

OFFICE OF THE STATE AUDITOR

DIANA DIZOGLIO

Official Audit Report – Issued March 4, 2025

Massachusetts Bay Transportation Authority—Keolis Contract

For the period June 1, 2020 through December 31, 2023



OFFICE OF THE STATE AUDITOR

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March 4, 2025

Monica Tibbits-Nutt, Secretary and Chief Executive Officer
Massachusetts Department of Transportation
State Transportation Building
10 Park Plaza, Suite 4160
Boston, MA 02116

Dear Secretary Tibbits-Nutt:

I am pleased to provide to you the results of the enclosed performance audit of the Massachusetts Bay Transportation Authority (MBTA) as it relates to the Keolis Commuter Services, LLC contract. This report details the audit objectives, scope, methodology, findings, and recommendations for the audit period, June 1, 2020 through December 31, 2023.

This report is part of a series of reports that the Office of the State Auditor (OSA) intends to issue as part of a performance audit of the MBTA. Among other topics, we have chosen to examine areas such as safety, contract performance, operational concerns, and spending. While all are parts of one audit, these topics are best addressed in incremental reports.

OSA audits over 200 state agencies as part of our statutory mandate. In doing so, we examine areas of risk, including program integrity, funding sources, spending, and potential operational weaknesses, including safety. We also reexamine previous audits to determine whether the agency has implemented our recommendations.

Based on our research, the MBTA is a “high-risk” agency that warrants consistent oversight due to the size of its budget, the complexity of its operations, and the risks related to the services it provides. While our resources are limited, making it difficult to provide the needed level of oversight, we continue to advocate for funding that would support the creation of a transportation audit unit within OSA. This unit would allow us to provide the MBTA with recommendations that help it provide for safer, more efficient, and more cost-effective programming for Massachusetts riders and taxpayers.

The mission of OSA is to provide oversight and insight to improve performance and make government work better. In this report, we found that the MBTA did not exercise adequate oversight over certain areas of its contract with Keolis Commuter Services, LLC, the operator of the MBTA’s commuter rail system.

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In the "Other Matters" section of this report, we identify issues warranting attention that, while not part of our original objectives, came to light during the course of our work. These findings highlight the need for additional oversight related to the MBTA's contract with Keolis Commuter Services, LLC.

It is our team's hope that you find this report helpful as we work together to improve services, now and in the future.

In the months to come, we will share with you additional reports from this audit, which will detail areas and topics we think deserve immediate attention. We intend to identify other areas of risk and offer recommendations for performance enhancements.

We welcome the opportunity to discuss the findings and recommendations of this and our future reports with you.

Best regards,



Diana DiZoglio
Auditor of the Commonwealth

cc: Thomas M. McGee, Chair of the Massachusetts Bay Transportation Authority Board of Directors
Phillip Eng, General Manager and Chief Executive Officer of the Massachusetts Bay Transportation Authority

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
OVERVIEW OF AUDITED ENTITY	5
AUDIT OBJECTIVES, SCOPE, AND METHODOLOGY	19
DETAILED AUDIT FINDINGS WITH AUDITEE’S RESPONSE.....	32
1. The Massachusetts Bay Transportation Authority did not accurately assess performance-based incentives and penalties for Keolis.....	32
a. The Massachusetts Bay Transportation Authority did not assess approximately \$3,324,126 worth of performance-based penalties for Keolis.	32
b. The Massachusetts Bay Transportation Authority inappropriately assessed approximately \$257,724 worth of performance-based penalties against Keolis.	33
c. The Massachusetts Bay Transportation Authority overpaid Keolis by approximately \$105,810 in performance-based incentives.....	33
d. The Massachusetts Bay Transportation Authority underpaid Keolis by \$105,210 in performance-based incentives it had achieved.	34
2. The Massachusetts Bay Transportation Authority did not maintain sufficient documentation of certain inspections designed to evaluate Keolis’s performance.	41
3. The Massachusetts Bay Transportation Authority did not always enforce the monthly and annual performance incentive payment caps.	44
4. The Massachusetts Bay Transportation Authority did not ensure that Keolis submitted required reports relating to fare collection revenue and fleet maintenance on time and did not penalize Keolis for noncompliance.....	47
5. The Massachusetts Bay Transportation Authority did not ensure that Keolis employees who had access to the Train Resource Management System completed annual cybersecurity awareness training.	49
6. The Massachusetts Bay Transportation Authority does not have an internal control plan.	52
OTHER MATTERS	54
1. The Massachusetts Bay Transportation Authority did not effectively monitor Keolis’s compliance with disadvantaged business enterprise requirements.....	54
2. Keolis entered into a \$425,000 settlement agreement with a Disadvantaged Business Enterprise firm, which included non-disclosure and non-disparagement clauses.....	58

3. The audit process was constrained by delays and inconsistent and inaccurate information provided by the Massachusetts Bay Transportation Authority.	59
APPENDIX A	61
APPENDIX B	62
APPENDIX C	64
APPENDIX D	65
APPENDIX E	66
APPENDIX F	67
APPENDIX G	68
APPENDIX H	69
APPENDIX I	70

LIST OF ABBREVIATIONS

ADA	Americans with Disabilities Act
BTC	blind trailer coach
CTC	cab control coach
DBE	Disadvantaged Business Enterprise
MBTA	Massachusetts Bay Transportation Authority
ODRL	Operator Deliverable Requirement List
OSA	Office of the State Auditor
TRAC	Ticket Revenue Accounting Channel
TRMS	Train Resource Management System
US DOT	US Department of Transportation

EXECUTIVE SUMMARY

In accordance with Section 12 of Chapter 11 of the Massachusetts General Laws, the Office of the State Auditor has conducted a performance audit of the Massachusetts Bay Transportation Authority (MBTA) for the period June 1, 2020 through December 31, 2023.

The purpose of our audit was to determine whether the MBTA effectively administered certain aspects of its contract with Keolis Commuter Services, LLC, referred to in this report as Keolis. Under this contract, Keolis has maintained and operated the MBTA's commuter rail system since July 1, 2014.

In this performance audit, we determined the following:

- whether the MBTA ensured that Keolis met the performance requirements outlined in Section 2 of Schedule 6.1 of the MBTA's "Commuter Rail Operating Agreement 159-12" with Keolis;
- whether the MBTA enforced the required report deadlines in Section 2.1.4 of Schedule 3.14 of the MBTA's "Commuter Rail Operating Agreement 159-12" with Keolis that are related to the performance requirements in Section 2 of Schedule 6.1 of this contract; and
- whether the MBTA enforced the performance incentive payment caps outlined in Section 6.5 of Schedule 6.1 of the MBTA's "Commuter Rail Operating Agreement 159-12" with Keolis and Section 4.2 of Schedule 17 of the "Revenue Growth Service Change Agreement."

Below is a summary of our findings, the effects of those findings, and our recommendations, with links to each page listed.

Finding 1
Page [32](#)

The MBTA did not accurately assess performance-based incentives and penalties for Keolis.

- a. The MBTA did not assess approximately \$3,324,126 worth of performance-based penalties for Keolis.
- b. The MBTA inappropriately assessed approximately \$257,724 worth of performance-based penalties against Keolis.
- c. The MBTA overpaid Keolis by approximately \$105,810 in performance-based incentives.
- d. The MBTA underpaid Keolis by \$105,210 in performance-based incentives it had achieved.

Effect	Performance-based penalties and incentives are designed to incentivize vendors to achieve certain quality or timeliness standards and to hold them accountable for meeting agreed-upon service levels. Failing to accurately assess these penalties and incentives undermines accountability and reduces the incentive for vendors to meet expectations. It also diminishes the overall quality and reliability of the MBTA's commuter rail services. In this instance, the MBTA failed to assess millions of dollars of financial penalties that could have helped improve service for MBTA customers. This represents a financial loss to the MBTA and could lead to other financial losses, as poorer service may result in fewer riders. Failure to properly assess incentives and penalties could also reduce the public's trust in the MBTA and harm its relationship with a vendor that relied on the MBTA's calculations of incentives and penalties.
Recommendations Page <u>36</u>	<ol style="list-style-type: none"> 1. The MBTA should develop and implement sufficient policies and procedures, including a monitoring component, to ensure that the performance-based incentives and penalties it assesses Keolis are accurate and in accordance with the executed contract. 2. The MBTA should implement a verification process to ensure the correct escalation factors are used when calculating incentive and penalty amounts. This will help prevent errors and ensure accuracy in future calculations. 3. To help increase transparency and accountability, the MBTA should consider publicly reporting on the performance of its contractors. This would provide riders, taxpayers, and other stakeholders with insight into how contractors are performing relative to the MBTA's expectations.
Finding 2 Page <u>41</u>	The MBTA did not maintain sufficient documentation of certain inspections designed to evaluate Keolis's performance.
Effect	<p>The MBTA and its customers are exposed to safety risks if the MBTA fails to properly manage resolution of issues at commuter rail stations and with regard to snow and ice. This can result in avoidable injuries or accidents and financial loss. Failure to properly document the management of Americans with Disabilities Act (ADA) inspections can result in unnecessary inconvenience or denial of service to residents and can create avoidable financial risk for the MBTA. Failure to appropriately oversee the fare collection efforts of its contractor and coach and locomotive availability can result in the perception of unfairness for riders, reduction in service levels during peak times, and the loss of ridership and contractor-penalty revenue for the MBTA.</p> <p>Proper documentation of inspections is crucial for evaluating performance and ensuring that agreed-upon service levels are met. Without these records, it can be impossible for the MBTA to properly manage its operations and challenging to address any potential shortcomings or hold the responsible parties accountable.</p>
Recommendations Page <u>42</u>	<ol style="list-style-type: none"> 1. The MBTA should establish policies and procedures to monitor station maintenance, snow and ice removal, ADA inspections, locomotive and coach availability, and fare collections. 2. The MBTA should document all inspections, regardless of outcome.
Finding 3 Page <u>44</u>	The MBTA did not always enforce the monthly and annual performance incentive payment caps.
Effect	As a result, the MBTA is paying Keolis more than is permitted under contract for monthly and annual performance incentives.

Recommendations Page <u>46</u>	<ol style="list-style-type: none">1. The MBTA should establish adequate policies and procedures to monitor and enforce the monthly and annual performance incentive caps. This should include a monitoring component that ensures that there is sufficient, appropriate ongoing supervision and reporting on this issue, including financial reviews of the contract and the payment of incentives.2. The MBTA should implement a verification process to ensure that the correct escalation factors are used when calculating the annual cap for all incentives. This will help prevent errors and ensure accuracy in future fiscal years.
Finding 4 Page <u>47</u>	The MBTA did not ensure that Keolis submitted required reports relating to fare collection revenue and fleet maintenance on time and did not penalize Keolis for noncompliance.
Effect	Not requiring Keolis to submit Operator Deliverable Requirement List (ODRL) reports in a timely manner deprived MBTA operations and management personnel members of information needed to make decisions and monitor performance. Because the MBTA also failed to assess an estimated \$255,000 in penalties, this also resulted in a loss of revenue that must be compensated for through additional funding from riders or the Commonwealth and its taxpayers.
Recommendation Page <u>48</u>	The MBTA should establish sufficient policies and procedures to monitor the receipt, review, and follow-up of reports that are required to be submitted by Keolis to the MBTA, per the executed contract. This should include appropriate monitoring and reporting components, as well as a financial review, to ensure that appropriate penalties are assessed and collected.
Finding 5 Page <u>49</u>	The MBTA did not ensure that Keolis employees who had access to the Train Resource Management System (TRMS) completed annual cybersecurity awareness training.
Effect	If the MBTA does not ensure that its contracted service provider's employees with access to the MBTA's information technology systems complete annual cybersecurity awareness training, then the MBTA exposes itself to an increased risk of cybersecurity attacks and financial and/or reputational losses. In addition, the integrity and security of information in TRMS, which is used to monitor all aspects of commuter rail performance, may become compromised.
Recommendations Page <u>50</u>	<ol style="list-style-type: none">1. The MBTA should establish policies and procedures, including a monitoring component, to ensure that its contracted service provider's employees with access to the MBTA's information technology systems complete cybersecurity awareness training.2. The MBTA should ensure that its contractor complies with all terms and conditions of its contract and that it retains sufficient documentation of this.
Finding 6 Page <u>52</u>	The MBTA does not have an internal control plan.
Effect	Without a sufficiently developed internal control plan, based on a department-wide risk assessment, the MBTA is limited in its ability to identify vulnerabilities, which could prevent it from achieving organizational goals and objectives. This also exposes the MBTA to heightened risks in its operations.
Recommendations Page <u>52</u>	<ol style="list-style-type: none">1. The MBTA should develop an internal control plan based on a current department-wide risk assessment that includes all aspects of its business activities.2. After completing the internal control plan, the MBTA should ensure that the internal control plan is communicated to all employees, used within its operations, and reviewed and updated at least annually.

In addition, while we were conducting our audit, additional issues came to our attention which we have outlined in the “Other Matters” section of this report. These issues relate to the MBTA's monitoring of Keolis’s compliance with Disadvantaged Business Enterprise (DBE) requirements, including a \$425,000 settlement between Keolis and a DBE firm that involved non-disclosure and non-disparagement clauses, as well as delays in the audit process caused by inconsistent and inaccurate information provided by the MBTA.

OVERVIEW OF AUDITED ENTITY

The Massachusetts Bay Transportation Authority (MBTA) was created in 1964, pursuant to Chapter 161A of the Massachusetts General Laws. The agency provides the following: a rapid transit system, commuter rail services, bus services, ferry routes, and transit services for people with disabilities. According to its website, the MBTA is “one of the largest public transit systems in the country, serving nearly 200 cities and towns and over 1 million daily riders.”

According to Section 7 of Chapter 161A of the General Laws, the MBTA is governed by a nine-member board of directors. This section states,

The board shall consist of: secretary [of Transportation], who shall serve ex officio; 1 person to be appointed by the mayor of the city of Boston; 1 person to be appointed by the advisory board who shall have municipal government experience in the service area constituting the authority and experience in transportation operations, transportation planning, housing policy, urban planning or public or private finance; provided, however, that said person shall not represent the city of Boston; and 6 persons to be appointed by the governor, 1 of whom shall have experience in safety, 1 of whom shall have experience in transportation operations, 1 of whom shall have experience in public or private finance, 1 of whom shall be a rider as defined in section 1 [of the General Laws] and a resident of an environmental justice population as defined in section 62 of chapter 30 [of the General Laws], 1 of whom shall be a municipal official representing a city or town located in the area constituting the authority representing the service area . . . and 1 of whom shall be selected from a list of 3 persons recommended by the president of the Massachusetts State Labor Council.

Not less than 2 of the appointed members shall also be members of the board of directors of the Massachusetts Department of Transportation.

The MBTA is also overseen by the Massachusetts Department of Transportation board of directors, whose 11 members are appointed by the Governor. According to Section 3(d) of Chapter 161A of the General Laws, the General Manager of the MBTA is hired by the Secretary of Transportation and oversees the MBTA’s day-to-day activities.

The MBTA's Commuter Rail System

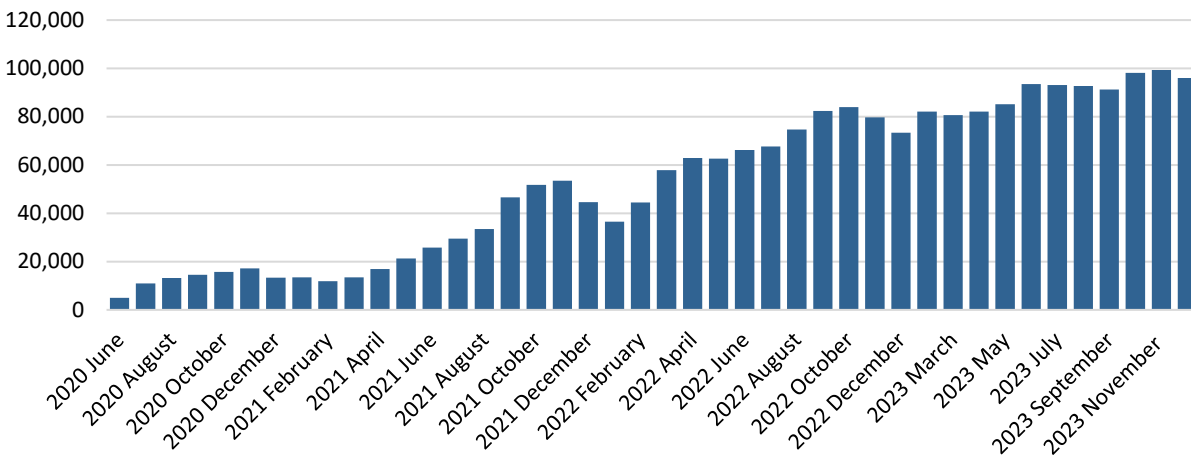
The MBTA's website states,¹

[The MBTA commuter rail] connects communities in eastern Massachusetts and Rhode Island to downtown Boston, with 137 stops throughout the region. The service area includes 12 [commuter rail] lines that run seven days a week, plus special service to Gillette Stadium from Boston and Providence for sporting events and concerts.

