



U.S. Department
of Transportation

**Federal Transit
Administration**

**State Safety Oversight Audit of
Massachusetts Department of Public Utilities (MDPU)
Boston, MA**

Conducted by

**U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL TRANSIT ADMINISTRATION**

Office of Transit Safety and Oversight

Final Report: December 8, 2020



December 8, 2020

SENT VIA EMAIL

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Subject: FINAL State Safety Oversight Program Audit Report of the Massachusetts Department of Public Utilities – October 21-25, 2019

Ms. Cellucci,

Enclosed is the Federal Transit Administration’s (FTA) Final State Safety Oversight (SSO) Program audit report of the Massachusetts Department of Public Utilities (MDPU). This audit assessed MDPU’s implementation of FTA’s SSO program regulation 49 CFR Part 674 (Part 674) and conformance to its own Program Standard and governing directives. The audit was conducted on-site at MDPU and the Massachusetts Bay Transportation Authority (MBTA) offices and system in Boston, Massachusetts.

This is the FTA’s first audit of MDPU since FTA certified MDPU’s SSO program on March 19, 2018.

Audit Process

Prior to arriving on-site, the FTA’s audit team requested and reviewed documentation used by MDPU and MBTA to direct, manage, implement, and monitor the SSO program as specified in Part 674.

Comment on Draft Audit Report

FTA provided MDPU an opportunity to review the draft audit report for errors of fact and to submit factual corrections to FTA. The FTA incorporated necessary comments and updated this final audit report to reflect any concerns. FTA’s responses to MDPU’s comments to the draft report are in Appendix A. MDPU comments submitted to FTA on March 13, 2020 are in Appendix B.

Audit Findings

As a result of the audit, FTA identified 16 findings where elements of the oversight program are “Noncompliant” with specific Part 674 requirements. An explanation of this criteria is presented in Section 1 of this audit report.



Resolution of Findings

The MDPU will have 45 business days to respond to each finding with a corrective action plan. This extended response time is provided in recognition that responding to the COVID-19 public health emergency is the primary focus of transit systems and SSOAs across the country at this time.

We appreciate your cooperation and assistance in working with FTA to support this audit. Your actions to address findings will contribute to the goal of improved safety for Massachusetts' rail transit passengers and employees.

Sincerely,

Angela Dluger
Acting Director, Office of Safety Review

Enclosure: Final MDPU SSO 2019 Audit Report

cc: Matthew H. Nelson, Chairman, MDPU
Ivana Limlengco, Assistant Director, MDPU
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Executive Summary

Background

The Massachusetts Department of Public Utilities (MDPU) is the designated agency for the Commonwealth of Massachusetts to carry out the State Safety Oversight (SSO) program responsibilities for the Massachusetts Bay Transportation Authority's (MBTA) rail transit system.

The MBTA began rail service in the late 1890's with its Green Line. Currently, the MBTA has approximately 26 miles of light rail service and approximately 38 miles of heavy rail. MBTA data as of September 2019, reveals that it provides, on average, 697,000 weekday trips.

The MDPU is an adjudicatory agency overseen by a three-member Commission. Within the MDPU, the Transportation Oversight Division has direct responsibility as the State Safety Oversight Agency (SSOA) to carry out Federal safety requirements in its oversight of the MBTA. FTA certified MDPU, in compliance of Part 674, on March 19, 2018.

Scope of the Audit

Federal regulation, 49 CFR Part 674.11, requires FTA to audit each State's compliance of their SSO program at least every three -years. The audit team conducted the on-site portion of this audit from October 21 – 25, 2019. The FTA conducted its previous audit of MDPU in May 2016.

Summary of Findings

The FTA audit team identified 16 findings of noncompliance of the MDPU's SSO program. A finding of noncompliance is determined when FTA finds that a required element of MDPU's program does not meet the SSO Rule (49 CFR Part 674) requirements.

Findings related to MDPU's direct oversight of the MBTA include deficiencies in MDPU's oversight and enforcement of the MBTA's execution of its System Safety Program Plan (SSPP).

- MDPU did not effectively oversee MBTA's SSPP implementation, including procedures for:
 - Hazard identification, analysis, and tracking;
 - Right of way worker safety procedures; and
 - Track maintenance safety procedures.
- MDPU did not verify the sufficiency and thoroughness of MBTA accident investigation reports;
- MDPU did not ensure that MBTA developed CAPs as required from hazards or investigation reports; and



- MDPU did not properly track the approved CAPs.

FTA also identified several findings related to the following processes:

- MDPU did not have a staffing level commensurate with the actual oversight needs of the MBTA; and
- MDPU did not disburse obligated Federal grants in accordance with FTA rules, guidance, and grant agreements.

Between Fiscal Years 2013 and 2019, FTA apportioned over \$7.8 million to the MDPU to conduct safety oversight of the MBTA rail transit system. At the time of the on-site audit, MDPU had disbursed \$2.7 million leaving \$5.1 million of obligated funding unused.

Conclusion

The MDPU is responsible for safety oversight of the nation's oldest subway system. Boston's rail transit system has seen its share of growth and challenges. Since 2013, the MBTA has seen a marked increase in their rate of reported accidents and derailments—a rate that is well above industry average.

MDPU has been certified under 49 CFR Part 674 and has an approved program standard to exercise safety oversight of MBTA, but the MDPU has not fully executed or consistently followed the procedures. The MDPU also has several million dollars in Federal grant program resources unutilized that are directly for providing the oversight program established in the program standard. The findings of noncompliance are detailed in this report. MDPU must address the FTA findings and required actions.



1. Introduction

This report documents the FTA SSO program audit required under Part 674 of the MDPU. Title 49 CFR Part 674.11 requires FTA to monitor and evaluate SSOA compliance with FTA's SSO Rule on a triennial basis.

The FTA's SSO program audit is designed to:

- Review the implementation of Part 674 requirements by the SSOA;
- Assess the adequacy of resources and authority provided to the SSOA to carry out Part 674 requirements;
- Assess the technical capacity of the SSOA to implement Part 674 requirements; and
- Assess the agency's compliance with all other regulatory requirements.

1.1 Audit Scope

From October 21 - 25, 2019, the FTA conducted the on-site audit portion of MDPU's SSO program. The audit assessed MDPU's processes and implementation of FTA's SSO Rule, Part 674 for the transit system in its jurisdiction-the Massachusetts Bay Transportation Authority (MBTA) rail transit system. This is the first audit of MDPU under FTA's SSO Final Rule, 49 CFR Part 674. FTA's SSO audit focused on the following areas:

- The adequacy of MDPU's resources and authority to carry out Part 674 requirements;
- MDPU uses available financial assistance to develop and carry out its SSO program;
- The level of communication and coordination between MDPU and MBTA regarding safety issues;
- The effectiveness of the processes in place for MDPU and MBTA to identify, assess, communicate, and resolve hazards and vulnerabilities in both operations and in safety certification for current projects;
- The effectiveness of the processes used by MDPU to manage, review, approve, track and close out corrective action plans (CAPs);
- The adequacy of MBTA's internal reviews and MDPU's triennial audits in assessing either the System Safety Program Plan (SSPP) or Public Transportation Agency Safety Plan (PTASP); and
- MDPU's technical capacity to implement Part 674 requirements.



1.2 Audit Methodology

The SSO audit process follows four major steps:

1. Prior to arriving on-site

- FTA requested that MDPU submit specific documents and materials related to its SSO program and the transit agency's safety plan under its jurisdiction as applicable to SSO Program Rules.
- FTA reviewed the documents prior to arriving on-site on October 21, 2019.

2. While on-site

- FTA conducted interviews with MDPU staff and the transit agency safety and operations personnel responsible for key safety programs and functions.
- FTA also conducted field reviews and verification activities.

3. Drafting and Reviewing Audit Report

- MDPU provided comments to the draft audit report. The FTA incorporated comments, as appropriate, and updated this final audit report.
 - Appendix A includes FTA responses to MDPU's comments provided in a letter dated March 13, 2020.
 - Appendix B includes MDPU's letter with comments to FTA dated March 13, 2020.

4. Findings Management

- If there are any findings, this report includes a tracking matrix that identifies each audit finding of noncompliance and the required actions.
- Open findings require a corrective action plan submitted to the FTA within 45 business days of the issuance of this report.

1.3 Findings of Noncompliance

If FTA determines that a required element of an SSOA's program does not meet the SSO Rule requirements, FTA will issue a finding of noncompliance to be addressed through a corrective action plan.

2. Program Management

For this portion of the audit, the FTA evaluated MDPU's program management process as specified in Part 674:

- Part 674.3 – Applicability
- Part 674.5 – Policy
- Part 674.11 – State Safety Oversight Program



- Part 674.13 – Designation of Oversight Agency
- Part 674.15 – Designation of Oversight Agency for Multi-State System
- Part 674.25 – Role of the State Safety Oversight Agency
- Part 674.27 – State Safety Oversight Program Standards
- Part 674.41 – Conflicts of Interest

2.1 Legal Entity

Basic Requirement: 49 CFR Part 674.11(c) State Safety Oversight Program

Establish a State safety oversight agency, by State law, in accordance with the requirements of 49 United States Code (U.S.C.) 5329(c) and this part.

Audit Evidence

The audit team verified that MDPU’s Program Standard—which is codified in 220 Code of Massachusetts Regulation (CMR) 151.00: Rail Fixed Guideway System: System Safety Program Standard—establishes MDPU as the legal entity responsible for SSO program implementation in the Commonwealth of Massachusetts.

