BUS AND LIGHT RAIL TRAIN OPERATOR SAFETY

REGIONAL TRANSPORTATION DISTRICT

PERFORMANCE AUDIT SEPTEMBER 2015



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September 30, 2015

Members of the Legislative Audit Committee:

This report contains the results of a performance audit of the Regional Transportation District (RTD). The audit was conducted pursuant to Section 32-9-115(3), C.R.S., which requires the State Auditor to conduct a performance audit of RTD at least once every 5 years. The Office of the State Auditor contracted with Two Hills Accounting & Consulting, P.C., to conduct this audit. The report presents our findings, conclusions, and recommendations, and the responses of the Regional Transportation District.

Sincerely,

Two Hills Accounting & Consulting, P.C.

This c. Hill

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REPORT HIGHLIGHTS

Bus and Light Rail Train Operator Safety Performance Audit, September 2015

Regional Transportation District

AUDIT CONCERN

The Regional Transportation District (RTD) needs to improve its oversight of compliance with safety requirements by vehicle operators, particularly with respect to bus operators employed by private carriers under contract with RTD.

KEY FACTS AND FINDINGS

- Electronic Device Use While Driving. RTD took disciplinary action against 16 out of 19 operators for violations of restrictions on the use of electronic devices while driving. (Three cases remained open at the time of the audit work.) RTD did not terminate employment in any of the 16 closed cases, and the disciplinary actions taken appear inconsistent or insufficient given the nature of the violations. RTD took harsher action in some cases than on others that appear to involve the same fundamental violation. Further, RTD's general classification system for disciplinary action does not appear to adequately reflect the public safety risks that use of an electronic device creates.
- **Fitness for Service.** One quarter of the private carriers' files we reviewed lacked documentation required to substantiate operators' fitness for service. We reviewed a sample of 511 operators. Multiple documents were missing for some operators. Specifically, motor vehicle records were missing for 28 operators; current driver's licenses were missing for 17 operators; current medical certificates were missing for 11 operators; documentation of a criminal background check was missing for 19 operators, and required annual driver certifications were missing for 116 operators.
- Hours of Duty. During a 1-month review period, we identified a total of 547 operator days (3 percent) where the private carrier operator exceeded the federal limit of 70 hours on duty within an 8-day period. A total of 107 operators were responsible for the 547 operator days that exceeded the 70-hour limit.
- Drug and Alcohol Screening. Private carriers were unable to provide drug and alcohol screening test results and other required documentation for 47 of 320 sampled operators (15 percent). Test results were missing for six tests, and a required Custody and Control Form was missing for 41 tests.

BACKGROUND

- RTD is statutorily charged with developing, maintaining, and operating a public mass transportation system for the benefit of the communities within its service boundaries.
- About 57 percent of Colorado's total population resides within RTD's boundaries.
- RTD had approximately 105 million passenger boardings in Calendar Year 2014.
- RTD contracts with private carriers to operate a significant portion of its bus route services.
 In Fiscal Year 2014, RTD spent about \$115 million on contracted services, or about 16 percent of its total expenses of \$735 million.
- Bus and light rail train operators must adhere to federal and state regulations, as well as policies and procedures established by RTD, related to the safe operation of buses and light rail trains.

KEY RECOMMENDATIONS

- RTD should improve efforts to ensure that bus and light rail train operators comply with restrictions on the use of electronic devices.
- RTD should improve its oversight and monitoring to ensure private carriers' full compliance with federal regulations and contract provisions relating to bus operator safety.

RTD agreed with these audit recommendations.

Recommendation Locator

Agency Addressed: Regional Transportation District (RTD)

Rec.	Page No.	Recommendation Summary	Agency Response	Implementation Date
1	17	RTD should improve efforts to ensure that bus and light rail train operators comply with restrictions on the use of electronic devices. Specifically, RTD should: (a) expand written policies and procedures to specifically outline the disciplinary actions that will be applied when violations of electronic device use restrictions and other distracted driving policies occur, (b) revise accident investigation forms to ensure a more systematic collection of information about operators' use of electronic devices when investigating bus and light rail train accidents, and (c) evaluate whether an on-board video surveillance system is a viable option to improve monitoring of light rail train operators' use of electronic devices.	a. Agree b. Agree c. Agree	a. January 2016 b. January 2016 c. June 2016
2	26	RTD should improve its oversight and monitoring to ensure private carriers' full compliance with federal regulations and contract provisions relating to bus operator safety. At a minimum, RTD should: (a) adhere to established schedules for monitoring fixed-route and paratransit carriers' compliance with operator safety requirements; (b) include procedures to routinely verify, on a test basis, self-reported information and assertions made by the private carriers about their drug and alcohol screening activities to underlying supporting documentation; and (c) include the results of compliance monitoring activities in the periodic reports to the Board of Directors to help identify and address bus operator safety risks at the private carriers.	a. Agree b. Agree c. Agree	a. January 2016 b. January 2016 c. January 2016

Chapter 1

Overview of the Regional Transportation District

The Regional Transportation District (RTD) was created in 1969 as a political subdivision of the State of Colorado. RTD is statutorily charged with developing, maintaining, and operating a public mass transportation system for the benefit of the communities within its service boundaries [Section 32-9-107, C.R.S.]. RTD's mission is to meet constituents' present and future public transit needs by providing safe, clean, reliable, courteous, accessible, and cost-effective services throughout its service area.

As a local government entity, RTD operates separately from Colorado state government. RTD is governed by a 15-member, publicly elected Board of Directors (Board). Directors are elected to serve 4-year terms. The Board is responsible for setting policy, overseeing RTD's annual budget, and establishing short and long-term transit goals and plans in coordination with local, state, and federal agencies. The Board also hires a General Manager who serves as RTD's chief executive officer. The General Manager oversees RTD's operations, which fall under eight departments: Bus Operations; Rail Operations; Safety, Security, & Facilities; Communications; Planning; Finance & Administration; General Counsel; and Capital Programs.