Each commuter rail line runs on a set schedule, with services starting as early as 5:00 a.m. and running until as late as 1:00 a.m. at certain stops.

According to the MBTA's website, the average weekly ridership on the MBTA commuter rail fluctuated greatly during the audit period because of the COVID-19 pandemic. For example, in June 2020, the average weekly ridership totaled 5,044 riders. In January 2020, before COVID-19, the average weekly ridership totaled 114,518 riders. Over time, as the Commonwealth addressed the COVID-19 pandemic, there was a gradual increase in the average number of weekly riders. By December 2023, the average weekly ridership totaled 95,966 riders.

**Average of Weekly Ridership
June 1, 2020 through December 31, 2023**



1. The 12 commuter rail lines, as referenced in the excerpt, are as follows: Fairmount, Fitchburg, Framingham/Worcester, Franklin/Foxboro, Greenbush, Haverhill, Kingston, Lowell, Middleborough/Lakeville, Needham, Newburyport/Rockport, and Providence/Stoughton.

Commuter Rail Operating Agreement

On February 5, 2014, the MBTA entered an eight-year contract (worth \$2,686,344,294) with Keolis to maintain and operate the commuter rail system on behalf of the MBTA. This initial contract covered the period July 1, 2014 through June 30, 2022. On July 1, 2020, the MBTA and Keolis added an extension to their contract, expiring June 30, 2026. This extension included the option for an additional one-year extension through June 30, 2027, which the MBTA exercised on April 25, 2024.

Under this contract and its amendments, Keolis is responsible for operating, managing, and staffing the MBTA's commuter rail services. Keolis also inspects, maintains, and repairs commuter rail trains, tracks, station facilities, and other infrastructure owned by the MBTA. In addition, Keolis is responsible for collecting fares from all customers along the MBTA commuter rail system.

Keolis Performance Evaluation

The MBTA's contract with Keolis includes a fixed price for a certain level of service but also allows Keolis to earn financial incentives or incur financial penalties based on its performance in certain areas. According to Section 1 of Schedule 6.1 of the MBTA's "Commuter Rail Operating Agreement 159–12" with Keolis, the MBTA evaluates Keolis's performance monthly in four key areas: on-time performance, seat availability, fleet maintenance, and passenger comfort and amenities. The MBTA uses its Financial Management Information System to record penalty and incentive adjustments to Keolis's invoices.

On-Time Performance

According to the MBTA's contract with Keolis, on-time performance is measured by the percentage of commuter rail trains that arrive at their final destination within five minutes of their scheduled time. The MBTA monitors on-time performance of all trains for each route through daily, monthly, and annual reports that are required to be produced by Keolis. Within these reports, each scheduled trip is detailed with its scheduled arrival and departure times, its actual arrival and departure times, whether the train is operating within peak² or off-peak³ commuter hours, its status (on time, late, etc.), and the number of minutes late the train arrived, if applicable.

-
2. The peak commuter period is defined as the following: for trains arriving in Boston, the period is between 6:00 a.m. and 10:00 a.m., while for trains departing Boston, the period is between 3:30 p.m. and 7:30 p.m.
 3. The off-peak commuter period is defined as the following: for trains arriving in Boston, the period before 6:00 a.m. and after 10:00 a.m., while for trains departing Boston, the period is before 3:30 p.m. and after 7:30 p.m.

If a commuter rail train is late (for example, it arrives five minutes after its scheduled time), terminated (for example, it arrives over 40 minutes late or did not make it to its destination), or canceled, Keolis incurs a financial penalty. The amount of the penalty is determined by (1) the number of minutes late or whether the train was terminated or canceled and (2) whether the train was operating within peak or off-peak hours. The penalties range from \$287 to \$11,482 and escalate in amount each year. (See [Appendix A.](#)) Penalties are not assessed if the MBTA determines that the delay was caused by something outside of Keolis's control (e.g., a police or fire department held up the train). Keolis was charged \$10,644,273 in on-time performance penalties during the audit period (\$247,541 per month, on average).

The MBTA's contract establishes that Keolis must meet an on-time performance standard of 92%. Keolis can earn incentive payments monthly for lines that are on time over 92.5% of the time. The amount of the incentive varies based on the actual on-time performance percentage and the specific commuter rail line. These incentives range from \$2,500 to \$70,000 and escalate in amount each year. (See [Appendix B.](#)) Keolis can earn up to \$2 million per year in on-time performance incentives. Keolis earned \$7,447,562 in on-time performance incentives during the audit period (\$177,323 per month, on average).

Seat Availability⁴

Keolis is responsible for ensuring that the scheduled commuter rail trains meet the required number of seats or capacity each trip, which is detailed in its Train Staffing Plan. This report is updated quarterly. The minimum number of seats is determined by north and south division and the fiscal year. The seating required can range from 1 to 1,160 seats per train. During the COVID-19 pandemic, there was a reduction in seating required.

The MBTA monitors seat availability through reports that are required to be produced by Keolis. Within each report, each scheduled trip is detailed with its required number of seats, the number of seats on the trainset, and the number of seats short, if applicable. If a trainset is short by 49 or more seats, Keolis receives a penalty. The penalty is \$575 per train and escalates in amount each year. (See [Appendix C.](#)) Keolis was charged \$396,371 in seat availability penalties during the audit period (\$9,218 per month, on average).

4. The number of seats that are in service on a trainset.

The MBTA also promotes seat availability through incentive payments. Keolis earns incentive payments for each trainset operating during peak commuter hours that exceeds the required number of seats by 48 or more seats. The amount of the incentive is determined by the ridership level. The incentives range from \$202 to \$808 per train and escalate in amount each year. (See [Appendix D.](#)) Keolis earned \$7,496,534 in seat availability incentives during the audit period (\$178,489 per month, on average).

Fleet Availability

Within its contract with Keolis, the MBTA has established that a minimum number of locomotive⁵ and coach trains be available for revenue service “at the start of each of the two daily weekday peak periods from 5:00 AM to 10:00 AM and from 4:00 PM to 9:00 PM.” This is defined as the following: (1) the northern division of the commuter rail network⁶ requiring 24 locomotives and 131 coaches, which includes a minimum of 4 bilevel coaches and 24 cab control coaches (CTCs);⁷ and (2) the southern division of the commuter rail network⁸ requiring 38 locomotives and 228 coaches, which includes a minimum of 126 bilevel coaches and 37 CTCs. The MBTA monitors fleet availability through reports that are required to be produced by Keolis. Within each report, each locomotive and coach is listed with whether it was available for service for each day of the month. If the required number of locomotives or coaches is not available for service during each day of the month, Keolis is assessed a penalty. The penalty is \$575 per day that Keolis does not supply the minimum number of trains and escalates in amount each year. (See [Appendix C.](#)) Keolis was not charged any penalties for fleet availability during the audit period.

Americans with Disabilities Act Compliance

Within Section 1.1 of Schedule 3.3 of the Keolis contract, Keolis is required to comply with Subpart I of Part B of Title II of the Americans with Disabilities Act (ADA) of 1990, which requires that each trainset has an operable ADA wheelchair device(s) and at least one lavatory-equipped coach, which must be located either on the first or second coach behind the locomotive. The MBTA monitors ADA compliance by performing physical inspections.

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5. A locomotive is a self-propelled train car that moves the trainset. MBTA locomotives are currently powered by burning diesel fuel.
 6. The northern division of the commuter rail network is made up of the following train lines: Fitchburg, Haverhill, Lowell, and Newburyport/Rockport.
 7. A CTC is the first train car that has the controls for the engineer to operate the train in a forward or backward motion powered by the locomotive.
 8. The southern division of the commuter rail network is made up of the following train lines: Fairmount, Franklin/Foxboro, Greenbush, Kingston/Plymouth, Middleborough/Lakeville, Needham, Providence/Stoughton, and Framingham/Worcester.

ADA inspections focus on the presence and functionality of ADA wheelchair devices, the presence of lavatories, and their locations on the train. If the Commuter Rail Department inspector finds that the train is not in ADA compliance, then the inspection is considered a failed inspection.

The MBTA is authorized under contract to penalize Keolis based on the number of failed ADA inspections. The penalty is \$575 per train and escalates in amount each year. (See [Appendix C.](#)) Keolis was charged \$18,770 in ADA compliance penalties (\$437 per month, on average) and \$23,759 in ADA toilet compliance penalties (\$553 per month, on average).

Fleet Maintenance

According to the MBTA's 2022 "Transit Asset Management Plan," the MBTA uses a revenue fleet of 105 locomotives and 452 passenger coaches to provide commuter rail service across its 12 lines.⁹ According to the MBTA's contract with Keolis, Keolis performs a "periodic maintenance inspection" on locomotives and CTCs every 92 days and on blind trailer coaches (BTCs)¹⁰ every 184 days. The MBTA monitors Keolis's compliance with the periodic maintenance inspections by conducting its own fleet maintenance inspections, which are performed after Keolis completes its maintenance inspection. During these routine preventive maintenance inspections, mechanics inspect vehicles' brakes and schedule repairs for any cracked or broken components and any leaks found.

The inspections consist of reviewing Keolis's inspection reports that detail the maintenance performed, visual inspections of reliability features on the train, and safety features on the train.

The number of inspections required to be completed by the MBTA is determined by the number of locomotive, CTC, and BTC fleet maintenance inspections performed by Keolis. Using the number of fleet maintenance inspections performed by Keolis, the MBTA uses a 99% confidence level¹¹ with a confidence interval¹² of 10 to calculate the number of inspections that the MBTA must perform. If the MBTA does not perform the minimum number of inspections, then it cannot penalize Keolis for any fleet maintenance inspections that result in a failing score.

9. On a daily basis, 62 locomotives and 359 passenger coaches are needed to meet the fleet availability requirements stated above in Fleet Availability.

10. A BTC is a passenger car that does not have controls.

11. Confidence level is a mathematically based measure of the auditor's assurance that the sample results (statistic) are representative of the population (parameter), expressed as a percentage.

12. A confidence interval is the range of likely values within which the true population value should lie.

If the MBTA inspector finds issues during an inspection, the MBTA will open a service request. The service request prompts Keolis to fix the issues identified.

The MBTA is authorized under contract to penalize Keolis based on a percentage of fleet maintenance inspections performed by the MBTA. The amount of the penalty is determined by the type of train (locomotive, CTC, or BTC) and the percentage of passing inspections for each type of train. The penalties range from \$7,750 to \$114,814 based on a percentage of passing fleet maintenance inspections and escalate in amount each year. (See [Appendix E](#).) Keolis incurred \$128,495 in CTC fleet maintenance penalties (\$2,988 per month, on average) and \$66,536 in BTC fleet maintenance penalties (\$1,547 per month, on average) during the audit period. Keolis was not charged any penalties for locomotive fleet maintenance during the audit period.

Passenger Comfort and Service Amenities

Vehicle Cleaning Standards

Within its contract with Keolis, the MBTA established cleaning standards for its commuter rail passenger coaches. These cleaning standards are broken down into categories based on the level of cleaning applied.

Class A cleaning is the highest level of cleaning applied to the vehicles, and Keolis is required to perform this cleaning on each coach at least once every 30 days. According to Section 3.5.7 of Schedule 3.3 of the MBTA's "Commuter Rail Operating Agreement 159-12" with Keolis, Class A cleaning involves the following work:

Interior: (a) Remove all trash; (b) Hand wash interior panels; (c) Hand wash seat backs and bottoms; (d) Hand wash seat frames; (e) Wash and squeegee windows; (f) Wash floor and heater guards; (g) Toilet Room – wash all surfaces with an approved anti-bacterial cleaner; (h) Hand wash all stanchions and partitions; (i) Hand wash all cab surfaces; (j) Hand wash all trash receptacles; (k) Hand wash all light lenses (covers); (l) Inspect all decals and repair/replace as required; and (m) Remove all graffiti and unauthorized materials (stickers, gum, etc., from interior surfaces).

Exterior: (a) Wash coach exterior with an approved cleaner; (b) Hand wash and squeegee windshields; (c) Remove all debris from the exterior of the vehicle; (d) Inspect all decals and reflective materials and repair/replace as required; and (e) Remove all graffiti and unauthorized materials (stickers, gum, etc., from exterior surfaces).

Class C cleaning is the lowest level of cleaning applied to the vehicles, and Keolis is required to perform this cleaning on each coach daily. According to Section 3.5.9 of Schedule 3.3 of the MBTA's "Commuter Rail Operating Agreement 159–12" with Keolis, Class C cleaning involves the following work:

Interior: (a) Remove all trash; (b) Wipe down all seating surfaces; (c) Clean all spills on floors; (d) Clean all windows; (e) Sweep and wet mop floor and stairs; (f) Wipe down all handles and passenger grab handles, stanchions and hand-holds; (g) Toilet Room – wash all surfaces; and (h) Remove all graffiti and unauthorized materials (stickers, gum, etc. from interior surfaces).

The MBTA monitors Keolis's compliance with its vehicle cleanliness standards by performing physical inspections of passenger coaches. As seen in the table below, the MBTA has developed a Vehicle Cleanliness Matrix, which identifies certain conditions that affect the cleanliness of a train.

Passenger Coach Condition	Points	✓	Total
Bathrooms – litter (as defined below), grime and liquids on floor and surfaces, generally unclean	7		
Bathrooms – odor	7		
Cabin – dust on HVAC grills	1		
Cabin – odor	2		
Floor – dried footprints, dried salt and sand	1		
Interior ledges – dust or grime	1		
Litter – dried gum	2		
Litter – ticket stubs, paper punches, newspaper, other passenger trash	2		
Misc. – bodily fluids	7		
Misc. – dried beverage spills	2		
Misc. – dirty joints, seat pedestals, and other interior crevices	1		
Misc. – food or beverages	2		
Seats – spilled liquids and grime	2		
Seats – torn or damaged over 12 in.	2		
Seats – torn or damaged under 12 in. (can temporarily use fabric tape)	2		
Vandalism and graffiti – paint, ink, and other removable substances	2		
Vandalism and graffiti – window and panel etchings	2		
Vandalism and graffiti – offensive (must be removed immediately)	7		
Vertical surfaces – torn advertisements, damaged notices, old flyers	2		
Vertical surfaces – unauthorized posters, signs, stickers	2		
Windows – dust or grime	2		
Windows – hair or hand prints	2		

The MBTA assigns points to each of the conditions as criteria for determining a failed inspection. During an inspection, if the conditions identified by the MBTA amount to seven or more points, then the inspection is considered a failed inspection. The MBTA penalizes Keolis based on the number of failed inspections. The penalty for Class A is \$1,148 per failed inspection, and for Class C, it is \$575 per failed inspection. Both these failure penalties escalate in amount each year (see [Appendix F](#)). Keolis incurred \$323,288 in Class C cleaning penalties (\$7,518 per month, on average) during the audit period. Keolis did not incur any penalties for Class A cleaning during the audit period.

Service Amenities

Keolis is responsible for maintaining the commuter rail fleet in good working condition to ensure that the performance levels outlined in the contract can be achieved. The MBTA evaluates Keolis's performance regarding passenger comfort by monitoring failures in the following in-service amenities:

- heating, ventilation, and air conditioning system—failure to maintain temperatures within a designated range;
- door system—failure of a door to operate as designed;
- lighting system—failure of at least 10% of a vehicle's interior lights to remain illuminated for the duration of a trip;
- toilet system—failure of the toilet system to function properly; and
- communication system—failure of the public address system, intercommunication system, signage, or vehicle radio.

The MBTA monitors failures in in-service amenities of the trains by performing periodic inspections and by reviewing reports that are required to be produced by Keolis. During a periodic inspection or by reviewing reports, if any one of the amenities above are not in compliance, then each amenity that is not in compliance is marked as a failed area. For periodic inspections, the MBTA penalizes Keolis based on the number of failed areas. For report inspections, the MBTA penalizes Keolis based on the number of failed areas that are not corrected within 24 hours of the notification of the failure. The penalty is \$2,297 for heating, ventilation, and air conditioning system failures, \$575 for door system failures, \$575 for lighting system failures, \$862 for toilet system failures, and \$575 for communication system failures, and all penalties escalate in amount each year. (See [Appendix F](#).)

Keolis incurred \$107,444 in heating, ventilation, and air conditioning system penalties (\$2,499 per month, on average), \$235,670 in door system penalties (\$5,481 per month, on average), \$56,328 in lighting system penalties (\$1,310 per month, on average), \$446,630 in toilet system penalties (\$10,387 per month, on average), and \$60,437 in communication system penalties (\$1,406 per month, on average) during the audit period.

