.07(3). MBTA develops written CAPs on DPU-approved forms to address hazardous conditions. The DPU reviews and approves the CAP prior to MBTA carrying out the plan.



If MBTA cannot submit a CAP to DPU within sixty (60) days of the discovery of the hazard and/or risk, MBTA submits a written request for an extension outlines the reason(s) for the extension, including the tasks to be completed and a timeline for completion.

MBTA Safety uses a web-based program to document all corrective action plans and recommendations through to closure.

Each CAP identifies the:

- Event or condition requiring corrective action
- Action necessary to eliminate or control occurrence or condition
- Schedule for implementation
- Person or department responsible for implementation
- The department supervisor who is attesting to the content of the CAP
- Anticipated schedule after implementation to perform data analysis over a sufficient period of time (e.g., 30, 60, 90 day reviews) to verify effective implementation
- Data sources to be used to determine if additional actions are required

To resolve each CAP, MBTA must provide:

- Verification that each corrective action described in the CAP has been implemented, or that a proposed alternate action(s) has been implemented subject to DPU review and approval
- Status reports as requested by DPU, describing the status of each corrective action not completely implemented pursuant to a CAP's implementation schedule
- Reports to the DPU when the requirements of an approved CAP have been satisfied

MBTA and DPU meet regularly to review overall progress regarding CAPs. CAPs remain open until DPU is notified and accepts that MBTA has successfully implemented all documented corrective actions, or that alternate actions have been implemented that would satisfy a CAP closure, subject to DPU review and approval.

All employees affected by a corrective action are made aware of the reason why a corrective action is being implemented. Communication methods (e.g., Safety Flash) are further discussed in Section 7.2.

6.4.1.1 Immediate or Emergency Corrective Actions

Immediate or emergency corrective actions are deployed by MBTA when a risk poses an imminent danger to employees or the public. MBTA implements immediate or emergency corrective actions prior to communicating with the DPU, however, all efforts are made to notify DPU within 90 minutes after the risk is mitigated to an acceptable level. After such risk is mitigated to an acceptable level, MBTA holds an after action review meeting to determine if the corrective actions in place are adequate. If such emergency corrective actions are not adequate, MBTA follows its standard process for developing and implementing CAPs, subject to DPU approval.

6.5 Continuous Improvement



MBTA is committed to continually improving SMS and the overall level of safety. Actions taken to achieve continuous improvement are an output of the safety performance assessment process. If conformity with risk mitigations is found to be ineffective (e.g., required training not accomplished, procedures not followed) the appropriate management safety committee would identify a course for corrective action.

It is standard practice to perform SRM when a risk mitigation is doing what is intended, but not producing the expected result.

Safety assurance processes documented in this Plan support improvements to the SMS through continual verification and follow-up actions. These objectives, at a minimum, are achieved through the application of internal safety audits, external audits, and peer agencies' reviews of the SMS.

6.5.1 Internal Safety Audits

The MBTA Internal Safety Audit (ISA) Program ensures safety-related tasks and activities performed by MBTA departments are adhering to written plans, programs, and procedures; and are consistent with federal and state regulations, as well as industry best practices. The comprehensive internal safety audit process verifies the Safety Plan is effectively implemented; performing its intended functions; achieving its performance objectives; and ultimately safeguarding MBTA personnel and the public from safety risks.

6.5.1.1 Annual Internal Safety Audit Report

MBTA prepares a report describing its internal audits conducted and the status of subsequent findings and corrective actions. The report is reviewed by Agency Leadership, signed by the Accountable Executive, and formally states the safety performance results in terms of the adequacy and effectiveness of this Transit Safety Plan.²⁶ The MBTA Internal Safety Audit process is documented in the MBTA Internal Safety Audit Program.

6.5.2 External Audits and Inspections

MBTA complies with all local, state, and federal agencies' oversight activities on MBTA property. The Department of Public Utilities (DPU) conducts a continuous audit of the MBTA system and prepares a report annually, from which MBTA may use to identify safety concerns or hazards.

Every three years, the DPU and FTA audit the MBTA. The triennial safety review is a formal, comprehensive, on-site examination by the oversight agency of a transit agency's safety practices to determine whether MBTA complies with the policies and procedures required under the Safety Plan.

In addition to the above-mentioned audits, the DPU has the authority and capability to enter MBTA facilities to inspect infrastructure, equipment, records, personnel, and data, including the data that MBTA collects when identifying and evaluating safety risks.

6.5.3 Peer Agency SMS Reviews

MBTA is a member of the American Public Transportation Association (APTA) which supports the exchange of ideas and information from one transit agency to another. Over the course of SMS development and implementation, MBTA has had successful peer agency meetings to discuss their SMS. MBTA intends on

²⁶ Refer to 220 CMR 151.05(3) for regulatory context.



**MASSACHUSETTS BAY
TRANSPORTATION AUTHORITY**



REVISION: 3

MBTA Transit Safety Plan

PAGE: 65 of 107

meeting with like-size agencies on a bi-annual basis to discuss successes and challenges of the SMS. The goal of these meetings is to gather information on effective safety practices that could be incorporated into the SMS.



7 SAFETY PROMOTION

Safety promotion is one of the four components of SMS. Safety promotion refers to the collection of activities undertaken by MBTA to promote a positive safety culture, to communicate the outputs of SMS, and to ensure the application of safety lessons learned in order to foster the continuous improvement of safety in MBTA operations.

MBTA is committed to ensuring that all personnel are informed about safety policies and objectives, how well those goals are met, results of accident and incident investigations, new safety practices, and other pertinent safety information.

7.1 Safety Culture

Safety is a core value and MBTA will strive for continual improvement. In order to promote the positive safety culture that is desired, agency leadership has directed that all employees are responsible for and must consider the impact of safety in everything they do.

It is the stated purpose of our agency leadership to ensure the growth of a positive safety culture throughout the organization. To this end, an informed culture has been established at MBTA where people understand the hazards and risks inherent in their areas of operation. This is accomplished through high quality training, on-the-job training (OJT), and continued coaching to ensure that all personnel are provided with the necessary knowledge and skills to work safely. Training specific to SMS is described in this Plan.

MBTA will strive to build a robust reporting culture that encourages every employee to contribute to the overarching MBTA safety knowledge base. The reporting programs that have been implemented are described in this Plan.

In order to ensure the growth of a learning culture, the outputs from SMS, hazards identified, and safety lessons learned, are communicated to all employees throughout the methods described in this section.

In order to achieve the growth of a positive safety culture, the following programs have been implemented:

1. A formal Safety Policy Statement has been published in the front of this Plan outlining MBTA's commitment to SMS.
2. MBTA management has allocated the resources that are required to operate and maintain the SMS.
3. Safety responsibilities for all MBTA personnel have been specified in this Plan.
4. All personnel must complete training on the Safety Management System as described in this Plan.
5. The employee safety reporting system described in this Plan is available 24 hours per day and provides for complete confidentiality or anonymity.
6. Internal safety audits are completed by all departments on a regular basis as described in this Plan.
7. MBTA maintains an electronic database of safety information collected from available sources. This data is regularly analyzed, assessed, and applied to improve safety.
8. Clear channels of communication are being established throughout MBTA.
9. A Safety Data Analysis Report (SDAR) is published on a monthly basis to keep all MBTA management current on the status of MBTA's activities, the operation of SMS, hazards identified, safety actions taken,



and safety lessons learned. This newsletter is distributed and is available to employees on the MBTA Intranet.

7.2 Safety Communication

Effective safety communication is an essential element to safety promotion. The Transit Safety Plan has been developed in order to ensure that employees are aware of SMS policies, processes, and tools that are relevant to their duties and responsibilities. MBTA's safety policy written by the Accountable Executive is communicated to employees and contractors during all initial and recurrent Right-of-Way training classes, the SMS Fundamentals for All Employees training course, as well as during New Hire Orientation for all incoming employees. All employees are directed to the location of the current safety policy statement located on TSTOP.

MBTA used a closed-loop communication method where feedback is circulated back to the originator. Within the context of SMS, the employee promptly reports hazards to the manager, who will then notify appropriate parties and complete the loop by following up with the employee.

MBTA has developed several different means to communicate hazard information, why safety actions have been taken, and why safety procedures are implemented or modified:

- Special Orders (Please refer to departmental appendices)
- Safety Advisories
- Safety Directives
- Safety Bulletins (distributed as needed)
- Safety Flashes (distributed as needed)
- Training Flashes
- Safety Blitzes
- Agents of Safety Awards
- Safety Stand-down's
- Rail Safety Week
- Safety Data Analysis Report (SDAR) (distributed monthly and annually by MBTA Safety)
- Between The Lines Newsletter
- Everbridge Notifications
- TSTOP

MBTA communicates lessons learned as well as proactive messages to ensure employees are continually involved in the SMS. Significant accident and incident investigation outcomes may be communicated to appropriate employee groups and relevant contractors. MBTA limits the amount of identifying information, when necessary, to ensure confidentiality for employees involved in the accident or incident.



8 SAFETY TRAINING

MBTA provides SMS training to all employees commensurate with their position in the organization and their duties relevant to the operation and performance of the SMS. Training consists of initial SMS training for all employees and further refresher training for management and front line employees with specific SMS-related duties. Rail transit safety-related positions, responsibilities, and authorities are defined, documented, and communicated throughout the MBTA. To ensure currency, SMS training modules are reviewed and updated periodically.

Successful operation of MBTA's SMS is tied to the success of the SMS training program. The training is designed to ensure that each employee understands his/her individual SMS responsibilities and is competent to perform such duties. Accordingly, safety training will begin with each employee's initial education and continue throughout the term of employment.