Bus and Light Rail Services

As of January 2015, RTD's boundaries covered approximately 2,340 square miles, including all of Jefferson, Boulder, and Denver counties, and portions of Adams, Arapahoe, Broomfield, Douglas, and Weld counties. Over 2.8 million people, or approximately 57 percent of the total population of Colorado, reside within the district. RTD reports it had approximately 344,000 average weekday passenger boardings and approximately 105 million total passenger boardings in Calendar Year 2014.

RTD operates 138 regular fixed local, limited, express, and regional bus routes and six light rail lines. RTD also operates SkyRide routes to Denver International Airport, the free MallRide and MetroRide in Downtown Denver, special bus services for major sporting and other events, Accessa-Ride (e.g., transportation services for individuals with disabilities), and Call-n-Ride (e.g., service for areas lacking fixed-route service). RTD's transportation network includes more than 9,500 bus stops, 46 light rail stations, and 74 Park-n-Ride facilities. RTD's FasTracks project, currently underway, is a comprehensive transit expansion plan to provide additional commuter rail, light rail, and bus rapid transit services.

RTD's active bus fleet totals approximately 1,000 vehicles—about 565 are owned and operated by RTD, and about 435 are owned by RTD and operated by private carriers. RTD's active light rail fleet totals approximately 170 vehicles (train cars). According to its 2014 Comprehensive Annual Financial Report, RTD has approximately 2,600 employees, 1,150 (44 percent) of whom are bus and light rail train operators (operators). RTD also contracts with five private carriers that provide fixed-route, Access-a-Ride, and Call-n-Ride services.

Operating Budget and Revenue

RTD's Fiscal Year 2014 total revenues were about \$938 million and total expenses were about \$735 million. RTD's primary revenue source is a 1 percent sales and use tax levied within the district—0.6 percent is used to fund RTD's base operations and 0.4 percent is used to fund RTD's FasTracks program. RTD's other sources of revenue include passenger fares; federal, state, and local financial assistance (grants and contributions); and advertising, rental, and investment income.

Audit Purpose, Scope, and Methodology

The Colorado Office of the State Auditor contracted with Two Hills Accounting & Consulting, P.C. to conduct this performance audit pursuant to Section 32-9-115(3), C.R.S., which requires the State Auditor to conduct a performance audit of RTD at least once every 5 years. Audit work was performed between April and September 2015 and primarily focused on RTD's activities for Calendar Year 2014. However, in some cases, the audit work included prior and subsequent years to have enough data points on which to form conclusions. We appreciate the cooperation and assistance provided during the audit by RTD's management and staff, as well as the management and staff of RTD's private carriers.

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.

The overall purpose of this audit was to assess and evaluate RTD's efforts to ensure bus and light rail train operator safety in compliance with federal regulations and RTD policies and procedures. Specifically, the objectives of this audit were to determine whether RTD complies with applicable federal regulations and RTD policies and procedures in five key areas:

- Operators' fitness for service.
- Operators' hours of duty.
- Drug and alcohol screening.

- Incidents and accidents involving buses or light rail trains.
- Operators' use of electronic devices while buses or light rail trains are in operation.

To accomplish our audit objectives, we performed the following audit work:

- Reviewed federal and state regulations, RTD's policies and procedures, and the terms of RTD's contracts with its private carriers.
- Interviewed RTD management and staff who have oversight responsibilities for ensuring operator safety, including individuals in charge of bus operations, bus scheduling, light rail operations, drug and alcohol monitoring, contractor monitoring, and human resources.
- Analyzed documentation and data related to RTD-employed operators' pre-employment and ongoing screening for fitness for service, hours of duty, and drug and alcohol screening. We also reviewed documentation and data maintained by RTD related to monitoring of operators' use of electronic devices, monitoring private carriers for compliance with operator safety requirements, and accident/incident investigations and reports.
- Conducted site visits to all five of RTD's private carriers. During the site visits we reviewed
 private carriers' policies and procedures; interviewed management and staff; analyzed
 documentation and data related to operators' pre-employment and ongoing screening for
 fitness for service, hours of duty, and drug and alcohol screening, and accident/incident
 investigations and reports.
- Conducted direct observations of local, express, and regional bus routes; light rail routes; and the free MallRide to monitor operators for electronic device use.
- Reviewed archived video files and other data captured by RTD's on-board bus surveillance system for events involving use of an electronic device. We also reviewed the personnel files documenting any subsequent actions taken by RTD.
- Reviewed best practices and research related to vehicle operator safety published by national organizations, such as the Federal Transit Administration, the Federal Motor Carrier Safety Administration, the American Public Transportation Association, the Transportation Research Board, the National Highway Traffic Safety Administration, and the National Safety Council.

We relied on sampling techniques to support our audit work. We designed our samples to help provide sufficient, appropriate evidence for the purpose of determining compliance with key operator safety requirements that were significant to the objectives of our audit. The sample results are not intended to be projected to the entire population.

We planned our audit work to assess the effectiveness of those internal controls that were significant to our audit objectives. Our conclusions on the effectiveness of those controls, as well as specific details about the audit work supporting our findings, conclusions, and recommendations, are described in Chapter 2 of this report.

The scope of our audit included testing compliance with key operator safety requirements for operators who are RTD employees, as well as for operators who are employees of the private carriers providing transportation services under contract with RTD. We report one audit finding in Chapter 2 related to monitoring of electronic device use by RTD-employed bus and light rail train operators. We also report one audit finding in Chapter 2 related to RTD's monitoring of its private carriers.

Chapter 2

Bus and Light Rail Train Operator Safety

The Regional Transportation District (RTD) provides over 100 million bus and light rail rides to the public each year. Rider safety is dependent on the vehicle operators employed by RTD and by the private carriers with whom RTD contracts for services. In order to provide safe transportation for their passengers, bus and light rail train operators (operators) must adhere to a number of federal and state regulations, as well as policies and procedures established by RTD.

