MDOT MTA
Public Transportation Agency Safety Plan (PTASP)

MARYLAND DEPARTMENT OF TRANSPORTATION

MARYLAND TRANSIT ADMINISTRATION

6 St. Paul Street
Baltimore, MD 21202

Version 5 – April 2024

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SECTION 1. General Information

1.1 Plan Development, Approval, and Certification

Pursuant to 49 CFR Part 673.11(a)(1), MDOT MTA's PTASP must be signed by the Accountable Executive and approved by the agency's Board of Directors, or an Equivalent Authority. This PTASP is approved by the Equivalent Authority in lieu of a Board of Directors, who has a similar function for a recipient or subrecipient of FTA funds under 49 U.S.C. Chapter 53, including sufficient authority to review and approve a recipient or subrecipient's PTASP.

Name of Entity that Drafted Plan	MDOT MTA Office of Safety Management and Risk Control	
Signature of the Accountable Executive	Holly Arnold Digitally signed by Holly Arnold. Date: 2024.04.30 Holly Arnold, MDOT MTA Administrator	04/30/2024 Date Signed
Approval by the Maryland Equivalent Authority	DocuSigned by: Dianna Rosborough 43D38747EDE24E2... Dianna Rosborough, MDOT Assistant Secretary of Transportation	2024-05-02 Date Signed
Approval by State Safety Oversight Agency	DocuSigned by: Loyda Sequeira AB882CD0773E4DF... Loyda Sequeira, MDOT Chief, Audits & Rail Safety	2024-05-01 Date Signed

MARYLAND DEPARTMENT OF TRANSPORTATION

MARYLAND TRANSIT ADMINISTRATION

LETTER OF CERTIFICATION

The primary mission of the Maryland Department of Transportation Maryland Transit Administration (MDOT MTA) is to provide safe, efficient, and reliable transit across Maryland with world-class customer service. Safety shall be the primary consideration in every stage of all MDOT MTA activities to ensure the highest level of safety for both passengers and employees. All MDOT MTA employees, and contract employees whose contracts so specify, are responsible for fulfilling their respective duties in accordance with the requirements of this Public Transportation Agency Safety Plan (PTASP).

This PTASP has been established and is being implemented by MDOT MTA in accordance with the requirements of 49 CFR Part 673, the Federal Transit Administration (FTA) final rule on Public Transportation Agency Safety Plans. This PTASP is the successor to the 2019 MDOT MTA System Safety Program Plan and is the master document for all agency safety programs, which are now organized under and based on the principles and methods of a Safety Management System (SMS).

As MDOT MTA's Accountable Executive, I have the ultimate responsibility for carrying out this PTASP, directing human and capital resources needed to develop and maintain the agency's safety programs in accordance with 49 U.S.C. 5329(d), and ensuring action is taken, as necessary, to address substandard performance in the agency's SMS. **I hereby certify that MDOT MTA has established and is implementing this Public Transportation Agency Safety Plan (PTASP) to meets the requirements of 49 CFR Part 673.13 and the Maryland Department of Transportation Rail Safety Oversight Program Standard.**

Thank you for your continued commitment to a culture and discipline of safety excellence.

Holly Arnold

Digitally signed by Holly Arnold.
Date: 2024.04.29

04/29/2024

Holly Arnold — DATE
MDOT MTA Administrator and Accountable Executive

Reviewed & Approved by: DocuSigned by: Michael Winger 990EE82D1E56468... 2024-04-26
MDOT MTA Chief Safety Officer Date

Reviewed & Approved by: DocuSigned by: Jerome Howard 94F7ED8AB47A4D5... 2024-04-29
MDOT MTA Chief of Police Date

Reviewed & Approved by: DocuSigned by: Kate Sylvester A3651B6B547C467... 2024-04-29
MDOT MTA Deputy Administrator and Chief Planning, Programming, and Engineering Officer Date

Reviewed & Approved by: DocuSigned by: June DAVIS C79B2CA015104D7... 2024-04-27
MDOT MTA Chief Operations Officer Date

Reviewed & Approved by: DocuSigned by: Minilla Malhotra 3F7D708FCA5547C... 2024-04-26
MDOT MTA Chief Administrative Officer Date

Reviewed & Approved by: DocuSigned by: Austin Miller 98138C365E1F45B... 2024-04-29
MDOT MTA Chief Technology Officer Date

Reviewed & Approved by: DocuSigned by: 74E77B2FBE7C445... 2024-04-26
Chairperson, Joint Safety Committee Date

1.2 List of Acronyms

ADA	-	Americans with Disabilities Act
ADU	-	Aspect Display Unit
AIB	-	Accident Investigation Board
ANSI	-	American National Standards Institute
APTA	-	American Public Transportation Association
ARS	-	Accident Reporting System
AST	-	Aboveground Storage Tanks
ASTM	-	American Society for Testing and Materials
ATC	-	Automatic Train Control
ATO	-	Automatic Train Operation
ATP	-	Automatic Train Protection
BIL	-	Bipartisan Infrastructure Law
BWI	-	Baltimore Washington International-Thurgood Marshall Airport
CAP	-	Corrective Action Plan
CBD	-	Central Business District
CCTV	-	Closed-Circuit Television
CDL	-	Commercial Driver's License
CDRL	-	Contract Data Requirements List
CEIWC	-	Chesapeake Employers' Insurance Workers' Compensation
CFR	-	Code of Federal Regulations
CIL	-	Certifiable Items List
CIRT	-	Critical Incident Response Team
CITF	-	Continuous Improvement Task Force
CLRL	-	Central Light Rail Line
CMC	-	Crisis Management Center
CMV	-	Commercial Motor Vehicle
COMAR	-	Code of Maryland Regulations
COOP	-	Continuity of Operations Plan
CPR	-	Cardiopulmonary Resuscitation
CPTED	-	Crime Prevention Through Environmental Design
CQCP	-	Contract Quality Control Plan
CSHPG	-	Contractor Safety and Health Plan Guidelines
DHS	-	Department of Homeland Security
DOT	-	Department of Transportation

EAP - Employee Assistance Program
EMS - Emergency Medical Services
ENS - Emergency Notification System
EOC - Emergency Operations Center
EOP - Emergency Operations Plan
EPA - Environmental Protection Agency
ESRP - Employee Safety Reporting Program
FBI - Federal Bureau of Investigations
FEMA - Federal Emergency Management Agency
FFD - Fitness for Duty
FMCSA - Federal Motor Carrier Safety Administration
FMECA - Failure Modes, Effects, and Criticality Analysis
FMVSS - Federal Motor Vehicle Safety Standards
FRA - Federal Railroad Administration
FRM - Fatigue Risk Management
FTA - Federal Transit Administration
GETS - Government Emergency Telecommunications Service
GIS - Geographical Information System
HMIS - Hazardous Materials Identification System
HOS - Hours of Service
HSEEP - Homeland Security Exercise and Evaluation Program
HTL - Hazard Tracking Log
HVAC - Heating, Ventilation, and Air Conditioning
ICC - Intercounty Connector
ICS - Incident Command System
IIPP - Injury and Illness Prevention Plan
ISRP - Internal Safety Review Program
KPI - Key Performance Indicator
LMS - Learning Management System
LOA - Letter of Agreement
LRV - Light Rail Vehicle
MARC - Maryland Area Regional Commuter
MDE - Maryland Department of the Environment
MDEM - Maryland Department of Emergency Management
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MDOT - Maryland Department of Transportation

MEOP - Master Emergency Operations Plan
MHFA - Mental Health First Aid
MOSH - Maryland Occupational Safety and Health
MOW - Maintenance of Way
MPO - Metropolitan Planning Organization
MTA - Maryland Transit Administration
MTAPF - Maryland Transit Administration Police Force
NEO - New Employee Orientation
NFPA - National Fire Protection Association
NIMS - National Incident Management System
NIOSH - National Institute for Occupational Safety and Health
NSC - National Safety Council
NTD - National Transit Database
NTSB - National Transportation Safety Board
OCC - Operations Control Center
OCIP - Owner Controlled Insurance Program
OCS - Overhead Catenary System
OHA - Operating Hazard Analysis
OSHA - Occupational Safety and Health Administration
OPM - Office of Performance Management
OTP - On-Time Performance
PA - Public Address
PHA - Preliminary Hazard Analysis
PM - Periodic Maintenance
PPE - Personal Protective Equipment
PTASP - Public Transportation Agency Safety Plan
QA - Quality Assurance
QC - Quality Control
QMSP - Quality Management System Plan
RACI - Responsible, Accountable, Consulted, and Informed
RAP - Risk Assessment Process
RBI - Risk-Based Inspection
RRC - Risk Review Committee
RWP - Roadway Worker Protection
RSOPS - Rail Safety Oversight Program Standard
SAP - Substance Abuse Professional

SERMA - State Employee Risk Management Administration
SDS - Safety Data Sheets
SGR - State of Good Repair
SHA - Subsystem Hazard Analysis
SMP - Safety Management Plan
SMS - Safety Management System
SPI - Safety Performance Indicator
SOP - Standard Operating Procedure
SRCP - Safety Rules Compliance Program
SRM - Safety Risk Management
SSCC - Safety and Security Certification Committee
SSCP - Safety and Security Certification Program
SSCPP - Safety and Security Certification Program Plan
SSCVR - Safety and Security Certification Verification Report
SSEPP - System Security and Emergency Preparedness Plan
SSI - Sensitive Security Information
SSMP - Safety and Security Management Plan
SSOA - State Safety Oversight Agency
SSORC - Safety and Security Operations Review Committee
SSPP - System Safety Program Plan
SSVTL - Safety and Security Verification Tracking Log
SWPPP - Stormwater Pollution Prevention Plan
TAM - Transit Asset Management
TBU - Transportation Business Unit
TPA - Third-Party Administrator
TRC - Training Review Committee
TSA - Transportation Security Administration
TSHRS - Transportation Service Human Resource System
TSI - Transportation Safety Institute
TVA - Threat and Vulnerability Assessment
USC - United States Code
UST - Underground Storage Tank
WMATA - Washington Metropolitan Area Transit Authority

1.3 List of 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 (or other public transportation vehicle); a runaway train; an evacuation for life safety reasons; or any derailment of a rail transit vehicles at any location, at any time, whatever the cause.

Accountable Executive – A single, identifiable person who has ultimate responsibility for carrying out the PTASP of a public transportation agency; 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 PTASP, in accordance with 49 U.S.C. 5329(d), and the agency's Transit Asset Management Plan in accordance with 49 U.S.C. 5326.

Asset Condition Score – A numeric score derived using the FTA Transit Economic Requirements Model (TERM) scale that describes the condition of an asset (5.0 – Excellent; 4.0 – Good; 3.0 – Adequate; 2.0 – Marginal; and 1.0 – Poor).

Chief Safety Officer – An adequately trained individual who is responsible for safety and reports directly to a transit agency's chief executive officer, general manager, or equivalent officer. A Chief Safety Officer may not serve in other operational or maintenance capacities.

Collision – Physical contact between a moving transit vehicle and another object. Some collisions meet an FTA threshold for Safety Event reporting as Reportable Collision. They are:

(1) A crash involving a transit vehicle with another vehicle and the vehicle (either transit or non-transit) must be towed away from the scene;

(2) A transit vehicle that strikes or has contact with a person not in a vehicle; or

(3) A crash of a transit non-revenue vehicle in which the amount of property value damage exceeds the reportable threshold.

Consequence – Potential effect or result of a hazard or condition that could cause injury, illness, or death; damage to or loss of the facilities, equipment, rolling stock, or infrastructure of a public transportation system; and/or damage to the environment, i.e., the outcome, "What could happen?"

Corrective Action Plan (CAP) – A plan that describes actions taken to minimize, control, correct, or eliminate risks and hazards, and the schedule for taking those actions.

Designated Personnel – Employees and contractors identified by a public transportation agency whose job function is directly responsible for safety oversight of the agency's public transportation system.

Events – Any Accident, Incident, or Occurrence.

Fatality – A person who is killed in a safety event and the death is confirmed within 30 days, including intentional death (suicide).

Frontline Employee – An employee of a public transportation agency who is a transit vehicle driver or operator, dispatcher, maintenance and maintenance support employee, station attendant, customer service employee, security employee, or transit police, or any other employee who has direct contact with riders on a regular basis.

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.

Hazmat – Abbreviation for hazardous materials. Substances in quantities or forms that may pose a reasonable risk to health, property, or the environment.

Hierarchy of Controls – Methodology of applying safety strategies to eliminate hazards by prevention through design or to implement reasonably practical and effective mitigations to minimize exposure to hazardous conditions

or consequences (Elimination, Substitution, Engineering Control, Administrative Control, and Personal Protective Equipment).

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.

Initial Risk – The initial/inherent impact or effect that the consequence of a hazard or condition may have on a system.

Injury – Damage or harm to a person requiring immediate medical attention and/or transported away from the scene because of a safety event.

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

Lessons Learned – Experiences distilled from a project or other activity that should be actively considered in future similar projects or activities.

National Public Transportation Safety Plan – The plan to improve the safety of all public transportation systems that receive Federal financial assistance under 49 U.S.C. Chapter 53.

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.

Performance Measure – An expression based on a quantifiable indicator of performance or condition that is used to establish targets and to assess progress toward meeting the established targets.

Performance Target – A quantifiable level of performance or condition, expressed as a value for the measure, to be achieved within a time period required by the Federal Transit Administration (FTA).

Preventable Accident – An accident in which the vehicle operator failed to do everything reasonable to prevent it. This definition is consistent with the National Safety Council definition of a Preventable Accident.

Probability – Likelihood of how often a consequence would occur, i.e., How likely it is to occur? [Frequent, Probable, Occasional, Remote, Improbable]

Rail Fixed Guideway Public Transportation System - Any fixed guideway system that uses rail, is operated for public transportation, is within the jurisdiction of a State, and is not subject to the jurisdiction of the Federal Railroad Administration, or any such system in engineering or construction. Rail fixed guideway public transportation systems include but are not limited to rapid rail, heavy rail, light rail, monorail, trolley, inclined plane, funicular, and automated guideway.

Reportable Property Damage – Damage to any involved transit agency vehicles, facilities, equipment, or infrastructure resulting from a Safety or Security Event where the estimated property damage equals or exceeds $25,000 (for bus or other rubber tire vehicles) or substantial property damage (for rail vehicles or other facilities and infrastructure).

Residual Risk – The risk that remains in a system or environment after all efforts have been made to identify consequences and reduce the risk to as low as reasonably practical.

Resiliency – The ability to return to original form, recover.

Risk – The composite of predicted severity and probability of the potential effect (consequence) of a hazard.

Risk Acceptance/Approval – The process of accepting residual risk at designated levels of tolerance set by the agency to include the personnel who are trained and qualified with authority and accountability to approve and accept those levels of risk.

Risk Level – A term that describes the magnitude of risk by designating a color and title to specific risk values to be used as criterion for risk-based decision making (e.g.,

risk acceptance or risk mitigation). MTA utilizes the following risk levels: High, Serious, Medium, Low, and Negligible.

Risk Mitigation – A method or methods to eliminate or reduce the effects of hazards.

Risk Priority – A number assigned to a Risk Level that determines the specific action taken.

Risk Value – A designated number associated with specific Severity and Probability Levels used for grouping assessed hazard consequences into Risk Levels.

Root Cause Analysis – A process of defining, understanding, and solving problems by determining the underlying or fundamental cause of an accident or incident.

Safety – Freedom from unintentional harm to people, equipment, reputation.

Safety Assurance – Processes within a transit agency's Safety Management System that functions to ensure the implementation and effectiveness of safety risk mitigation, and to ensure that the transit agency meets or exceeds its safety objectives through the collection, analysis, and assessment of information.

Safety-Critical – Designed or needing to be fail-safe for safety purposes.

Safety Event – An event occurring on transit right-of-way, in a transit revenue facility, in a transit maintenance facility, or involving a transit revenue vehicle that can cause either: injury or death of an employee or customer; or damage to facilities, equipment, rolling stock or infrastructure that disrupts the operations of a transit agency. Types of events include collision of public transportation vehicles, derailment of a rail transit vehicle, fire, hazardous materials spill, acts of nature, and evacuation for life/safety reasons.

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) – The formal, top-down, data-driven, organization-wide approach to managing safety risk and assuring effectiveness of safety risk mitigations. SMS includes systematic procedures, practices, and policies for managing risks and hazards.

Safety Management System (SMS) Executive - A Chief Safety Officer or an equivalent.

Safety Promotion – A combination of training and communication of safety information to support SMS as applied to the transit agency's public transportation system.

Safety Risk – The assessed probability and severity of the potential consequences(s) of a hazard, using as reference the worst foreseeable, but most credible, outcome.

Safety Risk Assessment – The formal activity whereby a transit agency determines Safety Risk Management priorities by establishing the significance or value of its safety risks.

Safety Risk Management – A process within a transit agency's Public Transportation Agency Safety Plan (PTASP) for identifying hazards and analyzing, assessing, and mitigating safety risk.

Security – Freedom from intentional harm to people, equipment, or reputation.

Security Events – A transit system event that results from intentional harm to the system, such as a bomb threat, nuclear/chemical/biological release, arson, sabotage, burglary, vandalism, or projectiles thrown at vehicles; or personal security events such as operator or customer assault, attempted suicide and suicide, homicide, motor vehicle theft, robbery, rape, or theft.

Serious Injury – An injury that requires hospitalization for more than 48 hours/within 7 days, fracture of any bone (except simple fractures of fingers, toes, or nose), severe hemorrhages, nerve, muscle, or tendon damage, involves any internal organs, or involves 2nd or 3rd degree burns, or any burn affecting more than 5% of the body surface.

Severity – The worst foreseeable, but most credible consequence resulting from a hazard

or condition.

Severity Level – Designated level assigned to the most credible consequence of the outcome, i.e., How bad could it be? [Catastrophic, Critical, Major, Minor, Negligible]

State of Good Repair – The condition in which a capital asset is able to operate at a full level of performance, meeting each of the following three criteria: (1) The capital asset is able to perform its designed function; (2) The use of the asset in its current condition does not pose an identified unacceptable safety risk; and (3) The life-cycle investment needs of the asset have been met or recovered, including all scheduled maintenance, rehabilitation, and replacements.

State Safety Oversight Agency (SSOA) – An agency established by a State that meets the requirements and performs the functions specified by 49 U.S.C. 5329(e) and the regulations set forth in this part - 49 CFR Part 674 State Safety Oversight (SSO).

System Safety – The application of management and engineering principles and techniques to optimize all aspects of safety, within the constraints of operational effectiveness, time, and cost, throughout all phases of a system life cycle.

Transit Asset Management Plan – The strategic and systematic practice of procuring, operating, inspecting, maintaining, rehabilitating, and replacing transit capital assets to manage their performance, risks, and costs over their life cycles, for the purpose of providing safe, cost-effective, and reliable public transportation, as required by 49 U.S.C. 5326 and 49 CFR part 625.

Vulnerability – Any weakness, flaw or condition that allows and/or can be exploited, for the successful realization of a potential threat against a system.

1.4 PTASP Revision and Updates

The PTASP is a living document that is reviewed during the year and officially released in March of each year. The PTASP must be updated at least annually, but more frequent review and update may be required if there are:

- Significant changes to service delivery, such as restructuring bus routes or opening a rail system extension
- Significant changes in MDOT MTA's organizational structure
- Significant changes in funding and other resources to support SMS
- Changes in federal or state regulatory requirements

Before it is finalized and released, the PTASP must be reviewed and approved by MDOT MTA's Joint Safety Committee. After JSC and Accountable Executive approval, the PTASP is submitted to Maryland's SSOA, MDOT Office of Audits, for review and approval. Section 2.4.1 of this plan sets out the PTASP update and review timeline.

To submit questions, comments or revision requests regarding the policies and procedures published in this PTASP, please email MTASafety@mdot.maryland.gov.

Version Number and Updates			
Version Number	Date	Section/Pages Affected	Description of Change
5	3/7/2024	1.2	**Added** OPM, MHFA, and TSHRS acronyms
5	3/7/2024	1.7	**Updated** section 1.7.2 to clarify MTA and concessionaire relationship and review of SSMP/ SSCP by Office of Safety
5	3/7/2024	2.1	Section 2.1.1.1 Safety Management Policy Statement Distribution **added** to describe purpose of SMPS and its communication agencywide to meet part 673.23
5	3/7/2024	2.2.1 and 2.2.2.1	Figure 9 in Section 2.2.1 has **updated** organizational structure released November 2023, Final Version will include most up-to-date version if changes made.
5	3/7/2024	2.2.3	Section 2.2.1.1 Employee Classifications & Safety Responsibilities **added** to describe the distinction between management (TSHRS) and union-represented personnel, and how safety responsibilities are described in job descriptions/postings, respectively.
5	3/7/2024	2.2.3.2.7	Updates to 2.2.3.2.7 CAO; Section 2.2.1.2 Office of Human Resources and Office of Labor & Employee Relations **added**
5	3/7/2024	2.2.3.2.7	**Added** Section 2.2.3.2.9 Chief Technology Officer **added** to described CTO and IT staff safety responsibilities
5	3/7/2024	2.2.3.2.9	SRCP references omitted from PTASP due to current lack of formally approved program.
5	3/7/2024	2.2.4.1	Office of Performance Management **added**, references to Chief Innovation Officer (CIO) **removed** because position no longer exists.

5	3/7/2024	2.2.4	Safety Acountabilities and Responsibilities Matrix still needs formatting by graphics team to add column for CTO
5	3/7/2024	2.2.5.2.4	Section 2.2.5.2.4 Safety Rules Compliance Program omitted due to lack of approved program. Section heading now applies to CCTV Task Force for continuity of document numbering
5	3/7/2024	2.4.3	**Added** following referenced documents: • Light Rail Operations Responding to Accidents/ Incidents (SOP LR.GP.00.08.00) • MDOT MTA 3092 Safety Risk Management SOP OSMRC.OPS.001 Safety Officer Rail Event Reporting Procedure SOP • MDOT MTA 3088 Public Transportation Agency Safety Plan and System Security and Emergency Preparedness Plan Internal Review SOP • MOW-Track Maintenance Management Plan, Rev. 4 (2023) • Light Rail Facilities Maintenance Plan, Rev. 1 (2023) MTA Central Light Rail Car Maintenance Management Plan, Rev. 0 (2023) • OSMRC.ADM.001 Safety Event Tracking and Document Storage SOP • MDOT MTA Hazardous Energy Control (Lockout/ Tagout), 2023
5	3/7/2024	2.4.3	3.2.2 **updated** to include how qualitative and quantitative assessments may be made and that one severity category should be selected when completing SRA.
5	3/7/2024	3.2.1	Sections 3.2.1 and 4.2 edited SRA Trigger #2 "New Procedures Developed/Existing Procedure Revised" to "Changes to Plans, Committees, and other Significant Agency Activities;" graphic in 3.2.1 still needs to be **updated**
5	3/7/2024	3.2.6	Section 3.2.6 **updated** to include specific language regarding Administrator responsibilities and actions regarding Priority 1 and 2 hazards.
5	3/7/2024	4.1.1	**Added** Section 2.2.4.2 summarizes OPM use of Business Intelligence Programs to clarify usage of Annhilator information for safety data collection, analysis, and KPI reporting due to MDOT Excellerator program ending without notice.
5	3/7/2024	4.3.1.1	Section 4.3.1 edited to align with MDOT MTA 3088 SOP as Office of Audits is now in charge of ISRP. Some procedural dialogue **removed** as it is captured in SOP and to ensure consistency across documents.

5	3/7/2024	5.1.11	Document reviewed for consistency in use of CSHPG rather than CSHP.
5	3/7/2024	5.2.1.2	**Updated** lanaguage regarding which MTA personnel receive de-escalation training to comply with 49 U.S.C. 5329(d)(1)(H)(ii) "all operations and maintenance personnel and personnel directly responsible for safety."
5	3/7/2024	5.2.1.5	**Added** Assistant Chief Safety Officer - Emergency Management; Emergency Management Specialist; and Safety and Security Specialist to list of designated personnel requiring PTSCTP
5	3/7/2024	5.2.6.2	Section 5.2.6.2 activities **updated** to include • Completing the log of completed drills and exercises • Adhering to the multi-year drill schedule
5	3/7/2024	3.1	Opening paragraph of Section 3 amended to include reference to SOP MDOT MTA 3088 as formalized SRM process and procedure.
5	3/7/2024	4.1.5.7	**Updated** 4.1.5.7 to substitute $25,000 threshold for investigation due to escalating repair costs for substantial damage, **added** non-revenue and other types of safety events, e.g. OSHA, under Office of Safety discretionary purview
5	3/7/2024	5.1.1	**Updated** 5.1.1 SMS Milestones with 2023 information
5	3/7/2024	5.2.8	**Added** section 5.2.8 covering agency mental health and suicide response
5	3/7/2024	1.7.2	**Added** "MTA reviews the Concessionaire's Safety and Health Plan to ensure an adequate level of safety is met." after "... public-private partnership consortium, Purple Line Transit Partners" in first paragraph.
5	3/7/2024	1.7.2	1.30.24 -- add statement "or subsequent FTA governing guidelines at the time of project readiness and the issuance of SSC." after "requirements of 49 CFR Part 673 - PTASP".
5	3/7/2024	1.7.2	**Added** "MDOT MTA is the project lead, with the support and close coordination of a team that includes the Washington Metropolitan Area Transit Authority, Montgomery and Prince George's counties, the Maryland-National Capital Park and Planning Commission, Maryland Department of Transportation State Highway Administration (MDOT SHA), and local municipalities in the project area." at end of section prior to Section 1.8
5	3/7/2024	2.2.2	**Added** Purple Line reporting chain-of-command Superintendent of Safety to Director of Safety, Security, & Quality Control to CSO to Administrator.
5	3/7/2024	2.2.3.2.3	**Added** Project Superintendent of Safety to serve as delegated authority/deputy to Project Director of Safety.

5	3/7/2024	2.2.5.3.1	Amended language to include "and local municipalities and governments as applicable."
4	3/1/2023	1.3	**Revised** definitions of Collision, Reportable Property Damage
4	3/1/2023	1.3	**Added** definitions of Frontline Employee, Preventable Accident
4	3/1/2023	1.4	**Added** "Changes in regulatory requirements" as a triggering event for PTASP revision outside of normal schedule
4	3/1/2023	1.4	**Added** description of the entities who perform required PTASP review and approval process, including Joint Safety Committee, Accountable Executive, and State Safety Oversight Agency (SSOA)
4	3/1/2023	1.5	**Added** language describing Bipartisan Infrastructure Law (BIL) requirements for transit worker assaults and MDOT MTA initiatives to strengthen assault prevention and response
4	3/1/2023	1.5	**Added** safety performance target for transit worker assault reduction
4	3/1/2023	1.5	**Added** language describing BIL requirement to dedicate not less than 0.75 percent of Section 5307 funds to safety-related projects
4	3/1/2023	1.8	**Added** language noting that the Purple Line light rail system will establish its own separate PTASP
4	3/1/2023	1.9	**Added** new subsection describing BIL requirements affecting MDOT MTA's safety management
4	3/1/2023	1.10.2	**Added** new subsection to MDOT MTA Bus System Description to incorporate Zero Emission Bus Transition Program for battery electric buses
4	3/1/2023	1.10.8	**Added** new subsection describing MDOT MTA's measures to reduce exposure to infection disease
4	3/1/2023	2.1.1	**Revised** MDOT MTA's Safety Management Policy Statement to address BIL priorities
4	3/1/2023	2.1.2	**Added** new language describing MDOT MTA Agency Core Values adopted in 2022
4	3/1/2023	2.2.5	Deleted references to defunct Safety and Operations Round Table, SMS Ambassadors Committee, and Worker's Compensation Safety Task Force
4	3/1/2023	2.2.5	**Added** Joint Safety Committee and CCTV Review Task Force to list of safety committees
4	3/1/2023	2.2.5.2.2	**Added** description of Joint Safety Committee, including its establishment, membership, and responsibilities

4	3/1/2023	2.2.5.3.2	**Added** language in description of Safety and Security Certification Committee (SSCC) clarifying that a SSCC is formed for each major capital project requiring full safety and security certification following the guidance of MDOT MTA's agency-wide Safety and Security Certification Program Plan
4	3/1/2023	2.4.1	**Revised** PTASP Review and update schedule, **added** line item for Joint Safety Committee approval
4	3/1/2023	2.4.3	**Added** language describing where the list of agency safety plans, directives and SOPs is housed and retained
4	3/1/2023	2.4.3	**Added** following directives and SOPs to the list of agency safety plans, directives, and SOPs: • MDOT MTA Agency-Wide Operator Assault Prevention and Response Directive and SOP (New - Oct. 2022) • MTA Police Force Operator Assault Prevention and Response SOP (New - Oct. 2022) • Safety and Security Certification Program Plan (New - Nov. 2022) • Safety and Security Certification SOP (New - Nov. 2022) • System Modification Authorization Request, Final Report, and Review and Approval Process SOP (**updated** Nov. 2022)
4	3/1/2023	3.2.1	**Added** example of a risk assessment trigger due to new procedure being developed or existing procedure being **revised** (Example: Major changes to the Track Standard and Field Guide)
4	3/1/2023	3.2.6	**Revised** risk acceptance and approval language to clarify that individuals completing a safety risk assessment must have the risk assessment reviewed by a trained member of the Office of Safety
4	3/1/2023	3.2.6	**Revised** Figure 19 - Ranking Risk and Risk Acceptance/ Approval Level Index to clarify that only the Administrator can approval mitigation plans for risks that have been rated High (Risk Priority 1)
4	3/1/2023	4.1	**Added** language describing BIL requirement that transit agencies track transit worker assault and develop a safety performance target for this measure
4	3/1/2023	4.1.1	Deleted reference to defunct MDOT Excellerator Performance Management System

4	3/1/2023	4.1.4	**Added** language describing minimum requirements for developing Corrective Action Plans (CAPs); SSOA approval of CAPs; and process for monitoring, tracking, and verifying CAP completion
4	3/1/2023	4.1.5.8	**Added** language regarding MDOT MTA's automated email notification system to help ensure that safety event investigation fact reports are submitted within 45 days following and event
4	3/1/2023	4.2.1	**Added** language clarifying the purposes of MDOT MTA's configuration management process
4	3/1/2023	4.2.3	**Revised** section regarding Safety and Security Certification to align with new MDOT MTA Safety and Security Certification Program Plan and SOP and to reflect all requirements of SSOA Program Standard
4	3/1/2023	4.2.3.2	**Added** subsection regarding newly-formed MDOT MTA Project Management Office and its responsibilities in supporting the Safety and Security Certification program
4	3/1/2023	4.3.1	**Revised** section regarding MDOT MTA's Internal Safety Review Program to reflect all requirements of SSOA Program Standard and make program references consistent
4	3/1/2023	5.1.1	**Added** 2021 and 2022 SMS development milestones
4	3/1/2023	5.1.3.4	**Added** new subsection describing the Chief Safety Officer Citation
4	3/1/2023	5.1.6	**Revised** language on fitness for duty and fatigue to note that MDOT MTA is developing a comprehensive Fitness for Duty and Fatigue Risk Management Directive to reflect hours of service and fitness for duty industry standards published by the American Public Transportation Association
4	3/1/2023	5.1.10	**Revised** figure 30 - OSHA Hazard Communication Standard Pictogram, which is displayed throughout MDOT MTA facilities in support of the agency's Hazard Communication program and provides information regarding safety data sheets and hazardous materials labeling
4	3/1/2023	5.2.1.2	**Revised** Figure 31 - Safety-related training and certification courses include de-escalation training for Bus, Metro, and Light Rail operators and controllers; description of training program provided
4	3/1/2023	5.2.1.5	**Added** language describing refresher training requirements for designated personnel
4	3/1/2023	5.2.1.6	**Added** description of SMS Level 2 - Advanced training for supervisory employees, which instructs participants how to conduct safety risk assessments

4	3/1/2023	5.2.4	**Added** new subsection describing Battery Electric Bus safety-related training
4	3/1/2023	5.2.7	**Updated** description of environmental compliance training program and summary of attendance for 2019-2022
3	3/1/2022	1.3	**Revised** definition of Accident
3	3/1/2022	1.5	**Updated** Safety Performance Targets
3	3/1/2022	1.6.3	**Updated** MPO coordination description
3	3/1/2022	2.1.1	**Revised** Safety Management Policy Statement
3	3/1/2022	2.2.1	**Updated** MDOT MTA Organization Chart
3	3/1/2022	2.2.2	**Updated** Office of Safety Organization Chart
3	3/1/2022	2.2.3.11	**Revised** SMS Ambassador Responsibilities
3	3/1/2022	2.2.4	**Updated** Safety and Accountabilities Matrix
3	3/1/2022	2.2.5.2.2	**Updated** SORT description
3	3/1/2022	2.2.5.2.6	Changed to CCTV Task Force
3	3/1/2022	4.1.4	**Revised** to align with RSOPS CAPs monitoring, tracking, and verification process
3	3/1/2022	4.1.5	**Revised** to align with RSOPS update
3	3/1/2022	4.1.5.7	**Updated** Non-Rail Investigation Criteria
3	3/1/2022	5.1.3.2	Changed to "Safety All-Stars"
3	3/1/2022	5.2.6	**Updated** Full Section
3	3/1/2022	All Sections	**Revised** use of 'Accident/Incident' to 'Event'
2	3/1/2021	Signature Page	**Removed** Deputy COO's and Deputy Chief Engineer Signatures
2	3/1/2021	1.9	**Updated** System Description for accuracy
2	3/1/2021	1.6.2	**Added** C-SMMPO and HEPMPO
2	3/1/2021	2.1.2.2	**Added** "honest, and transparent..."
2	3/1/2021	2.2.1	**Organizational Updates**
2	3/1/2021	2.2.2.1	**Removed** "...and is responsible and accountable for the daily oversight, identification, and control of operating and workplace hazards."
2	3/1/2021	2.2.2.1	**Organizational Updates**
2	3/1/2021	2.2.2.1	**Removed** "loss control and"
2	3/1/2021	2.2.3.3	**Added** "Fulfill the duties of Incident Commander as delegated"
2	3/1/2021	2.2.3.4	**Removed** "Risk Management Work Group"
2	3/1/2021	2.2.3.5	**Added** "and/or co-chair"

2	3/1/2021	2.2.3.7	**Added** "Ensure instructors are periodically assessed and audited for proficiency in both classroom and field instruction"
2	3/1/2021	2.2.4	**Altered to** "This assures that the office holds primary responsibility and accountability for active implementation of tasks in their area of responsibility, in addition to the Office of Safety's overall responsibility for the task on an MDOT MTA-wide basis."
2	3/1/2021	2.2.4	**RACI Chart Update**
2	3/1/2021	2.2.5.1.5.	**Removed** "Risk Management Work Group"
2	3/1/2021	2.2.5.2.1	**Removed RMWG**
2	3/1/2021	2.2.5.2.2	**Altered to SORT**
2	3/1/2021	2.2.5.2.5	**Altered RMWG to RRC**
2	3/1/2021	2.2.5.3.5	**Added Safety Committees (as needed)**
2	3/1/2021	3.2.6	**Added** "The MDOT MTA Administrator has ultimate authority in risk acceptance and approval."
2	3/1/2021	4.1.4.1	**Added** "MDOT MTA is committed to closing all CAPs in a timely manner, aligned with FTA and SSOA expectations, in order to ensure operational risks are managed efficiently and effectively."
2	3/1/2021	4.1.4.5	**Added** "approved CAPs, which should be made available to the SSOA. Logs shall include"
2	3/1/2021	4.1.4.5	**Revised** to reflect RSOPS CAP requirements.
2	3/1/2021	4.1.5.8	**Removed** "Preliminary" Changed report timeline from 30 to 45 days
2	3/1/2021	4.2.2.1	**Updated** Planning/Engineering/Maintenance PM Title
2	3/1/2021	4.2.2.2	**Updated** Planning/Engineering/Maintenance PM Title
2	3/1/2021	4.2.4.4	**Updated** to reflect FTA 15 elements of quality
2	3/1/2021	5.1.2	**Removed RMWG** and replaced with SORT
2	3/1/2021	5.1.3.2	**Removed** 'Elite' branding
2	3/1/2021	5.1.4	**Added** "The Safety Hotline may also be delegated as the central point of contact for other agency concerns that require 24/7 monitoring and/or response."
2	3/1/2021	5.2.1.6	**Removed** subsection descriptions from SMS Level 1 – Basics Course Review Outline
2	3/1/2021	5.2.1.6.	**Revised** SMS Level 2 Outline
2	3/1/2021	All Sections	**Removed RMWG** and replaced with SORT
2	3/1/2021	All sections	**Revised** to include Maryland Transit Administration Police Force (MTAPF)
2	3/1/2021	All sections	**Revised** to change SMS Manager to Deputy Chief Safety Officer - Safety Management System (DCSO-SMS)

1.5 Safety Performance Targets

Pursuant to 49 CFR Part 673.11(a)(3), MDOT MTA is required to include safety performance targets in its PTASP that are based on the safety performance measures established under the National Public Transportation Safety Plan (49 CFR Part 670, Subpart D). The four required safety performance measures are:

- Fatalities (total number of reportable fatalities and rate per total vehicle revenue miles by mode)
- Injuries (total number of reportable injuries and rate per total vehicle revenue miles by mode)
- Safety Events (total number of reportable events and rate per total vehicle revenue miles by mode)
- System Reliability (mean distance between major mechanical failures by mode)

The thresholds for reportable fatalities, injuries, and safety events are defined in the National Transit Database (NTD) Safety and Security Reporting Manual. The definition of reportable major mechanical failures is defined in the NTD Glossary as "a failure of some mechanical element of the revenue vehicle that prevents the vehicle from completing a scheduled revenue trip or from starting the next scheduled revenue trip because actual movement is limited or because of safety concerns."

The table below shows MDOT MTA's 2023 safety performance targets. Other safety-related key performance indicators (KPIs) are outlined in Section 4, Safety Assurance.

Mode of Transit Service	Fatalities	Fatalities (per 1M VRM)	Injuries	Injuries (per 1M VRM)	Safety Events	Safety Events (per 1M VRM)	System Reliability (VRM/Failures)
Local Bus	2	0.1	141	7.1	57	2.9	6,000
Light Rail	1	0.3	16	5.5	19	6.6	900
Metro Subway	1	0.2	42	9.3	8	1.9	5,000
Mobility	0	0	77	4.3	33	1.9	15,000
Commuter Bus	0	0	0	0	0	0	25,000

Figure 1 - MDOT MTA Safety Performance Targets, 2024

The Bipartisan Infrastructure Law (BIL), known officially as the Infrastructure Investment and Jobs Act (Public Law 117-58), requires that transit agencies track transit worker assaults and develop risk reduction programs to reduce the number of assaults on transit workers. MDOT MTA has been actively engaged in strengthening its prevention of and effective response to transit worker assaults. Initiatives that the agency has undertaken include an Administrator's Task Force on Transit Worker Assaults, developing an agency-wide directive, and implementing formal SOPs to guide and direct the roles and responsibilities of multiple MDOT MTA offices to support employees and help protect them from assault. Tracking and responding to worker assaults is a primary responsibility of the MTA Police Force. The last

three years of assault data were used by MDOT MTA and MTA Police Force to develop a safety performance target for transit worker assaults of two (2) percent reduction in the number of reported assaults, year-over-year.

The BIL also requires that not less than 0.75 percent of FTA Section 5307 Urban Area Formula Grant funds be allocated to safety-related projects. MDOT MTA management is committed to ensuring that not less than 0.75 percent of the Section 5307 grant funding remaining with core Baltimore-area transit services after suballocation to other Maryland transit properties will be obligated to safety-related projects that help the agency meet its safety performance targets.

1.6 State and MPO Safety Target Transmittal and Coordination

49 CFR Part 673.15 requires that a transit agency make its safety performance targets available to the State and Metropolitan Planning Organization (MPO) on an annual basis to aid in the planning process. Additionally, to the maximum extent practicable, States and transit agencies must coordinate with MPOs in the selection of safety performance targets.

1.6.1 Making Safety Performance Targets Available to the State

The MDOT Office of Audits, MDOT MTA's SSOA, will receive an updated PTASP by March 1 of each year. The updated PTASP will include MDOT MTA's safety performance targets. Additionally, MDOT MTA meets on a quarterly basis with the MDOT SSOA team and will update the SSOA in those meetings of the agency's progress in meeting safety performance targets.

1.6.2 Making Safety Performance Targets Available to the MPO

MDOT MTA's core transit service area is within the Baltimore Regional Transportation Board (BRTB) MPO area, whereas MARC train and commuter bus service operate within C-SMMPO, HEPMPO, and TPB MPO areas. The MPOs provide regional planning and inter-governmental coordination for the central Maryland regions. MDOT MTA will make its safety performance targets available to the MPOs not less than annually. MDOT MTA will inform the MPOs of changes the agency is making to its safety performance targets after the annual review and update process is completed (see section 2.4.1 for the annual PTASP review and update schedule).

1.6.3 MPO Coordination of Performance Targets

The FTA/Federal Highway Administration (FHWA) joint planning regulation requires MPOs and States to incorporate transit safety performance targets into the statewide and metropolitan planning process. MPOs must "integrate, directly or by reference, the goals, objectives, performance measures, and targets described in other State transportation plans and transportation processes," including plans developed by public transportation providers as a part of a performance-based program (23 CFR § 450.306(d)(4)). MDOT, including MDOT MTA, has signed Letters of Agreement (LOA) with both BRTB and TPB documenting the responsibilities for Federal Transportation Performance-Based Planning and Programming, including transit safety. MDOT MTA will, to the maximum extent practicable, coordinate with the MPOs after annual PTASP approval and certification to discuss and assist in determining appropriate public transportation safety performance targets for each MPO.

1.7 PTASP Purpose and Scope

1.7.1 Purpose

The MDOT MTA's SMS provides an agency-wide coordinated effort and common framework to assess safety risks and take effective action to reduce those risks to a level that is as low as reasonably practicable. The SMS addresses all aspects of the MDOT MTA's transit services, including Bus, Light Rail, Metro Subway, Commuter Rail, Commuter Bus, and Mobility (Paratransit) operations and applies operating, technical, and risk management techniques and principles to conserve life and property, prevent and reduce safety events, and maintain a safe and healthful work environment. The SMS facilitates cross-functional Safety Risk Management (SRM) among all MDOT MTA divisions, describes the organizational principles and processes that will be used to carry out the SMS, documents the agency divisions and positions who are responsible for the management of safety in transit operations, and provides a standard and reference for consistent implementation of safety management processes within MDOT MTA.

This document, MDOT MTA's PTASP, has been prepared to meet the standards established by FTA under 49 CFR Part 673. The FTA requires that transit agency PTASPs incorporate SMS structure, principles, and methods in a manner that is tailored to the size, complexity, and scope of the public transportation system and environment in which it operates.

The MDOT MTA PTASP directs the establishment and implementation of technical and managerial safety strategies for the identification, assessment, and control of safety risks to MDOT MTA customers, employees, the public, and others who may be impacted by the system. Specifically, the PTASP describes the safety management policies, procedures, and processes that MDOT MTA will use to manage the following safety activities:

- Safety data collection and analysis
- Safety reviews, audits, and evaluations
- Investigation of transit safety events and discovery of significant hazards
- Continuous monitoring of safety performance
- Assuring compliance with controls for making system modification/ configuration changes and keeping relevant documentation up to date
- Continuous improvement of SMS processes
- Communication of safety activities and progress towards safety performance objectives, development, and delivery of safety-related training.

1.7.2 Scope

The SMS applies to all MDOT MTA managers (at all levels), employees, and contractors who are either directly or indirectly involved in or responsible for providing transit services, infrastructure elements, and/or processes from planning, construction, testing, commissioning, and operational phases of all modes. The SMS addresses both operational and occupational safety and harmonizes with federal/state/local environmental policies and system security requirements.

Development and preparation of the SMS is in accordance with:

- FTA SMS Framework (August 2015)
- National Public Transportation Safety Plan, 49 CFR Part 670, Subpart D
- Public Transportation Safety Certification Training Program, 49 CFR Part 672
- PTASP, 49 CFR Part 673
- SSO, 49 CFR Part 674
- Code of Federal Regulations, DOT, 49 CFR, Chapter VI
- FTA's Transit Advisory Committee for Safety (TRACS) Report 10-01 "Safety

Planning Model and SMS Principles"

- FTA's Transit Advisory Committee for Safety (TRACS) Report 12-02 "PTASP"
- International best practices for public transportation safety
- Maryland DOT SSOA requirements and program standard for rail transit found in the Rail Safety Oversight Program Standard (RSOPS).

PTASP-SSPP Statement for MARC Commuter Rail

MDOT MTA's MARC commuter rail system safety program is covered under a separate safety program planning document entitled System Safety Program Plan (SSPP). The MARC SSPP conforms to the requirements of the Federal Railroad Administration's (FRA) rule, 49 CFR Part 270 – System Safety Program. Because of the confidential nature of MDOT MTA's security measures, the MARC System Security Plan (SSP) is maintained separately from their SSPP.

PTASP Statement for Construction of MDOT MTA Purple Line

The Maryland Purple Line is a 16.2-mile light rail line currently under construction that extends from Bethesda in Montgomery County to New Carrollton in Prince George's County. The project is being managed and constructed by a public-private partnership consortium, Purple Line Transit Partners. MDOT MTA reviews the Concessionaire's Safety and Health Plan to ensure an adequate level of safety is met. MDOT MTA is the project lead, with the support and close coordination of a team that includes the Washington Metropolitan Area Transit Authority, Montgomery and Prince George's counties, the Maryland-National Capital Park and Planning Commission, Maryland Department of Transportation State Highway Administration (MDOT SHA), and local municipalities in the project area.

The Purple Line project has an established Safety and Security Management Plan (SSMP) and Safety and Security Certification Program (SSCP). These documents are distributed to and reviewed by the MTA Office of Safety. Until the Maryland Purple Line project construction and operational testing is complete, MDOT MTA's Purple Line will be covered under this PTASP.

Prior to entering revenue service, the Purple Line light rail system will establish its own individualized safety plan that conforms to the requirements of 49 CFR Part 673 – PTASP, or subsequent FTA governing guidelines at the time of project readiness and the issuance of SSC, which will be reviewed and approved by the Maryland SSOA.

1.8 Goal and Objectives for SMS

The overall goal of our SMS is to provide MDOT MTA with a management system that reduces the level of safety risk to as low as reasonably practicable through the effective management of safety risks. This goal is reflected in the safety activities integrated during planning, design, construction, operation, and maintenance phases of transit projects and services. Achievement of the goal is accomplished, in part, through the application of a formal system of analytical techniques and methods to be used for the identification, assessment, and mitigation of safety risks (and assuring that risk mitigation worked as intended), along with resource support and prioritization from senior management. The expected outcomes of the SMS over time will be improved safety culture, safety performance, and assurance that safety risk is being managed to a level that is as low as reasonably practicable.

MDOT MTA will proactively address safety risk using a top-down, organization-wide management system. The following objectives will assist the agency in meeting this goal:

1. Use standard safety risk management processes to identify, assess, evaluate, and mitigate hazards that may impact customer, employee, and public safety.
2. Incorporate all-hazard controls into capital project design criteria and specification development. (An all-hazards approach considers safety, security/public safety, and emergency preparedness/management hazards in a holistic manner.)
3. Analyze causes of employee and passenger injuries.
4. Analyze causes of transit vehicle collisions, close calls, and other safety events.
5. Train MDOT MTA personnel in SMS and other safety-related topics and ensure that safety certifications are up-to-date and maintained.
6. Comply with all federal, state, and local environmental regulations.
7. Promote safety education and participation internally with MDOT MTA employees through campaigns, promotional campaigns, and other activities.
8. Improve planning and projections for safety-related fiscal support needs by tracking and analyzing data.
9. Coordinate and communicate management of safety risks with jurisdictional partners, the MDOT SSOA, FTA, and the FRA.
10. Collect and analyze safety data that informs MDOT MTA's safety performance measures and other safety KPIs.
11. Conduct internal MDOT MTA safety reviews, audits, and evaluations to determine compliance with safety rules, procedures, standards and guides and identify new hazards.
12. Assure compliance with controls for making system modification/ configuration changes and keep relevant documentation up to date.
13. Continuously improve SMS processes.
14. Communicate safety activities and progress towards safety performance objectives with MDOT MTA front line employees.

1.8.1 SMS Products

The products of the SMS include safety risk assessments, measurement and collection of safety data, and the development of safety assurance and evaluation reports based on analyses of the supporting data. These products are intended to document and support decision-making across all transit operations and maintenance activities based on reducing safety risk. SMS products support

the identification, assessment, prioritization, and implementation of safety enhancements for all transit services.

1.8.2 SMS Implementation

MDOT MTA's implementation of its SMS will be a multi-year process. For transit agency implementation, these times will be approximate and will vary, dependent upon available resources for implementation. MDOT MTA will prepare an SMS Implementation Plan based on a phased approach that identifies SMS implementation activities, responsible staff, and schedule milestones.

1.9 Bipartisan Infrastructure Law

The Bipartisan Infrastructure Law, known officially as the Infrastructure Investment and Jobs Act (Public Law 117-58), makes amendments to the U.S. public transportation safety program authorized in 49 U.S.C, section 5329, as carried out by Federal Transit Administration and public transportation agencies. The public transportation safety program includes the following elements: the national public transportation safety plan (incorporated in 49 CFR Part 670), a public transportation safety certification training program (49 CFR Part 672), public transportation agency safety plans (49 CFR Part 673), and the State Safety Oversight (SSO) program (49 CFR Part 674).

Under the Bipartisan Infrastructure Law, MDOT MTA must:

- Establish a Safety Committee, composed of representatives of frontline employees and management, that is responsible for identifying, recommending, and analyzing the effectiveness of risk-based mitigations or strategies
- Develop 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 (NTD)
- Set risk reduction performance targets using a three-year rolling average of the data submitted by MDOT MTA to the NTD
- Allocate not less than 0.75 percent of FTA Section 5307 Urban Area Formula Grant funds to safety-related projects
- Require maintenance employees to meet MDOT MTA's existing safety training requirements, and require that employees from Safety, Operations, and Maintenance complete de-escalation training
- Ensure that measures taken by MDOT MTA to minimize exposure to infectious disease are consistent with Centers for Disease Control and Prevention (CDC) or Maryland Department of Health (MDH) guidelines

1.10 MDOT MTA System Description and Accountability

MDOT MTA is a division of the Maryland Department of Transportation, and one of the largest multi-modal transit systems in the United States. MDOT MTA operates local service through BaltimoreLink, Commuter Buses, Light RailLink, Metro SubwayLink, Maryland Area Regional Commuter (MARC) Train Service, and a comprehensive paratransit (MobilityLink) system. MDOT MTA also manages the Taxi Access system and directs funding and statewide assistance to Locally Operated Transit Systems (LOTS) in each of Maryland's 23 counties, Baltimore City, Annapolis, and Ocean City.