Train Staffing

Keolis is responsible for staffing each train in accordance with its “Train Staffing Plan,” which is required to be updated and produced by Keolis on a quarterly basis. The “Train Staffing Plan” states that “train staffing is based on the Keolis ridership counts for each train,” which is “based on the minimum ridership of three hundred passengers per train staff member.”

The MBTA monitors the commuter rail train staffing through reports that are required to be produced by Keolis. Within each report, each scheduled trip is detailed with its required number of staff members, the actual number of staff members, and the number of staff members by which the train was short, if applicable. If a train does not have the required number of conductors and assistant conductors, Keolis is assessed a penalty for each train with a staffing shortage. The penalty is \$862 per train and escalates in amount each year. (See [Appendix G](#).) Keolis incurred \$1,396,889 in train staffing penalties during the audit period (\$32,486 per month, on average).

The MBTA also promotes properly staffed trains through incentive payments. Incentive payments are earned by Keolis for each trainset that exceeds the required number of staff members that operates during peak hours. The amount of the incentive is determined by the ridership level. The incentives range from \$477 to \$1,432 per train and escalate in amount each year. (See [Appendix H](#).) Keolis earned \$11,066,138 in train staffing incentives during the audit period (\$263,479 per month, on average).

Commuter Rail Station Maintenance

According to Section 5.8.2 of Schedule 3.2 of the MBTA’s “Commuter Rail Operating Agreement 159–12” with Keolis, Keolis is responsible for keeping all exterior and interior surfaces of MBTA commuter rail stations free of trash, debris, and graffiti. The MBTA performs weekly physical inspections of stations to ensure that Keolis is complying with this requirement. If the MBTA finds issues during an inspection, then the MBTA will either open a service request or contact Keolis. By doing so, Keolis will be prompted to fix

the issue(s) identified. The MBTA verifies at a later date whether the issue(s) identified have been corrected.

Upon its follow-up inspection, if the MBTA finds that the issue(s) have not been corrected, then Keolis is assessed a financial penalty. The penalty is \$2,297 per failed inspection and escalates in amount each year. (See [Appendix I](#).) Keolis was not charged any penalties for station maintenance during the audit period.

Snow and Ice Removal

To keep riders and employees safe and to minimize liability to the MBTA, Keolis is responsible for keeping all commuter rail station platforms, walkways, ramps, and parking areas clear of ice and snow. Keolis is responsible for reacting quickly to remove ice and snow from traveled areas. According to Section 8.1.8 of Schedule 3.2 of the MBTA's "Commuter Rail Operating Agreement 159–12" with Keolis,

Snow removal shall begin no later than when a snowfall of two inches has accumulated when any storm forecast projects an accumulation of more than four inches or when icy conditions on streets and walkways require sanding or salting. Snow removal shall continue uninterrupted until snow removal is complete.

The MBTA monitors snow and ice removal through physical inspections when winter weather conditions are predicted to impact the commuter rail service. If the MBTA inspector finds issues during the inspection, then the MBTA contacts Keolis. By doing so, Keolis will be prompted to fix the identified issues. The MBTA inspectors return to the station to ensure that the issue was corrected.

If the MBTA finds that the issue was not corrected upon its follow-up inspection, then Keolis may be assessed a penalty. The penalty is \$1,148 per failed inspection and escalates in amount each year. (See [Appendix I](#).) Keolis was not charged any penalties for snow and ice removal during the audit period.

Fare Collection

As previously mentioned, Keolis is responsible for collecting fares from all customers along the MBTA commuter rail system. The MBTA conducts visual inspections when resources allow to ensure that Keolis conductors and assistant conductors are on board commuter rail trains collecting passenger fares.

If the MBTA finds a Keolis employee not performing this part of their duties during the inspection, then the MBTA inspector will file an Operator Corrective Action Request. If this report is filed, Keolis is assessed

a penalty. The penalty is \$575 per issue and escalates in amount each year. (See [Appendix I.](#)) Keolis was not charged any penalties for fare collection during the audit period.

The total performance penalties for all areas above (on-time performance, seat availability, ADA compliance, fleet maintenance, passenger comfort and service amenities, and train staffing) totaled approximately \$2.6 million in fiscal year 2021, \$5.1 million in fiscal year 2022, \$5.1 million in fiscal year 2023, and \$945,975 for the first six months of fiscal year 2024.

Operator Deliverable Requirement List Reports

The MBTA's contract with Keolis established a reporting mechanism, the Operator Deliverable Requirement List (ODRL) reports, to identify operating deliverables. Keolis is required to submit these reports to the MBTA. These ODRL reports allow the MBTA to monitor the performance of the commuter rail system. For each report listed on the ODRL, there is a report number, a description of the report, and its due date. The due dates vary depending on the report and can be due one time (at the start of the contract), on request (if an occurrence triggers a report), on demand (be available continuously), or at a regular interval. Regular intervals include reports that are required to be delivered daily, weekly, quarterly, or annually. According to the MBTA's contract with Keolis (Section 2.1.4 of Schedule 3.14), Keolis is required to deliver the regular interval report to the MBTA as follows:

- daily reports—"No later than 9:00 am on the next business day immediately following the day to which the report relates";
- weekly reports—"No later than the close of business on the Monday of the following week";
- quarterly reports—"No later than the date of the submission . . . of its monthly invoice for the first month of the following quarter"; and
- annual reports—"No later than the date of the . . . submission of the invoice for the first month of the subsequent MBTA fiscal year, unless otherwise specified."

To ensure that reports are accurate and delivered on time, the contract defines the monetary penalties charged to Keolis for erroneous or late reports. For example, for a report submitted with inaccuracies, a

penalty between \$25,000 and \$200,000 applies, depending on the type of content.¹³ A service penalty between \$5,000 and \$10,000 applies for a report submitted late and varies depending on the delay.¹⁴

Penalties for Inaccurate Reports

Failure to Achieve Service Level	Dollar Amount of Penalty
Inaccuracy in a report that involves safety, bodily harm, or security	\$200,000
Inaccuracy in a report that does not involve safety, bodily harm, or security	\$25,000

Penalties for Untimely Delivery of Reports

Failure to Achieve Service Level	Dollar Amount of Penalty
Delay between two and six hours in delivery of a report	\$5,000
Delay of six or more hours in delivery of a report	\$10,000

Incentive Caps and Revenue Sharing

According to MBTA's contract with Keolis (Section 6.5 of Schedule 6.1), the total amount in performance incentive payments that Keolis is entitled to earn annually is \$7 million across all categories of incentives.¹⁵ The \$7 million cap escalates each fiscal year. Keolis earned incentive payments of approximately \$7 million in fiscal year 2021, \$7.1 million in fiscal year 2022, and \$7.4 million in fiscal year 2023.

Amount in Performance Incentive Payments Earned by Category

Performance Category	Fiscal Year 2021	Fiscal Year 2022	Fiscal Year 2023	Fiscal Year 2024 (partial)
On-Time Performance	\$ 2,000,000	\$ 2,042,910	\$ 2,104,200	\$ 1,300,452
Train Staffing	3,000,000	3,064,370	3,051,090	1,950,678
Train Seating	2,000,000	2,042,910	2,209,410	1,244,214
Total	<u>\$ 7,000,000</u>	<u>\$ 7,150,190</u>	<u>\$ 7,364,700</u>	<u>\$ 4,495,344</u>

On June 30, 2017, the MBTA and Keolis entered into a "Revenue Growth Service Change Agreement." The driving force of this amendment was to increase shared revenue between the MBTA and Keolis, to

13. If the content error involves safety, bodily harm, or security, then the penalty is \$200,000.

14. If the delay in delivery is between two and six hours, the penalty is \$5,000. If the delay in delivery is six or more hours, the penalty is \$10,000.

15. According to the MBTA's contract with Keolis, each performance category is subject to an annual incentive payment cap.

increase ridership, and to improve the efficiency of commuter rail service operation. The MBTA and Keolis agreed on a revenue model designed by an outside consultant. The revenue model is used to develop a revenue baseline to forecast revenues. The revenue baseline is reviewed annually. During the annual review, the revenue baseline is updated with actual data for the year that just ended and to project revenues for the coming year.

For each agreement year, revenue generated above the annual revenue baseline is shared between the MBTA and Keolis, promoting a mutual interest between the two parties to increase commuter rail revenue and ridership. According to the “Revenue Growth Service Change Agreement,” revenue above the revenue baseline is used to compensate Keolis for operational and capital expenses incurred as a result of this agreement. The “Revenue Growth Service Change Agreement” outlines a maximum annual payment of up to \$7 million for operating expenses and \$2 million for capital expenses to Keolis. Keolis is required to submit an annual budget for planned operating and capital expenditures to the MBTA for approval no later than June 1st each year for the subsequent year. Additionally, Keolis provides the MBTA with an annual invoice, accompanied by supporting documentation, to facilitate proper reimbursement. The annual invoice must be submitted to the MBTA on or before the 10th business day of October each year. Once the operational and capital expenses are reimbursed to Keolis, the MBTA receives \$1 million from the remaining funds over the revenue baseline. The table below further outlines how revenue above the revenue baseline is shared between the MBTA and Keolis.

Revenue Sharing Above Baseline

Incremental Revenue	The MBTA’s Share	Keolis’s Share
\$1–\$7,000,000	\$0	100% (operating expense reimbursement)
\$7,000,001–\$9,000,000	\$0	100% (capital expense reimbursement)
\$9,000,001–\$10,000,000	100%	0%
\$10,000,001–\$16,000,000	50%	50%
\$16,000,001–\$20,000,000	40%	60%
\$20,000,001–\$30,000,000	25%	75%
\$30,000,001 or more	50%	50%

AUDIT OBJECTIVES, SCOPE, AND METHODOLOGY

In accordance with Section 12 of Chapter 11 of the Massachusetts General Laws, the Office of the State Auditor has conducted a performance audit of certain activities of the Massachusetts Bay Transportation Authority (MBTA) for the period June 1, 2020 through December 31, 2023.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives, with the exception listed.

Paragraph 9.12 of the US Government Accountability Office's *Government Auditing Standards* states, "Auditors should . . . report any significant constraints imposed on the audit approach by information limitations or scope impairments." During our audit, we experienced constraints regarding our ability to obtain the information necessary to draw conclusions related to certain aspects of our first objective, in the areas of station maintenance, snow and ice removal, fare collection, fleet availability, and ADA inspections.

Below is a list of our audit objectives, indicating each question we intended our audit to answer; the conclusion we reached regarding each objective; and, if applicable, where each objective is discussed in the audit findings.

Objective	Conclusion
1. Did the MBTA ensure that its commuter rail contractor, Keolis, met the performance requirements outlined in Section 2 of Schedule 6.1 of the MBTA's "Commuter Rail Operating Agreement 159-12" with Keolis?	No; see Findings <u>1</u>, <u>2</u>, <u>5</u>, and <u>6</u>
2. Did the MBTA enforce the required report deadlines in Section 2.1.4 of Schedule 3.14 of the MBTA's "Commuter Rail Operating Agreement 159-12" with Keolis that are related to the performance requirements in Section 2 of Schedule 6.1 of this contract?	No; see Finding <u>4</u>
3. Did the MBTA enforce the performance incentive payment caps outlined in Section 6.5 of Schedule 6.1 of the MBTA's "Commuter Rail Operating Agreement 159-12" with Keolis and Section 4.2 of Schedule 17 of the "Revenue Growth Service Change Agreement"?	Partially; see Finding <u>3</u>

To accomplish our audit objectives, we gained an understanding of the aspects of the MBTA’s internal control environment relevant to the objectives by reviewing applicable policies and procedures and by interviewing officials at the MBTA and Keolis. We evaluated the design and implementation of the internal controls related to our audit objectives. We also tested the operating effectiveness of controls related to the authorization of the MBTA’s revenue-sharing invoices with Keolis. In performing our work, we found that the MBTA has not developed an internal control plan (see [Finding 6](#)).

In addition to the findings mentioned in the table above, the MBTA did not ensure that Keolis employees with access to its Train Resource Management System (TRMS) completed annual cybersecurity awareness training (see [Finding 5](#) for more information). We also found that the MBTA did not ensure that Keolis complied with the requirements of the MBTA’s Disadvantaged Business Enterprise Program. See the “[Other Matters](#)” section of this report for more information.

To obtain sufficient, appropriate evidence to address our audit objectives, we performed the procedures described below.

Keolis Performance Evaluation

To determine whether the MBTA ensured that Keolis met the performance requirements outlined in Section 2 of Schedule 6.1 of the MBTA’s “Commuter Rail Operating Agreement 159–12” with Keolis, we took the actions described below.

On-Time Performance

We interviewed the MBTA’s director of transportation, acting director of transportation, and the deputy director of railroad operations finance to discuss the MBTA’s process for monitoring Keolis’s performance in this area. Keolis provided us with a list of all 508,550 scheduled train trips that took place during the audit period from TRMS. Of the 508,550 scheduled train trips that took place during the audit period, we determined that 20,530 scheduled train trips did not arrive on time after all waivers were applied. Using the 20,530 scheduled train trips that were not on time, we recalculated the dollar amount of the on-time performance penalty for each late trip and compared our calculation of the penalty to what the MBTA invoiced Keolis each month. For all instances where there was a variance in the dollar amounts of the penalties invoiced to Keolis, we followed up with the MBTA on these inconsistencies we identified.

Additionally, of the 508,550 scheduled train trips, we determined that 488,020 scheduled train trips arrived on time after all waivers were applied. Using the 488,020 train trips that arrived on time, we summarized the train trips by month and train line. We then recalculated the system-wide adjusted performance¹⁶ to ensure that all scheduled train trips arrived on time at least 92% of the time each month during the audit period. We determined that 42 of the 43 months during the audit period qualified for the on-time performance¹⁷ incentive. We then recalculated the dollar amount of the on-time performance incentive by month and train line and compared our calculation of the incentive to what the MBTA paid Keolis each month. For all instances where there was a variance in the dollar amounts of the incentives paid to Keolis, we followed up with the MBTA on these inconsistencies we identified.

Based on the results of our testing, we determined that, during the audit period, the MBTA did not always accurately assess performance-based incentives and penalties for Keolis. See [Finding 1a](#) and [1c](#) for more information.

Seat Availability

We interviewed the MBTA's acting director of transportation and deputy director of railroad operations finance to discuss the MBTA's process for monitoring Keolis's performance regarding seat availability. We analyzed from TRMS each of the 508,550 scheduled train trips that took place during the audit period. Of the 508,550 scheduled train trips, we determined that 572 scheduled train trips did not meet the required number of seats. We then recalculated the dollar amount of the financial penalties by month and compared our calculations to what the MBTA invoiced Keolis each month. For all instances where there was a variance in the dollar amounts of the penalties invoiced to Keolis, we followed up with the MBTA on these inconsistencies we identified.

Additionally, of the 508,550 scheduled train trips, we determined that 30,565 scheduled train trips exceeded the seat availability requirement during peak commuter hours and qualified for an incentive payment. We recalculated the dollar amount of the seat availability incentive and compared our calculation of the incentive to what the MBTA paid Keolis each month. For all instances where there was

16. The system-wide adjusted performance is the percentage of trains that arrived at their final destination on time after all waivers were applied.

17. The on-time performance incentive went into effect on July 1, 2020, one month into the audit period.

a variance in the dollar amount of the incentives paid to Keolis, we followed up with the MBTA on these inconsistencies we identified.

Based on the results of our testing, we determined that, during the audit period, the MBTA did not always accurately assess performance-based incentives and penalties to Keolis. See [Finding 1b](#) and [1c](#) for more information.

Americans with Disabilities Act Compliance

We interviewed the MBTA's director of mechanical to discuss the MBTA's process for monitoring Keolis's performance regarding certain aspects of Americans with Disabilities Act (ADA) compliance. The MBTA provided us with a list of all 70 failed ADA inspections that took place during the audit period, which were documented by the MBTA in a Microsoft Excel spreadsheet. For each of the 70 failed inspections, we determined whether the MBTA penalized Keolis for the failed inspection and we recalculated the penalty amounts invoiced to Keolis each month. For all instances where there was a variance in the dollar amounts of the penalties invoiced to Keolis, we followed up with the MBTA on these inconsistencies we identified.

Paragraph 9.12 of the US Government Accountability Office's *Government Auditing Standards* states, "Auditors should . . . report any significant constraints imposed on the audit approach by information limitations or scope impairments." During our audit, we experienced constraints regarding our ability to obtain the information necessary to draw conclusions related to certain aspects of this objective. Specifically, we asked MBTA management to provide us with data for all ADA inspections. However, MBTA management told us that they do not retain reports or records of passing inspections. As a result, we were unable to independently verify the number and accuracy of passed ADA inspections. Due to this data limitation, we had to limit the scope of our audit to only include a review of failed ADA inspections.

Based on the results of our testing, we determined that, during the audit period, the MBTA did not always accurately assess performance-based incentives and penalties to Keolis and did not maintain sufficient documentation of certain inspections designed to evaluate Keolis's performance. See [Finding 1b](#) and [Finding 2](#) for more information.