Specifically, operators are required to comply with safety policies and procedures established by the Federal Motor Carrier Safety Administration (FMCSA) and the Federal Transit Administration, both of which are within the U.S. Department of Transportation. Although federal regulations [49 CFR 390.3(f)(2)] provide an exemption from FMCSA requirements for political subdivisions of a state, the State of Colorado has adopted regulations [8 CCR 1507-1] that require all intrastate and interstate motor carriers, commercial vehicles, and drivers thereof operating within the state to comply with many FMCSA requirements. Additionally, RTD has established internal policies and procedures to implement federal regulations and ensure the safety of its bus and light rail train operations. Operators must also comply with applicable state and local traffic laws and commercial driver's license requirements. RTD's light rail functions must comply with federal regulations specific to state safety oversight of "rail fixed guideway systems." Under these regulations, the Colorado Public Utilities Commission serves as the designated state oversight entity that reviews and approves RTD's light rail operations safety and security plan.

Electronic Device Use

Distracted driving includes visual distractions that cause the driver to take his or her eyes off the road, manual distractions that cause the driver to take his or her hands off the wheel, and cognitive distractions that cause the driver to take his or her mind off the task of driving. According to the FMCSA, approximately 60 percent of the 34,500 commercial motor vehicle accidents involving passenger vehicles with fatalities in 2013 had driver-related factors, such as the use of electronic devices or other distractions. A 2009 study sponsored by the FMCSA concluded that texting while driving has the highest crash risk of all forms of distraction. Specifically, the odds of being involved in a safety-critical event (e.g., crashes, near-crashes, crash-relevant conflicts, and unintentional lane deviations) are 23 times greater for commercial motor vehicle drivers who text message while driving than for those who do not. For commercial motor vehicle drivers who dial a mobile phone while driving, the odds of being involved in a safety-critical event are six times greater than for those who do not.

RTD relies on several mechanisms to ensure bus and light rail train operators' compliance with applicable federal regulations and RTD policies restricting the use of electronic devices. First, RTD relies on operators to self-police and voluntarily comply. Second, RTD managers may become aware of operators' improper use of electronic devices through complaints filed through RTD's complaint hotline or their own direct observations. RTD has field supervisors on duty that perform a variety of functions, including periodically boarding buses and trains to check operators' compliance with policies and procedures. RTD also has established a Ride Check Program, in which undercover RTD contract monitors board private carrier buses to identify any safety violations, including improper use of electronic devices. Finally, for bus operations, RTD also relies on a new advanced on-board video surveillance system to help monitor operators' activities and performance, including compliance with restrictions on the use of electronic devices.

In January 2014, RTD contracted with SmartDrive, a third-party vendor, to develop a driver improvement program. As part of this effort, RTD installed additional video cameras in the bus operator cabs that are capable of monitoring operators' activities. Because RTD's bus and light rail operators work under a collective bargaining agreement, RTD worked closely with the Amalgamated Transit Union Division 1001 (Union) to implement the system. The video cameras operate on a continuous recording loop. The system flags and retains 30-second video clips, or "events," when a sharp movement or sudden acceleration or deceleration of the bus occurs in any direction. For example, a bus with sudden braking might trigger an event. Along with the video of the operator, data sensors on the bus record the bus's speed, exact location, and acceleration over the 30-second period of the event. Video clips and data are reviewed by SmartDrive, which documents information, such as the severity of the event, and flags those events involving the use of an electronic device.

After SmartDrive reviews and classifies information about the event, all of the details are posted on a web application available to RTD. A designated RTD supervisor regularly monitors and reviews the posted video clips to identify any events that require coaching or disciplinary action. Events containing confirmed electronic device use are sent to an RTD division supervisor, who, along with human resources personnel, determines the outcome for violations of policies and procedures based on RTD's general disciplinary framework and the parameters of its collective bargaining agreement with the Union:

Class A – The violation is of such severity that the operator may be terminated.

Class B – The violation is serious enough that the operator may be suspended without pay for the first offense.

Class C – The violation is less serious and does not warrant suspension, but the operator may still receive a written reprimand.

Counseling Memo – The violation is less serious and does not rise to the level of a "Class C" violation, but still warrants providing the operator with coaching.

RTD began limited use of the SmartDrive system in November 2014 after installation and testing was completed. In January 2015, RTD started using video obtained through the system to take disciplinary action against RTD-employed operators found to be in violation of electronic device use policies. RTD reported that its implementation of the SmartDrive system has been purposefully incremental. As of August 2015, RTD reports that approximately 55 to 60 percent of all buses owned and operated by RTD had the on-board video surveillance system installed and that it was in the process of equipping its remaining buses with these cameras. Buses that are owned by RTD but are leased and operated by private carriers working under contract with RTD also have on-board video surveillance systems; however, the video is monitored by the private carriers.

WHAT AUDIT WORK WAS PERFORMED AND WHAT WAS THE PURPOSE?

We reviewed FMCSA regulations and RTD's policies and procedures governing the use of electronic devices when bus and light rail train operators are on duty. We also interviewed RTD management and staff to understand the processes for monitoring RTD-employed operators' compliance with electronic device use restrictions, as well as RTD's process for taking disciplinary action against operators who violate such restrictions.

We reviewed video files and other data captured by the SmartDrive system for each of the 19 events involving use of an electronic device that occurred during the 5-month period from January 8, 2015, through June 12, 2015. We also reviewed the personnel files documenting any subsequent actions taken by RTD.

Overall, the purpose of the audit work was to evaluate RTD's efforts to ensure bus and light rail train operators' compliance with FMCSA regulations and RTD's policies and procedures prohibiting the use of electronic devices while operating a bus or light rail train.

HOW WERE THE RESULTS OF THE AUDIT WORK MEASURED?