There are no findings of noncompliance for this portion of the audit.

2.2 Legal Independence from RTA

Basic Requirement: 49 CFR Part 674.41(a) Conflicts of Interest

An SSOA must be financially and legally independent from any rail fixed guideway public transportation system under the oversight of the SSOA, unless the Administrator has issued a waiver of this requirement in accordance with § 674.13(b).

Audit Evidence

The audit team verified MDPU legal independence from MBTA through review of the Program Standard and on-site interviews. MDPU’s SSO program is organized under the Executive Office of Energy and Environmental Affairs in the Department of Public Utilities. The SSO program manager reports to the Director for Transportation Oversight, who reports to the Department’s Chairman. MBTA is housed under the Massachusetts Department of Transportation.

The Executive Office of Energy and Environmental Affairs and the Massachusetts Department of Transportation are two of nine Massachusetts Executive Branches. FTA previously determined that even though both branches ultimately report to the Governor of Massachusetts, there is sufficient legal independence to address 49 CFR Part 674.41(a) requirements.

There are no findings of noncompliance for this portion of the audit.

2.3 Financial Independence from RTA



Basic Requirement: 49 CFR Part 674.11(f) State Safety Oversight Program

Demonstrate that by law, the State prohibits any public transportation agency in the State from providing funds to the SSOA.

Audit Evidence

220 CMR 151.01(10), MDPU’s Program Standard, states, “The Department and the Transportation Authority operate as legally and financially independent agencies. There is an absolute funding prohibition between the Department and the Transportation Authority.” MDPU has not made legislation changes since its certification in July 2018.

There are no findings of noncompliance for this portion of the audit.

2.4 Overlap of Transportation Services

Basic Requirement: 49 CFR Part 674.13(a) Designation of Oversight Agency

Further, the State must ensure that: (2) The SSOA does not directly provide public transportation services in an area with a rail fixed guideway public transportation system the SSOA is obliged to oversee.

Audit Evidence

The audit team verified that MDPU does not provide public transportation services.

There are no findings of noncompliance for this portion of the audit.

2.5 Employment Conflict of Interest

Basic Requirement: 49 CFR Part 674.41(b) Conflicts of Interest

An SSOA may not employ any individual who provides services to a rail fixed guideway public transportation system under the oversight of the SSOA, unless the Administrator has issued a waiver of this requirement in accordance with § 674.13(b).

Audit Evidence

The audit team reviewed organizational charts to verify that MDPU does not employ staff that presents a conflict of interest for the SSO program. Current MDPU staff is dedicated to the SSO program or to the Department of Public Utilities. Staff that formerly worked at MBTA underwent orientation regarding their new responsibilities with MDPU.

There are no findings of noncompliance for this portion of the audit.

2.6 Contractor Conflict of Interest

Basic Requirement: 49 CFR Part 674.41(c) Conflicts of Interest

A contractor may not provide services to both an SSOA and a rail fixed guideway public transportation system under the oversight of that SSOA, unless the Administrator has issued a



waiver of this prohibition.

Audit Evidence

The audit team verified that MDPU does not have any contracts that violate the conflict of interest requirement. MDPU is in the process of hiring a contractor for technical program support. MDPU provided the Request for Proposal, which includes a conflict of interest provision.

There are no findings of noncompliance for this portion of the audit.

2.7 Acknowledgement of Responsibility

Basic Requirement: 49 CFR Part 674.11(a) State Safety Oversight Program

At minimum, an SSO program must: (a) Explicitly acknowledge the State's responsibility for overseeing the safety of the rail fixed guideway public transportation systems within the State.

Audit Evidence

The audit team verified that the Program Standard includes and the Standard Operating Guidelines (SOG) expands upon MDPU's SSO responsibilities. During on-site interviews, MDPU staff discussed their oversight duties and responsibilities consistent with requirements.

There are no findings of noncompliance for this portion of the audit.

2.8 Establishment of Minimum Standards for Safety

Basic Requirement: 49 CFR Part 674.25(a) Role of the State Safety Oversight Agency

An SSOA must establish minimum standards for the safety of all rail fixed guideway public transportation systems within its oversight. These minimum standards must be consistent with the National Public Transportation Safety Plan and the Public Transportation Safety Certification Training regulation, the rules for Public Transportation Agency Safety Plans and all applicable Federal and State law.

Audit Evidence

The audit team verified MDPU's Program Standard outlines minimum Part 674 requirements. During on-site interviews, MDPU staff discussed their oversight activities and responsibilities, including standards above the minimum requirements of Part 674.

MDPU provided an example of establishing increased requirements in response to a Green Line incident that occurred 10 years ago, involving a train operator using an electronic device. MDPU, in coordination with MBTA's General Manager, established a policy restricting train operators' use of electronic devices while in the train cab. MDPU included the electronic device restriction in the Program Standard.

There are no findings of noncompliance for this portion of the audit.



2.9 Multi-State System Oversight Agency Designation

Basic Requirement: 49 CFR Part 674.15(a) Designation of Oversight Agency for Multi-State System

Ensure that uniform safety standards and procedures in compliance with 49 U.S.C. 5329 are applied to that rail fixed guideway public transportation system, through an SSO program that has been approved by the Administrator.

Audit Evidence

Massachusetts does not have a Multi-State rail system. This requirement is not applicable to MDPU.

There are no findings of noncompliance for this portion of the audit.

2.10 Enforcement Authority

Basic Requirement: 49 CFR Part 674.13(a)(5) Designation of Oversight Agency

The SSOA has investigative and enforcement authority with respect to the safety of all rail fixed guideway public transportation systems within the State.

Audit Evidence

The audit team verified MDPU's Program Standard includes enforcement authority. MDPU has the authority to issue stop orders and other restrictions through its commissioners. MBTA must appeal these stop orders and restrictions through the State Supreme Court and the Attorney General.

There are no findings of noncompliance for this portion of the audit.

2.11 Investigative Authority

Basic Requirements:

49 CFR Part 674.13(a)(5) Designation of Oversight Agency

The SSOA has investigative and enforcement authority with respect to the safety of all rail fixed guideway public transportation systems within the State.

49 CFR Part 674.25(c) Role of the State Safety Oversight Agency

An SSOA has primary responsibility for the investigation of any allegation of noncompliance with a Public Transportation Agency Safety Plan. These responsibilities do not preclude the Administrator from exercising his or her authority under 49 U.S.C. 5329(f) or 49 U.S.C. 5330.

Audit Evidence

The audit team verified MDPU's Program Standard and SOGs include investigative authority. MDPU primarily delegates MBTA to conduct investigations on its behalf using investigation procedures required and approved by MDPU. MDPU then reviews and approves the final



report per Program Standard Section 151.09. MDPU retains the option to conduct independent investigations with SSO investigation procedures outlined in MDPU's Accident/ Incident Investigation Manual for Rail Transit Safety Personnel.

There are no findings of noncompliance for this portion of the audit.

2.12 Adoption of Federal and State Laws

Basic Requirement: 49 CFR Part 674.11(b) State Safety Oversight Program

At minimum, an SSO program must: (b) Demonstrate the State's ability to adopt and enforce Federal and relevant State law for safety in rail fixed guideway public transportation systems.

Audit Evidence

The audit team verified that MDPU's Program Standard includes the SSOA's ability to adopt and enforce Federal and relevant State law for safety at MBTA.

There are no findings of noncompliance for this portion of the audit.

2.13 Allegations of Noncompliance

Basic Requirement: 49 CFR Part 674.25(c) Role of the State Safety Oversight Agency

An SSOA has primary responsibility for the investigation of any allegation of noncompliance with a Public Transportation Agency Safety Plan. These responsibilities do not preclude the Administrator from exercising his or her authority under 49 U.S.C. 5329(f) or 49 U.S.C. 5330.

Audit Evidence

The audit team verified that MDPU's Program Standard includes investigative authority. MDPU's website has a general contact option for the public to communicate concerns and allegations of noncompliance with rules and regulations. MDPU informed the audit team that it investigated an anonymous phone call describing MBTA's track-inspection program and, MDPU determined that the complaint is not a safety concern.

There are no findings of noncompliance for this portion of the audit.

2.14 Ongoing Communication

Basic Requirement: 49 CFR Part 674.27(a)(1) State Safety Oversight Program Standards

The SSO program standard must explain the authority of the SSOA to oversee the safety of rail fixed guideway public transportation systems; the policies that govern the activities of the SSOA; the reporting requirements that govern both the SSOA and the rail fixed guideway public transportation systems; and the steps the SSOA will take to ensure open, on-going communication between the SSOA and every rail fixed guideway public transportation system within its oversight.



Audit Evidence

The audit team verified MDPU's Program Standard and SOGs include communication methods with MBTA. During on-site discussions, MDPU provided evidence of monthly meetings with the MBTA Chief Safety Officer, quarterly meetings with MBTA staff, and annual meetings with the MBTA Accountable Executive and Board of Directors. During the on-site audit, the audit team observed an MDPU coordination meeting that covered safety concerns, hazards, recent accidents, and mitigations.

There are no findings of noncompliance for this portion of the audit.

3. Grant Program

For this portion of the audit, the FTA evaluated MDPU's grant program processes and activities as specified in: Part 674.17 – Eligibility of Federal financial assistance.