Fleet Availability

We interviewed the MBTA's chief railroad officer, director of engineering, and the deputy director of railroad operations finance to discuss the MBTA's process for monitoring Keolis's performance regarding

fleet availability. The MBTA provided us (from TRMS) with all monthly fleet availability reports that took place during the audit period. These reports detail the specific vehicles available for revenue service¹⁸ each day. From these reports, we identified the number of locomotives and coaches (including both bilevel and cab control cars) that were available for revenue service for each day during the audit period. For each day during the audit period, we determined whether Keolis had the required number of locomotives and coaches available for revenue service.

For each day, Keolis needed to have available for both the north and south divisions 62 locomotives, 359 coaches, 130 bilevel cars, and 61 cab control cars.

Paragraph 9.12 of the US Government Accountability Office's *Government Auditing Standards* states, "Auditors should . . . report any significant constraints imposed on the audit approach by information limitations or scope impairments." During our audit, we experienced constraints regarding our ability to obtain the information necessary to draw conclusions related to certain aspects of this objective. Specifically, we asked MBTA management to provide us with data for the availability of locomotives and coaches, the vehicle location (north or south division), and the time of day that the vehicles were in use/available. MBTA management told us that they could not provide us with the data for the audit period because the MBTA's reports do not capture key details, such as the vehicle location (north or south division) or the time of day that the vehicles were in use/available. As a result, we were unable to determine whether the vehicles were available during peak periods and at the required locations each day, as specified in the contract. Instead, we were only able to determine whether the total number of vehicles met the required availability.

Based on the results of our testing, we determined that, during the audit period, the MBTA did not maintain sufficient documentation of certain inspections designed to evaluate Keolis's performance. See [Finding 2](#) for more information.

18. The MBTA maintains a fleet of "revenue service vehicles" that are used specifically to transport passengers and generate fare-based revenue. According to the MBTA's contract with Keolis, vehicles available for revenue service are those from the MBTA's revenue service fleet that 1) have undergone daily maintenance, 2) have passed all required daily tests, 3) are compliant with MBTA inspection criteria, and 4) are equipped with all required amenities.

Passenger Comfort and Service Amenities including Class C Cleaning, Vehicle Cleanliness, and Service Amenities for Passenger Comfort and Service Amenities

We interviewed the MBTA's director of mechanical to discuss the MBTA's process for monitoring Keolis's performance in the areas of passenger comfort and service amenities, including certain cleaning services. The MBTA provided us with a list of all 8,522 completed inspection forms for Class C cleaning, Class A cleaning, and mechanical amenities that were completed during the audit period. We then stratified the population of 8,522 inspection forms into two categories based on whether the inspection passed or failed. During the audit period, there were 6,142 failed inspections and 2,380 passed inspections. We then further divided each of these two strata into two categories of inspection forms: inspection forms with blank key fields (such as inspector's name, train number, inspection date, and location of the inspection) and inspection forms with complete information.

For the 2,380 passed inspections, we identified a total of 39 passed inspection forms with blank key fields. From the 39 passed inspection forms with blank key fields, we selected a random, nonstatistical sample of 10 passed inspection forms for testing. For the remaining 2,341 passed inspection forms with complete information, we sampled a random, statistical sample¹⁹ of 47 forms, using a 90% confidence level, a 0% expected error rate,²⁰ and a 10% tolerable error rate.²¹ We identified the total number of cleaning points and other failures of mechanical amenities documented on MBTA inspection forms to verify the accuracy of each passed inspection.

For the 6,142 failed inspections, we identified a total of 398 failed inspection forms with blank key fields. From these 398 failed inspection forms with blank key fields, we selected a judgmental, nonstatistical sample of 50 failed inspection forms for testing. For the remaining 5,744 failed inspections, we took a random, statistical sample of 74 failed inspections, using a 90% confidence level, a 20% expected error rate, and a 50% tolerable error rate. We identified the total number of cleaning points and other failures of mechanical amenities documented on MBTA inspection forms to verify the accuracy of each failed

19. Auditors use statistical sampling to select items for audit testing when a population is large and contains similar items. Auditors generally use a statistical software program to choose a random sample when sampling is used. The results of testing using statistical sampling, unlike those from judgmental sampling, can usually be used to make conclusions or projections about entire populations.

20. Expected error rate is the number of errors that are expected in the population, expressed as a percentage. It is based on the auditor's knowledge of factors such as prior year results, the understanding of controls gained in planning, or a probe sample.

21. The tolerable error rate (which is expressed as a percentage) is the maximum error in the population that is acceptable while still using the sample to conclude that the results from the sample have achieved the objective.

inspection. We also reviewed MBTA penalty logs to ensure that each failed inspection was penalized. If a failed inspection did appear on the penalty log, then we requested the penalty summary to ensure that the correct dollar amount of the penalty was invoiced to Keolis. If the failed inspection did not appear on the penalty log, we followed up with the MBTA on these inconsistencies we identified.

Based on the results of our testing, we determined that, during the audit period, the MBTA did not always accurately assess performance-based incentives and penalties for Keolis. See [Finding 1a](#) for more information.

Fleet Maintenance

We interviewed the MBTA's director of mechanical to discuss the MBTA's process for monitoring Keolis's performance in this area. The MBTA provided us with a list of all completed fleet inspection forms during the audit period. The MBTA also provided us with all preventative maintenance work orders created by Keolis during the audit period. These were extracted by the MBTA from its Trapeze Enterprise Asset Management fleet maintenance software. For each month that the MBTA performed the required number of inspections for both locomotives and coaches, we recalculated the dollar amount of the financial penalties and compared our calculations to what the MBTA invoiced Keolis. For all instances where there was a variance in the dollar amounts of the penalties invoiced to Keolis, we followed up with the MBTA on these inconsistencies we identified.

For all 524 locomotives, we stratified the inspection forms into three strata: 331 inspections that passed, 179 inspections that failed, and 14 inspections with a blank pass/fail field. We took a judgmental, nonstatistical sample of 50 inspections. Our sample of 50 inspections included 10 inspections that passed, 26 inspections that failed, and all 14 inspections with a blank pass/fail field. For inspections that passed, failed, or had a blank pass/fail field, we identified any failed areas identified on the inspection form. If a failed area was identified, we searched Trapeze for a service request. MBTA inspectors are required to open service requests when they note a failure during an inspection. For all instances where the MBTA inspector identified a failed area and did not create a service request, we followed up with the MBTA on these inconsistencies we identified.

To determine whether the MBTA created a service request for all issues identified during the fleet maintenance inspections for the 1,065 coach fleet maintenance forms, we selected a random, statistical sample of 60 cab control coach and blind trailer coach fleet maintenance inspections, using a 95%

confidence level, a 0% expected error rate, and a 5% tolerable error rate. For inspections that passed or failed, we identified any failed areas identified on the inspection form. If a failed area was identified, we searched Trapeze for a service request opened by the MBTA inspector. For all instances where the MBTA inspector identified a failed area and did not create a service request, we followed up with the MBTA on these inconsistencies we identified.

Based on the results of our testing, we determined that, during the audit period, the MBTA did not always accurately assess performance-based penalties to Keolis. See [Finding 1a](#) and [1b](#) for more information.

Train Staffing

We interviewed the MBTA's director of transportation to discuss the MBTA's process for monitoring Keolis's performance regarding train staffing. We analyzed (within TRMS) each of the 508,550 scheduled train trips. Of the 508,550 scheduled train trips, we determined that 1,604 scheduled train trips did not meet the required train staffing. We then recalculated the dollar amount of the financial penalties by month and compared our calculations to what the MBTA invoiced Keolis each month. For all instances where there was a variance in the dollar amounts of the penalties invoiced to Keolis, we followed up with the MBTA on these inconsistencies we identified.

Additionally, of the 508,550 scheduled train trips, we determined that 81,883 scheduled train trips exceeded the train staffing requirement during peak commuter hours and qualified for an incentive payment. We recalculated the dollar amount of the train staffing incentive and compared our calculation of the incentive to what the MBTA paid Keolis each month. For all instances where there was a variance in the dollar amount of the incentives paid to Keolis, we followed up with the MBTA on these inconsistencies we identified.

Based on the results of our testing, we determined that, during the audit period, the MBTA did not always accurately assess performance-based incentives and penalties for Keolis. See [Finding 1b](#) for more information.

Station Maintenance, Snow and Ice Removal, and Fare Collections

We requested inspection logs from the director of engineering to determine how many times the MBTA requested that Keolis maintain certain stations and remove snow and ice, and the MBTA's monitoring of the timeliness of Keolis's performance in these areas. We also requested the audit logs to determine how

often the MBTA performed inspections of the fare collections to determine whether Keolis was penalized for all failed inspections.

Paragraph 9.12 of the US Government Accountability Office’s *Government Auditing Standards* states, “Auditors should . . . report any significant constraints imposed on the audit approach by information limitations or scope impairments.” During our audit, we experienced constraints regarding our ability to obtain the information necessary to draw conclusions related to certain aspects of this objective. Specifically, we asked MBTA management to provide us with a log of when they contacted Keolis for station maintenance, snow and ice removal, and audits of fare collections. MBTA management told us that they could not provide us with the data for the audit period because the MBTA does not log phone calls or emails, and it only retains records of inspections where Keolis fails to collect fares. As a result, we had to limit the scope of our review for these areas (station maintenance, snow and ice removal, and fare collections).

Based on the results of our testing, we determined that, during the audit period, the MBTA did not maintain sufficient documentation of certain inspections designed to evaluate Keolis’s performance. See [Finding 2](#) for more information.

Operator Deliverable Requirement List Reports

To determine whether the MBTA enforced the required report deadlines in Section 2.1.4 of Schedule 3.14 of the MBTA’s “Commuter Rail Operating Agreement 159–12” with Keolis that are related to the performance requirements in Section 2 of Schedule 6.1 of this contract, we took the actions described below.

We interviewed the MBTA’s deputy director of contract management, director of engineering, supervisor of general accounting, acting director of transportation, the chief railroad officer, and the director of mechanical to discuss the MBTA’s process for monitoring Keolis’s performance in this area. Using the Appendix I from Schedule 3.14 of the operating agreement between the MBTA and Keolis, we identified 10,080 reports associated with the areas related to performance requirements. We analyzed all 10,080 and stratified the population of reports into two categories: 7,901 reports that are stored within TRMS and 2,179 reports that are stored on a shared drive. We included the 7,901 reports stored within TRMS in our testing for Objective 1 (described above), and therefore, we did not include these for this testing.

For the 2,179 reports (annual, quarterly, weekly, monthly, and daily) stored in Microsoft SharePoint,²² we used a 90% confidence level, a 50% expected error rate, and a 20% tolerable error rate to select a random, statistical sample of 73 reports. We then increased the sample size to 75 reports. For each report, we reviewed SharePoint and/or email submission dates to determine whether the report was delivered on time. For any reports that were delivered late, we calculated how many hours past due they were delivered and the dollar amount of the penalty that should have been incurred based on the number of hours past due each report was delivered. We then compared our calculation of the penalty amount incurred to what the MBTA invoiced Keolis each month.

Based on the results of our testing, we determined that, during the audit period, the MBTA did not ensure that Keolis submitted required reports on time and did not penalize Keolis for noncompliance. See [Finding 4](#) for more information.

Performance Incentive Payment Caps and Revenue Sharing

To determine whether the MBTA enforced the performance incentive payment caps outlined in Section 6.5 of Schedule 6.1 and Section 4.2 of Schedule 17 of the MBTA's "Commuter Rail Operating Agreement 159–12" with Keolis, we took the actions described below.

Performance Incentive Payments

The MBTA provided us with all 42 monthly invoices created during the audit period, which showed a total of \$26,010,234 in incentives that were paid to Keolis. We then determined whether the monthly incentive payments, by performance category, were within the monthly caps, whether the annual incentive payments, by performance category, were within the annual caps, and whether the annual total of all incentives paid by the MBTA were within the annual caps. For any incentives paid to Keolis that exceeded the monthly or annual cap, we followed up with the MBTA on these inconsistencies we identified.

Based on the results of our testing, we determined that, during the audit period, the MBTA did not always enforce the monthly and annual performance incentive payment caps. See [Finding 3](#) for more information.

22. SharePoint is a Microsoft web application used to store, organize, share, and access documents and information.

Revenue Sharing

We interviewed the MBTA's executive director of the commuter rail to discuss the MBTA's process for monitoring Keolis's performance in this area. We analyzed all four annual invoices created during the audit period, which showed a total of \$200,825 that was paid to Keolis and \$1,885,872 that was earned by the MBTA. We examined each annual invoice and recalculated the revenue sharing between Keolis and the MBTA.

We noted no exceptions in our testing. Therefore, we determined that, during the audit period, the MBTA met the relevant criteria regarding revenue sharing.

We used a combination of statistical and nonstatistical sampling methods for testing, and we did not project the results of our testing to the corresponding population(s).

Data Reliability Assessment

Financial Management Information System

To determine the reliability of the data received from the MBTA's Financial Management Information System, we interviewed MBTA officials who were responsible for oversight of the data. We also reviewed System and Organization Control reports²³ that covered the audit period and ensured that certain information system control tests had been performed.

To test the accuracy of the monthly invoice data we received, we randomly selected a sample of 20 expenses listed on the MBTA's accounts payable account and traced them to invoices. To test the completeness of the monthly invoice data we received, we selected a different random sample of 20 invoices and traced these back to the MBTA's accounts payable account. In addition, for fiscal years 2021, 2022, and 2023, we compared the dollar amounts recorded in the MBTA's general ledger for the commuter railroad and local subsidy expense categories to the corresponding amounts found in the MBTA's audited financial statements.

TRMS

To determine the reliability of the list of train trips scheduled during the audit period, which Keolis provided to us, we interviewed MBTA and Keolis officials who were responsible for oversight of the

23. A System and Organization Control report is a report, issued by an independent contractor, on controls about a service organization's systems relevant to security, availability, processing integrity, confidentiality, or privacy.

data. In addition, we tested certain information system general controls²⁴ over TRMS (for more information, see [Finding 5](#)). We also checked the list for any worksheet errors (hidden rows and columns, embedded data, and other contents) and duplicate records. We also checked for gaps in scheduled trip numbers and followed up on instances of inconsistencies in the numbering to determine whether there were any deleted scheduled trips.

Trapeze Enterprise Asset Management Fleet Maintenance Software

To determine the reliability of the work order and service request data received from the MBTA's Trapeze Enterprise Asset Management Fleet Maintenance Software, we interviewed MBTA and Keolis officials responsible for oversight of the data. In addition, we tested information system general controls and policies related to access control over the Trapeze Enterprise Asset Management Fleet Maintenance Software. We also tested the work order and service request data for any worksheet errors (hidden rows and columns, embedded data, and other contents) and tested for duplicates in the data. We tested the work order and service request data for gaps in the work order or service request numbers and followed up on instances of inconsistencies in the numbering to determine whether there were any deleted work orders or service requests.

Form.com

Form.com is repository software that the MBTA uses to document inspections of Keolis's performance related to passenger comfort and service amenities. We assessed the reliability of the data obtained from Form.com by interviewing MBTA's personnel members responsible for the oversight of the data. We also checked the data inspection report worksheet for any gaps in the inspections documented and their corresponding inspection numbers, any test inspections recorded, any illogical dates, such as an inspection date that falls after a documentation date, and duplicate inspections. When we found discrepancies (such as missing data, duplicate records, or data entry errors), we brought them to the attention of MBTA management and worked with them to correct any discrepancies.

24. Information system general controls are the policies and procedures that apply to an agency's information system, which help ensure the proper operation of the system. These controls assure management and stakeholders of the reliability of the information system and the data residing in it.

SharePoint

The MBTA and Keolis use SharePoint to transfer information relating to Keolis's reporting obligations. We conducted interviews with MBTA and Keolis officials responsible for the data residing in SharePoint. In addition, we tested information system general controls and policies related to access control over SharePoint and tested selected access controls.

Excel Reports

The MBTA uses Microsoft Excel to document inspections of Keolis's performance related to locomotive fleet maintenance and ADA compliance. We conducted interviews with the MBTA personnel responsible for the oversight of the data inspection reports. We checked the data inspection report worksheet for any illogical dates, such as an inspection date that falls outside the year of inspection, and for blank fields, such as the inspector's name and whether the inspection resulted in a passing or failing score. When we found discrepancies (such as missing data or illogical dates), we brought them to the attention of management in the Commuter Rail Department and worked with them to correct any discrepancies.

Based on the results of the data reliability assessment procedures described above, we determined that the information we obtained was sufficiently reliable for the purposes of our audit.

DETAILED AUDIT FINDINGS WITH AUDITEE'S RESPONSE

1. The Massachusetts Bay Transportation Authority did not accurately assess performance-based incentives and penalties for Keolis.