FMCSA regulations and RTD's policies and procedures outline a number of restrictions on the use of electronic devices by operators of buses and light rail trains:

- Federal regulations [49 CFR 392.80 and 392.82] prohibit either texting or using a handheld mobile telephone while driving a commercial motor vehicle, such as a passenger bus.
- RTD's policies and procedures prohibit employees from using electronic devices while operating an RTD vehicle (bus or light rail train) or performing a safety-critical task. Specifically, RTD's policies and procedures outline the following restrictions and definitions:

- Operators must keep all electronic devices in their possession powered off, not attached or affixed in any way to any part of the person or uniform, not viewable by the public, and stowed out of reach and inaccessible (e.g., stowed in a purse, bag, or backpack) while operating any RTD vehicle intended to carry fare-paying passengers. [RTD Represented Employee's Guidebook, Section 15: Mobile Electronic Devices]
- Employees are prohibited from wearing or using electronic equipment, headsets, or earpieces not issued by RTD while operating an RTD vehicle or while working in the maintenance or rail yard. Prohibited equipment includes, but is not limited to: scanners, cellular telephones, personal audio devices, and personal digital assistants. [RTD Rail Operations Rulebook, Rule 1.9]
- Electronic devices include items such as mobile and cellular phones, pagers, electronic book readers, portable music players, and any other portable or handheld communication, data or entertainment device, whether or not it allows for handsfree or concealed use. [RTD *Trailblazer*, Section III, Part 3, Item 11]
- Operating a bus or train includes driving the vehicle, being in the driver's seat or operator's cab (regardless of vehicle movement), and/or parking or securing the vehicle. [RTD Represented Employee's Guidebook, Section 15: Mobile Electronic Devices]
- Safety-critical tasks are those tasks which, if not performed correctly, increase the
 risk of damage to equipment or injury to a passenger, employee or other person.
 One example of a safety-critical task is operating a handicap accessibility lift. [RTD
 Represented Employee's Guidebook, Section 15: Mobile Electronic Devices]
- Operators are prohibited from engaging in any non-job-related activity while on duty that prohibits or impairs maximum employee performance (e.g., reading, crafting, card playing, etc.) and eating food on a vehicle while in revenue service. [RTD *Trailblazer*, Section I, Part 6, Rule 14]
- Violations of electronic device policies may result in immediate termination of employment. [RTD Represented Employee's Guidebook, Section 15: Mobile Electronic Devices]

Restrictions on operators' use of electronic devices do not apply when the vehicle is in a safe location, fully stopped and secured, and while the operator is out of the vehicle and not performing safety-critical tasks. Operators are also allowed to use an electronic device in the case of an emergency to contact 911 if the radio system is not working.

WHAT PROBLEMS DID THE AUDIT WORK IDENTIFY AND WHY DID THEY OCCUR?

Although relatively new, we found that RTD's use of the SmartDrive system has allowed it to identify and take disciplinary action for violations of electronic device use restrictions. Specifically, there were 19 cases involving use of an electronic device that were identified through the SmartDrive system between January and June 2015, as follows:

- 6 cases in which the operator was using a mobile phone with his or her hands to either text or view applications while the bus was in motion.
- 6 cases in which the operator was using a mobile phone with his or her hands to either text or view applications while the bus was stopped or in the process of stopping at a traffic light.
- 6 cases in which the operator was talking on a mobile phone while the bus was in motion.
- 1 case in which the operator had earphones in his ear while operating the bus, but was not talking on a mobile phone.

As shown in Exhibit 1, RTD took disciplinary action in all 16 of the 19 cases that had been closed (meaning final review of the cases had been completed by RTD) at the time we completed our audit work.

Exhibit 1. Regional Transportation District Disciplinary Actions Taken for Violations of Electronic Device Use Restrictions January Through June 2015

Nature of Violation and Disciplinary Action	Number of Cases
Ear Phones in Ear	
Adverse Write-Up in the Operator's Record	1
Mobile Phone Use – Talking	
3-Day Suspension	4
5-Day Suspension	2
Mobile Phone Use – Texting/Viewing Applications	
20-Day Suspension	5
3-Day Suspension	4
Open Cases ¹	3
Total	19

Source: Two Hills Accounting and Consulting's review of archived surveillance video and RTD personnel files.

¹No final action had been taken as of the end of the review period in June 2015.

RTD's disciplinary actions appear inconsistent or insufficient given the nature of the violations. RTD supervisors took various forms of disciplinary action for each of the cases involving an operator's use of an electronic device that were identified through the SmartDrive system. RTD did not terminate employment in any of the 16 closed cases. Although RTD suspended employees in 15 of the 16 closed cases, RTD took harsher action in some cases than on others that appear to involve the same fundamental violation. For example, RTD imposed 20-day suspensions on five operators who were using mobile phones to text or view applications while the bus was in motion, but imposed only 3-day suspensions on four other operators for the same violation. Further, some of these disciplinary actions do not appear to adhere to verbal agreements RTD reported having reached with the Union. According to RTD, the general framework it uses for taking disciplinary actions against bus and light rail train operators is agreed upon as part of a current 5-year collective bargaining agreement with the Union. The last collective bargaining agreement was signed in March 2013, prior to RTD's implementation of the SmartDrive system. Since a new agreement will not be established until 2017, RTD reports it has a verbal agreement on a 20-day suspension for texting. As noted, the disciplinary action for four of the operators found to be texting are not consistent with this verbal agreement. Overall, we found that RTD's approach to disciplinary action focuses more on making minor distinctions about each situation (e.g., the bus was in motion or not in motion, the operator was using a hands-free device) while missing the

more fundamental problem that none of these operators should have had electronic devices powered on or in their possession while operating their vehicles.

Further, RTD's general classification system for disciplinary action does not appear to adequately reflect the public safety risks that use of an electronic device creates. For example, in one case RTD imposed a 5-day suspension against a bus operator who was talking on a mobile phone while driving 75 miles per hour in a 45-mile-per-hour zone, then terminated the operator 3 months later for absenteeism. The termination appeared to be consistent with RTD's policies for progressive discipline. However, the fact that a short suspension was imposed for a significant safety violation while the employee was later terminated for actions that pose no safety risk demonstrates that RTD's general framework for disciplinary action, as it is currently used to address electronic device use violations, may not ensure that discipline is designed to discourage unsafe driving practices that put the public at risk.

Understanding that RTD's disciplinary framework is negotiated with the Union, RTD needs to work toward expanding its written policies and procedures to specifically outline how an electronic device use violation—whether it is identified through the SmartDrive system or some other method—corresponds to a specific disciplinary action, including what type of violation warrants immediate termination of employment. The written policies and procedures should also outline any mitigating factors, such as whether the electronic device use violation is a first or subsequent offense that should be considered when determining what type of disciplinary action to take.