3.1 20-percent Non-Federal Match

Basic Requirement: 49 CFR Part 674.17(e) Non-Federal shares of the eligible expenses

The non-Federal share of the expenses eligible for reimbursement under a grant for State Safety Oversight activities may not be comprised of Federal funds, any funds received from a public transportation agency, or any revenues earned by a public transportation agency.

Audit Evidence

During on-site interviews with FTA's Region 1 office and MDPU's Chief Financial Officer (CFO), the audit team learned that MDPU has access to the general fund that supports a 20-percent match. The MDPU CFO provided documentation verifying that the State spent its required 20% match for previous years, complying with drawdown requirements.

There are no findings of noncompliance for this portion of the audit.

3.2 Obligation and Disbursing of Federal Funds

Basic Requirements: 49 CFR Part 674.17(a) In accordance with 49 U.S.C. 5329(e)(6), FTA will make grants of Federal financial assistance to eligible States to help the States develop and carry out their SSO programs. This Federal financial assistance may be used for reimbursement of both the operational and administrative expenses of SSO programs, consistent with the uniform administrative requirements for grants to States under 2 CFR parts 200 and 1201. The expenses eligible for reimbursement include, specifically, the expense of employee training and the expense of establishing and maintaining an SSOA in compliance with 49 U.S.C. 5329(e)(4).

2 CFR Part 200.303(a) Establish and maintain effective internal control over the Federal award that provides reasonable assurance that the non-Federal entity is managing the Federal



award in compliance with Federal statutes, regulations, and the terms and conditions of the Federal award. The internal controls should follow guidance in “Standards for Internal Control in the Federal Government” issued by the Comptroller General of the United States and the “Internal Control Integrated Framework”, issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

2 CFR Part 200.303(d) Take prompt action when instances of noncompliance are identified including noncompliance identified in audit findings.

FTA Circular 5010.1E Chapter VI (2)(f)(3)(a)(2) Permit the tracing of federal assistance to a level of expenditures adequate to establish that such Federal assistance has been used according to the federal statutes, regulations, and the terms and conditions of the Award.

Audit Evidence

Between Federal Fiscal Years (FY) 2013 and 2019, FTA apportioned over \$7.8 million to MDPU to operate its SSO Program. During this time, MDPU disbursed just \$2.7 million of \$5.6 million of funds obligated in grants. An additional \$2.2 million in apportioned funds has yet to be obligated in grants. Accordingly, MDPU has \$5.1 million in underutilized federal resources for their mission to support safety oversight of the MBTA.

During on-site interviews, MDPU provided a financial plan showing that they would spend three years of funding (FY 2015, 2016, and 2017) in two years (end of June 2021). This plan does not demonstrate how MDPU will spend its apportioned-but-unobligated Federal funds for FY 2018 and 2019.

Finding 1 – MDPU did not disburse obligated Federal grants in accordance with FTA rules, guidance, and grant agreements.

Required Action – MDPU must develop and submit a spending plan to the FTA that includes a proposed schedule for current Federal funding.

4. Program Standard

For this portion of the audit, the FTA evaluated MDPU’s Program Standard as specified in: Part 674.27 – State Safety Oversight Program Standards.

4.1 SSOA Program Standard Adoption and Distribution

Basic Requirement: 49 CFR Part 674.27(a) State Safety Oversight Program Standards
At minimum, the program standard must meet the following requirements: Program standard development. The SSO program standard must explain the SSOA’s process for developing, reviewing, adopting, and revising its minimum standards for safety, and distributing those standards to the rail fixed guideway public transportation systems.

Audit Evidence



The audit team verified that MDPU's Program Standard outlines how MDPU addresses Part 674 minimum requirements. During on-site interviews, MDPU explained the processes for updating the Program Standard, SOGs, and manuals. MDPU can update program documents as needed without regulation changes. MDPU reviews program documents every March.

There are no findings of noncompliance for this portion of the audit.

4.2 SSOA Program Standard Minimum Requirements

Basic Requirement: 49 CFR Part 674.27(a) State Safety Oversight Program Standards **State Safety Oversight Program Standards**

At minimum, the program standard must meet the following requirements:

- (1) Program management
- (2) Program standard development
- (3) Program policy and objectives
- (4) Oversight of Rail Public Transportation Agency Safety Plans and Transit Agencies' internal safety reviews
- (5) Triennial SSO audits of Rail Public Transportation Agency Safety Plans
- (6) Accident notification
- (7) Investigations
- (8) Corrective actions

Audit Evidence

The audit team verified that MDPU's Program Standard and accompanying SOGs, manuals, and policies meet minimum Part 674 requirements. During on-site interviews, MDPU stated that it plans to revise its Program Standard to incorporate 49 CFR Part 673 requirements by December 31, 2020.

There are no findings of noncompliance for this portion of the audit.

5. Staffing and Qualifications of SSO Personnel and Contractors

For this portion of the audit, the FTA evaluated MDPU's staffing and qualifications of personnel as specified in:

- Part 674.11 – (d) and (e) State Safety Oversight Program
- Part 674.25 – (f) Role of the State Safety Oversight Agency
- Part 674.35 – (c) Investigations



5.1 SSO Program Workload Assessment

Basic Requirement: 49 CFR Part 674.11(d) State Safety Oversight Program

Demonstrate that the State has determined an appropriate staffing level for the State safety oversight agency commensurate with the number, size, and complexity of the rail fixed guideway public transportation systems in the State, and that the State has consulted with the Administrator for that purpose.

Audit Evidence

MDPU's 2018 workload assessment showed a need for six full time equivalent (FTE) employees. MDPU reported in its 2018 annual report to FTA the use of 5.8 FTEs for the calendar year.

In September 2019, in response to a series of safety events at MBTA and in response to MBTA's extensive rehabilitation and other capital programs, MDPU developed a new workload assessment to reflect the increased workload. This assessment increased the need to seven FTEs. MDPU plans to fill this position with a State employee. At the time of the on-site audit, MDPU received candidate applications, identified a pool of qualified applicants, and intended to start interviews the week of October 28, 2019. MDPU's current grant spending plan includes an eighth State employee, although at the time of the audit, they have not begun the hiring process for an eighth FTE.

At the time of the on-site audit, MDPU planned to award a contract for occasional consultant support and will conduct an assessment of MBTA's power department, which will be performed by another consultant.

Finding 2 – MDPU did not have a staffing level commensurate with the actual oversight needs of the MBTA.

Required Action – MDPU must develop, submit, and implement a revised workload assessment that reflects an appropriate staffing level for overseeing the MBTA, a revised technical training plan, and a plan for hiring and training personnel and/or contractors to fill the identified staffing needs.

5.2 Staffing Qualifications

Basic Requirement: 49 CFR Part 674.25(f) Role of the State Safety Oversight Agency

All personnel and contractors employed by an SSOA must comply with the requirements of the Public Transportation Safety Certification Training Program [49 CFR Part 672] as applicable.

49 CFR Part 672.21 Records

- (a) *General Requirement.* Each recipient shall ensure that its designated personnel are enrolled in the PTSCPT [Public Transportation Safety Certification Training Program].



Each recipient shall ensure that designated personnel update their individual training record as he or she completes the applicable training requirements of this part.

- (b) *SSOA Requirement.* Each SSOA shall retain a record of the technical training completed by its designated personnel in accordance with the technical training requirements of Appendix A to this part. Such records shall be retained by the SSOA for at least five (5) years from the date the record is created.

Audit Evidence

The audit team reviewed MDPU's Individual Training Plans (ITPs) for existing staff. One staff member does not have an ITP, as required by 49 CFR 672.21(a).

Finding 3 – MDPU did not ensure that all its designated personnel are enrolled in the Public Transportation Safety Certification Training Program (PTSCTP).

Required Action – MDPU must submit to the FTA documentary evidence that all designated personnel under 672.21(a) are enrolled in the PTSCTP. This finding has since been closed.

Audit Evidence

The audit team reviewed MDPU's Technical Training Plan which is entitled "Rail Transit Training Program Course Matrix" The TTP does not record technical training completed by some of its designated personnel, as required by 49 CFR 672.21(b).

Finding 4 – MDPU did not retain a record of the technical training completed by its designated personnel.

Required Action – MDPU must develop, submit, and implement a method for ensuring that all training is recorded and tracked.

6. System Safety Program Plan (SSPP) or Agency Safety Plan

Because this audit occurred before the Part 673 compliance date of July 20, 2020, any references to a Public Transportation Agency Safety Plan or Agency Safety Plan will mean a System Safety Program Plan (SSPP) compliant with 49 CFR 659.19.

49 CFR Part 674.9(c) states:

"A System Safety Program Plan (SSPP) developed pursuant to 49 CFR Part 659 shall serve as the rail transit agency's safety plan until one year after the effective date of the Public Transportation Agency Safety Plan final rule, which will be codified in Part 673 of this chapter."

6.1 SSPP Review and Approval

Basic Requirement: 49 CFR Part 674.25(b) Role of the State Safety Oversight Agency



An SSOA must review and approve the Public Transportation Agency Safety Plan for every rail fixed guideway public transportation system within its oversight.

Audit Evidence

MDPU's Program Standard and SOGs require MBTA to conduct an annual review of its agency safety plan and then submit it to MDPU for formal approval. The audit team verified that MDPU reviewed and approved the annual updates for the 2017 and 2018 MBTA SSPPs.