MBTA is committed to SMS training to provide all employees with the competencies to work safely and effectively. This will be accomplished by:

- Developing SMS training programs in co-operation with employees and operational areas
- Delivering appropriate SMS training programs in an effective and timely manner
- Maintaining training records of all training completed

Competency is the result of knowledge, skills, and abilities that are obtained by education, training, and experience. In order to ensure competency at MBTA, minimum qualification standards have been developed for all personnel described in this section. Training will be provided to ensure that each individual meets or exceeds that standard.

The specific SMS training programs utilized are discussed in the sections below.

8.1 Personnel Directly Responsible for Safety Oversight

MBTA Safety employees and relevant contractors are directly responsible for safety oversight at the MBTA. These individuals acknowledge their roles and responsibilities outlined in this Safety Plan; and whose primary job function includes the development, implementation and review of the MBTA Transit Safety Plan. Personnel directly responsible for safety oversight undergo initial and refresher training as it relates to MBTA's SMS performance.

MBTA personnel directly responsible for safety oversight are required to adhere to the following FTA-developed curriculum, as required by 49 CFR Part 672: Public Transportation Safety Certification Training Program (PTSCTP), over a three-year period:

- One hour course on SMS Awareness—e-learning delivery (all required participants)
- Two hour courses on Safety Assurance—e-learning delivery (all required participants)
- Twenty hours on SMS Principles for Transit (all required participants)
- TSSP curriculum (minus Transit System Security (TSS) course) (all required participants—credit will be provided if participant has a Course Completion Certificate of previously taken TSSP courses)



- Rail System Safety (36 hours)
- Effectively Managing Transit Emergencies (32 hours)
- Rail Incident Investigation (36 hours)

All MBTA Safety personnel also receive the full suite of SMS-related training described in Section 8.3.

In fulfillment of regulatory requirements related to ongoing PTSCTP refresher training, MBTA's designated refresher training at a minimum includes a one hour course on SMS fundamentals administered every two years.

8.1.1 MBTA Chief Safety Officer

The MBTA CSO has the authority and responsibility for day-to-day implementation and operation of MBTA's SMS. The MBTA CSO has competencies in hazard identification, incident investigation, safety certification, coordination with regulatory agencies, communication skills with agency leadership and front-line employees. The MBTA CSO has enrolled in training requirements outlined in 49 CFR Part 672.

The MBTA CSO manages the SMS Function during SMS Implementation and has experience:

- Overseeing the safety function of MBTA.
- Serving as MBTA's SMS Subject Matter Expert.
- Coordinating Key Staff to support SMS implementation.
- Facilitating the development of SMS processes and activities.
- Procuring technical resources for SMS implementation.
- Communicating SMS implementation progress and challenges.
- Socializing SMS activities to agency leadership and staff as necessary.

8.1.2 Deputy Chief Safety Officer

The Deputy Chief Safety Officer directs the functions and activities of the MBTA's Safety department related to the development, implementation, audit, inspection, and assessments of initiatives, utilizing the fundamentals of the Safety Management System (SMS).

- Plans and establishes SMS objectives in compliance with Authority goals and mission statement.
- Plans, directs, and coordinates, through subordinate level staff, department work plans and provides project management on the implementation and management of Authority-wide safety projects, including SMS.
- Oversees the SMS program and establishes safety objectives to ensure that the Authority and customers are given the highest degree of safe and secure transportation service.
- Directs and oversees MBTA Transit Safety Plan.

8.1.3 Safety Engineering



Safety engineering personnel have knowledge of the concepts, principles, theories, and methods to identify, control, mitigate, and eliminate safety hazards in the design and use of facilities, equipment, vehicles, systems, operations, and work processes.

8.1.4 Safety Event Investigators

MBTA safety event investigators have training and/or experience in investigations, systems analysis, root cause analysis, and risk management, as well as evaluation principles and techniques. Any one or combination of the following could accomplish training:

- MBTA prepared courses
- College courses
- Industry seminars and workshops
- Selected Transportation Safety Institute (TSI) courses

Refer to the MBTA Safety Event Investigation Manual for further information.

8.1.5 Internal Safety Auditors

220 CMR 151.05(2)(c) requires MBTA, "...use qualified personnel who are not supervising managers of the activity under review," to perform the Internal Safety Audit.

MBTA ISA auditors have training and/or experience in auditing, systems analysis, root cause analysis, and risk management, as well as evaluation principles and techniques. Any one or combination of the following could accomplish training:

- MBTA prepared courses
- College courses
- Industry seminars and workshops
- Selected Transportation Safety Institute (TSI) courses

MBTA created a required internal safety audit training module in The Learning Hub for any personnel conducting internal safety audits. Refer to the MBTA Internal Safety Audit (ISA) Program for further information.

8.2 Personnel Directly Responsible for Safety

MBTA has established a comprehensive safety competence program for all personnel directly responsible for safety, including operations and maintenance personnel whether at the executive level, frontline management, or labor. Each departmental job code has an associated job training profile that lists all required safety-related training courses, including education in the following areas:

- SMS
- Safety event investigation
- Incident command
- Occupational health and safety
- Operations and maintenance
- Right-of-way safety



- De-escalation

The job training profiles also specify continuing education requirements and refresher frequencies for each job code and assigned course title.

8.3 MBTA SMS-Related Training Courses

The level of training provided ranges from general safety familiarization to detailed risk management training. Training will be delivered in accordance with employee's duties relevant to the operation and performance of the SMS.



Figure 9: Safety Training Courses Supporting MBTA's SMS

MBTA will utilize the SMS training modules listed below:

- MBTA Safety Management System (SMS) Fundamentals Training (all employees and relevant contractors)
- Safety Risk Management Training (all safety personnel, executive and frontline management)
- Specialized SMS Training (agency leadership, executive management, and safety personnel)

Details of the SMS-specific training content are provided below. This training is reviewed and updated periodically.

8.3.1 MBTA SMS Fundamentals Training

As part of new employment training, all employees are educated on the fundamentals of SMS and employee safety reporting systems. Initial MBTA SMS fundamentals training module addresses the objectives shown below:

- Define what an SMS is;
- What an employee's role is in the SMS;
- Hazard identification;
- How to report hazards and safety concerns; and



- Voluntary and mandatory reporting system differences

New employees complete MBTA's SMS fundamentals training module during New Hire Orientation. Current employees are required to attend the SMS fundamentals training hosted in The Learning Hub.²⁷

Relevant contractors receive SMS fundamentals training in the initial and recurrent Right-of-Way course, provided to employees and relevant contractors every two years.

8.3.2 Safety Risk Management Training

Three SRM training modules were created for executive and frontline management, Safety personnel, and subject matter experts who participate in the SRM process.

8.3.2.1 Safety Risk Management at the MBTA Training

The Safety Risk Management at the MBTA training module is an introductory course to the SRM process. The training module addresses the objectives shown below:

- Define SRM, including how it fits into MBTA's overall SMS;
- Describe why it is important to conduct SRM and the value it brings to MBTA;
- Recognize who is involved in SRM and what roles they play;
- Identify when and how to initiate the SRM process; and
- Understand the five steps of MBTA's SRM process.

8.3.2.2 Preparing for an SRM Workshop

The Preparing for an SRM Workshop module is designed for those personnel who may participate in the SRM process by attending an SRM workshop and using an SRM worksheet. The training module addresses the objectives shown below:

- Identify when and how to initiate the SRM process;
- Understand the five steps of MBTA's SRM process; and
- Apply this knowledge by participating in upcoming SRM workshops and using an SRM worksheet.

8.3.2.3 SRM Facilitation Training

The SRM Facilitation training module is an in-depth course designed for Safety personnel who are required to facilitate the SRM process using the SRM worksheet, or equivalent. The training module addresses the objectives shown below:

- Recognize when and how to initiate the SRM process;
- Describe how to effectively prepare for and conduct an SRM workshop;
- Use each part of the SRM worksheet to guide participants through the SRM process; and
- Explain how to finalize the SRM worksheet and complete the process.

8.3.3 Specialized SMS Training

²⁷ The Learning Hub is MassDOT/MBTA's learning management system.



In addition to specialized SRM training, senior management receive specialized SMS training applicable to their safety risk accountabilities. Every member of agency leadership and executive management who oversee the SMS implementation and maturation, as well as Safety personnel, will receive the following training modules.

8.3.3.1 SMS Leadership Responsibilities Training

The purpose of the SMS Leadership Responsibilities training module is to help MBTA executive management, Safety personnel, and other employees understand their leadership responsibilities for safety within MBTA's SMS. The training module addresses the objectives shown below:

- Define the purpose and scope of the MBTA Transit Safety Plan and how it aligns with regulatory requirements;
- Explain how the MBTA's organizational structure supports its SMS; and
- Describe MBTA management responsibilities for safety under this Plan.

8.3.3.2 Safety Culture Training

The purpose of the Safety Culture training module is to help MBTA executive management and safety personnel understand their roles in contributing to a positive safety culture at MBTA. The training module addresses the objectives shown below:

- Discuss safety culture and how it impacts an organization; and
- Identify elements, characteristics, and behaviors associated with a positive safety culture.

8.3.3.3 Safety Performance and Oversight Training

The purpose of the Safety Performance and Oversight training module is to provide MBTA agency leadership, Safety Committee members, and Safety Department staff with an overview of their roles and responsibilities regarding safety performance and oversight of SMS through safety assurance activities. The training module addresses the objectives shown below:

- Define safety performance;
- Identify leadership responsibilities for oversight of SMS;
- Set safety targets based on agency goals/objectives; and
- Evaluate safety performance through measurements and trends.

8.3.3.4 Safety Assurance Training

The purpose of the Safety Assurance training module is to provide MBTA Agency Leadership, Safety Committee members, and Safety Department staff with an overview of their roles and responsibilities regarding safety assurance activities. The training module addresses the objectives shown below:

- Define safety assurance process; and
- Explain the importance of continuous improvement.