MDOT MTA owns and maintains a fleet of passenger buses, light rail vehicles (LRVs), heavy rail vehicles (Metro), commuter trains, and mobility vehicles to meet its service demands for public transportation services. Additionally, MDOT MTA oversees contracted commuter bus services throughout the State of Maryland.

The combination of these services provides regularly scheduled transit and additional transportation for special events throughout the City of Baltimore and its surrounding counties, as well as in service provided by the agency's commuter rail and commuter bus services throughout the State of Maryland, including to the greater Washington, DC metropolitan area and parts of West Virginia.

MDOT MTA employs approximately 3,400 employees. Additionally, MDOT MTA has its own police department, which has sworn police officers who are empowered with the same police powers as the Maryland State Police. The Maryland Transit Administration Police Force (MTAPF) also have communication officers, police monitoring technicians (PMFT) and civilian uniformed personnel services (CUPS) employees who perform fare enforcement and security guard functions. MDOT MTA maintains an internet site (*http://www.mta.maryland.gov*), that provides individual modal routes and schedule information. The MDOT MTA also maintains an Information Line at (410) 539–5000 or 1-866-RIDE-MTA (743-3682).

1.10.1 Operations Control Centers

Operations Control Centers (OCC) for each mode other than MARC and Commuter Bus are currently located in Baltimore City and surrounding areas and contain the necessary systems and the operating personnel to supervise, regulate, and control Bus, Light Rail, and Metro Subway operations. The OCC has the capability to monitor and control safe operation of the transit system and to handle any emergency situations that may arise and is continuously attended during all hours of operations. OCC personnel monitor train and switch positions, signal status and malfunctions, fire and intrusion alarms, traction power systems, and pumping station status.

There are separate OCCs for Bus, Metro, Light Rail, and Mobility. Each modal OCC is equipped with monitoring, control, and communication facilities required to operate a safe and efficient transit system, and to handle emergency situations. A computer system monitors train and switch positions, signal status and malfunctions, status of support systems such as ventilation, drainage, fire and intrusion alarms, traction power system status and pumping station alarms. The OCC has direct communication via radio, telephone, and/or public address with:

- Train and bus operators and train passengers
- Station attendants and passengers in stations
- MDOT MTA Systems and SCADA Maintenance
- Road, terminal, and yard tower supervisors
- Local fire/rescue communications centers
- MTAPF and local police

OCC staff has the responsibility for complete control of the Bus, Light Rail, Metro Subway, and all facilities necessary to coordinate activities required for correction of an emergency and/or non-routine situation in accordance with established Standard Operating Procedures (SOPs) and Emergency Operating Procedures (EOPs).

1.10.2 MDOT MTA Bus System Description

The MDOT MTA bus system operates four division facilities located throughout the City of Baltimore in which operations, administration, and maintenance activities are housed. These divisions include – Bush, Eastern, Kirk, and Northwest.

General repairs and maintenance are performed at all locations, although the major overhaul facility is located at the Bush Division. Routes are modified periodically to adapt to changing needs and to support special services. The MDOT MTA periodically procures new buses as existing buses age and as ridership and service areas increase and expand.

1.10.2.1 Bus Fleet Description

The MDOT MTA operates a mixed fleet of approximately 750 transit buses. The fleet consists of 40-foot diesel powered buses, 40-foot hybrid buses, 60-foot (articulated) clean diesel buses, and 60-foot (articulated) hybrid buses. The more fuel-efficient hybrid buses comprise one-third of the bus fleet.

1.10.2.2 Zero Emission Bus Transition Program

In 2021, the State of Maryland passed legislation that mandated MDOT MTA to convert 50% of its fleet to zero-emissions (ZE) by 2030. MDOT MTA proactively developed a ZE Transition Plan that evaluated vehicles, facilities, service implications, utility upgrades, alternative delivery strategies, and charging infrastructure in preparation for the largest ZE fleet transition in the Mid-Atlantic. Results from the study recommended that MDOT MTA pursue battery electric buses (BEBs) for an initial pilot program to assess their performance. The study also recommended that BEBs be chosen as the propulsion type for the first few years of to zero emission bus (ZEB)-only procurement from 2025-2030.

MDOT MTA has developed a transition schedule for which facilities will be partially or entirely retrofitted to support ZEB deliveries from 2025-2030. Due to its short service blocks and minimal construction risk, MDOT MTA identified Kirk Division as the most suitable location for the pilot program and the initial full-facility BEB retrofit. The Kirk pilot includes full deployment and operation of seven BEBs—four 40-foot and three 60-foot—as well as overhead pantograph and plug-ins. Facility design and retrofit construction is underway and delivery of the initial seven BEBs is anticipated in 2023. The Kirk pilot will enable MDOT MTA to enable all staff, including operators, mechanics, supervisors, and the first responder community, to become familiar with the technology and be trained to safely operate, maintain, charge, and respond to events involving BEBs before the new technology is rolled out system-wide.

1.10.2.3 BaltimoreLink

MDOT MTA's BaltimoreLink fixed route bus network opened for revenue service on June 18, 2017. BaltimoreLink is a completely restructured and rebranded core fixed-route bus system operating within the city and throughout the greater Baltimore region. The project name was developed to emphasize how the redesigned network will provide better connection between origins and destinations and between modes of transportation. BaltimoreLink routes connect with Light Rail, Metro Subway, and MARC commuter rail service, and provide approximately 64 million unlinked passenger trips each year, creating a more efficient and reliable bus network by spreading out the routes within the downtown core and creating a grid of high frequency routes serving more downtown locations.

To achieve MDOT MTA's overarching mission of providing safe, efficient, and reliable transit across Maryland with world-class customer service, BaltimoreLink had five major service goals:

1. Improve service quality and reliability
2. Maximize access to high-frequency transit
3. Strengthen connections between MDOT MTA's bus and rail routes
4. Align the network with existing and emerging job centers
5. Engage riders, employees, communities, and elected officials in the planning process

The BaltimoreLink network includes three different types of fixed route bus service under interconnected system:

- **CityLink**: 12 high-frequency, 24-hour service bus routes that form a downtown grid and radiate out from the city on major streets, connecting with each other, Metro Subway, Light Rail, MARC, Commuter Bus, Amtrak, and other services in an integrated transit network.
- **LocalLink**: 44 local bus routes that provide comprehensive crosstown connections and system-wide connectivity to neighborhoods and communities.
- **Express BusLink**: 9 express bus services that provide suburban-city connections. Typically, express bus routes have fewer stops and use higher speed roadways.

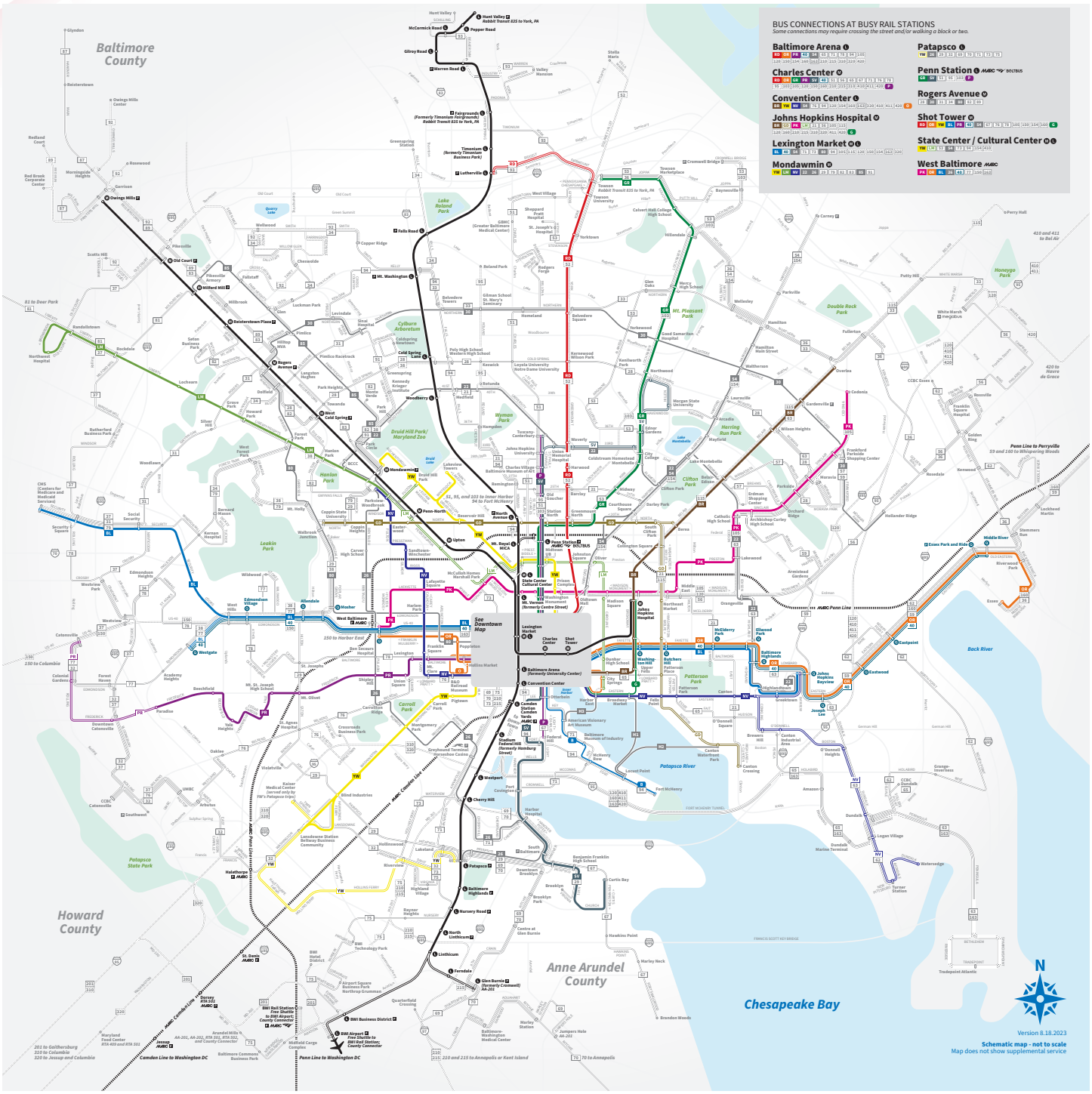

Figure 2 - The BaltimoreLink fixed-route bus network map

1.10.3 MDOT MTA Metro Subway System Description

The MDOT MTA Metro Subway System (Metro Subway) is a 15.05-mile long, 14-station mainline, double track rail system. A one-way trip encompassing the entire system takes approximately 29 minutes to complete.

The Metro Subway system was constructed in three stages:

Phase 1, Section A, included the Northwest Line, which extends from the Charles Center Station in downtown Baltimore to the Reisterstown Plaza Station in northwest Baltimore. Section A is 7.55 miles long and was completed in November 1983. It consists of a below-ground section that runs from Charles Center Station to Portal (located between Mondawmin and West Cold Spring Stations). An aerial section runs from the Portal to Reisterstown Plaza Station.

Phase 2, Section B, was an extension to the Northwest line that currently runs northwest from the Reisterstown Plaza Station to the Owings Mills Station. Section B is 6 miles long and was completed in July of 1987 and runs completely at grade level from the Reisterstown Plaza Station to the Owings Mills Station.

Phase 3, Section C, was an extension that currently runs from Charles Center to Johns Hopkins Hospital. It is 1.5 miles long and was completed in 1995. This section is completely underground.

Figure 3 - Map of the MDOT MTA Metro Subway system

1.10.3.1 Metro Heavy Rail Car Description

The MDOT MTA procured 100 heavy rail vehicles (50 married pairs) from the former Budd Company, which entered service between 1982 and early 1987. The cars, weighing 75,847 pounds, are 75 feet long (over couplers), 10 feet, 2-1/2 inches wide (at the greatest outside dimension), and 12 feet, 3 1/2 inches high (top of rail to top of roof including antenna), with a seating capacity of 76 passengers.

Each vehicle (rail car) is independently powered by four (two per truck) type 1462DA, series wound DC traction motors. Each motor drives one axle in which power from the motor is transferred through a coupling to a gear unit to the axle and wheels. The high voltage power system is at a nominal 750-Volts DC and receives power from the wayside power distribution system through a third rail.

The Automatic Train Control (ATC) system is made up of two subsystems - Automatic Train Operation (ATO) and Automatic Train Protection (ATP). The ATO equipment provides functions for automatic speed regulations, program station stopping, and tractive effort generation. The ATP system operates in conjunction with the wayside signaling system, providing speed limit information (cab signals) and overspeed enforcement to the Train Operator and the ATO system. Selection data, route lock data, and signal indication for transfer track areas are exchanged between the mainline and yard interlocking subsystems.

1.10.3.2 Metro Subway Control, Repair, and Maintenance Facilities

Metro Subway operations also include the Metro Wabash Yard and Shops, which are located between the Reisterstown Plaza and Rogers Avenue stations, and include facilities to repair, maintain, clean, and store vehicles and equipment and to support the maintenance of the system. There are several turnouts that provide the capability to move trains between the two mainline tracks and yard transfer tracks. OCC and Yard Tower controllers are alerted of impending yard/mainline interfacing train moves (yard to mainline or mainline to yard) by both audible and visual indications. Cooperative action permits such moves to be made, subject to prevailing operating rules.

1.10.4 MDOT MTA Light Rail System Description

The MDOT MTA Light Rail system is a 30-mile system operating from Hunt Valley, MD (northern terminus) to Glen Burnie, MD (its southern terminus at the Cromwell station). The Light Rail system also includes two extensions to Penn Station and BWI-Thurgood Marshall Airport, as well as the Light Rail Maintenance Facility located on North Avenue in Baltimore City. An additional maintenance facility was constructed at the Central Light Rail Line's (CLRL) Cromwell station located in Glen Burnie, MD. In 2006, the MDOT MTA also completed a double track project, in which adjacent tracks were built in nearly all remaining single tracked sections of right-of-way throughout the Light Rail system.

During the Light Rail Double Track Project, ATP was added to the system and car body equipment. The Light Rail system utilizes ATP, which prevents train collisions by forcing operators to comply with speed restrictions that are displayed on the Aspect Display Unit (ADU). This is done by monitoring track circuits for the presence of trains and applying a speed code to the track when a train is detected. The speed code is processed by equipment on the Light Rail Vehicle (LRV) and presented to the train operator. Failure to operate the vehicle at or below the assigned speed code results in the automatic braking and eventual emergency brake application to bring the LRV to a safe stop. ATP is in operation throughout the majority of the Light Rail system, with the exception of the Central Business District (CBD), which runs directly through downtown Baltimore City along the Howard Street

Figure 4 - Map of the MDOT MTA Light Rail system

corridor. In the CBD, line-of-sight operations governed by bar signals interconnected with existing traffic signals allow for LRVs to operate through a mixed traffic roadway.

There are a total of 33 Light Rail stations within the system and the stations are designed to be barrier-free. Sidewalks and at-grade crosswalks provide pedestrian access between platforms. Ancillary station facilities include passenger shelters, lighting, signage, and ticket vending machines. Parking is provided at specified locations and many stations are designed with bus drop-off areas.

Light Rail stations are low platform throughout the system. However, due to the current LRV design, station platforms utilize high blocks in order to be fully compliant with the Americans with Disabilities Act of 1990 (ADA). Ramps from the platform to the highblock tie into the pedestrian system at the station. The Light Rail system interfaces with the MDOT MTA Bus, Metro Subway, and MARC Commuter Rail systems to provide improved circulation in the Baltimore City CBD.

1.10.4.1 Light Rail Vehicle Description

The MDOT MTA Light Rail fleet consists of 53 manually operated LRVs. The LRVs are two-car, six-axle, articulated vehicles that can accommodate 84 seated passengers, 172 standing passengers, and 260 passengers with a crush load (1 person per square foot). The LRV is of conventional design and is consistent with generally accepted practices in the transit industry.

The LRV consists of an "A" section and a "B" section, with an articulated (jointed) section in the middle and is operated as a single unit or in consists of up to three vehicles. An Operator's cab is located at the end of both the "A" and "B" sections. There are three trucks on the vehicle. A powered truck is located at the cab end of the "A" and "B" sections, and an unpowered truck is located under the articulated section. A coupler located at the end of each section permits coupling of the LRV to additional LRVs to form a consist.

The LRV operates from a 750-volt DC power source provided by an overhead catenary system (OCS). A pantograph, located on the roof of the "A" section, collects power from the OCS. An ice-scraper pantograph, located at the cab end of the "B" car, is used for ice removal during winter operations. Eight passenger doors, four on each side of the vehicle, provide access to and from the LRV.

Safety-critical items identified by specification relate to deceleration rates and braking distances, Operator's controls, and fire and smoke emissions. A deadman feature and an emergency pushbutton are an integral part of the propulsion and braking system. Communications systems include two-way train radios, passenger intercoms, and an internal/external PA system. Doors with sensitive edges and inside emergency door releases are provided. A designated area with wheelchair securement devices is located near the cab of each LRV. Once dispatched from the yard tracks in the Maintenance Facility area, each vehicle will follow the ATP speed commands as displayed on the ADU.

1.10.5 MDOT MTA MARC System Description

The Maryland Area Regional Commuter (MARC) commuter rail service is a division of MDOT MTA. Because MARC is a commuter railroad, safety oversight of MARC operations falls under the jurisdiction of the FRA, pursuant to 49 CFR Part 209, Appendix A, "Statement of Agency Policy Concerning Enforcement of the Federal Railroad Safety Laws." Because MARC is subject to FRA rather than FTA safety oversight, it is specifically exempted from being included in the PTASP (49 CFR Part 673.13(f)). However, the MDOT MTA Office of Safety provides safety management and oversight services for MARC.

MARC operates on three lines: Brunswick, Camden, and Penn Lines with service to Baltimore, Maryland; Washington, DC; eight counties in Maryland; and parts of northern West Virginia. MARC serves Anne Arundel, Baltimore, Cecil, Frederick, Harford, Howard, Montgomery, and Prince George's Counties, and Baltimore City. The system encompasses approximately 200 miles of track and 42 stations, providing 95 trips daily. MARC's revenue fleet consists of 177 railcars and 42 diesel locomotives, which are operated at maximum speeds of 125 miles per hour, depending on design and railroad limitations.

Train service is offered during morning and evening rush hours only on the Brunswick

and Camden Line, with all-day, weekends, and late evening service on the Penn Line. Services on the Penn Line are operated and maintained under contract by Amtrak, who owns most of the Penn Line right-of-way as part of its Northeast Corridor. Services on the Brunswick and Camden Lines are operated and maintained under contract by Bombardier on shared CSX Transportation railroad.

1.10.6 MDOT MTA Commuter Bus Services System Description

The MDOT MTA's Commuter Bus service is a fully contracted transportation system serving both Baltimore and Washington, DC bound commuters from outlying counties. Commuter Bus operates primarily to peak travel destinations and during peak travel times on weekdays only. Currently there are 36 routes that operate under 13 multi-year contracts. Baltimore-bound trips require approximately 10% of Commuter Bus resources while Washington DC-bound trips require about 80%. Routes along the Maryland Intercounty Connecter (ICC), also known as MD Route 200, require the remaining 10%. MDOT MTA Commuter Bus service consists of the following three units:

Commuter Bus – Baltimore. As part of the MDOT MTA bus service, the Commuter Bus program provides express transit service (at a premium price) within the Baltimore metropolitan region. These long-haul routes connect suburban residential areas, downtown Baltimore, and suburban employment centers. Commuters can access these express lines via several Park & Ride lots located throughout the region. Seven commuter routes operate in the Baltimore region making 42 daily trips.

Commuter Bus – Washington. The MDOT MTA provides 26 privately contracted Commuter Bus routes that offer long-haul service from points throughout Maryland and Washington, DC, and its inner-ring suburbs. Buses make 392 daily trips.

Commuter Bus – ICC (MD–200). The MDOT MTA provides 3 privately contracted Commuter Bus routes that offer long-haul service from points along the Inter-County Connector (MD – 200). Buses make 63 daily trips.

The MDOT MTA Office of Safety provides safety management and oversight services for Commuter Bus. Figure 5 on the next page displays a map of the MARC commuter rail and MDOT MTA commuter bus route systems:

Figure 5 - MARC Commuter Rail System and MDOT MTA Commuter Bus Routes

1.10.7 MDOT MTA Mobility Services System Description

Mobility is MDOT MTA's complementary Paratransit Service, which operates under requirements of the Americans with Disabilities Act. The service is a shared door-to-door service for people who are functionally unable to navigate fixed-route public transportation. The Mobility fleet consists of a variety of over 545 vehicles that include a mix of 10- to 12-passenger wheelchair lift buses and full-size sedans. Mobility Service is available to certified riders who meet criteria outlined in the ADA.

Mobility service is provided within three-quarters of a mile of any fixed-route service in MDOT MTA's core service area. The term "fixed-route" refers to local Bus, Light Rail, or Metro Subway routes operated by the MDOT MTA. Mobility service is not offered as a complementary service to MDOT MTA's Commuter Service, MARC Train & Commuter Bus.

Mobility schedules an average of 180,000 trips per month, transporting an average of 74,000 customers in that period. In addition, Mobility contracts to provide supplemental taxi and sedan service "Call-a-Ride" for an average of 67,000 additional riders per month (FY19). Passengers can utilize the Call-a-Ride service, operated by local taxi & sedan companies for a direct ride. Call-a-Ride is a curb-to-curb service.

While Mobility is part of MDOT MTA core services, it is a separate and distinct service provided under contract by service delivery providers. The MDOT MTA Office of Safety provides safety management and oversight services for Mobility Paratransit Service.

1.10.8 Minimizing Exposure to Infectious Disease on MDOT MTA Systems

MDOT MTA, like other transit agencies around the world, took extraordinary steps during the Coronavirus pandemic to reduce exposure to infectious disease for the agency's customers and employees. Enhanced cleaning measures were implemented in all facilities, stations, and on buses and trains; new air handling systems and physical barriers were installed in facilities and on vehicles; safety checkpoints were established at MDOT MTA buildings for employees; social distancing measures were implemented; cases of employee illness were tracked and traced; and face masks were required for employees and customers. As the Coronavirus pandemic has eased, MDOT MTA has retained its enhanced cleaning procedures and air handling systems. In the case of any future widespread health emergencies, MDOT MTA will continue to take safety mitigation measures to minimize exposure to infectious disease that are consistent with CDC or MDH guidelines.

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SECTION 2. Safety Management Policy

2.1 Safety Management Policy

2.1.1 MDOT MTA Safety Management Policy Statement

The Maryland Department of Transportation Maryland Transit Administration (MDOT MTA) is committed to the safety and security of our employees and customers as a fundamental organizational value that underpins every decision and action taken by our agency. MDOT MTA's Safety Management System (SMS) is an organization-wide, data-based approach that relies on lessons learned through assessing risk, monitoring and measuring the effectiveness of our safety programs, and continually making improvements based on that feedback. MDOT MTA's SMS is designed to reduce the level of safety risk to as low as reasonably practicable throughout our agency's workplaces, capital programs, and operations, as well as support an agency-wide culture where all activities are carried out in a manner that optimizes safety.

As the Accountable Executive for all operations and activities, I have the ultimate responsibility to carry out MDOT MTA's Agency Safety Plan and will ensure that resources are available to support safety management. The SMS program is managed under my authority by the Chief Safety Officer who reports directly to me. All other MDOT MTA management will continue to provide top-level support for safety program initiatives. They are responsible for supervising and training workers in safe work practices, enforcing MDOT MTA's safety rules, and working cooperatively with employees to eliminate or control hazardous conditions. Our frontline employees are critical to the success of MDOT MTA's mission and core values and are the agency's most valuable assets. Frontline employees play an active and integral role of managing safety risk and participate fully in the Employee Safety Reporting Program and are represented, in equal numbers with management, on MDOT MTA's Joint Safety Committee.

MDOT MTA sets data-based safety performance targets and is committed to a reduction in the number and rates of accidents, injuries, and assaults on transit workers. To further these goals, we have developed new safety training, including de-escalation training.

All MDOT MTA employees and contractors have an important SMS role to proactively identify hazards and reduce risk in the workplace and throughout our system. MDOT MTA Directive 3074 describes the agency's non-punitive Employee Safety Reporting Program. Hazards should be reported to an employee's supervisor, the Safety Hotline at 844-MTA-SAFE (844-682-7233), or reportallhazards@mdot.maryland.gov.

Utilizing our collective expertise and sound judgment, we can proactively identify unsafe conditions or near-misses to prevent safety incidents from occurring.

Thank you for your continued commitment to fostering a positive safety culture at MDOT MTA.

Holly Arnold
MDOT MTA Administrator

2.1.1.1 Safety Management Policy Statement Distribution

The SMPS helps to ensure that individuals at all levels of a transit agency understand the agency's principal safety management commitments and policies. The SMPS also serves to introduce the SMS within the broader context of MDOT MTA's mission and commitment to safety. The SMPS is communicated throughout the agency in both virtual and physical form in various media, and the most current version is released with all PTASP updates.

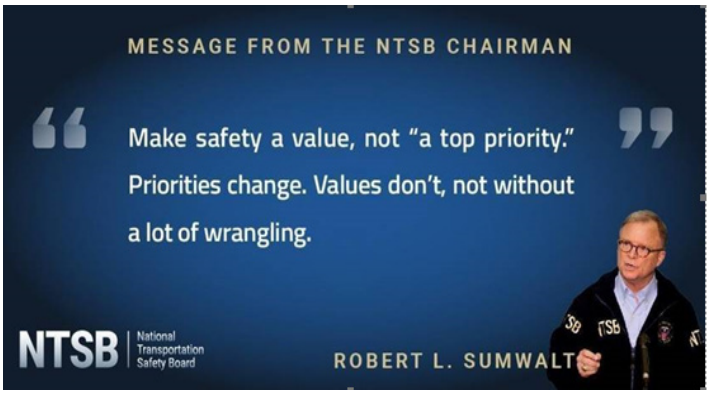
2.1.2 SMS Safety Culture

2.1.2.1 Safety Culture Definition and Importance

Safety culture is the product of individual and group values, attitudes, competencies, and patterns of behavior that determine commitment to safety management. In addition, the four key attributes of a positive safety culture (based on James Reason's work on safety culture)[1] are:

- **Reporting** - encouraging employees to divulge information about hazards that they encounter
- **Just** - rewarding employees for providing essential safety-related information, but are held accountable for deliberate violations of the rules
- **Flexible** - adapting to changing demands and reacting to events
- **Learning** - willing to change based on safety indicators and hazards uncovered through assessments, audits, data, and incidents.

Accordingly, safety culture is both attitudinal, as well as structural, relating to both individuals and organizations. It consists not only of identifying safety issues, but also matching them with appropriate actions. A positive safety culture focuses on finding and correcting systemic issues rather than finding someone or something to blame. A positive safety culture flourishes in an environment of trust, encouraging error-reporting and discouraging covering up mistakes. The need to address behavior that is malicious or recklessly negligent must be balanced with the need for a just culture that is not excessively punitive. A positive safety culture goes beyond simply adhering to procedures. It is demonstrated when employees carry out their duties correctly, with alertness, full knowledge, sound judgment, and a sense of accountability. Positive safety culture must develop as an organizational value, not just a "top priority."



[1] "Achieving a safe culture: theory and practice" James Reason, Department of Psychology, University of Manchester, **Work and Stress**, 1998, Volume 12, pp. 293-306.

2.1.2.2 MDOT MTA's Safety Culture Values

MDOT MTA strives to develop a safety culture that is built on **safety integrity**. Much like personal integrity, **safety integrity** is "doing the right thing, the safe thing, when no one is watching." MDOT MTA's management sets the standards for the agency's safety culture by allocating adequate resources; providing unambiguous policy direction; promoting open, honest, and transparent communication; and leading by example. The following values are inherent to MDOT MTA's safety culture. These are the standards by which the agency will measure its safety culture moving forward, as SMS is fully implemented.

- Employees at all levels and those with whom they interface understand the hazards and risks inherent in their operations.
- Employees continuously work to identify and control/manage hazards or potential hazards.
- Employees understand errors, make efforts to eliminate potential errors from the system, and do not tolerate willful violations.
- Employees and management understand and agree on what is acceptable and unacceptable behavior and risk.
- Management at all levels encourages employees to report safety hazards.
- When employees report hazards, others are empowered to analyze them using a risk-based assessment methodology and take appropriate action.
- Management tracks hazards and actions to control them and reports them at all levels of the organization.
- Management encourages employees to develop and apply their own skills and knowledge to enhance organizational safety.
- Employees and management communicate openly and frequently concerning safety hazards.
- Management widely distributes/makes available safety reports to share lessons learned.

MDOT MTA's safety culture is also based on the Agency Core Values that the agency's policies, programs, and all employees be:

- Customer Focused
- Safe
- Respectful
- Equitable
- Continuously Improving

Figure 6 - MDOT MTA's Core Values

2.1.2.3 Nexus Between Safety Management and Transit Asset Management

A philosophical nexus between SMS and Transit Asset Management (TAM) is acknowledged by our industry, but the functional integration opportunities between these business management systems are less understood. As the MDOT MTA implements and improves its SMS, it also endeavors to explore these functional integration opportunities to improve the overall outcomes of system safety and asset performance.

The SMS requirements under 49 U.S.C. 5329 were created to help transit agencies develop a better business approach to proactively mitigate safety risk to their customers, employees, and the general public. The TAM requirements under 49 U.S.C. 5326 were created to help transit agencies develop a better business approach to keeping their assets in a State of Good Repair (SGR) and maximizing their performance. Both SMS and TAM are data-driven management systems and federal regulations require that these systems be planned and implemented in parallel.

Currently, SMS and TAM are still relatively new requirements for the transit industry, and agencies are in very early phases of planning their SMS and TAM systems accordingly. Both business management systems are being developed at the MDOT MTA using the same general process:

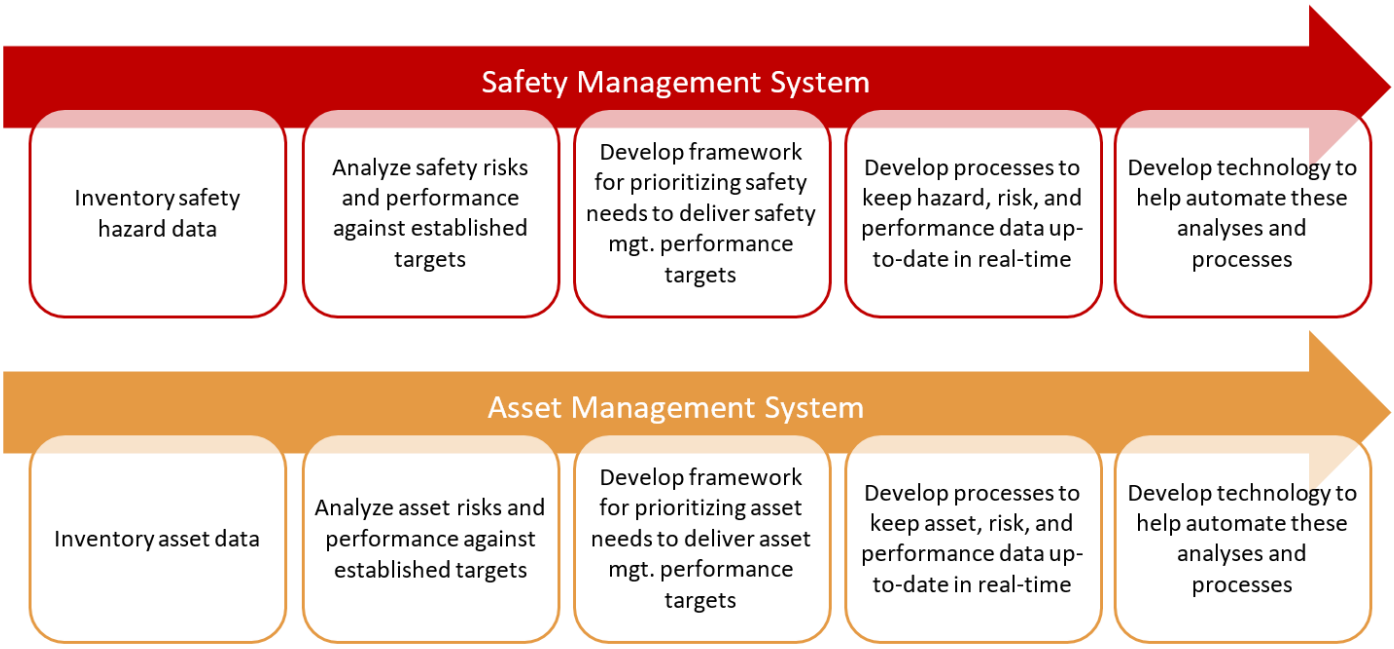


Figure 7 - Nexus of SMS and TAM - General Process Alignment

The *philosophical* nexus between SMS and TAM is simple. Transit assets (vehicles, facilities, infrastructure, and equipment) that are not in an SGR can pose a significant safety risk. Conversely, safety events (incidents and accidents) can pose a significant cost and performance risk to the transit system.

The *functional* nexus between SMS and TAM is not spelled out in regulations. It is up to the MDOT MTA to explore how it functionally integrates these management systems, starting with identification of the assets most critical to transit system safety, and then identifying how the MDOT MTA can better manage these assets to maximize the benefits of SMS and TAM. As the MDOT MTA plans and implements its SMS and TAM systems, it will concurrently explore the functional nexus in the following areas:

- Staffing
- Asset information
- Capital project prioritization
- Lifecycle management
- Competencies and training
- Technology

2.2 Safety Accountabilities and Responsibilities

2.2.1 MDOT MTA Organization

The MDOT MTA organization is led by an Administrator who reports to the Maryland Secretary of Transportation. The MDOT MTA comprises the following organizational functions as shown in the organizational chart, Figure 8.

- Administrative Offices (Human Resources, Labor Relations, Equal Opportunity Compliance, Procurement, Diversity, Equity, and Inclusion, Organizational Development)
- Communications and Marketing
- Internal Audits
- Customer Experience (Performance Management, Service Information, Rider Experience)
- Finance (Treasury)
- Engineering (Construction, Facilities, and Systems)
- Governmental Affairs
- Information Technology
- Legal Counsel
- Operations (Bus, Rail, Operations Support, Contracted Services)
- Planning and Programming
- Procurement
- Program Management
- Real Estate
- Safety Management and Risk Control
- Training and Development
- Transit Development and Delivery
- Maryland Transit Administration Police Force (MTAPF)

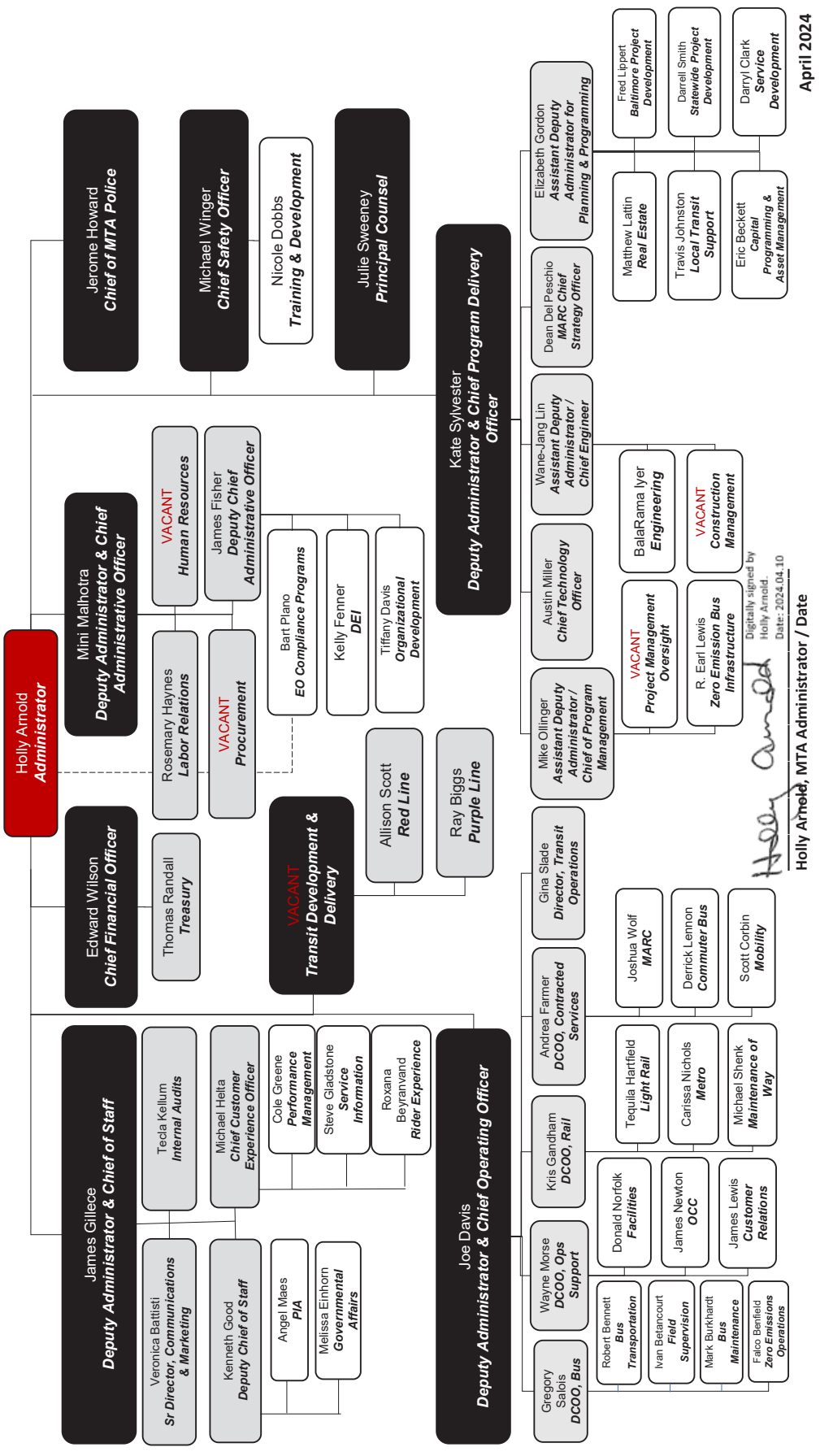


Figure 8 - MTA Organizational Chart (11.02.2023)

2.2.1.1 Employee Classifications & Safety Responsibilities

The MDOT MTA is organizationally comprised of management personnel who are a part of TSHRS, in either executive or career service, and frontline employees represented by various bargaining units. Job safety responsibilities are not currently included in all job descriptions and position listings. For better awareness of duties and responsibilities as they pertain to safety, including which trainings may be appropriate, the MTA Office of Human Resources is engaged in a long-term project to update safety-related requirements in position descriptions.

For TSHRS employees, managers and employees are encouraged to review position descriptions as part of the annual performance review process. Descriptions should be updated to reflect any changes to responsibilities and submitted to the Office of Human Resources. This review should include the addition or modification of any safety-related requirements. When position descriptions are created or updated as part of a classification review or study, safety-related requirements should be incorporated and/or reviewed by the manager and employee before being submitted to the Office of Human Resources.

For represented employees, certain roles within one of the bargaining units have documented job descriptions. When these job descriptions are created or updated as part of the review process, safety-related requirements should be incorporated and/or reviewed by the manager and employee before being submitted to the Office of Human Resources. Certain roles within the bargaining units do not have documented job descriptions. Safety-related requirements for these roles must be incorporated into new and subsequent job postings.

2.2.1.2 Office of Human Resources and Office of Labor & Employee Relations

Organizationally, the Office of Human Resources and the Office of Labor & Employee Relations are overseen by the Chief Administrative Officer. The Office of Labor & Employee Relations provides services to address work disputes, grievance resolution, and disciplinary appeals. The Office of Human Resources includes sections specializing in benefits, employee classification and compensation, employment services, and recruitment and examination. Safety-related responsibilities under these sections include: position descriptions (Classification & Compensation), employee data and records, new employee onboarding, performance evaluations (Employment Services), testing and examination, and background checks (Recruitment & Examination). Human Resources also coordinates the Employee Assistance Program which provides confidential and professional referral and assessment services to State employees who are experiencing personal difficulties that are adversely affecting their work performances.

2.2.2 General Safety Authorities

The Chief Safety Officer (CSO), as the SMS Executive, is empowered and authorized by the Accountable Executive (MDOT MTA Administrator) to develop, implement, and administer the SMS. This includes identifying safety hazards and concerns, conducting internal audits and inspections, developing recommendations and Corrective Action Plans (CAPs) to address safety concerns, tracking and verifying the implementation of recommendations and CAPs, and reporting on a regular basis the status of the SMS to MDOT MTA's Accountable Executive with the goal of keeping operational risks as low as possible throughout the organization. The CSO, with the support of the Administrator, has the authority to develop and institute safety policies, procedures, and general practices and to develop and implement specific plans for the identification, prevention, control, and resolution of any unsafe conditions during design, construction, testing, operations, maintenance, and disposal of MDOT MTA facilities, equipment, systems, and services. The CSO is an adequately trained individual who is solely dedicated to the functions described in this PTASP and may not serve in other operational or maintenance capacities.

The Deputy Chief Safety Officer – Safety Management System (DCSO-SMS) within the Office of Safety Management and Risk Control (Office of Safety) is responsible and accountable for the SMS review process. Revisions, if necessary, are coordinated and led by the CSO acting under the authority of the MDOT MTA Administrator.

The CSO has assigned Modal Safety Officers with the responsibility of interfacing with each transportation mode. Modal Safety Officers are responsible and accountable for tracking identified hazards or safety deficiencies to closure. If a safety concern or issue cannot be resolved at the Modal Safety Officer level, the issue can be elevated to one of the Assistant Chief Safety Officers or the Deputy Chief Safety Officers, or Superintendent of Safety to Director of Safety, Security, & Quality Control to CSO to Administrator. If resolution of a safety issue cannot be attained at these levels of management, it can be elevated to the CSO and ultimately to the Administrator.

All personnel are responsible and accountable for fulfilling and complying with the safety requirements of their positions. All department heads, supervisors, and managers are likewise responsible and accountable for enforcing the safety requirements pertaining to their employees. Further, it is the responsibility of all employees to take into consideration the safety of others as well as their own safety, when performing their daily duties. All employees are encouraged to identify hazards or potential hazards when performing their jobs. It is the responsibility of all employees to immediately notify their immediate supervision or the Office of Safety, according to the appropriate chain of command when a hazard or potential hazard has been identified.

When an immediate or serious hazard has been identified, all employees have the authority and responsibility to order the cessation of unsafe activities or operations until the hazardous condition is corrected. The identification, analysis, and reporting of hazards is further described in the Safety Risk Management Process of this plan. Additionally, the CSO is empowered to order the cessation of unsafe activities or operations that are evaluated as creating an immediate and serious hazard within the system. The CSO is also empowered to conduct unannounced inspections aimed at identifying and eliminating unsafe practices, operations, and conditions not corrected by immediate management/supervision.

2.2.2.1 The Office of Safety Management and Risk Control

The Office of Safety Management and Risk Control (Office of Safety) is comprised of five functional departments including Operations Safety, Emergency Management and Compliance, SMS, Workers' Compensation and DOT Compliance, and Transit Claims. The Office of Safety team is led by the Chief Safety Officer and five Deputy Chief Safety Officers. The Office of Safety organizational chart is provided in Figure 9.

The Office of Safety serves as a resource for MDOT MTA's modal operations and services. Responsibilities of the Office of Safety include:

- Performing periodic reviews and updates of the PTASP and other documents developed by the Office of Safety
- Developing and maintaining safety related policies, rules, and training programs for the Office of Safety
- Coordinating with MDOT in the development and implementation of the RSOPS
- Providing the State Safety Oversight Agency (SSOA) notification of the MDOT MTA's involvement in any Light Rail or Metro Subway event that has the potential of high media or public interest
- Providing input to each of the modes and offices pertaining to safety requirements in the development of procedures and other departmental documentation
- Coordinating and executing the Internal Safety Review Program

- Evaluating safety processes and practices of MDOT MTA offices and personnel
- Participating in and overseeing testing programs of new systems and system modifications
- Overseeing and performing System Safety Certification Plans (SSCPs) of new systems and system modifications
- Evaluating proposed system changes and modifications to determine their impact on the safety of MDOT MTA operations and services
- Coordinating emergency drills, simulations, table-top exercises, and training exercises
- Developing and implementing injury/illness prevention programs
- Assisting other offices in the development of training lesson plans to ensure safety elements are included
- Responding to emergencies and disasters in accordance with the MDOT MTA Emergency Operation Plans (EOPs)
- Evaluating hazardous material/chemical data to determine potential safety hazards prior to its purchase, use in MDOT MTA systems or by MDOT MTA employees, or storage on MDOT MTA properties
- Conducting event investigations to determine root causes and develop recommendations to mitigate or prevent recurrences
- Participating in and reviewing procurement processes and documents to ensure safety elements are addressed
- Assisting in the evaluation and determination of the need for safety equipment and devices and making recommendations for their implementation
- Acting as an MDOT MTA representative at outside safety meetings and seminars
- Ensuring safety information is made available to MDOT MTA offices, personnel, contractors, and patrons
- Reviewing and approving contractor site-specific safety plans for all construction projects
- Responding to Maryland Occupational Safety and Health (MOSH) and other regulatory agency citations related to safety and developing CAPs as necessary
- Managing the MDOT MTA's Owner Controlled Insurance Program (OCIP) which includes site visits and inspections for all projects enrolled in the program
- Compiling and analyzing events, injury, illness, and property damage data to identify potential trends and submitting reports to appropriate regulatory agencies
- Reviewing and approving risk assessments and hazard mitigations developed by other offices
- Assisting in the evaluation and resolution of hazards when departments are unable to achieve resolution through their management structure
- Assisting departments with the development and review of CAPs and follow-up activities resulting from the hazard identification and resolution process, event investigations, employee or passenger complaints, etc. and ensuring proper documentation is maintained
- Ensuring Drug & Alcohol testing performed is in accordance with 49 CFR Parts 40 and 655
- Providing Drug Awareness, Reasonable Suspicion and Post-Accident training for selected employees
- Ensuring all Commercial Motor Vehicle operators are compliant with federal and state licensing requirements including DOT medical examiner certificate

compliance

- Managing MDOT MTA's Workers' Compensation program to include implementing and managing the Return-to-Work Program for injured workers
- Managing and improving communication among the agency, employees, and Third-Party Administrator (TPA)
- Setting and maintaining standards of internal claim investigation and reporting
- Improving claims handling protocols to include nurse case management and increasing surveillance and investigating tools
- Developing strategies to identify and eliminate root causes of worker's injuries
- Managing environmental regulatory compliance under federal, state, and local requirements, including regulations of the Environmental Protection Agency (EPA) and Maryland Department of the Environment (MDE)
- Communicating MDOT MTA's environmental policy and Standard Operating Procedures (SOPs) to all employees and interested parties
- Overseeing all environmental safety and risk management programs for MDOT MTA employees
- Developing and delivering environmental safety and risk management training
- Reviewing and implementing environmental protection and pollution prevention in planning and during early design stages of all new MDOT MTA projects and programs
- Conducting site visits, inspections, and audits to identify environmental safety hazards and determine whether required mitigations are being implemented
- Reviewing environmental documents, reports, design specifications, planning studies, environmental surveys and assessments, and inspection records
- Interacting with and responding to inquiries, correspondence, and external audits or investigations from federal and state regulatory entities
- Ensuring that MDOT MTA complies with all state and federal statutes and regulations regarding insurance claims and adheres to fair claims practices
- Obtaining/requesting property damage assessments from appraisers to examine the damages on vehicles involved in the claims
- Obtaining photographs that fairly and accurately documents the damage before the vehicles have been altered or repaired
- Retrieving data packs from data video recorders from MDOT MTA revenue vehicles
- Securing and retrieving Closed-Circuit Television (CCTV) via network download, manual download, hard drives, or data packs via request for footage
- Ensuring that the evidence chain of custody is properly executed
- Obtaining recorded statements and written documentation of first reports to set up new claim files
- Examining claims forms, medical reports, and other reports to determine insurance coverage on Parties involved in claims
- Gathering, preserving, organizing, and evaluating evidence in preparation of litigation
- Negotiating out of court settlements with claimants, when appropriate, in order to avoid unnecessary litigation and

defense costs

- Participating in the litigation process by attending and/or testifying at depositions, pre-trial conferences, and trials, obtaining, and forwarding information requested by Defense Counsel
- Evaluating and recommending any settlement amounts for claimants based on the complete investigation documented and preserved in the claim file and utilized to determine the liability issues
- Obtaining settlement authority or any authority required above authorization given to the claims adjusters in writing prior to the settlement or denial of a claim

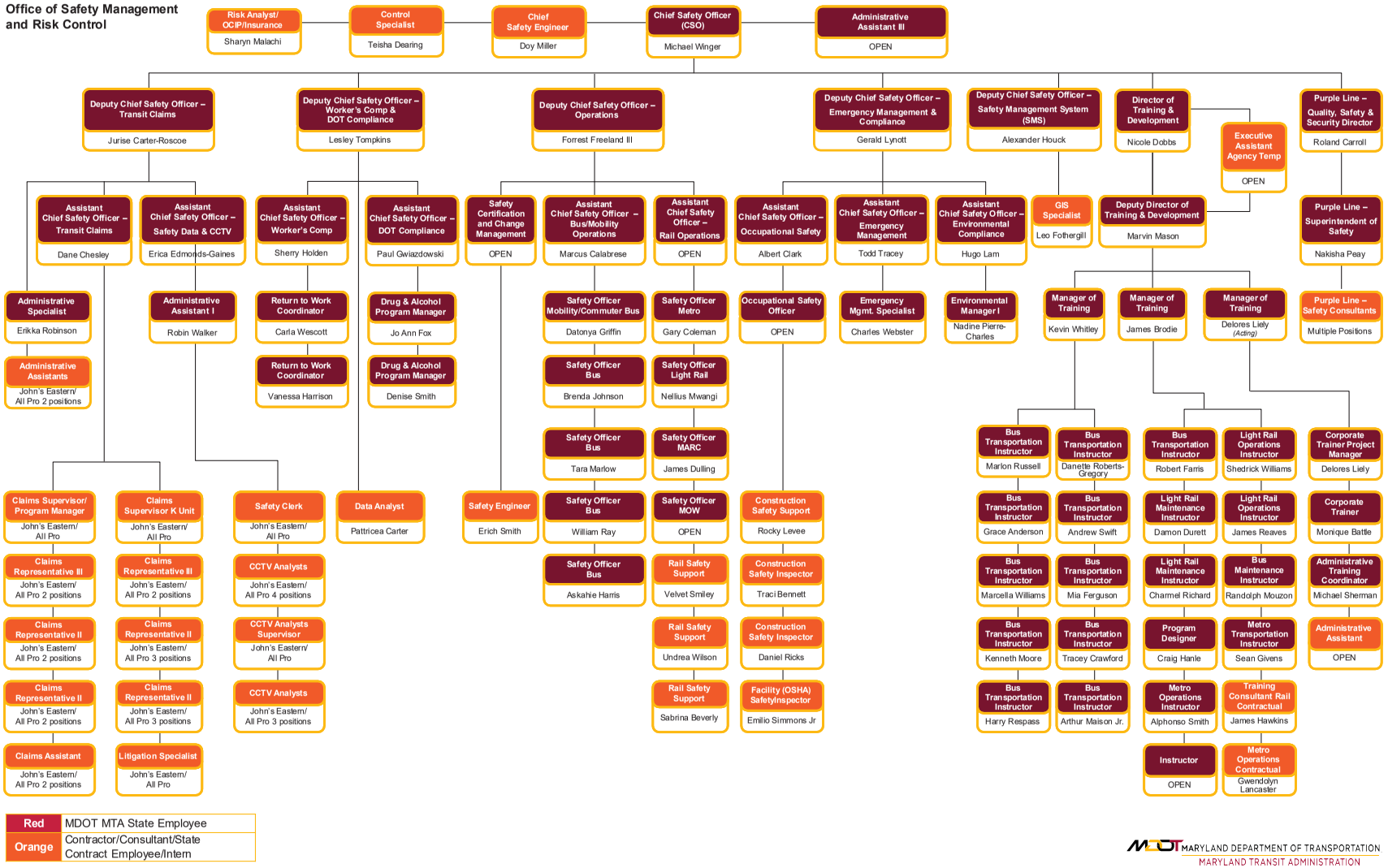


Figure 9 - MDOT MTA Office of Safety Organizational Chart

2.2.3 Safety Responsibilities and Accountabilities

Safety does not "happen" at the agency's Office of Safety. It is a shared responsibility. The following key staff represents MDOT MTA executive management with authorities or responsibilities for the day-to-day implementation and operation of the agency's SMS.