The audit team reviewed MDPU's SSPP review checklist for MBTA's 2018 SSPP. MDPU's Program Standard requires MBTA's SSPP to contain all Part 659-required elements

During on-site document reviews, MDPU and MBTA could not produce rule compliance checks or documentation for mechanics. When asked whether MBTA performs all rules compliance checks in accordance with their SSPP, MDPU stated that MBTA's SSPP does not include the requirement for rules compliance checks for mechanics. MDPU's 2017 and 2018 SSPP review checklists both note that this requirement is missing. In January of 2018 MDPU summarized the open CAPs to require MBTA to develop this program. MDPU closed these CAPs numbered 3821 and 3791 on 3/2/2017 and 7/30/2019 respectively.

Finding 5 – MDPU did not ensure the MBTA implemented all SSPP elements required in 659.19.

Required Action – MDPU must submit and implement a process that ensures the MBTA implements SSPP required elements, including rule compliance and training.

6.2 SSPP Enforcement and Oversight

Basic Requirement: 49 CFR Part 674.25(b)

An SSOA must oversee an RTA's execution of its Public Transportation Agency Safety Plan. An SSOA must enforce the execution of a Public Transportation Agency Safety Plan, through an order of a corrective action plan or any other means, as necessary or appropriate.

Audit Evidence

Element 6 of the MBTA's SSPP describes how the MBTA will:

- Recognize, identify, and evaluate hazards
- Resolve or reduce those hazards to an acceptable risk level
- Track the effectiveness of hazard controls

Section 6.2 states that MBTA Management "With support from MBTA Safety, [is] responsible for the proactive and continual involvement in the application of the safety risk management process and safety risk management tools in order to identify, evaluate, and resolve safety risks in their areas of responsibilities.



On August 23, 2019, a metal sign mounted to a crosstie came loose and came into contact with a train, resulting in a smoke event and passenger evacuation of the vehicle. MBTA determined that these metal signs, posted periodically throughout the system, are loose in several locations. On 9/5/2019, during a phone call with FTA and MDPU personnel, a representative of the MBTA Safety office stated that they have not conducted a hazard analysis, have not listed it on their hazard log, and do not consider these signs to be a hazardous condition.

Section 6.4 of MBTA's SSPP states that the purpose of a 'corrective action plan' is "to address hazardous conditions." Section 6.5 of the MBTA SSPP states that the purpose of a 'safety improvement' is to "enhance, improve, and strengthen existing processes." MBTA safety staff clarified that a CAP is used to address an insufficient process or practice to minimize the risk of a hazard, whereas a 'safety improvement' is simply applied to enhance an already sufficient process or practice where no hazardous condition exists. Both 'safety improvements' and 'corrective actions' are an informational element found in all MBTA accident investigation reports.

In its 2018 annual report to the FTA, MDPU reported 19 derailments at the MBTA. The audit team examined five of these derailment accident investigations reports:

- 2/21/2018 Red Line Train Derailed at a failed Restraining Rail (#18-00753)
- 4/4/2018 Derailment at Park Street Loop (#18-01498)
- 8/8/2018 Split Switch at Cleveland Circle Crossover/Derailment (#18-03648)
- 8/12/2018 Derailment between Black of the Hill and Riverway Stations (#18-03688)
- 12/8/2018 Blandford Siding Derailment (#18-05503)

Of these five investigations, two have safety improvements:

- Investigation Report #18-00753: evaluating a Huck bolt system for restraining rail clock assemblies to address the probable cause that this incident is a sheared bolt that caused the restraining rail assembly block to dislodge and resulted in the wheel flange of Car #1742 climbing on the rail.
- Investigation Report #18-05503: Moves from the siding must be made in an adverse direction from the siding to the eastbound track using the left-hand turn out on the west end of the siding. ... investigate the option of replacing the present switch with a fully guarded double point switch to address the probable cause that could not be determined.

Part 674 defines a hazard as "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 rail fixed guideway public transportation system; or damage to the environment."

The purpose of both actions, then, is to mitigate a hazardous condition—two different track components that are weak enough to fail under normal use—making them 'corrective actions' as defined in the SSPP. These hazardous conditions are serious enough that MBTA would



need to develop a plan for mitigating them (ensuring track components are in sufficient condition that they won't fail under normal use), thus meeting the definition of a corrective action plan in 674 and the Program Standard, and making these 'safety improvements' part of a required CAP. This hazard does not appear on the MBTA's hazard log. MDPU did not require MBTA to perform a hazard analysis.

Finding 6 – MDPU did not oversee and enforce the implementation of MBTA's SSPP hazard analysis procedures.

Required Action – MDPU must submit and implement a process that ensures the MBTA identifies its thresholds for developing CAPs, and is conducting hazard analysis as required in the SSPP.

Audit Evidence

Section 6.7.3 of MBTA's SSPP states that they have developed a Hazard Tracking Log that lists all identified hazards. Sections 6.2.2.2.2 and 6.0 describe many quantitative and qualitative hazard sources, including Operations Control Center (OCC) daily logs, rules compliance program inspections, safety hotline reports, and more.

MBTA safety and MDPU personnel stated that car houses keep a list of hazardous conditions they are working to resolve. Most of these problems are resolved at the car house and are not reported to the safety office where they can be recorded in the hazard database. MBTA safety personnel stated that hazards would be reported when they cannot be resolved locally, or will take significant time—that is, hazards are reported based on how fast and easy they are to fix, not by an analysis of likelihood vs. severity.

Finding 7 – MDPU did not oversee and enforce the implementation of MBTA's SSPP hazard identification and tracking procedures.

Required Action – MDPU must submit and implement a process that ensures the MBTA identifies and tracks all hazards as outlined in the SSPP.

Audit Evidence

Section 18.2 of the SSPP requires that "All MBTA employees and contractors accessing the ROW [Right of Way] are responsible for ... complying with all MBTA rules and regulations pertaining to ROW safety." Section 6.5 of MBTA's ROW Safety Rulebook (Third Edition, dated 7/1/2014) provided in the MBTA RWP training on October 23, 2019, requires the completion of a ROW checklist prior to workers accessing the ROW. During track maintenance field observations, performed prior to full implementation of the "Level 1" area and de-energization of the Overhead Catenary System (OCS), the MBTA Safety Officer did not require the audit team member's MBTA and MDPU escorts to complete a ROW checklist.

The MBTA Safety Officer and MDPU staff on site stated that the MBTA workers are all familiar with the worksite, as they have been working there for months. Additionally, the MBTA Safety Officer stated that the newest version of the ROW checklist requires a job hazard analysis before work begins, but this process is not currently in place.



Finding 8 – MDPU did not oversee and enforce the MBTA’s SSPP rules compliance procedures for right of way safety rules and procedures.

Required Action – MDPU must submit and implement a process that ensures the MBTA follows its rules compliance program as required in the SSPP for right of way safety rules and procedures.

Audit Evidence

MDPU Program Standard Section 151.12(1)(a) requires that all tracks must be supported by ballast material that will “transmit and distribute the load of the track and railroad rolling equipment to the subgrade.”

MBTA’s SSPP Section 14.1 requires that, “Facilities and Equipment Safety Inspections are to: Ensure the safe passage of track ... Ensure and continuously monitor compliance with MBTA policies and procedures, federal and state regulations, and industry best practices.” Further, MBTA SSPP Section 14.4 outlines the agency responsibilities stating, “MBTA Safety: Responsible for supporting MBTA management in monitoring the implementation and effectiveness of MBTA’s facilities and equipment safety inspections and policies through internal auditing and oversight activities.”

During records reviews, the audit team reviewed the MBTA Final Accident Investigation Report #17-02675, *Derailment at Summit Avenue on Green Line B Branch*, occurring on October 13, 2017. The investigation examined a derailment that occurred during track maintenance due to the removal of eight Pandrol clips in a row. Pandrol clips secure the track to the ties, and MBTA workers have removed the clips as part of the track maintenance activity.

During an on-site track maintenance field observation, the MBTA Safety Officer and MDPU representative missed observing or questioning several situations that compromised track infrastructure and the safety of operations, after the MBTA’s worker in charge explained the work zone set up:

- A track area prepared for a weekend concrete pour, spanning ten crossties under each running rail and located on a curve, did not have ballast or lateral restraints to structurally support the track. This could lead to a possible shifting of rails under traffic and result in a derailment.
- A crosstie that should be chained in two places to the running rails, but secured only in one place. MBTA representatives and MDPU staff on-site did not seem to notice and did not attempt to correct the defect prior to the FTA audit team member noting the issue.

The FTA audit team member discussed these issues with the MBTA Safety Officer and MDPU representative. The MBTA Safety Officer stated that a speed restriction is in place for trains moving over the ballast-free section of the track. Additionally, neither MDPU nor



MBTA clarified whether MBTA engineering or safety staff inspects work zones to verify tracks are stabilized to support train movements and prevent derailments or other incidents.

Given the previous accident and two concerns identified during an on-site track maintenance field observation, it is not evident that MDPU is overseeing or enforcing MBTA's safety procedures for track maintenance work zones.

Finding 9 – MDPU did not oversee and enforce MBTA's rules compliance procedures for track maintenance safety rules and procedures.

Required Action – MDPU must submit and implement a process that ensures the MBTA follows its rules compliance program as outlined in the SSPP for track maintenance safety rules and procedures.