8.3.3.5 Local Safety Committee Training



MBTA offers two training modules regarding local safety committees, as described below. All agency leadership, executive management, frontline managers, and Safety personnel take the Introduction to Participating in a Local Safety Committee course. In addition, Safety Department staff take the Local Safety Committees: Safety Department Responsibilities module.

8.3.3.5.1 Introduction to Participating in a Local Safety Committee

The purpose of the Introduction to Participating in a Local Safety Committee course is to introduce MBTA management and personnel to local safety committees within the MBTA safety committee structure. The training module addresses the objectives shown below:

- Explain why local safety committees are essential to MBTA's SMS;
- Identify the benefits – both personal and for the MBTA – of being an active member in a local safety committee;
- Define roles and responsibilities for personnel involved in local safety committees; and
- Describe what happens before, during, and after local safety committee meetings.

MBTA management periodically reassign Local Safety Committee trainings to Safety personnel and staff from other business units to ensure a consistent baseline of knowledge related to committee roles and responsibilities, participation, and facilitation. The Introduction to Participating in a Local Safety Committee training course is promoted to front line personnel via committee meetings, facility safety message boards, and TCOMMS communication screens, and is available to any employee on a continuous basis via the Learning Hub.

8.3.3.5.2 Local Safety Committees: Safety Department Responsibilities

The purpose of the Local Safety Committees: Safety Department Responsibilities training module is to help Safety personnel better understand local safety committees and Safety's roles and responsibilities related to them. The training module addresses the objectives shown below:

- Describe why it is important for Safety personnel to actively engage in local safety committees, and the benefits of doing so;
- Describe the relationship between local safety committee inputs/outputs and MBTA's SMS;
- Define Safety's roles and responsibilities related to local safety committees; and
- Explain how Safety staff support local safety committee meetings through preparation, facilitation, and follow-up actions.



ACRONYMS

APTA	American Public Transportation Association
CAP	Corrective Action Plan
CDC	Centers for Disease Control
CFR	Code of Federal Regulations
CMR	Code of Massachusetts Regulations
CSO	MBTA Chief Safety Officer
DAG	Data Analysis Group / Accident Reduction Committee
DGM	Deputy General Manager
DLS	Massachusetts Department of Labor Standards
DPH	Massachusetts Department of Public Health
DPU	Massachusetts Department of Public Utilities
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GM	General Manager (General Manager and Accountable Executive are interchangeable terms)
JLMSC	Joint Labor-Management Safety Committee
MassDOT	Massachusetts Department of Transportation
MBTA	Massachusetts Bay Transportation Authority
MCRS	Maintenance Control and Reporting System
MIL-STD	Military Standard
NTD	National Transit Database
NTSB	National Transportation Safety Board
OCC	Operations Control Center
OHS	Occupational Health and Safety
OSHA	Occupational Safety and Health Administration
PTASP	Public Transportation Agency Safety Plan (also referred to as the MBTA Transit Safety Plan)
QA/QC	Quality Assurance/Quality Control
ROW	Right of Way
SGR	State of Good Repair
SMI	Safety Management Inspection



**MASSACHUSETTS BAY
TRANSPORTATION AUTHORITY**



REVISION: 3

MBTA Transit Safety Plan

PAGE: 76 of 107

SMRC	Safety Management Review Committee
SMS	Safety Management System
SOP	Standard Operating Procedure
SRCP	Safety Rules Compliance Program
TAM	Transit Asset Management
TPD	Transit Police Department
USC	United States Code



DEFINITIONS

Accident: An event that involves any of the following: a loss of life; a report of a serious injury to a person; a collision involving a rail transit vehicle; a collision involving public transportation vehicles; a runaway train; an evacuation for life safety reasons; or any derailment of a rail transit vehicle, at any location, at any time, whatever the cause. An accident must be reported in accordance with the thresholds for notification and reporting set forth in 49 CFR Part 674, Appendix A and 220 CMR 151.09.

Accountable Executive: A single, identifiable person who has ultimate responsibility and accountability for the effective implementation and maintenance of the Safety Management System throughout the authority's transit system; responsibility for carrying out the agency's Transit Asset Management Plan; and control or direction over the human and capital resources needed to develop and maintain both the agency's Public Transportation Agency Safety Plan, in accordance with 49 CFR 673, and the agency's Transit Asset Management Plan in accordance with 49 CFR 625. MBTA's Accountable Executive is the General Manager.

Annual Internal Safety Audit Report: The report prepared by the MBTA describing safety performance and SMS activities performed during the preceding twelve (12) months.

Causal Factors: The set of elements that affect an event's outcome. A causal factor is not necessarily a root cause, because whereas removing a causal factor can benefit an outcome, it does not with certainty prevent recurrence of a safety event.

MBTA Chief Safety Officer (CSO): An adequately trained individual who has responsibility for safety and reports directly to MBTA's Accountable Executive (General Manager). A Chief Safety Officer may not serve in other operational or maintenance capacities.

Closed-loop: The concept of a loop system where feedback is circulated back to the originator. Within the context of SMS, the employee promptly reports hazards to the manager, who will then notify appropriate parties and complete the loop by following up with the employee.

Configuration Management: The systematic control, monitoring, and documenting of all changes and/or modifications of a system's physical and operational features throughout its life cycle to ensure that the system and its various components reflect the current documentation. This plan incorporates by reference MBTA's Configuration Management and Control Safety Program (SAFE1.10.00).

Contractor: An entity that performs tasks required on behalf of the MBTA.

Continuous Improvement: Gradual, never-ending changes focused on meeting or exceeding MBTA's safety performance targets and safety objectives. Continuous improvement is a core sub-component found within Safety Assurance. Continuous improvement may come in the form of a safety recommendation, a corrective action plan, or other methods to improve safety at the MBTA.

Corrective Action Plan (CAP): A plan developed by the transit agency that describes the actions it will take to minimize, control, correct, or eliminate hazards; and the schedule for implementing the actions it will take to minimize, control, correct, or eliminate hazards.



Emergency: A situation that is life threatening or one that causes damage on or in any agency facility, right-of-way, or vehicle.

Employee Safety Reporting Program: A Program formally recognized and approved by the MBTA that describes the process for employees to report safety conditions to senior management, protections for employees who report safety conditions to senior management, and a description of employee behaviors that may result in disciplinary action.

Environment: Operational setting, right-of-way, passenger interface, pedestrian/vehicle interface, weather, subway/non-subway, regulatory, political, media, etc.

Form B: A written document that allows employees to anonymously or confidentially document unsafe conditions and bring them to MBTA Safety for resolution.

Good Faith Safety Challenge: A stoppage in work, initiated by an employee, whenever the employee makes a good faith safety determination that the employee has been directed to either: take actions that would violate federal, state, or local safety regulations; or to take actions that would violate MBTA's operating rules, policies, procedures, or programs.

Hazard: Any real or potential condition that can cause injury, illness, or death; damage to or loss of the facilities, equipment, rolling stock, or infrastructure of a public transportation system; or damage to the environment.

Incident: An event that involves any of the following: a personal injury that is not a serious injury; one or more injuries requiring medical transport; or damage to facilities, equipment, rolling stock, or infrastructure that disrupts the operations of a transit agency.

Investigation: The process of determining the causal and contributing factors of an accident, incident, occurrence, or hazard, for the purpose of preventing recurrence and mitigating risk.

Lagging Indicators: Measures of unsafe events that have occurred such as derailments, accidents, casualties, fires, or evacuations; also known as trailing indicators.

Leading Indicators: Measures of incident precursors that may be predictive of unsafe events, such as close calls, deterioration of asset conditions, or failures to comply with safety standards.

MassDOT/MBTA Railroad System Safety Program Plan: An FRA-regulated plan that documents system safety programs and processes used by MassDOT/MBTA Regional Rail employees, which satisfies the requirements of 49 CFR Part 270: System Safety Program.

MBTA Management: The collective management groups across all MBTA departments, which consist of frontline managers and executive managers.

MBTA Personnel: For purposes of this Transit Safety Plan, MBTA personnel include employees and contractors.

MBTA Safety: The MBTA's Safety Department and all personnel associated with the Department. MBTA Safety staff are responsible for corporate oversight of the safety processes and objectives described within the Safety Plan, and for providing corporate safety guidance to MBTA management, labor, and contractors in working to achieve safety performance objectives.



Occupational Health and Safety (OHS) Plan: A comprehensive plan that governs and defines the authority, responsibilities, roles, and processes related to MBTA's workplace safety programs. For detailed information related to MBTA's workplace safety programs, including hazardous materials, refer to the OHS Plan.

Occurrence: an event without any personal injury in which any damage to facilities, equipment, rolling stock, or infrastructure does not disrupt the operations of a transit agency.

Passenger: A person who is onboard, boarding, or alighting from a transit vehicle for the purpose of travel.

Personnel Directly Responsible for Safety: MBTA personnel involved in any of the following duties:

- Operating a revenue service vehicle, including when not in revenue service.
- Operating a nonrevenue service vehicle, when required to be operated by a holder of a Commercial Driver's License.
- Controlling dispatch or movement of a revenue service vehicle.
- Maintaining (including repairs, overhaul and rebuilding) a revenue service vehicle or equipment used in revenue service.
- Carrying a firearm for security purposes.
- A person employed or contracted by the MBTA who is in a formally-designated safety-sensitive position.

Personnel Directly Responsible for Safety Oversight: MBTA personnel whose primary job function includes the development, implementation and review of the agency's safety plan, and/or the SSOA requirements for the rail fixed guideway public transportation system pursuant to 49 CFR parts 659 or 674. MBTA's Chief Safety Officer and Safety personnel have primary job functions directly responsible for safety oversight.