The Massachusetts Bay Transportation Authority (MBTA) did not accurately assess performance-based incentives and penalties for Keolis. Specifically, the MBTA failed to assess approximately \$3,324,126 worth of performance-based penalties for Keolis, inappropriately assessed approximately \$257,724 in performance-based penalties, overpaid Keolis by approximately \$105,810 in performance-based incentives and underpaid Keolis by \$105,210 in performance-based incentives.

Performance-based penalties and incentives are designed to incentivize vendors to achieve certain quality or timeliness standards and to hold them accountable for meeting agreed-upon service levels. Failing to accurately assess these penalties and incentives undermines accountability and reduces the incentive for vendors to meet expectations. It also diminishes the overall quality and reliability of the MBTA's commuter rail services. In this instance, the MBTA failed to assess millions of dollars of financial penalties that could have helped improve service for MBTA customers. This represents a financial loss to the MBTA and could lead to other financial losses, as poorer service may result in fewer riders. Failure to properly assess incentives and penalties could also reduce the public's trust in the MBTA and harm its relationship with a vendor that relied on the MBTA's calculations of incentives and penalties.

a. The Massachusetts Bay Transportation Authority did not assess approximately \$3,324,126 worth of performance-based penalties for Keolis.

During the audit period, we found that the MBTA failed to assess Keolis \$3,324,126 worth of performance-based penalties. These unenforced penalties spanned several different performance areas, as described in more detail below.

- On-time performance—we identified 17 commuter rail train trips that qualified for on-time performance penalties, which the MBTA did not assess. We also identified at least \$54,829 in unassessed penalties related to on-time performance.
- Passenger comfort and service amenities—we identified 20 failed inspections for which the MBTA did not assess penalties for Keolis. These inspections totaled \$20,499 in unassessed penalties. In addition, we identified 30 failed inspections where the MBTA under-penalized Keolis by a total of \$147. In total, we identified at least \$20,646 in unassessed penalties related to passenger comfort and service amenities.

- Fleet maintenance (locomotives)—we noted that, in 34 months out of 43 (79%), despite the MBTA conducting the minimum number of required fleet maintenance inspections necessary to assess penalties on Keolis, no penalties were assessed for locomotive maintenance. Within those 34 months, we identified 159 failed inspections that warranted penalties for Keolis, totaling \$3,248,651 in unassessed penalties.

b. The Massachusetts Bay Transportation Authority inappropriately assessed approximately \$257,724 worth of performance-based penalties against Keolis.

- Americans with Disabilities Act (ADA) compliance—we identified 70 failed inspections for which the MBTA inappropriately assessed penalties for Keolis in the amount of \$227.
- Seat availability—we identified 572 train trips that did not meet the required number of seats. Our review of these trips identified \$37,120 in inappropriately assessed penalties.
- Train staffing—we identified 1,604 train trips that did not meet the required number of train staff members. Our review of these understaffed train trips identified \$25,346 in inappropriately assessed penalties.
- Fleet maintenance—
 - Cab control coaches (CTC)—despite failing to conduct the minimum number of required fleet maintenance inspections necessary to assess penalties against Keolis in all 43 months during the audit period, we found that the MBTA inappropriately assessed \$128,495 in penalties in this area.
 - Blind trailer coach (BTC)—despite failing to conduct the minimum number of required fleet maintenance inspections necessary to assess penalties against Keolis in all 43 months during the audit period, we found that the MBTA inappropriately assessed \$66,536 in penalties in this area.

c. The Massachusetts Bay Transportation Authority overpaid Keolis by approximately \$105,810 in performance-based incentives.

- On-time performance—we found that the MBTA overpaid Keolis by \$51 in on-time performance incentives. Specifically, we noted 8 trips that did not qualify for incentive payments.
- Seat availability—we found that the MBTA overpaid Keolis \$105,675 in seat availability incentives. Specifically, we noted the following:
 - a \$105,210 overpayment due to an inadvertent clerical error, where the train seating and train staffing incentive amounts on a monthly invoice were mistakenly transposed and went uncorrected;
 - overpayments worth \$438 caused by MBTA invoicing errors that had gone undetected and were paid; and

- a \$27 overpayment due to the incorrect escalation factor being used for fiscal year 2024.
- Train staffing—we found \$84 worth of overpayments due to the MBTA inadvertently using the wrong escalation factor when calculating Keolis performance incentives in this area over a span of six months. We also identified 343 trips that did not qualify for incentive payments. These trips did not impact the incentive payment, as both the monthly and annual caps had already been reached. However, they were initially listed for payment and would have been paid out if the caps had not already been met.

d. The Massachusetts Bay Transportation Authority underpaid Keolis by \$105,210 in performance-based incentives it had achieved.

We found that the MBTA underpaid Keolis by \$105,210 in train staffing incentives. This underpayment resulted from the previously mentioned clerical error, where the incentive amounts for train seating and train staffing were mistakenly transposed on a monthly invoice and went uncorrected. This highlights a weakness in internal control and management oversight in this area.

Authoritative Guidance

Section 13.1 of Part 1 of the MBTA contract with Keolis, dated February 5, 2014, states,

The MBTA may for its own purposes monitor or review proposals, plans or reports (or any aspect thereof) of the Operator under this Agreement, but no review, comment, statement, report or undertaking made or given by or on behalf of the MBTA during such review or monitoring (and no failure to undertake, make or give any review, comment or statement) shall operate to exclude or relieve either Party from or reduce or otherwise affect the obligations of such Party under this Agreement.

Sections 1.1, 1.2, 1.3, and 1.4 of Schedule 6.1 of the MBTA contract with Keolis, dated February 5, 2014, state,

The MBTA will evaluate the Operator's On-Time Performance. . . . The MBTA will evaluate the Operator's compliance with the consist requirements established by the MBTA for the North Division and the South Division Service Lines. . . . The MBTA will evaluate the Operator's compliance with the standards established for maintenance of the revenue Rolling Stock Fleet based upon compliance with the state-of-good repair standards for locomotives, control coaches ("CTCs") and trailer coaches ("BTCs") following the prescribed 92-day maintenance interval for locomotives and CTCs, and the prescribed 184-day maintenance interval for BTCs (or the equivalent, as the same may be adjusted from time to time to conform to Applicable Law). . . . The MBTA will evaluate the Operator's performance with respect to passenger comfort and service amenities.

Reasons for Issues

The MBTA did not have sufficient policies and procedures, including a monitoring component, to ensure that the performance-based incentives and penalties it assessed Keolis were accurate.

For on-time performance, we found that the MBTA applied an escalation method for on-time performance penalties that differed from the standard escalation used for all other performance area penalties, despite the contract not calling for a different method. In addition, TRMS data was not being updated accurately. For example, we identified instances in which trips recorded as late—which was done correctly—did not have any penalty applied in TRMS. Additionally, there were cases in which trips recorded as on-time in TRMS were actually not on time when we recalculated the arrival times (actual arrival time minus scheduled arrival time).

For passenger comfort and service amenities, we found that in some cases, the MBTA applied an incorrect penalty amount due to errors in calculating its penalty escalations. In one instance, we found that the MBTA allocated an incorrect number of points for one area on the inspection form, which resulted in the form being marked as passed when it should have been marked as failed.

For fleet maintenance (locomotives), there were instances in which the MBTA documented inspections as failed when they should have been passed. In addition, MBTA officials indicated that they would waive penalties for failed inspections caused by paperwork issues if Keolis presented the corrected paperwork to the MBTA. However, the MBTA inspection log was not updated with this information when penalties were waived.

For train seating penalties, in some cases, the MBTA applied an incorrect penalty amount due to errors in calculating the penalty escalations. In addition, the MBTA pulled TRMS reports before the close of the month in error, which led to penalties being applied based on incorrect data.

For train staffing penalties, in most cases, the MBTA applied an incorrect penalty amount due to errors in calculating the penalty escalations.

For fleet maintenance (coaches), MBTA officials explained in their response to this finding that they did not always record all inspections in Form.com and allowed inspections documented outside of Form.com to count toward meeting their minimum number of inspections. This practice makes it appear that they

failed to meet the minimum number of inspections, which suggests that penalties should not have been assessed.

Recommendations

1. The MBTA should develop and implement sufficient policies and procedures, including a monitoring component, to ensure that the performance-based incentives and penalties it assesses Keolis are accurate and in accordance with the executed contract.
2. The MBTA should implement a verification process to ensure the correct escalation factors are used when calculating incentive and penalty amounts. This will help prevent errors and ensure accuracy in future calculations.
3. To help increase transparency and accountability, the MBTA should consider publicly reporting on the performance of its contractors. This would provide riders, taxpayers, and other stakeholders with insight into how contractors are performing relative to the MBTA's expectations.

Auditee's Response

The MBTA appreciates the work the [Office of the State Auditor (SAO)] has done in completing the Draft Report and as illustrated in more detail in our responses, the MBTA has already begun to make improvements based on some of the SAO's recommendations and will continue to utilize the Draft Report and the final version in making improvements to the operations of the MBTA.

The MBTA received the engagement letter for this audit on September 11, 2023. The original audit period was from July 1, 2021 through June 30, 2023. On September 16, 2024 the audit period was expanded by the SAO to cover June 1, 2020 through December 31, 2023, with the reasoning provided that the extension "allows the audit period to include the amendment and extension to the MBTA's 'Commuter Rail Operating Agreement 159-12' with Keolis, effective July 1, 2020. [SAO] extended the audit period through December 31, 2023, to capture more recent activity as of the time of our fieldwork."⁴

In 2014, the MBTA entered into an operating agreement with Keolis with an initial 8-year term ending June 30, 2022, plus extension options. In 2020, the MBTA exercised options to extend the term by four years, to June 30, 2026. Then in 2024, while preparing for the procurement of a successor contract, the MBTA extended the term by another year, to June 30, 2027 (for the purposes of this response, the Commuter Rail operating agreements and extensions will be referred to the "Operating Agreement"). Under the current Operating Agreement, the MBTA provides an annual fixed payment to [Keolis] for the performance of defined operations and maintenance functions; sets all fares and service schedules; conducts service planning and makes capital improvement decisions.

The MBTA Railroad Operations staff manages all aspects of service provision under the Operating Agreement through administration of the terms of the contract, monitoring of service and maintenance functions, enforcement of performance penalty and incentive regimes, regular meetings with the operator, and reporting through MBTA and contractor-managed information systems. As the MBTA's commuter rail operator, [Keolis] employs and directs the commuter rail

workforce of approximately 2,300 personnel; performs daily transportation operations (train crews, dispatching, etc.); maintains all MBTA-owned commuter rail assets (stations, track, signals, right of way, vehicle fleet, facilities, systems and tools); performs capital improvements compensated as supplemental work above the base operations and maintenance fee; performs all frontline customer service functions, including ticket sales, customer communications, disruption and special event management; and provides extensive reports and information about system operations to the MBTA. . . .

Thank you again for your consideration of the MBTA's responses. As explained in more detail below, the MBTA has already started to implement some of the SAO's recommendations. We look forward to working with the SAO on how the MBTA can continue to improve to provide safe, reliable, and accessible service to the MBTA's customers and employees. . . .

The MBTA disagrees with some of the SAO's calculations and interpretations of contract language and has provided a detailed breakdown in its responses to the exceptions provided by the SAO. . . .

For the on-time performance penalty amount . . . the MBTA in collaboration with Keolis automated the calculation of the on-time performance penalty escalation, using a multiplier approach rather than escalating each penalty fee individually. This accounts for the majority of the unassessed penalties. . . .

For the passenger comfort and service amenities inspections, the SAO identified 20 failed inspections in which penalties were not assessed and 30 failed inspections in which the MBTA under-penalized Keolis, totaling \$20,646 in unassessed penalties. Of these 20 inspections identified, only 12 were failures and 8 were incorrectly written up as failed inspections, resulting in \$7,573 in unassessed penalties. Further, of the 30 penalties where the incorrect penalty was used, one trip was classified as Class A rather than Class C cleaning, adjusting the alleged underassessment of \$147 to an overassessment of \$501.

For fleet maintenance, the SAO found 159 failed inspections totaling \$3,248,651 in unassessed penalties. As previously reported to the SAO, the MBTA reviews the penalties with Keolis monthly, and adjustments are made based on the information provided at the time of the review. The SAO's use and reference to "159 failed inspections" fails to consider this monthly review between the parties and clarifications discussed during those meetings. The lack of penalties assessed in connection with the 159 inspections referenced is not an example of an oversight or mistake on the part of MBTA, but rather a function of the outcome of the review process between the parties. In these instances, where no penalty was assessed, it was adjudged during those meetings there was no basis to do so, and the MBTA exercised its administrative discretion accordingly. The MBTA has provided documentation of the outcomes of the review process. The net variance for the penalty assessment for fleet maintenance is \$0. . . .

For the Americans with Disabilities Act compliance the SAO identified 70 failed inspections for which the MBTA inappropriately assessed penalties to Keolis in the amount of \$227. The MBTA agrees with the SAO's analysis. . . .

For train staffing, the SAO identified 1,604 train trips that did not meet the required number of train staff members and identified \$25,346 in inappropriately assessed penalties. The MBTA agrees

that there was an overassessment of this amount, representing 1.8% of the total train staffing penalties paid of \$1,396,889. . . .

For fleet maintenance, the SAO found that the MBTA failed to conduct the minimum number of required fleet maintenance inspections to assess penalties for both Cab Control Coaches ("CRC") and Blind Trailer Coaches ("BTC") and yet inappropriately assessed penalties in the amounts of \$128,495 and \$66,536 respectively. The MBTA provided evidence to the SAO to demonstrate the minimum number of required fleet maintenance inspections were performed. For CRC, penalties were incorrectly assessed in October 2022, totaling \$16,914 in overassessment and the MBTA used the incorrect escalation rate resulting in underassessment of \$2,655. The net overassessment of penalties for CTC Inspections is \$14,259. For BTC, penalties were incorrectly assessed in March 2021, October 2022, and July 2023, totaling \$22,833 in overassessment and the MBTA used the incorrect escalation rate resulting in an underassessment of \$1,041. The net overassessment of penalties for BTC Inspections is \$23,874. The net overassessment of penalties for fleet inspections is \$38,133. . . .

For on-time performance, the SAO found MBTA overpaid Keolis by \$51 in incentive payments, with 30 trips that did not qualify for incentive payments. . . . The MBTA agrees with the net overpayment of incentives for on-time performance of \$51.

For seat availability, the SAO found that 110 trips did not qualify for incentive payments, payments were made when the monthly incentive cap was met, Keolis' invoicing errors went undetected and Keolis was overpaid \$105,563 in overpaid seat availability incentives. The 110 trips did not affect the total incentive payments, as the monthly and annual caps had been achieved. As discussed in detail below, there was a clerical error in the transposition of the incentive amounts for seats and staffing in July 2022 leading to overassessment of \$105,210 for seat availability. The offsetting value of negative \$105,210 is reflected in subpart D. . . .

For train staffing, the SAO found the MBTA underpaid Keolis in train staffing incentives, specifically that the MBTA inadvertently used the wrong escalation factor, an invoicing error gone undetected by the MBTA, and that 343 trips did not qualify for incentive payments, totaling \$105,126. . . . As discussed in the MBTA's response to Finding 3, there was a clerical error in the transposition of the incentive amounts for seats and staffing in July 2022 leading to overassessment of \$105,210 for seat availability.

[. . .]

- 1. The SAO extended the audit period again with respect to its review of Keolis's Disadvantaged Business Enterprise participation to cover July 1, 2014 through December 31, 2023.*

Auditor's Reply

For the passenger comfort and service amenities inspections, the MBTA suggests that eight cleaning inspections were performed after the coach's entry to service, or midday. According to the MBTA, since midday cleanings are not subject to penalties, this misclassification led to the incorrect assessment of failures and \$7,573 in unassessed penalties. We attempted to verify that these were, in fact, midday

cleanings, but the MBTA could not provide sufficient evidence of when the inspection occurred. As such, we are unable to verify the accuracy of the MBTA's statements in this regard.

In its response, the MBTA argues that it was justified in not imposing penalties for fleet maintenance, as adjustments were made during monthly meetings with Keolis and both parties agreed that penalties were not necessary. It claims to have provided documentation of this review process. However, the documentation, which was not provided until after our fieldwork ended, was insufficient. It shows that adjustments were made but does not explain why the decision was made not to impose penalties. This lack of clarity and transparency in the documentation made it impossible for us to assess whether these decisions were appropriate, and the failure to provide this information in a timely manner was an unfortunate pattern in this audit that occurred with troubling regularity.