2.2.3.1 Agency Leadership and Executive Management

MDOT MTA's SMS is led by the Administrator and Chief Safety Officer.

2.2.3.1.1 Accountable Executive - MDOT MTA Administrator

The MDOT MTA Administrator is designated as the agency's Accountable Executive. The Administrator is responsible and accountable for carrying out the PTASP and has direction over human and capital resources to effectively implement SMS. The Administrator will direct the appropriate MDOT MTA office to develop and carry out a plan to address any substandard performance in the agency's SMS.

2.2.3.1.2 Chief Safety Officer

The Chief Safety Officer is MDOT MTA's designated SMS Executive. The CSO is responsible and accountable for the overall safety performance of personnel and equipment, implementing and maintaining effective control and mitigation measures, and for reporting compliance to the SSOA. The CSO is responsible and accountable to:

- Facilitate full implementation of the SMS across MDOT MTA
- Advocate for a positive safety culture and leading with integrity
- Conduct strategic planning for the SMS
- Manage SMS processes based on best practices and past experiences
- Review and update the PTASP at least annually
- Facilitate coordination of SRM, evaluations and investigations, and controls with special attention to cross-organizational impacts
- Monitor the safety performance of MDOT MTA operations and activities through formal data collection and analysis
- Track safety-critical issues and corrective actions to conclusion, using appropriate tracking systems
- Fulfill the duties of Incident Commander as delegated

In addition, the CSO is responsible and accountable for advising MDOT MTA leadership on safety-related issues.

2.2.3.2 Key Staff

Other staff from the Office of Safety Management and Risk Control, modal operations, engineering, MTA Police Force, and Communications and Marketing are designated as key staff form MDOT MTA's SMS implementation.

2.2.3.2.1 Deputy Chief Safety Officer – Safety Management System

The MDOT MTA Deputy Chief Safety Officer – Safety Management System (DCSO-SMS) is responsible for the implementation and continuous improvement of MDOT MTA's SMS. As the DCSO-SMS, overseeing the management of MDOT MTA's safety risks is a core responsibility. The DCSO-SMS is responsible and accountable to:

- Develop and implement SMS processes
- Deliver SMS training at all levels of MDOT MTA
- Develop and implement SMS directives, procedures, forms, worksheets, promotional materials, and other tools
- Ensure Job Hazard Analyses are performed for "Medium", "Serious", and

"High" risk tasks

- Review identified safety risks to verify the risks are properly prioritized using the established risk matrices
- Collect and manage safety risk data
- Ensure the Chief Operations Officer, Deputy Chief Operations Officers, and Modal Operations Directors are informed of safety risks categorized to be Medium, Serious, or High
- Ensure the Accountable Executive is informed of all hazards that have been rated with a High or Serious risk level or require additional resources to sufficiently reduce the risk to its lowest practicable level
- Foster a positive safety culture by leading with integrity in the SMS
- Establish and manage methods to collect and analyze safety risk data, including data that is reactive, proactive, and predictive

2.2.3.2.2 Chief Operations Officer, Deputy Chief Operations Officers, and Modal Operations Directors

MDOT MTA Chief Operations Officer, Deputy Chief Operations Officers, and Modal Operations Directors are accountable and responsible for the safety performance of all personnel and equipment under their supervision, implementing and maintaining control or mitigation measures, and for reporting close calls, accidents, and incidents to the appropriate safety representative. Chief Operations Officer, Deputy Chief Operations Officers, and Modal Operations Directors are responsible and accountable to:

- Foster a positive safety culture by leading with integrity in the SMS
- Complete the Safety Risk Assessment (SRA) forms for hazards and their associated risks that are identified in their Areas of Responsibility (AoR) including, but not limited to, equipment and workplace conditions
- Submit the SRA form to the Office of Safety for review and approval

If the risk rating for the potential consequence of an identified hazard is within MDOT MTA's defined "acceptable" regions (with a risk level rating of Medium, Low, or Negligible), the Chief Operations Officer, Deputy Chief Operations Officers, and Modal Operations Directors will reinforce or implement the appropriate mitigation or control within their ability and resources. Certain levels of safety risk may also be accepted without further mitigation. If the risk rating for the potential consequence of an identified hazard is not within the MDOT MTA's defined "acceptable" region (with a risk level rating of High or Serious), the responsibility for determining the corrective action is elevated to a higher level of management for decision making. The safety risk assessment and risk acceptance/approval authority processes are further described in Section 3, Safety Risk Management.

2.2.3.2.3 Modal Safety Officers

The Office of Safety staff includes Modal Safety Officers for Bus, Light Rail, Metro Subway, Mobility, and MARC/Commuter Bus. The Modal Safety Officers report to the Assistant Chief Safety Officers for Rail and Bus operations. The Project Superintendent of Safety will serve as delegated authority/deputy to Project Director of Safety. Modal Safety Officers are responsible for incorporating the PTASP into all aspects of MDOT MTA's operations and services and acting as a resource for the operations, maintenance, and administrative staff of their respective mode, with assistance from modal management. Each Modal Safety Officer has the authority and responsibility to:

- Perform duties as on-call Safety Officer by monitoring and responding to phone calls to the dedicated Safety Hotline (e.g., accidents, incidents, hazard reports, pandemic health reports)
- Perform event investigation on behalf of the MDOT MTA as well as on behalf of

MDOT, when requested to do so

- Conduct internal safety reviews and inspections in accordance with MDOT MTA's Internal Safety Review Program to proactively identify hazards and risks to prevent accidents and incidents from occurring
- Plan, coordinate, and conduct emergency exercises by mode to ensure readiness for safety and security related incidents and to ensure compliance with policies and procedures
- Review SRA forms submitted to the Office of Safety to confirm that an appropriate risk assessment procedure was followed, and the level of risk determination is valid
- Participate in the design reviews of system expansions and new equipment procurements, including overseeing, and administering formal SSCPs when necessary
- Perform hazard analyses of system modifications to determine potential hazards that may be created because of the system modification, and support development of mitigating and controlling factors to address such hazards
- Report unacceptable hazardous conditions to executive management as soon as possible
- Work daily with modal operations and maintenance staff to ensure all PTASP requirements are being implemented and program goals and objectives are being achieved
- Make recommendations and develop CAPs that result from event investigations, hazard analyses, risk assessments, and safety reviews and audits, and track corrective actions through fruition to ensure all identified deficiencies are adequately eliminated or controlled
- Chair and/or co-chair Safety Committee meetings for their respective mode
- Foster a positive safety culture by supporting the SMS with integrity
- Support monitoring of implemented mitigation strategies along with modal stakeholders
- Ensure that the CSO is immediately notified of imminent danger hazards or other problems are identified or arise

2.2.3.2.4 Deputy Chief/Chief Engineer

The Deputy Chief/Chief Engineer oversees MDOT MTA Systems, Equipment, and Facilities Engineering divisions. The primary safety tasks and responsibilities of the Deputy Chief/Chief Engineer are to:

- Ensure that system safety principles are incorporated in concept, planning, design, architectural, and engineering services, and in the procurement, installation, and disposal of system-wide elements
- Support the development of and incorporate system safety and security requirements into design criteria and technical specifications
- Coordinate with the MDOT MTA Office of Safety in the design review process
- Coordinate safety-related activities of the Office of Engineering staff and ensure compliance with the PTASP
- Oversee design services during construction

2.2.3.2.5 Director, Training and Development

The primary safety tasks and responsibilities of the Office of Training and Development are to:

- Coordinate new employee training and job-specific training courses, including SMS training and other safety-related training
- Train new mechanics and technicians

to inspect, maintain, and repair MDOT MTA's rail, bus, and mobility vehicles in a safe and effective manner

- Train and certify new rail and bus operators
- Ensure instructors are periodically assessed and audited for proficiency in both classroom and field instruction
- Oversee the Roadway Worker Protection (RWP) Program for Metro Subway and Light Rail systems. Includes training, class scheduling, manuals, guidebooks, and revisions as necessary
- Oversee and coordinate rail operator, bus operator, and mobility operator training programs and practices
- Ensure that training programs for safety-sensitive employees are consistent with agency directives or SOPs in areas that impact safety performance, such as Hours of Service, fatigue management, fitness for duty, medical qualification, and return to work
- Coordinate with and train external agencies such as city and county fire, police, and Emergency Medical Services (EMS) in MDOT MTA rail and bus operations, particularly in relation to emergency response training
- Establish or coordinate training programs in alternative fuels safety
- Coordinate safety-related activities of Training and Development staff and to help ensure compliance with the PTASP

2.2.3.2.6 Director, Communications and Marketing

The primary safety tasks and responsibilities of the Office of Communications and Marketing are to:

- Fully support Accountable Executive and the Office of Safety in carrying out employee information campaigns regarding SMS, safety-related directives and SOPs, and other safety-related communications
- Support the Office of Safety in distributing safety education and awareness messages and materials to MDOT MTA employees
- Coordinate with Accountable Executive and the Office of Safety in outward-facing safety communications to customers and the greater Baltimore region
- Coordinate with Accountable Executive and Chief Safety Officer regarding public statements regarding MDOT MTA accidents or incidents

2.2.3.2.7 Chief Administrative Officer

The primary safety tasks and responsibilities of Human Resources and Labor Relations are to:

- Develop position descriptions that address safety-related restrictions and requirements
- Develop and administer medical services and standards for specific job positions, as warranted
- Ensure that candidates for positions are capable of safely performing the tasks of these positions on a repetitive basis
- Maintain documentation regarding safety-related restrictions and requirements and medical standards in personnel files
- Assist in facilitating emergency/safety training to employees as appropriate
- Participate on safety and security committees established and facilitated by the MDOT MTA Office of Safety
- Include safety orientation in New Employee Orientation (NEO)

2.2.3.2.8 Chief, MTA Police Force

The Maryland Transit Administration Police Force (MTAPF) is primarily responsible for

security on the MDOT MTA transit system, to help all passenger feel safe and at ease when they ride public transportation. The MTAPF was established in 1971 as a fully commissioned, full-service police force with full police authority throughout the State of Maryland. The MTAPF enforces state, city and county laws and codes within and upon MDOT MTA vehicles, stations, facilities, and property, protecting the transit agency's customers and assets against criminal activity. The mission of the MTAPF is "to professionally enforce the law, protect its transit community, employees, and facilities with dignity and respect."

The primary safety tasks and responsibilities of the MTAPF are to:

- Participate and coordinate with internal and external departments in emergency drills and exercises
- Assist in development of emergency response plans for MDOT MTA Operations
- Oversee anti-terrorism efforts and homeland security coordination for MDOT MTA through engagement in the intelligence community and memoranda of understanding with local, state, and federal agencies
- Ensure that MTAPF officers receive appropriate safety and security training
- Develop, implement, and maintain the System Security and Emergency Preparedness Plan (SSEPP)
- Provide support for development and implementation of security-related training and operational procedures for MDOT MTA employees
- Coordinate with other MDOT MTA offices to help ensure safe and secure Bus, Mobility, Light Rail, and Metro Subway systems
- Participate in the internal safety review of the SSEPP

2.2.3.2.9 Chief Technology Officer

The Chief Technology Officer (CTO) and Information Technology (IT) play a crucial role in ensuring the safe use, backup, and recovery of MTA's IT systems. The primary safety tasks and responsibilities of the CTO and IT staff are to:

- Develop and maintain a robust technology infrastructure that supports the safety initiatives of the agency.
- Ensure the reliability and security of technology systems, including communication networks, surveillance systems, and control systems.
- Implement and manage Intelligent Transportation Systems to enhance safety, such as vehicle tracking and real-time information systems for passengers.
- Ensure interoperability of communication systems across different modes of transportation and emergency response agencies.
- Implement robust cybersecurity measures to protect the agency's technology infrastructure from cyber threats that could compromise safety systems.
- Conduct regular security audits and ensure compliance with industry standards to safeguard sensitive safety-related data.
- Develop and implement technology solutions that enhance the agency's emergency response capabilities, including incident detection, coordination, and communication systems.
- Stay abreast of safety regulations and standards relevant to public transportation.
- Ensure that the agency's technology systems comply with all safety-related regulations and standards set by relevant authorities.
- Develop training programs for

staff involved in the operation and maintenance of safety-critical technology systems.

- Educate employees on the proper use of safety technologies and protocols.
- Regularly assess the effectiveness of safety-related technology systems and identify areas for improvement.
- Implement a culture of continuous improvement, encouraging innovation and the adoption of new technologies to enhance safety.

2.2.4 Safety Accountabilities and Responsibilities Matrix

A responsibility assignment matrix describes the participation by various roles in completing tasks or other deliverables for a project or business process. The responsibilities are expressed by identifying both the Office of Safety and the office responsible for the task. This assures that the office holds primary responsibility and accountability for active implementation of tasks in their area of responsibility, in addition to the Office of Safety's overall responsibility for the task on an MDOT MTA-wide basis. The interface relationship for offices means that the office is responsible and accountable for responding to, cooperating with, and participating in the execution of the task under the leadership role of the Office of Safety.

The Safety Accountabilities and Responsibilities Matrix provided in Figure 10 uses a **RACI** (Responsible, Accountable, Consulted, and Informed) Matrix structure to display the roles and responsibilities of Office of Safety and other MDOT MTA offices. As used in the matrix, the following notations are defined as:

R - Responsible: Performing the Task/Activity

This person or group performs the task or deliverable. They are responsible for getting the work done or making the decision.

A - Accountable: Owning and Approving the Task/Activity

This person is responsible for the overall completion and approval of the task or activity. He/she will not perform the work but is responsible for making sure it's finalized.

C - Consulted: Assisting and Supporting the Task/Activity

This person or group will provide information useful to completing the task or activity. There will be two-way, coordinated communication between those Responsible and those Consulted.

I - Informed: Keeping Aware of the Task/Activity

These people or offices will be kept up to date on the task or activity. However, they will not be asked to feedback or review, but can be affected by the outcome of the task or activity.

Responsible = R Accountable = A Consulted = C Informed = I Task/Activity	Accountable Executive/ Administrator	Chief Safety Officer, Office of Safety Management and Risk Control	Deputy Administrator & Chief Planning, Programming & Engineering	Chief Operating Officer, Deputy Chief Operating Officers, Modal Operations Directors	Chief Administrative Officer	Chief Technology Officer	Chief, MTA Police Force	Director, Communications and Marketing
Acceptance Testing and Inspection	A	C	R	C		R		
Accident/Incident Response and Investigation	A	R	C	C	C	C	R	I
Configuration Management	A	C	R	C	C	C		
Construction Safety Program	A	R	R	C	I		I	
Contractor Safety Program	A	R	R	C		I	I	
Safety-Related Directives, Rules, and SOP Review	A	C	R	R	I	C	I	I
Drug and Alcohol Program	A	R	I	R	C		R	
Emergency Drills and Exercises	A	R	I	C		R	R	C
Emergency Management	A	R	I	C		I	R	C
Emergency Operation Procedures and Plans	A	R	C	C		C	R	C
Emergency Response Training	A	R	I	C		R	R	
Employee Safety Awards	A	C		R	I	C		I
Employee Safety Communications	A	R	C	R		C	I	R
Employee Safety Reporting Program	A	R	C	C	I	I	C	
End User Safety Requirements and Guidelines	A	C	R	C		R		
Environmental Protection Program	A	R	C	R				I
Equipment and System Design	A	C	R	C	I	C		
Facilities and Equipment Inspections	A	R	R	R		C	I	
Fatigue Management/Hours of Service	A	C		R	R			
Fire/Life Safety Implementation	A	R	R	C			C	
Hazard Identification, Assessment, and Mitigation	A	R	R	R	C	R	C	
Hazardous Waste Management Program	A	R	C	R				
Industrial Hygiene Program	A	R	C	R	I			
Internal Review and Audit Processes	A	R	C	R		I	C	
Maintenance of Physical Plant and Equipment	A	C	R	R		R		
Maintenance Training	A	C	C	R	I	R		
Management of Change	A	C	R	R	R	C		
Medical Certification and Return-to-Work	A	R		R	R			
Occupational Safety & Health Program	A	R	C	R	R	I		
Operations Training	A	C	C	R	I	C		
Passenger Safety Communications	A	C		C		I	C	R
Personal Protective Equipment	A	C	R	R	I	I	R	
Safety and Security Certification	A	R	R	C				
Safety Data Acquisition & Management	A	R	R	R	I		C	I
Safety Performance Monitoring	A	R	C	R	C		C	I
Safety Policy	A	R	C	C	I	I	C	I
Safety Rules Compliance Program	A	C		R	C			
Security	A	C	C	C		C	R	
SMS Documentation and Retention	A	R	C	C	I		C	I
Transit Asset Management	A	C	R	R		I		
Waste Water Abatement Program	A	R	R	R				

Figure 10 - Safety Accountabilities and Responsibilities Matrix

2.2.4.1 Office of Performance Management

The primary safety tasks and responsibilities of the Office of Performance Management are to:

- Finalize accident and incident data submissions for submission to the National Transit Database
- Update reporting programs compiling data from MDOT MTA's systems relevant to safety performance indicators
- Participate in/Build out stakeholder groups to assist in the development of policy documents
- Assist with quality assurance to ensure compliance with external/internal requirements
- Assist in the distribution of policy documents, including SOPs to impacted staff
- Catalogue and maintain an archive of current and past policy documents

2.2.4.2 MTA Business Intelligence Program Summary

In 2019, MTA's Office of Performance Management (OPM) began its Business Intelligence Program. The Business Intelligence Program is designed to collect, manage and report data and make it available to stakeholders "on-demand". OPM's Business Intelligence Program uses Microsoft's Power BI software to access and report data in "dashboard" or "report" format. Power BI is divided into Apps, which generally align to either a Performance Program, a Department/ Office, or an agency initiative. Within each App there are multiple Reports, which consist of multiple pages (dashboards). Note that Power BI is not used to store data, only report data that is stored in a database or file.

Power BI reports are tools used in MTA's Performance Programs, which are periodic (bi-weekly or monthly) meetings with key stakeholders to monitor Key Performance Indicators (KPIs), develop managerial data tools, and inform performance improvement initiatives. As of August 2023*, OPM manages five Performance Programs:

- Bus Operations Performance Squad (**BOPS**)
- Mobility Operations Performance Squad (**MOPS**)
- Train Reliability & Accountability Exchange (**TRAX**)
- Strategic Transit Administrative Metrics & Performance (**STAMP**)
- Leave & Absence Monitoring

*Performance Programs for Commuter Bus and MARC are currently in development.

In addition, OPM's Business Intelligence is used with other programs and external reports that are not directly managed as a part of OPM's Performance Programs, including:

- Office of Safety Risk Review Committee
- MTA Police Operator Assault Prevention Task Force
- Transit Worker Appreciation Week
- National Transit Database (FTA)
- Managing for Results (State of Maryland)
- Attainment Report (State of Maryland)
- Legislative Mandates and Requests
- Media Requests
- Ad-Hoc Analyses and Initiatives

OPM's Business Intelligence Program consists of published Apps including:

- Annihilator (high level KPI's for the agency)
- Bus Operations
- Rail Operations
- Mobility Operations
- Commuter Rail Operations

- Commuter Bus Operations
- MTA Absenteeism Task Force
- Transportation Manager Dashboard
- MTA Equity Dashboard
- Customer Relations
- Safety & Risk Management
- STAMP
- MTA Finance
- MTA Operations Center
- HR Manager
- Customer Experience
- MTA NTD

OPM continues to grow and expand its Business Intelligence Program by improving data quality, access and understanding while serving the needs of its stakeholders.

2.2.5 Agency Safety Committees

MDOT MTA's SMS is dependent on strong intra-agency communication about safety hazards and risk. Safety Committees are an effective tool to help facilitate the identification of hazards, discuss potential risk mitigation actions to resolve safety issues, and distribute safety information. The MDOT MTA's standing Safety Committees are:

- Risk Review Committee
- Joint Safety Committee
- Modal Safety Committees (Bus and Mobility, Light Rail, Metro, MARC/ Commuter Bus)
- Safety Rules Compliance Program Committee
- CCTV Review Task Force

In addition to the standing committees listed above, MDOT MTA will form safety committees that are required to support the safety development, engineering, and construction of major capital projects on a project-by-project basis. These ad hoc committees will be organized and carry out the functions described in FTA Circular 5800.1, "Safety and Security Management Guidance for Major Capital Projects." The roles and responsibilities of these project-specific safety committees are described further in Section 2.2.5.3. These committees include:

- Fire/Life Safety Committee
- Safety and Security Certification Committee
- Safety and Security Operations Review Committee

Safety-related data that is collected from a variety of sources is elevated from modally- or functionally based safety committees to higher levels of management review, depending upon the level of risk represented by the data or other safety information. Sources for safety data collection, assessment, and consideration by the various Safety Committees include:

- ADA Compliance Program
- APTA Peer Reviews
- Claims Data
- Customer Feedback
- Emergency Notification System
- Employee Safety Reporting Program
- FTA Safety Advisories/Other Guidance
- FTA Triennial Audits
- Internal Safety Reviews
- Job Hazard Analysis
- Learning Management Program
- Owner Controlled Insurance Program
- Safety Risk Assessments
- Safety Rules Compliance Program
- Service Development Feedback

- SSO Audits, Corrective Action Plans
- Threat and Vulnerability Assessments
- Train Control Systems
- Transit Asset Management
- Workforce Management

2.2.5.1 Safety Committee Organization

The following subsection describes how MDOT MTA Safety Committees are organized, who may participate, what training is required, and how agency employees can participate in the Safety Committee process. Individual Safety Committees may have directives or SOPs that govern safety processes overseen by the committee; these guidance documents are approved and retained by the Office of Safety.

2.2.5.1.1 Safety Committee Officers and Representatives

Each committee will have a Chairperson. The Chairperson will be responsible and accountable for conducting meetings, establishing an agenda, and selecting the time and place of the meeting. Meeting minutes shall be recorded and retained electronically for a minimum of three years. Each committee will include a member of the Office of Safety. All members of the committee are responsible for reporting employee concerns and hazards, providing recommendations to mitigate hazards, and participating in facility inspections.

2.2.5.1.2 Safety Committee Membership

Safety Committees include management, employees, an Office of Safety representative, and employee representatives. MDOT MTA executive management may appoint persons to any safety committee.

2.2.5.1.3 Safety Committee Member Training

All members of MDOT MTA Safety Committees will be trained in hazard identification and fundamental safety risk management principles through the SMS Level 1 – Basics training course. Members of MDOT MTA Safety Committees who are Superintendents, Directors, or Managers and have authority to assess and accept risk are also required to be trained in risk assessment and mitigation through the SMS Level 2 – Advanced training course. Both SMS training courses are described in Section 5.2, Competencies and Training.

2.2.5.1.4 Elevation of Risk and Conducting Inspections

The Committee may elect to bring issues to the attention of the Executive-level Risk Review Committee (RRC). All safety risks that have been assessed at a "High" or "Serious" risk level must be elevated to the RRC. Facility and systems inspections may be conducted instead of a regular committee meeting. All members of a Safety Committee may participate on the inspection team.

2.2.5.1.5 Employee Involvement and Informing Safety Committees About Hazards

Employees may, verbally or in writing, share a safety/security concern with a Safety Committee member who will bring the concern to the attention of the relevant Modal Safety Committee, or the Risk Review Committee, as appropriate. Any Safety Committee member can bring employee concerns to the Safety Committee. If the Committee members believes that an employee concern has identified a hazard that might result in immediate injury, he/she may:

- Notify their Lead/Supervisor, local Safety Representative, or a member of the Office of Safety
- Make a confidential hazard report through the Safety Hotline phone system (844-MTA-SAFE, or 844-682-7233)
- Send an email detailing their safety concern to *ReportAllHazards@mdot.maryland.gov*

2.2.5.2 Standing MDOT MTA Safety Committees

The following safety committees are standing

committees that meet on a regular basis.

2.2.5.2.1 Risk Review Committee

The Risk Review Committee (RRC) is the MDOT MTA's highest-level safety committee, chaired by the MDOT MTA Administrator. The committee is alternately chaired by the Chief Safety Officer. The RRC is comprised of the MDOT MTA executives and senior leadership team representing all offices.

The RRC meets quarterly to review reports on safety, accident trends, major accidents, urgent/safety critical concerns or hazards, internal/external audit findings, certification recommendations, items referred from agency safety committees and other items of concern to the RRC for comment, direction, resolution, and execution. All risks that have been assessed at Risk Priority 1 or 2 must be referred to the RRC, as well as unresolved internal or external safety audit results that have taken too long to close, or safety mitigations that will require additional budgetary resources. Minutes are maintained and disseminated to members of the committee. A digest of key information from RRC meetings will be communicated through SMS quarterly publications.

2.2.5.2.2 Joint Safety Committee

The Joint Safety Committee (JSC) is a high-level Safety and SMS review and coordination committee composed of equal number of MDOT MTA management and labor organization-represented employees. The JSC was established in Summer 2022 in compliance with 49 U.S.C. § 5329(d). The JSC is convened by a joint labor-management process and consists of an equal number of: (1) frontline employee representatives, selected by a labor organization representing the plurality of the frontline workforce employed by the recipient; and (2) management representatives. The responsibilities of the JSC include identifying and recommending risk-based mitigations or strategies necessary to reduce the likelihood and severity of consequences identified through MDOT MTA's safety risk assessment process; identifying mitigations or strategies that may be ineffective, inappropriate, or were not implemented as intended; and identifying safety deficiencies for purposes of continuous improvement. Additionally, the JSC must approve the annual update of the PTASP. The JSC meets as necessary to carry out its tasks.

2.2.5.2.3 Modal Safety Committees

Each MDOT MTA transportation mode has a standing Modal Safety Committee. The Modal Safety Committees coordinate on-going safety efforts within the operations, facilities, and maintenance departments of the bus and rail systems. They meet monthly to update and mitigate hazards within their facilities, and on their systems. Modal Safety Committees are usually chaired by the modal safety officer from the Office of Safety.

Other members of the Modal Safety Committee may include managers within the division/group, MTAPF, and employees from the following areas: bus operators, bus maintenance workers, facilities maintenance workers and any other unique area (i.e., Maintenance of Way). Union employees may serve as safety representatives from the ranks of a department, voicing safety concerns to the Modal Safety Committee. Modal Safety Committees are also empowered to form task-based working groups as needed for the various shops, groups, locations, and/or divisions.

2.2.5.2.4 CCTV Task Force

The Office of Safety, Office of Training and Development, and Operations staff meet weekly with our TPA claims staff and TPA legal to review Closed-Circuit Television (CCTV) footage to determine claim compensability, training, and disciplinary actions for each claim incident reviewed.

2.2.5.3 Major Capital Project Safety Committees

The following MDOT MTA committees are established on an as-needed basis when a large capital project is being planned, designed, and constructed.

2.2.5.3.1 Fire/Life Safety Committee

The purpose of the committee is to identify and work through issues related to agency matters relevant to fire protection and life safety concerns. The committee develops lists of potential issues related to fire and life safety and identifies mitigations and solutions to those problems/issues.

The committee is comprised of stakeholders affected by fire and life safety conditions, as well as assisted by members of the MDOT MTA Capital Projects and Emergency Management teams. These stakeholders may include representatives from the City of Baltimore, Baltimore City Police Department/other local police departments, Fire & Rescue, local municipalities and governments as applicable, and the following MDOT MTA offices: MTAPF, Operations Support, Field Operations, Maintenance of Way, Rail Equipment Maintenance, Facilities Maintenance, Community Relations, Bus Transportation, and/or Rail Transportation.

2.2.5.3.2 Safety and Security Certification Committee

The purpose of the SSCC is to oversee the conduct of safety and security efforts for MDOT MTA capital projects. A SSCC is formed for each major capital project requiring full safety and security certification, following the guidance of MDOT MTA's agency-wide Safety and Security Certification Program Plan. The SSCC oversees the SSCP and directs resolution of identified hazards. The SSCC is responsible for overseeing the design criteria conformance process. The SSCC discusses ongoing safety and security concerns; reviews and approves certification activities; and resolves issues among the project team and with the agency's executive leadership.

Members of the committee may include Project Manager(s), Operations Support, Engineering, an Office of Safety representative, MTAPF, and Maintenance of Way, as determined appropriate to the type of capital project being built. The SSOA may be invited to attend on an as-needed basis. The committee reviews the project design and works with the Project Manager to identify and eliminate hazards and must approve the design before certification activities are undertaken.

2.2.5.3.3 Safety and Security Operations Review Committee

Before a new major capital project begins revenue service, all safety and security certification documentation should be reviewed to determine whether any outstanding items remain. A construction specification conformance process is used to verify that the as-built facilities and systems incorporate the safety and security-related requirements identified in the specifications and other contract documents. The Safety and Security Operations Review Committee (SSORC) oversees construction conformance and additional safety and security test requirements before revenue service begins.

2.2.5.3.4 Continuous Improvement Task Forces

Continuous Improvement Task Forces (CITF) are temporary teams of managers, supervisors, and frontline employees assembled at the request of the CSO to address specific safety and security issues. The teams are temporary, typically lasting several months; until the team actions are fully implemented. CITFs have addressed roadway worker protection, bus ergonomics, operator assaults, and rail rule book modifications.

2.2.5.3.5 Safety Committees (as needed)

MDOT MTA may establish additional safety committees as needed in response to weather events, irregular/special operations, public health emergencies, demonstrations, special events, etc. Chairpersons will be determined as needed.

2.3 Integration with Public Safety and Emergency Management

The guidelines for integration with public safety and emergency management officials for MDOT MTA are described in the Security Management Plan (SMP) filed with FTA, and the Department of Homeland Security (DHS), Transportation Security Administration (TSA). The MDOT MTA System Security and Emergency Management Plan (SSEPP) is considered sensitive security information (SSI) per 49 CFR 15 and 1520, with distribution controlled to only those with a need-to-know. The SSEPP complies with DHS guidance including the National Response Framework, National Incident Management System (NIMS), and National Preparedness Goal.

2.3.1 Inter-Departmental Coordination

For response to terrorism or natural disaster incidents, the Maryland Transit Administration Police Force (MTAPF) Continuity of Operations Plan (COOP) & Emergency Operations Plan (EOP) is based on partnerships with the Metropolitan Washington Council of Council of Governments National Capital Region Homeland Security Strategic Plan and Regional Emergency Coordination Plan, the Baltimore Metropolitan Council, and first-responder organizations of cities and counties throughout MDOT MTA's service area.

For traditional security functions as well as terrorism prevention, MDOT MTA's plans are based upon a formally adopted policy of awareness, alert observation and reporting by all employees, especially front-line personnel, combined with effective responses by both MDOT MTA and first-responder law enforcement and emergency management organizations such as the Maryland Department of Emergency Management (MDEM). MDOT MTA riders are also asked to report suspicious behaviors or packages to employees or call 9-1-1 in the event of an incident. MTAPF works in partnership with Police and Sheriff's departments throughout MDOT MTA's service area for high responsiveness to calls for police assistance on the transit system, for application of the MDOT MTA Code throughout the MDOT MTA service area, and for effective criminal investigations and prosecutions.

In support of security awareness and reporting by transit system employees, MDOT MTA's design criteria for new service projects applies Crime Prevention Through Environmental Design (CPTED) principles and provides Closed-Circuit Television (CCTV) and other equipment throughout the system to enhance security.

Effective Emergency Management, response, coordination, and training are essential elements to minimize losses during the occurrence of an emergency or disastrous event. The overall objective of Emergency Management and planning is to ensure fast and efficient response to emergencies or disasters in a manner that minimizes risk to the safety and health of passengers, employees, and emergency response personnel as well as unnecessary property loss.

In order to meet this objective, the MDOT MTA has written comprehensive Emergency Operations Plans (EOPs) for the agency as a whole and for each of its modal operations (i.e., Metro Subway, Light Rail, MARC, Bus, and Mobility). These plans also include the involvement of many offices that provide support functions such as MDOT MTA Media Relations, Police, Safety, Engineering, Human Resources, and Procurement. These plans establish the roles and responsibilities to be carried out by MDOT MTA personnel, as well as by various emergency response agencies during an emergency or disastrous event. The EOPs are supplemented by the comprehensive SSEPP, SOPs, EOPs, and the operating rules used by each mode. The following sections summarize key components of MDOT MTA's Emergency Management Program.

2.3.2 Inter-Agency Agreements and Coordination

Interagency agreements are necessary to ensure that all organizations understand their roles and responsibilities during disasters and emergencies. Although interagency agreements exist through Maryland State Law, various offices of the MDOT MTA have prepared and maintained interagency agreements between applicable organizations (e.g., MDOT MTA, local, county, and State police departments). These agreements:

- Identify the roles and responsibilities of each organization
- Identify the appropriate chain of authority
- Identify the necessary contact information

In addition to preparing these agreements, the Office of Safety conducts annual reviews to ensure this information remains accurate and up to date.

2.3.3 Coordination with Outside Organizations

Emergency Management personnel within the Office of Safety coordinate with various outside organizations and committees at the federal, state, and local levels in order to foster greater cooperation and align overall objectives concerning Emergency Management and response.

These organizations include:

- Federal Emergency Management Agency (FEMA) Region III, through the MEMA
- Federal Transit Administration
- Transportation Security Administration (in conjunction with MTAPF)
- Metropolitan Washington Council of Governments (MWCOG) National Capital Region Transportation Emergency Management Committee (RESF-1)
- Local Jurisdiction's Local Emergency Planning Committee (LEPC)
- Baltimore Metropolitan Council Traffic Incident Management for the Baltimore Region (TIMBR) Committee
- Baltimore Metropolitan Council Transportation & Public Works Committee

2.3.4 Emergency Planning and Response

During emergencies and disasters, it is the policy of the MDOT MTA to provide the most effective and timely response to any emergency or disaster to ensure the safety of the general public, passengers, and employees. MDOT MTA will make provisions for the immediate needs of individuals involved in the emergency or disaster and ensure that all passengers, bystanders, and employees receive the appropriate care and treatment. During the emergencies, the agency will ensure that the highest practical level of service for all passengers is maintained by providing alternate or temporary service while striving to restore normal service and equipment. MDOT MTA has prescribed protocols regarding coordination with federal, state, and local authorities to make available additional or alternative transit service as deemed necessary to support response efforts of these authorities. MDOT MTA's response will be consistent with the federally initiated NIMS and Incident Command System (ICS) adopted by federal, state, and local agencies. In addition, the agency will provide for the following:

- Ensure that customers, the public, and the media are presented with timely, accurate, and easily understandable information including information regarding service changes, disruptions, or re-routing
- Ensure protection and preservation of MDOT MTA assets

- Coordinate debris removal and clean-up activities with the appropriate local, state, and federal agencies. The Maryland Department of the Environment and/or EPA shall be contacted for incidents resulting in environmental impacts
- Conduct incident damage assessments to determine the resources necessary for recovery and the services that can be restored
- Assist in any subsequent event investigation process conducted by federal, state, or local authorities or agencies with regulatory authority including the NTSB, FRA, FTA, TSA, FBI, MDOT, or other appropriate agencies
- Document and maintain records of all disasters or emergencies

2.3.5 Preparedness

The MDOT MTA prepares for emergencies and disasters by establishing objectives, procedures, and resources for future emergency response efforts. This is done in part through this plan as well as through the SSEPP, SOPs, and EOPs of each mode. Each mode has a Continuity of Operations Plan (COOP) that allows for continued operations in the event of an emergency or significant event that would disrupt normal operations. While these documents may vary depending on the transportation mode for which they were developed and the type of event for which they have been written, all incorporate and address methods for event assessment, notification procedures, hazard control and incident scene security, and evacuation and emergency rescue assistance. These documents are reviewed annually and updated every three years or if an emergency event occurs that identifies a need for a change as well as after any emergency response effort in which they were used.

The MDOT MTA further prepares for emergencies and disasters through frequent and proper training of personnel and by conducting tabletop and functional exercises, emergency drills and simulations, and individual unit drills. Office of Safety or MTAPF, in cooperation with each Modal Manager and local emergency response agencies, has implemented a program for exercise drills and simulations. These activities involve “in-the-field” full-scale mock emergencies as well as tabletop drills and exercises. The MDOT MTA will strive to conduct exercises consistent with the Homeland Security Exercise and Evaluation Program (HSEEP) guidelines established by FEMA.

Emergency simulations differ from other exercises and drills in that they involve utilizing actual railway, trains, equipment, facilities, and personnel together to form a “full-scale” mock emergency. The purpose of these simulations is to demonstrate that personnel understand and carry out their individual roles and responsibilities during an emergency and are familiar with the equipment and layout. These simulations are typically conducted once per year and often involve more than one mode.

Discussion based exercises such as tabletop drills are typically conducted once per year to prepare MDOT MTA personnel and participating agencies’ personnel for emergencies. These exercises involve presenting various emergency situations to teams of selected personnel from MDOT MTA as well as other applicable agencies with the purpose of allowing the teams to discuss the appropriate steps involved in resolving the event. The purpose of these drills is to ensure everyone understands their roles and responsibilities during an emergency and to check that procedures are up to date with accurate information.

Functional exercises, full-scale exercises, and emergency drills are scheduled by the Deputy Chief Safety Officer – Emergency Management and Compliance in coordination with the individual MDOT MTA modes. The purpose of these drills is to assure that individuals clearly understand what steps they are required to perform during an emergency. The drills also give the MDOT MTA the opportunity to further train employees on appropriate response activities. Results of these drills will be fed back into the tabletop drills for modifications to response activities, if necessary. Typical drills

may include operators assisting passengers in de-boarding; MTAPF crowd control during an emergency; and OCC personnel responding to Operator-initiated emergency call-ins. These drills may also include personnel from external law enforcement agencies.

The execution of these activities functions as part of MDOT MTA's Internal Safety Review Program and serves to evaluate the emergency response capabilities and procedures of all involved parties. Likely scenarios are acted out to demonstrate and train MDOT MTA personnel and emergency response personnel. They are also conducted to ensure all personnel and emergency response personnel are aware of their individual roles and responsibilities. After action reports are prepared to capture lessons learned and any corrective actions that need to be implemented upon completion of full-scale exercises and emergency drills. Findings generated through these activities are documented, and corrective actions are developed and tracked through completion.

2.3.6 Response

The response phase of emergency management puts the planned emergency activities, responsibilities, and agreements into effect. EOPs, SOPs, and Interagency agreements (as provided through Maryland State Law) are currently in place and have been written to ensure that when an emergency or disaster occurs, MDOT MTA offices and first response agencies and organizations will break down their areas of responsibility into manageable units, assess what has happened, what can be done, and what is needed. This information is communicated to all necessary parties and sent by whatever means available to the MDOT MTA Administrator. Response efforts focus on the preservation of lives concurrent with incident stabilization activities. These activities are conducted consistent with NIMS/ICS and will often require teamwork with other State and local emergency response agencies.

The MDOT MTA Critical Incident Response Team (CIRT) SOP describes the process the agency utilizes in the event of a critical incident, disaster, or catastrophe that has widespread impacts to MDOT MTA services or to the safety of employees, contractors, passengers, and the general public. The CIRT process is under the responsibility of the CSO. For the purposes of the CIRT SOP, a critical incident is an occurrence that results in property damage, deaths, or injuries to MDOT MTA employees, contractors, passengers, the general public, facilities, or a condition, situation, or occurrence of a serious nature that develops suddenly and unexpectedly and demands immediate attention. The primary purpose of the CIRT SOP is to quickly develop recommendations from senior MDOT MTA leadership about if and when public transportation services are to be suspended, why they should be suspended, and to offer mitigation options.

2.3.7 Recovery

The recovery phase of emergency management includes the restoration of normal services and conditions and the assessment and documentation of emergency response operations. Depending on the nature and severity of the event and its aftermath, restoration of normal services and conditions are dependent upon other recovery activities. The MDOT MTA Master COOP provides the framework for the agency to restore its essential functions in the event of an emergency that affects its operations, including loss of access to a facility (as in a fire); loss of services due to a reduced workforce (as in a pandemic); and loss of infrastructure services due to equipment or systems failure (as in an information technology systems failure). The COOP also addresses reconstitution, the process to return the organization to fully functioning capability.

2.3.8 Notification

It is the responsibility of all MDOT MTA personnel to understand the requirements for proper notification when an emergency or disaster occurs. To minimize and control the threat to health, life, and property, it is essential

that all appropriate parties be notified as quickly as possible to ensure a timely response to the disaster or emergency.

Emergencies and disasters affecting the MDOT MTA can be both internal, such as in the case of a vehicle fire or passenger injury, and external, such as in the case of a natural disaster or mass evacuation of population centers such as the City of Baltimore. Likewise, the declaration of emergencies and disasters can be both internal and external. Internal declarations most frequently occur at the modal or operational level and typically follow a bottom to top notification process where the initial assessment and declaration of an emergency or disaster is made by a vehicle operator or other employee(s). These individuals notify and communicate all necessary information pertaining to the emergency event to their OCC or Supervisor, which in turn notifies the appropriate departments, personnel, emergency response agencies, and upper management including the MDOT MTA Administrator.

External declarations come from an outside party such as MDOT, MEMA, FEMA, the Governor's office, etc. This type of declaration typically results in a top to bottom notification process, during which the MDOT MTA Administrator and Office of Safety receive notification from an outside agency or party that a disaster or emergency event has occurred. The Administrator then coordinates with the Chief Operations Officer (COO), and other appropriate managers regarding the role the MDOT MTA will play in the response. The COO provides the OCCs with an initial report, followed by hourly updates, regarding the event and any changing conditions.

When a determination is made that an emergency exists, all MDOT MTA employees adhere to the guidelines established in current operating rules, procedures, standards, guides and EOPs. If guidance and instruction from the appropriate parties is not available, employees are expected to follow the established chain of authority and apply sound judgment. The MDOT MTA has acquired Federal Government Emergency Telecommunications Service Cards (GETS Cards) for key management personnel to have the ability to communicate during regional emergencies.

2.3.9 Emergency Management Team Meetings

Emergency management meetings are conducted quarterly with a team member from the Office of Safety, MTAPF, and each modal group. Fire and Life Safety committee meetings are scheduled on an as-needed basis to discuss emergency management initiatives and each mode sends representatives to attend. Emergency Management training is further explained in the EOP. Modal operations supervisors are involved in the planning and coordinating of emergency activities at these emergency management team meetings. Emergency response organizations are informed of the modal system and important fire/life safety features. These meetings provide an informational forum and interface to address emergency concerns. Meetings with external agencies are coordinated for training, information, exercising, and to provide familiarization training for local first responders. Exercises, types of training, reports, and schedule are also explained within the EOP.

2.4 SMS Documentation and Records

2.4.1 MDOT MTA PTASP Review and Updates

The PTASP is a living document that is reviewed during the year and officially released in February of each year. The schedule for review and update is as follows:

PTASP Update Tasks and Schedule

Process Task	Timeline	Description
Content Gathering	June - July	Review existing policies, procedures, bulletins, and presentations noting possible areas of change in areas such as Standard Practices and State and Federal regulations. Communicate with stakeholders and subject matter experts to gather existing material and review knowledge areas.
Create First Draft	August	Based on the information provided during the Content Gathering phase, a revised first draft of the PTASP is created.
Review First Draft with Content Providers	September	Document is reviewed by MDOT MTA Office of Safety content providers. The First Draft (Draft 1) review serves two (2) purposes: 1. Staff can note specific changes in the existing document. 2. Identify specific areas that will require updates and/or must be created as new.
Create Second Draft	October	Based on the first draft review changes, the Office of Safety makes edits and produce the PTASP Draft 2.
Conduct Reviews	November - December	Provide Draft 2 to Joint Safety Committee and Agency Directors for review. Document all changes and assign action items as needed.
Create Final Draft	December	Resolve all issues and reviews, including edits from Joint Safety Committee and Agency Directors. Create Final Draft of PTASP.
Joint Safety Committee Approval	By December 31	All PTASP revisions are reviewed with Joint Safety Committee and committee approval is reflected in meeting minutes and by approval signature(s) by December 31.
Conduct SSOA Acceptance Review	January	Prior to final delivery, the final draft document (unsigned) is provided for Acceptance Review by the SSOA. This may be undertaken concurrent with Joint Safety Committee review process.
Final Changes and Signature	Final week of January	SSOA will issue written, conditional approval of PTASP, confirming that no changes are required or, if changes are required, a written explanation with a review checklist. If no changes are required, the final document is converted to InDesign and presented to the Accountable Executive for approval and signature.
SSOA Changes to Final PTASP	February	If required, SSOA changes will be incorporated into PTASP. This revised final edition will be circulated to agency stakeholders and key personnel for additional review. Any required changes will have a final review and approval by Joint Safety Committee.
Delivery to SSOA	1-Mar	Final version of the PTASP with Joint Safety Committee and Accountable Executive approvals is submitted to SSOA for formal and final approval.

Figure 11 - PTASP Update Tasks and Schedule

The focus of the annual review is to:

- Evaluate current safety initiatives for appropriateness
- Refine and improve ongoing safety activities
- Identify new initiatives, which may be required to improve safety performance or the SMS
- Define organizational responsibility for accomplishing safety related tasks
- Incorporate organizational, operational, or legislative changes

Reviews may be needed in addition to the annual review due to major system changes such as:

- Rail system extensions or major bus route modification
- New construction or modification of existing vehicles, infrastructure, facilities, or system equipment
- Significant changes to operational practices
- Changes to oversight regulations
- Significant negative safety events or experiences

2.4.2 Safety and Security Plan Documentation and Retention

The MDOT MTA PTASP, System Security and Emergency Preparedness Plan (SSEPP), and the Emergency Operations Plan (EOP) seek to take proactive measures to implement preventive actions to minimize the potential for undesirable outcomes to MDOT MTA operations and the public.

Emergency management plans have been developed for MDOT MTA and are part of the MDOT MTA Master Emergency Operations Plan (MEOP). Each mode within MDOT MTA has the requirement to develop their specific emergency response procedures. These plans detail activities and responsibilities for MDOT MTA personnel and are the responsibility of affected personnel, CSO and Administrator. The MDOT MTA MEOP is reviewed annually and updated as needed. The CSO is accountable to senior management for the accuracy and timeliness of all PTASP, SSEPP and EOP updates approvals and distribution.

The MDOT MTA SSEPP details the security program for MDOT MTA. This plan describes the system security and the threat and vulnerability management process employed by the MTAPF organization. This plan details how state and local law enforcement agencies and MTAPF work together to provide for a secure transit environment. Involvement of MDOT MTA security managers and local law enforcement personnel is essential for a strong cooperative security effort.

The SSEPP is a controlled document that is applicable to all MDOT MTA employees, contractors, and visitors. (Note: The SSEPP is not distributed as it is a security sensitive document. It may be reviewed after an approved written request is made). All MDOT MTA safety and security documents and documents relevant to SMS development and implementation are housed in the agency's electronic document management system and will be retained for no less than three years. The plans are retained in accordance with the MDOT, Records Retention and Management Policy, Policy number "MDOT 043".

2.4.3 List of Agency Safety Plans, Directives, and SOPs

A reference listing of MDOT MTA Plans, SOPs, Directives, and Guidelines that augment the PTASP and address operational and occupational safety; federal, state, and local environmental policies; and system security requirements is provided below. These documents are available on MDOT MTA's document management system in the same folder as that housing the most up-to-date PTASP. Printed copies of these safety-related plans, directives, and SOPs are also retained in the Deputy Chief Safety Officer – SMS office.