Procedures: Rules, SOPs, orders, training, emergency procedures, notifications, investigations, reporting, data collection, etc.

Public Transportation Agency Safety Plan (PTASP): The documented, comprehensive agency safety plan for a transit agency that is required by 49 U.S.C. 5329 and 49 CFR Part 673. This MBTA Transit Safety Plan is intended to meet the PTASP requirements.

Public Transportation Agency: As referenced in this plan, the MBTA is the public transportation agency.

Rail Transit Vehicle: The MBTA's rolling stock specific to rail including, but not limited to, passenger and maintenance vehicles.

Recommendation: A safety action that usually addresses a specific issue uncovered during an internal safety audit, employee safety report, or safety data analysis. Recommendations may be developed in instances where MBTA is technically in compliance with applicable federal and state regulations and documented safety program requirements, but where no written plan, policy, or procedure is in place, where agency practices are not fully consistent with relevant industry best practices and standards, or where organizational and resource issues have inhibited the performance of safety-related activities. A recommendation does not take the place of a Corrective Action Plan (CAP).



Regulator: An individual or organization that is granted oversight of a system in order to ensure its day-to-day efficiency and continual improvement.

Relevant Contractor: A person contracted by the MBTA who is involved in any of the following duties:

- Operating a revenue service vehicle, including when not in revenue service.
- Operating a nonrevenue service vehicle, when required to be operated by a holder of a Commercial Driver's License.
- Controlling dispatch or movement of a revenue service vehicle.
- Maintaining (including repairs, overhaul and rebuilding) a revenue service vehicle or equipment used in revenue service.
- Carrying a firearm for security purposes.
- A person contracted by the MBTA who is in a formally-designated safety-sensitive position.

Reportable Event: Any accident, incident, safety violation, or near miss that occurs within the MBTA transportation system that requires a formalized investigation process, reporting as required by federal or state regulations, and/or MBTA rules, policies, orders, directives, or regulation.

Right of Way: The property over which trains and authorized rail equipment operate, and ten feet from the centerline of track in any direction, including sidings and yards.

Risk: The composite of predicted severity and likelihood of the potential effect of a hazard.

Risk Likelihood: The likelihood that a consequence's chosen severity level will occur when the identified hazard is present/encountered. Risk likelihood may be expressed in quantitative or qualitative terms. The five MBTA risk likelihood levels are (refer to Table 8 of this Transit Safety Plan for descriptions):

- Frequent
- Probable
- Occasional
- Remote
- Improbable

Risk Severity: A qualitative measure in which a consequence/effect of a hazard's condition results in a certain level of severity. The five MBTA risk severity levels are (refer to Table 7 of this Transit Safety Plan for descriptions):

- Catastrophic
- Critical
- Moderate
- Minor
- Low

Rolling Stock: Transit vehicles such as buses, vans, cars, railcars, locomotives, trolley cars and trolley buses, as well as vehicles used for support and maintenance services.



Root Cause Analysis (RCA): A specialized, technical, in-depth investigation and analysis that identifies the primary cause(s) of events in order to make corrective recommendations to prevent reoccurrence. RCA is a reactive method of hazard analysis and is an effective tool for understanding why and how an event occurred.

Safety: The state in which the potential of harm to persons or property damage during operations related to provisions of services is reduced to and maintained at an acceptable level through continuing hazard identification and safety risk management activities.

Safety Advisory: A formal notification issued by MBTA's Chief Safety Officer to MBTA or contractor management advising of a real or potential hazard or unsafe system condition. Safety Advisories request review and assessment of the hazard/condition and recommend that recipients respond to any findings with a Corrective Action Plan (CAP). If the hazard/condition identified is severe enough, an Urgent Safety Advisory may be issued in place of a standard Safety Advisory. A Safety Directive may also be issued as a follow-up or higher level notification.

Safety Assurance: One of the four (4) main components of SMS; ensures and verifies effectiveness of MBTA's SMS safety performance, corrective action mitigations, and overall program.

Safety Certification: A process used to verify safety-related requirements are incorporated into a project, thereby demonstrating that it is operationally ready for revenue service and safe and secure for passengers, employees, public safety agencies, and the general public. This plan incorporates by reference MBTA's Safety Certification Program (SAFE1.09.00).

Safety Critical: A term applied to any system, part, condition, event, operation, process, or item whose failure or malfunction may result in:

- death or serious injury to people.
- loss or severe damage to property, equipment; or
- significant environmental impact
- major service interruption or system loss

Safety Culture: The safety culture of an organization is the product of the individual and group values, attitudes, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization's health and safety programs. Organizations with a positive safety culture are characterized by communications founded on mutual trust, shared perceptions of the importance of safety, and confidence in the efficacy of preventative measures.

Safety Directive: A formal notification issued by the MBTA's Chief Safety Officer to MBTA or contractor management identifying an urgent and high level hazard or unsafe system condition. Safety Directives require a response from the recipient with a Corrective Action Plan (CAP) and may be issued in conjunction with or independently of a Safety Advisory.

Safety Event: FTA defines a Safety Event as an Accident, Incident, or Occurrence. Safety Events are also a term defined in the National Transit Database that involves one or more of the following:

- Collisions



- Fires (suppression)
- Derailments (mainline and yard) including non-revenue vehicles
- Hazardous Material Spills
- Acts of God

Other Safety Events (events that do not fall into any of the other categories, yet meet a reporting threshold other than immediate transport for medical attention for one person)²⁸

Safety Hotline: A telephone communication method for employees to report safety conditions and/or hazards directly to the MBTA Safety department. The telephone number is (617) 222-SAFE (7233) and is checked every business day.

Safety Management Policy: A transit agency's documented commitment to safety, which defines the transit agency's safety objectives and the accountabilities and responsibilities of its employees in regard to safety.

Safety Management System (SMS): A formal, top-down, organization-wide, data-driven approach to managing safety risks and assuring the effectiveness of safety risk mitigations. SMS includes systematic procedures, practices, and policies for managing risks and hazards.

Safety Notification: As it relates to the Employee Safety Reporting System, a Safety Notification is a form of communication an employee may use to document a hazard or safety concern and submit it via e-mail, fax, mail, or hand-delivery.

Safety Plan: A comprehensive federally-required document that outlines the activities and processes of the MBTA's safety program. It establishes the framework for the MBTA's Safety Management System (SMS) program and applies to Heavy Rail, Light Rail, Bus, and Paratransit operations.

Safety Promotion: One of the four (4) main components of SMS; provides visibility of executive management's commitment to safety and fosters improved safety performance by increasing safety awareness through safety communication and training.

Safety Risk Management (SRM): One of the four (4) main components of SMS; a process within a transit agency's Public Transportation Agency Safety Plan for identifying hazards and analyzing, assessing, and mitigating safety risk.

Safety Stand-Down: A temporary stop in normal work where the entire work crew or site focuses on a particular safety issue. MBTA management can conduct a safety stand-down by taking a break to host a toolbox talk or a meeting to discuss a safety topic, like conducting safety equipment inspections, developing rescue plans, or talking about job-specific hazards.

Safety Validation: The process of determining whether a system's safety design requirements fulfill its intended safety design objectives before, during, and after its development and life cycle. The goal of the safety validation process is to determine the system and or product is built, tested, and designed correctly and in accordance with

²⁸ The NTD Safety and Security Reporting Manual further define the term safety event and threshold reporting requirements.



its intended safety design, purpose, performance expectations, and regulatory requirements and industry best practices.

Security: Freedom from harm resulting from intentional acts or circumstances.

Sole Source: All evidence of the safety event available to the MBTA is discovered by or otherwise predicated on the employee/contractor safety report through the Employee Safety Reporting Program (ESRP).

State of Good Repair: The condition in which a capital asset is able to safely operate at a full level of performance.

State Safety Oversight Agency: The entity established by the State and certified by the FTA to regulate and oversee state transit agencies, including fixed guideway systems (trolley, light & heavy rail), bus, and paratransit, ferry, and other transportation systems not otherwise regulated by the FRA (passenger rail operation) in accordance with 220 CMR 151, 220 CMR 155, 49 USC 5329, and 49 CFR Parts 673 and 674. The Department of Public Utilities (Department or DPU) is appointed as the SSOA for the state of Massachusetts.

Substance Abuse: The use of drugs not prescribed to the individual, the use of illicit substances, or overmedicating oneself using prescription medications.

System: A composite of people, procedures and equipment that are integrated to perform a specific operational task or function within a specific environment.

System Lifecycle: All phases of the system's life, including design, research, development, test and evaluation, production, deployment (inventory), operations and support, and disposal. Considering all phases of a system lifecycle is a standard practice of system safety.

System Modification: Any change to a system, facility, equipment, program, or department that may introduce a new hazard to the public transportation system. This safety plan incorporates by reference the MBTA System Modification Safety Program (SAFE1.08.00).

System Safety: The application of operating, technical, and management techniques and principles to the safety aspects of a system throughout its life cycle to reduce hazards to the lowest practical level through the most effective use of available resources.

System Safety Engineering: An engineering discipline that employs specialized professional knowledge and skills in applying scientific and engineering principals, criteria, and techniques to identify and eliminate hazards, in order to reduce the associated risk.

The RIDE: MBTA's door-to-door, shared-ride paratransit service. The RIDE is operated by the MBTA in compliance with the Americans with Disabilities Act (ADA). Demand-response service and paratransit service are synonymous with The RIDE in this Safety Plan.