The MBTA disagrees with our calculations of inappropriately assessed penalties related to coach maintenance, claiming that it has provided evidence showing that the required inspections were performed. The new information it provided to us contradicts previous statements made during the audit, upon which the MBTA told us to rely. Initially, MBTA officials explained that only inspections recorded in Form.com were considered for penalties. Now, after our audit has been completed, they are presenting an Excel document as additional evidence, despite having told us explicitly that it was not in use during the audit period. We have not had the opportunity to verify the veracity of the document, when it was developed, and other important factors. Since this documentation was provided after our fieldwork and we did not have the opportunity to assess its reliability, we are unable to consider it as sufficient evidence and must reject it.

Our audit began on November 9, 2023. We conducted an exit conference with MBTA management on November 1, 2024 to present our preliminary findings and recommendations. The purpose of this meeting was to facilitate a discussion and clarify any potential issues, providing MBTA officials an opportunity to express their views on the audit results. MBTA officials did not have any questions or comments regarding this finding during this meeting. It was not until six weeks later, on December 18, 2024, that the MBTA began providing us with additional information that it requested us to consider regarding this finding. We submitted our draft report to the MBTA on December 27, 2024, and allowed 15 days for its written responses. On January 2, 2025, MBTA officials provided us with more new information, which it did not previously provide to us during our audit. We had requested this information many months before but were only provided with it two months after completing our audit and after presenting our conclusions

to the MBTA. This was followed by additional information on January 10 and 13. On January 15, we received the MBTA's formal, written responses to the draft report. The MBTA continued to provide us with additional information, on a rolling basis, until January 31, 2025. After reviewing all the information provided, including the written responses, we agreed, as a courtesy, to consider it and assess its validity. As a result, adjustments were made to this finding. On February 5, the MBTA sent us another email containing further additional information related to this finding. This last submission could not be incorporated because it would have required additional validation and potential revisions, which would have further extended our review process and further delayed the issuance of this report. Per generally accepted government auditing standards, if an auditee does not respond within a "reasonable period of time" (in this case, the 15 days required by Section 12 of Chapter 11 of the Massachusetts General Laws), then auditors may issue the report without the auditee's comments. As listed in the above chronology, the MBTA was allowed much more than a "reasonable period of time" to provide any pertinent information related to this finding.

We provided the MBTA with ample time to provide the requested information in response to our audit and the questions we asked. As discussed further in this report, the MBTA staff members assigned to our audit had little or no knowledge, experience, or expertise in the areas we were examining. After later changing its team, the MBTA's new staff members who were assigned to our audit provided us with information that the MBTA now says is inaccurate and unreliable, even though the MBTA initially stated that we could and should rely on it for the purposes of our audit. We understand that audits can be difficult and time-consuming, but they are critical to transparency and public support of government programs. The fact that the MBTA was unable to provide us with accurate information means that the MBTA itself may not know what information is accurate—that is, it is unable to properly manage this contract and its \$2,686,344,294 in public spending—or that the MBTA intentionally provided us with erroneous information. We find either scenario highly troubling.

According to its response, the MBTA has already begun to make improvements based on some of our recommendations and will continue to use this report in making improvements to the operations of the MBTA. We will review progress on this issue in our post-audit review in six months, when we hope to receive significantly improved cooperation from the MBTA.

2. The Massachusetts Bay Transportation Authority did not maintain sufficient documentation of certain inspections designed to evaluate Keolis's performance.

The MBTA did not ensure that it documented inspections designed to evaluate Keolis's performance in the areas of station maintenance, snow and ice removal, fare collection, and the availability of coaches and locomotives.

We noted the following issues with documentation:

- The MBTA does not maintain logs to document if and when it notifies Keolis to fix, repair, or clean a certain station or to remove snow and ice. No penalties were charged for station maintenance or snow and ice removal during the audit period.
- The MBTA only documents a fare collection inspection when an issue is identified. When an issue is identified, an "Operator Corrective Action Request" report is created and sent to Keolis. No "Operator Corrective Action Request" reports were created during the audit period. No penalties were charged for fare collection during the audit period.
- The MBTA does not document passed ADA inspections. Because of this, we were unable to test passed inspections to confirm that they were not failed inspections that the MBTA incorrectly marked as passed.
- As currently designed, the MBTA's coach and locomotive availability reports within the Train Resource Management System (TRMS) do not document the time of day or the location of the asset. Without these key data points, the MBTA is unable to effectively monitor whether assets are available during peak service times at North and South divisions, as required by the contract. No penalties were charged for fleet availability during the audit period.

The MBTA and its customers are exposed to safety risks if the MBTA fails to properly manage resolution of issues at commuter rail stations and with regard to snow and ice. This can result in avoidable injuries or accidents and financial loss. Failure to properly document the management of ADA inspections can result in unnecessary inconvenience or denial of service to residents and can create avoidable financial risk for the MBTA. Failure to appropriately oversee the fare collection efforts of its contractor and coach and locomotive availability can result in the perception of unfairness for riders, reduction in service levels during peak times, and the loss of ridership and contractor-penalty revenue for the MBTA.

Proper documentation of inspections is crucial for evaluating performance and ensuring that agreed-upon service levels are met. Without these records, it can be impossible for the MBTA to properly manage its operations and challenging to address any potential shortcomings or hold the responsible parties accountable.

Authoritative Guidance

The MBTA is responsible for monitoring Keolis's performance, according to Section 2 of Schedule 6.1 of the operating agreement. The operating agreement states,

The MBTA shall determine the level of the Operator's performance in each Performance Area, . . . [within the Passenger Comfort and Service Amenities states,] periodic inspections conducted by the MBTA during the Reporting Period. The MBTA shall evaluate the Operator's actual performance, as detailed in such Operator reports and MBTA inspection reports, and shall calculate the Performance Failure Payment.

Reasons for Issue

The MBTA does not have a policy or procedure in place that contains language regarding monitoring inspections being performed for station maintenance, snow and ice removal, ADA inspections, locomotive and coach availability, and fare collection.

Recommendations

1. The MBTA should establish policies and procedures to monitor station maintenance, snow and ice removal, ADA inspections, locomotive and coach availability, and fare collections.
2. The MBTA should document all inspections, regardless of outcome.

Auditee's Response

The MBTA agrees that improvements can and are in the process of being made to the documentation process for certain types of inspections. That said the MBTA's primary focus is, and will always be, ensuring safe, reliable, and accessible service to the MBTA's customers and employees. The Draft Report states throughout the document that the SAO experienced constraints regarding its ability to obtain the information necessary to draw conclusions, specifically with regards to station maintenance, snow and ice removal, fare collection, fleet availability, and ADA inspections. The MBTA disagrees that the SAO's audit was constrained. This audit has taken place over 14 months and the MBTA has provided responses to hundreds of requests for documents and information and the SAO has conducted dozens of interviews with MBTA and Keolis employees. The SAO's finding itself is inconsistent with the idea that the audit was constrained. Again, the MBTA agrees it can improve its documentation of certain inspections, but this finding demonstrates that the SAO had sufficient information to conduct its audit and that it obtained sufficient evidence to provide a reasonable basis for its findings and conclusions.

Auditor's Reply

We disagree with the MBTA's claim that our audit was not constrained. For purposes of an audit, a "constraint" is a limitation on an auditor's ability to answer the questions they set out to answer. This can

occur for several reasons, including an auditee's refusal to participate in the process or a lack of data provided. For the benefit of the reader, we will summarize the constraints we experienced below.

For our first objective, we sought to determine whether the MBTA ensured that Keolis met the performance requirements outlined in its contract. Specifically, we examined Keolis's performance across several key areas, including on-time performance, seat availability, fleet availability, fleet maintenance, ADA compliance, and passenger comfort/service amenities. The latter encompasses aspects such as vehicle cleanliness, in-service amenities, train staffing, station maintenance, snow and ice removal, and fare collection.

As we explained in the "Audit Objectives, Scope, and Methodology" section of this audit report, and again in this finding, during our audit, we faced limitations in which essential information was either unavailable or not properly maintained by the MBTA. As a result, we were forced to limit the scope of our audit in certain areas, which impacted our ability to fully assess Keolis's performance in those areas. These areas with limitations are outlined again below for the reader's understanding.

The MBTA monitors Keolis's ADA compliance by conducting physical inspections. It is authorized under its contract to penalize Keolis based on the number of failed ADA inspections. During our review, we requested data from MBTA management on all ADA inspections performed on Keolis during the audit period. However, MBTA management informed us that they do not retain records of inspections for which Keolis was deemed to have passed, only those that resulted in failure. As a result, we were unable to determine the total number of inspections performed or to assess whether any inspections that were deemed passed should have been failed, and whether any penalties should have been assessed accordingly. This resulted in a constraint in our audit.

Within its contract with Keolis, the MBTA has specified that a minimum number of locomotive and coach trains must be available for revenue service each day during the two daily weekday peak periods, which are from 5:00 a.m. to 10:00 a.m. and from 4:00 p.m. to 9:00 p.m. The northern and southern commuter rail divisions each have their own specific requirements for fleet availability. Both divisions must meet these requirements during the specified peak periods each day. If the required number of locomotives or coaches is not available for service on any given day, then Keolis should be assessed a penalty. According to MBTA officials, fleet availability is monitored through reports that Keolis is required to produce. However, when we requested these reports, we found that they did not capture key details, such as the

vehicle location (north or south station) or the time of day that the vehicles were in use or available. As a result, we were unable to determine whether the vehicles were available during the peak periods and at the required locations each day, as specified in the contract. Instead, we were only able to determine whether the total number of vehicles met the required availability. This created a constraint on our ability to answer our audit questions.

Keolis is responsible for keeping all MBTA commuter rail stations free of trash, debris, and graffiti. The MBTA conducts weekly physical inspections of stations to ensure that Keolis meets this requirement. If any issues are found during an inspection, the MBTA will either open a service request or contact Keolis officials directly, prompting them to address the identified issues. Similarly, the MBTA monitors snow and ice removal through physical inspections when winter weather is expected to impact commuter rail service. If issues are identified during these inspections, then the MBTA contacts Keolis, prompting it to address the snow and ice removal concerns. However, the MBTA does not keep logs to document if and when it notifies Keolis to fix, repair, or clean a station, or to remove snow and ice. As a result, we were unable to determine how often such notifications occurred during the audit period or the extent to which they were addressed, constraining our ability to answer these questions.

The MBTA's response highlights the 14-month duration of the audit, the hundreds of document requests, and the dozens of interviews conducted with MBTA and Keolis staff members. This is not directly relevant to the core issue, which is that limitations of available information imposed constraints on the audit. We recognize that the audit took longer to complete than originally expected and appreciate the MBTA's participation with it. The extended time period required to conduct the audit was driven by several factors that are described in the "Other Matters" section of this report, including significant delays in the MBTA identifying the correct officials responsible for the programs under review, prolonged waits for requested information, and instances of inaccurate data provided by the MBTA.

3. The Massachusetts Bay Transportation Authority did not always enforce the monthly and annual performance incentive payment caps.

Out of the 42 months during the audit period where incentives could have been earned for performance, the monthly incentive caps were exceeded, as follows:

- The on-time performance cap was exceeded for six months (14% of the 42 months reviewed), totaling \$54 over the monthly cap.

- The train staffing cap was exceeded for six months (14% of the 42 months reviewed), totaling \$84 over the monthly cap.
- The train seating cap was exceeded for four months (10% of the 42 months reviewed), totaling \$105,237 over the monthly cap.

Additionally, the annual incentive cap for train seating was exceeded for one year (29% of the 42 months reviewed), totaling \$105,210 over the annual cap.

As a result, the MBTA is paying Keolis more than is permitted under contract for monthly and annual performance incentives.

Authoritative Guidance

Section 6.5 of Schedule 6.1 of the amended MBTA contract with Keolis, dated July 1, 2020, states,

The Operator shall be entitled to earn up to \$7 million per Agreement Year in Performance Incentive Payments, inclusive of incentives and the incremental investment necessary by the Operator to achieve the enhanced customer experience desired by the Performance Incentive Payments. The [On-Time] Performance Incentive Payment shall be subject to a cap of \$2 million per Agreement Year; the Performance Incentive Payment for Coach Seating shall be subject to a cap of \$2 million per Agreement Year; and the Performance Incentive Payment for Train Staffing shall be subject to a cap of \$3 million per Agreement Year. The amount of the potential Performance Incentive Payments, and the Agreement Year caps for each category of Incentives, will escalate in each Agreement Year, commencing in the first month in Agreement Year 8 and in the first month in each Agreement Year thereafter, at a rate equal to the percentage increase in the Net Annual Fee for the current Agreement Year over the Net Annual Fee for the prior Agreement Year. The Performance Incentive Payments which the Operator may earn in any given calendar month shall be capped at 1/10 of the annual potential Performance Incentive Payments applicable per category for that Agreement Year.

Reasons for Issue

The MBTA does not have adequate policies and procedures to monitor the monthly and annual performance incentive caps. According to MBTA officials, the issue regarding the train seating cap was caused by a clerical error, in which the train seating and staffing amounts on the invoice were transposed, and it was never corrected. For fiscal year 2024, the MBTA applied the incorrect escalation factor when calculating the annual cap for all incentives. Although the error was identified before the year ended, there was still a net overpayment for each incentive.

Recommendations

1. The MBTA should establish adequate policies and procedures to monitor and enforce the monthly and annual performance incentive caps. This should include a monitoring component that ensures that there is sufficient, appropriate ongoing supervision and reporting on this issue, including financial reviews of the contract and the payment of incentives.
2. The MBTA should implement a verification process to ensure that the correct escalation factors are used when calculating the annual cap for all incentives. This will help prevent errors and ensure accuracy in future fiscal years.

Auditee's Response

The MBTA disagrees with some of the SAO's analysis and has provided a detailed breakdown in its responses to the exceptions provided by the SAO. The Monthly and Annual payment incentive program caps were exceeded by a net of \$165 over the audit period, representing 0.0006% of the total \$26,010,032 earned by Keolis. This number is also reflected in the discussions withing Finding 1. Further for each of the exceptions, please find the MBTA's responses:

- *For the on-time performance cap, the MBTA agrees with the SAO's finding that the on-time performance cap was exceeded for six months, totaling \$54.*
- *For the train staffing cap, the MBTA agrees with the SAO's finding that the train staffing performance cap was exceeded for six months, totaling \$84.*
- *For the train seating cap, which the SAO found was exceeded for four months, totaling \$105,237; \$105,210 of this amount was caused by a transposition within the train staffing value in July 2022 which was addressed in the offsetting transposition error on the train staffing invoice. The MBTA otherwise agrees with the SAO's finding that the train seating cap was exceeded for four months, totaling \$27.*
- *For the annual incentive cap for train [seating], which the SAO found was exceeded for one year, totaling \$105,126 . . . [this overpayment] was offset by the underpayment of the train staffing incentive due to a clerical error transposing the two values on the first invoice of the month.*

Auditor's Reply

We acknowledge that a clerical error made by the MBTA related to the transposition of the train seating and staffing amounts on the invoice may have led to the monthly and annual caps being exceeded. This error highlights an underlying issue of ineffective controls and insufficient oversight processes. These incentive payment caps were established for a specific purpose, and the fact that they were allowed to be exceeded indicates a failure in the processes designed to enforce them. We urge the MBTA to implement our recommendations in order to prevent similar errors in the future and ensure that the monthly and annual caps are applied appropriately.

4. The Massachusetts Bay Transportation Authority did not ensure that Keolis submitted required reports relating to fare collection revenue and fleet maintenance on time and did not penalize Keolis for noncompliance.

The MBTA did not ensure that it received from Keolis Operator Deliverable Requirement List (ODRL) reports on their respective due dates and did not penalize Keolis for delivering ODRL reports late. Our test revealed that 40 ODRL reports were received late, resulting in penalties that should have been charged to Keolis in the amount of \$255,000. Of these 40 ODRL reports, 39 were daily reports related to fare collection revenue and 1 was a weekly report related to maintenance activities performed for coaches and locomotives.

Not requiring Keolis to submit ODRL reports in a timely manner deprived MBTA operations and management personnel members of information needed to make decisions and monitor performance. Because the MBTA also failed to assess an estimated \$255,000 in penalties, this also resulted in a loss of revenue that must be compensated for through additional funding from riders or the Commonwealth and its taxpayers.

Authoritative Guidance

Appendix 1 of Schedule 3.14 of the operating agreement with Keolis includes the following:

ODRL Number	Description of Report	Due Date
3.1 009	Revenue Report	Daily
3.3 17	Weekly Maintenance Production Report	No later than 10:00 a.m. on each Monday

Section 20.1 of Schedule 3.18 of the operating agreement with Keolis includes the following:

Timeliness Service Level	Service Credit	Penalty Amount
A delay in delivery of any Time-Constrained Report of more than 2 hours and less than 6 hours	Severity 5 Service Credit	\$5,000
A delay in delivery of any Time-Constrained Report of 6 or more hours	Severity 4 Service Credit	\$10,000

Reasons for Issue

The MBTA does not have sufficient policies and procedures to monitor the receipt, review, and follow-up of reports that are required to be submitted by Keolis to the MBTA.