- MDOT MTA 6.11 Accident/Incident Investigation Handbook
- MDOT MTA Agency-Wide Operator Assault Prevention and Response SOP
- Bulk Fluid Transfer Operations
- MDOT MTA Bus CCTV Policies and Procedures
- Configuration Management SOP (MTA-GP-04-01)
- Consolidated Plans
- MDOT MTA Contractor Safety and Health Plan Guidelines, 2024
- MDOT MTA 3074 Critical Incident Response Team SOP
- Employee Safety Reporting Program Directive 3074
- Fact Reports
- MDOT MTA Development of Standard Operating Procedures
- Guidelines for Elite Safe Operator and Maintainer Program
- MDOT MTA Engineer's Manual 2022
- MDOT MTA 317.03 Hazardous Waste Management SOP
- Injury and Illness Prevention Plan (IIPP)
- Light Rail Fitness for Duty SOP
- Master Continuity of Operations Plan (COOP)
- MARC System Safety Program Plan (SSPP)
- Master Emergency Operations Plan (MEOP)
- Office of Safety Site Visit/Inspection/ Investigation Policy, 2012
- MDOT MTA 4.2 Paint Spray Booth Operating Practices SOP
- MTA Police Force Operator Assault Prevention and Response SOP
- Policies and Procedure for Drivers of State Vehicles, 2010
- Policies and Procedure for Vehicle Fleet Management, 2005
- MDOT MTA 3124 Protective Footwear Directive
- Quarterly Visual Stormwater Monitoring
- Rail Safety Oversight Program Standard (RSOPS)
- Roadway Worker Protection (RWP) Manual
- MDOT MTA 3011 Reflective Safety Apparel Directive
- Safety and Security Certification Program Plan
- Safety and Security Certification SOP
- Safety Monitor Responsibilities
- Single Stream Recycling
- Smoke-Free Workplace Executive Order, 1992
- Stormwater Pollution Prevention Plan (SWPPP)
- System Modification Authorization Request
- System Modification Final Report
- System Modification Review and Approval Process (SOP MTA-GP-04-02)
- MDOT MTA Transit Operator Assault Program Directive
- Vehicle and Equipment Fueling
- Visits from Regulatory Agencies Memorandum, 2011
- MDOT MTA 3200 Substance Abuse Policy Education, Treatment and Program Directive
- MDOT MTA 1.11 Spill Prevention,

Response, Cleanup and Reporting SOP

- Light Rail Operations Responding to Accidents/Incidents (SOP LR.GP.00.08.00)
- MDOT MTA 3092 Safety Risk Management SOP
- OSMRC.OPS.001 Safety Officer Rail Event Reporting Procedure SOP
- MDOT MTA 3088 Public Transportation Agency Safety Plan and System Security and Emergency Preparedness Plan Internal Review SOP
- MOW-Track Maintenance Management Plan, Rev. 4 (2023)
- Light Rail Facilities Maintenance Plan, Rev. 1 (2023)
- MTA Central Light Rail Car Maintenance Management Plan, Rev. 0 (2023)
- OSMRC.ADM.001 Safety Event Tracking and Document Storage SOP
- MDOT MTA Hazardous Energy Control (Lockout/Tagout), 2023
- MDOT MTA 3089 Corrective Action Plan SOP (2024)

2.4.4 SMS Documentation Retention

In accordance with 49 CFR Part 673 Subpart D, MDOT MTA will at all times maintain this PTASP and documents that are included in whole, or by reference, that describe the programs, policies, and procedures that the agency uses to carry out the PTASP. All referenced documents, including those related to the implementation of its SMS, and results from SMS processes and activities, will be made available upon request by the FTA or other Federal entity, or the Maryland SSOA. These documents will be maintained for a minimum of three years after they are created.

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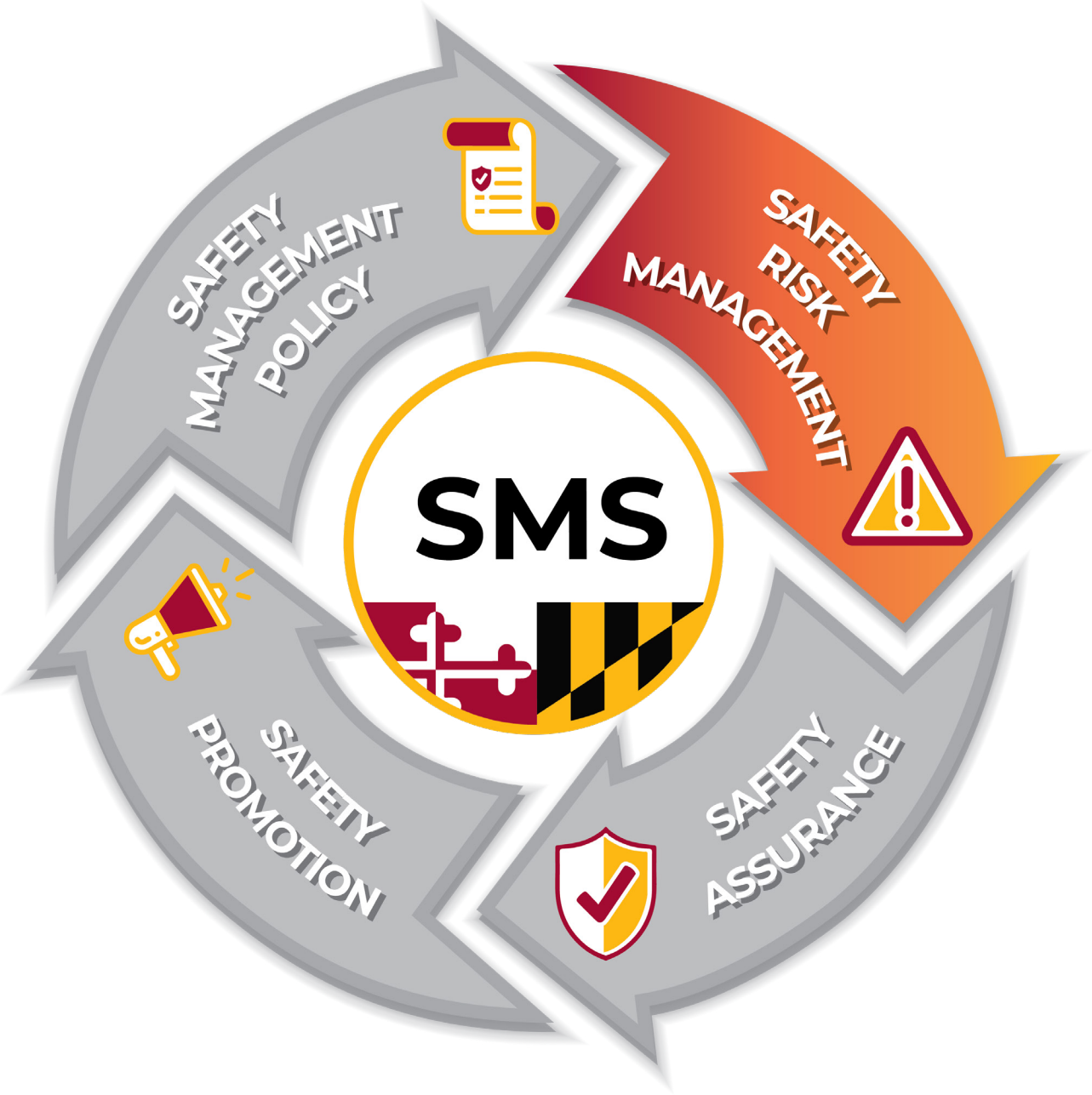
SECTION 3. Safety Risk Management



MDOT MTA's Safety Risk Management program incorporates the management of risk in all elements of the agency's systems, including all modes and addressing all stages of a system's life cycle, from design through construction, operations, maintenance, and disposal. The three main subcomponents of SRM are: (1) safety hazard identification, (2) safety risk assessment, and (3) safety risk mitigation. An effective SRM program demonstrates continuous improvement, effectiveness of safety risk controls, and a level of safety performance that meets MDOT MTA safety management goals and objectives and regulatory requirements. Information in this document may be generalized to explain concepts. The formalized SRM process is documented in MDOT MTA 3092 and includes detailed information on MDOT MTA hazard identification, training, tracking, reporting, and naming conventions.

The SRM process is a vital component of a successful SMS. A successful SRM program is based on a proactive and systematic approach to change management (e.g., the Seven Triggers for Safety Risk Assessment), continuous improvement, and effectiveness of implemented safety controls. The three subcomponents of the SRM process are shown in the figure below.

Figure 12 - Safety Risk Management Process

3.1 Hazard Identification

The first step in the SRM process is to identify as many hazards as possible, real or potential, throughout the agency. Safety hazard identification is a continuous process that involves establishing methods or processes for capturing safety data for continuous improvement. While identifying every hazard is virtually impossible, an active employee safety reporting program and robust interdepartmental data collection can greatly increase the ability to eliminate hazards and reduce risk to an acceptable level. The figure below illustrates some of the many sources of hazard information that MDOT MTA collects and analyzes.

Below are some additional MDOT MTA hazard identification sources:

- Committee reviews
- Compliance programs
- Industry data and government sources (FTA, NTSB, SSOA), including FTA Safety Advisories
- Inspection and audit results
- Internal safety investigations
- Maintenance reports
- OCC logs
- Operator/Operations observations
- Reports/Lessons Learned from drills and exercises
- Reports/Lessons Learned from

emergency response

- Safety Certification hazard analyses
  - Preliminary Hazard Analyses (PHA)
  - Operational Hazard Assessment (OHA)
  - Failure Modes, Effects, and Criticality Analyses (FMECA)
  - Fault Tree Analyses

3.1.1 Hazard Reporting

The MDOT MTA Employee Safety Reporting Program (ESRP) directs the policies and procedures for the agency's non-punitive employee reporting system. There are multiple ways that MDOT MTA employees can report safety hazards, near misses, or other safety concerns:

- Notify your Lead/Supervisor, local Safety Representative, or a member of the Office of Safety
- Call the Safety Hotline 844-MTA-SAFE (844-682-7233)
- Formally submit a confidential report
- Email *ReportAllHazards@mdot.maryland.gov* (QR Code option auto populates the Report All Hazards email address)

Hazards or safety concerns identified by and received from passengers or the general public are normally communicated to the most immediately available MDOT MTA personnel or through the Transit Information Services (410-539-5000). Once the hazard is received, it is the responsibility of the MDOT MTA personnel or customer service representative to formally document the hazard or concern and make the necessary notifications.

3.1.2 Hazard Tracking

Hazard reports are submitted to the Office of Safety where they will be assessed and tracked in mode-specific Hazard Tracking Logs (HTLs) and stored in an electronic document management system. The HTLs are managed by the modal Safety Officer. Incidents and hazards can be tracked and analyzed for leading indicators for potential hazards and risk.

MDOT MTA is currently transitioning from its current hazard tracking platform to a software database where incidents and hazards can be tracked and analyzed for leading indicators of potential hazards and risks.

3.1.3 Hazard Identification Training

All MDOT MTA employees, contractors, and vendors are required to take the online learning module SMS Level 1 – Basics training, or that the course be taught to them via instructor-led training. SMS Level 1 – Basics training includes familiarization with SMS principles; describing the differences between a hazard, a consequence, and a risk; and explaining how MDOT MTA employees can report hazards or safety concerns all the while promoting agency-wide hazard identification and reporting. Hazards are an inevitable part of the MDOT MTA transit operations. Accessing safety information from many data sources increases the likelihood that hazards can be adequately identified, assessed, and mitigated.

Figure 13 - MDOT MTA Agency Hazard Identification Sources

3.2 Safety Risk Assessment

Identified hazards and their potential consequences are assessed to determine the level of risk and associated impact they may have on the system. Assessing risk has two major steps – assessing consequence(s) of the hazard (i.e., categorizing the severity) and assessing the likelihood of the consequence(s) (i.e., categorizing the probability).

Generally, the greater the probability of a consequence to cause injury or loss, the greater the risk, and subsequently the greater the need to eliminate the hazard or reduce the risk. The severity of the consequences the hazard may present must also be taken into consideration when assessing the risk level associated with the hazard. Commensurate to probability, as the severity of the hazard's consequences increase, so will the risk level; and again, so will the need to eliminate the hazard or reduce the risk.

The MDOT MTA Risk Assessment Process (RAP) is an SRM tool to help SMS Level 2 – Advanced trained and certified personnel and/or the Office of Safety perform a safety risk assessment (SRA). Each identified hazard is examined to determine the conditions under which the hazard exists in order to choose the most applicable category within the RAP. The category provides criterion for determining the most credible consequence.

Although the depicted RAP has multiple categories, such as Security/Cyber and Customer/Brand/Reputation, that can be considered in a MDOT MTA agency wide RAP (i.e., Enterprise Level) including safety categories (Safety Event and/or Injury to Employee or Customer, Environment, and etc.), this document is only considering the safety categories within the RAP. The RAP lists what will trigger an SRA, and who can accept or approve the determined safety Risk Level.

What Triggers A Safety Risk Assessment?

1. New Hazard Identified or Reported Through Employee Safety Reporting Program (ESRP)
2. Changes to Plans, Committees, and other Significant Agency Activities
3. New Construction Project / Existing Facility or System Modification
4. New Capital Acquisitions / Modification to Equipment or Infrastructure
5. Proposed System Expansion / New or Modified Routes
6. Asset Condition Risk Score Level of "High" or "Serious"
7. Ineffective Risk Controls Identified

Figure 14 - Seven SRA Triggers

3.2.1 Risk Assessment Triggers

MDOT MTA's RAP is initiated by the identification of a condition or action that "triggers" a safety risk assessment (found in Start Here of the RAP). These seven triggers are not hazards in and of themselves but can lead to potential consequences that present safety risk. If uncertain whether an action or condition requires an SRA, contact the Office of Safety. The seven triggers are listed in the What Triggers A Safety Risk Assessment graphic (Figure 14) and below with basic examples.

1. New Hazard Identified or Reported Through Employee Safety Reporting Program (ESRP)
    - *Example* - Hazard reported to the Safety Hotline
2. Changes to Plans, Committees, and other Significant Agency Activities
    - *Example* - Major changes to the Track Standard and Field Guide
3. New Construction Project/Existing Facility or System Modification
    - *Examples* – Facility or system modifications; New capital projects at engineering benchmark of 30%
4. New Capital Acquisitions/Modification to Equipment or Infrastructure
    - *Examples* – New rail cars or major modifications to existing rail cars;
    - Installing new operator seat belts
5. Proposed System Expansion/New or Modified Routes
    - *Example* – Changing a bus stop location
    - Service change on existing route
6. Asset Condition Risk Score Level of "High" or "Serious"
    - *Example* – Outdated Maintenance or Operations equipment (e.g., bus overhaul)
7. Ineffective Risk Controls Identified
    - *Example* – Mitigation(s) not reducing risk level(s) as anticipated

3.2.2 Hazard Severity

Hazard severity is a subjective determination of the worst foreseeable, yet most credible consequence or outcome that can be anticipated to result from human error, design inadequacies, or component failure or malfunction. Each level of severity (Catastrophic, Critical, Major, Minor, or Negligible) is attributed through multiple descriptions of the consequences dependent on the hazard category (e.g., injury, environment, financial, emergency, etc.). To determine the severity level, historical agency data can be used to perform a quantitative assessment. Otherwise, subject matter expertise or industry best practices can be referenced to perform a qualitative assessment. One safety severity category should be selected to determine the appropriate hazard severity when completing an SRA. The levels of severity (found in Step 1 of the RAP) for the following safety categories are defined in Figure 15 – Five Safety Categories and Five Levels of Severity.

Figure 15 - Five Safety Categories and Five Levels of Severity

Safety Severity Category	Catastrophic (I)
Safety Event and/or Injury to Employee or Customer	Could result in death, permanent total disability
Environment	Irreversible severe environmental damage that violates law or regulation
Financial	Loss exceeds $1 million
Emergency/ Resiliency	Catastrophic failure of a major element or segment of the public transportation system from natural disaster (flood, hurricane, etc.) or infrastructure failure/damage / Inability to continue or restore basic service for 15 days or longer to fulfill continuity of operations as TBU / Excessive or extended weather
Operations/Service Delivery	Total loss of equipment or system interruption, requiring months to repair / catastrophic change to normal operations (by Mode) / catastrophic change to OTP Goal (by Mode)

Safety Severity Category	Critical (II)
Safety Event and/or Injury to Employee or Customer	Could result in permanent total disability, serious injuries or occupational illnesses that may result in hospitalization of 2 or more persons
Environment	Reversible environmental damage that violates law or regulation
Financial	Loss exceeds $200,000, but less than $1 million
Emergency/ Resiliency	Critical failure of a major element (safety critical) or segment of the public transportation system from natural disaster (flood, hurricane, etc.) or infrastructure failure/damage / other disasters (fires, damage to facilities, roads, and utilities) affecting multiple modes / Inability to continue or restore basic service within 15 days to fulfill continuity of operations as TBU
Operations/Service Delivery	Significant loss of equipment or system interruption, requiring weeks to repair / critical change to normal operations (by Mode) / critical change to OTP Goal (by Mode)

Safety Severity Category	Major (III)
Safety Event and/or Injury to Employee or Customer	Could result in injury or occupational illness resulting in one or more lost workdays
Environment	Mitigatable environmental damage without violation of law or regulation where restoration activities can be accomplished
Financial	Loss exceeds $25,000, but less than $200,000
Emergency/ Resiliency	Hazmat/chemical release, evacuations, quarantine of buildings/ surrounding areas (e.g., health, protest, or other demonstration) or severe weather conditions affecting one or more modes for a few days / Inability to restore full service or continue basic service within 5 days to fulfill continuity of operations as TBU
Operations/Service Delivery	Some loss of equipment or system interruption, requiring seven or less days to repair / major change to normal operations (by Mode) / major change to OTP Goal (by Mode)

Safety Severity Category	Minor (IV)
Safety Event and/or Injury to Employee or Customer	Could result in injury or illness not resulting in a lost work day
Environment	Minimal environmental damage not violating law or regulation
Financial	Loss exceeds $2,000, but less than $25,000
Emergency/ Resiliency	Inclement weather affecting one or more mode, damaged infrastructure (e.g., Road blockage/closed bridge/tunnel) affecting peak revenue service / Inability to restore full service within 48 hours to fulfill continuity of operations as TBU
Operations/Service Delivery	Some loss of equipment, no system interruption, less than 24 hours to repair / minor change to normal operations (by Mode) / minor change to OTP Goal (by Mode)

Safety Severity Category	Negligible (V)
Safety Event and/or Injury to Employee or Customer	Injury Not Likely
Environment	Negligible environmental damage not violating MDOT MTA SOP's
Financial	Loss exceeds $1, but less than $2,000
Emergency/ Resiliency	Police activity or other disturbance temporarily disrupting revenue service for any mode / Inability to provide full service but able to continue basic services to fulfill continuity of operations as TBU
Operations/Service Delivery	Minor damage to equipment no system interruption, no immediate repair necessary / Insignificant change to normal operations (by Mode) / Insignificant change to OTP Goal (by Mode)

3.2.3 Hazard Probability

Hazard probability is described quantitatively and qualitatively in potential occurrences (e.g., per units of time). A hazard probability may be derived from the analysis of transit system operating experience, evaluation of the MDOT MTA safety data resources, or from historical safety data from other transit systems. Each level of probability is attributed through multiple descriptions of the consequence's occurrence. Levels of probability (found in Step 2 of RAP) are defined below.

Probability Levels	
Frequent (A)	Likely to occur often in the life of an item. Consequence may occur 26 or more events a year.
Probable (B)	Will occur several times in the life an item. Consequence may occur 13 to 25 times a year.
Occasional (C)	Likely to occur sometime in the life of an item. Consequence may occur 6 to 12 times a year, or less than 24 events per 5 years.
Remote (D)	Unlikely, but possible to occur in the life of an item. Consequence may occur 1 to 5 times a year, or less than 10 times per 10 years.
Improbable (E)	So unlikely, it can be assumed occurrence may not be experienced. Consequence may occur 1 time in 25 years.

Eliminated (F)	Incapable of occurrence within the life of an item. This probability is used when the initial risk has been mitigated and the residual risk is Eliminated.

Figure 16 - Hazard probability levels

3.2.4 Assessing Risk

When assessing risk, emphasis is placed on the worst foreseeable, but most credible consequence or outcome. If we are using agency historical data (quantitative) or subject matter expert opinion (qualitative), the condition must always be credible. The severity or impact of a consequence occurring is classified as: ***Catastrophic, Critical, Major, Minor, or Negligible.***

Assessing risk probability involves an assessment of the potential likelihood of the consequence occurring. The probability of a consequence occurring is classified as: ***Frequent, Probable, Occasional, Remote, Improbable, or Eliminated,*** if the hazard has been removed.

To determine or quantify the risk probability, MDOT MTA uses qualitative data (data from subject matter expert opinion) or quantitative data (agency historical data). The probability can be more accurately predicted by using more data concerning the hazard and previous occurrences. Sources of data include information from various MDOT MTA reporting systems, conducting interviews and surveys, and using national databases when information is not internally available. Figure 14 in Section 3.1 lists other available hazard tracking resources whose information may be aggregated for data analysis. Final determination of the probability and severity ratings must consider any existing mitigations.

3.2.5 Determining Risk Value, Risk Level, and Risk Priority

Risk Value and Risk Level are both the outcome or combination of both the Severity and Probability of the Hazard consequence assessment but are represented differently within the matrix. The Risk Value and Risk Level are located at the intersection of the identified severity and probability (found in Step 3 of the RAP). Risk Levels are categorized as: **High, Serious, Medium, Low, or Negligible**. Risk Values are categorized as: One through twenty-five (1-25). Multiple Risk Values can be merged into a single Risk Level. For example, Risk Level Medium encompasses nine Risk Values (7-15),

STEP 3 - Determine Risk Value/Level at the intersection of the selected Severity and Probability Levels

Probability Level	Catastrophic (I)	Critical (II)	Major (III)	Minor (IV)	Negligible (V)
Frequent (A)	1 High	3 High	5 Serious	8 Medium	10 Medium
Probable (B)	2 High	6 Serious	12 Medium	14 Medium	17 Low
Occasional (C)	4 Serious	11 Medium	15 Medium	19 Low	21 Low
Remote (D)	7 Medium	13 Medium	18 Low	22 Negligible	24 Negligible
Improbable (E)	9 Medium	16 Low	20 Low	23 Negligible	25 Negligible
Eliminated (F)			Eliminated		

Figure 17 – Example of the Medium Risk Level encompassing nine (9) Risk Values

see the matrix below.

Both Risk Value and Risk Level each has a corresponding Risk Priority and a Risk Acceptance and Approval Level that signifies a required action that needs to be taken. For example, Risk Level High has a Risk Priority of One (1) that equates to a Not Acceptable risk that must be addressed according to the guidelines set forth in the Risk Acceptance and Approval matrix (found in Step 4 of the RAP). Generally, Not Acceptable risks (Risk Level Serious) should be mitigated to as low as reasonably practical but can be accepted with executive management review by the MDOT MTA Administrator or designee in consult with the Chief Safety Officer.

3.2.6 Ranking Risk and Assigning Risk Acceptance/Approval Level

Following the risk assessment, risks shall be ranked so they can be addressed in a systematic prioritized manner. The most straightforward ranking of risk is by the Risk Value (1-25) and Risk Level (High - Negligible). The prioritized effort to mitigate hazards to as low as reasonably practical will depend on budget, time, and expertise. Medium Risk may be more easily mitigated, but the emphasis on eliminating or reducing Serious Risk should not be disregarded due to budget constraints or by mitigation difficulties.

Safety hazards that have been identified must be controlled or eliminated so that the hazard does not continue to pose a danger. The controls may be done in a temporary manner until a long-term mitigation plan is implemented. Regardless of whether the controls implemented are short-term or long-term mitigations, monitoring and measuring for effectiveness is a necessary Safety Assurance action. All measures taken to control risks/hazards are recorded in the HTL by the Office of Safety.

Dependent on the risk ranking of the hazards' severity and likelihood, a multi-departmental team may be established to analyze and control these risks/hazards. The team should, at least, be comprised of the following personnel:

- Subject matter expert (SME) for the system
- Front line personnel and supervisors
- SSOA participation is encouraged
- Safety staff, as support

Select MDOT MTA personnel will be designated and authorized to assess, mitigate, accept, and approve risk. This is an awesome responsibility of being held accountable to the accuracy of the assessment, the implementation of a mitigation plan, and the approval and acceptance of risk that will affect the safety of the agency. With concurrence from the Office of Safety according to the SRA processes, only the following personnel can accept/approve risk: MDOT MTA Administrator, Chief Safety Officer (CSO), Departmental Director Level, Deputy Chief Safety Officer, and SMS Level 2 trained and certified. Any individual completing an SRA will have it independently reviewed by a trained member of the Office of Safety. If the assessor is already Safety personnel, the SRA can be reviewed by other Safety personnel at the level which corresponds with the minimum "Acceptance/Approval Level" based on the initial risk rating; whichever is greater. As shown in Figure 18 - Ranking Risk and Risk Acceptance/Approval Level index below, the higher the risk, the rank of the accepting/approving personnel increases. For example, SMS Level 2 trained and certified personnel can accept and approve Low and Negligible Risk Levels, but only the Administrator can approve and accept a High Risk Level. Acceptance or approval of Priority 2 safety risks and mitigations are approved by the CSO after review and concurrence by the Administrator. The Administrator must be notified of Priority 1 and Priority 2 safety risks in a timely manner. The Administrator will designate the responsible party for Priority 1 and 2 safety risks who have received authority, means, and specific resources to correct identified risks, and the Administrator will continue to monitor implementation of mitigations. The MDOT MTA Administrator has ultimate authority in risk

Risk Value	Risk Level	Risk Priority	Action Taken	Acceptance / Approval Level
1-3	High	1	**Not acceptable** • Operations/activity must be discontinued in a manner that does not place individual(s) at greater risk • Operations/activity must not begin or continue until the mitigation plan is approved, or the risk is accepted • Must be investigated to identify root causes • Risk must be monitored • Reportable to MDOT Rail Safety Oversight Agency (if rail-related)	**Administrator / CSO** Review and approve mitigation plan(s)
4-6	Serious	2	**Generally not acceptable** • Mitigate risk as quickly as possible and to as low as reasonably practical (ALARP), or accept risk • Must investigate to identify root causes • Risk must be monitored • Reportable to MDOT Rail Safety Oversight Agency (if rail-related)	**Administrator / CSO** Review and approve mitigation plan(s), or Accept risk
7-15	Medium	3	**Acceptable** • Mitigate risk to as low as reasonably practical (ALARP), or accept risk • Investigate to identify root causes • Risk must be monitored	**Director Level / Dep. CSO (or higher)** Review and approve mitigation plan(s), or Accept risk
16-21	Low	4	**Acceptable** • Risk is acceptable without mitigation and continued monitoring is required	**SMS Level 2 trained** Review and approve mitigation plan(s), or Accept risk
22-25	Negligible	5	**Acceptable** • Risk is acceptable as is without further mitigation or monitoring	**SMS Level 2 trained** Accept risk

Figure 18 - Ranking Risk and Risk Acceptance/Approval Level Index

acceptance and approval as the designated Accountable Executive.

3.2.7 The MDOT MTA Risk Assessment Process (RAP)

The two matrices below (Figures 19 and 20) are the MDOT MTA Risk Assessment Process, also referred to as the "RAP". The RAP is an SRM tool that is distributed to and used by select personnel who are granted the authority to assess, accept, and approve risks. The RAP is the foundation for the SMS Level 2 – Advanced training and only those who are SMS Level 2 trained and certified can conduct a safety risk assessment (SRA); this is to ensure that personnel are qualified and using a consistent methodology.

With the ease of use and assistance of the standardized RAP, assessing risk should not be so difficult that regular proactive hazard identification and risk assessments are not being conducted. A risk assessment can be conducted for many reasons; however, a safety risk assessment can start with personnel questioning MDOT MTA activities and subsequently identifying one or more of the seven triggers listed under the "Start Here" section of the RAP.

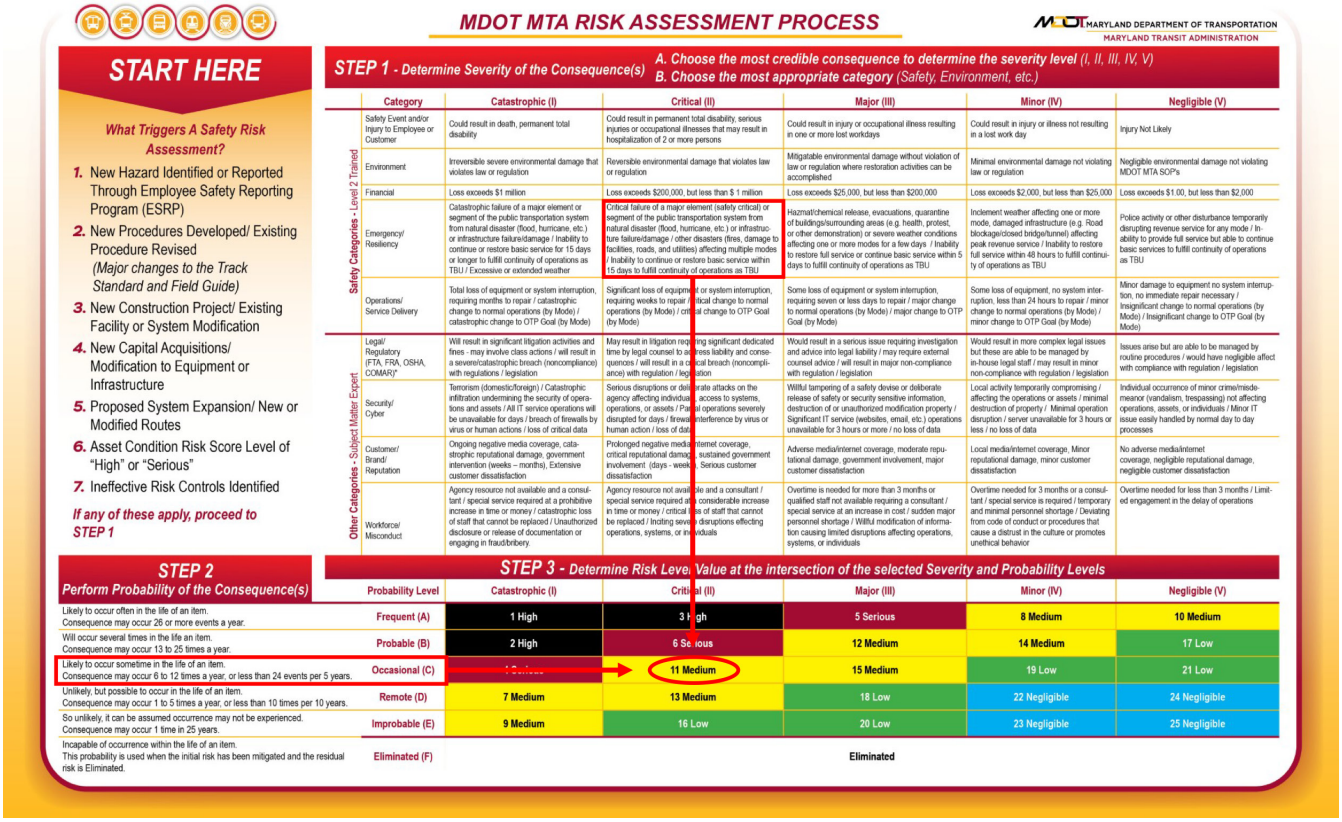
Conducting a RAP identifies Initial Risk, which is the first Risk Level determined, and Residual Risk from a subsequent assessment as required if the Initial Risk is High or Serious. Listed below are basic steps for the RAP and the steps for submitting a Safety Risk Assessment (SRA) Form to Safety, see 19 - Risk Assessment Flowchart. As necessary, both Initial and Residual Risk is required to be listed on the SRA form.

Follow the RAP steps in the Risk Assessment Flowchart to determine Risk Value, Risk Level, and Acceptance/Approval Levels.

1. Determine the Consequences of the identified hazard
    a. Assess Severity of the Consequence
    b. Assess Probability of the Consequence
    c. Determine Risk Value and Risk Level at the intersection of the selected Severity and Probability Levels chosen during RAP Step 1 and Step 2

2. Determine Initial Risk - collect data and/or interview personnel
    a. Record the Initial Risk (determined Risk Value and Risk Level from the first risk assessment) on the Safety Risk Assessment (SRA) Form
    b. If the initial risk is High or Serious, immediately implement short-term mitigation to prevent imminent harm and notify Safety immediately
    c. Determine the appropriate Acceptance/Approval Level personnel based on the Risk Value and Risk Level as determined from RAP Step 3
    d. Perform the required Action Taken for the assigned level and notify the appropriate MDOT MTA personnel per RAP Step 4
    e. Acceptance/Approval personnel will:
    f. Accept – submit SRA to Safety for review and accept/decline
    g. Mitigate – develop a mitigation plan
3. Determine Residual Risk - collect data and/or interview personnel (Note: LR and Metro must follow CAP development process)
    a. Use proposed controls/mitigation listed in the Plan to determine Residual Risk by performing another Risk Assessment
    b. Submit the completed SRA form to the Office of Safety for review
    c. Safety will either accept or decline the mitigation plan and/or the SRA
    d. Safety declines – develop a new Plan and repeat the RAP
    e. Safety accepts - the Plan can be implemented
    f. Continuous monitoring of controls/mitigation for effectiveness is established in the SRA

Figure 19 - Risk Assessment Flowchart



MDOT MTA RISK ASSESSMENT PROCESS

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION

START HERE

What Triggers A Safety Risk Assessment?

1. New Hazard Identified or Reported Through Employee Safety Reporting Program (ESRP)
2. New Procedures Developed/ Existing Procedure Revised *(Major changes to the Track Standard and Field Guide)*
3. New Construction Project/ Existing Facility or System Modification
4. New Capital Acquisitions/ Modification to Equipment or Infrastructure
5. Proposed System Expansion/ New or Modified Routes
6. Asset Condition Risk Score Level of "High" or "Serious"
7. Ineffective Risk Controls Identified

If any of these apply, proceed to STEP 1

STEP 1 - *Determine Severity of the Consequence(s)* — *A. Choose the most credible consequence to determine the severity level (I, II, III, IV, V)* *B. Choose the most appropriate category (Safety, Environment, etc.)*

	Category	Catastrophic (I)	Critical (II)	Major (III)	Minor (IV)	Negligible (V)
Safety Categories - Level 2 Trained	Safety Event and/or Injury to Employee or Customer	Could result in death, permanent total disability	Could result in permanent total disability, serious injuries or occupational illnesses that may result in hospitalization of 2 or more persons	Could result in injury or occupational illness resulting in one or more lost workdays	Could result in injury or illness not resulting in a lost work day	Injury Not Likely
	Environment	Irreversible severe environmental damage that violates law or regulation	Reversible environmental damage that violates law or regulation	Mitigatable environmental damage without violation of law or regulation where restoration activities can be accomplished	Minimal environmental damage not violating law or regulation	Negligible environmental damage not violating MDOT MTA SOPs
	Financial	Loss exceeds $1 million	Loss exceeds $200,000, but less than $ 1 million	Loss exceeds $25,000, but less than $200,000	Loss exceeds $2,000, but less than $25,000	Loss exceeds $1.00, but less than $2,000
	Emergency/ Resiliency	Catastrophic failure of a major element or segment of the public transportation system from natural disaster (flood, hurricane, etc.) or infrastructure failure/damage / Inability to continue or restore basic service for 15 days or longer to fulfill continuity of operations as TBU / Excessive or extended weather	Critical failure of a major element (safety critical) or segment of the public transportation system from natural disaster (flood, hurricane, etc.) or infrastructure failure/damage / other disasters (fires, damage to facilities, roads, and utilities) affecting multiple modes / Inability to continue or restore basic service within 15 days to fulfill continuity of operations as TBU	Hazmat/chemical release, evacuations, quarantine of buildings/surrounding areas (e.g. health, protest, or other demonstration) or severe weather conditions affecting one or more modes for a few days / Inability to restore full service or continue basic service within 5 days to fulfill continuity of operations as TBU	Inclement weather affecting one or more mode, damaged infrastructure (e.g. Road blockage/closed bridge/tunnel) affecting peak revenue service / Inability to restore full service within 48 hours to fulfill continuity of operations as TBU	Police activity or other disturbance temporarily disrupting revenue service for any mode / Inability to provide full service but able to continue basic services to fulfill continuity of operations as TBU
	Operations/ Service Delivery	Total loss of equipment or system interruption, requiring months to repair / catastrophic change to normal operations (by Mode) / catastrophic change to OTP Goal (by Mode)	Significant loss of equipment or system interruption, requiring weeks to repair / critical change to normal operations (by Mode) / critical change to OTP Goal (by Mode)	Some loss of equipment or system interruption, requiring seven or less days to repair / major change to normal operations (by Mode) / major change to OTP	Some loss of equipment, no system interruption, less than 24 hours to repair / minor change to normal operations (by Mode) / minor change to OTP Goal (by Mode)	Minor damage to equipment no system interruption, no immediate repair necessary / Insignificant change to normal operations (by Mode) / Insignificant change to OTP Goal (by Mode)
Other Categories - Subject Matter Expert	Legal/ Regulatory (FTA, FRA, OSHA, COMAR)*	Will result in significant litigation activities and fines - may involve class actions / will result in a severe/catastrophic breach (noncompliance) with regulations / legislation	May result in litigation requiring significant dedicated time by legal counsel to address liability and consequences / will result in a critical breach (noncompliance) with regulation / legislation	Would result in a serious issue requiring investigation and advice into legal liability / may require external counsel advice / will result in major non-compliance with regulation / legislation	Would result in more complex legal issues but these are able to be managed by in-house legal staff / may result in minor non-compliance with regulation / legislation	Issues arise but are able to be managed by routine procedures / would have negligible affect with compliance with regulation / legislation
	Security/ Cyber	Terrorism (domestic/foreign) / Catastrophic infiltration undermining the security of operations and assets / All IT service operations will be unavailable for days / breech of firewalls by virus or human actions / loss of critical data	Serious disruptions or deliberate attacks on the agency affecting individuals, access to systems, operations, or assets / Partial operations severely disrupted for days / firewall interference by virus or human action / loss of data	Willful tampering of a safety devise or deliberate release of safety or security sensitive information, destruction of or unauthorized modification property / Significant IT service (websites, email, etc.) operations unavailable for 3 hours or more / no loss of data	Local activity temporarily compromising / affecting the operations or assets / minimal destruction of property / Minimal operation disruption / server unavailable for 3 hours or less / no loss of data	Individual occurrence of minor crime/misdemeanor (vandalism, trespassing) not affecting operations, assets, or individuals / Minor IT issue easily handled by normal day to day processes
	Customer/ Brand/ Reputation	Ongoing negative media coverage, catastrophic reputational damage, government intervention (weeks – months), Extensive customer dissatisfaction	Prolonged negative media/internet coverage, critical reputational damage, sustained government involvement (days - weeks), Serious customer dissatisfaction	Adverse media/internet coverage, moderate reputational damage, government involvement, major customer dissatisfaction	Local media/internet coverage, Minor reputational damage, minor customer dissatisfaction	No adverse media/internet coverage, negligible reputational damage, negligible customer dissatisfaction
	Workforce/ Misconduct	Agency resource not available and a consultant / special service required at a prohibitive increase in time or money / catastrophic loss of staff that cannot be replaced / Unauthorized disclosure or release of documentation or engaging in fraud/bribery	Agency resource not available and a consultant / special service required at a considerable increase in time or money / critical loss of staff that cannot be replaced / Inciting severe disruptions effecting operations, systems, or individuals	Overtime is needed for more than 3 months or qualified staff not available requiring a consultant / special service at an increase in cost / sudden major personnel shortage / Willful modification of information causing limited disruptions affecting operations, systems, or individuals	Overtime needed for 3 months or a consultant / special service is required / temporary and minimal personnel shortage / Deviating from code of conduct or procedures that cause a distrust in the culture or promotes unethical behavior	Overtime needed for less than 3 months / Limited engagement in the delay of operations

STEP 2 *Perform Probability of the Consequence(s)*

STEP 3 - *Determine Risk Level / Value at the intersection of the selected Severity and Probability Levels*

Probability Level	Catastrophic (I)	Critical (II)	Major (III)	Minor (IV)	Negligible (V)
Likely to occur often in the life of an item. Consequence may occur 26 or more events a year. — Frequent (A)	1 High	3 High	5 Serious	8 Medium	10 Medium
Will occur several times in the life an item. Consequence may occur 13 to 25 times a year. — Probable (B)	2 High	6 Serious	12 Medium	14 Medium	17 Low
Likely to occur sometime in the life of an item. Consequence may occur 6 to 12 times a year, or less than 24 events per 5 years. — Occasional (C)	[illegible]	11 Medium	15 Medium	19 Low	21 Low
Unlikely, but possible to occur in the life of an item. Consequence may occur 1 to 5 times a year, or less than 10 times per 10 years. — Remote (D)	7 Medium	13 Medium	18 Low	22 Negligible	24 Negligible
So unlikely, it can be assumed occurrence may not be experienced. Consequence may occur 1 time in 25 years. — Improbable (E)	9 Medium	16 Low	20 Low	23 Negligible	25 Negligible
Incapable of occurrence within the life of an item. This probability is used when the initial risk has been mitigated and the residual risk is Eliminated. — Eliminated (F)	Eliminated				

Figure 20 - MDOT MTA (RAP) side A - Example

The following narrative is the determined outcome using the RAP example from Figure 20 that depicts a red box denoting both Assessing Severity of the Consequence and Assessing Probability of the Consequence and a red circle denoting their intersection.

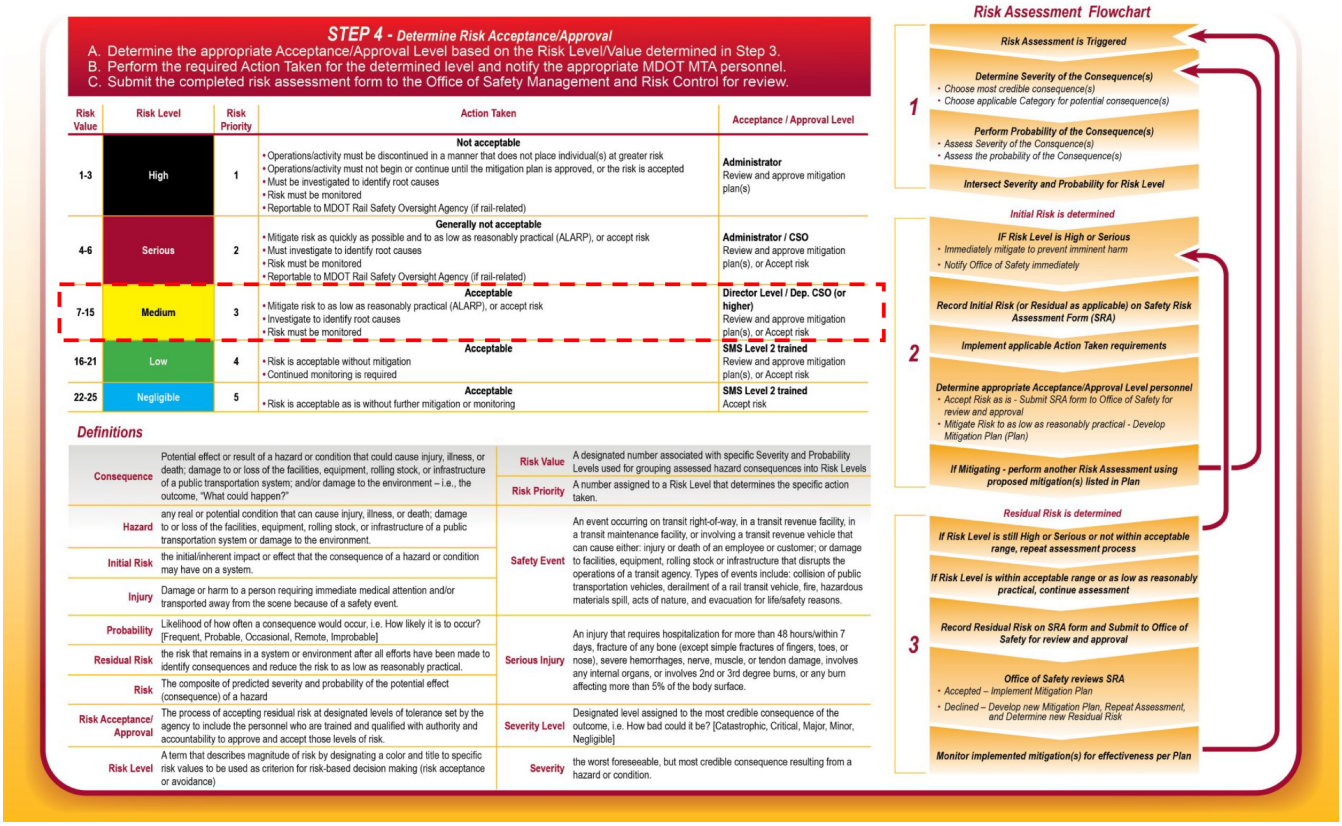
Using the RAP example, because the determined and most credible consequence chosen is:

Critical failure of a major element (safety critical) or segment of the public transportation system from natural disaster (flood, hurricane, etc.) or infrastructure failure/ damage / other disasters (fires, damage to facilities, roads, and utilities) affecting multiple modes / Inability to continue or restore basic service within 15 days to fulfill continuity of operations as TBU and the most appropriate category chosen is Emergency/ Resiliency, the determined Severity Level is Critical (II).

Using the same RAP example, the most appropriate probability is:

Consequence may occur 6 to 12 times a year, or less than 24 events per 5 years, the determined Probability Level is Occasional (C).

The determined Risk Level and Risk Value is **Medium** (11) respectively at the intersection of the selected Severity and Probability Levels, chosen during RAP Steps 1 and 2.



STEP 4 - Determine Risk Acceptance/Approval

A. Determine the appropriate Acceptance/Approval Level based on the Risk Level/Value determined in Step 3.
B. Perform the required Action Taken for the determined level and notify the appropriate MDOT MTA personnel.
C. Submit the completed risk assessment form to the Office of Safety Management and Risk Control for review.

Risk Value	Risk Level	Risk Priority	Action Taken	Acceptance / Approval Level
1-3	High	1	**Not acceptable** • Operations/activity must be discontinued in a manner that does not place individual(s) at greater risk • Operations/activity must not begin or continue until the mitigation plan is approved, or the risk is accepted • Must be investigated to identify root causes • Risk must be monitored • Reportable to MDOT Rail Safety Oversight Agency (if rail-related)	**Administrator** Review and approve mitigation plan(s)
4-6	Serious	2	**Generally not acceptable** • Mitigate risk as quickly as possible and to as low as reasonably practical (ALARP), or accept risk • Must investigate to identify root causes • Risk must be monitored • Reportable to MDOT Rail Safety Oversight Agency (if rail-related)	**Administrator / CSO** Review and approve mitigation plan(s), or Accept risk
7-15	Medium	3	**Acceptable** • Mitigate risk to as low as reasonably practical (ALARP), or accept risk • Investigate to identify root causes • Risk must be monitored	**Director Level / Dep. CSO (or higher)** Review and approve mitigation plan(s), or Accept risk
16-21	Low	4	**Acceptable** • Risk is acceptable without mitigation • Continued monitoring is required	**SMS Level 2 trained** Review and approve mitigation plan(s), or Accept risk
22-25	Negligible	5	**Acceptable** • Risk is acceptable as is without further mitigation or monitoring	**SMS Level 2 trained** Accept risk

Definitions

Consequence	Potential effect or result of a hazard or condition that could cause injury, illness, or death; damage to or loss of the facilities, equipment, rolling stock, or infrastructure of a public transportation system; and/or damage to the environment – i.e., the outcome, "What could happen?"	Risk Value	A designated number associated with specific Severity and Probability Levels used for grouping assessed hazard consequences into Risk Levels
		Risk Priority	A number assigned to a Risk Level that determines the specific action taken.
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.	Safety Event	An event occurring on transit right-of-way, in a transit revenue facility, in a transit maintenance facility, or involving a transit revenue vehicle that can cause either: injury or death of an employee or customer; or damage to facilities, equipment, rolling stock or infrastructure that disrupts the operations of a transit agency. Types of events include: collision of public transportation vehicles, derailment of a rail transit vehicle, fire, hazardous materials spill, acts of nature, and evacuation for life/safety reasons.
Initial Risk	the initial/inherent impact or effect that the consequence of a hazard or condition may have on a system.		
Injury	Damage or harm to a person requiring immediate medical attention and/or transported away from the scene because of a safety event.		
Probability	Likelihood of how often a consequence would occur, i.e. How likely it is to occur? [Frequent, Probable, Occasional, Remote, Improbable]	Serious Injury	An injury that requires hospitalization for more than 48 hours/within 7 days, fracture of any bone (except simple fractures of fingers, toes, or nose), severe hemorrhages, nerve, muscle, or tendon damage, involves any internal organs, or involves 2nd or 3rd degree burns, or any burn affecting more than 5% of the body surface.
Residual Risk	the risk that remains in a system or environment after all efforts have been made to identify consequences and reduce the risk to as low as reasonably practical.		
Risk	The composite of predicted severity and probability of the potential effect (consequence) of a hazard		
Risk Acceptance/ Approval	The process of accepting residual risk at designated levels of tolerance set by the agency to include the personnel who are trained and qualified with authority and accountability to approve and accept those levels of risk.	Severity Level	Designated level assigned to the most credible consequence of the outcome, i.e. How bad could it be? [Catastrophic, Critical, Major, Minor, Negligible]
Risk Level	A term that describes magnitude of risk by designating a color and title to specific risk values to be used as criterion for risk-based decision making (risk acceptance or avoidance)	Severity	the worst foreseeable, but most credible consequence resulting from a hazard or condition.

Risk Assessment Flowchart

1
- Risk Assessment is Triggered
- Determine Severity of the Consequence(s)
  - Choose most credible consequence(s)
  - Choose applicable Category for potential consequence(s)
- Perform Probability of the Consequence(s)
  - Assess Severity of the Consequence(s)
  - Assess the probability of the Consequence(s)
- Intersect Severity and Probability for Risk Level

Initial Risk is determined

2
- IF Risk Level is High or Serious
  - Immediately mitigate to prevent imminent harm
  - Notify Office of Safety immediately
- Record Initial Risk (or Residual as applicable) on Safety Risk Assessment Form (SRA)
- Implement applicable Action Taken requirements
- Determine appropriate Acceptance/Approval Level personnel
  - Accept Risk as is - Submit SRA form to Office of Safety for review and approval
  - Mitigate Risk to as low as reasonably practical - Develop Mitigation Plan (Plan)
- If Mitigating - perform another Risk Assessment using proposed mitigation(s) listed in Plan

Residual Risk is determined

3
- If Risk Level is still High or Serious or not within acceptable range, repeat assessment process
- If Risk Level is within acceptable range or as low as reasonably practical, continue assessment
- Record Residual Risk on SRA form and Submit to Office of Safety for review and approval
- Office of Safety reviews SRA
  - Accepted – Implement Mitigation Plan
  - Declined – Develop new Mitigation Plan, Repeat Assessment, and Determine new Residual Risk
- Monitor implemented mitigation(s) for effectiveness per Plan

Figure 21 - MDOT MTA (RAP) side B - Example

Based on the Risk Value and Risk Level determined in RAP Step 3, determining the appropriate Acceptance/Approval Level is a process of matching up the Risk Value number with the Risk Level title and color.