Transit Asset Management (TAM) Plan: The MBTA's Transit Asset Management Plan which describes: the capital asset inventory; condition of inventoried assets; TAM performance measures, targets, and prioritization of investments aligned with the agency's TAM and SGR policy, strategic goals and objectives; as well as the



strategies, activities, and resources required for delivering the plan (including decision support tools and processes); and other agency-wide approaches to continually improve TAM practices.

Triennial Safety Review: A formal, comprehensive, on-site examination by the oversight agency of a transit agency's safety practices to determine whether they comply with the policies and procedures required under the transit agency's system safety program plan.

Urgent Safety Advisory: A formal notification issued by the MBTA Chief Safety Officer to MBTA or contractor management advising them of an urgent hazard or unsafe system condition. Urgent Safety Advisories require immediate action and response by the recipient, with expedited development of a Corrective Action Plan (CAP).

Willful Disregard for Safety: An intentional, voluntary act committed either with knowledge of the relevant MBTA rule or reckless disregard for whether the act violated the requirements of the MBTA rule. A willful disregard for safety must demonstrate a higher level of culpability than negligence.



DEPARTMENT SMS SUPPORT PLANS

The MBTA department SMS Support Plans contained within this appendix detail how each operational department conforms to MBTA's SMS. These plans explain how each department will support SMS implementation, set safety performance targets, and perform or support internal safety audits.



BUS MAINTENANCE DEPARTMENT

The Bus Maintenance department performs preventative maintenance and inspections to ensure passenger safety and vehicle reliability.

Safety Performance Indicators

Every year the Bus Maintenance department will analyze the previous year's data to create Department Performance Indicators that coincide with the overall corporate objectives found in the GM's Safety Policy Statement. The following performance indicators will be used to measure and ensure the Bus Maintenance department are meeting the Authority's safety objectives:

- Employee Injuries
- Safety Events
- Failures In Service
- System Reliability (Mean Miles Between Failures) by Fleet Type
- Near Misses

Safety Performance Monitoring and Measurement

Every day, OCC will document any safety or reliability information reported by Bus Operators into a log. When information is entered into the log, Bus Maintenance management reviews it immediately. Safety or reliability related events are entered into a shift log found in MCRS2. Garage foremen and supervisors review the shift log every morning for trends and investigation follow-up.

On a monthly basis, Bus Maintenance management personnel review the Safety Data Analysis Report (SDAR) generated from MBTA Safety. Bus Maintenance will review the data at standing committee meetings and follow-up with any safety trends and observations noted in the SDAR.

Bus Maintenance has a preventative maintenance program for all buses in the MBTA fleet. Bus Maintenance employees use standard repair times and manufacturer instructions to inspect and repair buses.

Bus Maintenance supervisors audit preventative maintenance work at least four times per month. Bus Maintenance supervisors review the work performed on a bus and ensure all safety-related items are in conformance. Bus Maintenance also partners with the quality assurance personnel who perform audits of the Bus Maintenance Supervisors. Quality assurance personnel perform quarterly safety audits to ensure maintenance practices are adhering to applicable rules and standards.



Safety Committees

The Chief Mechanical Officer oversees Bus Maintenance and is a member of the Safety Management Review Committee (SMRC). Bus Maintenance management personnel serve as members of the Joint Labor-Management Safety Committee (JLMSC), which reports directly to the SMRC.

Bus Maintenance has a safety committee structure that is aligned with MBTA's overall SMS. The Bus Accident Reduction Committee (BARC) meets monthly and is chaired by MBTA Safety personnel as well as Bus Management.

Every bus garage has a local safety committee meeting monthly or quarterly (depending on garage size) comprised of labor and management. Issues related to safety are reviewed and corrected immediately or are logged in the appropriate data management system to be resolved. Any issue a local safety committee cannot resolve is elevated to a monthly safety committee meeting comprised of labor, management, and an MBTA Safety representative. MBTA Safety will address safety concerns and any safety-related issues brought to the meeting.

Investigations

Bus Maintenance foremen and supervisors review the shift log every day for employee injuries or near misses that require an investigation. Bus Maintenance supervisors will perform on-site investigations, witness interviews, and other investigative techniques to identify causal factors related to the event.

Internal Safety Audits & Oversight

MBTA Safety will evaluate the safety performance of maintenance processes and services. Refer to the Internal Safety Audit Program document for details. MBTA Safety analyzes the collected data and provides the information to the Bus Maintenance department to be assessed at the applicable safety committee meetings.

Bus Maintenance tracks all recommendations and corrective actions until closed.

Employee Reporting

Bus Maintenance employees are encouraged to identify hazards and safety concerns within their work environment. MBTA Safety personnel are also notified of hazards reported by employees that cannot be resolved quickly at the local safety committee meetings. If Bus Maintenance frontline management are unable to resolve the hazard or safety concern, frontline management will inform the appropriate safety committee as to the nature of the hazard or safety concern. If necessary, the appropriate safety committee will perform safety risk management.

Safety Promotion

Bus Maintenance has at least one Safety Officer at each garage. Safety Officers are labor employees who volunteer to be a point-of-contact or safety related matters at a garage.

Bus Maintenance receives safety communication from MBTA Safety, primarily Safety Flashes. Bus Maintenance training personnel also distribute new/revised training procedures and ensure all appropriate employees are made aware of the changes.



Bus Maintenance conducts Safety Stand-down's periodically to address a relevant safety concern. Typically, Safety Stand-down's involve all Bus Maintenance employees.

Training

Bus Maintenance employees are trained on the types of buses that are housed in the garage. Typically, bus maintenance personnel receive 2-3 weeks of training any time they transfer to a garage with a different bus type (e.g., electric vs. diesel).

Safety officers and foremen are encouraged to participate in occupational health and safety classes offered at the MBTA.

Recordkeeping

Bus Maintenance uses PeopleSoft to maintain training records for its employees. Maintenance records are documented and signed-off when necessary. Bus Maintenance safety committees typically record attendance and meeting minutes. Quality assurance personnel perform documentation audits to ensure up-to-date maintenance records are maintained and processed in a timely manner.



BUS OPERATIONS DEPARTMENT

Safety Performance Indicators

Every year the Bus Operations department will analyze the previous year's data to create Department Performance Indicators that coincide with the overall corporate objectives found in the GM's Safety Policy Statement. The following performance indicators will be used to measure and ensure the Bus Operations department are meeting the Authority's safety objectives:

- Employee Injuries
- Safety Events (e.g., Collisions)
- Bus Operator Assaults
- Operational or Procedural Errors
- Near Misses

Safety Performance Monitoring and Measurement

Bus Operations monitors the OCC logs for any safety performance-related issues. Bus Operations also participates in the Safety Rules Compliance Program (SRCP). Bus Operations supervisors perform audits of Bus Operators to ensure pre-trip inspections, safe driving, and other safety-related tasks are being performed. Moreover, Bus Operations supervisors are audited to ensure the SRCP is being administered appropriately.

Safety Committees

The Assistant General Manager of Bus Operations oversees bus operations and is a member of the Bus Accident Reduction Committee (BARC), which reports findings and recommendations to the SMRC.

In addition to the BARC and SMRC, Bus Operations has monthly safety committee meetings at each facility for frontline management and frontline employees.

Investigations

Bus Operations responds to any safety event reported to OCC. An investigation into all safety performance indicators is conducted for causal factors.

Internal Safety Audits & Oversight

The MBTA Chief Safety Officer is responsible for the Internal Safety Audit program. MBTA Safety will evaluate the safety performance of Bus Operations. Refer to the Internal Safety Audit Program for details. MBTA Safety analyzes the collected data and provides the information to the Bus Operations department to be assessed at the applicable safety committee meetings.

Bus Operations tracks all recommendations and corrective actions until closed.

Employee Reporting

Bus Operations employees are encouraged to identify hazards and safety concerns within their work environment. MBTA Safety personnel are also notified of hazards reported by employees that cannot be resolved quickly at the local safety committee meetings. If Bus Operations frontline management are unable to resolve the hazard or



safety concern, frontline management will inform the appropriate safety committee as to the nature of the hazard or safety concern. If necessary, the appropriate safety committee will perform safety risk management.

Safety Promotion

MBTA Safety and Bus Operations work together to promote safety to all employees. Bus Roadeos highlight the safe driving of Bus Operators. Safety Flashes are created and distributed to appropriate personnel.

Training

Bus Operations have a training program designed to ensure all Bus Operators are ready to safely operate their vehicle before carrying passengers. Bus Operations personnel receive on-the-job training and refresher training on the latest changes to bus safety.

Recordkeeping

Bus Operations uses PeopleSoft to maintain training records for its employees. Pre-trip inspection records are documented and maintained by the bus garages. Bus Operations safety committees typically record attendance and meeting minutes. Quality assurance personnel perform documentation audits to ensure up-to-date maintenance records are maintained and processed in a timely manner.



CAPITAL DELIVERY DEPARTMENT

Safety Performance Indicators

Every year, the MBTA Capital Delivery department analyzes the previous year's data to create department-specific performance indicators that coincide with the overall corporate objectives found in the General Manager's Safety Policy statement. Performance indicators are used to measure and ensure Capital Delivery is meeting the Authority's safety objectives:

- Injuries
- Certifiable Items List (CIL) completion
- Inspection Sheets completion
- Management Meetings documenting safety-related items
- Contract Deliverables documenting safety-related items

Safety Performance Monitoring and Measurement

Monthly walkthroughs are performed by the Capital Delivery department project manager, resident engineer(s), contractor, and other staff to ensure workplace safety meets or exceeds MBTA standards. Certifiable Items List (CIL) forms are periodically reviewed by the Director of Quality Assurance/Quality Control (QA/QC) to ensure safety-critical items are documented and reviewed by project managers in a timely manner and consistent with the MBTA Safety Certification Program.