6.3 RTA Annual Review

Basic Requirement: 49 CFR Part 659.25(a) Annual review of system safety program plan and system security plan

The oversight agency shall require the rail transit agency to conduct an annual review of its system safety program plan and system security plan.

Audit Evidence

The audit team verified that MDPU requires MBTA to conduct an annual review of its safety plan by August 1st. During on-site interviews, the audit team learned that MDPU approved MBTA's 2019 Safety Plan and provided the approval letter.

There are no findings of noncompliance for this portion of the audit.

7. RTA Safety Reviews

For this portion of the audit, the FTA evaluated MDPU's oversight activities for MBTA's internal safety reviews as specified in: Part 674.27(a)(4) State Safety Oversight Program Standards.

7.1 RTA Safety Review Requirements

Basic Requirement: 49 CFR Part 674.27(a)(4) State Safety Oversight Program Standards

The SSO program standard must explain the role of the SSOA in overseeing an RTA's execution of its Public Transportation Agency Safety Plan and any related safety reviews of the RTA's fixed guideway public transportation system. The program standard must describe the process whereby the SSOA will receive and evaluate all material submitted under the signature of an RTA's accountable executive. Also, the program standard must establish a procedure whereby an RTA will notify the SSOA before the RTA conducts an internal review of any aspect of the safety of its rail fixed guideway public transportation system.



Audit Evidence

Program Standard Section 151.05 specifies that MBTA must develop “a process requiring ongoing internal safety audits over a three-year cycle to evaluate compliance with, and measure the effectiveness of, the SSPP or PTASP.” The audit team reviewed MBTA’s 2017 and 2018 internal review checklists and annual reports and verified that MBTA is conducting internal reviews in an ongoing manner. MDPU issued an approval letter dated March 20, 2019. MDPU informed the audit team that it participates in MBTA’s internal safety review activities and that they are included on the distribution list for all MBTA internal safety review notifications and materials.

There are no findings of noncompliance for this portion of the audit.

8. Investigations and Reviews

For this portion of the audit, the FTA evaluated MDPU’s investigation and reviews activities and documentation as specified in:

Part 674.27 – (a)(7) State Safety Oversight Program Standards

Part 674.33 – Notification of Accidents

Part 674.35 – Investigations

8.1 Notifications

Basic Requirement: 49 CFR Part 674.33(a) Notification of Accidents

Two-Hour Notification. In addition to the requirements for accident notification set forth in an SSO program standard, an RTA must notify both the SSOA and the FTA within two hours of any accident occurring on a rail fixed guideway public transportation system. The criteria and thresholds for accident notification and reporting are defined in a reporting manual developed for the electronic reporting system specified by FTA as required in Part 674.39(b), and in appendix A.

Audit Evidence

The audit team reviewed the MDPU’s 2017 and 2018 annual reports and compared them to the information provided in the National Transit Database (NTD). The team identified misdated incidents in the 2017 SSO report (incident 4190) and the 2018 report (incident 4415). The team also identified two SSO-reportable collisions with persons that occurred in January 2018 and that MBTA reported to the NTD, but the MDPU did not include in the SSO report.

During on-site interviews, the audit team learned MDPU receives “All Page” text message alerts for incidents from the MBTA operations control center. These alerts include revenue service status information and event notifications. However, the accident log does not document all incidents.



Finding 10 – MDPU did not ensure the MBTA notified the FTA and SSOA of all accidents within two hours.

Required Action – MDPU must submit and implement a process that ensures the MBTA notifies FTA and the MDPU of all reportable accidents within two hours.

8.2 Accident Investigation Requirements

Basic Requirement: 49 CFR Part 674.35(a) Investigations

A SSOA must investigate or require an investigation of any accident and is ultimately responsible for the sufficiency and thoroughness of all investigations, whether conducted by the SSOA or RTA. If an SSOA requires an RTA to investigate an accident, the SSOA must conduct an independent review of the RTA's findings of causation. In any instance in which an RTA is conducting its own internal investigation of the accident or incident, the SSOA and the RTA must coordinate their investigations in accordance with the SSO program standard and any agreements in effect.

Audit Evidence

The audit team reviewed the following five (5) MDPU approved accident investigation reports and discussed during on-site interviews:

- LI-02.21.19.1 Pedestrian Strike at Baltimore Highlands Station
- MI-02.25.19.1 Pedestrian Strike at Penn North Station
- 19-01447 Derailment at Blandford Siding
- 19-00953 Lechmere Wire Damage and ROW Evacuation
- LI-06.02.19.1 Light Rail collision with Motorist at Howard and Marion Intersection

Of the five (5) investigation reports, two (2) reports do not accurately include the findings of causation, including reports #19-01447 and #19-00953.

Final accident investigation report #19-01447 *Derailment at Blandford Siding* occurring on March 30, 2019—approved by MDPU—states, “The probable cause of this incident appears to be a culmination of individual track variances, each of which independently were within specification.” The report does not explain what the individual track variances are and the circumstance in which a train derailed on tracks within MBTA specifications.

Final accident investigation report #19-00953 *Lechmere Wire Damage and ROW Evacuation* occurring on March 1, 2019—also approved by MDPU—states that “The external force of the pantograph as it was passing Pole 285/78 caused a tension force and caused the pole to snap at its base.” While the probable cause involves the pantograph, the “Safety Improvement” and “Actions Taken” are focused on mitigations for strengthening the catenary poles.

Finding 11 – MDPU did not verify the sufficiency and thoroughness of MBTA accident investigation reports.



Required Action – MDPU must submit and implement a process that ensures the MBTA thoroughly investigates all accidents.

Audit Evidence

During on-site interviews, MDPU explained that it needs additional resources to examine technical elements of accident investigations. MDPU also stated that, while they check the content of the investigation factually, they do not determine the sufficiency of the probable cause identified. This indicates that MDPU relies heavily upon MBTA’s technical expertise to identify causal and contributing factors for accidents, which may result in conflicting conclusions if MDPU independently investigated.

Finding 12 – MDPU did not conduct an independent review of the MBTA’s findings of causation.

Required Action – MDPU must submit and implement a process that ensures they conduct independent reviews of accident investigation findings of causation.

8.3 Accident Investigation Reports

Basic Requirement: Part 674.35(b) Investigations

Within a reasonable time, an SSOA must issue a written report on its investigation of an accident or review of an RTA’s accident investigation in accordance with the reporting requirements established by the SSOA. The report must describe the investigation activities; identify the factors that caused or contributed to the accident; and set forth a corrective action plan, as necessary or appropriate. The SSOA must formally adopt the report of an accident and transmit that report to the RTA for review and concurrence. If the RTA does not concur with an SSOA’s report, the SSOA may allow the RTA to submit a written dissent from the report, which may be included in the report, at the discretion of the SSOA.

Audit Evidence

MDPU stated that MBTA submits the initial accident notification within the 1-day required time frame, but the final investigation reports can take longer than the prescribed 60 days. In those situations, MBTA provides status updates to MDPU as required.

There are no findings of noncompliance for this portion of the audit.

8.4 RTA Investigations

Basic Requirement: 49 CFR Part 674.27(a)(7) State Safety Oversight Program Standards, Investigations.

The SSO program standard must identify thresholds for accidents that require the RTA to conduct an investigation. Also, the program standard must address how the SSOA will oversee an RTA’s internal investigation; the role of the SSOA in supporting any investigation conducted or findings and recommendations made by the NTSB [National Transportation



Safety Board] or FTA; and procedures for protecting the confidentiality of the investigation reports.

Audit Evidence

The audit team verified that MBTA’s safety plan and accompanying procedures include MDPU accident investigation requirements.

During on-site interviews, MDPU explained their staffing schedule to support on-scene response to all accidents meeting Part 674 thresholds. Staff are trained and equipped to respond to accident scenes and observe MBTA’s response and initial investigation activities.

There are no findings of noncompliance for this portion of the audit.

9. SSOA Triennial Reviews of SSPP

For this portion of the audit, the FTA evaluated MDPU’s triennial review documentation of the SSPP/PTASP as specified in: Part 674.31 – Triennial Audits: General Requirements.

9.1 SSPP/PTASP Audit Requirements

Basic Requirement: 49 CFR Part 674.31 Triennial Audits, General Requirements

At least once every three years, an SSOA must conduct a complete audit of an RTA’s compliance with its System Safety Program Plan/Public Transportation Agency Safety Plan. Alternatively, an SSOA may conduct the audit on an on-going basis over the three-year timeframe. At the conclusion of the three-year audit cycle, the SSOA shall issue a report with findings and recommendations arising from the audit, which must include, at minimum, an analysis of the effectiveness of the Public Transportation Agency Safety Plan, recommendations for improvements, and a corrective action plan, if necessary or appropriate. The RTA must be given an opportunity to comment on the findings and recommendations.

Audit Evidence

The audit team reviewed MDPU’s 2015–2017 triennial audit documentation and the schedule for the 2018–2020 triennial audits. MDPU completes annual summary reports with findings and recommendations as applicable. The MDPU 2015-2017 triennial audit identified three (3) findings resulting in CAPs, with one CAP open at the time of the FTA audit. Although MDPU does address all elements required in its most recent cycle, MDPU did not issue a final audit report at the conclusion of the three-year audit cycle for 2015–2017.

During on-site interviews, MDPU stated that it would include a final summary report as required in the Program Standard in its 2018–2020 three-year audit cycle. MDPU provided the annual summary for 2018, and records for the activities completed in 2019. They provided a schedule for completing the audit in 2020, and their progress is in line with that schedule.