The *example* Risk Level (depicted with a red circle) for determining Risk Acceptance/Approval is **Medium/Yellow** and the commensurate required Action Taken is boxed by a red dotted line. The identified risk attributes and associated Action Taken will determine the mitigation plan and the required personnel to assist with and approve the plan (see Figure 21).

Risk Value	Risk Level	Risk Priority	*Risk Tolerance* Action Taken	Acceptance/Approval Level
11	Medium / Yellow	3	*Acceptable* • Mitigate risk to as low as reasonably practical (ALARP), or accept risk • Investigate to identify root causes • Risk must be monitored	Director Level / Dep. CSO (or higher) Review and approve mitigation plan(s), or Accept risk

Figure 22 - Identified Risk Attributes

3.3 Safety Risk Mitigation

All MDOT MTA employees, contractors, and vendors are accountable for safety performance and encouraged to take immediate steps to mitigate hazards that pose imminent or severe consequences. Disciplinary or retaliatory action shall not be taken against any employee who acts to prevent an injury, accident, incident, or hazard from occurring as stated in the MDOT MTA Safety Management Policy Statement (SMPS).

Safety risk mitigation is the corrective action taken in response to hazard identification and risk assessment processes. The department in which the hazard exists works with their trained and qualified staff, the mitigation team/committee, or with the Office of Safety to develop and implement an approved mitigation or CAP. The corrective actions are then monitored and tracked by both the Office of Safety and the applicable department until the hazard is confirmed as effectively controlled or eliminated, with adequate resources, or the risk is reduced to as low as reasonably practical.

Effectively controlled, eliminated, or reduced to as low as reasonably practical hazards experienced either an immediate mitigation and/or a long-term mitigation. An immediate mitigation example would be the hazards identified by an employee and communicated to his/her supervisor; it is encouraged that immediate mitigation be implemented by the employee and/or the supervisor to prevent imminent harm and then report it immediately. Although the hazard has been immediately mitigated and tracked in an HTL, a Safety Risk Assessment is still needed to determine the Risk Level and Risk Value and the need for a long-term mitigation through an approved mitigation or CAP. Long-term mitigations will require continual monitoring through the Mitigation Monitoring Assurance Program, SMS Safety assurance processes outlined in Section 4, to determine the effectiveness of the implemented mitigation or if a new or an additional control measure is required.

In all cases, MDOT MTA strives to first eliminate hazards (if possible), and then reduce the risks if elimination is not possible. If the risk cannot be eliminated or reduced, or if it is impossible or impractical, designated MDOT MTA representatives trained and certified, such as the MDOT MTA Administrator with required authority, may choose to accept the risk. In these cases, care is taken to ensure compliance with all applicable rules, procedures, policies, and regulations to control the risk as much as possible. SMS Safety Assurance processes will continuously monitor these “accepted risks” at a designated frequency to ensure the residual risk is effectively controlled. The designated MDOT MTA representatives’ decision is formally documented on the Safety Risk Assessment Form and all affected parties and applicable regulatory agencies are notified.

The primary methods of resolving a hazard can be categorized as either engineering or administrative controls. Engineering controls are changes that are made to the system to eliminate hazards or mitigate their risks. An example of an engineering control may be building a separate storage facility for hazardous chemicals or installing a protective barrier around rotating machinery. Administrative controls are changes made to the organization itself. An example of an administrative control may be posting signs and/or changing procedures to limit employee exposure to the hazard.

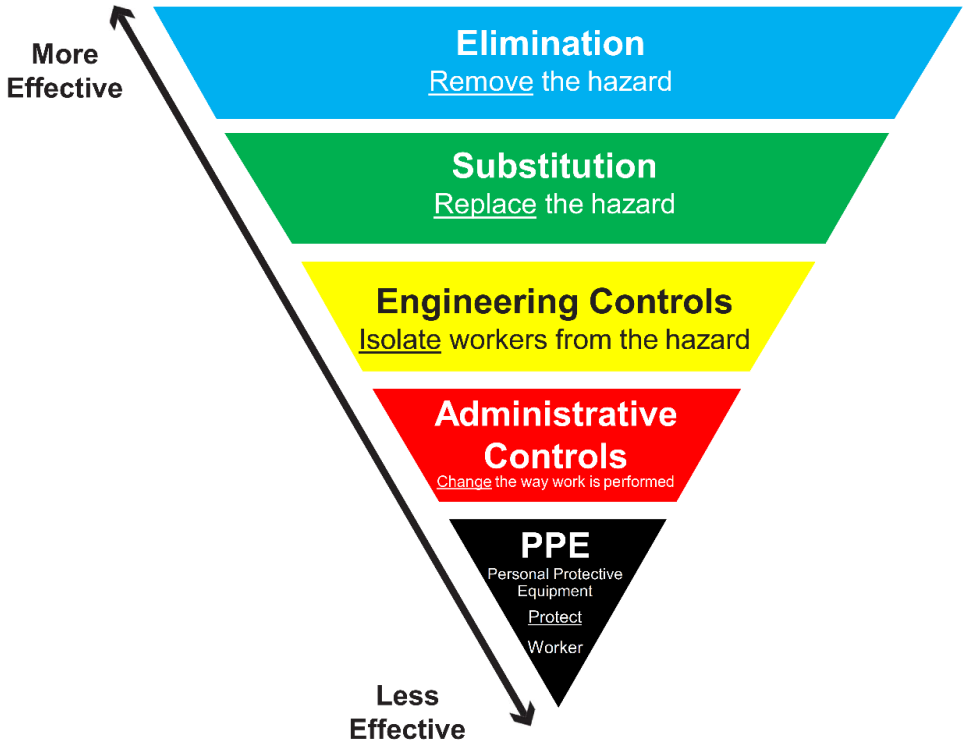


Figure 23 - Hierarchy of Controls Methodology Pyramid

3.3.1 Hierarchy of Controls

When possible, the Hierarchy of Controls is used to eliminate or control hazards and their associated risks. The Controls move from the most effective method to mitigate or control a hazard by physically removing the hazard to the least effective method, Personal Protective Equipment (PPE), Figure 23. It's important to note that any combination thereof or all of the controls may be used depending on the attributes of the hazard.

3.3.1.1 Elimination

Elimination is factually the removing of a hazard; it may not be feasible for all hazards but should always be considered first. This type of control is on par with the National Institute for Occupational Safety and Health (NIOSH) Prevention through Design (PtD) Program. The best way to prevent loss is to design the hazard out. The ability to review designs or projects early in the planning phases (30% design is optimal) could eliminate many hazards and associated risks later in the lifecycle of the system. Addressing elimination at the start allows designers and planners to make large changes easily without needing to retrofit processes. The investment often can be justified by increased worker productivity, efficiency, and safety. It should be implemented before all other methods and is considered the most effective of the five controls. As with any mass transit agency, some risk is inherent to operations and often cannot be completely avoided; however, there are many other methods for reducing hazards and risks.

3.3.1.2 Substitution

The next-best control to reduce hazards and

risk is through substitution, which is most effective when implemented at the early stages of a project like elimination. Substitution is the replacement of material or a process with another that is considered less hazardous. Of course, the substitution must remove or at least mitigate the hazard to provide any real safety benefit. A simple example would be the substitution of lead-based paint with water-based paint. Lead paints can cause nervous system and kidney damage and water-based paints can help reduce such significant health hazards, but paint, even water-based, still presents its own set of hazards and risks.

3.3.1.3 Engineering Controls

Again, not all hazards can be eliminated or substituted, especially when projects are further along in planning or development phases or departments are disjointed and work in silos. The third and next best control option is to implement engineering controls. An engineering control isolates people from the hazard.

For example, installing a machine guard that shield workers, reducing exposure, from airborne emissions or particulates reduces risk considerably. Although this is not the optimal choice, it is a highly effective control because it places a physical barrier between workers and the hazard and can be implemented independently of any worker interaction.

The initial costs of engineering controls can be higher than other methods, but long-term mitigations frequently lower operating costs (workers compensation and lost workdays). These types of controls do not normally interfere with worker productivity or personal comfort as does PPE.

3.3.1.4 Administrative Controls

Administrative controls are second to last for being the least effective and should not be the first control option to implement because it is easier or inexpensive. This method effectively changes the way people work or interact with equipment or facilities and only limits the exposure to a hazard rather than blocking, substituting, or eliminating it. This method is considered less effective because the hazard is still present.

Administrative controls must include employee training, implementation of signs and warning labels, as well as potential procedural changes. This control is prone to human error and cannot be relied on to significantly reduce exposure to a hazard and associated risks. SMS Safety Assurance's continuous monitoring is needed for mitigations that use administrative and/or engineering controls.

A common rail example of an administrative control is performing track work at night or off-peak hours when train headways are longer. By changing the time or practices of when work is conducted, it reduces some exposure to hazards but not eliminating the risk of injury or operating disruptions.

3.3.1.5 Personal Protective Equipment

The final and least effective control is the implementation of Personal Protective Equipment (PPE). PPE is usually the easiest and most common hazard mitigation; however, it does not eliminate hazards and may expose personnel if equipment fails or is used improperly.

As with administrative controls, PPE can be easily and relatively inexpensive to implement, but it is usually more difficult and expensive to maintain. The continuous safety assurance efforts toward inspections, training, and compliance as well as the significant effort on the part of the worker to use or have access to PPE has proven to be less effective than all the other control measures.

Of course, gloves, hard hats, safety glasses, high-visibility clothing, and other protective garments and equipment provide a real benefit toward protecting personnel from hazardous exposures and its residual risks; it is not the most desired mechanism in the hierarchy of controls.

3.3.2 Determining Whether Hazards Are Resolved through Mitigations and Controls

If the resolution of a hazard is dependent upon action by a third party, such as a city, county, or contract services, a management representative from the MDOT MTA will submit a request for action to the appropriate MDOT MTA control point or liaison with the third party. If the hazard is not being resolved in a timely manner, the management representative elevates the matter to a higher level of authority within their department and notifies the Office of Safety of the risks.

If the head of the department determines that the hazard cannot be resolved or is not being resolved in a timely manner and the risk is still considered Not Acceptable, the head of the department further elevates the issue within the MDOT MTA's organizational hazard reporting structure; for example, the Safety Hotline or Safety Committees.

The Chief Safety Officer and/or Office of Safety should be notified of all instances in which a hazard is not being resolved in a timely manner. Regardless of the type of control used to eliminate the hazard or reduce its risk, MDOT MTA reevaluates the control method after its implementation to determine and verify its effectiveness. It is understood that there are inherent challenges and obstacles to timely mitigations such as, resources, funding, and staffing levels. Regardless, the safety of personnel and passengers comes first. In all cases, if the hazard has been eliminated or controlled, or if the Office of Safety or other trained and qualified management representative deems that the risk is Acceptable, he/she shall document this decision on the Safety Risk Assessment Form and ensure all affected parties, internal and external customers, and applicable regulatory agencies are notified.

3.4 SRM Coordination with SSOA

MDOT MTA coordinates and works with the SSOA in their oversight of rail transit system safety. MDOT MTA reports safety incidents, occurrences, and hazardous conditions that represent High or Serious risk levels to the SSOA. Risk management activities are conducted in coordination with the SSOA in accordance with 49 CFR Part 674 and the MDOT RSOPS.

3.4.1 Prioritization of Risks

The MDOT MTA RAP provides a methodology for assessing and prioritizing risk by meeting the criteria thresholds via the calculations of (Severity of Consequence, Probability of Consequence, and Risk Level/Value matrices).

The Office of Safety investigates all categorical Risk Priority 1 and Priority 2 levels and hazardous conditions to identify root causes and contributing factors and works with all necessary departments and personnel to develop appropriate CAPs and lessons learned. Risk Priority Levels (3, 4, and 5) as categorized by the RAP, will still be investigated for root causes and trending analyses, but not at the same urgency or regulatory requirements stipulated in the RSOPS for Risk Priority 1 and Priority 2 levels, unless otherwise necessary.

3.4.2 Minimum Criteria for Identifying, Tracking, Notifying SSOA, Investigating, and Reporting Priority 1 and 2 Risks

Rail-related High and Serious risks (Priority 1 and Priority 2 respectively) are reported to the SSOA. The RSOPS specifies that MDOT MTA must notify the SSOA by telephone or e-mail of all suspected or assessed high and serious Priority 1 and 2 hazardous conditions within 24 hours of determination of the risk level. Hazardous conditions that have already materialized into a safety event are not simply hazards but are occurrences, incidents, or accidents, or serious occurrences (notification and reporting criteria are referenced in RSOPS Section 5).

RSOPS required information is entered, maintained, tracked, and archived within MDOT MTA's CAP Monitoring Log. All **rail** related CAPs, not just those developed for High and Serious rail system risks, are submitted to the SSOA for review, mitigation agreement, and approval.

Ongoing risk reporting and CAP status are provided during modal Safety Committees and Risk Review Committee meetings by the CSO or designated Modal Safety Officer and to the SSOA at quarterly meetings.

All instances of the hazards listed within the RSOPS Identification, Tracking, Notification, and Reporting Requirements for Specified Hazards table should be input into the modal HTL, stored in an electronic document management system, with appropriate Risk Priority rankings to ensure tracking of hazards, and that the SSOA is notified of all hazardous conditions affecting rail safety.

3.4.3 SSOA Risk-Based Inspections

The Bipartisan Infrastructure Law (BIL) of 2021 amended FTA's Public Safety Transportation Program to require SSOAs to develop and implement risk-based inspections (RBI) as part of SSOA oversight. FTA issued Special Directive No. 22-33 under 49 U.S.C. §5329(k) and 49 CFR Part 670 to the Maryland Department of Transportation requiring the development and implementation of an RBI program by October 21, 2024.

A risk-based inspection program uses qualitative and quantitative data analysis to inform ongoing inspection activities. RBI programs are designed to prioritize inspections to address safety concerns and hazards associated with the highest levels of safety risk.

MDOT SSOA's RBI program standards are listed in its RSOPS as of 2024. MTA will coordinate with SSOA on policies and procedures for inspection access and data collection per

MDOT RSOPS RBI program standards and include these, in full or by way of reference, into the MDOT MTA PTASP as required by the Public Transportation Agency Safety Plan regulation 49 CFR Part 673.

At a minimum, to support ongoing monitoring, corrective or remedial action of defects, and verification of CAP and safety risk mitigations, MDOT MTA will share data at least on a quarterly basis with the SSOA regarding key performance indicators and other safety critical information and will provide read-only access to the following specific safety critical data:

- Injuries (customers, employees, and the public)
- Safety events
- Everbridge notifications
- Probable causes and contributing factors
- Status of existing Corrective Action Plans (CAPs)
- Maintenance defects
- On-time performance of maintenance
- Rule compliance results provided by MTA
- Hazard logs
- Crime statistics
- Reports/complaints from patrons or employees
- Changes to management, operations, or maintenance

In accordance with the federally mandated RBI program, MTA is required to provide the SSOA access to data, when requested, from other source types as listed in Section 7.3.1 of the MDOT RSOPS.

SSOA has the authority to conduct both announced and unannounced inspections of MTA's property, both with and without advanced notice per COMAR Section 11.24.02.03. During any inspection, SSOA will follow all MTA rules and regulations for PPE and other forms of necessary precautions. Additionally, SSOA will confirm receipt of needed certifications and proper PPE with the inspection scheduler.

As determined by 49 CFR Appendix A to Part 1582 – Determinations for Public Transportation and Passenger Railroad, MTA is mandated to comply with the Security Training for Surface Transportation Final Rule requirements of 49 CFR Part 1582. Appendix B to Part 1582 lists security-sensitive job functions that are required to complete an approved training program compliant with this standard. SSOA Staff, including support contractors, wanting open and acceptable access to MTA infrastructure, equipment, records, personnel, and data without an MTA staff escort, excepting in safety-critical locations, must complete MTA's Transportation Security Administration Security Program training within sixty (60) days of receiving an MTA-contractor badge, or similar, and must complete refresher training every three (3) years.

Areas where an escort is always required by an MTA staff member for safety reasons include:

- Dedicated guideways/right of way requiring escort under Roadway Worker Protection
- Traction power substations
- Signal houses
- Electrical and mechanical rooms
- Maintenance shop areas outside of a designated "safe walk" zone or areas for which access requires an additional level of personal protective equipment such as inspection pits, paint rooms, etc.
- Locations containing confidential employee files for which access to the area would also grant access to the files.

SSOA staff and contractors may conduct inspections of publicly accessible areas and transit operations without notice to MTA until the inspection has concluded. Unless accompanied by MTA personnel, these may be confined to publicly accessible areas and will not interfere with transit system operations nor will SSOA foul MTA tracks at any time. The

SSOA shall make reasonable reimbursement for any actual damage resulting to any adjacent lands, waters, and premises that may occur during inspection activities and shall inform the MTA Chief Safety Officer, in writing, of any such damages at the conclusion of the inspection or within 30 days.

MTA will keep its document management system updated continuously, but at least monthly by the tenth day of each month, with the most recent data from all relevant MTA departments. MTA shall maintain a Data Collection Directory based off MDOT RSOPS Section 7.3.1 and include the following:

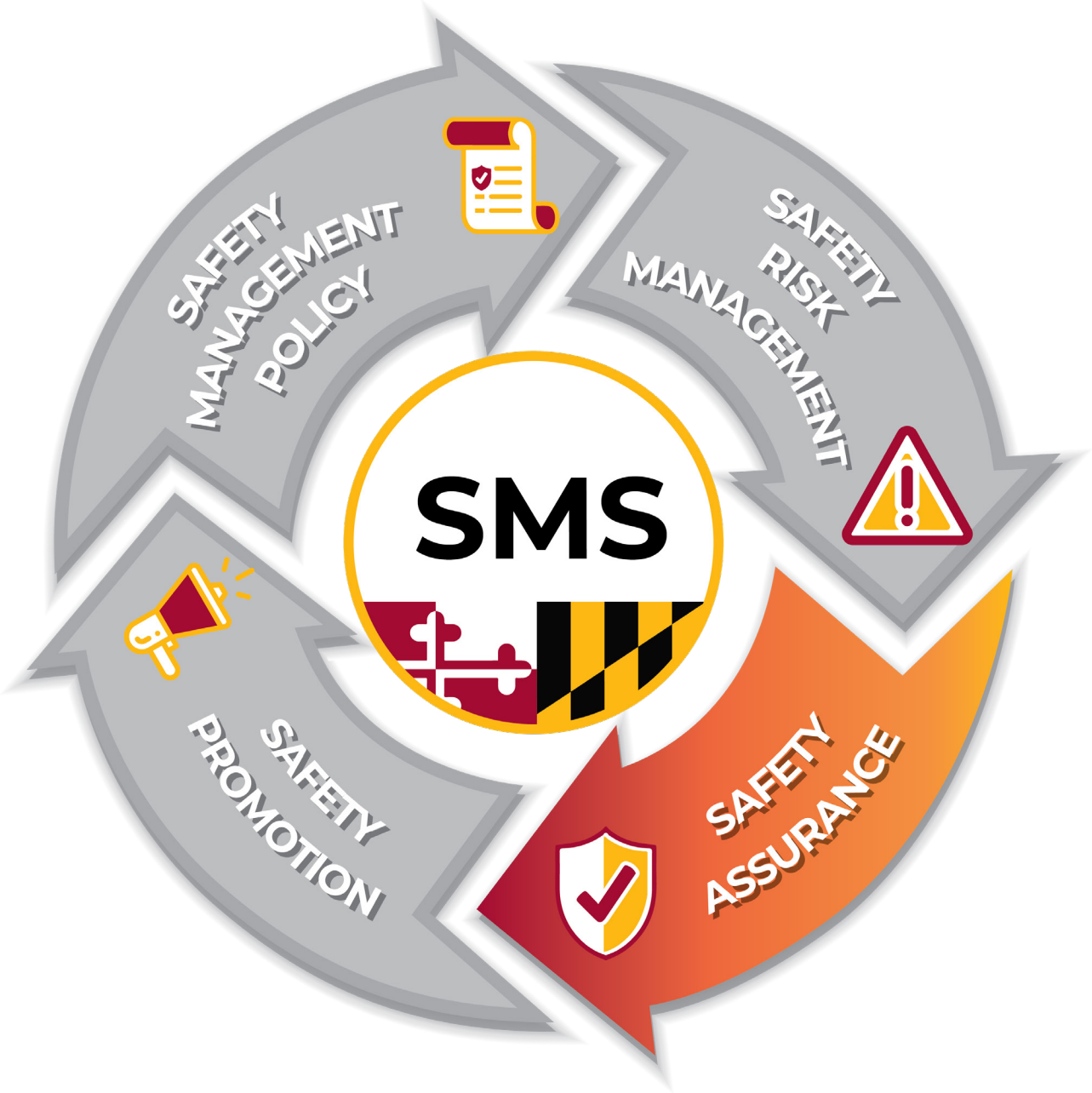
- Responsible Departments
- Responsible Personnel for Data Upload Management
- Access Instructions
- File Types
- Related Programs

MTA staff will complete a review of the Data Collection Directory at least once every 12-month period and provide updates as needed by SSOA. Any records mutually agreed to be sensitive security information (SSI) will be transmitted by MTA with a passcode and reviewed by SSOA members as needed. SSI records will be removed based on mutually-agreed timelines between MTA and SSOA.

For the purposes of inspection scheduling, SSOA will designate one SSOA member as the inspection scheduler for a particular inspection who will email the MTA ACSO of Rail or designee prior to the beginning of an announced inspection. Unannounced inspections by SSOA will follow escort requirements and MTA rules, and following completion of an unannounced RBI, the inspection scheduler will notify the MTA ACSO of Rail or designee within 24 hours by e-mail containing location and purpose details for awareness. For the purposes of safety and security, while unescorted or in security- and/or safety-critical areas, SSOA staff and contractors must present identification and state the nature of their inspection when challenged by an MTA staff member.

If an SSOA representative witnesses a serious hazard or a major operations rule violation that could affect the immediate safety or security of the MTA system, the SSOA shall immediately contact the Light Rail or Metro OCC and a designated Office of Safety representative. The SSOA should provide the Controller with a train number, location, and complete description of the observation; however, it is not the role of SSOA to interdict an employee rule violation.

SECTION 4. Safety Assurance



MDOT MTA's Safety Assurance processes function to ensure the implementation and effectiveness of safety risk mitigations and to ensure that the agency meets or exceeds its safety objective through the collection, analysis, and assessment of information. These processes work interdependently with Safety Risk Management processes to measure, monitor, and evaluate MDOT MTA's SMS.

4.1 Monitoring and Measuring Safety Performance

Safety performance monitoring involves acquiring and analyzing data related to the MDOT MTA's SMS. Through this effort, the MDOT MTA can meet internal and external reporting requirements and evaluate the degree to which safety efforts are effective. The section outlines the process by which the MDOT MTA collects and analyzes safety data.

FTA's National Safety Plan describes the required safety performance areas public transit agencies must measure, outlined in Figure 24, which are fatalities, injuries, safety events, and system reliability. These performance measures focus on existing data delivered to the NTD.

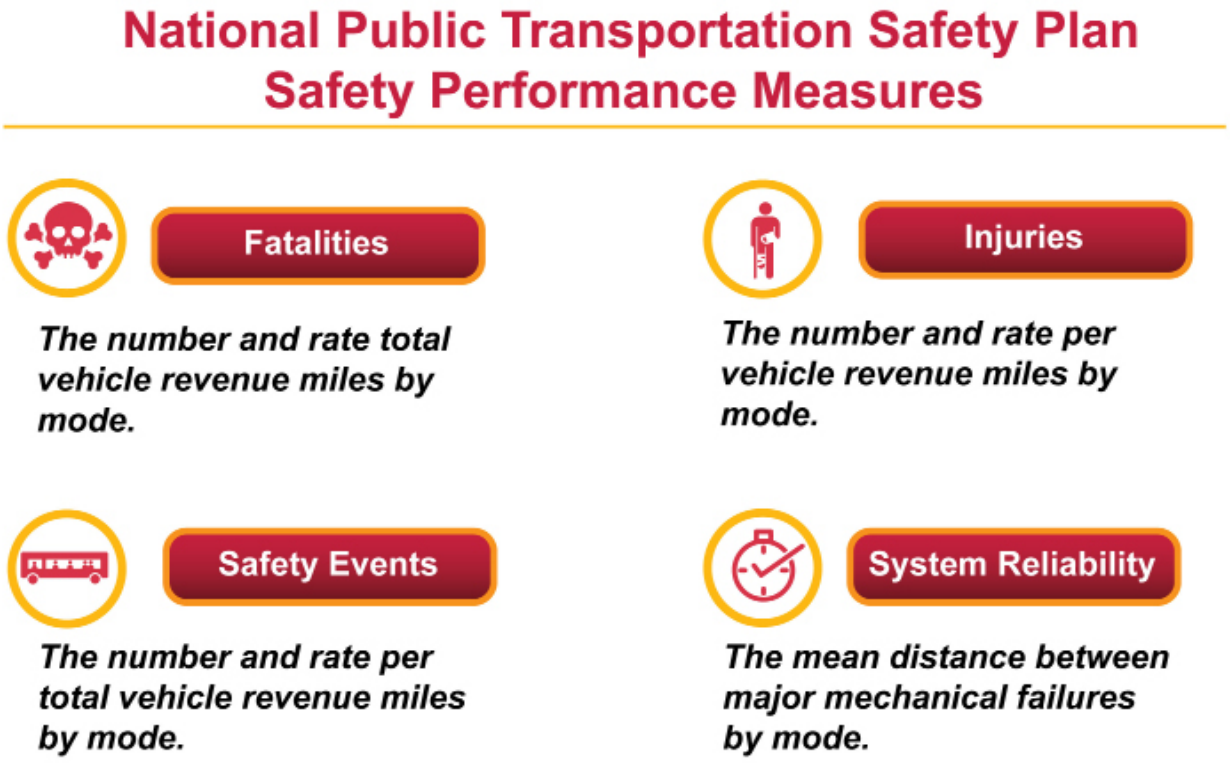


Figure 24 - FTA-Required Safety Performance Measures

Transit agencies use these four safety performance measures to select improvement targets in each mode of transit in order to improve and monitor safety performance. The BIL added a new requirement that transit agencies track transit worker assaults and develop a safety performance target for this measure (see Section 1.5). It is anticipated that future revisions of FTA's National Public Transportation Safety Plan will formally add this safety performance measure. In addition, FTA encourages transit agencies to strategically select additional measures and associated targets.

4.1.1 MDOT MTA Safety Data Reporting and Tracking

MDOT MTA monitors and reports safety data through a variety of avenues in order to effectively assure the agency and its personnel are acquiring, analyzing, and reacting to data related to MDOT MTA's SMS. These programs include:

- **MDOT MTA Annihilator** - MDOT MTA's Annihilator Program is a performance analytics program designed to communicate system performance to senior leadership for decision-making purposes. MDOT MTA senior leadership use the insights gained through this program to create or alter performance improvement initiatives and projects. Quarterly Annihilator meetings allow for regular evaluation of these initiatives and projects.

  The Annihilator Program's scope spans across the organization and focuses on metrics, or Key Performance Indicators (KPI's) that represent individual, asset, and system performance. These KPI's are built around MDOT MTA's four cornerstones: Safety, Efficiency, Reliability, and World-Class Customer Service. The KPI's are also subject to improvement as the MDOT MTA is able to implement new measurement technologies which in turn provide new insights into the system performance.

- **State of the Rails for Metro Subway and Light Rail** - This is a monthly meeting between senior leaders, operations, and safety to review all-things related to track maintenance for the Light Rail and Metro Subway systems. Topics include:
  - Current speed restriction reports
  - Long range project planning schedules
  - Mitigation plans for black and red rail conditions and related safety concerns
  - Repair schedules
  - Short range project planning schedules
  - Special project review status, as necessary
  - Work order analysis
- **Risk Review Committee (RRC)** - Quarterly meeting of MDOT MTA Senior Leadership from all modes and departments for internal awareness of Priority 1 and 2 risks to the operation and their mitigations. Senior Leaders and SSOA are also made aware of other areas of risk and are asked for their assistance, when needed, to lower those risks to acceptable levels.

4.1.2 Other Key Safety Performance Indicators (SPIs)

In addition to the four required safety performance measures, MDOT MTA has developed a list of other key safety performance indicators (SPIs) that will assist the agency in monitoring safety improvement progress. These SPIs include both leading and lagging indicators. Leading indicators are proactive and preventative in nature; they can identify and highlight the extent to which certain activities are effective and reveal potential safety problems. Lagging indicators are "after-the-event" measurements, essential for tracking progress but reactive in nature. A

combination of these two types of indicators results in enhanced performance overall, as a lagging indicator without a leading one will give no indication of how a result will be achieved and provide no early warnings about tracking toward a goal. Conversely, a leading indicator alone does not provide confirmation that a desired result has been achieved. Together, a balance of safety performance measures across the MDOT MTA can ensure the right activities are in place to ensure the right outcomes. The list of key SPIs that MDOT MTA will initially monitor and report on in the PTASP is short, but these are indicators that the agency has found valuable and for which there are current capabilities to consistently track, measure, and report trends and progress toward improvement. After a period of time, it is possible that more SPIs will be added to assess a broader range of safety performance activities.

MDOT MTA's initial set of key SPIs includes:

1. Preventable Accidents per 100,000 Vehicle Revenue Miles
2. Non-Preventable Accidents per 100,000 Vehicle Revenue Miles
3. Employee Injuries per 200,000 Work Hours
4. Safety Related Violations per 100,000 Revenue Miles (Red Signals, Trailed Switches, Speeding, Red Light, Seatbelt)
5. Percentage of Periodic Maintenance (PM) Inspections Completed On-Time
6. Number of Safety Critical System Failures/Near-miss per 100,000 Revenue Miles

4.1.3 Safety Data Acquisition and Analysis Process

Safety accountability across the MDOT MTA depends upon timely, accurate information and data collection and analysis. By using performance measures, indicators, and targets, MDOT MTA management and the Office of Safety are empowered to make informed decisions regarding the allocation of resources necessary to optimize safety.

The MDOT MTA gathers and analyzes various forms of data related to the SMS, such as:

- Employee injury and illness data
- Fatalities
- Maintenance data
- Operator and supervisor reports
- System reliability
- Unusual occurrence log data
- Vehicle accident data

4.1.3.1 Employee Injury and Illness Reporting

Because Maryland is a State Plan State, matters of employee safety and health are not reported to the federal OSHA, but through the State Plan Office of Maryland Occupational Safety and Health (MOSH). Maryland safety and health regulations are aligned and in compliance with OSHA regulations. Both OSHA and MOSH require employers to file a detailed report within eight hours of fatal workplace accidents. Severe on-the-job injuries that do not result in death but require hospitalization must be reported within 24 hours. Such reports must be filed regardless of the size of the business.

The 24-hour severe injury reporting requirement includes all work-related hospitalizations, amputations, or loss of an eye. Additionally, contracted services such as those provided by the various commuter bus companies and MARC Commuter Rail contracted by MDOT MTA are required to inform the Office of Safety of all accidents or incidents involving their operations.

MDOT MTA managers may also track employee event trends through the OSHA 300 injury/illness log to determine high hazard work areas or job classifications, employee training and re-training needs, or to determine the levels of disciplinary action required following an event.

The Office of Safety works in conjunction with Chesapeake Employers' Insurance Workers' Compensation (CEIWC), who gathers data regarding workers' compensation claims and costs that is used for insurance purposes.

4.1.3.2 The MDOT MTA Accident Reporting System Database

The MDOT MTA Accident Reporting System (ARS) Database is the central database for accident and incident information from Bus, Light Rail, and Metro Subway. The Office of Safety maintains, monitors, and provides reports based on the information contained in the database. The ARS database also has built in alarms and triggers that will help identify trends from Operators facing repeat safety violations, or other programmed parameters.

The Office of Safety evaluates all reports entered in the ARS and determines the total number of accidents/incidents that occurred throughout the month. In addition to the ARS, the Office of Safety uses the Geographical Information System (GIS) mapping to identify "hotspots" involving accidents or incidents.

Figure 25 - The MDOT MTA Accident Reporting System (ARS)

4.1.3.3 National Transit Database Safety and Security Data Reporting

It is the responsibility of the Office of Safety to report accident and incident data monthly to the FTA NTD in accordance 49 U.S.C. §5335 and the most recent NTD Safety and Security Policy Manual. The Office of Performance Management (OPM) annually finalizes the accident and incident data submissions. The NTD safety and security data reports provide uniform and consistently defined information about safety and security incidents that are considered "reportable" by FTA, including types, total number, and frequency rates.

4.1.3.4 Maintenance and System Reliability Data Reporting

The OPM also gathers vehicle maintenance and equipment failure data to ensure that the agency is conducting preventive maintenance according to schedule as well as to evaluate equipment quality and warranty period performance. This data is also used to determine the System Reliability safety performance measure required by the National Public Transportation Safety Plan. System Reliability means the distance in miles between major mechanical failures. A reportable major mechanical failure is defined in the NTD Glossary as "a failure of some mechanical element of the revenue vehicle that prevents the vehicle from completing a scheduled revenue trip or from starting the next scheduled revenue trip because actual movement is limited or because of safety concerns." System Reliability is determined by dividing the number of annual vehicle revenue miles by the number of major mechanical failures, by mode.

Timeliness of maintenance reviews is particularly important, as equipment that fails within the time frame of the warranty period can be replaced at limited or no cost under the provisions of the warranty. Information pertaining to equipment that repeatedly fails or that requires high maintenance costs provides management with appropriate reasoning necessary for discontinuing its use and selecting different equipment or a different equipment manufacturer.

4.1.3.5 Other Safety-Related Data Acquisition

The safety data acquisition and analysis process also involve collecting technical data and information from other federal and state agencies and industry resources, such as:

- American National Standards Institute (ANSI)
- American Public Transportation Association (APTA)
- American Society for Testing and Materials (ASTM)
- Federal Motor Carrier Safety Administration (FMCSA)
- Federal Motor Vehicle Safety Standards (FMVSS)
- Federal Railroad Administration (FRA)
- Federal Transit Administration (FTA)
- Chesapeake Employers' Insurance Workers' Compensation (CEIWC)
- Maryland/Occupational Safety and Health Administration (M/OSHA)
- Safety Data Sheets (SDSs)
- National Fire Protection Association (NFPA)
- National Transit Database (NTD)
- Professional Society Guidelines
- State Building Codes

Once this information is gathered, the Office of Safety can link any identified hazards to the MDOT MTA's RAP and correct, track and report those identified hazardous work areas and job classifications. Areas and job classifications that have high event, injury, and illness rates will typically contain hazardous conditions that cause or contribute to the event, injuries, and

illnesses. The Office of Safety will investigate these identified hazards to find the root cause and/or causal factors. The Office of Safety will then provide recommendations to the appropriate departments and personnel to eliminate, mitigate, or control the hazards.

4.1.4 MDOT MTA CAP Monitoring Process

There are multiple entities that can audit MDOT MTA for successful safety management, including the SSOA, FTA and the FRA. The Office of Safety uses a "CAP Monitoring Log" to store, maintain, and track corrective action plans (CAPs) generated through multiple sources, including safety event investigations, hazards, and other internal and external reviews. The Office of Safety will communicate this information as needed in a timely manner to management.

As previously discussed in Section 4.1.1, MDOT MTA has strategic committees in place, working in conjunction with the Internal Safety Review Program (ISRP), that serve a key role in the process by which the agency evaluates whether or not mitigations are effectively working as intended, or if an alternative approach should be employed. Together, these organization entities, processes, and supporting materials create a comprehensive approach to monitor corrective actions and outcomes.

4.1.4.1 Objectives

This section addresses SSOA procedure to ensure that MDOT MTA develops and implements (CAPs) to address hazardous conditions identified through external and internal safety reviews, safety event investigations, the risk assessment process, deficiencies in MDOT MTA's implementation of its PTASP and/or SSEPP, or other recommendations specified by MDOT. All CAPs that MDOT MTA develops require SSOA review and approval before implementation, as well as closure by the SSOA following completion. MDOT MTA is committed to closing all CAPs in a timely manner, aligned with FTA and SSOA expectations, in order to ensure operational risks are managed efficiently and effectively.

4.1.4.2 Minimum Requirements

MDOT MTA must develop and the SSOA must formally approve CAPs for the following:

- Results from investigations in which identified causal factors or recommendations are determined by MTA, NTSB, FTA, or the SSOA as requiring corrective actions;
- SSOA Triennial Audit Findings of Non-Compliance, and any Observations which MTA voluntarily agrees to mitigate
- SSOA inspection formal findings, and any Observations which MTA voluntarily agrees to mitigate
- SSOA recommendations resulting from inspections of MTA operations or facilities;
- Findings from MTA Internal Safety Reviews;
- Hazards assessed through MTA's safety risk management process with an initial risk rating of High or Serious;
- Major capital projects (PHA, TVA) items;
- Complaints generated internally, externally, or by the general public that have a specific safety implication; and
- Findings resulting from any data/ trend analysis performed (of accidents, hazards, etc.).

Each CAP that requires SSOA approval shall identify:

- A unique CAP identification number in a consistent format in accordance with the MTA CAP Numbering Process
- MTA department(s) and individual(s) responsible for implementing corrective actions
- Source of CAP

- A summary of the deficiency (typically the finding or hazard)
- CAP summary with specific, planned activities or actions to minimize, control, correct, or eliminate the risks and hazards identified
    - CAPs requiring multiple actions may be packaged in the same CAP with individual milestone dates or as separate CAPs (with separate identification numbers)
    - CAPs involving long-term projects should be accompanied by temporary or interim mitigations to be completed
    - CAPs involving long-term projects should also specify the official MTA project number and budget
- If additional hazards would be introduced with CAP implementation, and how they would be mitigated
- Reasonable estimated completion date

The Office of Safety shall submit all rail-related CAPs to the SSOA for review and approval. CAPs should be submitted regularly to the SSOA, or within 30 days of the finding or hazard being documented and should specify a due date for closure.

In addition, the SSOA will regularly attend MDOT MTA departments' CAP meetings, and CAPs will be a standing agenda item for SSOA-MDOT MTA coordination meetings. MDOT MTA must also present CAP key performance indicators to the SSOA during these meetings, including how many CAPs are currently open, how many have been closed since the last meeting and in what categories, and others to be determined by the SSOA.

In the event that the SSOA and MDOT MTA dispute the need for, findings requiring, or enforcement of a CAP, the SSOA will allow MDOT MTA 30 calendar days to submit its case. The SSOA will then issue final direction to MDOT MTA regarding the CAP. In cases where a resolution is not forthcoming in 30 days, the SSOA will select a panel of non-MDOT MTA experts to review CAP arguments and decide on final CAP implementation activities. Representatives from the SSOA will participate in this Panel. CAPs will be subject to Panel review to ensure that a CAPs implementation does not introduce new hazards into the system.

Should the NTSB investigate, MDOT MTA and the SSOA shall review the NTSB findings and recommendations to determine whether or not to develop a corrective action, with the SSOA leading this evaluation. If a CAP is required either by the NTSB or the SSOA, MDOT MTA shall develop it. MDOT MTA should consider employing a root cause analysis technique for a finding or hazard's primary and contributing causes.

MDOT MTA shall provide status updates to SSOA every 30 calendar days and elevate review to the appropriate safety committee as needed.

4.1.4.3 Initial CAP Development

CAPs must be submitted to the SSOA using the approved SSOA CAP Submission Form. MDOT MTA shall submit the CAP to the SSOA for approval within 30 calendar days after either MDOT MTA or the SSOA has identified the need for a CAP. Depending on the complexity of the issue requiring corrective action, and at the SSOA's discretion, additional time may be granted to MDOT MTA to prepare the CAP. All CAPs must be submitted to the SSOA by the MDOT MTA Office of Safety. The Office of Safety does not develop all CAPs; however, when an MDOT MTA department provides a CAP for submittal to the SSOA, that CAP must include with it written verification of the Office Safety's review and concurrence.

The Office of Safety's CAP numbering process is:

- CAPs generated by internal and external audits are numbered by Year, Agency Conducting Audit, Audit Type/Name, and Number of CAP (Ex. 2022.SSO.HWT.1)
- CAPs generated by safety event

investigations are numbered by Mode, Event Report Number, Number of CAP (Ex. LRC.02.17.22.1.1)

- CAPs generated by hazards where risk is rated as High or Serious (Priority 1 and Priority 2, respectively) are numbered by Mode, Hazard Log Number, and Number of CAP (Ex. MC.200.1)

4.1.4.4 CAP Review and Approval

The SSOA must review and approve all MDOT MTA CAPs, including those generated by internal safety reviews, audits, or safety inspections and observations. CAPs are submitted to the SSOA using the SSOA CAP Submission Report form, which includes the following fields:

- MTA ID Number
- Risk Priority/Risk Value for all Identified Hazards
- Source
- Finding Summary
- Corrective Action Summary
- Responsible Person
- Scheduled Close Date
- CAP Approved by Safety?
- CAP Approved by MDOT?
- MDOT Comments

The SSOA will notify the MDOT MTA of its approval or rejection of a CAP within 15 calendar days of receiving the CAP. In the event the SSOA rejects a CAP, the SSOA will state its reasons in writing and recommend revisions. MDOT MTA shall submit a revised CAP to the SSOA no later than 15 calendar days following the rejection. SSOA approval is not necessary for short-term measures required to immediately mitigate hazardous conditions; however, these measures shall not replace the need for a long-term CAP. The SSOA will provide its support for such short-term measures, or outline its concerns regarding them, in its written approval or disapproval of the formal CAP.

4.1.4.5 Monitoring, Tracking, and Verification

The MDOT MTA shall maintain a Corrective Action Monitoring Log, which should be made available to the SSOA electronically The SSOA may then independently verify MDOT MTA's corrective action. The SSOA will maintain a parallel Corrective Action Monitoring Log to ensure it has captured all CAPs reported from MDOT MTA. The MTA Office of Safety must verify that the corrective action has been fully implemented before submitting CAP Closure Requests to the SSOA via email.

In the event that the verification process reveals that a CAP has not had the intended effects or impacts, the process must return to SRM to do so. It is critical that all parties understand that this does not indicate a failure on anyone's part, but rather is an inherent part of the SMS approach to safety. If the verification of the mitigation has proven to be unsuccessful, the SRM process must be followed again to achieve acceptable levels of risk. In this circumstance, MDOT MTA would communicate this outcome to the SSOA and request approval for a new CAP.

Estimated CAP completion dates must always remain realistic and up-to-date. Unforeseen delays may cause MDOT MTA to update its estimated completion date for a CAP. In such cases, MDOT MTA must submit a formal CAP extension request to the SSOA no less than 15 days before the CAP's current estimated completion date will expire.

The SSOA will review the extension request for approval and return the completed form indicating denial or approval prior to the CAP's current deadline date. If the extension request is denied, MDOT MTA must address the SSOA's comments within 15 days and resubmit the request when applicable.

To close CAPs, MDOT MTA must submit verification that the corrective action(s) has

been implemented as described in the CAP or that a proposed alternative action(s) has been implemented. During implementation of these CAPs, Office of Safety personnel should acquire evidence of implementation, such as documentation of inspections, or observations of certain operational elements in action. The Office of Safety must verify in written form that the corrective action has been verified as being fully implemented and any evidence, or the method of verification, shall be provided to the SSOA. The verification should be in unalterable electronic format and should bear a scanned or electronic signature. In the quarterly log, the MDOT MTA must also inform the SSOA concerning any alternative actions for implementing a CAP.

After MDOT MTA personnel have verified implementation of CAPs, the SSOA will review the Office of Safety's verification materials and may perform independent verification activities, such as inspections or observations, to confirm a CAP has been implemented. The SSOA will provide CAP approval with a formal letter detailing the approved CAP actions and signed by the Program Manager, or if not approved, will provide comments in a comment sheet. The SSOA must verify the implementation of a CAP prior to its closure. The MDOT MTA Office of Safety will submit a CAP Closure Request Form (RSOPS Appendix G) to formally request the closure of a CAP after implementation has been verified.

Due to the sensitive nature of security related information and the requirements to protect Security Sensitive Information, the SSOA may receive regular briefings and/or reports on the status of system security and the implementation of corrective actions from the MTAPF on an as-needed basis, contingent upon the existence of security-sensitive CAPs.

4.1.4.6 Immediate or Emergency Corrective Actions

In the event that an immediate or emergency corrective action is needed, MDOT MTA will take the appropriate actions to mitigate the risk in real time and notify the SSOA of these actions within two (2) days of initiation. The appropriate department and the Office of Safety will then follow the standard procedures for CAPs should the SSOA determine that a formal CAP approval is necessary.

4.1.5 Safety Event Notification, Investigation, and Reporting

Effective event investigation and reporting is a key component used to identify and eliminate hazards within the system and to prevent reoccurrence. In order to minimize and control the threat to health, life, and property, it is essential that all appropriate parties be notified of an event as quickly as possible to ensure timely response to the scene.

All accidents/incidents involving MDOT MTA's operations and services including vehicles, stations, the right-of-way, maintenance facilities, or other MDOT MTA properties under the direct control of OCC are to be reported to the OCC immediately. The OCC then coordinates all emergency response activities for events occurring within their respective mode.

All accidents/incidents involving MDOT MTA employees, facilities, buildings, equipment, or other properties and assets not under the direct control of the OCC are to be reported by the employee witnessing the event to their immediate Supervisor, the Office of Safety, and/or MTAPF and Fire Rescue, according to the appropriate chain of command. Supervisors and other members of Management witnessing or being notified of an event shall initiate the appropriate emergency procedures.

It is MDOT MTA's policy to ensure that all accidents/incidents be subject to a formal and objective investigation, regardless of origin, the operator(s) involved, or the responsible party. MDOT MTA is responsible for investigating all accidents in accordance with accepted industry accident investigation practices and the following guidelines:

- MDOT MTA Accident/Incident Investigation Handbook

- APTA RT-OP-S-002-02 Rev 3 - Rail Transit Accident/Incident Notification and Investigation Requirements
- MDOT Rail Safety Oversight Program Standard and Procedures
- Accepted event investigation procedures as adopted by law enforcement agencies and public safety agencies

For contracted operations, such as contracted Commuter Bus and Paratransit operations, the contractor's dispatcher is notified of the event and is then responsible for coordinating and monitoring emergency response efforts. Contractors maintain accurate event and injury data and shall cooperate with all event investigations. This includes submitting comprehensive event reports to the MDOT MTA upon request, as well as any other information the MDOT MTA deems necessary to conduct an event investigation and to ensure similar events do not occur. Events that contracted operators must report to the MDOT MTA include:

- All occurrences resulting in employee deaths or occupational injuries while on the job
- Passenger, trespasser, and/or passers-by deaths or reported injuries that occur on MDOT MTA vehicles or property
- Near misses and minor events which had the potential of serious injury or death
- All other unusual occurrences, incidents, malfunctions, hazardous conditions, near misses, etc., that may impact the safety of MDOT MTA operations and services, personnel, or patrons

For MARC operations, the MDOT MTA will only respond and assist events if notified to do so by MARC OCC or the Director of MARC (or designee). The MDOT MTA may then respond to assist. By agreement, MARCs host railroads and/or third-party Operations and Maintenance contractors are responsible for preparing all event reports for MARC service. The MDOT MTA is the reporting railroad, however, and must review all MARC reports prepared by host railroads and/or third-party Operations and Maintenance contractors. The MDOT MTA is also notified of all events involving host railroad operations that may affect MDOT MTA operations or services. Emergency contact information is included below:

- MARC Operations Control Center (MOCC) – 410-856-4849
- CSX Transportation Public Safety Coordination Center (PSCC) – 1-800-232-0144
- Amtrak – 1-800-331-0008

4.1.5.1 Safety Event Definitions and Criteria

The following information in this section is taken from the SSOA RSOPS and is intended to align with the RSOPS as amended:

A **safety event** is either an accident, incident, occurrence, or serious occurrence (as defined by the SSOA in the RSOPS). A safety event may occur:

- on transit right-of-way or infrastructure,
- at a transit revenue facility,
- at a maintenance facility or rail yard,
- during a transit-related maintenance activity; or
- involving a transit revenue vehicle.

A **rail transit vehicle** includes any rolling stock used on a rail fixed guideway public transportation system, including but not limited to passenger and maintenance vehicles (NTD).

Excluded from reportable events are:

- events that occur off transit property where affected persons, vehicles or objects come to rest on transit property after the event;
- OSHA events in administrative buildings;
- deaths that are a result of illness or other natural causes;

- non-rail collisions that occur while travelling to or from a transit-related maintenance activity;
- collisions involving a supervisor car or other transit service vehicle operating on public roads.

Accidents (FTA Definition)

Criterion	Definitions/Exclusions
Fatality	**Includes** fatalities occurring at the scene or within 30 days following the accident on a transit property or are related to transit operations or maintenance. **Excludes** deaths resulting from illness or other natural causes and criminal homicides that are not related to collisions with a rail transit vehicle.
One or more persons suffering a serious injury	A **serious injury** refers to any injury which: 1. Requires hospitalization for more than 48 hours commencing within seven days from the date of the injury; 2. Results in a fracture of any bone (except simple fractures of fingers, toes, or nose); 3. Causes severe hemorrhages, nerve, muscle, or tendon damage; 4. Involves any internal organ; or 5. Involves second- or third-degree burns or any burns affecting more than 5 percent of the body surface. Due to the difficulty in determining whether an injury is serious, MTA should report based on its best estimate or information at the time. MTA can later make updates to upgrade or downgrade the classification.
Collisions between two or more rail transit vehicles	See above definition of **rail transit vehicle**.