The Capital Delivery department has also begun documenting Job Hazard Analyses (JHAs) specific to the duties and tasks carried out by personnel who work in the frontline. JHAs are a proactive way to review job tasks being conducted on a daily basis and assure hazards are identified and risk mitigations are implemented using the JHA process.²⁹

Safety Committees

The Deputy Assistant General Manager of Capital Delivery is a member of the Safety Management Review Committee (SMRC).

In addition to safety management committees, the Capital Delivery department holds weekly senior staff meetings which incorporates safety-related agenda items, as appropriate, and documented in meeting minutes.

Every other week, the Capital Delivery department holds progress meetings with appropriate staff to discuss safety-related topics, look ahead to the next steps in a project's design and construction, and to discuss non-conformance issues with the contractor.

The Capital Delivery department will also meet and serve on safety committees and working groups that apply to its department.

²⁹ For further information, refer to the MBTA Job Hazard Analysis Program.



Construction Safety Compliance

Monthly safety walkthroughs of Capital Delivery construction job sites are completed by Resident Engineers, ensuring contractor compliance with the 01568 Construction Safety specification. Any deficiencies are noted and a contractor plan for correction is requested.

Investigations

The Capital Delivery department investigates all employee injuries using the MBTA Safety Event Investigation Manual. Contractor injuries on MBTA property are also investigated by Capital Delivery employees and/or MBTA Safety to ensure appropriate corrective actions are taken to mitigate recurrence. Capital Delivery department project managers complete appropriate reporting forms which are submitted to MBTA Safety for tracking and trending purposes.

Internal Safety Audits

The MBTA Chief Safety Officer is responsible for the Internal Safety Audit program. MBTA Safety will evaluate the safety performance of capital delivery processes and services. Refer to the Internal Safety Audit Program for details. MBTA Safety analyzes the collected data and provides the information to the Capital Delivery department to be assessed at the applicable safety committee meetings.

Capital Delivery tracks all recommendations and corrective actions until closed.

Safety Promotion

The Capital Delivery department promotes safety by using MBTA Safety developed content and awareness campaigns.

The Capital Delivery department proactively ensures contractors promote their safety activities. MBTA Capital Delivery projects require contractors to assign a safety manager who will oversee the project and promote a safe workplace.

Training

All Capital Delivery department employees and contractors are transit Right-of-Way (ROW) certified. Refresher training occurs every two years. This two year refresher training requirement is separate and distinct from applicable requirements for Commuter Rail Roadway Worker Protection (RWP) training for Capital Delivery personnel.

Documentation and Recordkeeping

The Capital Delivery department maintains documents and records using common drives and file folders. The Capital Delivery department also maintains records using web-based platforms. CIL and safety-critical elements related to a project are submitted to MBTA Safety for tracking and trending purposes.



ENGINEERING & MAINTENANCE DIRECTORATE

MBTA's Engineering & Maintenance (E&M) directorate oversees the following departments:

- Signals and Communication Maintenance
- Transit Facilities Maintenance
- Power Systems Maintenance
- Maintenance of Way
- E&M Administration

Safety Performance Indicators

The E&M department regularly reviews safety data and specific departmental safety performance indicates that coincide with the overall corporate objectives found in the GM's Safety Policy Statement. The following are some of the performance indicators that are used to measure and ensure the E&M department is meeting the Authority's safety objectives:

- Employee Injuries
- Safety Events
- State of Good Repair
- Work Order Completion

Safety Performance Monitoring and Measurement

E&M departments monitor the MBTA system for deficiencies and defects on a daily basis, and track work to timely completion through follow-up actions to address these deficiencies and defects. Work orders and maintenance logs document safety-related issues as well as safety events. E&M departments prioritize work efforts based upon the deficiencies and defects reported. E&M departments also proactively inspect their systems on a routine basis. Maintenance of Way, at a minimum, complies with DPU's program standard 220 CMR 151.

E&M also participates in the Safety Rules Compliance Program (SRCP) to ensure work activities are conforming to existing rules and procedures.

Safety Committees

E&M personnel play an active role in the Safety Committee structure as outlined in the Transit Safety Plan. At the highest levels, the Chief of E&M is a member of the Safety Management Review Committee, and the Deputy Chief of E&M is a member of the Joint Labor Management Safety Committee.

Within E&M, the Director of Policy, Strategy and Oversight leads the monthly E&M Safety Working Group Meeting, which is attended by the Chief and Deputy Chief of E&M, the Director of each operating department, other members of E&M as well as members of the Safety Department. This meeting is focused on providing updates on and advancing safety initiatives within E&M. While E&M does not currently have safety committees, E&M employees will attend on occasion the safety committee meetings in Operations to help address infrastructure-related safety issues.



Investigations

E&M departments conform to the latest Safety Event Investigation Manual. When employee injuries occur or safety events are reported, E&M management is made aware immediately and an investigation is conducted.

Internal Safety Audits

The MBTA Chief Safety Officer is responsible for the Internal Safety Audit program. MBTA Safety will evaluate the safety performance of maintenance processes and services. Refer to the Internal Safety Audit Program document for details. MBTA Safety analyzes the collected data and provides the information to the E&M departments to be assessed at the applicable safety committee meetings.

RVM tracks all recommendations and corrective actions until closed.

Employee Reporting

E&M departments encourage employees to identify hazards and safety concerns within their work environment. MBTA Safety personnel are also notified of any hazard reported by employees. If E&M department's frontline management are unable to resolve the hazard or safety concern, frontline management will inform the appropriate safety committee as to the nature of the hazard or safety concern. If necessary, the appropriate safety committee will perform safety risk management.

Safety Promotion

E&M also organizes a semi-annual E&M Safety Series (ESS), previously known as Safety Standardization Day, to promote safety awareness and provide additional safety training to employees. New safety programs and policies are introduced and implemented at E&M Safety Series to ensure all E&M employees receive consistent trainings and understand new expectations related to new programs and policies.

Beyond ESS and depending on the occurrence of safety incidents or changes in the operating environment, E&M may also organize Safety Stand-Downs to reinforce the importance safety practices or emphasize a change in the operating environment.

On a more decentralized level, E&M training personnel and supervisors also promote safety via toolbox talks and Safety Flashes or Alerts.

Training

Most E&M employees are skilled tradespeople who are certified in the position they work (e.g., plumber, carpenter, electrician, etc.). In addition to any job certifications employees may have, each E&M department trains their employees to safely perform all aspects of their jobs. E&M employees also complete other safety-related trainings, including MBTA ROW training and OSHA 10-Hour Construction Safety training.

Documentation and Recordkeeping

E&M uses the Trapeze Enterprise Asset Management System (EAMS) to track defects and record completed repairs and preventive maintenance and inspections (PMIs). Repairs and PMIs are prioritized based on the safety criticality of the asset and the severity of the defect.



RAIL VEHICLE MAINTENANCE DEPARTMENT

Rail Vehicle Maintenance department is responsible for light rail and heavy rail maintenance, engineering changes, vehicle system modifications, carhouse/employee safety, and employee training.

Safety Performance Indicators

Every year the Rail Vehicle Maintenance department will analyze the previous year's data to create departmental safety performance indicators that coincide with the overall corporate objectives found in the GM's Safety Policy Statement. The following performance indicators will be used to measure and ensure the Rail Vehicle Maintenance department are meeting the Authority's safety objectives:

- Employee Injuries
- Safety Events
- Failures In Service
- System Reliability (Mean Miles Between Failures) by Fleet Type

Safety Performance Monitoring and Measurement

Vehicle inspections are one of the most important maintenance activities as it relates to passenger safety and vehicle reliability. In an effort to standardize maintenance documentation and to ensure both consistency and accuracy, Rail Vehicle Maintenance follows documented safety and quality assurance procedures:

- Every week, Rail Vehicle Maintenance collects performance information to analyze and disseminate to appropriate levels of MBTA management for review. This information is retained on a Rail Vehicle Maintenance common drive.
- Forepersons are responsible for inspecting revenue service vehicles outlined in QAP-002, incorporated by reference. Results of this inspection are retained on a Rail Vehicle Maintenance common drive.
- Mileage Inspection Procedures are outlined for each fleet type. Rail Vehicle Maintenance employees ensure safety-critical items are functioning properly and that any preventative maintenance is performed.
- Rail Vehicle Maintenance performs an audit of a vehicle that has just undergone the Mileage Inspection Procedure, at least every 90 days, outlined in QAP-004, incorporated by reference. Results of this audit are retained on a Rail Vehicle Maintenance common drive.

Safety Committees

The Chief Mechanical Officer oversees Rail Vehicle Maintenance and is a member of the Safety Management Review Committee (SMRC).

In addition to safety management committees, Rail Vehicle Maintenance management meets with Transit Rail Operations, Scheduling & Planning, and Transit Facilities Maintenance management periodically to manage safety risks that effect operational aspects of the MBTA. These meetings incorporate safety-related agenda items, as appropriate, and are documented in meeting minutes.

The Rail Vehicle Maintenance department will also meet and serve on safety committees and working groups that apply to its department.



Investigations

The Rail Vehicle Maintenance department investigates all employee injuries using the MBTA Safety Event Investigation Manual. For details reference the Safety Event Investigation Manual.

Internal Safety Audits & Oversight

The MBTA Chief Safety Officer is responsible for the Internal Safety Audit program. MBTA Safety will evaluate the safety performance of maintenance processes and services. Refer to the Internal Safety Audit Program document for details. MBTA Safety analyzes the collected data and provides the information to the Rail Vehicle Maintenance department to be assessed at the applicable safety committee meetings.

RVM tracks all recommendations and corrective actions until closed.