Recommendation

The MBTA should establish sufficient policies and procedures to monitor the receipt, review, and follow-up of reports that are required to be submitted by Keolis to the MBTA, per the executed contract. This should include appropriate monitoring and reporting components, as well as a financial review, to ensure that appropriate penalties are assessed and collected.

Auditee's Response

The MBTA disagrees that it failed to ensure the Keolis submitted reports relating to fare collection revenue and fleet maintenance on time and as such disagrees that any penalties were appropriate to be assessed to Keolis. Keolis inputs these reports daily into the [Ticket Revenue Accounting Channel] TRAC system. The emails of these reports relied on by the SAO are sent merely as a courtesy, so they are not considered a failure of time-delivery. The only exception was for Report 3.3-17, which was posted to TRAC two-and-a-half hours late on the same date it was due which would result in a net penalty assessment of \$5,000.

Auditor's Reply

In its response, the MBTA states that Keolis inputs ODRL reports into the Ticket Revenue Accounting Channel (TRAC) system daily, implying that the MBTA was monitoring on-time delivery through this system. We disagree with this statement. Based on multiple meetings with MBTA officials responsible for monitoring the timeliness of Keolis's report submissions, it was never indicated to us that the MBTA was using TRAC for this purpose. Instead, MBTA officials told us that they rely on the receipt of emailed reports from Keolis and the dates Keolis uploads reports to SharePoint to monitor compliance with reporting timelines. This is why we used these dates as the primary evidence for testing the timeliness of report submissions. These same MBTA officials indicated that they had authorization to review reports in TRAC but had trouble accessing them, which suggests that, while TRAC may have been available, it was not being used for monitoring report timeliness.

In its response, the MBTA acknowledges that it failed to penalize Keolis for a late Weekly Maintenance Production Report. If the MBTA had been effectively monitoring the timeliness of report submissions, using the TRAC system, email records, SharePoint, or any other method, then it should have detected the

delay and penalized Keolis appropriately. It did not. This failure to identify and penalize Keolis for the delay highlights the inadequacy of the MBTA’s monitoring process in this area during the audit period. We believe that the MBTA needs to strengthen its monitoring processes to ensure more effective oversight of the receipt, review, and follow-up of reports required to be submitted by Keolis. We reiterate our recommendation that the MBTA establish adequate policies and procedures to ensure that Keolis complies with the reporting requirements outlined in the contract and that penalties are accurately assessed and collected when necessary.

5. The Massachusetts Bay Transportation Authority did not ensure that Keolis employees who had access to the Train Resource Management System completed annual cybersecurity awareness training.

As part of our data reliability assessment procedures, we reviewed cybersecurity awareness training records²⁵ for a sample of 35 Keolis employees who had access to TRMS at any point during the audit period. We found that Keolis employees with access to TRMS did not complete annual cybersecurity awareness training during the audit period, as outlined in the table below.

Number of Keolis Employees in Our Sample Who Completed Cybersecurity Awareness Training		Total Number of Keolis Employees in Our Sample Required to Complete Cybersecurity Awareness Training During the Corresponding Year		Percentage of Completion
2021	8	29		28%
2022	13	25		52%
2023	16	27		59%

If the MBTA does not ensure that its contracted service provider’s employees with access to the MBTA’s information technology systems complete annual cybersecurity awareness training, then the MBTA exposes itself to an increased risk of cybersecurity attacks and financial and/or reputational losses. In addition, the integrity and security of information in TRMS, which is used to monitor all aspects of commuter rail performance, may become compromised.

25. This documentation had to be obtained directly from Keolis as the MBTA told us they did not maintain this documentation.

Authoritative Guidance

According to Section 4.1.5 of Schedule 3.17 of the MBTA's "Commuter Rail Operating Agreement 159–12,"

The Operator [Keolis] shall provide and ensure that it, its personnel and MBTA employees with access to the Commuter Rail [information technology] Environment or the MBTA Internal [information technology] Environment shall complete initial information assurance awareness and annual refresher training in MBTA policies governing security, information assurance and workforce management, and such trainees shall certify to said training.

Reasons for Noncompliance

In an email on August 21, 2024, in response to our request for cybersecurity awareness training records for a sample of Keolis employees who had access to the MBTA's TRMS system during the audit period, the MBTA stated,

While MBTA requires Keolis to complete a comparable cyber security training to that conducted by MBTA employees, we do not have records of Keolis employees' cybersecurity training certificates.

The MBTA has not established policies and procedures, including a monitoring component, to ensure that Keolis is complying with its contract by providing cybersecurity awareness training to its employees who have access to TRMS. In fact, based on our interviews with both MBTA and Keolis officials, it appears that the MBTA was not actively monitoring Keolis's compliance with this training requirement during the audit period, despite its being an explicit part of the contract.

Recommendations

1. The MBTA should establish policies and procedures, including a monitoring component, to ensure that its contracted service provider's employees with access to the MBTA's information technology systems complete cybersecurity awareness training.
2. The MBTA should ensure that its contractor complies with all terms and conditions of its contract and that it retains sufficient documentation of this.

Auditee's Response

The MBTA with Keolis have identified the Keolis employees that did not complete annual cybersecurity training. The MBTA recognizes that with additional resources, the MBTA can conduct more thorough review of the cybersecurity training completed by Keolis employees. The MBTA also acknowledges that cyber security training conducted by Keolis is more thorough for those who had administrative/editing rights to TRMS as opposed to individuals who are restricted to basic data entry access rights to TRMS. Further information regarding the individuals for whom evidence of

cybersecurity training was not completed was provided to the SAO in a series of emails in September and October 2024 by Keolis' . . . Chief Legal Officer & Vice President of Strategy to your office. The reasoning for the lack of evidence that certain "employees" completed cybersecurity training was (a) a number of employees left employment prior to cybersecurity training required completion and (b) five (5) of the identified "employees" were actually contractors with limited access to the TRMS system. This left only 3 employees that Keolis and the MBTA were unable to locate records of their completion of cybersecurity training.

Auditor's Reply

In its response, the MBTA states that with additional resources, it could have conducted a "more thorough review" of the cybersecurity awareness training completed by Keolis employees. This statement implies that the MBTA was monitoring Keolis's compliance to some extent during the audit period. This is inaccurate. As noted above, based on our discussions with both MBTA and Keolis, it appeared that the MBTA was not monitoring Keolis's compliance with this training requirement *at all* during the audit period. Any specific information we requested regarding the cybersecurity awareness training completed by Keolis employees, including any evidence of training completion for the Keolis employees in our testing sample, had to be obtained directly from Keolis. This information was not available through the MBTA's own records or monitoring processes, highlighting the lack of oversight and enforcement by the MBTA.

In its response, the MBTA indicates that, in some cases, cybersecurity awareness training records could not be provided because the employee had left their employment with Keolis prior to the required completion date of the training. The absence of training records for those individuals did not have an impact on our testing results, as we focused solely on employees who were still employed and were required to complete the training in each respective year. As can be seen in the table in [Finding 5](#) above, there were 35 total employees in our sample. Of these, only 29 were required to complete the training in 2021, 25 in 2022, and 27 in 2023.

The MBTA also indicates that five of the Keolis employees in our testing sample were contractors with limited access to MBTA's TRMS system. While we acknowledge that these individuals were contractors with limited access rights, we believe that all TRMS users, regardless of their employment status or access level, should be required to complete cybersecurity awareness training. Even individuals with restricted access to systems or data can be targets for cybersecurity attacks. Contractors and/or users with limited access could still serve as an entry point for attackers, or they themselves may unintentionally compromise security through negligence or lack of awareness. Therefore, training is essential for all users in order to mitigate risks and maintain the integrity and security of information in the MBTA's TRMS.

We urge the MBTA to implement our recommendations fully and to improve its oversight of cybersecurity awareness training for Keolis employees with access to MBTA systems.

6. The Massachusetts Bay Transportation Authority does not have an internal control plan.

The MBTA has not developed an internal control plan. In addition, the MBTA could not demonstrate that it had conducted a department-wide risk assessment which would be used to identify potential risks regarding all aspects of its business operations (financial, operational, and compliance activities) and to design and implement internal controls to mitigate such risks.

Without a sufficiently developed internal control plan, based on a department-wide risk assessment, the MBTA is limited in its ability to identify vulnerabilities, which could prevent it from achieving organizational goals and objectives. This also exposes the MBTA to heightened risks in its operations.

Authoritative Guidance

According to Chapter 647 of the Acts of 1989, every state agency must maintain an internal control plan, review it annually, and update it as necessary.

Reasons for Condition

We asked the MBTA why the agency does not have an internal control plan. In an email on March 1, 2024, MBTA's senior counsel of regulatory compliance stated,

The MBTA has ensured it has internal controls by issuing its own fully independent audited financial statements, having [System and Organization Control] reports for its financials and materials information system, and following its applicable internal policies and procedures that are reviewed and accepted by our external independent auditors.

Recommendations

1. The MBTA should develop an internal control plan based on a current department-wide risk assessment that includes all aspects of its business activities.
2. After completing the internal control plan, the MBTA should ensure that the internal control plan is communicated to all employees, used within its operations, and reviewed and updated at least annually.

Auditee's Response

*The MBTA does not disagree that it does not have an authority wide internal control plan. . . . The MBTA disagrees with the SAO's claim Chapter 647 of the Acts of 1989 applies to the MBTA as the MBTA is not a state agency. The MBTA was formed under [Massachusetts General Laws, Chapter] 161A and is considered "a body politic and corporate and a political subdivision of the commonwealth." See *Daveiga v. Bos. Pub. Health Comm'n*, 449 Mass. 434, 451 (2007). Specifically, there is no inclusion of the MBTA of the executive branch, which may cause it to be considered an "agency." The MBTA is typically referred to as an "authority" or "quasi-public" entity as opposed to a "state agency" and is not specifically included in Chapter 647 of the Acts of 1989. Courts have found that the MBTA is a public entity and a political subdivision, but not a state agency, which applies to the application of the Commonwealth's laws and regulations. For example, the MBTA is not considered a "common carrier" for purposes of certain advertising regulations. See *Massachusetts Bay Transp. Authority v. City of Somerville*, 451 Mass. 80, 86 (2008). Additionally, the MBTA's retirement board is not subject to the conflict-of-interest law applicable to state agencies. See *Massachusetts Bay Transp. Authority Retirement Bd. v. State Ethics Com'n*, 414 Mass. 582, 593 (1993).*

Auditor's Reply

We recognize that the MBTA is a quasi-public agency and, therefore, is not required to comply with Chapter 647 of the Acts of 1989. However, we believe that a properly documented internal control plan is essential in any business operation, as it helps identify areas of financial and operational risk that should be addressed in an agency's policies and procedures. As noted above, without a sufficiently developed internal control plan, based on a department-wide risk assessment, the MBTA is limited in its ability to identify vulnerabilities which could prevent it from achieving organizational goals and objectives, and exposes itself to heightened risks in its operations. Although Chapter 647 of the Acts of 1989 does not apply to the MBTA, the MBTA should voluntarily adopt its provisions, as we consider them a best practice for internal controls in state agencies. We urge the MBTA to fully implement our recommendations.

OTHER MATTERS

During our audit, we also identified the below issues, which we believe warrant attention.

1. The Massachusetts Bay Transportation Authority did not effectively monitor Keolis's compliance with disadvantaged business enterprise requirements.

The US Department of Transportation's (US DOT) Disadvantaged Business Enterprise (DBE)²⁶ program is a legislatively mandated program designed to provide DBEs with an equal opportunity to compete for federally funded contracts. According to the US DOT's website, the main objectives of the DBE program are as follows:

- *To ensure that small DBE's can compete fairly for federally funded transportation-related projects.*
- *To ensure that only eligible firms participate as DBEs.*
- *To assist DBE firms in competing outside the DBE Program.*

US DOT has established regulations, specifically Part 26 of Title 49 of the Code of Federal Regulations, to administer its DBE program. These regulations require state transportation agencies that receive financial assistance from US DOT, such as the Massachusetts Bay Transportation Authority (MBTA), to establish goals for the participation of DBEs.

The MBTA's operating agreement with Keolis is subject to the requirements of Part 26 of Title 49 of the Code of Federal Regulations. Therefore, Keolis, as operator of the MBTA's commuter rail service, is required to establish its own DBE participation goals under this contract. According to Section 4.5.3.1 of the "Instructions to Proposers" document for the MBTA's Request for Proposal No. 159-12 (for the operation and maintenance of the MBTA's commuter rail system),

The DBE Participation goal for this [Request for Proposal] and the proposed Contract to be awarded is set at fifteen percent (15%). This DBE participation goal represents those elements of work performed by qualified DBEs for amounts totaling fifteen percent (15%) of the goods and services purchased or subcontracted.

26. DBEs are for-profit small businesses that are owned and controlled by socially and economically disadvantaged individuals.

In order to participate in the MBTA's DBE program, a small business owned and controlled by socially and economically disadvantaged individuals must receive DBE certification from the Massachusetts Unified Certification Program.

According to the MBTA's Request for Proposal No. 159-12, proposers were required to submit, among other information, a DBE Participation Schedule listing the qualified DBEs with which they "intend to contract for the performance of portions of the work under the contract." The DBE Participation Schedule Keolis sent to the MBTA as part of its final DBE plan, dated March 25, 2015, contained 53 DBEs. We noted that 18 (or 34%) of these 53 DBE firms never ended up executing a contract with Keolis. In our review of documents provided to us by Keolis, we found that Keolis had executed a \$425,000 settlement agreement with one of the firms initially listed on its DBE Participation Schedule, which included non-disclosure and non-disparagement clauses. See Other Matter 2 for more information.

According to Section 4.1 of Schedule 3.13 of the MBTA's operating agreement with Keolis, Keolis is required to submit monthly written reports to the MBTA summarizing the total expenditures made with DBE firms under the agreement. These reports also detail whether Keolis has met its monthly and year-to-date DBE goals.

We met with MBTA officials and determined that the MBTA did not have sufficient measures in place to ensure that Keolis achieved the DBE participation goals it committed to under this contract. For example, the MBTA had not established a formal process for reviewing and approving the monthly DBE reports it received from Keolis. From July 2014 (the inception of the contract) through the end of the audit period, the MBTA could not demonstrate that it had reviewed and approved any of the monthly reports it had received from Keolis. As part of a formal review process, we would have expected the MBTA to verify that the DBE subcontractors listed on these monthly reports (1) had current DBE certifications on file with the Massachusetts Unified Certification Program, (2) had executed contracts in place, and (3) that Keolis was meeting its monthly and year-to-date DBE spending goals. Further, as part of its monitoring efforts, we believe that the MBTA should have been reviewing project documents and accounting records and visiting project sites to verify that the specific DBE firms listed on monthly reports were the contractors ultimately performing the work. The MBTA could not provide us with any documentation to substantiate whether any of these efforts or comparable efforts occurred during this time period.

As part of this audit, we also obtained all of the monthly DBE expenditure reports Keolis sent to the MBTA from July 2014 through December 2023. We inspected each of the monthly DBE expenditure reports and found that Keolis included in these reports at least \$3,004,880 in payments made to firms that did not have a valid DBE certification at the time of payment. Specifically, we noted the following:

- that \$479,770 in payments made to firms after their DBE certification had expired or were withdrawn; and
- that \$2,525,110 in payments were made to firms that never had a valid DBE certification on file with the Massachusetts Unified Certification Program.

After identifying the payments made to noncertified firms mentioned above, we removed them from the expenditure reports and recalculated the total DBE spending to determine what impact, if any, it had on Keolis's ability to meet the DBE participation goals. This adjustment revealed that Keolis met the 15% DBE spending target in all 9.5 years we reviewed; however, we still believe that the MBTA needs to strengthen its monitoring process in this area. Without a formal review process in place, the MBTA is limited in its ability to evaluate the effectiveness of its efforts—in this instance, executed under contract with Keolis—to support contracting with DBEs.

The MBTA should develop, document, and implement policies and procedures to effectively monitor Keolis's compliance with DBE requirements. These policies and procedures should ensure that Keolis is accurately reporting DBE award and other financial information and should include a reporting component.

Auditee's Response

The MBTA appreciates the SAO's input and suggestions when it comes to the handling of monitoring Keolis' compliance with disadvantaged business enterprise ("DBE") requirements. The MBTA's current handling of Keolis' compliance with DBE requirements has changed significantly from the audit period, which goes back to July 2014. The MBTA provides Keolis with policies and procedures for DBE requirements following a change in the Keolis oversight manager within the MBTA's Office of Diversity and Civil Rights ("ODCR"). When DBE reports are filed, the ODCR manager reviews documentation with Keolis representatives for accuracy and completeness, including contractor certification, subcontractor accounting accuracy, and ensuring new subcontractors are reviewed for their specific scopes of work. Prompt payments and Equal Employment Opportunity ("EEO") verification are also provided with monthly reports. Since the change in oversight occurred, only one company has been removed for noncompliance and the associated monthly report was revised appropriately. Further, the MBTA ODCR intends to conduct further training with Keolis regarding prompt payment, EEO, and Semiannual reports. . . .