Collision involving one rail transit vehicle resulting in substantial damage	**Substantial damage** refers to any physical damage to transit or non-transit property including vehicles, facilities, equipment, rolling stock or infrastructure, which adversely affects the structural strength, performance or operating characteristics of the vehicle, facility, equipment, rolling stock or infrastructure requiring towing, rescue, on-site maintenance or immediate removal prior to safe operations. **Excludes** damage such as crack 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.
Runaway train	A runaway train refers to a train which is no longer under the control of a driver regardless of whether the operator is physically on the vehicle at the time. **Includes** an unintended train uncoupling during revenue service. This requirement is only applicable to trains and not all rail transit vehicles. Other rail transit vehicles are covered by the SSOA-only serious occurrence criterion below.
Evacuation due to life safety reasons	**Includes** a situation such as a fire; the presence of smoke or noxious fumes; a fuel leak; a vehicle fuel leak; an electrical hazard; a bomb threat; a suspicious item or other hazard that constitutes a real or potential danger to any person at that moment. **Excludes** evacuation of a train into the right of-way or onto adjacent track for a non-life safety reason; or customer self-evacuation or transfer of passengers to rescue vehicles or alternant means of transportation due to obstructions, loss of power, mechanical breakdown and system failures, or damage. These excluded evacuations are covered by the SSOA-only serious occurrence criterion below.
Derailment	A derailment is a non-collision event in which one or more wheels of a rail transit vehicle unintentionally leaves the rails. Includes any location, at any time, whatever the cause.

Incidents (FTA Definition)

Criterion	Definitions/Exclusions
Personal injury that is not a serious injury	**Excludes** cases in which an individual seeks medical care several hours after an event or in the days following an event (NTD).

One or more injuries requiring medical transport	A **non-serious injury** refers to any injury that is not serious, but results in transportation away from the event scene (NTD).
Damage to facilities, equipment, rolling stock, or infrastructure that disrupts operations	**Excludes** events with damage that do not disrupt operations. (Minor Central Business District collisions could be accidents, incidents, or occurrences)

Occurrences (FTA Definition)

Criterion	Definitions/Exclusions
An event without any personal injury in which any damage to facilities, equipment, rolling stock, or infrastructure does not disrupt operations	Examples include safety violations, vandalism/theft, and other events that do not meet the below subset of SSOA-defined Serious Occurrences, which do have notification and reporting requirements.

Serious Occurrences (SSOA)

Criterion	Definitions
Close calls / near misses	An unplanned safety event that did not result in damage or injury but had the potential to do so (NSC). These should be reported to the SSOA for determination of whether an SSOA-approved investigation is needed on a case-by-case basis. Excludes closely avoided collisions between light rail vehicles and pedestrians.
Face-up of rail vehicles	Two revenue transit vehicles enter the same block in signalized rail-exclusive territory
Malfunctions of safety critical systems or equipment that could result in a catastrophic or single-point failure	Malfunction differs from “damage” under Incident criteria; may include events such as loose railcar wheel or dropped underbody equipment

Track closure due to track or system damage or disrepair	Includes a black-code condition
Fire or smoke on a track, on a vehicle, or in a facility that does not meet the accident or incident criteria	Such an event may involve smoke that dissipates or a fire that is immediately extinguished, but does not result in evacuation.
Evacuation of a train into the right of-way or onto adjacent track for a non-life safety reason	Includes customer self-evacuation or transfer of passengers to rescue vehicles or alternant means of transportation due to obstructions, loss of power, mechanical breakdown and system failures, or damage. Evacuations for life safety reasons should instead be reported as an accident as described in the criterion above.
Signal violations or overruns	Includes violation of stop signal provided by roadway worker
Split/trailed switch without derailment	N/A
Vehicle door openings on the wrong side, off station platforms, or during train movement	N/A
Incapacitated operator in service	An operator loses consciousness, falls asleep, or otherwise becomes physically incapable of operating the rail transit vehicle during revenue or non-revenue service.
Runaway rail transit maintenance vehicle	Excludes runaway trains, which are defined in the accident category per FTA requirements

4.1.5.2 Notification Responsibilities of the Operation Control Centers

Once notified of an event, the OCCs gather as much information as possible regarding the event, and immediately and concurrently:

1. Notify applicable emergency response units:
   - Emergency Medical Services (EMS)
   - Police from MDOT MTA, the State, and the Local Jurisdiction
   - Fire Department(s)
   - Other Emergency Response Agencies
2. Send Incident Report through the MDOT MTA Emergency Notification System (ENS). The ENS is utilized to make initial notification to all necessary parties that an event has occurred. To allow the responsible parties to provide timely response to investigate and meet regulatory reporting requirements, the OCC is also required to report the incident by phone to the appropriate Safety staff member as soon as possible. In the case of MARC Commuter Rail, the MDOT MTA Office of Safety is notified by email (or phone if the incident warrants that). The ENS is also used at the end of the event to notify all necessary parties that the event has ended. The ENS is

configured to send a broadcast page simultaneously to (at a minimum) the following MDOT MTA personnel:

- Administrator or Designee
- Chief Safety Officer
- Deputy Chief Safety Officers
- Assistant Chief Safety Officers
- Chief of Police
- Deputy Chief of Police
- Chief of Staff
- Deputy Administrator
- Chief Operations Officer
- Deputy Chief Operations Officer, Bus
- Deputy Chief Operations Officer, Contracted Services
- Deputy Chief Operations Officer, Operations Support
- Deputy Chief Operations Officer, Rail
- Chief of Operations, Light Rail
- Chief of Operations, Metro Subway
- Chief of Maintenance of Way (MOW)
- Director, Bus
- Director, Communications and Marketing
- Director, Commuter Bus
- Director, MARC
- Director, Mobility Services
- Director, OCC
- Field Supervisors
- Safety Officers
- Superintendents of Operations
- Maintenance Managers
- Other individuals as deemed appropriate

4.1.5.3 Notification Responsibilities of the Office of Safety

The following describes the notification responsibilities of the Office of Safety following an accident or incident.

1. **MDOT (Designated Maryland SSOA)** – The following outlines the minimum requirements for initial notifications for accidents, incidents, and occurrences, as set forth in Appendix A to 49 CFR Part 674. Part 674 requires MDOT MTA to notify both the SSOA and FTA within two (2) hours of any accident meeting the criteria established in Appendix A of the State Safety Oversight rule.

    - Accidents are to be tracked by the transit agency and reported to the SSOA and FTA within 2 hours.
    - Incidents are to be tracked by the transit agency and reported to the SSOA within 24 hours.
    - Occurrences are to be tracked by the transit.
        - Serious Occurrences (as defined by SSOA in the RSOPS) are Occurrences according to 49 CFR Part 674. These specific items require formal adoption of reports from SSOA. Serious Occurrences are to be tracked by the transit agency and reported to the SSOA within 24 hours.

    MDOT MTA shall notify the SSOA of an accident by phone, regardless of the time of day. If MDOT MTA is unable to contact the SSOA point of contact by phone, an e-mail with all of the accident facts must be sent to all SSOA points of contact.

    The SSOA shall be notified of all incidents and occurrences which, while not reportable, constitute a hazardous

condition within twenty-four (24) hours of their occurrence. Should a non-reportable event represent High or Serious Priority 1 and 2 hazardous conditions as defined in the Risk Acceptance/Approval Level Index, MDOT MTA shall report them within two (2) hours.

In any instance in which MDOT MTA must notify the FRA of a safety event, such as an accident as defined by 49 CFR 225.5 (e.g., shared use of the general railroad system trackage or corridors), MDOT MTA must also notify the SSOA and FTA of the safety event within the same time frame as required by the FRA.

2. **National Transportation Safety Board (NTSB)** – Pursuant to NTSB regulations pertaining to notification of railroad accidents (49 CFR Part 840), the MDOT MTA Chief Safety Officer or a designated representative shall notify the National Response Center (NRC) for NTSB-reportable accidents; all NRC reporting for MARC incidents is handled by the host railroad (normally by the dispatcher). Telephonic reporting to the NRC is made through one of two numbers: 800-424-8802 or 800-424-0201. Notification shall be made within two (2) hours from the time of an accident/incident that has resulted in: a trespasser, passenger, or employee fatality; serious injury of two (2) or more employees, passengers, or trespassers requiring admission to a hospital; the emergency evacuation of a train; or a fatality at a grade crossing. The NTSB is also notified within four (4) hours from the time of an accident/incident that has resulted in damage estimated at $150,000 or more in repairs (or current replacement cost) to the railroad or non-railroad property; or damage of $25,000 or more to a passenger train including railroad and non-railroad property. The Chief Safety Officer or a designated representative determines whether the NTSB intends to investigate and, if so, notifies the SSOA.

   In addition to its mandate to investigate rail accidents meeting the criteria described above, the NTSB is also authorized to investigate other transportation accidents if the Board decides that the accident is catastrophic or involves problems of a recurring character (49 U.S.C. §1131(a)(1)(F)). Highway accidents that the NTSB selects to investigate must be selected in cooperation with the State. (49 U.S.C. §1131(a)(1)(B)). Therefore, the NTSB may, in cooperation with the State of Maryland, select to investigate a major MDOT MTA bus or paratransit accident if it meets the threshold of an accident that is "catastrophic" or "involves problems of a recurring character." MDOT MTA does not have a notification responsibility in these instances.

3. **State Plan Office of Maryland Occupational Safety and Health (MOSH)** – Federal OSHA requirements state that employers must file a detailed report within eight hours of fatal workplace accidents. Severe on-the-job injuries that do not result in death but require hospitalization, amputations, or loss of an eye must be reported within 24 hours.

4. **Federal Transit Administration (Light Rail and Metro only)** – The Chief Safety Officer, or a designated representative, notifies the U.S. DOT Crisis Management Center within the Office of Intelligence, Security, and Emergency Response by emailing TOC-01@dot.gov or by calling 202-366-1863 as soon as possible, but at a minimum within two (2) hours after the occurrence of an accident that involves any of the following:

   - A loss of life
   - A report of a serious injury to a person
   - Substantial damage resulting from a collision
   - A runaway train

- An evacuation for life safety reasons
- Any derailment of a rail transit vehicle, at any location, at any time, whatever the cause

Note: The designated representative will make every effort to email this notification and 'CC' the CSO, DCSO-Operations, and ACSO-Rails. Calls will be the secondary method.

4.1.5.4 At-Scene Procedures

All vehicle operators and MDOT MTA personnel are required to follow the appropriate SOP while at the scene of an event. The role of on-scene coordinator will often change during the course of the event. As the first MDOT MTA representative at the scene, the vehicle operator serves as the acting on-scene coordinator until emergency responders arrive or until otherwise instructed by the OCC. The primary responsibility of the vehicle operator is the safety of their passengers and any injured parties. At no time, shall the vehicle operator or any MDOT MTA employee release or volunteer any information regarding the event to anyone except MDOT MTA personnel or the police without appropriate management approval from Director level or above. It is the responsibility of the vehicle operator to assist emergency response personnel as they arrive at the scene and to maintain contact with the appropriate OCC.

As emergency responders and MDOT MTA personnel arrive, various mechanisms may be used to control the scene and to begin the event investigation process, following the MDOT MTA Accident/Incident Handbook. MDOT MTA emergency response adheres to NIMS training and applies an ICS approach. Depending on the severity and location of the event, access to the scene may be restricted to credentialed personnel, photographs and measurements may be taken, and witness statements may be gathered. It is the responsibility of all personnel at the event scene to support all investigation efforts as deemed necessary by the on-scene coordinator.

Upon arrival, all members will report and identify themselves to the Incident Commander, the MDOT MTA On-Scene Coordinator or ranking MDOT MTA Modal Transportation or Maintenance official, and any other authorized persons involved with the event before commencing investigation activities. As in all safety investigations, Transportation and Maintenance Supervisors and the MTAPF are made aware of the investigation.

4.1.5.5 Safety Event Investigation

It is the responsibility of the Office of Safety to ensure all events and near misses are thoroughly investigated and that all applicable records are maintained, including CAPs developed as a result of investigation findings. This may include working with the MTAPF during their investigation of the event. The degree of the investigation and the parties involved with the investigation depend on the type and extent of the event. Event investigations involving MDOT MTA vehicles, for example, may involve Federal and/or State agencies such as the NTSB or the SSOA. The investigation may also involve conducting a detailed engineering analysis to determine event causes and may require the support of outside contracted expertise. The agency strongly encourages employees to report near misses.

The Administrator or Chief Safety Officer may form an Accident Investigation Board (AIB) if necessary. Members of the AIB are determined by the CSO or Administrator and notified as appropriate. The Chief Safety Officer is responsible for notifying the AIB members of their participation in the investigation. The SSOA is invited and encouraged to participate as a member of the AIB. The Chief Safety Officer, or their designee, serves as the AIB Chair.

The AIB is authorized to conduct the investigation of the event in the most expedient manner as determined by the Chair with support from other AIB members. The AIB is also authorized to impound, receive, and

examine any evidence related to the event. The AIB is responsible for maintaining the integrity of the evidence and the chains of custody. In fulfilling this responsibility, secure facilities and assistance from the MTAPF may be utilized.

In all cases, the MDOT MTA strives to identify the root cause and contributing factors to the event and to take immediate corrective actions to ensure that the same or similar type of event does not occur. Accordingly, it is critical that the event investigation process maintains a strong link to the hazard identification and risk management process.

Hazards identified as a result of the investigation are evaluated according to MDOT MTA's Safety Risk Management process previously detailed in Section 3 of this plan. Risk control and mitigation are incorporated into procedures, designs, construction, modifications, and procurements as necessary to prevent further accidents/incidents of a similar nature.

4.1.5.6 Rail Safety Event Investigation

For all Light Rail or Metro Subway accidents/incidents, if the SSOA elects to conduct an event investigation, the MDOT MTA will provide access, documents, and any information that the SSOA determines is necessary for their investigation. While performing the investigation, the SSOA may elect to use its own investigation procedures, or those that have been formally adopted from the MDOT MTA, and which have been submitted to the FTA. The SSOA shall notify the MDOT MTA of its intent to conduct an incident investigation within two (2) hours of being notified of the incident. The SSOA's decision to conduct an event notification does not preclude the MDOT MTA from conducting its own independent investigation.

When the SSOA has authorized the MDOT MTA to conduct an event investigation on its behalf, the SSOA shall formally review and adopt the final event report that is submitted. If the SSOA does not concur with the findings of the MDOT MTA final event report they must formally transmit its dissent to the findings and work with the MDOT MTA to resolve the issues. If the SSOA does not accept the MDOT MTA final report it must conduct its own investigation, or task a contractor to investigate on its behalf. The MDOT MTA will provide the SSOA with investigation status reports as the SSOA deems appropriate.

The MDOT MTA investigates all significant events and provides a Preliminary Fact Report to the SSOA as required by the RSOPS. A Final Fact Report will be submitted within the time requirement. However, if more time is needed, MDOT MTA will submit a monthly status report which shall include:

- Minutes of any meeting held by an MDOT MTA ad hoc reportable event investigation committee or contractor
- Disclosure of any immediate corrective actions MDOT MTA has planned or completed
- Principal issues or items currently being evaluated
- Overall progress and status of the investigation

To provide the SSOA with sufficient investigation data to support causal determinations and allow the SSOA to adequately review and adopt the final investigation report, MDOT MTA will attach as part of the final report related reports used in the investigation such as inspection reports, supervisor reports, operator reports, police reports, and photographic evidence. The MDOT MTA will provide the SSOA a draft final report for review upon request.

4.1.5.7 Non-Rail Safety Event Investigation

For non-rail events, MDOT MTA is not required to report to the SSOA. However, all Bus, Commuter Bus and Paratransit events may be investigated at the discretion of MDOT MTA Office of Safety, MTAPF, or other law enforcement agency representatives dependent upon the location, type, and severity of the accident or incident. The Office of Safety reserves the right to conduct investigations

into non-revenue vehicular safety events and all other safety events if deemed appropriate or necessary. The MDOT MTA Office of Safety has determined that non-rail event investigations will be conducted at the following thresholds, but may also conduct investigations at lesser thresholds at its discretion:

- Fatality
- One or more serious injuries that require transport
- Collision or other event involving a transit vehicle or transit infrastructure resulting in substantial damage
- Evacuation for life safety reasons
- Pedestrian contact with a moving transit vehicle
- Close call/near miss

4.1.5.8 Safety Event Investigation Report

The Office of Safety prepares and submits a Fact Report and, if required, a detailed Comprehensive Report or AIB Report of the event investigation to the appropriate authorities, including the Administrator. The report may be preliminary or final, includes, but may not be limited to descriptions of the following:

- **Physical Characteristics of the Scene.** Physical characteristics include, but may not be limited to, a description of vehicle measurements, vehicle condition, posted speed limits, damage to other vehicles or properties, extent of injuries/fatalities to personnel, passengers, or pedestrians, and/or location of landmarks. Photographs of the scene may also be taken depending upon the severity of the accident/incident.
- **Interview Findings.** Interviews may be conducted with MDOT MTA personnel, passengers, witnesses, emergency responders, etc., depending on the extent of the accident/ incident. Typical questions asked during an interview may include asking for a description of what was witnessed, the sequence of events, what may have contributed to the event, or where the individual was located during the time of the event. Interview findings may also include information gathered from the Medical Examiner's Office.
- **Sequence of Events.** The sequence of events will define the time and date of the event, when emergency responders arrived at the scene, when applicable Federal, State, and local agencies were notified, when vehicles, equipment, or victims were removed from the scene and where they were taken, and/or at what time the event scene was released, and normal revenue operations began.
- **Probable, Root, and Contributing Causes.** For each accident, MDOT MTA will identify a single probable cause in accordance with the SSOA RSOPS, as amended. If there are multiple probable causes, MDOT MTA shall identify the primary probable cause and list the others as contributing causes. MDOT MTA will analyze the probable cause(s) further to determine the underlying or fundamental cause(s) of an accident, or the root cause(s). The list of probable causes:
  - Rules violations/Human factors
  - Equipment failure
  - Poor maintenance
  - Slips and falls
  - Action of motorist
  - Imprudent customer actions
  - Pedestrian actions
  - Suicides
  - Trespassing
  - Medically related
  - Other

- **Conclusions.** The conclusion should be a brief summary of the preceding information with a final classification of the event as being the result of operator error, pedestrian error, driver error, etc.
- **Recommendations and Corrective Actions.** Based on the investigation findings, recommendations and corrective actions should be developed and assigned to the most applicable and responsible party for implementation. If necessary, a formal CAP may be developed.
- **Document Control Number.** The Office of Safety generates a document control number to all event investigation reports so that corrective actions that are developed as a result of the event can be tracked through fruition.

The investigation report prepared by MDOT MTA shall be submitted to the SSOA within 45 calendar days following the event unless an extension is requested and granted. MDOT MTA maintains an email notification system that sends automated emails to the Office of Safety Management to help ensure that the reports are submitted by the 45-day deadline. The emails notify personnel to complete the report(s) by the due date and sent at the following frequency:

- 21 days prior
- 7 days prior (including extension request reminder)
- Due date.

The Preliminary and Final Fact Report are subject to change to improve clarity and efficiency. Prior to implementing any updated forms, SSOA will have the opportunity to approve the new forms and attend training on the new forms.

4.1.5.9 Post-Safety Event Investigation Activities

Since the primary reason for conducting an event investigation is to determine event causes and to prevent reoccurrences and thereby improve MDOT MTA operations and services, it is critical to ensure that approved corrective actions are not only implemented, but also monitored to ensure and measure their effectiveness. It is the responsibility of the department or mode in which the event took place, with support from the Office of Safety, to fulfill this requirement. After all relevant investigations are complete and root causes have been identified, this information should be shared as “lessons learned” throughout the agency to prevent future occurrences.

All event information including, but not limited to investigation reports, witness statements, photographs, CAPs, and disciplinary action taken against an operator or MDOT MTA employee as a result of the event, is documented and maintained by the Office of Safety and the applicable department or mode in which the event took place. All final reports are placed into the electronic document management system. All event investigation findings including root causes and hazards identified during the investigation are linked and fully evaluated and managed through the MDOT MTA’s Safety Risk Management Process.

General responsibilities and additional information of personnel and departments with respect to event reporting and investigation are provided in the MDOT MTA Accident/Incident Investigation Handbook.

4.1.6 Facilities and Equipment Inspection

Inspections of facilities and equipment are necessary to ensure MDOT MTA remains capable of fulfilling its mission of providing safe, reliable, and efficient services to its passengers. Facilities and equipment impact MDOT MTA’s ability to ensure ADA compliance, facilitate asset management, and allocate resources to address issues in a timely manner. Hazards in facilities are the most reported items within an SMS. Consequently, routine, daily inspections

of MDOT MTA's facilities and equipment are performed by its operations and maintenance staff. The Office of Safety also performs general audits and inspections of the transit system. The sections that follow describe MDOT MTA's facility and equipment inspection processes.

4.1.6.1 Facilities and Equipment Subject to Inspection

The primary purpose of performing facility and equipment inspections is to identify hazards, program deficiencies, and system risks within MDOT MTA's operations and services. The inspection process functions as a component of MDOT MTA's Internal Safety Review Program and is therefore directly linked to MDOT MTA's Safety Risk Management Process. All findings are documented, evaluated, and prioritized for closure in accordance with the Safety Risk Management Program.

Routine facility and equipment inspections are performed during MDOT MTA's daily operations by operations, maintenance, and safety staff to assure MDOT MTA's systems remain safe and reliable. All facilities and equipment owned and operated by the MDOT MTA are included in this process. This includes MDOT MTA operations, rolling stock, track, rights-of-way, power distribution systems, communications facilities and systems, equipment, stops, structures and facilities, stations and platforms, and signals owned or operated by the agency. The inspections are conducted to identify and document unsafe or unhealthy conditions; to evaluate compliance with the SMS and other applicable safety controls; and to ensure corrective actions are developed, implemented, and proven effective.

The inspections are also performed to:

- Review training materials and records
- Review SDS to ensure availability for all chemicals used at a location
- Record all observed hazards and violations and develop recommendations and corrective actions for their elimination or control
- Ensure departments have adequate emergency and safety related supplies

4.1.6.2 Regular Inspection and Testing

Equipment and vehicles are inspected and tested according to appropriate preventive maintenance schedules, industry standards, and/or manufacturer recommendations. Inspections are also conducted as a result of accidents/incidents, employee or passenger complaints or notifications, or safety analyses and hazard reports. Work orders are generated as necessary to resolve identified issues, and the responsible maintenance divisions or contractors are notified.

Facility Supervisors and Department Managers hold the primary responsibility for ensuring facility and equipment inspections are routinely performed according to established procedures and manufacturers' recommendations. In addition, the Office of Safety may also perform detailed facility and equipment inspections on the equipment and facilities that the MDOT MTA owns or operates and/or review inspection procedures, checklists, findings, and corrective actions. Preventive maintenance records maintained by the operating department may also be inspected in order to identify hazards and to verify the accuracy of inspection and testing data and methods. Internal Safety Reviews are also performed on processes to ensure control or resolution of reported hazards as well as to ensure compliance with applicable local, State, and Federal regulations and MDOT MTA policies and procedures.

Maintenance employees and representatives from the Office of Safety inspect each MDOT MTA facility, including stations, shops, offices, and other locations. These inspections are conducted utilizing the facility safety inspection form. These inspections ensure that all safety appliances are properly placed, in good condition, and being used in accordance with MDOT MTA procedures and manufacturer recommendations. The use of written checklists helps to ensure inspections are conducted in a consistent manner and that all safety and security critical items are inspected. Written

reports are prepared detailing inspection findings, corrective actions, responsible parties for implementing the corrective actions, and estimated closure dates. Follow-up inspections are conducted to ensure action was taken.

Managers and supervisors are responsible for immediately notifying their employees of any hazard identified in the workplace and for acting to eliminate, mitigate, and/or control these hazards. It is the responsibility of the department in which the hazard was identified to notify all other departments and personnel that may be affected by or exposed to the hazard and obtain approval from the Office of Safety for their hazard mitigation plan. It is also the responsibility of the department in which the inspection took place to implement and monitor the success of proposed recommendations and corrective actions and follow the MDOT MTA Safety Risk Management process as outlined in Section 3 of this plan.

The Office of Safety tracks corrective actions to closure, including inspection results, reports, recommendations and corrective actions, and follow-up activities taken as a result of the inspection. This information is documented and maintained in the Corrective Action Plan Monitoring Log (CAP Log), which is stored in the electronic document management system. Corrective actions are tracked to closure and are included in MDOT MTA's annual report to SSOA for its Metro Subway and Light Rail operations.

The Office of Safety develops and maintains checklists for those inspections carried out by Modal Safety Officers and other staff as assigned. These checklists are to be used by the Office of Safety personnel only and are meant for performing safety-related inspections of facilities and equipment. These checklists are a subordinate document to the MDOT MTA PTASP. Checklists used by maintenance personnel are developed and managed within each respective mode.

4.1.6.3 Maintenance Audits and Inspections

An effective maintenance program cannot only reduce the vehicle and equipment replacement costs associated with MDOT MTA operations and services, but it also aids in fulfilling MDOT MTA's mission of providing safe, reliable, and efficient service. Applying the Internal Safety Review and inspection processes to MDOT MTA's maintenance activities is critical in ensuring the effectiveness of the maintenance program.

4.1.6.4 Safety Compliance Assessment and Inspection Tasks and Responsibilities

The MDOT MTA maintenance program is based on preventive maintenance, non-scheduled maintenance, and campaigns to improve fleet safety and reliability. This includes MDOT MTA operations, rolling stock, track, rights-of-way, power distribution systems, communications facilities and systems, equipment, stops, structures and facilities, stations and platforms, and signals owned or operated by the MDOT MTA. Maintenance activities also include performing safety event and vandalism repairs, and warranty work.

All maintenance work is performed in accordance with the applicable preventive maintenance schedules, procedures, industry standards, and/or manufacture recommendations. Maintenance procedures and manuals are maintained in each of the maintenance facilities for each of the MDOT MTA's modes and within the electronic document management system.

Periodic quality inspections of maintenance facilities, equipment, and work practices are also conducted by maintenance technicians and supervisors as well as by representatives from the Office of Safety. The Office of Safety conducts monthly facility safety assessments and inspections. These inspections are conducted utilizing the facility safety inspection form. Office of Safety also reviews the maintenance procedures, policies, and practices during the Internal Safety Review.

Both the quality checks and Internal Safety Reviews include conducting:

- Interviews and discussions with personnel
- Reviews of procedures and records
- Firsthand observations of operations and maintenance activities
- Visual examinations and measurements.

The information gathered when performing preventive and corrective maintenance as well as the information gathered through audits and inspections, is used to identify hazards and system risks. The process is also used to perform failure analyses on systems, vehicles, equipment, and other components of MDOT MTA operations and services to identify trends, including those caused by design and material defects; improper installation or use of parts and equipment; operating environments and conditions; operator error; other systems, subsystems, or components; or the lack of required maintenance or testing. Once identified, the trends, hazards, and system risks can be analyzed according to MDOT MTA's RAP and eliminated or controlled appropriately.

Corrective actions, including the use of different parts; making modifications to systems, vehicles, equipment, or other components; revising procedures, practices, and maintenance manuals; retraining employees and vehicle operators; or increasing testing practices and procedures, are developed and tracked to closure through MDOT MTA's CAP Log and the SSOA. Regardless of the corrective action taken, it is the responsibility of the department in which the hazard was identified, and its associated maintenance department to monitor the success and effectiveness of the action. Records are maintained in a standard format of all maintenance activities. Because maintenance audits and inspections function as part of MDOT MTA's Internal Safety Review, the information gathered through this process is included in MDOT MTA's annual report to SSOA for its Metro Subway and Light Rail operations. The Bus Safety Committee is responsible for completing assessments, the hazard log, and tracking corrective actions.

The Office of Safety develops and maintains checklists for those inspections carried out by Modal Safety Officers and other staff as assigned. These checklists are to be used by the Office of Safety personnel only and are meant for performing safety-related inspections of maintenance activities. These checklists are a subordinate document to the MDOT MTA PTASP. Checklists used by maintenance personnel are developed and managed within each respective mode.

Supervisors monitor maintenance activities and are responsible for ensuring that required inspections and repairs are conducted according to schedules and procedures. Examples of these activities include:

- **Pre-trip Inspections.** It is the responsibility of all vehicle operators to perform pre-trip inspections of their vehicles prior to entering revenue service. All vehicle defects identified by the operator are noted on the applicable pre-trip inspection card and reported to maintenance personnel. If a vehicle has a defect or is damaged to the extent that the operator feels that it is

unsafe for service, he/she notifies the OCC and maintenance department, and the vehicle is repaired or replaced. If vehicles are safe for service, they are operated, and all non-safety/security related defects will be corrected as soon as possible. Maintenance personnel maintain a record of all operator defect reports.

- **Vehicle Accident/Incident Repairs.** All events involving vehicles are reported to the OCC upon identification. Vehicles damaged as a result of an event are removed from revenue service, evaluated by maintenance personnel, and repaired as soon as possible, depending upon the degree of damage.
- **Preventive Maintenance.** Scheduled maintenance activities include, but may not be limited to, preventive maintenance programs tied to vehicle mileage, manufacturer recommendations, or industry standards. Preventive maintenance programs have been established for all MDOT MTA vehicles and the programs attempt to identify and eliminate potential problems and hazards prior to the need for performing corrective maintenance, which can often increase costs.

Supervisors are also responsible for ensuring that all repairs are made and documented in accordance with local, State, and Federal regulations. General responsibilities of personnel and departments with respect to maintenance audits and inspections are provided as follows:

- **All Personnel** must perform periodic inspections of their work areas to identify unsafe and/or unhealthy conditions.
- **Maintenance Department Managers and Supervisors** are responsible for assigning qualified personnel to perform preventive maintenance inspections and audits and overseeing the inspection and audit process to assure and verify that it is completed correctly. These processes should adhere to the Maintenance Management Plan for each mode. Maintenance Department Managers must also coordinate the issuance of appropriate work orders to address inspection findings that have indicated a need for repair.
- **Maintenance Technicians and Supervisors** assigned responsibility for performing preventive maintenance inspections and audits must:
  - Complete the inspections and audits in accordance with the established procedures and schedules.
  - Notify their direct supervision and Office of Safety, according to the appropriate chain of command, and to take immediate action to address all identified hazards. Timely reporting must be accomplished in order to prevent injury or damage to employees, contractors, passengers, or equipment that may come into contact with the hazard before it is eliminated or controlled.
  - Document all inspection and audit findings.
- The **Office of Safety** is responsible for notifying the SSOA of all unacceptable hazards identified during inspections and audits of MDOT MTA's Metro Subway and Light Rail operations, and to report quarterly on the status of corrective actions taken to address identified hazards and program deficiencies.
- **Modal Safety Officers** are required to oversee the maintenance inspection and audit program for their respective modes, and to participate in the inspections and audits as directed by management, to verify and assure that the inspections and audits are being performed in accordance with established procedures and schedules. Modal Safety Officers must ensure maintenance audit and inspection findings are integrated into the Safety

Risk Management Program. This includes assisting in the development of corrective actions for identified hazards and deficiencies, tracking the implementation of corrective actions, and performing follow-up activities to verify the effectiveness of corrective actions.

4.1.7 Rules, Procedures, Standards and Guides

MDOT MTA's operations and services are continually growing and changing in response to passenger and system needs. These changes directly impact how MDOT MTA operates and maintains its systems, equipment, and facilities. It is therefore essential that all operating and maintenance rules, procedures, standards and guides remain accurate and up to date so that MDOT MTA can continue to provide safe and reliable service to MDOT MTA's customers. When rules or procedures are revised, it is necessary to review and update training materials so that processes on which employees are trained are consistent with the procedures. The following sections provide a description of the processes used to perform reviews of rules, procedures, standards and guides.

4.1.7.1 Rules, Procedures, Standards and Guides Safety Risk Assessment Process

Each of MDOT MTA's modal operations is responsible for reviewing and revising, as needed, the operating and maintenance rules, procedures, standards and guides applicable to their departments.

Rules, procedures, standards and guides are also reviewed and revised when:

- Safety event investigations determine that a procedural change is required
- In response to system modifications or changes including new system and equipment procurements
- In response to changing Federal, State, and local regulations and requirements
- Findings generated through the Internal Safety Review Program or audits performed by external agencies such as the SSOA, FTA, and FRA indicate the need for revised procedures

Creating a new rule or procedure or modifying an existing rule or procedure is one of the seven triggers for a Safety Risk Assessment (SRA). The assessments are performed to ensure existing safety requirements are met; to verify that proposed changes do not create new hazards or present additional risks to the system; to assure the effectiveness of existing safety controls will not be reduced; and, to ensure that risks to personnel, passengers, contractors/vendors, equipment, facilities, and other properties or the environment will not be increased.

Rules, procedures, standards and guides subject to the SRA process include vehicle operator rulebooks and EOPs; vehicle, system, and facility maintenance manuals and procedures; track standard and field guide; training materials and programs; human resources policies and procedures; and safety programs, plans, and procedures.

Management and administration of the rules, procedures, standards and guides review process is the responsibility of the Modal Operations Directors and the Director of Training. Because the annual rules, procedures, standards and guides review process functions as a portion of MDOT MTA's Internal Safety Review Program and SRM process, the Chief Safety Officer is responsible for overseeing the process to assure compliance with is this PTASP and SSOA requirements. Each Modal Operations Director coordinates the annual review process for their mode and assigns staff as necessary to ensure the completion of the review. In some cases, a small committee consisting of supervisory personnel and front-line staff may be formed to facilitate and conduct the review.

All modal rules, procedures, standards and guides are reviewed in their entirety periodically

to assure they remain consistent and up to date with the most recent operating and maintenance practices. Bulletins, special orders, and notices developed and implemented during the year are also reviewed to determine if they should be incorporated directly into the rule book or into a formal procedure. The proper use of these publications and documents are captured in the Employee General Rules and Regulations: Operating Rules.

Hazard and program deficiencies identified through the review process are documented in modal HTLs, assessed, and prioritized per MDOT MTA's Safety Risk Management Process, and tracked to ensure that controls and mitigations are being carried out and are effective. All proposed changes to MDOT MTA rules, procedures, standards and guides are documented and provided to the Modal Operations Director, their Deputy Directors, Supervisors, selected front line employees, and the Modal Safety Officer for review and concurrence. Proposed changes to MDOT MTA's Metro Subway and Light Rail rules, procedures, standards and guides are coordinated with MOW to ensure that proposed mitigating actions are consistent with best practices for managing track conditions. Metro Subway and Light Rail rules, procedures, standards and guides are provided to SSOA for review and concurrence.

Once approved, the changes are formally incorporated into the rulebook and applicable procedures and re-issued as necessary to all applicable staff. If, as a result of the review, it is determined that no changes to operating rules or procedures are necessary, the Modal Operations Director for the respective mode is responsible for notifying the Chief Safety Officer and MDOT MTA Administrator, in writing, that the rules, procedures, standards and guides review has been completed and no changes are required. The Chief Safety Officer is responsible for reporting this information to the SSOA for MDOT MTA's Metro Subway and Light Rail operations as part of fulfilling MDOT MTA's annual reporting requirements.

4.1.7.2 Assessing Implementation of Rules, Procedures, Standards and Guides

Once developed, it is important to assess if rules, procedures, standards and guides are being implemented as intended, throughout MDOT MTA's operations and services. If not implemented, or if implemented incorrectly, the system hazards and risks the rules, procedures, standards and guides have been written to address will remain unresolved and the rules, procedures, standards and guides review process will have failed. It is for this reason that MDOT MTA supports and evaluates the implementation of new and revised rules, procedures, standards and guides through various techniques. These include employee training and evaluation of work practices such as supervisor ride checks, supervisor inspections, and increased management oversight.

It is the responsibility of the Director of Operations for each of MDOT MTA's modal operations to ensure all new and revised rules, procedures, standards and guides are implemented and followed as intended. To facilitate this process, applicable employees are notified of all new rules, procedures, standards and guides via special orders, bulletins, and/or notices. If the new or revised rule and/or procedure is extensive, training programs are developed and provided to all applicable personnel including contractor/vendor staff. It is the responsibility of all employees and contractors/vendors to comply with new or revised rules and/or procedures as directed by management.

Employee compliance with rules, procedures, standards and guides is measured through MDOT MTA's Internal Safety Review Program, which includes work practice inspections, and Supervisor oversight of employee work practices. All hazards and deficiencies identified through this process are documented, evaluated, and prioritized in accordance with MDOT MTA's SRM process. When necessary, disciplinary action is taken to ensure compliance with the rules, procedures, standards and guides. Supervision's compliance and enforcement of established rules, procedures, standards and

guides is also measured through this process. When new policies, procedures, or work rules are developed, training will be updated to communicate what has been changed.

4.1.7.3 General Responsibilities of all Personnel and Departments with Respect to Rules, Procedures, Standards and Guides

General responsibilities of personnel and departments with respect to the rules, procedures, standards and guides review process are provided as follows:

- It is the responsibility of the employee to track all training requirements that are required for their job classification.
- It is the responsibility of all employees to adhere to all established rules, procedures, standards and guides.
- It is the responsibility of the Director of Operations for each of MDOT MTA's modes to ensure an annual review of all operating and maintenance rules, procedures, standards and guides is performed.
- It is the responsibility of the Director of Operations and the Modal Safety Officer for each of MDOT MTA's modes to evaluate proposed changes and/or modifications to operating and maintenance rules, procedures, standards and guides to determine safety implications of the proposed change.
- It is the responsibility of the Director of Operations for each of MDOT MTA's modes to ensure appropriate personnel and departments are included in the review process.
- It is the responsibility of the Director of Operations for each of MDOT MTA's modes to notify all appropriate personnel and departments when a change or modification has been made to an existing operating or maintenance rule or procedures.
- It is the responsibility of the Director of Operations for each of MDOT MTA's modes to actively enforce all rules, procedures, standards and guides through immediate and consistent disciplinary action.

4.2 Change Management

Effective change management can help to ensure that all changes and modifications made to the systems, operations, facilities, equipment, or other properties as well as policies, procedures, and/or rules used during MDOT MTA operations and services are systematically planned, evaluated, approved by the appropriate parties, and documented. MDOT MTA's change management processes are described herein.

As discussed in Section 3 – Safety Risk Management (SRM), the safety risk management program incorporates the management of risk in all elements of the MDOT MTA system through identification, assessment, and mitigation. Changes within the agency, whether to documents, policies, equipment, or practices, may present new safety risks. To this end, the SRM process guides MDOT MTA's evaluation of proposed changes.

Section 3 also defines the seven events that may trigger a Safety Risk Assessment. Change Management is a key process that initiates the feedback loop between Safety Risk Management and Safety Assurance activities for several of these trigger events, particularly:

- Changes to Plans, Committees, and other Significant Agency Activities
- New Construction Project/Existing Facility or System Modification
- New Capital Acquisitions/Modification to Equipment or Infrastructure
- Proposed System Expansion/New or Modified Routes

Effective Change Management ensures that the potential impacts and outcomes of changes to procedures, project designs, and project use and utility are evaluated and documented in writing, and that all parties who are potentially affected by the proposed changes have input into assessing these impacts and outcomes. Figure 26, on the next page, illustrates the relationship between Safety Risk Management and Safety Assurance. If the safety data that is received in the Monitoring and Measuring activities indicate that a mitigation or control is ineffective, the system or operation will need to go through the SRM process to assess the level of risk and analyze the root cause or causal factors of the hazard.

4.2.1 Configuration Management

Configuration management (CM) is a process, almost universally focused on asset maintenance, for controlling changes to a system and/or subsystem, identifying anticipated impact(s), and maintaining commensurate documentation of the proposed and actual changes (e.g., procurement/ substitution of different parts, cleaners/ chemicals, equipment/hardware/software; up-to-date criteria/procedures/schematics.); CM does not primarily affect operations, but it could under certain circumstances. MDOT MTA Change Management places all personnel on the same page regarding processes and procedures by empowering personnel to identify potential hazards or secondary impacts and those affected by proposed changes or impacts have input into assessing the risk of the consequences, hazard or impact outcomes. This CM process establishes a method for formally reviewing and approving proposed modifications and changes to documents to assure proposed modifications will:

- Be compliant with applicable State, Federal, and local regulations
- Be compatible with and consistent throughout all existing policies, procedures, and rules
- Not reduce the safety and hazard controls already in place on the system
- Not introduce new hazards to the system

Configuration management applies the SRM process to identify hazards that may be introduced when MDOT MTA documents are changed or modified. As with any change, new or different real or potential hazards may be identified through active employee

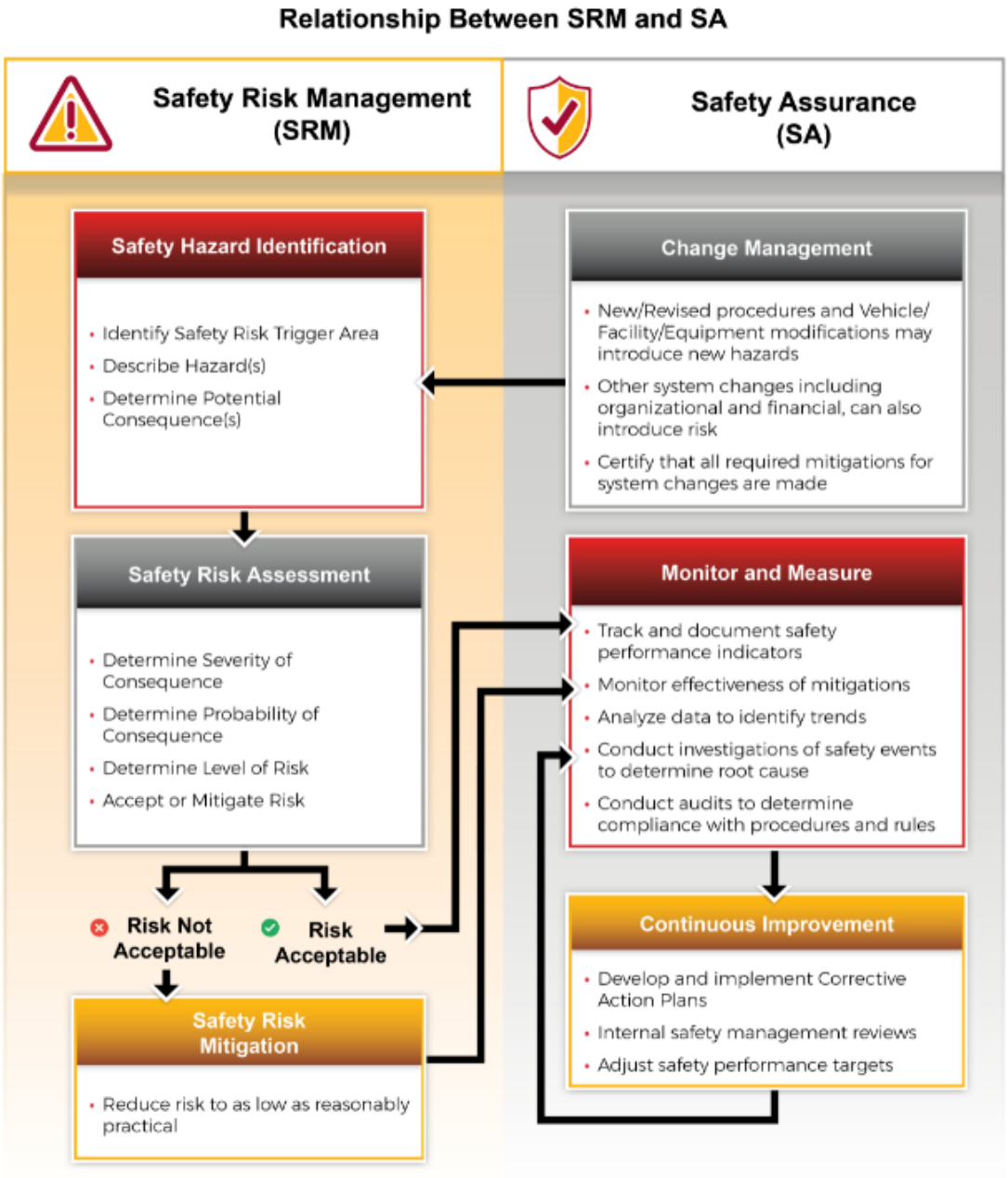


Figure 26 - MDOT MTA Safety Risk Management and Safety Assurance Relationship

safety reporting and robust interdepartmental data collection. As discussed in Section 3, these hazards can then be tracked, assessed, and mitigated in a process of continual improvement (see Section 4.3 for more detail on Continuous Improvement).

The Configuration Management process is controlled by the Configuration Management Process SOP (MTA-GP-04-01). Examples of the types of documentation that are evaluated as part of the configuration management process include policies, procedures, guidelines, rulebooks, training materials, drawings, schematics, as-builts, manuals, catalogues, bulletins, notices, general orders, pamphlets, information related to replacement parts and components, or other technical data. It is the

responsibility of all personnel whose duties entail the authoring and/or revising of these documents to thoroughly evaluate proposed changes and modifications to these documents to ensure the changes or modifications meet the aforementioned requirements of the review process. If it is determined through this evaluation that the proposed change or modification does not meet one or more of the four requirements, the change or modification cannot be made.

Careful documentation and dissemination of all proposed changes and modifications are also critical elements to an effective configuration management program. Once a change or modification has been thoroughly evaluated and made to a document, it is the responsibility of that document's authoring or controlling party to disseminate the revised document to the applicable personnel and departments. It is also the responsibility of the authoring or controlling party to notify the applicable personnel and departments of what other documents have been changed or must now be revised as a result of the change or modification.

Only the pages containing the change or modification require copy and distribution as long as a memo is attached detailing the pages that must be replaced within the document(s). Depending on the extent of the change or modification, such as in the case of a new rule or procedure, training may be required to ensure all personnel fully understand the change or modification as well as their responsibilities as they relate to the change or modification.

The configuration management activities of the MDOT MTA have not been assigned to a specific department within the MDOT MTA but are instead carried out by each of MDOT MTA's departments. It is therefore the responsibility of all MDOT MTA departments to not only implement the configuration management practices detailed by this PTASP, but to also maintain up-to-date files or document libraries of all documents pertaining to the department's operations and services. It is the responsibility of all personnel to remain cognizant and up to date regarding the rules, regulations, procedures, and/or policies related to their departments, their job classifications, and the MDOT MTA.

4.2.1.1 General Responsibilities

General responsibility of personnel and departments with respect to MDOT MTA's configuration management practices are provided as follows:

- Department Managers must thoroughly evaluate all proposed changes and modifications made to existing and new documents used by their departments.
- Department Managers must ensure all applicable personnel and departments are notified of all changes and modifications made to existing documents as well as issuance of new documents.
- All personnel must remain cognizant of rules, regulations, procedures, and policies governing the department, specific job classifications, and the MDOT MTA.
- Each Department must maintain accurate documentation, files, and document libraries of all documents pertaining to the operations and services of the department and the performance of job duties.
- It is the responsibility of all Department Managers to ensure all employees and contractors under their supervision receive necessary training regarding updated, revised, and new documents and their requirements as applicable to ensure safety.

4.2.2 System Modification

MDOT MTA systems and operations are regularly modified to maintain compliance with industry standards, Federal, State, and local regulations, and to ensure customers are continually provided with a high level of service.

System changes and modifications may also result from inspections, employee observations, post-event investigations, internal and external audits, and/or safety data analysis. All changes or modifications made to MDOT MTA's operations and services have the potential to affect customer, employee, and system safety and security, and as such, detailed reviews of proposed system modifications must be performed.

System modifications to infrastructure, vehicles, or equipment are identified as one of the "seven triggers" detailed in Section 3 – Safety Risk Management. Such modifications trigger a safety risk assessment, as they may lead to potential consequences that present safety risks. To this end, system modifications must be reviewed and approved, as detailed below.

4.2.2.1 System Modification Review and Approval Process

MDOT MTA's Global Standard Operating Procedure for System Modification Review and Approval Process (MTA-GP-04-02) has been developed to ensure that proposed system modifications and changes are compliant with all applicable State, Federal, and local regulations; are compatible with existing systems; will not reduce or compromise the safety and hazard controls already in place on the system; and will not introduce new hazards to the system. This review and approval process applies to:

- Changes in safety-critical processes or functions
- New construction projects or modifications to existing facilities which are limited in scope
- Equipment acquisitions or modifications/ overhauls of existing equipment.

The System Modification Review and Approval Process begins as early as possible in the project life cycle. For each proposed change or system modification, the sponsoring department completes a System Modification Authorization Request Form, which describes the scope of the work to be completed and determines the modification's urgency and hazard risk assessment value to decide whether to implement the modification immediately or whether to pursue a formal design and review process.

It is the responsibility of the Chief Safety Officer, or his/her designee to oversee that the System Modification Review and Approval process is carried out. Upon receipt of a System Modification Authorization Request Form, the Office of Safety will evaluate the proposed modification and will assign a Safety Representative to participate in the modification project.

The Safety Representative is responsible for assuring the proposed change or modification is evaluated to determine impact to the safety and security of MDOT MTA's systems and operations; for working with the design team and sponsoring department to ensure the safety and security requirements of all designs are accurately identified and included in project specifications and work plans prior to the start of the project, or the procurement of services, materials, or equipment.

The sponsoring department is responsible for notifying the Office of Safety and other project stakeholders of proposed system modifications using the System Modification Authorization Request Form and to receive approval before the commencement of work when possible. In emergency instances, modifications may be completed prior to approval being received. It is the sponsoring department's responsibility to ensure proper evaluation of system modifications. The sponsoring department must provide all supporting documentation that will be needed to evaluate the modification.

4.2.2.2 General Responsibilities

General responsibilities of personnel and departments with respect to system modifications are provided as follows:

- It is the responsibility of **all personnel**

involved in a system modification to comply with the guidance and procedures outlined in MTA-GP-04-02 and participate in the system modification review process as necessary and as determined by management.

- It is the responsibility of the **Planning, Engineering, or Maintenance Department Project Manager/Resident Engineer** to ensure impacts from the proposed modifications are thoroughly evaluated prior to implementing them into the system.
- It is the responsibility of the **Office of Safety representative** to oversee the evaluation process and to keep the Chief Safety Officer or his/her designee apprised of project status and any issues that may arise requiring additional support from the Office of Safety.
- It is the responsibility of **department management** to stop work on all unauthorized system modifications. It is the responsibility of the **sponsoring department** to notify the stakeholders (e.g., Engineering, Safety, Procurement) of the proposed system modifications using the MDOT MTA System Modification Authorization Request Form and to receive approval before the commencement or resumption of work.
- If the System Modification cannot be completed before the change, it must be completed within 72 hours of work initiation, particularly for emergency work.