Other areas of RTD's operator safety programs have a more specific and straightforward approach to disciplinary action and may serve as models for policies related to electronic device use. In the case of drug and alcohol use violations, an operator with a verified positive test result is automatically suspended for a minimum of 20 days and must undergo more frequent drug and alcohol tests upon returning to work. If the operator has a second positive test result, he or she may be terminated. This approach appears to better align disciplinary action with the seriousness of the public safety risks created by bus and light rail train operators who test positive for drug and alcohol use. Bus and light rail train operators who use electronic devices when operating a vehicle pose similar public safety risks. For example, RTD could classify all first-offense electronic device use violations as "Class B" violations resulting in a 20-day suspension and outline certain factors that would automatically elevate a first offense to a "Class A" violation resulting in termination of employment. RTD could classify second offenses at any point in time as "Class A" violations resulting in termination of employment.

Having a more specific and straightforward approach to disciplinary action would help ensure consistency and send a clear message to operators about RTD's and the public's level of tolerance for the use of electronic devices when operating a bus or light rail train. Several other transit agencies have adopted strong, zero-tolerance policies concerning electronic device use. For example, the Maryland Transit Administration (MTA) adopted a zero-tolerance policy in 2010,

under which an employee using any mobile device while operating an MTA vehicle, whether in service or out of service, results in immediate termination. The Washington Metropolitan Area Transit Authority and the Metropolitan Atlanta Rapid Transit Authority have also implemented zero-tolerance policies. Finally, two of RTD's large private carriers have adopted discipline policies that are more stringent than RTD's. For example, one of these private carriers has made any mobile phone use while operating a vehicle a terminable offense. Both private carriers reported having significant drops in their electronic device and/or distracted driving violations as a result.

Lack of Detailed Data on Preventable Accidents. RTD does not systematically collect data on the extent to which electronic device use and other distracted driving may be a contributing factor in its preventable accidents. RTD supervisors complete an accident investigation form that includes a variety of information about each accident, including details about the bus, operator, route, location, weather, type of collision, and a general description of the accident. RTD reported that it instructs supervisors to include in the accident description any potential causes of the accident, including the use of electronic devices. However, the accident investigation form does not include fields to positively confirm whether or not electronic device use was a factor in the accident or the location of electronic devices at the time of the accident, nor are such fields specifically included in RTD's preventable accident database. Although RTD reports that it has not had a preventable accident that it attributes to use of an electronic device since 1999, collecting this additional data point will help ensure the completeness of supervisors' accident investigations related to electronic device use and inform RTD's analysis and reporting on preventable accident statistics. Through more systematic data collection efforts, the Southwest Ohio Regional Transit Authority determined that about 40 percent of its preventable accidents in 2012 involved distracted driving, including use of electronic devices.

By systematically collecting and analyzing data related to electronic device use by bus and light rail train operators, RTD will be able to evaluate whether its monitoring and enforcement efforts are leading to reductions in preventable accidents over time. RTD has performed a similar analysis in the past related to another area of bus safety operations. According to an April 2015 Best Practices Report issued by RTD, its safety officer for bus operations compiled and analyzed data from accident records and identified an increase in right-turn accidents in 2011. In response, RTD conducted a targeted safety campaign that included tying red ribbons to mirrors to remind operators to check them, featuring articles on right-turn accidents in internal newsletters, and including a module on right turns in the annual refresher training course for bus operators. RTD reported a decrease in its preventable accident statistics from 2011 to 2012 as a result of these efforts. RTD could take a similar data-analytic approach with respect to electronic device use.

More Monitoring on Light Rail Trains. RTD performs compliance monitoring of train operators through the use of periodic checks by field supervisors and, in some cases, has been able to use video cameras at the light rail stations to make observations into the operator cab. These types of monitoring have inherent limits, however, since it can be difficult to directly observe the cab of

the train from the passenger compartment and periodic checks do not provide continuous monitoring along the entire route. Currently, none of RTD's light rail trains is equipped with onboard video surveillance cameras in the operator cab. As a result, RTD's ability to monitor light rail train operators for inappropriate use of electronic devices and other distractions is more limited in comparison to RTD's monitoring of bus operators.

The SmartDrive system appears to be a valuable tool for identifying violations of RTD's electronic device use policies, and a similar video surveillance system on light rail trains would provide RTD with an important detection control for its light rail operations. A light rail train may not have the same up-and-down and side-to-side movement as a bus; however, sudden braking of the train, either by the operator or the train's automatic braking system, could trigger an "event" and give RTD managers the ability to review video and other data to determine whether operator distraction appeared to be a cause or contributing factor. According to RTD, light rail trains were not included in the procurement discussions and corresponding budget request in 2014 when SmartDrive was approved for installation on its buses. RTD's Rail Operations Division has not subsequently evaluated installing a similar system on light rail trains, which RTD reports would require a significant financial commitment.

WHY DO THESE PROBLEMS MATTER?

Ensuring bus and light rail train operators' compliance with restrictions on the use of electronic devices is essential for mitigating the risk that accidents, injury, and other damages will occur. Events in other states show that injuries and damages can be significant when accidents do occur. In 2014, a bus driver for the Massachusetts Bay Transport Authority (MBTA) was using his mobile phone and caused an accident with injuries that sent nine passengers to the hospital. A 2009 accident involving the use of a cellphone by an MBTA employee resulted in 40 injuries and \$8.6 million in damages. In 2013, a bus driver working for a private commuter service in New Jersey was talking on a mobile phone and caused an accident in which the bus jumped a curb and killed a child and injured seven bystanders. Ultimately, RTD risks loss of public confidence and ridership unless RTD demonstrates that it is consistently taking the proper steps to help ensure rider safety by effectively curbing operators' misuse of electronic devices.

RECOMMENDATION NO. 1:

The Regional Transportation District should improve efforts to ensure that bus and light rail train operators comply with restrictions on the use of electronic devices. Specifically, RTD should:

a. Expand written policies and procedures to specifically outline the disciplinary actions that will be applied when violations of electronic device use restrictions and other distracted driving policies occur.