Finding 13 – MDPU did not issue a triennial audit summary report with findings and recommendations at the end of the 2015-2017 three-year cycle.

Required Action – MDPU must issue a summary report of the 2015-2017 audit cycle that contains all required elements.

9.2 SSOA Triennial Audit Verification of SSPP Implementation

Basic Requirement: 49 CFR Part 674.31 Triennial Audits, General Requirements

At least once every three years, an SSOA must conduct a complete audit of an RTA's compliance with its Public Transportation Agency Safety Plan. Alternatively, an SSOA may conduct the audit on an on-going basis over the three-year timeframe.

Audit Evidence

The audit team verified that MDPU's Program Standard includes the minimum requirements for auditing RTA's compliance with its Public Transportation Agency Safety Plan at least once every three years.

There are no findings of noncompliance for this portion of the audit.

10. Corrective Actions

For this portion of the audit, the FTA evaluated MDPU's CAP documents as specified in:

Part 674.27 – (a)(8) State Safety Oversight Program Standards

Part 674.37 – (a) Corrective Action Plans

10.1 Procedure to Review, Approve, and Verify Corrective Action Plans

Basic Requirement:

49 CFR Part 674.27(a)(8) State Safety Oversight Program Standards - CAPs

The program standard must explain the process and criteria by which the SSOA may order an RTA to develop and carry out a Corrective Action Plan (CAP) and a procedure for the SSOA to review and approve a CAP. Also, the program standard must explain the SSOA's policy and practice for tracking and verifying an RTA's compliance with the CAP and managing any conflicts between the SSOA and RTA relating either to the development or execution of the CAP or the findings of an investigation.

49 CFR Part 674.37(a) In any instance in which an RTA must develop and carry out a CAP, the SSOA must review and approve the CAP before the RTA carries out the plan; however, an exception may be made for immediate or emergency corrective actions that must be taken to ensure immediate safety, provided that the SSOA has been given timely notification, and the SSOA provides subsequent review and approval. A CAP must describe, specifically, the actions the RTA will take to minimize, control, correct, or eliminate the risks and hazards identified by the CAP, the schedule for taking those actions, and the individuals responsible



for taking those actions. The RTA must periodically report to the SSOA on its progress in carrying out the CAP. The SSOA may monitor the RTA's progress in carrying out the CAP through unannounced, on-site inspections, or any other means the SSOA deems necessary or appropriate.

Audit Evidence

MDPU Program Standard Section 151.07 and 151.09 establishes the procedures MBTA must use to develop and submit CAPs, including development of CAPs from hazardous conditions and investigations.

The MBTA has reported to the MDPU a serious hazardous condition of speeding on the Green Line. During discussions with MBTA, MDPU recommended corrective actions to mitigate this hazard, including posting speed signs, improving driver training, and additional supervisor resources. These actions are complex enough to require plans to implement them, thus meeting the definition of a required CAP. However, MDPU does not direct MBTA to develop and submit CAPs for approval and does not track the progress of the recommendations and mitigations. MBTA did not implement recommended corrective actions to address speeding on the Green Line. On June 8, 2019, a Green Line train traveling at more than 20 mph in a 6-mph area derailed resulting in 10 injuries.

Finding 14 – MDPU did not ensure that MBTA developed CAPs as required from hazards or investigation reports.

Required Action – MDPU must submit and implement a process that ensures that all required CAPs are submitted, reviewed, approved, and tracked.

10.2 Establish Content Requirements for Corrective Action Plans

Basic Requirement: 49 CFR Part 674.37(a) Corrective Action Plans

In any instance in which an RTA must develop and carry out a CAP, the SSOA must review and approve the CAP before the RTA carries out the plan; however, an exception may be made for immediate or emergency corrective actions that must be taken to ensure immediate safety, provided that the SSOA has been given timely notification, and the SSOA provides subsequent review and approval. A CAP must describe, specifically, the actions the RTA will take to minimize, control, correct, or eliminate the risks and hazards identified by the CAP, the schedule for taking those actions, and the individuals responsible for taking those actions. The RTA must periodically report to the SSOA on its progress in carrying out the CAP. The SSOA may monitor the RTA's progress in carrying out the CAP through unannounced, on-site inspections, or any other means the SSOA deems necessary or appropriate.

Audit Evidence

During on-site record reviews, the audit team examined the CAP log dated October 7, 2019, and identified 19 open CAPs. Of the 19 open CAPs, 15 CAPs do not include an accurate schedule for completion nor the name of the individual or position responsible for the CAP.



Similarly, the CAP tracking log submitted with MDPU's 2018 annual report included eight CAPs with five CAPs that do not include an accurate schedule for completion. Additionally, the individuals responsible for certain CAPs no longer employed at MDPU or MBTA.

Finding 15 – MDPU did not ensure that MBTA's CAPs included an accurate schedule and responsible individual.

Required Action – MDPU must ensure that their CAP tracking logs are updated and contain all required information, including current schedules and responsible individuals.

10.3 Process for Evaluating NTSB Findings

Basic Requirement: 49 CFR Part 674.37(b) Corrective Action Plans

In any instance in which a safety event on the RTA's rail fixed guideway public transportation system is the subject of an investigation by the NTSB, the SSOA must evaluate whether the findings or recommendations by the NTSB require a CAP by the RTA, and if so, the SSOA must order the RTA to develop and carry out a CAP.

Audit Evidence

The audit team verified that MDPU's Program Standard includes the minimum requirements for addressing NTSB recommendations. During on-site interviews, MDPU stated that MBTA has one open NTSB recommendation, R-09-014, from the May 2008 Green Line collision. The recommendation states: "To the [MBTA]: Develop and implement a positive train control system for all of your rail lines." At the time of this audit, NTSB categorized this recommendation as "Open – Acceptable Response." MDPU is tracking MBTA's actions to resolve this under CAP 3222-1, which states, "MBTA will procure, qualify and install a Non-vital radio frequency based red signal violation protection system that will be overlaid onto the existing Green Line system."

There are no findings of noncompliance for this portion of the audit.

11. Annual Reports

For this portion of the audit, the FTA evaluated MDPU's annual reports submissions as specified in:

- Part 674.13 – (a)(7) Designation of Oversight Agency
- Part 674.27 – (b) State Safety Oversight Program Standards
- Part 674.39 – State Safety Oversight Agency Annual Reporting to FTA

11.1 Annual Safety Status Report Requirements

Basic Requirement: 49 CFR Part 674.13(a)(7) Designation of Oversight Agency

At least once a year, the SSOA reports the status of the safety of each rail fixed guideway public transportation system to the Governor, the FTA, and the board of directors, or



equivalent entity, of the rail fixed guideway public transportation system.

Audit Evidence

The audit team reviewed MDPU’s annual report to the Massachusetts Governor. The report included a review of MDPU’s Part 674 certification, MDPU involvement with MBTA’s Safety Plan, and MDPU’s 2018 Triennial Audit activities. During on-site interviews, the audit team confirmed that MDPU provides annual reports and briefings to the MBTA Board of Directors.

There are no findings of noncompliance for this portion of the audit.

11.2 FTA Annual Report Requirements

Basic Requirement: 49 CFR Part 674.39(a) State Safety Oversight Agency Annual Reporting to FTA

On or before March 15 of each year, an SSOA must submit the following material to FTA:

- (1) The SSO program standard adopted in accordance with Part 674.27, with an indication of any changes to the SSO program standard during the preceding twelve months;
- (2) Evidence that each of its employees and contractors has completed the requirements of the Public Transportation Safety Certification Training Program, or, if in progress, the anticipated completion date of the training;
- (3) A publicly available report that summarizes its oversight activities for the preceding twelve months, describes the causal factors of accidents identified through investigation, and identifies the status of corrective actions, changes to Public Transportation Agency Safety Plans, and the level of effort by the SSOA in carrying out its oversight activities;
- (4) A summary of the three-year audits completed during the preceding twelve months, and the RTAs’ progress in carrying out CAPs arising from three-year audits conducted in accordance with Part 674.31;
- (5) Evidence that the SSOA has reviewed and approved any changes to the Public Transportation Agency Safety Plans during the preceding twelve months; and
- (6) A certification that the SSOA is in compliance with the requirements of this part.

Audit Evidence

MDPU Program Standard Section 151.10(3) requires MDPU to submit by March 15 each year “evidence that each of its employees and contractors has completed the requirements of the Public Transportation Safety Certification Training Program, or, if in process, the anticipated completion date of the training.” MDPU’s 2018 annual report does not include evidence of compliance with the Public Transportation Safety Training Program.

Program Standard Section 151.10(5) requires MDPU to submit by March 15th “evidence that the Department has reviewed and approved any changes to the PTASPs during the preceding



12 months.” MDPU’s 2018 annual report did not provide clear evidence of MDPU’s review and approval of MBTA’s Agency Safety Plan in the submission.

MDPU submitted its annual report to FTA on March 15, 2019, before the extended deadline of April 30, 2019. However, as described in Section 8.1 of this audit report, MDPU does not include all reportable accidents in their 2017 and 2018 annual reports to FTA.

At the time of the audit, MDPU continues to coordinate with FTA representatives to reconcile the annual report information.

Finding 16 – MDPU did not submit an annual report to FTA with all required information.