Employee Reporting

Rail Vehicle Maintenance employees are encouraged to identify hazards and safety concerns within their work environment. MBTA Safety personnel are also notified of any hazard reported by employees. If Rail Vehicle Maintenance frontline management are unable to resolve the hazard or safety concern, frontline management will inform the appropriate safety committee as to the nature of the hazard or safety concern. If necessary, the appropriate safety committee will perform safety risk management.

Safety Promotion

Rail Vehicle Maintenance publishes special orders, training flashes, and other notices to employees. In addition to Rail Vehicle Maintenance publications, The Safety Data Analysis Report (SDAR) is published every month by MBTA Safety via email and on the MBTA Intranet. The SDAR contains information for all employees highlighting hazards and explains why corrective actions from safety hazards were implemented.

Rail Vehicle Maintenance uses electronic messaging boards to communicate safety promotion activities, as well as bulletin boards and in-person toolbox talks.

Training

Rail Vehicle Maintenance employees receive all mandatory MBTA-wide training courses. Rail Vehicle Maintenance has specific training for their employees which includes:

- General workplace safety
- New equipment training(s)
- New system training
- Forklift safety

Documentation and Recordkeeping

Rail Vehicle Maintenance Forepersons and managers have access to the MBTA Intranet and a computer-based common drive file folder structure. Training records, repair records, inspections, environmental audits, quality assurance records are all retained in the common drive. Safety Rules Compliance Program (SRCP) information is submitted to the SRCP committee on a monthly basis.



TRANSIT RAIL OPERATIONS DEPARTMENT

MBTA's Transit Rail Operations has frontline employees involved in operating, training, and overseeing the safe and reliable operation of the subway system.

Safety Performance Indicators

Every year the Transit Rail Operations department will analyze the previous year's data to create Department Performance Indicators that coincide with the overall corporate objectives found in the GM's Safety Policy Statement. The following performance indicators will be used to measure and ensure the Transit Rail Operations department are meeting the Authority's safety objectives:

- Employee Injuries
- Safety Events
- Operational or Procedural Errors
- Vehicle Damage

Safety Performance Monitoring and Measurement

The Transit Rail Operations department utilizes many different processes to measure and/or monitor safety performance:

- Continuous Monitoring
- Departmental Audits (e.g., speed sign audits)
- Internal Safety Audit Program administered by MBTA Safety
- External Audits
- Investigations
- Employee Reporting

Safety Committees

The Transit Rail Operations department has a robust safety committee structure. The Joint Labor-Management Safety Committee (JLMSC) was formed to manage safety risk identified within the transit rail environment. The JLMSC reviews the monthly Safety Data Analysis Report (SDAR) for trends and other systemic issues identified using data. Changes to the environment, procedures, and other human factors are also discussed at a management level to determine if the Safety Risk Management process should be performed. The JLMSC meets monthly to discuss issues/hazards that were not able to be resolved at the local committee level.³⁰

The JLMSC conducts assessments of its safety performance against the departmental safety objectives to:

1. Ensure compliance with safety risk mitigations
2. Evaluate the performance of the SMS

³⁰ The local committee level is made up of management and frontline staff to improve workplace safety and identify safety concerns and/or hazards. Local committees are typically line-specific (e.g., green line safety committee) and discuss issues relevant to their operation.



3. Evaluate the effectiveness of established risk mitigations and identify any ineffective risk mitigations.
4. Identify changes in the operational environment that may introduce new hazards.
5. Identify new hazards.

After the System Assessment the JLMSC will determine:

1. The analysis has shown that safety performance is acceptable and departmental objectives are being met (Continue to monitor).
2. The analysis has discovered that safety performance is not acceptable, and an issue lies with complying with Authority policies/special orders or necessary procedures are not being followed (Implement a corrective action.)
3. The analysis has discovered a new uncontrolled hazard, or ineffective risk mitigation (Follow SRM process in Chapter 4.
4. JLMSC members

The Assistant General Manager - Rail Operations has overall responsibility of the Transit Rail Operations safety committees; however, he has delegated the District Superintendents to facilitate their respective local safety committee meetings. The key members of the safety committees are accountable to develop, implement, and maintain SMS processes in the Transit Rail Operations department including:

1. Hazard identification and safety risk assessment
2. Assuring the effectiveness of safety risk mitigations
3. Promoting safety
4. Advise the Assistant General Manager - Rail Operations who will update the Chief Operating Officer on the performance of the SMS.

Continuous Monitoring

Continuous monitoring is what the Transit Rail Operations department perform on a day-to-day basis. The continuous monitoring process is designed to ensure each department is monitoring its services, operational processes, and operational environment to detect changes. The Transit Rail Operations department utilize the following programs.

1. Operations Control Center (OCC) Communication Logs
2. SOP2 reports
3. Quality Assurance/Quality Control
4. Inter-departmental meetings
5. Daily Operational Meetings

A.1.a Investigations

MBTA Safety has developed an investigation form to investigate incidents and accidents involving Rail Transit Operations employees. For details reference the Safety Event Investigation Manual.



Departmental Audits

The Assistant General Manager - Rail Operations is responsible for the departmental auditing program. The Transit Rail Operations department will utilize both internal department audits and external audits.

A. Internal Departmental Audits

The Transit Rail Operations department will perform a scheduled audit each month to ensure compliance with operations and maintenance processes. Non-scheduled audits will be performed at the discretion of the Assistant General Manager - Rail Operations.

The Safety Rules and Compliance Program (SRCP) was started by the Rail Transit Operations department and continues to evolve into other departments at MBTA. Rail Transit Operations performs weekly audits of its operations and maintenance procedures to monitor its system for compliance with, and sufficiency of, the Authority's procedures for operations and maintenance. Data collected from this program is analyzed by a committee of management representatives in order to track and trend valuable safety data.

B. External Audits

Any external audit including but not limited to FTA, DPU, and APTA audits will be analyzed by the Assistant General Manager - Rail Operations and included in the applicable safety committee meetings for assessment.

Internal Safety Audits

The MBTA Chief Safety Officer is responsible for the Internal Safety Audit program. MBTA Safety will evaluate the safety performance of operational processes and services. Refer to the Internal Safety Audit Program for details. MBTA Safety analyzes the collected data and provides the information to Rail Transit Operations department to be assessed at the applicable safety committee meetings.

Employee Reporting

Multiple employee reporting systems, in which employees can report hazards, issues, concerns, incidents, as well as recommendations, have been developed and maintained.

1. Mandatory incident reporting

Rail Transit Operations employees are required to report to their supervisor and/or OCC for events outlined in applicable rulebooks and SOPs. Mandatory reporting for rail transit employees includes the following events:

- Derailment
- Collision of any kind
- Employee Injury
- Customer Injury
- Signal Violation
- Clearance Violation
- Wrong Route
- Fire / Code 1



- Employee Assault
 - OCS/Pantograph Damage
 - Vehicle Damage
 - ROW Safety Violation
2. Safety Hotline/Notifications

MBTA Safety manages an anonymous/confidential reporting program via a telephone number and email address. All reports involving Rail Transit Operations employees will be de-identified and assessed by MBTA Safety management and Rail Transit Operations management, and/or appropriate safety committees.

Safety Promotion

Transit Rail Operations publishes special orders, safety flashes, and other notices to employees. In addition to Rail Transit Operations publications, The Safety Data Analysis Report (SDAR) is published every month by MBTA Safety via email and on the MBTA Intranet. The SDAR contains information for all employees highlighting hazards and explains why corrective actions from safety hazards were implemented.

Training

Transit Rail Operations employees receive all mandatory MBTA-wide training courses. Transit Rail Operations has a specialized training department that ensures its employees are trained and competent to perform in their job functions.

Documentation and Recordkeeping

All Transit Rail Operations department safety risk assessments will be maintained by MBTA Safety for as long as the risk mitigations remain relevant, but for a minimum of 3 years.

Safety assurance outputs will be maintained in internal databases and folders for a minimum of 3 years.

SMS training records will be maintained in PeopleSoft (or equivalent web-based platform) by MBTA Safety for a minimum of 3 years.

Safety communication published by MBTA Safety will be maintained on the MBTA Intranet for a minimum of 3 years.



PARATRANSIT SERVICES

MBTA oversees paratransit services and ensures conformance to this Safety Plan. Contractors have responsibilities to perform safety functions to ensure they are conforming to the SMS outlined in this Safety Plan. MBTA will audit paratransit services to ensure contractors/vendors are in conformance to this Safety Plan.



SAFETY ASSESSMENT DECISION TOOL

Background & Use:

The Safety Assessment Decision Tool (see next page) is intended to serve as a visual reference and job aid to help you make informed decisions about the different types of safety assessments that are used to support Safety Risk Management (SRM) at the MBTA. You'll see there are numerous safety assessments that can be used, and this tool is intended to guide you as to which one may be best suited to a given situation.

The Safety Assessment Decision Tool does not cover every possible type of safety assessment or SRM activity that can be used. Instead, it presents some of the most common scenarios you may run into and suggests the most appropriate tool to use in those cases.

How to Use this Tool:

Start with the first column, labeled *First Ask: Is the issued related to...* Read down the column until you find the question you can best answer “yes” to regarding the issue you’ve encountered. You may recognize the options in this column as the “Eight triggers” for SRM that are listed in the MBTA Transit Safety Plan and that were discussed in the *Safety Risk Management at the MBTA* training.


























Once you’ve chosen the most appropriate trigger, check if there are additional questions to ask in the second *If Yes, Then Ask: Is this issue related to...* column. If so, select the one you can best answer “yes” to. You can review the corresponding *Example Scenario* in the third column to illustrate the question and help you select the best fit.

From there, follow the selected row to the right. The column provides guidance on the activity that might be most appropriate to use for the situation, while the *Output & Monitoring* column lists the document(s) that will be produced as an output of the activity, and the established mechanism for ongoing tracking and monitoring.