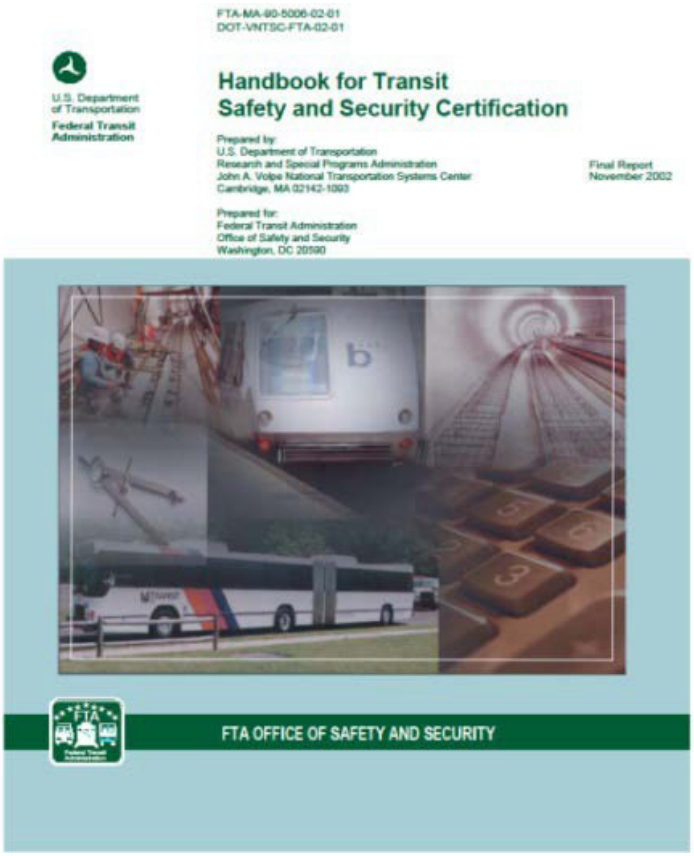
4.2.3 Safety and Security Certification

Safety and security certification is a multiphase process that applies the SRM steps to verify that all planned safety and security activities are completed and properly documented prior to revenue operations or the start of services related to a new capital project (including ancillary projects associated with the new capital project) or acquisition. Safety and security certification risk analyses include preliminary hazard analysis (PHA), operational hazard assessment (OHA), threat and vulnerability assessment (TVA), based on the safety and security requirements that are determined to be required for each project. These requirements are based on safety and security related codes, guidelines, industry standards, and design criteria. Together these processes enable MDOT MTA to identify and assess any new risk that may be introduced through new projects related to operations, expanded or modified services, or acquisitions. Based on these risk analyses, a master list of items that must be verified through the certification process is developed, called the Certifiable Items List (CIL). For all new rail transit projects undertaken by MDOT MTA, the SSOA provides general review and oversight of the Safety and Security Certification (SSC) process.

At MDOT MTA, SSC is a project-specific endeavor and may follow three different paths, or levels, of certification: Full, Medium, and Limited. The process for SSC is described in the MDOT MTA Safety and Security Certification Program Plan and specific procedures for those offices involved in the SSC process are included in the MDOT MTA Safety and Security Certification SOP.

The Office of Safety reserves the right to review all ancillary projects prior to initiation to determine the need for Safety and Security Certification above and beyond the FTA requirements as per System Modification and Review Process Global SOP, MTA-GP-04-02.

The MDOT MTA's SSCPP is based on FTA guidance, including Hazard Analysis Guidelines for Transit Projects (DOT-FTA-MA-26-5005-00-01, January 2000); Handbook for Transit Safety and Security Certification (FTA-MA-90-5006-02-01, November 2002); and Safety and Security Management Guidance for Major Capital Projects (FTA Circular 5800.1, August 1, 2007). These documents provide guidelines and recommendations for conducting safety and security certification for new systems, vehicles, facilities, additions, or modifications and identify specific safety and security activities for each phase of the project.



4.2.3.1 Initiating the SSC Process

The MDOT MTA office sponsoring any new capital project is required to complete a Safety and Security Certification Level Determination Form ("Determination Form") when the project has achieved 30 percent design. This sponsoring office (Planning, Engineering, or Modal Operations) completes the Determination Form, which includes basic project information such as the name and title of the Project Title, Project Manager, MTA Division, and Brief Project Description (mode, location, general description, and purpose and need of the project). The preliminary milestone schedule for project development is included, as well as estimated project cost and how much of the project will be supported with Federal funds. The Determination Form is then forwarded to the Office of Safety so that the required level of Safety and Security Certification can be determined, SSC committee membership is recommended, and a safety budget is requested.

The Determination process is led by the Office of Safety, with support from MDOT MTA Engineering and/or other departments as appropriate and is informed by the examples of types of projects and the associated SSC Level.

All projects valued at $100 million or greater and designated as Major Capital Projects by the FTA and projects receiving funds through the 49 U.S.C. §5309 Capital Investment Grant program under a full funding grant agreement are automatically designated as requiring full SSC. A project-specific Safety and Security Certification Plan (SSCP) and Safety and Security Management Plan (SSMP) must be developed for each project undergoing Full Certification.

4.2.3.2 Safety and Security Certification Responsibilities

Depending on the type, size, level of complexity, and safety and security criticality of the project, a number of MDOT MTA departments, offices, and/or contractor groups will be responsible for coordinating, participating in, or tracking the status of a project's safety and security certification. The following provides a summary of responsibilities these parties may have during the completion of the project.

4.2.3.2.1 State Safety Oversight Agency

The Maryland Department of Transportation Office of Audits is the SSOA for MDOT MTA's rail transit programs (Metro and Light Rail). The SSOA has authority to oversee and audit MDOT MTA's safety and security certification of major rail system modifications and expansions, and other rail fixed guideway public transit projects that have a significant safety impact. For projects meeting these criteria, MDOT MTA is required to submit planning studies, design criteria and standards, project designs, SSMPs and SSCPs, and other safety and security certification related documentation to the SSOA throughout project development until project completion. The SSOA's tasks related to their safety and security certification oversight role are:

- Provide general review and oversight

Full	Medium	Limited
Any project meeting FTA requirements for funding/with a certification requirement in the contract Safety/security critical systems • Automatic Train Control • Automatic Train Protection • Rail Operations Control Systems Any rail or bus maintenance facility Right of Way and all components Rail or bus vehicles • New vehicles • Extensive midlife vehicle overhauls Other rolling stock/equipment	Communication Systems Fire Protection Systems Fire/Intrusion Alarm Systems AC Power Switchgear Traction Power Equipment Emergency Ventilation Systems Maintenance Facility Equipment	Parking Facilities Commuter Lot / Bus loop Renovations Minor Facility/Station modifications that do not impact Fire/Life Safety Systems

Figure 27 - Safety and Security Certification Project Examples to Determine Level of Certification

of the safety and security certification process;

- Audit major rail fixed guideway public transit projects;
- Conduct on-site Pre-Revenue Service Audits of major rail fixed guideway public transit projects to expand or modify the existing rail system; and
- Review and approve Safety and Security Certification Verification Reports (SSCVRs) for rail fixed guideway public transit projects.

4.2.3.2.2 Office of Administrator

The MDOT MTA Administrator is responsible for allocating MDOT MTA resources to meet the SSCPP goals and objectives. The MDOT MTA Administrator is ultimately responsible for execution of the SSCPP and for the safety and security of MDOT MTA operations. The MDOT MTA Administrator or designee provides the signature approval of the Project Safety and Security Certificate of Conformance.

4.2.3.2.3 Office of Safety Management and Risk Control

The Office of Safety Management and Risk Control (Office of Safety) oversees implementation of the SSCPP with support from key stakeholders. Key stakeholders include those offices listed in this agency wide SSCPP as well as project-specific personnel,

including contractors, listed in project-specific SSCPs.

The Office of Safety leads the process of ensuring the identification, prevention, control, and resolution of unsafe conditions during design, construction, testing, operation, maintenance, and disposition of MDOT MTA's operations and services relative to development and delivery of new transit projects for the MDOT MTA.

Office of Safety tasks related to implementation of the SSCPP include, but are not limited to, the following:

- Make the initial determination of required certification activities and documentation
- Monitor the safety and security certification process for each project, with initial involvement in project safety and security certification no later than 30 percent design;
- Participate in relevant meetings with the Office of Engineering and Construction;
- Participate in project design reviews;
- Confirm projects are evaluating all appropriate hazards and risks and mitigating, as needed, including the preliminary hazard analysis (PHA) and threat and vulnerability assessment (TVA) processes;
- Support the development of mitigating and controlling factors to address hazards and vulnerabilities identified for projects;
- Oversee the development and review of the Certifiable Items List (CIL) and checklist process;
- Confirm projects are managed according to FTA requirements and processes;
- Provide representation on project-specific Safety and Security Certification Committees (SSCCs) and the Fire/Life Safety and Security Committee (FLSSC);
- Review and comment on site-specific Safety Plans;
- Oversee the construction safety program;
- Verify testing and pre-revenue operational readiness is complete before advancing into revenue service;
- Develop and maintain the SSCVR; and
- After approval by the CSO or designee, submit the SSCVR to the SSOA for review and approval prior to revenue service.

4.2.3.2.4 MTA Police Force

The MTA Police Force provides policing for MDOT MTA and provides input to projects for crime prevention and response. In addition, local jurisdiction police agencies may be employed through Memoranda of Understanding (MOUs) to assist in policing a project once it begins operations.

MTA Police may provide but are not limited to the following police activities related to a project:

- Direct the resolution of project security issues;
- Participate in the safety and security certification process;
- Participate in design reviews to ensure security issues are appropriately addressed;
- Participate in TVAs;
- Participate in the development and review of the CIL and checklist process;
- Develop and/or review security training curriculum for MDOT MTA staff and contractors;
- Conduct audits of a project's security programs;
- Serve on the SSCC and the FLSSC;
- Oversee the construction security program, including assisting a project construction team in the identification

of construction security threats and potential vulnerabilities;

- Support project start-up activities, including emergency exercises;
- Verify use of the principles of "Crime Prevention through Environmental Design"; and
- Incorporate transit security design considerations into the project development and engineering phases of a project.

4.2.3.2.5 Office of Engineering and Construction

MDOT MTA's Office of Engineering and Construction is typically responsible for overseeing implementation of a project from engineering through construction.

The Office of Engineering and Construction tasks related to implementation of the SSCPP include, but are not limited to, the following:

- Complete and forward the Safety and Security Certification Level Determination Form and accompanying project information to the Office of Safety prior to 30 percent design;
- Participate in hazard assessments (e.g., PHAs, OHAs and TVAs);
- Incorporate safety and security concerns raised by the Office of Safety or through the hazard assessments and TVAs into project design reviews;
- Provide subject matter expertise into the safety and security certification process;
- Support the development of mitigating and controlling factors to address identified hazards and vulnerabilities;
- Review and provide input into CILs and checklists;
- Provide representation on the SSCC and the FLSSC;
- Develop site-specific Safety Plans for construction;
- Implement the construction safety and security program;
- Provide input into integrated test plans and documentation developed by project staff;
- Review and revise the design criteria, as appropriate, for a project; and
- Verify design criteria certification checklists and construction certification checklists are accurate and in accordance with SSCPP guidance through the Certificates of Conformance.

4.2.3.2.6 Program Management Office

MDOT MTA's Program Management Office (PMO), established in 2022, is charged with the mission of ensuring a well-planned, coordinated delivery of all Light Rail and Metro projects to support reliable, safe, and constantly improving service to MDOT MTA customers.

The PMO tasks related to the implementation of the SSCPP include, but are not limited to, the following:

- Ensure that projects are submitted to the Office of Safety at not later than 30% design for determination of Safety and Security Certification requirements
- Ensure safety implementation and compliance in programs and projects under the PMO's management
- Maintain consistent communication with maintenance staff to ensure all preventative and corrective maintenance for projects under the PMO's management is incorporated in the 60-day look ahead, at a minimum, and 2-week look ahead (approved work) schedule

4.2.3.2.7 Office of Procurement

MDOT MTA's Office of Procurement is responsible for ensuring that safety and security requirements are assessed for and

included in procurement activities, including RFPs and contracts. The Office of Procurement tasks related to implementation of the SSCPP include, but are not limited to, the following:

- Involve the Office of Safety in review of procurements that involve safety and security critical elements;
- Verify that procurement procedures are followed for a project, including Article 1 testing; and
- Ensure that all required components/ parts, tools, manuals, and fluids are included in the procurement process with suitable spares and supplies.

4.2.3.2.8 Transit Operations

Transit Operations includes Training and Development, which is responsible for providing training that supports the safe and secure operation of MDOT MTA, including its transit system and administrative activities.

- Training and Development tasks related to implementation of the SSCPP include, but are not limited to, the following:
- Update existing and create new, as needed, training materials to reflect new MDOT MTA projects (typically, training materials are received from a contractor for use by Training and Development prior to revenue operations);
- Coordinate with the Office of Safety and affected departments and modes to identify training needs; and
- Track the effectiveness of existing training offerings, continually assess areas for improvement, and share findings with the Office of Safety for continual improvement.

Transit Operations also includes modal operational departments. Modal operational department tasks related to implementation of the SSCPP include, but are not limited to, the following:

- Support operational start-up activities; and
- Participate on a project SSCC, as appropriate.

4.2.3.2.9 Office of Attorney General

MDOT MTA's Office of Attorney General is responsible for ensuring that the agency minimizes its legal exposure related to safety and security risk. MDOT MTA always owns its safety and security risk. Safety and security risk cannot be insured away or offloaded onto a contractor.

The Office of Attorney General tasks related to implementation of the SSCPP include, but are not limited to, the following:

- Understand MDOT MTA's safety and security risk profile;
- Weigh in on risk-based decisions and resource allocations; and
- Review and provide legal advice on procurement contracts involving safety and security critical elements, including whether security sensitive information has been referenced in draft procurement documents.

4.2.3.3 Committees Supporting Safety and Security Certification Process

MDOT MTA may establish the following committees, as needed, when a large project is being planned, designed, and constructed. For smaller projects, MDOT MTA may establish a single project-specific SSCC that provides the functionality of all committees listed below.

4.2.3.3.1 Safety and Security Certification Committee

A project-specific Safety and Security Certification Committee (SSCC) is established for all projects requiring Full safety and security certification and should be considered for projects undergoing Medium and Limited certification. The purpose of the SSCC is to oversee the conduct of safety and security efforts for MDOT MTA capital projects. The SSCC

oversees implementation of the SSCPP and directs resolution of identified hazards. The SSCC is responsible for overseeing the criteria conformance process. The SSCC discusses ongoing safety and security concerns; reviews and approves certification activities; and resolves issues among a project team and with the agency's executive leadership.

Committee size and membership is scaled to the size and complexity of the project. Members of the SSCC may include Project Manager(s) and representatives from Transit Operations, Engineering, Office of Safety, and MTA Police Force as determined appropriate to the type of capital project being built and required safety and security certification activities and documentation. The SSOA may be invited to attend on an as-needed basis for all projects related to Light Rail and Metro Subway. The committee reviews a project's design and works with the Project Manager to identify and eliminate hazards. The SSCC must approve the design before certification activities are undertaken.

The SSCC is further responsible for assuring that the proper system requirements have been established, that system safety and security reviews have been performed at each stage of a project, and that sufficient documentation supports the review and resolution of identified deficiencies.

The SSCC reviews and approves, as applicable:

- The project-specific SSCP, including forms to be used in the safety and security certification process;
- Certifiable Elements List (CEL) and CIL;
- Safety and Security Design Criteria and Construction Specification Conformance Checklists; and
- Assessment of existing MTA operations, maintenance and training program adequacy, and safety and security initiatives.

The SSCC also monitors the processing and retention of safety and security certification documentation, in addition to scheduling and holding periodic meetings to accomplish the following:

- Review proposed changes to a project-specific SSCP;
- Assist as required in defining safety and security related tests;
- Review safety and security test plans and test procedures;
- Review hazards and vulnerability assessments and resolutions;
- Arrange site visits and witness safety and security-related tests as appropriate;
- Develop and maintain a list of safety and security certification related items;
- Assist in resolving safety and security certification related items of noncompliance; and
- Oversee preparation of and approve the Final SSCVR.

A project may have a Safety and Security Representative who may serve as Co-Chair of the SSCC and convene meetings and review sessions necessary to achieve final certification. Minutes are kept of each meeting. Preparation of all materials and logistics for SSCC meetings is the responsibility of the Chair or designee. The Safety and Security Representative reports to the Office of Safety.

Meetings of the SSCC are scheduled to support the certification process. The SSCC reviews documentation of compliance, assigns responsibility for resolution of deficiencies, and assigns resolution. The SSCC also authorizes the issuance of a Certificate of Conformance.

The SSCC is required for all projects undergoing Full Certification. The SSCC should be considered for projects undergoing Medium and Limited Certification that have unique requirements or could involve Priority 1 or 2 risk. The SSCC allows for collaboration on risk management, helps balance risk, and reduces liability against a single decision maker.

4.2.3.3.2 Fire/Life Safety and Security Committee

Projects undergoing Full Certification are required to have a Fire/Life Safety and Security Committee (FLSSC). For projects undergoing Medium and Limited Certification, the functions of the FLSSC may be provided as part of the SSCC.

The purpose of the FLSSC is to identify and work through issues related to agency matters relevant to fire protection and life safety concerns. The committee develops lists of potential issues related to fire and life safety and identifies mitigations and solutions to those problems/issues.

The committee is comprised of stakeholders affected by fire and life safety conditions, as well as assisted by members of the MDOT MTA Capital Projects and Emergency Management teams. These stakeholders may include representatives from the City of Baltimore, Baltimore City Police Department, Fire and Rescue, and surrounding jurisdictions, and the following MDOT MTA offices: MTA Police Force, Operations Support, Field Supervision, Maintenance of Way, Rail Equipment Maintenance, Bus Maintenance, Facilities Maintenance, Community Relations, Bus Transportation, and/or Rail Transportation.

The FLSSC serves as a liaison between MTA and external emergency response agencies. The FLSSC reviews, analyzes, and provides input related to the fire/life safety and security aspects of a project by identifying emergency response needs during design and construction. The FLSSC provides the expertise and support for:

- Emergency responder training programs;
- Emergency drills/activities;
- Emergency operating procedures and plans; and
- Fire/life safety input into the PHA and TVA.

These various emergency preparedness components are required to adequately respond to accidents/incidents that might occur during Systems Integration Testing, Start-up, Pre-revenue operations, and operations and maintenance of a project.

4.2.3.3.3 Safety and Security Operations Review Committee

The Safety and Security Operations Review Committee (SSORC) is required for all projects undergoing Full Certification. For projects undergoing Medium and Limited Certification, the functions of the SSORC may be provided as part of the SSCC.

The SSORC is established during the construction phase to plan and prepare for pre revenue operation and ultimately ensure readiness for revenue operation. This committee consists of key staff and is chaired by the Chief Operating Officer or designee. The SSORC reviews the documentation provided for Certificates of Conformance related to maintenance and training, manuals and SOPs, and rulebook development. For rail fixed guideway projects (Metro Subway or Light Rail), the SSORC ensures that revenue service SSOA regulations are integrated into SOPs, procedures, training, and rulebook requirements. This committee reviews all integrated testing documents to ensure conformance with applicable operating practices.

4.2.3.4 Safety and Security Certification Program Steps and Activities

The safety and security certification process verifies achievement and documentation of acceptable safety and security risk levels to allow the initiation of operations. The following are the high-level steps in MDOT MTA's safety and security certification process for projects:

- Set up the project for safety and security certification
- Determine safety and security requirements
- Complete applicable safety and security

conformance activities

- Verify operational readiness
- Complete project documentation for certification and transition to operations

The specific activities to be undertaken under each step vary according to what level of SCC has been determined for the project. Section 3.1 of the SSCPP, Safety and Security Certification Steps and Activities, includes a matrix that identifies the activities required by each certification level, which MDOT MTA office has primary or supporting responsibility, and in which project phase the activities are conducted.

4.2.4 Procurement of Services, Equipment and Materials

Safety: The procurement of services, equipment, and other materials has a direct impact on the safety of MDOT MTA's operations and services. It is, therefore, of the utmost importance to ensure that the MDOT MTA Procurement process considers and evaluates the safety aspects of the procurement on MDOT MTA's operations and services. Information pertaining to the safety aspects of the procurement process is provided below.

Risk Management: The procurement of services, equipment and materials require a risk management review and assessment to verify that insurance coverage is:

- Assessed for Owner Controlled Insurance Program (OCIP) participation;
- Applicable; and
- Limits are adequate.

Risk Management, operating under Safety, also assesses insurance needs beyond the procurement stage for MDOT MTA. For example, Risk Management coordinates with the State Treasurer's Office for insuring facilities and operational coverages.

Risk Management notifies the State Treasurer's Office upon completion of new facilities or purchasing equipment / materials that may have an impact on operational insurance coverage.

4.2.4.1 Procurement Process

Whenever feasible, MDOT MTA addresses safety requirements within the procurement process. MDOT MTA's procurement process attempts to ensure that services, equipment, and other materials obtained by MDOT MTA will not degrade the safety of MDOT MTA's operations and services. These requirements are met by:

- Including safety requirements in technical specifications and contracts
- Evaluating impacts on MDOT MTA's operations and services in accordance with the Safety Risk Management process
- Requesting SDS for new chemicals in accordance with the hazardous materials program
- Requesting and analyzing insurance requirements
- Requiring the submittal of certificates of compliance stating that all work has been performed in compliance with the technical specification
- Evaluating replacement parts and sub-component
- Monitoring contractor/vendor performance

When procuring services, equipment, and other materials MDOT MTA strives to ensure that these elements meet or exceed all applicable Federal, State, and local requirements.

MDOT MTA's procurement process establishes written selection procedures for procurement transactions. These procedures ensure that a clear and accurate description of the technical requirements (including those related to safety) for the services, equipment, or other materials to be procured, is included in all solicitations. Examples of technical requirements which may be included in a request for proposals

include requirements related to a contractor's or vendor's performance and safety records, demonstrated experience within a specific discipline, warranty coverage, or information pertaining to training and certification programs. Depending on the nature and extent of the procurement, various MDOT MTA personnel and departments may be involved in developing and reviewing procurement requirements as well as in selecting the services, equipment, or other materials.

4.2.4.2 Project Managers

MDOT MTA Project Managers are essential to the procurement process, as they oversee and are responsible for the activities and daily technical administration related to the contracted services, equipment, or materials. The responsibilities of the Project Manager may vary depending on the nature and extent of the procurement. These responsibilities will as a minimum include:

- Monitoring the performance of the procured services, equipment, or other materials
- Monitoring the performance of a contractor/vendor in their performance of the contract including complying with the technical requirements of the contract as well as with applicable Federal, State, local, and MDOT MTA rules, regulations, policies, and procedures
- Serving as a technical expert regarding all matters pertaining to the contract
- Ensuring storeroom and purchasing requirements are fulfilled correctly
- Defining the work area of the contractor/vendor and what MDOT MTA facilities, buildings, or other properties to which the contractor/vendor will be given access. Access to MDOT MTA's operations and services will be limited to the greatest extent possible to reduce the risk of injury to contractor/vendor personnel and to limit the interference with MDOT MTA's daily operations and services.

Typically, all problems related to the procured services, equipment, or other materials, such as equipment malfunctions or failures or a contractor's/vendor's poor performance, are to be submitted to the Project Manager for review. It is the responsibility of the Project Manager to then review all provided information and to make the initial request for remedial action. When necessary, such as when a life-threatening situation exists, additional members of MDOT MTA management such as the Office of Procurement and the Office of Safety may become involved.

4.2.4.3 Emergency Procurements

There may be instances, in which the immediate procurement of services, equipment, or other materials is necessary to maintain safety as well as MDOT MTA's operations and services. These situations are considered emergency conditions and as such special procedures are enacted to respond to and control the event. Examples of emergency conditions or events, which may require the emergency procurement of services, equipment, or other materials include, but are not limited to:

- Equipment failures and malfunctions
- Emergency response and recovery activities related to accidents/incidents
- Employee strikes or work stoppages
- Other reason declared by the MDOT MTA Administrator, which may create an immediate threat to public health, welfare, or safety.
- Pandemic and contagious illness
- Riots
- Severe weather conditions (i.e., flooding, tornadoes, hurricanes, etc.)
- Terrorist attacks

In all cases, whether under normal or

emergency conditions, the procurement process is conducted in accordance with the proper policies and procedures of MDOT MTA as well as the SRM process described throughout this plan. All decisions regarding the procurement process are made with regards to safety and the effects and impacts the procurement will have on the safety of MDOT MTA's operations and services must be thoroughly evaluated. Every effort is made to ensure the procurement of new services and equipment will not diminish the effectiveness of current safety processes or hazard controls or create new or additional hazards within the system. All parties involved with or affected by the procurement are notified and continually informed regarding the procurement.

4.2.4.4 Quality Assurance and Warranties

The Office of Safety Management and Risk Control (Office of Safety) Safety Assurance program assists with MDOT MTA's procurement process attempts to ensure that services, equipment, and other materials obtained by MDOT MTA will not degrade the safety of MDOT MTA's operations and services; however, the following Quality Assurance role is limited to certain activities in engineering and not performed through the Office of Safety.

- Quality Assurance (QA) includes planning for quality management activities and confirming those activities were carried out through random and sample audits.
- Quality Control (QC) includes the actual implementation of quality management activities, inspecting to confirm that the processes are performed correctly and completely at the time they are being performed, and documenting quality management activities.

The evaluation of contractor/vendor services, equipment, and other materials is essential not only to maintaining safety, but also to maintaining quality. Therefore, MDOT MTA includes quality requirements that are compliant with the MTA Quality Management System Plan (QMSP), including warranty clauses, in the procurement process.

Contractors/vendors are responsible for controlling and ensuring the quality of their services by submitting a Contract Quality Control Plan (CQCP) and at any time must be able to demonstrate to MDOT MTA that contract quality requirements have been met. Contractor/vendor responsibilities also encompass the work performed and the equipment and materials supplied by subcontractors. The requirements of the CQCP are derived from the MTA QMSP and are inclusive of the FTA mandated 15 elements of quality; which are monitored by MTA QAQC for compliance. These quality control activities may be carried out by the MTA QAQC or Project Manager and/or related MDOT MTA office. The following are the 15 elements:

1. Management Responsibility
2. Documented Quality Management System
3. Design Control
4. Document Control
5. Purchasing
6. Product Identification and Traceability
7. Process Control
8. Inspection and Testing
9. Inspection, Measuring, and Test Equipment
10. Inspection and Test Status
11. Nonconformance
12. Corrective Action
13. Quality Records
14. Quality Audits
15. Training

Note: Safety certification and safety deliverables can be tied to milestone payments and have associated liquidated damages for late delivery to incentivize contractors to complete their safety-related projects.

4.2.4.5 Additional Procurement Requirements

As a recipient of federal assistance, various federal laws and regulations apply to MDOT MTA's contracting for facilities, equipment, and materials. These laws and regulations, in many cases, directly impact the safety of MDOT MTA's operations and services. Examples of these federal laws and regulations include, but are not limited to the following:

- American with Disabilities Act (ADA) of 1990
- Americans with Disabilities (ADA) Accessibility Specifications for Transportation Vehicles, (49 CFR Part 38)
- Bus Testing, (49 CFR Part 665)
- Buy America Requirements (49 CFR Part 661)
- Clean Water Act (42 U.S.C. Section 7401)
- Contract Work Hours and Safety Standards Act (40 U.S.C. Sections 327-333)
- Labor standards provisions applicable to contracts covering federally finance and assisted construction (29 CFR Part 5)
- Drug Free Workplace Requirements (49 CFR Part 29)
- Equal Employment Opportunity (41 CFR Part 60)
- Federal Water Pollution Control Act (33 U.S.C. Section 1251)
- Pre-award and Post Delivery Audits of Rolling Stock Purchases (49 CFR Part 663)
- Procedures for Transportation Workplace Drug and Alcohol Testing (49 CFR 40)
- Prevention of Alcohol Misuse and Prohibited Drug Use in Transit Operations (49 CFR Part 655)
- Rehabilitation Act of 1973, Section 504
- Nondiscrimination on the Basis of Disability in Federally Financed Programs (49 CFR Part 27)
- Transportation Services for Individuals with Disabilities (49 CFR Part 37)

4.2.4.6 Procurement - General Responsibilities

General responsibilities of MDOT MTA personnel and departments with respect to contracting for equipment, facilities, and materials are as follows:

- Department Directors, in coordination with the Office of Safety to evaluate the safety impacts and aspects of planned procurements in accordance with the safety risk management process to ensure procured services, equipment, or other materials will not degrade the safety of MDOT MTA operations or services.
- All personnel and departments to comply with the procedures and policies established by MDOT MTA Administrator and MDOT MTA Office of Procurement's Contracts Administration and Materials Management Sections.
- All personnel and departments to adhere to the safety procedures related to the acquisition, handling, storage, disposal, and record keeping of hazardous materials.
- All personnel and departments to follow the established quality assurance and control practices to ensure safety and quality (i.e., testing of components, supervisors overseeing employee work practices and procedures).

4.3 Continuous Improvement Program

A continuous process structures the MDOT MTA's ability to improve. By instilling a commitment to always look for better, safer ways to do business, the agency creates a culture of safety across activities and a commitment to constantly learning from the past to improve for the future.

Continuous improvement is a core component of an effective SRM program. The feedback loop created by the SRM and Safety Assurance processes feed the continuous improvement of the agency. SRM encompasses the formal set of processes for hazard analysis and safety risk assessment. Safety Assurance includes the processes within SMS that function to ensure the implementation and effectiveness of safety risk mitigation, and to ensure that the transit agency meets or exceeds its safety objectives through the collection, analysis, and assessment of information.

Information collected for safety and risk monitoring in the transit industry includes operations and maintenance (O&M) data, audit and accident investigation results, and training records and information. Depending on their nature, problems discovered during monitoring may be addressed immediately within Safety Assurance or referred to SRM for formal risk assessment and determination of controls or mitigations. In general, non-compliance is addressed within Safety Assurance, and ineffective controls and new hazards and problems are reviewed in SRM.

4.3.1 Internal Safety Review Program

MDOT MTA's Internal Safety Review Program supports the agency's continuous improvement by measuring the ongoing effectiveness of the MDOT MTA PTASP and determining the extent to which departments, personnel and contractors are fulfilling their responsibilities under the program. MDOT MTA's Internal Safety Review Program (ISRP) is designed to verify on an on-going basis that safety processes have been developed and implemented in accordance with the MDOT MTA PTASP throughout MDOT MTA's operations and services to:

- Assess the effectiveness of the safety processes
- Identify process deficiencies, potential hazards, and system risks
- Verify that prior corrective actions are being tracked for closure and to evaluate their effectiveness
- Recommend SMS improvements

The ISRP complements other methods MDOT MTA uses to assess, measure, and monitor safety performance, as discussed previously in Section 4.1.1. The leading and lagging KPIs and numeric targets related to fatalities, injuries, safety events, and system reliability guide the ISRP, ensuring that all MDOT MTA employees collectively and collaboratively work toward common targets with a shared understanding of historic and current performance in these key areas.

Internal Safety Review Program Oversight and Administration

The Office of Safety, while fully involved in all aspects of MDOT MTA's operations and services, serves as a resource for each of MDOT MTA's modal operations, maintenance, management, and administrative divisions. The Internal Safety Review Program exists to assure each MDOT MTA department implements, continually administers, and measures the effectiveness of the program as documented in standard operating procedure MDOT MTA 3088.

The Office of Audits develops an internal safety review schedule that addresses all required elements of the PTASP over a three-year cycle. Formal Internal Safety Review schedules are created by the Office of Audits and the actual review dates are coordinated with the department under review. Annual updates of the internal safety review schedule are provided to the SSOA. The reviews may incorporate preventive maintenance inspections, general

inspections, industrial hygiene surveys, environmental surveys, safety inspections, and reviews of safety policies and procedures.

The results of each internal review are provided in an Internal Safety Review Report that lists a summary of the findings, finding details, recommendations to correct open items, and an initial hazard analysis. Open findings are documented in MDOT MTA's CAP Log, where all findings, recommendations, corrective actions, responsible departments and personnel, estimated closure dates, and status information are also maintained. For each hazard and deficiency identified a hazard risk assessment value is determined so the hazards and deficiencies can be prioritized for closure. If safety review results and the resulting CAPs are not resolved in a timely manner, they are presented to the MDOT MTA Risk Review Committee for additional review and action at an elevated level.

For Metro Subway and Light Rail operations, MDOT MTA submits an annual report to SSOA according to RSOPS Section 3.3, ***Minimum Requirements for Annual Internal Safety Audit Report***.

This annual report must include:

- a listing of the internal safety reviews conducted for that year;
- a discussion of where MTA is in meeting its three-year internal review schedule, including the identification of any obstacles in meeting the schedule and any proposed mitigation measures;
- an updated schedule for the next year's reviews;
- the completed versions of the checklists that were submitted at the time of notification;
- the status of all findings, recommendations and corrective actions resulting from the reviews conducted that year; and
- any challenges or issues experienced by the MTA system safety function in obtaining action from/compliance with these findings, recommendations, and corrective actions during that year.

The annual report is submitted with a formal letter of certification signed by the MDOT MTA Administrator indicating MDOT MTA's compliance with the MDOT MTA PTASP no later than January 31 of each year. If this certification cannot be made, the MDOT MTA Administrator identifies what actions will be taken to achieve compliance.

4.3.2 Safety Culture Assessment

Assessing the safety culture of an organization is a subjective task, based on a range of indicators. Assessing it will provide MDOT MTA a valuable insight into how employees feel about the organization and the degree to which safety is perceived as important.

While MDOT MTA cannot directly control how people think and feel and has only limited influence on an individual's behavior, together we can provide systems and management actions that will foster desirable safety behaviors, establishing and fostering a culture of safety.

A **Safety Culture Survey** will be conducted annually. Results of the survey will then be compiled into a maturity analysis report.

SECTION 5. Safety Promotion

5.1 Safety Communications

FTA requires that public transportation agencies communicate safety and safety performance information throughout the organization. Safety communications must:

- Communicate the Safety Management Policy throughout the agency
- Include information on hazards and safety risk relevant to employees' roles and responsibilities
- Inform employees of safety actions taken in response to reports submitted through the Employee Safety Reporting Program (ESRP)

MDOT MTA has been working toward implementation of SMS, communicating with all levels of the agency at every step. One of the most basic, high-level safety communications from MDOT MTA management to agency employees and contractors is the SMPS (see Section 2.1.1). This statement was developed in June 2019, approved, and signed by the Accountable Executive. The SMPS has been disseminated to all MDOT MTA employees through the agency's intranet, the quarterly Transit Notes publication, and is included in the required MDOT MTA employee training program, "SMS Level 1 – Basics".

5.1.1 SMS Development Milestones

MDOT MTA has been preparing for the SMS since 2016, after FTA published its Public Transportation Safety Program regulation, 49 CFR Part 670. SMS communication is an ongoing education and outreach effort, to build an understanding of SMS principles and how each individual employee or contractor associated with MDOT MTA organization has a role and responsibility in the agency's SMS. Some of the major milestones in SMS development include:

2017

- Completed an SMS Gap Analysis

2018

- Designated SMS Team Lead, and Implementation Team
- Designated SMS Ambassadors from each MDOT MTA department
- Held an agency-wide SMS Kickoff Conference
- Provided TSI training on SMS Principles for Transit to all SMS Ambassadors

2019

- Developed and disseminated MDOT MTA Safety Management Policy Statement
- Created an SMS page on MDOT MTA Intranet
- Conducted a Safety Performance Measures Workshop
- Established new Safety Hotline number (844-MTA-SAFE)
- Developed a suite of branded SMS promotion and education materials
- Released first edition of MDOT MTA SMS Quarterly Newsletter

2020

- Conducted agency-wide Safety Culture Survey
- Approved and disseminated Employee Safety Reporting Program (ESRP) directive
- Released an online training program in MDOT MTA Learning Management System (LMS) called "SMS Level 1 - Basics" for all employees and contractors

2021

- Implemented Safety All-Star Award Program
- Began conducting SMS Safety Risk Assessments with newly-developed standardized SRA form

- Oversaw on-site COVID-19 Vaccination Clinics and conducted After Action Review of COVID-19 Response
- Implemented Workers Compensation CCTV Task Force
- Helped formulate eBike and eScooter Policy Mitigation Plans

2022

- Provided stakeholder input from Operator Assault Task Force which evolved into MDOT MTA's response to the BIL mandate
- Participated and helped organize Safety on the M.O.V.E. in-reach program
- Formed a 50/50 Joint Labor-Management Safety Committee to review hazard risk mitigations and approve revisions to the PTASP
- Created the Mitigation Monitoring Assurance Program to formally track implemented hazard controls to assure effectiveness
- Released an online training program in MDOT MTA LMS titled "SMS Level 2 – Advanced" for further training of the Safety Risk Management and Assurance processes for departmental leaders
- 2023
- Created SOPs for MTA's Safety Risk Management process and Safety Event Tracking and Document Storage process
- Implemented full agency training of SMS Level 2 safety risk management principles for management personnel
- Designed Fatigue Risk Management online tracking dashboard
- Conducted Mental Health First Aid training certification pilot course which was adopted as a permanent course offering
- Implemented 988 Suicide and Crisis Lifeline signage across all rail transit modes
- Developed Functional Requirements and User Stories for SMS Software development project.
- Development commenced on Safety Rules Violation Monitoring program in ARS that will replace the Safety Performance Evaluation System tracking.

2023

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- Development commenced on Safety Rules Violation Monitoring program in ARS that will replace the Safety Performance Evaluation System tracking.

5.1.2 Agency Safety Committees Communications

A two-way feedback loop between frontline employees and management about safety information is crucial in establishing a positive safety culture. MDOT MTA communicates safety-related information from the operating divisions and other departments of the agency to committees with responsibility for

evaluating and acting on specific areas of safety management. These committees work in a coordinated manner to ensure the continual improvement of safety at MDOT MTA.

The Office of Safety, MDOT MTA executive management, and department directors and supervisors are responsible for sharing information about hazards that have been reported and how they have been addressed or mitigated. All hazards that are reported through the ESRP are distributed to the appropriate offices and placed in a hazard log, where they are assessed by appropriately trained supervisory staff and the risk level and appropriate mitigation or control is determined. Mitigations are addressed at the departmental level and updated in the ESRP to be tracked as completed or in progress, with detailed findings. Mitigation and control actions and other safety information resulting from the ESRP program are communicated to MDOT MTA employees through a variety of communications methods, including but not limited to staff meetings, toolbox talks, safety bulletins, and email.

5.1.3 Awards and Recognition

MDOT MTA encourages employee participation in safety management by rewarding actions and ideas that improve employee and customer safety and health. Some of the ways that MDOT MTA encourages its employees are described below.

5.1.3.1 Bus Roadeo and Rail Rodeo

MDOT MTA organizes operator and maintenance competitions for bus operations and rail operations, in which operators and mechanics demonstrate their skills. Teams of operators and mechanics take part in challenges involving the operation of vehicles through obstacle courses containing simulated hazards. The teams also compete in repairing vehicles. The competitions are a means of encouraging and rewarding employee performance and winners of the event are given the opportunity to participate in the APTA's transit competitions, the International Bus Roadeo and the International Rail Rodeo.

5.1.3.2 Safety All-Stars

MDOT MTA organizes safe performance recognition events to reduce preventable accidents through incentivizing safe vehicle operation and maintenance practices. Safety All-Star Awards are provided to MDOT MTA's full-time operators and maintainers who have 3, 5, or 10 years of experience without a preventable accident, traffic citation or Safety Rules Compliance Program violation. The recognition demonstrates senior management's commitment to improving safety and promotes a positive safety culture. For the individual awards, the Office of Safety will analyze the data to determine the list of qualified operators and this list will be reviewed by the modal group. The operators and maintainers who qualify will have worked at least 180 days for the calendar year. Additional information regarding this program is maintained by the Office of Safety.

5.1.3.3 Administrator Superstar Award

MDOT MTA Administrator recognizes MDOT MTA employees annually for their dedication to the agency based off quantifiable key performance indicators and the award candidates record of safety and compliance with safety requirements. The Administrator's Superstar Award is presented formally to recognize the employees who have demonstrated initiative in taking action on safety-related issues. The Administrator's Superstar Award is provided to employees within the bus, rail, maintenance, and administrative support divisions. The award nominees are identified by their peers and supervisors for their observed work ethic and effectiveness, while championing for a safe work environment. For additional information regarding the administrator's award contact the Office of the Administrator.

5.1.3.4 Chief Safety Officer Citation

The Office of Safety may bestow a Chief Safety

Officer Citation to MDOT MTA employees, contractors, or vendors to recognize safety excellence in the workplace, including actions to mitigate safety risk and foster employee safety. Individuals or groups may be nominated to the Chief Safety Officer for a citation. The Office of Safety is responsible for the development of each citation and for conducting the research needed to verify that proposed nominees meet the standard of excellence for a citation. There is no minimum or maximum number of citations that must be distributed by the Office of Safety. For additional information regarding the Chief Safety Officer Citation contact the MDOT MTA Office of Safety.

5.1.4 Employee Safety Reporting Program

All employees, contractors, and vendors are responsible and accountable for their own safety and for the safety of those around them. To heighten safety awareness and encourage the identification and resolution of hazards, MDOT MTA formally adopted a directive outlining the agency's confidential and non-punitive Employee Safety Reporting Program.

MDOT MTA encourages all employees to report safety events, concerns, and issues. The directive states that it is always preferable to report safety concerns at the level closest to the hazard, through the normal chain of command. However, if for any reason an employee or contractor is not comfortable with approaching their supervisor or management, the Safety Hotline is a resource that is available 24 hours a day, 7 days a week for reporting and resolving safety concerns, events, and issues. Employees have the option of making an anonymous report into the system. MDOT MTA also has an email safety reporting program where safety concerns can be sent ***ReportAllHazards@mdot.maryland.gov***.

Safety concerns include, but are not limited to, non-compliance or violations of safety rules, hazardous conditions, environmental concerns, close calls, and incidents and accidents involving MDOT MTA personnel, equipment, and property. The Safety Hotline does not relieve personnel from taking reasonable actions to mitigate or eliminate an imminent safety hazard.

Under the ESRP directive, a non-punitive ESRP means a reporting program under which there will be no disciplinary or other retaliatory action taken against an employee for reporting safety concerns, including close calls, unless the disclosure indicates, beyond any reasonable doubt, an illegal act, gross negligence, or a deliberate or willful disregard of regulations or procedures by the employee reporter. The directive clearly delineates which Events are and are not eligible for protection from discipline.

The directive states that MDOT MTA will communicate safety and safety performance information throughout the agency. Information about hazards and safety risks that are relevant to employees' roles and responsibilities will be shared. Employees will be informed of safety actions taken in response to reports submitted through the ESRP.

To facilitate these processes, MDOT MTA has established a Safety Hotline 844-MTA-SAFE (844-682-7233) and email (***ReportAllHazards@mdot.maryland.gov***), in which safety concerns and/or hazards can be anonymously reported. Messages left on the hotline are reviewed daily

Figure 28 - Lanyard Card for Employee Safety Reporting

and addressed appropriately. The Safety Hotline may also be delegated as the central point of contact for other agency concerns that require 24/7 monitoring and/or response.

SMS cards are provided to all the managers, supervisors, and front-line employees at MDOT MTA to reinforce their personal safety roles and accountabilities, safety reporting options and unacceptable workplace behaviors. Figure 28, below, shows a lanyard card that has been distributed to employees to help them remember the different methods which can be used to report safety hazards and concerns.

5.1.5 Workplace Safety Communications

The most valuable resource of MDOT MTA is its employees, and as such, great efforts must be put into place to ensure to the greatest extent possible, that the safety of all MDOT MTA employees is maintained.

The Workplace Safety Requirements of MDOT MTA encompass a wide range of occupational safety and health, injury and illness prevention, hazard communication, industrial hygiene, fire and life safety, emergency preparedness, operational safety, environmental, and security programs. Many of these programs have been developed in accordance with Federal, State, and local regulatory requirements, such as those of M/OSHA and the “Employee Right to Know” requirements. Office of Safety in cooperation with MDOT MTA’s Office of Training develops and maintains these programs, while facilitating their implementation throughout MDOT MTA. Many of these programs are interrelated and based on other SMS processes such as the Safety Risk Management Program.

The workplace safety awareness program entails communicating safety concepts to employees through various methods including, but not limited to, posting and distributing bulletins, notices, and general orders; placing safety related posters, brochures, signs, and hazard warning signs throughout work areas and vehicles; developing and presenting specific safety related training programs; and making safety topics an action item during meetings. Safety awareness is also heightened through employee rulebooks, SOPs, and operations manuals.

5.1.5.1 Safety Warning Signs and Personal Protective Equipment (PPE)

Many hazards can be encountered throughout MDOT MTA's work areas, especially in maintenance facilities and yards where the work being performed is industrial and hazardous in nature. Although MDOT MTA strives to eliminate hazards first through engineering means, there may be occurrences when such controls are not feasible. In such cases, other methods of control are necessary. These controls include the use of warning signs or PPE.

To heighten employee awareness in work areas and to inform personnel, contractors, or other visitors to MDOT MTA property, MDOT MTA has installed various safety warning signs throughout its facilities and property. These signs are used to remind employees of safety requirements and procedures such as the use of personnel protective equipment or lockout/tagout devices; to communicate information about potential hazards; to limit access to restricted areas; and to designate emergency response equipment and procedures, such as fire extinguishers and evacuation routes. All personnel are responsible for obeying the information conveyed by the safety warning signs.

In addition to posting safety warning signs throughout MDOT MTA's various properties, MDOT MTA also strives to evaluate its work areas, practices, and procedures to determine when PPE is required. Examples of such areas and practices include wearing safety glasses when performing metal grinding work or when working in or passing through various maintenance shops. PPE also includes wearing a reflective vest while at event scenes or while working in yards.

It is the responsibility of all MDOT MTA personnel to wear the appropriate PPE, as defined by work procedures and safety policies, while performing their daily duties. It is the responsibility of all supervisors and managers to ensure that all personnel under their supervision wear and use the appropriate PPE while performing their job duties.

5.1.6 Fitness for Duty and Fatigue Risk Management

It is the responsibility of MDOT MTA supervisory personnel to ensure that employees carrying out safety-sensitive responsibility are Fit for Duty when reporting for and carrying out all functions of work. It is the responsibility of MDOT MTA safety-sensitive employees to report for and carry out all functions of their work Fit for Duty. Being fit for duty is generally defined as being physiologically and mentally prepared and capable of performing assigned duties at the highest degree of safety. It is critical for MDOT MTA safety-sensitive employees, who are responsible for the safety of customers, the general public, and the agency's equipment and assets, to be fit and fully attentive at all times while on duty. The American Public Transportation Association (APTA) has developed a standard for transit agencies to assist in developing a fitness for duty (FFD) program (RT-OP-S-018-12 Fitness for Duty Program Requirements, January 2019). The standard describes a comprehensive FFD program that address medical examinations and FFD assessments, regular FFD checks when reporting to duty, return to work policies, and nonpunitive employee self-reporting.

There is a clear linkage between fatigue and transportation accidents. Although the exact number of transportation accidents caused by fatigue is unknown, the NTSB has found that fatigue was a probable cause

in approximately 20 percent of 182 major accident investigations and has issued more than 200 safety recommendations addressing fatigue-related problems in all modes of transportation. In addition to increasing the risk of accidents due to potentially "falling asleep at the wheel," fatigue can cause other deficiencies such as poor judgment and decision-making, slowed reaction times, and loss of situational awareness and control. MDOT MTA is committed to providing a safe working environment in circumstances where fatigue is evident and protecting the health and safety of its employees, visitors, customers, property, and the public. APTA developed an industry standard for Train Operator Hours of Service Requirements (RT-OP-0S-015-09, June 2019) that outlines the following hours of service requirements and directs that transit agencies adopt these standards or those that are more restrictive:

- Maximum on-duty time should be restricted to 12 hours of work (allowing for a 16-hour period with 4 hours shift break)
- Minimum off-duty time of 10 hours or more between shifts
- Maximum number of six consecutive days worked

MDOT MTA is developing a comprehensive Fitness for Duty and Fatigue Risk Management Directive to meet the APTA HOS and FFD standards. The FFD/FRM Directive will cover certain safety-sensitive employees. New restrictions on on-duty working period will be subject to negotiation with labor representatives and the agreed-to standard will be included in the next collective bargaining agreement (CBA) between MDOT MTA and its primary non-profit labor union.

5.1.7 Drug and Alcohol

MDOT MTA has established a formal drug and alcohol policy in accordance with Federal and State regulations. The policy has been developed and is under review to ensure that it not only meets the requirements of these regulations, but also emphasizes MDOT MTA's commitment to its employees as well as provides for safe, reliable, and efficient services. MDOT MTA's drug and alcohol substance abuse prevention policy is summarized in the following sections.

5.1.7.1 Drug and Alcohol Program

As required by DOT regulations, MDOT MTA has developed a substance abuse prevention policy, which applies to all MDOT MTA personnel. The policy:

- Complies with the Federal Drug Free Workplace Act
- Implements the Governor of Maryland's Substance Abuse Policy contained in Executive Order 01.01.1991.16
- Defines the responsibilities of MDOT MTA personnel
- Identifies the circumstances under which an employee may be tested for alcohol and/or drugs
- Includes the consequences of violating the policy
- Informs employees of the education and treatment program (rehabilitation program), which are available to employees requiring treatment or those who seek treatment voluntarily
- Requires that all safety sensitive employees submit to random drug and alcohol testing
- Requires that all safety sensitive employees who have been absent from work for more than 90 calendar days submit to a drug and alcohol test and have a verified negative drug test result before returning to safety sensitive functions
- Requires that safety sensitive employees submit to drug and alcohol testing as a result of being involved in an accident/incident that meets the FTA threshold for post-accident testing. Supervisors

trained in post-accident procedures will determine if an employee must submit to a post-accident drug and alcohol test

- As required by federal guidelines, procurement procedures require that MDOT MTA contractors and vendors who perform safety sensitive duties create and/or comply with a drug and alcohol testing policy that is compliant with 49 CFR Part 40 and 655 as amended

5.1.7.2 Substance Abuse Program

MDOT MTA has implemented a Substance Abuse Education and Treatment Policy. This policy provides that MDOT MTA Office of Safety is responsible for:

- Administering this policy
- Initiating appropriate referral to the State's Substance Abuse Professional (SAP) or Counselor
- Ensuring that before returning an employee to duty to perform safety sensitive functions, the employee has successfully completed an effective substance abuse education and treatment program as determined by the SAP
- Ensuring that all safety sensitive employees returning to work have taken FTA drug and/or alcohol tests with a verified negative drug result and a confirmation alcohol reading of less than 0.02
- Managing the SAP's follow-up testing requirements
- Employees who have previously been terminated for a drug and alcohol policy violation and whose return to MDOT MTA service is mandated by a higher authority or employees who have entered this Substance Abuse Education and Treatment Program will not be returned to any duty status without successfully participating in this program

General responsibilities of personnel and departments with respect to MDOT MTA's Drug and Alcohol Substance Abuse Prevention Policy are provided as follows:

- It is the responsibility of MDOT MTA Office of Safety to develop and maintain an up-to-date drug and alcohol policy that is consistent with Federal and State regulations and MDOT MTA management policies.
- It is the responsibility of MDOT MTA Office of Safety to maintain and provide information regarding the drug and alcohol policy to all employees.
- It is the responsibility of MDOT MTA Office of Safety, in conjunction with Office of Training and Development, to ensure that all employees receive training on the drug and alcohol policy.
- It is the responsibility of all employees, contractors, and vendors to immediately notify their direct supervisor of any occurrence in which another individual has witnessed using drugs or alcohol on MDOT MTA property.
- It is the responsibility of all Department Directors, Managers, and Supervisors to enforce the requirements of the Drug and Alcohol Substance Abuse Prevention Policy in a consistent and appropriate manner.