Required Action – MDPU must submit their annual report for 2019 performance by the deadline, ensuring that the report contains all required elements.

12. Follow Up Actions

The MDPU will have 45 business days to respond with a corrective action plan for each finding included in Section 13 of this audit report.



13. Summary of Findings

MDPU Audit Findings	
Finding	Required Actions
1) Section 3.2. Part 674.17(a): MDPU did not disburse obligated Federal grants in accordance with FTA rules, guidance, and grant agreements.	MDPU must develop and submit a spending plan to the FTA that includes a proposed schedule for current Federal funding.
2) Section 5.1. Part 674.11(d): MDPU did not have a staffing level commensurate with the actual oversight needs of the MBTA.	MDPU must develop, submit, and implement a revised workload assessment that reflects an appropriate staffing level for overseeing the MBTA, a revised technical training plan, and a plan for hiring and training personnel and/or contractors to fill the identified staffing needs.
3) Section 5.2. Part 674.25(f) and Sub-requirement 672.21(a): MDPU did not ensure that all its designated personnel are enrolled in the Public Transportation Safety Certification Training Program (PTSCTP).	MDPU must submit to the FTA documentary evidence that all designated personnel under 672.21(a) are enrolled in the PTSCTP. <u>This finding has since been closed.</u>
4) Section 5.2. Part 674.25(f) and Sub-requirement Part 672.21(b): MDPU did not retain a record of the technical training completed by its designated personnel.	MDPU must develop, submit, and implement a method for ensuring that all training is recorded and tracked.
5) Section 6.1. Part 674.25(b): MDPU did not ensure the MBTA implemented all SSPP elements required in 659.19.	MDPU must submit and implement a process that ensures the MBTA implements SSPP required elements, including rule compliance and training.
6) Section 6.2. Part 674.25(b): MDPU did not oversee and enforce the implementation of MBTA’s SSPP hazard analysis procedures.	MDPU must submit and implement a process that ensures the MBTA identifies its thresholds for developing CAPs, and is conducting hazard analysis as required in the SSPP.
7) Section 6.2. Part 674.25(b): MDPU did not oversee and enforce the implementation of MBTA’s SSPP hazard identification and tracking procedures.	MDPU must submit and implement a process that ensures the MBTA identifies and tracks all hazards as outlined in the SSPP.
8) Section 6.2. Part 674.25(b): MDPU did not oversee and enforce the MBTA’s SSPP rules compliance procedures for right of way safety rules and procedures.	MDPU must submit and implement a process that ensures the MBTA follows its rules compliance program as required in the SSPP for right of way safety rules and procedures.
9) Section 6.2. Part 674.25(b): MDPU did not oversee and enforce MBTA’s rules compliance procedures for track maintenance safety rules and procedures.	MDPU must submit and implement a process that ensures the MBTA follows its rules compliance program as outlined in the SSPP for track maintenance safety rules and procedures.
10) Section 8.1. Part 674.33(a): MDPU did not ensure the MBTA notified the FTA and SSOA of all accidents within two hours.	MDPU must submit and implement a process that ensures the MBTA notifies FTA and the MDPU of all reportable accidents within two hours.



11) Section 8.2. Part 674.35(a): MDPU did not verify the sufficiency and thoroughness of MBTA investigation reports.	MDPU must submit and implement a process that ensures the MBTA thoroughly investigates all accidents.
12) Section 8.2. Part 674.35(a): MDPU did not conduct an independent review of the MBTA's findings of causation.	MDPU must submit and implement a process that ensures they conduct independent reviews of accident investigation findings of causation.
13) Section 9.1 Part 674.31: MDPU did not issue a triennial audit summary report with findings and recommendations at the end of the 2015-2017 three-year cycle.	MDPU must issue a summary report of the 2015-2017 audit cycle that contains all required elements.
14) Section 10.1. Part 674.37(a): MDPU did not ensure that MBTA developed CAPs as required from hazards or investigation reports.	MDPU must submit and implement a process that ensures that all required CAPs are submitted, reviewed, approved, and tracked.
15) Section 10.2. Part 674.37(a): MDPU did not ensure that MBTA's CAPs included an accurate schedule and responsible individual.	MDPU must ensure that their CAP tracking logs are updated and contain all required information, including current schedules and responsible individuals.
16) Section 11.2. Part 674.39(a): MDPU did not submit an annual report to FTA with all required information.	MDPU must submit their annual report for 2019 performance by the deadline, ensuring that the report contains all required elements.



14. Appendix A - FTA Responses to MDPU Comments to the Draft Audit Report

FTA responses to MDPU comments to the FTA Draft SSO Audit Report on March 13, 2020 are included in the table below.

MDPU 2019 Draft Audit Report Comment/ Response Table			
Finding No.	Finding	MDPU Comment	FTA Response
1	Section 3.2. Part 674.17(a): MDPU did not disburse obligated Federal grants in accordance with FTA rules, guidance, and grant agreements.	MDPU acknowledges that there is room for improvement in our spending of grants funds and has already taken steps to address this issue: a new spending plan, a corrective action plan and new internal controls.	No response required.
2	Section 5.1. Part 674.11(d): MDPU did not have a staffing level commensurate with the actual oversight needs of the MBTA.	Reference: Audit Report Section 5.1 – Finding 2: MDPU included staffing levels in its Workload Assessment Plan submission to FTA. Although FTA has consistently approved MDPU's prior staffing levels, based on the audit process FTA has found, for the first time ever, that an increase in staffing is necessary and appropriate for the MDPU. The MDPU agrees with this finding and is fully committed to making sure that we have the proper staffing levels in place.	No response required.
3	Section 5.2. Part 674.25(f) and Sub-requirement 672.21(a): MDPU did not ensure that all its designated personnel are enrolled in the Public Transportation Safety Certification Training Program (PTSCTP).	MDPU disputes this finding. All required rail transit safety staff have enrolled in the PTSCTP and requested their ITPs. At the time when FTA requested documents regarding this requirement, training documentation for one staff member was inadvertently missing. MDPU has since provided this documentation to FTA using the OneHub Workspace.	The updated ITP was not provided to FTA at the time of the on-site audit. Since the on-site audit, FTA received and reviewed the ITP submitted by MDPU and will close this finding.
4	Section 5.2. Part 674.25(f) and Sub-requirement Part 672.21(b): MDPU did not retain a record of the technical training completed by its designated personnel.	MDPU disputes this finding. MDPU complies with 49 CFR 672.21(b) by recording all technical training in a training log. MDPU believes that this log is complete and meets all regulatory requirements and seeks additional clarification as to how the training log fails to comply with the referenced regulation.	Based on FTA's review of MDPU's TTP, FTA identified numerous instances where the TTP was not complete and did not comply with 672.21(b). Examples can be found on the second page of MDPU's Training Matrix. Course completion is shown in numerous instances, however, the competency documentation and examination requirement for the course is not entered.
5	Section 6.1. Part 674.25(b): MDPU did	MDPU disputes this finding. The MBTA's SSPP did contain all elements required in 49 CFR	FTA agrees that the SSPP did include rule compliance



MDPU 2019 Draft Audit Report Comment/ Response Table

Finding No.	Finding	MDPU Comment	FTA Response
	not ensure the MBTA implemented all SSPP elements required in 659.19.	659.19. The MDPU notes, however, that the MBTA was not in full compliance with Element 13 of the SSPP in 2017. The MDPU detected this lack of compliance and required the MBTA to develop CAPs to correct this issue.	requirements. In response to MDPU’s comment. The Final Audit Report has been updated to remove reference of “and the [SSPP] checklist accounts for each of these elements” to clear up confusion on this point. In 2017 and 2018, MDPU identified in their annual checklist that the rules-compliance requirements were not in the SSPP. They developed two CAPs to correct this problem. These CAPs were closed in March 2017 and July 2019. In October 2019, rules-compliance checks were not being conducted as required.
6	Section 6.2. Part 674.25(b): MDPU did not oversee and enforce the implementation of MBTA’s SSPP hazard analysis procedures.	MDPU disputes this finding. This finding is based on an alleged failure to conduct a hazard analysis for a hazard that was the subject of a corrective action plan. A hazard analysis is conducted in order to determine if a corrective action plan is necessary and appropriate. Once a corrective action plan to address a hazard has been adopted, no additional hazard analysis is required.	The SSPP requires a hazard analysis be conducted for all hazards. The purpose of the hazard analysis is not to determine if there should be a CAP. The purpose is to understand the extent, severity, and likelihood of the hazard, in order to prioritize the hazard and determine what corrective actions should be taken. It is an essential part of the CAP development process.
7	Section 6.2. Part 674.25(b): MDPU did not oversee and enforce the implementation of MBTA’s SSPP hazard identification and tracking procedures.	MDPU acknowledges that the SSPP could benefit from additional clarity on this subject, and will address this issue as part of its ongoing work with the MBTA Safety Department as they revise the MBTA's Hazard Tracking Process.	No response required.
8	Section 6.2. Part 674.25(b): MDPU did not oversee and enforce the MBTA’s SSPP rules compliance practices for right of way safety rules and procedures.	MDPU disputes this finding. As noted in the draft report, this finding is based on a single instance where an FTA employee accompanied a MDPU staff member to review an MBTA construction site for approximately 4 hours. Even if the FTA employee had observed a violation of right of way (ROW) safety rules and procedures, this single observation is insufficient support for the broadly worded finding. More importantly, MDPU does not believe that the conduct observed constitutes a violation of ROW safety rules and procedures. The audit report states that, "the MBTA Safety Officer did not require the audit team member's MBTA and MDPU escorts to complete a ROW checklist." Section 6.4.6 of the ROW Safety Rulebook	An instance identified during an FTA on-site audit is evidence of non-compliance, The Audit Report Section 6.2 is updated as shown below in <u>underline clarifies the finding by detailing</u> FTA’s observation during the on-site audit. “...MBTA’s ROW Safety Rulebook (Third Edition, dated 7/1/2014) <u>provided in the MBTA RWP training on October 23, 2019,</u> requires the completion of a ROW checklist prior to workers accessing the ROW. During track maintenance field observations, <u>performed prior to full</u>