- b. Revise accident investigation forms to ensure a more systematic collection of information about operators' use of electronic devices when investigating bus and light rail train accidents. Revise the accident database to include a field that captures information from the investigation form as to whether or not electronic device use was a factor in the accident.
- c. Evaluate whether an on-board video surveillance system is a viable option to improve monitoring of light rail train operators' use of electronic devices.

REGIONAL TRANSPORTATION DISTRICT RESPONSE:

a. Agree. Implementation Date: January 2016.

RTD will expand upon, standardize, and formalize in writing its disciplinary approach regarding violations of electronic device usage, within the parameters of the current Collective Bargaining Agreement, including specific actions that will take place when violations occur.

b. Agree. Implementation Date: January 2016.

While RTD currently does require that all accident investigations include examining if electronic device usage was a contributing factor, RTD will add a written policy and a section to the accident investigation form and the accident database to more effectively formalize and document this process.

c. Agree. Implementation Date: June 2016.

RTD will evaluate whether an on-board video surveillance system is a viable option for light rail trains. In addition, RTD will review other viable options. Monitoring operators' use of electronic devices remains important to us.

Private Carrier Monitoring

RTD contracts with private carriers to operate a significant portion of its bus route services. Section 32-9-119.5(2)(a), C.R.S., allows RTD to contract with private carriers to provide up to 58 percent of its bus service hours. RTD does not contract for light rail services. As of August 2014, approximately 55 percent of RTD's non-rail transit service was delivered by private contractors operating under the auspices and direction of RTD. In Calendar Year 2014, private carriers provided 47 percent of RTD's total fixed-route miles driven and were responsible for at least a portion of the daily schedule on 87 out of 138 (63 percent) of RTD's fixed-route bus services. Approximately 43 percent of the buses owned by RTD are leased to private carriers. In 2014, contracted services, known as "Purchased Transportation," comprised \$115 million, or approximately 16 percent of RTD's total expenses of \$735 million.

Currently, RTD has eight contracts with five private carriers (contractors)—four contracts are for providing fixed-route services, generally considered traditional bus routes, and four contracts are for providing paratransit services such as the Call-n-Ride and Access-a-Ride buses. RTD uses a formal procurement process to obtain private carrier services. This process includes the issuance of a Request for Proposal and a review of proposals by RTD staff. Staff presents its recommendation to RTD's Board of Directors (Board), which makes the final selection.

RTD's Senior Manager of Contracted Services leads the contracted services team, which is responsible for overseeing the private carriers providing fixed-route and paratransit services. In addition to the Senior Manager of Contracted Services, the contracted services team comprises a manager and three staff who monitor fixed-route services, a manager and four staff who monitor American Disabilities Act (ADA) paratransit services, and a manager and one staff who monitor non-ADA paratransit services. The Senior Manager of Contracted Services reports directly to the Assistant General Manager of Bus Operations and provides quarterly updates regarding the results of monitoring activities to the Board via its Operations and Customer Service Committee. Contractually, private carriers are responsible for compliance with federal and state laws and regulations and RTD policies. However, RTD bears the ultimate reputational and operational risk for contractor noncompliance.

WHAT AUDIT WORK WAS PERFORMED AND WHAT WAS THE PURPOSE?

We reviewed federal statutes and regulations, contract provisions, and RTD's and private carriers' policies and procedures to gain an understanding of applicable bus operator safety requirements and how they are met. We interviewed private carrier personnel and analyzed data and documentation maintained by the private carriers that demonstrates their compliance with operator safety requirements in several key areas. We also interviewed RTD personnel and reviewed data and documentation maintained by RTD related to its monitoring and oversight of private carriers.

Overall, the purpose of our audit work was to evaluate the effectiveness of RTD's monitoring and oversight of private carriers' compliance with operator safety requirements. Specifically, we reviewed all five of RTD's private carriers for compliance in the following areas:

- **Fitness for Service.** We selected a statistical random sample of 511 private carrier operators (current and terminated). We reviewed qualification files for the sampled operators to determine if the operator met the fitness-for-service qualifications for operating a commercial motor vehicle.
- Hours of Duty. We obtained and analyzed electronic data on hours of duty for a 1-month sample period covering 1,649 private carrier operators. We judgmentally selected the period from August 15 to September 15, 2014 for five of RTD's private carriers. However, one private carrier implemented a new timekeeping system in August 2014 for its paratransit division, so we selected the period from December 1 to December 31, 2014 for that division. For all five carriers, we selected a 1-month period that encompassed likely high ridership, holidays, and large sporting or other public events that can stress staffing. We designed our analysis to determine compliance with restrictions on operators' hours of duty by identifying as a violation any day during which the operator was on duty driving (known as an "operator day") in excess of the 70-hour, 8-day limit established by federal regulations.
- **Drug and Alcohol Screening**. We reviewed documentation of pre-employment and random drug and alcohol screening for a total of 320 private carrier operators who were identified using two different sampling methodologies as follows:
 - o Pre-Employment Testing. We selected a nonstatistical, systematic sample of 218 private carrier operators by choosing every seventh operator from a list of all 1,487 operators who were employed in 2014.
 - o Random Testing. We selected a nonstatistical, judgmental sample of 102 private carrier operators who were randomly screened for drug and alcohol use in 2014. Specifically, we reviewed all random drug and alcohol tests performed during a 2-month period that we selected judgmentally. Our primary selection criteria was to choose months that may be more prone to impaired driving (e.g., during holiday seasons or large sporting and other public events). To ensure coverage of the entire year, we did not always select the same 2 months for each carrier, nor did we always select consecutive months.

HOW WERE THE RESULTS OF THE AUDIT WORK MEASURED?