The payments of \$479,770 made to vendors after their DBE certification expired or was withdrawn are valid payments, given that federal regulations guiding the DBE program allow a vendor to be kept on DBE reports until the full-close out of the company's payment. In this case, the \$479,770 can be attributed to retention or final payments owed to these company, noting that some of these vendors do not request final payments for months. The MBTA is addressing these types of payments with Keolis in reviewing its close-out requirements and invoicing from contractors. . . .

The [Office of the State Auditor (SAO)] identified [\$2.475 million] in spend to two vendors, Ketchie & Anta Electric, for which the Massachusetts Supplier & Diversity Office ("SDO") have no records as being certified DBEs.² Keolis payments to Ketchie and Anta Electric were reported as a Tier 2 spend through Keolis' prime supplier, Harsco Rail, based in North Carolina. Harsco is an equipment and parts manufacturer of railroad track equipment. Both Ketchie and Anta Electric are certified DBEs in multiple states and actively work with other public transportation agencies.³

As discussed in the SAO's report, the MBTA-Keolis Operating Agreement incorporates 49 [Code of Federal Regulations (C.F.R.)], Part 26. Under 49 C.F.R., Part 26, a DBE must be certified by a Unified Certification Program (UCP) in the state where the business seeks to participate as a DBE on federally funded projects. Certification reciprocity is recognized in 49 C.F.R. § 26.81(e), which requires each state's UCP to accept DBE certifications from other states, provided the out-of-state DBE applies for recognition and provides all required information. The Operating Agreement does not restrict DBE participation to only Massachusetts-based DBEs. As Tier 2 vendors to Keolis's prime contractor, Keolis received reporting information from Harsco that it was using valid DBE sub-vendors. Upon investigation, while both Ketchie and Anta Electric are DBEs, it was discovered that neither company secured the necessary reciprocal certification within Massachusetts. As such, while the MBTA and Keolis agree this was a procedural oversight and believe the improved oversight program would recognize and correct any such future issues, the intent of the DBE program of using DBE vendors appears to be satisfied, even if not technically compliant. Furthermore, even removing the [\$2.475 million] reported spend with these two Tier 2 vendors during [fiscal year 2022 and fiscal year] 2023, Keolis achieved [18.33% and] 19.59% DBE spend for those years.

[. . .]

- 2. The SAO also identified WWP [doing business as] d/b/a VOIP Networks as having no records as being certified by the SDO. MBTA agrees WWP [doing business as] d/b/a VOIP Networks does not have proper DBE certification, and it was an error to be included. Removal of this spend has had no material impact on the overall DBE goal for that year.*
- 3. With this response the MBTA provides the SAO with documentation of Ketchie and Anta Electric DBE certifications.*

Auditor's Reply

In its response, the MBTA refers to federal regulations that allow vendors to remain on DBE reports until the final payment for a contract is closed out. The MBTA suggests that the \$479,770 in payments made to firms after their DBE certification had expired or were withdrawn were retention or final payments owed

to these companies. We were unable to verify that these payments were final or retention payments, as the MBTA did not provide supporting documentation to substantiate this claim. However, based on the data available to us, it appears that these payments are not final or retention payments, as final payments typically would not span over a period of several months, as these payments did. Indeed, some of these payments span across a 14-month period, undermining the claim that they were retention payments or final in nature.

Regarding the payments made to firms that never had a valid DBE certification on file with the Massachusetts Unified Certification Program, the MBTA's suggestion that these firms' valid DBE certifications in other states minimizes the issue. The fact remains that these firms did not meet the necessary Massachusetts-specific compliance standards, regardless of their certification status in other states. We acknowledge that federal regulations allow for the recognition of out-of-state DBE certifications. However, this process requires the out-of-state DBE to apply for recognition and provide all required documentation in Massachusetts. These firms did not fulfill that process for Massachusetts, which means that they were not compliant with the state's DBE program. Allowing out-of-state vendors to participate based solely on certifications from other states undermines this process and could unfairly exclude local firms that meet Massachusetts requirements.

Since the end of the audit period, the MBTA has implemented policies and procedures aimed at addressing the issues identified in our audit. We will review progress made, during our post-audit review in six months.

2. Keolis entered into a \$425,000 settlement agreement with a Disadvantaged Business Enterprise firm, which included non-disclosure and non-disparagement clauses.

As part of our review of the MBTA's monitoring of Keolis's compliance with DBE requirements, we discovered that Keolis had entered into a \$425,000 settlement agreement with one of the firms listed on its DBE Participation Schedule. The firm alleged that Keolis unlawfully failed to award it certain subcontracts related to its contract with the MBTA, which led to the settlement agreement. The agreement included non-disclosure and non-disparagement clauses.

These confidentiality clauses may prevent the subcontractor from sharing critical information about potential issues with Keolis's performance under its contract with the MBTA, thereby reducing the effectiveness of MBTA oversight. For instance, the subcontractor could possess valuable information

about Keolis’s process for handling DBE firms interested in work under this contract—such as whether Keolis acted in good faith, maintained fairness and transparency, and complied with federal requirements. By potentially silencing the subcontractor through the use of confidentiality language, Keolis is protected from scrutiny, compromising the ability of the MBTA and the public to hold the company accountable for its actions or inactions related to its contract with the MBTA.

We recommend that the MBTA develop and implement policies and procedures related to settlement agreements involving its subcontractors and their vendors (in connection with work being completed under an MBTA contract). Specifically, the MBTA could implement protocols recently adopted by Executive Branch agencies and could also implement a requirement to report all monetary settlement agreements to the Office of the Comptroller of the Commonwealth. These efforts would help improve accountability and transparency related to settlement agreements.

3. The audit process was constrained by delays and inconsistent and inaccurate information provided by the Massachusetts Bay Transportation Authority.

During this audit, we faced delays in the MBTA’s identification of the appropriate officials responsible for the programs under review, prolonged waits for requested information, and instances of inconsistent and inaccurate data provided by the MBTA.

During our planning process, we asked the MBTA to identify the individuals responsible for monitoring Keolis’s performance in the areas we were auditing so that we could schedule interviews to gain an understanding of these processes. Throughout this process, which spanned several months, the MBTA directed us to meet with certain employees. These meetings took time to schedule, and after conducting them, we found that, in some cases, the employees were unable to provide the necessary information. These employees lacked the required understanding of the process, forcing us to spend additional time identifying the correct sources. In other cases, the information provided to us in these meetings did not align with what was documented in the contract and the MBTA’s internal procedure documents, which led to further delays as we worked to understand what was occurring during the audit period. As a result, meetings needed to be rescheduled with different employees, significantly delaying the overall audit process.

Additionally, the MBTA provided us with incorrect escalation factors used to calculate Keolis’s performance incentives and penalties. We relied on these factors throughout our audit work, and it was

not until after our testing was completed and the MBTA saw our results that it identified and corrected the error. This error forced us to redo our testing, update our workpapers, and re-review the results with the MBTA, causing significant delays in the audit process and a \$829,454 error in our initial calculations, which relied on data that was provided to us and stipulated as correct by the MBTA.

These issues demonstrate weaknesses in accountability and oversight within the MBTA, inefficiencies in internal processes, poor coordination and communication among departments, and potential gaps in employee subject-matter knowledge. These issues wasted significant time for both the MBTA and the Office of the State Auditor—and therefore public dollars—and raise questions about the MBTA's prioritization and commitment to this particular audit.

APPENDIX A

On-Time Performance Penalties

Performance Requirement	Fiscal Year 2020		Fiscal Year 2021		Fiscal Year 2022		Fiscal Year 2023		Fiscal Year 2024	
	Non-Peak	Peak	Non-Peak	Peak	Non-Peak	Peak	Non-Peak	Peak	Non-Peak	Peak
Late Trains										
5–10 Minutes Late	\$287	\$575	\$293	\$587	\$299	\$600	\$308	\$618	\$317	\$637
10–20 Minutes Late	\$575	\$1,148	\$587	\$1,171	\$600	\$1,196	\$618	\$1,232	\$637	\$1,269
20–40 Minutes Late	\$862	\$1,723	\$879	\$1,758	\$898	\$1,796	\$925	\$1,850	\$953	\$1,906
40+ Minutes Late	\$2,870	\$5,740	\$2,928	\$5,856	\$2,991	\$5,982	\$3,081	\$6,161	\$3,173	\$6,346
Terminated or Canceled Trains										
Terminated or Canceled: Not Fuel-Related	\$2,870	\$5,740	\$2,928	\$5,856	\$2,991	\$5,982	\$3,081	\$6,161	\$3,173	\$6,346
Terminated or Canceled: Fuel-Related	\$5,740	\$11,482	\$5,856	\$11,714	\$5,982	\$11,965	\$6,161	\$12,324	\$6,346	\$12,694

APPENDIX B

Incentive Payments for On-Time Performance

Line and Percent Range of Adjusted Performance*	Fiscal Year 2021	Fiscal Year 2022	Fiscal Year 2023	Fiscal Year 2024
Franklin				
Low Range	\$20,000	\$20,429	\$21,042	\$21,673
Medium Range	\$40,000	\$40,858	\$42,084	\$43,347
High Range	\$60,000	\$61,287	\$63,126	\$65,020
Providence				
Low Range	\$20,000	\$20,429	\$21,042	\$21,673
Medium Range	\$40,000	\$40,858	\$42,084	\$43,347
High Range	\$60,000	\$61,287	\$63,126	\$65,020
Worcester				
Low Range	\$30,000	\$30,644	\$31,563	\$32,510
Medium Range	\$60,000	\$61,287	\$63,126	\$65,020
High Range	\$70,000	\$71,502	\$73,647	\$75,856
Fitchburg				
Low Range	\$15,000	\$15,322	\$15,782	\$16,255
Medium Range	\$30,000	\$30,644	\$31,563	\$32,510
High Range	\$40,000	\$40,858	\$42,084	\$43,347
Haverhill				
Low Range	\$7,500	\$7,661	\$7,891	\$8,128
Medium Range	\$15,000	\$15,322	\$15,782	\$16,255
High Range	\$20,000	\$20,429	\$21,042	\$21,673
Lowell				
Low Range	\$5,000	\$5,107	\$5,260	\$5,418
Medium Range	\$10,000	\$10,215	\$10,521	\$10,837
High Range	\$20,000	\$20,429	\$21,042	\$21,673
Newburyport				
Low Range	\$15,000	\$15,322	\$15,782	\$16,255
Medium Range	\$30,000	\$30,644	\$31,563	\$32,510
High Range	\$40,000	\$40,858	\$42,084	\$43,347
Stoughton				
Low Range	\$10,000	\$10,215	\$10,521	\$10,837
Medium Range	\$20,000	\$20,429	\$21,042	\$21,673
High Range	\$30,000	\$30,644	\$31,563	\$32,510

Line and Percent Range of Adjusted Performance*	Fiscal Year 2021	Fiscal Year 2022	Fiscal Year 2023	Fiscal Year 2024
Kingston/Plymouth				
Low Range	\$5,000	\$5,107	\$5,260	\$5,418
Medium Range	\$10,000	\$10,215	\$10,521	\$10,837
High Range	\$20,000	\$20,429	\$21,042	\$21,673
Foxboro				
Low Range	\$2,500	\$2,554	\$2,631	\$2,710
Medium Range	\$5,000	\$5,107	\$5,260	\$5,418
High Range	\$10,000	\$10,215	\$10,521	\$10,837
Middleboro				
Low Range	\$7,500	\$7,661	\$7,891	\$8,128
Medium Range	\$15,000	\$15,322	\$15,782	\$16,255
High Range	\$30,000	\$30,644	\$31,563	\$32,510
Needham				
Low Range	\$10,000	\$10,215	\$10,521	\$10,837
Medium Range	\$20,000	\$20,429	\$21,042	\$21,673
High Range	\$30,000	\$30,644	\$31,563	\$32,510
Rockport				
Low Range	\$2,500	\$2,554	\$2,631	\$2,710
Medium Range	\$5,000	\$5,107	\$5,260	\$5,418
High Range	\$10,000	\$10,215	\$10,521	\$10,837
Fairmount				
Low Range	\$2,500	\$2,554	\$2,631	\$2,710
Medium Range	\$5,000	\$5,107	\$5,260	\$5,418
High Range	\$10,000	\$10,215	\$10,521	\$10,837
Greenbush				
Low Range	\$2,500	\$2,554	\$2,631	\$2,710
Medium Range	\$5,000	\$5,107	\$5,260	\$5,418
High Range	\$10,000	\$10,215	\$10,521	\$10,837

* The adjusted performance ranges are as follows: the low range is 92.50%–93.99%, the medium range is 94%–97.99%, and the high range is 98%–100%.

APPENDIX C

Penalty Payments for Seat Availability and Americans with Disabilities Compliance / Americans with Disabilities Toilet Location

Performance Requirement	Fiscal Year 2020	Fiscal Year 2021	Fiscal Year 2022	Fiscal Year 2023	Fiscal Year 2024
Seat Availability					
Fleet Availability					
Americans with Disabilities Compliance	\$575	\$587	\$600	\$618	\$637
Americans with Disabilities Toilet Location					

APPENDIX D

Incentive Payments for Coach Seating

Ridership Level	Fiscal Year 2021	Fiscal Year 2022	Fiscal Year 2023	Fiscal Year 2024
Low	\$202	\$206	\$212	\$218
Medium	\$404	\$413	\$425	\$438
High	\$808	\$825	\$850	\$876

APPENDIX E

Fleet Maintenance

Performance Requirement	Fiscal Year 2020	Fiscal Year 2021	Fiscal Year 2022	Fiscal Year 2023	Fiscal Year 2024
Fleet Maintenance: Locomotive and Cab Control Coaches					
Pass Rate: 95%–99.9%	\$8,610	\$8,784	\$8,972	\$9,241	\$9,518
Pass Rate: 90%–94.9%	\$17,222	\$17,570	\$17,947	\$18,485	\$19,040
Pass Rate: 85%–89.9%	\$25,833	\$26,355	\$26,920	\$27,728	\$28,560
Pass Rate: 80%–84.9%	\$43,054	\$43,924	\$44,866	\$46,212	\$47,598
Pass Rate: Below 80%	\$114,814	\$117,133	\$119,646	\$123,235	\$126,932
Fleet Maintenance: Blind Trailer Coach					
Pass Rate: 95%–99.9%	\$7,750	\$7,907	\$8,077	\$8,319	\$8,569
Pass Rate: 90%–94.9%	\$15,499	\$15,812	\$16,151	\$16,636	\$17,135
Pass Rate: 85%–89.9%	\$23,249	\$23,719	\$24,228	\$24,955	\$25,704
Pass Rate: 80%–84.9%	\$34,875	\$35,580	\$36,343	\$37,433	\$38,556
Pass Rate: Below 80%	\$103,334	\$105,422	\$107,684	\$110,915	\$114,242

APPENDIX F

Passenger Comfort and Service Amenities

Performance Requirement	Fiscal Year 2020	Fiscal Year 2021	Fiscal Year 2022	Fiscal Year 2023	Fiscal Year 2024
Vehicle Cleaning Standards					
Class A Cleaning	\$1,148	\$1,171	\$1,196	\$1,232	\$1,269
Class C Cleaning	\$575	\$587	\$600	\$618	\$637
Service Amenities					
Heating, Ventilation, and Air Conditioning System	\$2,297	\$2,343	\$2,393	\$2,465	\$2,539
Door System	\$575	\$587	\$600	\$618	\$637
Lighting System	\$575	\$587	\$600	\$618	\$637
Toilet System	\$862	\$879	\$898	\$925	\$953
Communication System	\$575	\$587	\$600	\$618	\$637

APPENDIX G

Penalty Payment for Train Staffing

Performance Requirement	Fiscal Year 2020	Fiscal Year 2021	Fiscal Year 2022	Fiscal Year 2023	Fiscal Year 2024
Train Staffing	\$862	\$879	\$898	\$925	\$953

APPENDIX H

Incentive Payments for Train Staffing

Ridership Level	Fiscal Year 2021	Fiscal Year 2022	Fiscal Year 2023	Fiscal Year 2024
Low	\$477	\$487	\$502	\$517
Medium	\$954	\$974	\$1,003	\$1,033
High	\$1,432	\$1,463	\$1,507	\$1,552

APPENDIX I

Part Two of Passenger Comfort and Service Amenities

Performance Requirement	Fiscal Year 2020	Fiscal Year 2021	Fiscal Year 2022	Fiscal Year 2023	Fiscal Year 2024
Station Maintenance	\$2,297	\$2,343	\$2,393	\$2,465	\$2,539
Snow and Ice Removal	\$1,148	\$1,171	\$1,196	\$1,232	\$1,269
Fare Collection	\$575	\$587	\$600	\$618	\$637