MDPU 2019 Draft Audit Report Comment/ Response Table

Finding No.	Finding	MDPU Comment	FTA Response
		states: "Levels 1 and 5 are exempt from the ROW Checklist requirement."	implementation of the "Level 1" area and de-energization of the Overhead Catenary System (OCS), the MBTA Safety Officer did not require the audit team member's MBTA and MDPU escorts to complete a ROW checklist."
9	Section 6.2. Part 674.25(b): MDPU did not oversee and enforce MBTA's rules compliance practices for track maintenance safety rules and procedures.	MDPU disputes this finding. The MDPU complies with 49 CFR 674.25(b), including overseeing and enforcing the MBTA's rules compliance practices for track maintenance safety rules and procedures by conducting announced and unannounced audits of MBTA track maintenance safety rules and procedures. These audits included, as part of the MDPU's 2019 triennial audit of the MBTA, a targeted audit of the MBTA Maintenance of Way (MOW) Department to review compliance with the MBTA SSPP, Element 14: Facilities and Equipment Safety Inspections. As the draft report notes, the portions of the SSPP at issue in this finding are found in Element 14 (sections 14.1 and 14.4).	In the past 4 four years, MDPU has not identified any audit findings related to track maintenance safety. Over the past several months, MBTA has experienced track work accidents, including two work vehicles rolling into each other on two separate occasions. The FTA accompanied the MDPU on an announced inspection and identified multiple track work safety violations. From this evidence, FTA has determined that the MDPU's oversight of MBTA's track maintenance and safety rules should be more effective.
10	Section 8.1. Part 674.33(a): MDPU did not ensure the MBTA notified the FTA and SSOA of all accidents within two hours.	MDPU agrees with this finding and has taken steps to ensure the MBTA corrects this issue. On March 4, 2020, the Department sent a letter to MBTA senior leadership restating the 2-hour notification requirement. The MDPU is also in the process of convening a meeting with MBTA Safety and the Operations Control Center (OCC) to reemphasize the need to adhere to the 2-hour notification rule. In the event that these efforts to reinforce the importance of the rule are unsuccessful, MDPU will develop a CAP to address the issue.	No response required.
11	Section 8.2. Part 674.35(a): MDPU did not verify the sufficiency and thoroughness of MBTA investigation reports.	The MDPU agrees that it, rather than the MBTA, is ultimately responsible for the sufficiency and thoroughness of all investigations, including those undertaken by the MBTA at MDPU's direction. Over the course of the audit period, MDPU required the MBTA to conduct 236 investigations. The audit evidence focuses on two of these 236 reports and finds that these two reports did not meet "sufficiency and thoroughness" requirements. While the MDPU believes that it complies with 49 CFR 674.35(a) and has an adequate process to ensure sufficiency and thoroughness of investigative reports authored by the MBTA, the MDPU looks forward to	In response to MDPU's comment, the Final Audit Report has been updated to specify that the audit team focused on five accident reports, and two accident reports did not sufficiently address the root cause. FTA reviews a sampling of documentation during SSO audits. In this case, 40% of the reviewed reports were not comprehensive. For your clarification, accident investigation report #19-01447 does not provide root-cause analysis of the derailment. The report



MDPU 2019 Draft Audit Report Comment/ Response Table

Finding No.	Finding	MDPU Comment	FTA Response
		working with the audit team to better understand any specific deficiencies in these two reports so that the MDPU can improve its processes.	concludes that the train, under normal operating conditions went over a section of track that was within specifications, and derailed. The report does not explain what the individual track variances were and the circumstance in which a train derailed on tracks within MBTA specifications. Final accident investigation report #19-00953 also lacks root-cause analysis. It states that the force of the pantograph caused the pole to break. In general, the force of a pantograph should not break a catenary pole. The report did not detail what was it about the pantograph (or the pole) that caused the failure.
12	Section 8.2. Part 674.35(a): MDPU did not conduct an independent review of the MBTA’s findings of causation.	MDPU disputes this finding. For each of the 236 investigations conducted by the MBTA during the audit period, multiple levels of MDPU staff reviewed the resulting reports, which include the findings of causation. This review is, by definition, independent because it is performed by MDPU staff rather than MBTA staff. The MDPU agrees that reviews of certain findings of causation could be strengthened through the retention of additional technical experts, but an outside contractor is not required to make the MDPU's review "independent" or to otherwise comply with the governing regulation.	FTA found that the same root-cause analysis conducted by MBTA was provided in the final adopted report. Section 8.2 of the final audit report explains that, when asked why this was the case, MDPU Responded that, “while they check the content of the investigation factually, they do not determine the sufficiency of the probable cause identified.”
13 <i>(Finding Deleted in Final Report)</i>	Section 8.3 Part 674.35(b): MDPU issued accident investigation reports that did not include all required elements.	MDPU disputes this finding. MDPU adopts an MBTA accident investigation report only after MDPU is satisfied that the report includes all required elements. The finding is based on two accident reports that the audit team stated did not "identify the factors that caused or contributed to the accident" as required by 49 CFR 674.35(b). Report 19-01447 identifies the factors that caused or contributed to the underlying accident on pages 1 and 3.	While these reports do contain causal factors, they are not complete and are not indicative of a thorough investigation. This evidence supports the finding that MDPU did not verify the sufficiency and thoroughness of MBTA investigation reports. FTA has removed this finding from Section 8.3 of the final audit report and will consider this as part of Finding 11.
14 <i>(Listed as Finding 13 in Final Report)</i>	Section 9.1 Part 674.31: MDPU did not issue a triennial audit summary report with findings and	The MDPU agrees with this finding and will submit a summary report of the 2015- 2017 audit cycle shortly.	No response required.



MDPU 2019 Draft Audit Report Comment/ Response Table

Finding No.	Finding	MDPU Comment	FTA Response
	recommendations at the end of the 2015-2017 three-year cycle.		
<p>15 <i>(Listed as Finding 14 in Final Report)</i></p>	<p>Section 10.1. Part 674.37(a): MDPU did not ensure that MBTA developed CAPs as required from hazards or investigation reports.</p>	<p>The MDPU disputes this finding. MDPU ensures that the MBTA develops CAPs as required from hazards of investigation reports. The governing federal regulation, 49 CFR 674.27(a)(8) requires that "[t]he program standard must explain the process and criteria by which [MDPU] may order [the MBTA] to develop and carry out a Corrective Action Plan." MDPU has established the criteria for developing and carrying out a CAP by regulation: certain "Risk Assessment Codes". See 220 CMR 151.07(1). "Risk Assessment Codes" are defined as "[t]he terminology, reviewed and approved by the Department, used for the characterization of risk such as high, serious, medium, or low based on hazard severity and probability of occurrence."</p>	<p>FTA agrees that the hazardous condition of track components failing under normal use does not meet the reporting threshold in the program standard, as no hazard analysis was performed. This evidence supports the finding that MDPU did not require MBTA to perform a hazard analysis, and has been moved to section 6.2 of the final report.</p> <p>MDPU has required CAPs from MBTA to mitigate the severe hazard of speeding on the green line (e.g. CAP #3222). As stated in section 10.1 of this report, MDPU and MBTA agreed that MBTA would institute additional corrective actions to mitigate this hazard, but these corrective actions were never developed as CAPs and were not completed.</p>
<p>16 <i>(Listed as Finding 15 in Final Report)</i></p>	<p>Section 10.2. Part 674.37(a): MDPU did not ensure that MBTA's CAPs included an accurate schedule and responsible individual.</p>	<p>As required by the governing regulation (49 CFR 674.37(a)), MDPU ensured that CAPs included an accurate schedule and responsible individual at the time that the SSOA "review[s] and approve[s] the CAP."</p> <p>The MDPU requires the MBTA to submit a CAP on a pre-approved form that includes all necessary information including the MBTA staff member responsible and the CAP's expected completion date. While there is no regulation that requires MDPU to record updates to schedules and responsible individuals in the CAPs themselves, MDPU agrees that doing so would be a best practice and will require MBTA to update CAP information, if there are any changes, every 30 days.</p>	<p>No response required.</p>
<p>17 <i>(Listed as Finding 16 in Final Report)</i></p>	<p>Section 11.2. Part 674.39(a): MDPU did not submit an annual report to FTA with all required information.</p>	<p>MDPU agrees that certain information that, while provided to the FTA through other means, was not included in the 2018 Annual Report. The MDPU will ensure that the 2019 Annual Report includes all required elements.</p>	<p>No response required.</p>



15. Appendix B - MDPU Comments to the Draft Audit Report

MDPU provided the following comments to the FTA Draft SSO Audit Report on March 13, 2020.