5.1.8 Medical Certification and Monitoring

5.1.8.1 Medical Certification for MDOT MTA Bus and Rail Operators

Effective July 1, 2018, MDOT MTA formally extended the requirement for holding a valid Commercial Driver's License (CDL) and U.S. DOT Medical Card to all Metro and Light Rail Operators. This agency procedural change was implemented to address a regulatory gap between bus operators, who are required under FMCSA regulations to have medical

examinations every two years in order to maintain a valid CDL and transit rail operators, who are not subject to any federal regulations regarding medical certification. This agency decision requires that all Light Rail and Metro operators be subject to the same U.S. DOT medical examination and licensing requirements as those required for bus operators, creating a consistent safety net that ensures all MDOT MTA operators receive regular medical examinations.

5.1.8.2 Medical Monitoring in Respirator Use Areas

Medical monitoring requirements exist for MDOT MTA personnel, contractors, and visitors who will be entering respirator use areas. Medical monitoring requirements include baseline, annual, reassignment, and termination (exit) medical examinations. Required medical qualification documentation consists of a written physician opinion regarding any detected medical conditions that may limit working with hazardous substances activities and an opinion regarding protective clothing and respirator use. Copies of medical monitoring examination reports for MDOT MTA personnel will be reviewed and maintained by the Office of Safety. Copies of medical monitoring examination reports for MDOT MTA contractors and visitors will be reviewed and maintained by the project's manager or project safety representative.

MDOT MTA authorized medical examinations for field personnel are completed before job assignment (respirator use) and annually thereafter. MDOT MTA Office of Safety will recommend local medical providers for medical service outsourcing. Recommended occupational physicians, who are American Board of Preventive Medicine, Board-Certified (or Board-Eligible) provide occupational physician support services to MDOT MTA.

Medical examination reports are presented in the form of a clearance for work status report. These reports indicate any detected medical conditions that would increase an individual's risk of material health impairment from occupational exposure or if the individual has limitations in the use of PPE such as protective clothing or respirator use. Copies of medical examination reports for MDOT MTA personnel will be maintained by the Office of Safety. Copies of medical examination reports for MDOT MTA visitors will be maintained by the project's manager or project safety representative.

5.1.9 Employee Assistance Program (EAP) and Critical Incident Response

5.1.9.1 Employee Assistance Program

The MDOT MTA EAP is a confidential service managed by the Office of Labor and Employee Relations and provided through a State-contracted medical director that is provided to all State employees who may face personal matters that adversely affect their job performance. The goal of the program is to aid the employee in maintaining satisfactory job performance. Participation in this program is voluntary. Reasons for referral can include substance abuse, attendance, job productivity, behavior, mental or emotional well-being, stress, grief, and/or domestic violence. Information obtained during this process is confidential and is not maintained in employee's personnel or medical file. Additionally, information from this process will not be released without expressed written consent of the employee.

5.1.9.2 Critical Incident Response

Critical Incident Response/Critical Debriefing Services address situations involving serious, graphic, work-related incidents (where employees and/or private citizens are killed or seriously injured) or episodes of workplace violence. Individuals who observed or experienced these incidents often suffer from overt emotional distress. This service is available 24 hours a day, seven days per week on an as-needed basis.

5.1.10 Hazard Communication

It is the responsibility of MDOT MTA departmental managers, supervisors, and superintendents to ensure that all personnel and contractors are informed regarding the hazards that may be encountered in their work areas prior to the start of the employee's initial assignment. These hazards include those presented by hazardous materials and substances. It is the responsibility of departmental managers and supervisors to determine the training requirements necessary to ensure employees can perform their duties in a safe and efficient manner. As required under the OSHA Hazard Communication Standard (29 CFR 1910.1200) and Code of Maryland Regulations (COMAR) 09.12.33, employees have a "right to know" and must have training on the hazards presented by hazardous materials and substances in the workplace and the precautions and controls that must be taken or implemented to ensure safety when buying, storing, handling, and/or using the materials. To facilitate the identification of training needs, site-specific hazardous substances lists (Chemical Information Lists) are developed and maintained for the agency as a whole, indicating the locations of hazardous substances within various departments.

5.1.10.1 Safety Data Sheets (SDS)

MDOT MTA Office of Safety reviews and approves all chemicals or hazardous materials maintained by the department(s) in which the material is stored, handled, or used. MDOT MTA utilizes the MSDS Online database to track all SDS approvals and keep SDS information current. The MSDS Online system has is available on all MDOT MTA onsite computers. Because determining whether a material is hazardous often requires knowledge of the substance's chemical composition, SDS are required for all liquids, pastes, adhesives, waxes, powders, greases, gases, gels, and granulated materials. SDS are also required for all solid materials that may release fumes, dust, or other contaminants during a work process. SDS provide valuable information regarding the substance's flammability, reactivity, toxicity, and other health hazards, including:

- Intended use
- Consequences of accidental release
- PPE requirements
- Other special precautions required
- Volatile organic content
- Disposal requirements

5.1.10.2 Hazardous Material Labeling and Storage

Many departments throughout MDOT MTA have chemical storage locations. It is the responsibility of departmental managers and supervisors to ensure all hazardous materials are properly labeled and stored according to the requirements and recommendations of the SDS and material labels. Emphasis is placed on ensuring incompatible materials are not stored in the same location. This requirement applies not only to the storage facilities themselves, but also to all work areas in the materials are used. Storage locations are designed to appropriately accommodate, contain, and maintain material stability, both chemical and physical. All material containers must be properly labeled regarding their contents. The label also provides appropriate hazard warnings and the name, telephone number, and address of the manufacturer. MSDS Online has the ability to print out secondary labels (e.g., HazCom (GHS) Label – Hazardous Communications Globally Harmonized System Label) from this site for labeling and storing hazardous materials. MDOT MTA employees who are exposed to hazardous chemicals as part of their daily work assignments receive training on how understand pictograms and labels on hazardous materials containers and how to use SDS. Posters are displayed throughout MDOT MTA facilities as visual reminders to support the agency's Hazard Communication Program.

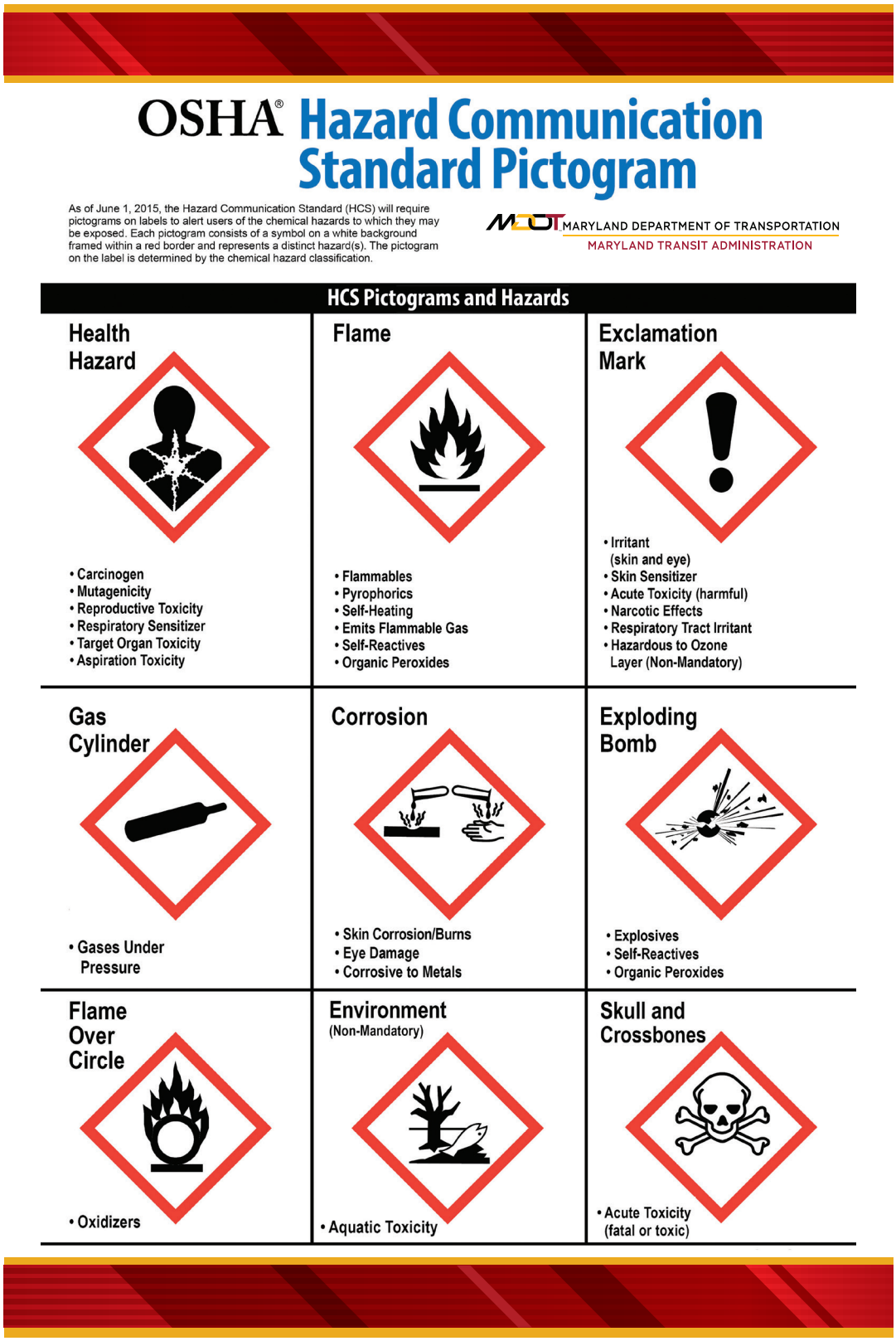


Figure 29 - HazCom pictograms, SDS information, and labeling examples

5.1.11 Contractor Requirements for Safety

Many of MDOT MTA's contractors and vendors must interface with and perform work throughout MDOT MTA facilities, systems, equipment, and properties. This work often places the contractor/vendor in direct contact with MDOT MTA's personnel as well as its customers and has a direct effect on the operations and services provided by MDOT MTA. Consequently, it is critical that the work practices of the contractor/vendor meet the standards and safety requirements of MDOT MTA. For this section, the term contractor also refers to vendors of MDOT MTA. MDOT MTA has developed comprehensive Contractor Safety and Health Plan Guidelines (CSHPG) pertaining to contractor and vendor operations in support of MDOT MTA's Contractor Requirements for Safety. The CSHPG should be referenced to gain a comprehensive understanding of contractor safety requirements, as the following provides only a summary of the requirements of that plan.

All contractors of MDOT MTA must comply with all rules, regulations, and requirements of OSHA, DOT, FRA, FTA, and MDOT MTA as well as all other State, and local regulations. In addition, contractors must comply with rules and training when performing work on or nearby to CSX Transportation, Amtrak, or other railroads. These requirements include, but may not be limited to, employee and passenger safety, fire and emergency response procedures, security procedures, and safe work practices related to MDOT MTA facilities, equipment, systems, vehicles, and/or other MDOT MTA properties. Contractor personnel who violate site safety requirements are considered unqualified to perform the contracted services or work and as such, can be denied site access. Contractors who fail to control personnel actions regarding safety shall have their contract terminated. If MDOT MTA deems the contractor/subcontractor is not complying with the safety regulations and requirements of MDOT MTA, the Contracting Officer/Resident Engineer or Program Manager:

- Notifies the Contractor in writing of the non-compliance
- Exercises the right to issue a suspend-work order stopping all or part of the work if the Contractor fails or refuses to take corrective action to abate the non-compliance notice in the specified time
- Denies any claim or request from the Contractor for adjustment for additional time or money on the suspended work order issued under these circumstances
- Requires the removal of an employee or piece of equipment or correction of a situation that is deemed to be unsafe

As mandated by MDOT MTA procurement policies, each contractor shall have and submit a written safety program plan (including site specific safety plans), along with a letter of management's statement of policy, to MDOT MTA that addresses the service or work to be performed under the contract. The safety

program plan shall define the duties and responsibilities of contractor employees at all levels as they pertain to the safe execution of and compliance with MDOT MTA Contractor Safety Program and shall designate a competent Safety Engineer, Supervisor, or Manager to implement the safety program. The name and resume of the individual who has been designated to implement the Contractor Project Safety Program shall be provided to MDOT MTA Resident Engineer and or a MDOT MTA Contract/Project Manager for approval by the Office of Safety.

The Contractor Safety Program Plan is submitted to the Contracting Officer, Resident Engineer and/or Program Manager. The plan is reviewed for comments and acceptance by the Construction Safety Department and the Office of Safety with final approval required from the Office of Safety prior to the start of work. MDOT MTA reserves the right to require the contractor to modify, at any time, any portion of the program that is not in conformance with Federal, State, or Local codes and regulations, or with MDOT MTA CSHPG. Upon request MDOT MTA will provide, through the Office of Safety, a copy of MDOT MTA PTASP to all contractors. The CSHPG inform the contractors, in writing, of their obligations under MDOT MTA PTASP.

5.1.11.1 Contractor Substance Abuse Program Requirements

The use of drugs and alcohol is not tolerated on any MDOT MTA project. Contractors and subcontractors are responsible for implementing and maintaining effective Substance Abuse Programs and must submit certification of their program and the written program to MDOT MTA for review within ten days of the execution of the contract, or ten days before mobilizing on the project, whichever occurs first. The program must address pre-engagement, periodic, for cause, and post-accident/incident testing. Any costs incurred in the adoption, implementation, or administration of the contractor/subcontractor Substance Abuse Program are the responsibility of the contractor/subcontractor. FTA requires Drug and Alcohol compliance for all contractors whose employees perform safety-sensitive functions for MDOT MTA.

5.1.11.2 Contractor First Aid Preparations

Contractors shall have adequate first aid supplies on-site at all times. The supplies shall be easily accessible to employees for immediate use. Written procedures shall be developed and implemented by the contractor to ensure that all first aid supplies are replaced promptly, if used, and are not missing or depleted. The contractor shall ensure that sufficient personnel be made available at the work site(s) to render first aid. The first aid personnel shall have valid CPR and first aid certifications in accordance with the U.S. Bureau of Mines, American Red Cross, or an equivalent training program that can be verified.

5.1.11.3 Auditing of Contractor Operations

Any contractor of MDOT MTA may, at any time, be subject to monitoring, auditing, inspection, and/or document review for the purposes of ensuring adherence to MDOT MTA PTASP, and for general safety compliance. Office of Safety may also, at any time, attend contractor on-site meetings. When involved with these activities, contractors are expected and required to cooperate with all MDOT MTA personnel and to make available for review all requested documents and other information MDOT MTA deems necessary to accurately evaluate the contractor's operations, performance, and general safety practices. This information includes, but may not be limited to, the contractor's employee injury and illness records, employee training programs, and/or policies, procedures, and program plans related to safety practices or the work being performed by the contractor. This information shall be provided in a timely fashion as specified by MDOT MTA. If at any time, the Office of Safety finds that a contractor is not complying with the above requirements, the Office of Safety has the right and responsibility to require all site activity to cease until full compliance is achieved. Failure to comply may result in further actions by other departments within

the agency, such as Construction Management and/or Procurement

5.1.12 Public Safety – Protection of the Public and Property

The agency and MDOT MTA contractors will take necessary precautions to protect the general public from injury or damage to property. The CSHPG describes the necessary precautions MDOT MTA takes when planning and conducting construction projects to protect the general public from injury or damage to property, including specific guidance on: how to safely maintain public access to buildings and roadways while providing adequate protection for the public; appropriate warning and directional signage for construction areas; and requirements for guardrails, pedestrian walkways, fencing, and other protections. The CSHPG also address requirements for vehicle and/or pedestrian traffic control plans for construction projects and when flaggers are required.

5.2 Safety Competencies and Training

FTA requires that public transportation agencies establish and implement a comprehensive safety training program for all agency employees directly responsible for safety, including relevant contractors. Training must include refresher training. All MDOT MTA training programs are based on building competencies: the knowledge, skills, and abilities that are necessary for employees to safely perform the duties required by their differing positions at the agency.

5.2.1 Training and Certification

Detailed training programs are necessary to ensure policies, procedures, and programs are followed accordingly. Formal training programs, which include in-class activities, curriculums, training manuals, lesson plans, field exercises, drills, computer-based training, written and video communications, and testing, have been established for vehicle operators and controllers, maintenance personnel, and other front-line employees. Additionally, training programs have been developed to address safety topics and concerns that may be faced by MDOT MTA employees during the performance of their daily duties.

5.2.1.1 New Employee Orientation (NEO)

The following training courses are required for all MDOT MTA employees in New Employee Orientation (NEO), either during the one-week

Bus Operator Training and Certification	Light Rail Controller/ Operator Training and Certification	Maintenance Training	Metro Controller/ Operator Training and Certification	RWP (Roadway Worker Protection)	Security and Emergency Preparedness
New Bus Operator Candidate Training Program	Light Rail Training	Facility and System Maintenance	Metro Rail Training	Flagmen and Watchmen RWP1	Emergency Operating Procedure Training
Bus Operator Recertification Training Program	Light Rail Recertification Training Program	Light Rail Maintenance Training	Metro Rail Recertification Training Program	Light Rail RWP2/ On-Site Coordinator	Emergency Response Training
Refresher/ Return to Duty Training	Light Rail Controller Training	Metro Maintenance Training	Metro Rail Controller Training	Metro RPW2/ On-Site Coordinator	NIMS/ICS Training
Post- Accident/ Remedial Training	De-escalation Training	Bus Maintenance Training	De-escalation Training		
Desensitization Training					
De-escalation Training					

Figure 30 - Safety and Security Certification Project Examples to Determine Level of Certification

orientation and training period or through computer-based training:

- Active Shooter Training
- ADA Laws and Regulations Compliance
- Anger & Stress Management Training
- Customer Service Training
- Driver Improvement Training (DIP)
- Domestic Violence Training
- Drug and Alcohol Abuse Policy
- Ethics Training
- Fatigue Awareness Training
- Infectious Disease Training
- Reasonable Suspicion Training *
- Sexual Harassment Training
- SMS Level 1 – Basics Training (SMS Awareness and Employee Safety Reporting)
- SMS Level 2 – Advanced Training (Safety Risk Assessment) *
- State and Federally Mandated Training
- Title VI Training

Note: Asterisk (*) denotes that only certain management-level employees are required to take these courses.

5.2.1.2 Safety Training for Certain Positions

Figure 31 below describes MDOT MTA job positions that require employees to successfully complete safety-related training and certification courses:

The De-Escalation Training developed by MDOT MTA's Operator Assault Task Force is provided to all operations and maintenance personnel and personnel directly responsible for safety as required by the language 49 U.S.C. 5329(d)(1)(H)(ii). The training is offered for new employees, recertification, refresher, and post-accident. The De-Escalation Training course is instructor-led and emphasizes emotional intelligence.

The training programs provided to an employee are dependent on their job classification and the responsibilities of their position. The training programs may also include on-the-job training that is monitored by a supervisor or mentor. Training efforts are first started at the initial stages of employment and are continued periodically throughout an employee's career as necessary to maintain certifications and to ensure the employee can perform their duties in a safe and efficient manner.

Training, certification and re-certification training courses for employees and contractors/vendors of MDOT MTA are developed and administered through MDOT MTA's Training Policy and Procedures, MDOT MTA Operations Transportation and Maintenance Training Department, MDOT MTA's Administrative services, and each of MDOT MTA divisions. All training programs are properly documented, regularly reviewed and updated, and appropriately controlled. The Office of Safety has the right and responsibility to review and approve all safety-related training programs administered by MDOT MTA. The Office of Safety regularly reviews training documentation to ensure it is properly maintained and that employees are receiving required training as specified in MDOT MTA's Training Policy and Procedures.

Contractors or vendors over whom MDOT MTA has direct oversight responsibility are required to submit training and certification documentation pertaining to MDOT MTA Construction Safety and Health Plan Guidelines (CSHPG). These materials cover the contractor's areas of operation and are reviewed by the Office of Safety to ensure conformance with professional standards for performance-based instruction.

MARC requires that the operating and host railroads comply with all FRA regulations, including Emergency Order 20, which stipulates that railroads operating passenger

service directly or over their territory provide specific employee training in safety, such as Roadway Worker Protection. MARC employees do not have a separate safety rulebook and as such, receive training and are qualified under applicable Amtrak and CSX Transportation rules.

Records are maintained for all training provided by MDOT MTA to its employees and contractors/vendors via an electronic database. At the completion of training, employees are required to sign formal attendance sheets verifying their participation in the training program. The training, certification and re-certification records that are available for review by MDOT MTA personnel, State, or Federal authorities, and include:

- Curriculum, classroom notes, lesson plans, written tests, and practical exams
- Pass/fail criteria for training and certification
- Efficiency test results as applied to the rules
- On-the-job training programs, apprenticeship, and journeyman programs
- Vendor training attended by contract employees

5.2.1.3 Training Program Review and Revision

Training programs are reviewed and revised to ensure they meet or exceed all SSOA, Federal, State, local and PTASP requirements. They are also reviewed and revised to ensure they remain up to date with the most current MDOT MTA operations and relevant rules, procedures, standards and guides. This helps to ensure that safe and reliable service is continually and consistently provided to MDOT MTA customers. MDOT MTA will develop a comprehensive training program or plan which outlines training topics, schedules, goals, and objectives for personnel in safety-sensitive job classifications. Training programs are reviewed by utilizing a schedule for review of all training programs so that every course will be reviewed within a quarterly cycle by the Training Review Committee.

Office of Safety reviews all proposed changes or modifications to training programs and materials to evaluate the safety impacts that the change or modification will have on MDOT MTA's operations. The Training Review Committee is established under the authority of the Chief Operations Officer comprising:

- Modal Division Senior Level Managers (i.e., Director, Deputy Director, Superintendent)
- Office of Safety representatives (i.e., Chief Safety Officer, Deputy Chief Safety Officer)
- Training representatives (i.e., Director, Deputy Director, Manager)

The Director of Training and Development chairs the committee. The committee Chairperson establishes the committee meeting time and place and notifies all other committee members in writing of all pertinent details. The Training Review Committee (TRC) meets on a quarterly basis.

Proposed training program changes and modifications are thoroughly evaluated through the TRC to determine their safety impact, and the impacts the changes or modifications will have on other documents and programs (i.e., through the configuration management program). Once the proposed change or modification has been thoroughly evaluated, it is implemented. Upon implementation, however, all applicable personnel and departments affected by the change are notified and retraining is schedule for all appropriate personnel as necessary. Records are maintained of all revisions made to training programs.

Training documentation is job classification and responsibility based. Upon completion of an employee's training, the Training Instructor will ensure that all appropriate training documentation is included in the employee's training file. Quarterly, all employees that have

been trained in that quarter will have their files audited to ensure consistency in the training documentation within their training files.

5.2.1.4 General Responsibilities of MDOT MTA Personnel and Departments Regarding Training

Effective training is a shared responsibility. General responsibilities of personnel and departments with respect to training and certification are provided as follows:

- It is the responsibility of all Directors, Managers, and Supervisors to ensure all employees and contractors/vendors under their supervision are adequately trained, certified, and qualified to perform their jobs prior to commencing work. This includes ensuring all employees and contractors/vendors are trained in general safety and health work practices and emergency procedures including emergency response, communication, and evacuation.
- It is the responsibility of all Managers to maintain training and re-training schedules for the employees and contractors/vendors under their supervision, and to periodically assess the training needs of employees and contractors/ vendors to ensure they maintain the appropriate certifications and remain qualified to safely perform the requirements of their jobs.
- It is the responsibility of the Office of Training to develop and administer training programs that are current and consistent with MDOT MTA's operations and services and management goals and objectives.
- It is the responsibility of the TRC to conduct a quarterly review of all training materials to ensure accuracy and to communicate training program changes and modifications to all necessary personnel and departments.
- It is the responsibility of the TRC to work with Modal Division Senior-level Managers and the Office of Safety representatives to periodically audit training courses to evaluate their quality and effectiveness.
- It is the responsibility of the Office of Training to maintain records of all personnel and contractors'/vendors' training including employee and contractor/vendor identification (i.e., names, badge numbers, and payroll numbers etc.), training dates, instructor names, subjects addressed, training aids and materials used, materials distributed, test results, and retraining schedules.
    - Training documentation is job classification and responsibility based and upon completion of an employee's training, the Training Instructor will be responsible for ensuring that all appropriate training documentation is included in the employee's training file.
    - Quarterly, all employees that have been trained in that quarter will have their files audited by the Office of Training to ensure consistency in the training documentation within their training files.
- It is the responsibility of the Office of Training (Director, Deputy Director, and Managers) to quarterly audit all employees' files that had been trained in that quarter to ensure consistency in the training documentation within their training files.
- It is the responsibility of the Office of Safety to perform internal safety reviews of MDOT MTA Comprehensive Training Plan annually or when changes are made.
- It is the responsibility of all MDOT MTA employees to complete training that is required for their job classification, including updates and recertifications, to avoid working when not properly trained or certified.

5.2.1.5 Public Transportation Safety Certification Training

Employees of rail transit systems such as MDOT MTA who are directly responsible for safety oversight are required under 49 CFR Part 672, the Public Transportation Safety Certification Training Program (PTSCTP) final rule, to complete a standard curriculum of safety training provided through the U.S. Department of Transportation Safety Institute (TSI). The Office of Safety has developed a list of designated personnel who meet the regulatory standard of having direct responsibility for safety oversight and will be required to complete the safety certification training program. Designated personnel shall complete applicable training requirements within three years of their designation.

The following TSI classes are required under 49 CFR Part 672 for designated personnel:

- SMS Awareness (e-Learning delivery, Rail & Bus personnel)
- Safety Assurance (e-Learning delivery, Rail & Bus personnel)
- SMS Principles for Transit (instructor-led delivery, Rail & Bus Personnel)
- TSSP Rail Curriculum (instructor-led delivery, for Rail Safety personnel)
    - Rail System Safety
    - Effectively Managing Transit Emergencies
    - Rail Incident Investigation

The Office of Safety has identified the following positions as designated personnel:

- Chief Safety Officer
- Deputy Chief Safety Officer – Operations
- Deputy Chief Safety Officer – Emergency Management and Compliance
- Deputy Chief Safety Officer – Safety Management System
- Assistant Chief Safety Officer – Bus/ Mobility Operations
- Assistant Chief Safety Officer – Rail Operations
- Assistant Chief Safety Officer – Occupational Safety and Emergency Management
- Safety Officers
- Purple Line Quality, Safety& Security Director
- Purple Line Safety & Security Superintendent

The following TSI classes are voluntary under 49 CFR Part 672. The Office of Safety may adopt these safety courses as required for relevant safety personnel:

- TSSP Bus Curriculum (instructor-led delivery, Bus Safety personnel)
    - Bus System Safety
    - Effectively Managing Transit Emergencies
    - Fundamentals of Bus Collision Investigation
- Advanced Rail Incident Investigation (instructor-led delivery, Rail Safety personnel)
- Advanced Problems in Bus Collision Investigation (instructor led delivery, Bus Safety personnel)

The PTSCTP also requires that designated personnel must complete a refresher every two years consisting of at least one hour of safety oversight training. To meet this requirement, the Office of Safety has determined that designated personnel will retake the one-hour TSI e-Learning course "SMS Awareness" every two years after completing the initial PTSCTP certificate requirements.

5.2.1.6 MDOT MTA SMS Training Courses

The Office of Safety has developed two online SMS courses. The first course (SMS Level 1 - Basics) is required for all MDOT MTA employees, contractors, and vendors and will familiarize participants with SMS concepts and the Employee Hazard Reporting Program. The second course (SMS Level 2 - Advanced) is being developed for a smaller group of supervisory employees, instructing them how to conduct Safety Risk Assessments.

SMS Level 1 - Basics Course Review Outline (Example of MDOT MTA SMS Awareness-level training)

- **SECTION 1** – Safety Management System (SMS) Awareness
- **SECTION 2** – My Role in MDOT MTA's SMS
- **SECTION 3** – Understanding Hazards, Consequences, and Risks
- **SECTION 4** – Employee Safety Reporting Program (ESRP)

SMS Level 2 - Advanced Course Review Outline (Example of MDOT MTA division supervisor-level training)

- **SECTION 1** – Key SMS Personnel
- **SECTION 2** – What is Safety Risk Management (SRM)?
- **SECTION 3** – The Seven Triggers for MDOT MTA's Risk Assessment Process
- **SECTION 4** – Conducting a Risk Assessment
- **SECTION 5** – Assess Severity of the Consequence(s)
- **SECTION 6** – Assess Probability of the Consequence(s)
- **SECTION 7** – Determine the Risk Level/ Value
- **SECTION 8** – Acceptance and Approval Levels
- **SECTION 9** – Mitigation Strategies
- **SECTION 10** – Determine Residual Risk
- **SECTION 11** – SRA Practical

5.2.2 Workplace Safety Training

MDOT MTA's safety training program for employees is based on and specific to employee job classification. For example, maintenance employees are trained regarding the proper use of grinding wheels or vehicle repair techniques, whereas bus operators receive training regarding defensive driving or how to address a confrontational passenger. It is important to note that training efforts and programs may entail not only formal in-class training, but also on-the-job training that is overseen by a supervisor or manager and properly documented in the employee's file. It is the responsibility of all managers and supervisors to not only oversee employee work practices and performance but to also enforce rules, procedures, standards and guides as well as to ensure their employees are properly trained in order to perform the duties of their job classifications in a safe and efficient manner. If and when an employee's duties change, it is the responsibility of the manager or supervisor to ensure that employee is retrained as necessary. It is also the responsibility of all managers and supervisors to ensure all personnel receive training regarding the hazards that may be associated with or encountered within employee work areas.

Managers and supervisors also ensure that all employees receive training regarding the various safety program topics and injury and illness prevention as a quality control measure. This training encompasses the use

of PPE, proper lifting techniques, blood-borne pathogens training, the requirements of the SMS, emergency preparedness including evacuation routes and procedures, and hazard identification and resolution techniques.

The frequency of training varies depending upon job classification, governing statutes, as well as job performance. Employees who violate safety rules, procedures, standards and guides, for example, are required to take certain forms of retraining or re-certification as part of corrective actions taken because of the violation. Other employees, such as bus operators, require retraining simply as a requirement of maintaining certifications and licenses.

5.2.2.1 Contractor Safety Training Requirements

It is the responsibility of all contractors to establish written safety orientation and training programs that provide contractor employees with the information required to safely execute their duties under the scope of the contract. The training programs must address employee responsibilities at all levels including the Contractor Safety and Health Plan Guidelines (CSHPG); applicable safety rules and regulations; hazard identification and elimination methods; emergency procedures; and the responsibility of each employee for formally acknowledging receipt of the safety rules orientation and training prior to performing or being assigned duties on the project.

To ensure all contractors are familiar with the appropriate rules and requirements, MDOT MTA is responsible for ensuring all contractors receive the proper instructions and training pertaining to its policies, procedures, rules, and other requirements. MDOT MTA is also responsible for ensuring that the contractors know and execute these policies, procedures, rules, and other requirements appropriately. Contractors who have not successfully completed required MDOT MTA safety courses shall be removed from the project.

5.2.3 Roadway Worker Protection Training

The primary goal of Roadway Worker Protection (RWP) training is to ensure continuous safety by clearly and concisely explaining Metro Subway and Light Rail on-track protection rules to MDOT MTA roadway workers and contractors accessing track areas. The RWP program contains on-track protection rules that apply to roadway workers and contractors while they are working in the track area. RWP training includes position responsibilities and procedures for providing protection from trains and/or roadway maintenance machines. MDOT MTA roadway workers and contractors must understand, be fully knowledgeable of, and obey safe work practices and procedures. Any violation of RWP rules or training will not only put individuals in a hazardous situation but will also subject them to disciplinary action. It is the responsibility of the roadway workers to keep their training up to date. For additional information regarding RWP and track access requirements or training refer to MDOT MTA RWP Program, RWP Manual, and/or the MDOT MTA Office of Training.

5.2.4 Battery Electric Bus Training

MDOT MTA has created a Workforce Development Plan to provide a roadmap for implementing training and preparing MDOT MTA's workforce for the transition to electrically-powered buses. For example, as the range of BEBs continues to increase, service planners will need to rethink how they create run cut and blocking schedules to accommodate BEBs; facility technicians may be required to work with medium and high voltage equipment; and first responders will have to prepare themselves for how to best approach a BEB in times of emergency response. While the maintenance staff will need more training than everyone else, the transition to BEBs will require adjustments across all aspects of MDOT MTA operations. Figure 32 lists the training modules and the planned source of material.

Training Module	Source
BEB 101 Overview	MDOT MTA/Third Party
High Voltage Safety Basics (part of BEB 101)	MDOT MTA/Third Party
Operator Orientation	Original Equipment Manufacturer (OEM)
Maintenance Orientation	OEM
Entrance and Exit Doors	OEM
Wheelchair Ramp	OEM
Coolant Loop Fill Procedures	OEM
Towing/Recovery	OEM
Propulsion & ESS Familiarization/High Voltage Safety	OEM
Propulsion & ESS Systems Trouble Shooting	OEM
Siemens Propulsion Troubleshooting	OEM
XALT ESS Troubleshooting	OEM
Troubleshooting for Dispatchers/Starters/ Supervisors/BOCC	MDOT MTA/Third Party
Multiplex Systems	OEM
Suspension and Steering	OEM
Electric Fan Drive	OEM
Articulate Joint	OEM
HVAC Maintenance	OEM
First Responder Training for BEB	MDOT MTA/Third Party
CPR & AED	MDOT MTA
Schedulers/Planners	MDOT MTA/Third Party
Charger Basics (as part of BEB 101)	MDOT MTA/Third Party
Depot Charger Familiarization (all brands and types)	OEM
Depot Charger Troubleshooting & Repair (all brands and types)	OEM
Charge Management	OEM
Charge Management Advanced	OEM
Mobile Charger Familiarization	MDOT MTA/Third Party
First Responder Training for Charging Infrastructure	MDOT MTA/Third Party

Figure 31 - Proposed MDOT MTA BEB Training Program Modules

5.2.5 Hazardous Chemicals, Health and Safety Training

The Assistant Chief Safety Officer – Occupational Safety and Emergency Management within the MDOT MTA Office of Safety is responsible for developing an appropriate list of required safety and health training courses for employees who are exposed to hazardous chemicals or dangerous equipment (including electrical equipment) as part of their daily work assignments. Employees who are included in these categories include Mechanics, Facilities Maintenance, Cleaners, and Fleet Repair. MDOT MTA has a longstanding partnership with the Chesapeake Region Safety Council, a regional division office of the National Safety Council, who delivers accredited Occupational Safety and Health courses in Baltimore on a regular basis. The safety and health courses that are recommended for MDOT MTA employees listed above and for safety officers in the areas of fire/life safety, industrial safety support, and construction safety include:

- Fundamentals of Industrial Hygiene
- Incident Investigation
- Job Hazard Analysis (JHA)
- Principles of Occupational Safety and Health (POSH)
- Safety Inspections
- Safety Management Techniques
- Safety Training Methods
- Team Safety

5.2.6 Emergency Management & Response Personnel Training

Effective emergency preparedness, response, coordination, and training are essential elements to minimize losses during the occurrence of an emergency or disastrous event. The overall objective of emergency preparedness and planning is to ensure fast and efficient response to emergencies or disasters in a manner that minimizes risk to the safety and health of passengers, employees, and emergency response personnel as well as unnecessary property loss.

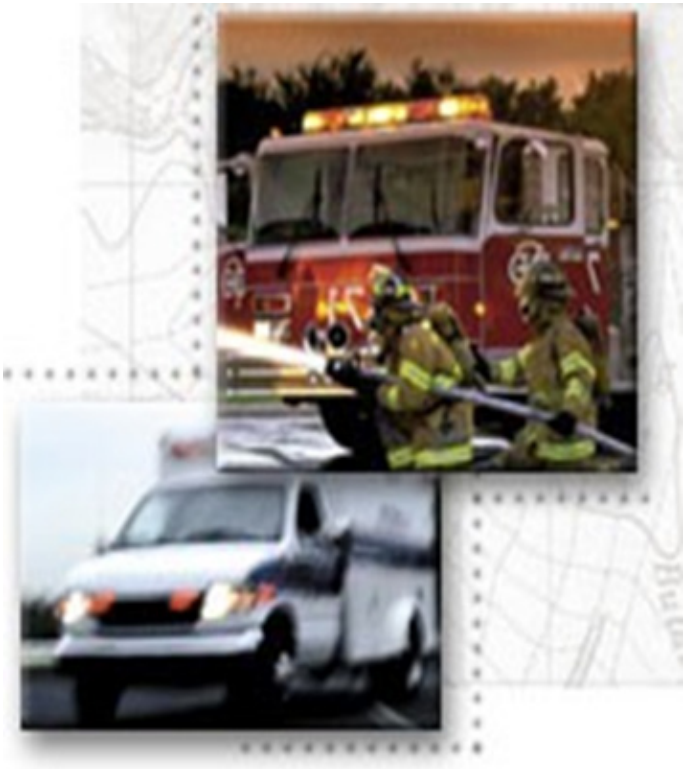
In order to meet this objective, MDOT MTA has written comprehensive emergency operations plans (EOPs) for MDOT MTA, and each of its modal operations (i.e., Metro Subway, Light Rail, MARC, Bus, and Mobility). These plans also include the involvement of many offices that provide support functions such as MDOT MTA Media Relations, Police, Safety, Engineering, HR, and Procurement offices. These plans establish the roles and responsibilities to be carried out by MDOT MTA personnel, as well as by various emergency response agencies during an emergency or disastrous event. The EOPs are supplemented by the comprehensive SSEPP, SOPs, and the emergency operating rules used by each mode.

Functional exercises, full-scale exercises, and emergency drills are conducted to assure that individuals clearly understand what steps they are required to perform during an emergency. The drills also give MDOT MTA the opportunity to further train employees on appropriate response activities. Results of these drills will be fed back into the tabletop drills for modifications to response activities, if necessary. Types of drills and exercises include seminars, workshops, tabletops, games, drills, functional drills, and full-scale exercises. Typical drills may include operators assisting passengers in de-boarding; MTAPF crowd control during an emergency; and OCC personnel responding to Operator-initiated emergency call-ins. These drills may also include personnel from external law enforcement agencies.

5.2.6.1 Response

The response phase of emergency management puts the planned emergency activities, responsibilities, and agreements into effect. EOPs, SOPs, and Interagency agreements (as provided through Maryland State Law) are currently in place and have been written to ensure that when an emergency or

disaster occurs, MDOT MTA departments and first response agencies and organizations will break down their areas of responsibility into manageable units, assess what has happened, what can be done, and what is needed. This information is communicated to all necessary parties and sent by whatever means available to the MDOT MTA Administrator. Response efforts focus on the preservation of lives concurrent with incident stabilization activities. These activities are conducted consistent with NIMS/ICS and often require teamwork with other State and local emergency response agencies.



5.2.6.2 Training of Personnel

MDOT MTA Emergency Management training is conducted through drills, simulations, and tabletop exercises, developed by the Office of Safety and/or MTAPF, and the Office of Transit Operations. Emergency response procedures are distributed to MDOT MTA personnel and other stakeholders as part of the training program and by departmental supervision based on the employee's scope of responsibility. Select MDOT MTA staff must also attend training courses presented by TSI, DHS, and other industry organizations. The training includes training MDOT MTA personnel, non-MDOT MTA personnel, Accident/Incident Stabilization Training, and Continuity of Operations (COOP) Training. MDOT MTA also provides resources for external industry training as necessary including Fire, Police, NIMS, EMS, government sponsored, and professional organization training.

Emergency management training for MDOT MTA personnel includes:

- Operating territory familiarization (i.e., types of operating environments and the hazards that can be encountered with each)
- Communications training including internal communications as well as external communications between other transit personnel, emergency response units, and the news media
- Command post operations including the organization and personnel roles and responsibilities (as stated in EOPs)
- Situational awareness including the procedures to be taken during different types of emergencies or disasters (as stated in EOPs)
- Coordination of functions including personnel responsibilities during the event (as stated in EOPs)
- Power removal procedures (as stated in EOPs and SOPs)
- Equipment familiarization including instruction concerning the location, function, and operation of on-board emergency equipment
- Emergency access/egress (i.e., passenger and personnel evacuation)
- Updates to passengers, customers, and media
- NIMS/ICS (for example, IS-100 for frontline responders, ICS-200 for supervisors, ICS- 300 for managers, etc.)

Emergency management training for non-MDOT MTA personnel (local police agencies, fire departments, etc.) may include:

- Operating territory familiarization (i.e., types of operating environments and the hazards that can be encountered with each)
- Communications training including communications between the OCC and emergency response agencies
- Command post operations (organizational and personnel roles and responsibilities)
- Situational awareness (i.e., the procedures to be taken during different types of emergencies or disasters)
- Coordination of functions (i.e., personnel responsibilities during the event)
- Power removal procedures
- Equipment familiarization including instruction concerning the location, function, and operation of on-board emergency equipment
- Emergency access/egress (i.e., passenger and personnel evacuation)
- NIMS/ICS (for example, IS-100 for frontline responders, ICS-200 for supervisors, ICS-300 for managers, etc.)

On-the-job training for accident/incident stabilization and COOP operations (conducted by Supervisors) includes:

- Emergency evacuation
- Re-routing of service
- Passenger and media updates
- Testing of systems affected by the event
- Restoring operations to schedule
- Completing the log of completed drills and exercises
- Adhering to the multi-year drill schedule

5.2.7 Environmental Compliance Training

The MDOT MTA Environmental Program has developed a comprehensive environmental training program to ensure compliance with regulatory requirements and provide MDOT MTA personnel with a clear understanding of the policies and procedures in place so that they may perform their duties in a manner that protects the environment, prevents pollution, and promotes environmental sustainability.

The MDOT MTA Environmental Program, within the MDOT MTA Office of Safety Management and Risk Control, is responsible for managing environmental training and ensuring MDOT MTA complies with regulatory mandated environmental training requirements. The EPA (per the Clean Water Act, Clean Air Act, and Resource Conservation & Recovery Act), OSHA, and the Maryland Department of the Environment dictate training for various environmental requirements typically with annual refresher training mandates. A summary of the environmental training events offered by the MTA Environmental Program is provided in the tables below.

The MDOT MTA Environmental Program sets a cooperative climate for learning, develops learning objectives based on the specific needs of the audience, and continuously evaluates the quality of the learning experience to make adjustments as needed. Whenever practical, hands-on tasks and in-the-field exercises are utilized so that attendees can engage in visual and/or kinesthetic learning by performing each task, or physically seeing demonstrations, rather than hearing and memorizing content.

MDOT MTA's environmental compliance training program is continuously evaluated and revised to be more streamlined and targeted to facility operations. Training is a means to a specific end, keeping goals in mind during the development, implementation, and continuous review of the training program assists the MTA Environmental Program in creating a clearly defined and effective training program.

Environmental Awareness	General Environmental Awareness Training (Workers)	
Frequency: Annually	**Duration:** <2 Hours	**Provided By:** MDOT MTA Environmental Compliance Specialists
Description: This is the fundamental environmental awareness training class provided to MTA employees. It covers a myriad of topics including stormwater pollution prevention; proper management of oil storage tanks; compliance with oil Spill Prevention, Control and Countermeasure (SPCC) Plans; spill response and reporting; hazardous waste management; hazardous material management; air quality permitting and air pollutants; and an introduction to the MTA Environmental and Sustainability Management System (ESMS).		

Environmental Awareness	General Environmental Awareness Training (Supervisors/Superintendents)	
Frequency: Annually	**Duration:** <4 Hours	**Provided By:** MDOT MTA Environmental Compliance Specialists
Description: This environmental awareness training class is provided to MTA Superintendents and Supervisors that have been deemed Primary or Secondary Environmental Coordinators (PECs/SECs) at their respective facilities. It is identical to and covers the same myriad of topics addressed in the Environmental Awareness Training provided to MTA workers discussed above. However, this training provides facility Superintendents/Supervisors with their roles and responsibilities pertaining to environmental stewardship from a Management level perspective and provides additional details on how to manage environmental compliance issues brought forth by employees.		

Asbestos	Asbestos Awareness Training	
Frequency: Annually	**Duration:** 2 Hours	**Provided By:** MDOT MTA Environmental Compliance Specialists
Description: Asbestos awareness training is required for employees who perform custodial or maintenance work that may put them in contact with asbestos-containing materials (ACMs). Training topics include background information on asbestos, health effects of asbestos exposure, worker protection programs, typical ACMs found at MTA facilities, and a general review of the MTA asbestos O&M Program.		

Oil Storage Tanks	UST Class C Operator / Fuel Manager Training	
Frequency: As needed	**Duration:** 2 Hours	**Provided By:** MDOT MTA Environmental Compliance Specialists
Description: Each MTA underground oil storage tank (UST) facility must have designated Class A, B, and C Operators, each with different roles and responsibilities for effective management of UST systems. Minimum training requirements have been designated for Class A, B, and C Operators. While Class A and B Operators receive the required training through MDE-approved third-party training providers, MTA provides training to Class C Operators. This site-specific training ensures that Class C Operators possess the knowledge to take appropriate actions in response to emergencies or alarms caused by spills or releases resulting from the operation of the UST system. Attendees are also instructed on the proper procedures for daily fuel inventory data collection and monthly fuel inventory recollection.		

Oil Storage Tanks	Aboveground Storage Tank (AST) Inspection Training	
Frequency: As needed	**Duration:** <4 Hours	**Provided By:** MDOT MTA Environmental Compliance Specialists
Description: MTA is required to inspect their oil-containing AST systems monthly. These inspections are conducted by facility staff. MTA developed an AST Inspector Handbook to be utilized as a reference during AST inspections. The Handbook provides basic information on AST systems and components as well as a detailed explanation for each question included in the AST Inspection form. The detailed explanation identifies specifically what the question is asking, to which tank systems it applies, and how the inspector should go about evaluating the AST. As requested, the MTA Environmental Group provides on-site training with facility AST inspectors and Supervisors/Superintendents (as applicable). During the training, the AST Inspector Handbook is reviewed, and a mock inspection is performed on several tanks located at the facility.		

Stormwater	Construction Inspector Training	
Frequency: As needed	**Duration:** <2 Hours	**Provided By:** MDOT MTA Environmental Compliance Specialists
Description: Stormwater permits require Construction Inspectors who are knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possess the skills to assess conditions at construction sites that could affect stormwater quality, and verifying the effectiveness of stormwater control measures being constructed. This training is provided to MTA construction inspectors and covers the typical types of erosion and sediment controls installed and how to inspect them; the types of structural stormwater control features installed at MTA facilities (e.g., stormwater ponds, sand filters, etc.), how they function, and how to ensure they have been constructed properly; and the expectations for data gathering, review, and submittal of As-Built drawings, related to stormwater controls.		

MTA ENVIRONMENTAL TRAINING ATTENDANCE SUMMARY				
Annual Environmental Awareness Training (Superintendent/Supervisors)				
Year	**Total Attendance Required**	**Total Attendance**	**Percentage of Training Completed**	**Additional Attendees (not required)**
2019	72	56	78%	11
2020	86	60	70%	11
2021	NA	74	NA	NA
2022	NA	52	NA	NA
Annual Environmental Awareness Training (Workers)				
2019	586	506	86%	0
2020	587	229	39%	0
2021	NA	350	NA	NA
2022	NA	519	NA	NA
Annual Asbestos Awareness Training (Custodial and Facility Maintenance Personnel)				
2019	--	65	--	0
2020	--	Cancelled due to Covid	--	0
2021	NA	74	NA	NA
2022	N/A			

5.2.8 Mental Health First Aid Training and MDOT MTA System Suicide Response

MDOT MTA is committed to implementing, updating, and expanding suicide prevention signage and messaging campaigns that apply best practices for reducing suicide attempts within the transit environment and greater-Baltimore community. In late 2022, MDOT MTA began a comprehensive review and assessment of the impact of suicide within its system. Previous signage that referenced the National Suicide Prevention Lifeline was replaced with 988 Suicide and Crisis Lifeline signage in conjunction with the official implementation of 9-8-8 as the toll-free nationwide telephone number on July 16, 2022. The signage was expanded to Light Rail and Metro subway stations and at system grade-crossings. MARC train signage along the Brunswick and Camden lines was updated with continued expansion planned along subsequent lines per negotiations with interfacing agencies who may regulate a station or platform. Signage is placed in highly visible areas that pose the greatest risk for suicide and MDOT MTA will consider awareness campaigns via public-facing media especially around high-impact times of year such as National Suicide Prevention Week which occurs annually in September.

MDOT MTA piloted a Mental Health First Aid (MHFA) training based on the curriculum from the National Council for Mental Wellbeing which has trained over three million people internationally. The course is now offered quarterly to all MDOT MTA employees and contractors on a voluntary basis. MHFA certification lasts three years before needing renewal and teaches participants risk factors and warning signs for mental health and addiction concerns, strategies for how to help someone in both crisis and non-crisis situations, and where to turn for help.

Topics covered include:

- Depression and mood disorders
- Anxiety Disorders
- Trauma
- Psychosis
- Substance Use Disorders

Interventions learned:

- Panic attacks
- Suicidal thoughts or behaviors
- Non-suicidal self-injury
- Acute psychosis (e.g., hallucinations or delusions)
- Overdose or withdrawal from alcohol or drug use
- Reaction to a traumatic event