In accordance with the terms and conditions of their contracts with RTD, private carriers hold the primary responsibility for complying with federal regulations and contract requirements related to operator safety. Specifically, RTD's private carriers must comply with the following requirements:

- **Fitness for Service.** Federal regulations [49 CFR 391] list specific steps that motor carriers must take to establish a new operator's fitness for service: performing a criminal background check, reviewing the operator's motor vehicle record (i.e., driving history), obtaining a current medical examiner's certificate certifying that the operator is physically qualified to drive a commercial motor vehicle, and verifying that the operator holds a current valid commercial driver's license. On an ongoing basis, motor carriers must conduct annual reviews of each operator's motor vehicle record, as well as verify that the operator has a current medical certificate on file (certificates are valid for a maximum of 2 years) and that the operator continues to maintain a valid commercial driver's license. Operators are also required to complete an annual certification reporting any violations of motor vehicle traffic laws and ordinances (other than those involving only parking) during the preceding 12 months.
- **Hours of Duty.** Federal regulations [49 CFR 395] limit the number of hours that operators of passenger-carrying commercial motor vehicles can drive. Specifically, operators are prohibited from driving after having been on duty for 70 hours within any period of 8 consecutive days. Operator duty time includes all hours from the time a driver begins or is ready to work until he/she is relieved of duty; including time spent driving, inspecting, training, completing drug testing, and any other tasks required by the carrier.
- **Drug and Alcohol Screening.** Federal regulations [49 CFR 382 and 655] specify how and when drug and alcohol screening should be conducted, including pre-employment screening and random screening. Pre-employment screening of new employees may occur at the employee's preferred time within 30 days prior to commencing employment. Potential new hires cannot begin employment without a verified negative test result. For random screening, operators are selected at specific times and are told to report to the testing center (or be tested on the spot if the carrier has the necessary equipment). Carriers must retain documentation of the results of the drug and alcohol screening. The required Federal Drug Testing Custody and Control Form (Custody and Control Form) includes a certification that the screening specimen was collected, labeled, sealed, and processed in accordance with federal requirements.

Under the terms and conditions of their contracts, RTD's private carriers are legally liable for any noncompliance with federal regulations. As the procuring entity, RTD's responsibility is to provide sufficient monitoring to ensure the quality of the services provided by its private carriers and that the private carriers comply with their contractual obligations.

WHAT PROBLEMS DID THE AUDIT WORK IDENTIFY?

Due to a lack of documentary evidence, we were unable to independently verify that private carriers fully complied with operator safety requirements in several key areas, as follows:

- **Fitness for Service.** At least one document required to substantiate fitness for service was missing from private carriers' files for 126 of 511 sampled operators (25 percent). Multiple required documents were missing for some operators. Specifically, we found that motor vehicle records were not on file for 24 operators, a copy of a current driver's license was not on file for 17 operators, a current medical certificate was not on file for 11 operators, documentation of a criminal background check was not on file for 19 operators, and the required annual driver certification was not on file for 116 operators.
- **Hours of Duty.** We identified a total of 547 operator days (3 percent) during the 1-month period under review where the private carrier operator exceeded 70 hours on duty within an 8-day period. A total of 107 operators were responsible for the 547 operator days we identified that exceeded the 70-hour limit.

As shown in Exhibit 2, the 107 operators who exceed the hours-of-duty limits were on duty for an average of 74.4 hours within an 8-day period. Our analysis identified 35 operators who had 8-day hours-of-duty totals exceeding 75 hours, including one operator who was on duty for a total of 89.7 hours within an 8-day period.

In some cases, the data we received from the private carriers did not have the detail necessary to ascertain whether operators' excess hours were spent driving, or if the operator was engaged in a non-driving activity when they exceeded the 70-hour limit. As a result, neither we nor the private carriers could definitively determine in these cases whether the limits were exceeded. We treated each of these operator days as noncompliant with the hours-of-duty restrictions.

Exhibit 2: Regional Transportation District Private Carrier Hours-of-Duty Analysis for a 1-Month Sample Period¹ in Calendar Year 2014

	Carrier Type		Total	
	Fixed-Route	Paratransit	Total	
Total Operator Days ²	12,064	5,625	17,689	
Operator Days With More Than 70 Hours on Duty in 8 Days ²	196	351	547	
Percentage of Operator Days With More Than 70 Hours on Duty in 8 Days	2%	6%	3%	
Operator Days With 70-71 Hours on Duty in 8 Days	90	47	137	
Operator Days With 72-75 Hours on Duty in 8 Days	77	135	212	
Operator Days With More Than 75 Hours on Duty in 8 Days	29	169	198	
Average Hours on Duty (if More Than 70 Hours on Duty in 8 Days)	72.6	75.4	74.4	
Maximum Hours on Duty in 8 Days	87.1	89.7	89.7	

Source: Two Hills Accounting and Consulting's analysis of private carriers' hours-of-duty data.

Exhibit 2 also provides a breakdown by private carrier type. Our analysis shows that despite having approximately half as many operator-days, paratransit carriers were responsible for more than twice as many of the operator days where the operator exceeded the 70-hour limit—351 of 547 operator days (64 percent) for paratransit carriers compared to 196 of 547 operator days (36 percent) for fixed-route carriers. The paratransit carriers also had roughly six times the number of operator days with more than 75-hours on duty within an 8-day period—169 of 198 operator days (85 percent) for paratransit carriers, compared to 29 of 198 operator days (15 percent) for fixed-route carriers.

 Drug and Alcohol Screening. Private carriers were unable to provide test results and other required documentation for 47 of the 320 sampled operator drug and alcohol screening

¹The analysis covered the 1-month period from August 15 through September 15, 2014 for five of RTD's private carriers. However, the paratransit division of one private carrier implemented a new timekeeping system in August 2014 that resulted in unreliable information during the month of roll-out; therefore, we reviewed the 1-month period from December 1 through 31, 2014 for that division.

²The eighth day in the 1-month review period is the first day for which we are able to determine whether the operator was on duty in excess of 70 hours within 8 consecutive days. Therefore, the total operator days listed are those falling between the eighth day and the last day of the observation period (e.g., August 22 through September 15, 2014).

tests we reviewed (15 percent). As shown in Exhibit 3, the test results were missing for six tests, and the required Custody and Control Form was missing for 41 tests.