For More Information:

- For a refresher on SRM concepts, review the MBTA Transit Safety Plan, Chapter 5, or the *Safety Risk Management at the MBTA* training course in the Learning Hub.
- For information on how to perform specific assessments/activities listed on the tool, refer to relevant supporting programs and procedures (e.g., SRM SOP, Safety Certification Program, etc.).
- If you have additional questions, please contact the Deputy Director of Safety Assurance and SMS Implementation.

Safety Assessment Decision Tool

First Ask: Is the issue related to...	If Yes, Then Ask: Is the issue related to...	Example Scenario	Tool to Use	Output & Monitoring	
A new operations or maintenance procedure?	Occupational safety associated with a specific job task?	Drafting a new procedure for working in confined space	OHS Assessment 	Assessment Report & SDMS	
	Something else?	Introduce a new operating rule	SRM Worksheet 	SRM Worksheet & RMML	
A change to existing system, equipment, or infrastructure?	A capital project?	Making accessibility improvements to a station	Safety Certification 	Safety Certification package & SDMS Hazards Module	
	A change made by an MBTA Department?	Changing the location of a signal mast	SRM Worksheet 	SRM Worksheet & RMML	
A new operation of service?		Planning a new bus route	SRM Worksheet 	SRM Worksheet & RMML	
An organizational change?		Restructuring of operating departments and chain of command	SRM Worksheet 	SRM Worksheet & RMML	
A new system, equipment, or capital project?		Building a new rail line extension	Safety Certification 	Safety Certification package & SDMS Hazards Module	
A change to an existing operations or maintenance procedure?	Occupational safety associated with a specific job task?	Modifying a procedure for welding rail	OHS Assessment 	Assessment Report & SDMS	
	Something else?	Updating an SOP for making safety event response notifications	SRM Worksheet 	SRM Worksheet & RMML	
The procurement process?	A capital project?	Procuring new vehicles	Safety Certification 	Safety Certification package & SDMS Hazards Module	
	A purchase that could introduce safety risk?	Purchasing new software system related to maintenance practices	SRM Worksheet 	SRM Worksheet & RMML	
	A purchase that doesn't introduce safety risk?	Buying a new brand of office printers	Procurement Process 	Purchase Order & FMIS	
Identification of a possible hazard; Ineffective risk mitigation; or Unsatisfactory safety performance?	A capital project?	Discovery of a hazard on a new revenue vehicle undergoing testing	Safety Certification 	Safety Certification package & SDMS Hazards Module	
	Occupational safety associated with a specific job task?	Determination that current mitigations are not adequately protecting employees performing hot work	OHS Assessment 	Assessment Report & SDMS	
	A safety event (accident, incident, occurrence, near miss) that has occurred?	Report of a near miss event	Safety Event Investigation 	Lead Investigator Final Report & SDMS Safety Event Module	
	Possible widespread or systemic...	Occupational health / safety issues at a specific work area, location, or facility (not a construction area)?	Report of multiple hazards throughout a bus garage	Facility / Work Area Inspection 	Checklist & SDMS Inspections Module
		Occupational health / safety issues at a specific construction site or area (non-diversion)?	Report of multiple hazards at a station construction site	Construction Inspection 	Checklist & SDMS Inspections Module
		Safety issues at a specific diversion area?	Report of multiple hazards on a ROW diversion site	Construction Diversion Inspection 	Checklist & SDMS Inspections Module
		Safety issues at a specific passenger station?	Report of multiple hazards at a rail station	Station Inspection 	Checklist & SDMS Inspections Module
	Possible specific or limited (not widespread) unsafe condition, work practice, or behavior?	Report of a person at a specific job site not using proper COVID-19 PPE	Safety Observation / Limited Inspection 	Checklist & SDMS Inspections Module	
	Possible non-adherence to a speed limit?	Report of speeding at a specific location on the Green Line	Speed / Radar Audit 	SDMS Audits Module	
	Possible non-adherence to a safety rule?	Report of bus operators routinely not wearing seatbelts	SRCP Audit 	SDMS Audits Module	
	Possible ineffectiveness of or non-adherence to another safety-related practice, activity, procedure, policy or program?	Report of a possible weakness in an existing maintenance procedure	Internal Safety Audit 	SDMS Audits Module	
	Possible safety data trend?	Report of a perceived increase in bus collisions involving left turns	Data Analysis 	Data Analysis Findings Report	
	Another known or confirmed hazard or ineffective risk mitigation?	A reported hazard or ineffective risk mitigation is confirmed through an investigation, inspection, audit, and / or data analysis	SRM Worksheet 	SRM Worksheet & RMML	



FMIS: Financial Management Information System
PPE: Personal Protective Equipment
SOP: Standard Operating Procedure

ACRONYMS

RMML: Risk Mitigation & Monitoring Log
SRCP: Safety Rules Compliance Program

OHS: Occupational Health & Safety
SDMS: Safety Data Management System
SRM: Safety Risk Management





MBTA REFERENCE DOCUMENTS

Table 11 is a list of MBTA-controlled documents incorporated by reference to support the overarching MBTA Safety Program:

Document Title:	Conformance to:	Chapter/Section Reference in this Safety Plan:
SMS Implementation Plan	§ 673.11(a)(2)	Applicability; PRF 4
Employee Safety Reporting Program	§ 673.23(b); § 673.27(b)(4)	PRF 3; 2.1.4; 6.2.5; 6.2.6
Emergency Management Plan	§ 673.11(a)(6)	2.3
TAM Plan	Part of MBTA's overarching Safety Program, including state of good repair and condition assessments.	2.4
OHS Plan	Part of MBTA's overarching Safety Program, including workplace safety programs and hazardous materials.	2.5
MassDOT/MBTA Railroad System Safety Program Plan	Part of MBTA Safety Program, including FRA requirements.	2.6
Safety Risk Management Standard Operating Procedure	§ 673.25	Chapter 5
Procurement Manual	§ 673.25(d)	5.1.7
Risk Mitigation & Monitoring Standard Operating Procedure	§ 673.27	5.2.6.1
Safety Event Investigation Manual	§ 673.27(b)(3)	6.2.4; 8.1.3
Configuration Management and Control Program	§ 673.27(c)	6.3.1.2
System Modification Program	§ 673.27(c)	6.3.1.2
Safety Certification Program	§ 673.27(c)	6.3.1.3
Internal Safety Audit Program	§ 673.37(d)	6.5.1
Job Hazard Analysis (JHA) Program	Part of MBTA's overarching Safety Program.	
Drug and Alcohol Policies	Part of MBTA's overarching Safety Program.	
Environmental Management System Manual	Part of MBTA's overarching Safety Program.	

Table 11: MBTA-Controlled Documents Supporting MBTA's Overarching Safety Program



REFERENCED STANDARDS AND GUIDANCE DOCUMENTS

49 CFR Part 672 – Public Transportation Safety Certification Training Program

49 CFR Part 673 – Public Transportation Agency Safety Plan

49 CFR Part 670 – Public Transportation Safety Program

49 CFR Part 674 – State Safety Oversight

Advisory Circular (AC) 120-92B – Safety Management Systems (FAA)

FTA’s Bus Template Reference Guide

FTA’s Comparison of Definitions: Part 673 versus Part 659

FTA’s Roadmap for Transition from the SSPP to the Agency Safety Plan

International Civil Aviation Organization: Safety Management Manual, 3rd edition

MIL-STD-882E – Department of Defense Standard Practice: System Safety

FTA’s National Public Transportation Safety Plan



REFERENCED SAFETY STANDARD OPERATING PROCEDURES

SAF-SOP-001 Safety on Call Policy

SAF-SOP-002 Comp Time / Time Off Requests

SAF-SOP-003 Winter Storm Response

SAF-SOP-004 Safety Rules Compliance Program

SAF-SOP-005 Employee Safety Reporting

SAF-SOP-006 Safety Risk Management

SAF-PGM-007 Internal Safety Audit Program

SAF-SOP-008 Internal Safety Audit Procedure

SAF-SOP-009 Commuter Rail Station Inspection

SAF-SOP-010 MBTA Facility Inspection

SAF-SOP-011 Local Safety Committee Meeting Function



**MASSACHUSETTS BAY
TRANSPORTATION AUTHORITY**



REVISION: 3

MBTA Transit Safety Plan

PAGE: 107 of 107

Revision	Section (If applicable)	Approved By:	Signed By:	Date Submitted to DPU:	Description
0	ALL	FMCB	Steve Poftak	06/15/2020	
1	PRF: 1; 2; 3; 4; 5; 6; 7; and 8	FMCB	Steve Poftak	06/25/2021	Updated internal Safety Plan review process; Added Safety Performance Targets for 2022; Updated organizational structure and safety committees; Modified SRM definitions; and Updated SMS training requirements. Contact MBTA Safety for a complete description of revisions.
2	PRF: 1: 2: 3: 4: 5: 6: 7: 8: APP	MBTA Board of Directors / JLMSC	Steve Poftak	12/31/2022	Updated Safety Policy Statement Added Safety Performance Targets for 2023 Updated safety committee structure Updated SMS implementation goals and objectives Clarified SRM and Assurance processes / activities Expanded Local Safety Committee structure and promotion descriptions Contact MBTA Safety for a complete description of revisions.
3	PRF: 1: 2: 3: 4: 5: 6: 7: 8: APP	MBTA Board of Directors / JLMSC	Phillip Eng	9/1/2023	Updated Safety Policy Statement Updated 2023 and added 2024 Safety Performance Targets Updated safety committee structure Updated SMS implementation goals and objectives Clarified SRM and Assurance processes / activities Expanded Local Safety Committee structure and promotion descriptions Contact MBTA Safety for a complete description of revisions.