Exhibit 3: Regional Transportation District					
Private Carrier Drug and Alcohol Screening					
Documentation Review					
Calendar Year 2014					
Carrier Type	Tests Reviewed ¹	Missing Test Results	Missing Custody and Control Form		
Fixed-Route Carriers	131	1 (<1%)	1 (<1%)		
Paratransit Carriers	189	5 (3%)	40 (21%)		
Total	320	6 (2%)	41 (13%)		
Source: Two Hills Accounting and Consulting's review of private carriers' drug					

Source: Two Hills Accounting and Consulting's review of private carriers' drug and alcohol screening records.

¹Includes pre-employment and random drug and alcohol screening tests.

Exhibit 3 also provides a detailed breakdown by private carrier type of the results of our review of drug and alcohol screening documentation for the 320 sampled operators. We found more missing drug and alcohol screening documentation for paratransit carriers than we did for the fixed-route carriers, where we found only one missing test result and one missing Custody and Control Form.

WHY DID THE PROBLEMS OCCUR?

Overall, the problems we identified are strong indicators that RTD's oversight of private carriers is not sufficient to ensure full compliance with key operator safety requirements. Based on our audit work, some of the gaps we found in RTD's monitoring related to operator safety include:

- **Insufficient monitoring of paratransit carriers.** RTD planned to conduct reviews of paratransit carriers' compliance with hours-of-duty requirements in 2014. However, RTD did not complete any of these reviews. Our test work demonstrated that private carriers providing paratransit services had significantly more instances of noncompliance with hours-of-duty requirements than those providing fixed-route services. Paratransit carriers also accounted for the majority of the missing drug and alcohol screening documentation.
- Lack of regular verification of contractor-reported data on drug and alcohol screening. RTD requires private carriers to self-report on their drug and alcohol screening activity and procedures, and RTD completed onsite visits with two private carriers in 2014. However, based on the documentation RTD provided during the audit, these onsite visits consisted primarily of interviews with private carrier staff and did not include procedures to verify self-reported information or assertions made by the private carriers to underlying

supporting documentation. We also note that three of RTD's private carriers did not have onsite visits in 2014. Our test work identified problems with the underlying drug and alcohol screening documentation being maintained by private carriers.

• Limited use of monitoring information to improve safety. RTD staff provide quarterly reports to the Board's Operations and Customer Service Committee. However, the reports submitted in 2014 only focused on trailing performance indicators, such as the number of accidents that occurred. The reports did not contain information about leading indicators, such as the results of reviews for compliance with fitness-for-service, hours-of-duty, operator drug and alcohol screening, or other key operator safety requirements, which can be used to identify and address increased risk of accidents.

Monitoring programs are only effective if they identify noncompliance with applicable requirements and the results are used to bring contractors back into compliance. We recognize that bus operator safety is only one component of RTD's broader monitoring efforts. For example, RTD also monitors private carriers' bus maintenance activities, on-time performance, operator training, and customer complaints. Therefore, RTD will need to evaluate how best to ensure sufficient coverage of private carriers' compliance with bus operator safety requirements within the context of its overall monitoring program.

WHY DO THESE PROBLEMS MATTER?

Gaps in RTD's monitoring of private carriers limits assurances that private carriers are adhering to operator safety requirements and potentially places riders' safety at risk. Specifically:

- Allowing operators to continue driving without verifying all current licensure and medical
 certificates and reviewing all motor vehicle records and traffic violations on an ongoing
 basis increases the risk of having unqualified operators at the wheel. Unqualified operators
 are more likely to be involved in an accident.
- Operators who are on duty for too many hours may become fatigued, which also increases the likelihood for accidents. Limits on the number of hours an operator is allowed to drive are intended to prevent fatigued driving. According to a study published by the FMCSA, 13 percent of commercial motor vehicle drivers were considered to have been fatigued at the time of their crash. Thus, although the 547 operator days are a small percentage of the total number of operator days in the 1-month period we reviewed, each operator day for which the operator exceeds the hours-of-duty limits represents a potentially risky driving situation.
- Missing drug and alcohol screening test results and other related test documentation limits
 private carriers' ability to fully demonstrate that required drug and alcohol screening was
 performed in accordance with federal requirements. Missing test results are of particular

concern because they substantiate whether the operator tested negative for drug or alcohol use.

RTD contracts with private carriers to provide a significant amount of its bus services. However, the casual, or even frequent, rider may not know they are riding on a bus operated by a private carrier. Private carrier-operated buses have the same labeling and appearance as RTD-operated buses. Thus, it is unlikely that the public would not hold RTD at least partially responsible for accidents, injuries, or damages caused by the actions of a private carrier. In fact, provisions in RTD's contracts with its private carriers demonstrate that RTD understands the risks caused to it by private carriers' actions: "The Contractor acknowledges that the faithful compliance with this [contract] is necessary to protect RTD and that any action inconsistent with this [contract] or with any RTD policy and procedure will cause RTD irreparable and continuing harm."

RECOMMENDATION NO. 2:

The Regional Transportation District (RTD) should improve its oversight and monitoring to ensure private carriers' full compliance with federal regulations and contract provisions relating to bus operator safety. At a minimum, RTD should:

- a. Adhere to established schedules for monitoring fixed-route and paratransit carriers' compliance with operator safety requirements.
- b. Include procedures to routinely verify, on a test basis, self-reported information and assertions made by the private carriers about their drug and alcohol screening activities to underlying supporting documentation.
- c. Include the results of compliance monitoring activities in periodic reports to the Board of Directors to help identify and address bus operator safety risks at the private carriers.

REGIONAL TRANSPORTATION DISTRICT RESPONSE:

a. Agree. Implementation Date: January 2016.

RTD will expand its processes to ensure complete adherence to established schedules for fully monitoring fixed-route and paratransit carriers' compliance with operator safety requirements.

b. Agree. Implementation Date: January 2016.

Starting at the end of September 2015, RTD will implement procedures that will routinely verify, on a test basis, self-reported information by the private carriers. Documentation will be reviewed and verified more frequently along with the other aspects of contractors' drug

and alcohol program to ensure full compliance with RTD contract provisions and federal regulations. Full implementation will occur by January 2016.

c. Agree. Implementation Date: January 2016.

RTD will add the results of compliance monitoring activities to its quarterly reporting mechanisms provided to the RTD Board of Directors.