Final Report to

Metropolitan Transit Authority of Harris County

FY05-FY08 Performance Audit: Performance Indicators

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in association with

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I. INTRODUCTION

BOOZ ALLEN HAMILTON WORKED WITH AGENCY STAFF TO CONDUCT THE FY05-FY08 PERFORMANCE AUDIT OF THE METROPOLITAN TRANSIT AUTHORITY OF HARRIS COUNTY

- Quadrennial performance audits of Texas transit agencies are mandated by Section 451.454 of the Texas Transportation Code.

- The purpose of the performance audit is to provide:
  - Evaluative information necessary for state and local officers to perform oversight functions
  - Information useful to the transit agency for improving the efficiency and effectiveness of its operations.

- The performance audit is required to assess the Authority's:
  - Compliance with applicable state law
  - Reporting of specified performance indicators
  - Performance in one of three areas (administration and management, transit operations, or system maintenance). The focus of this audit is system maintenance.

- This report summarizes the results of the performance indicator assessment for Fiscal Years 2005, 2006, 2007 and 2008 – the period from October 1, 2004 through September 30, 2008. The results of the compliance review and the functional review of system maintenance that have also been conducted for this performance audit are presented in separate reports.

THE AUDIT INCLUDES DATA VERIFICATION AND REVIEW OF PERFORMANCE INDICATORS

- Data verification assesses the degree to which data reporting methods conform to State definitions for the statistics used to calculate performance measures.

- Performance indicator validation determines whether each of the following State-mandated indicators is correctly calculated and reported:
  - Operating cost per passenger
  - Operating cost per revenue hour
  - Operating cost per revenue mile
  - Sales and use tax receipts per passenger
  - Fare recovery ratio
  - Average vehicle occupancy
  - On-time performance
  - Accidents per 100,000 total miles
  - Number of miles between mechanical road calls.

- In addition, performance indicator trends have been reviewed and discussed with staff and are highlighted in this report.

THE PERFORMANCE AUDIT TEAM CONDUCTED INTERVIEWS WITH KEY STAFF AND TOURED MAJOR AGENCY FACILITIES

- Interviews were conducted with METRO (i.e., Metropolitan Transit Authority of Harris County) personnel who are knowledgeable of data sources data collection, data reporting and performance trends:
  - Senior Director of Transportation
  - Director of Budget Operations
  - Director of Maintenance Support
  - Manager of Quality Assurance
  - Manager of Scheduling
  - Manager, Operations Management Analysis
  - Manager, Ridership Analysis/Service Evaluation
  - Lead Management Analyst, Office of Management & Budget
  - Maintenance Analyst, Office of Management & Budget
  - Quality Assurance Inspector
  - Sr. Operations Management Analyst
  - Operations Management Analyst.

THE PERFORMANCE AUDIT TEAM ALSO COMPLETED AN EXTENSIVE REVIEW OF DOCUMENTS AND DATA

- Documents reviewed for the performance indicator assessment include:
  - METRO Annual Reports, FY05-FY07
  - METRO Financial Statements, FY05-FY07
  - METRO Business Plans and Budgets, FY07-FY08
  - METRO Year End Financial and Management Reports, FY05-FY08
  - METRO Year End Monthly Board Reports, FY05-FY08
  - METRO National Transit Database Reports, FY05-FY07
  - Database of operating and financial statistics maintained by METRO's Office of Management & Budget
  - Data collection and reporting documents provided by METRO staff.

- The audit team responsible for the performance indicator assessment also visited METRO facilities: METRO offices at the Main Street building and the Kashmere bus operating facility.

METRO PROVIDES BUS, LIGHT RAIL, AND PARATRANSIT SERVICE IN THE HOUSTON METROPOLITAN AREA

- METRO provides transit service in a 1,285-square mile service area that includes the City of Houston, fourteen other municipalities, and portions of adjacent counties. METRO has a nine-member Board of Directors and about 3,500 salaried and hourly employees.
- METRO's bus services carry over 84 million passenger trips annually throughout greater Houston with a fleet of over 1,200 vehicles:
  - METRO has over 100 local and commuter bus routes, 19 transit centers, and 28 park-and-ride lots. METRO also runs some special event services.
  - Bus services are partially directly operated and partially operated under contract. METRO has five operating facilities for its directly operated services (Fallbrook, Polk, West, Hiram Clarke, and Kashmere). Contracted services operate from METRO's Northwest bus operating facility.
- METRORail, METRO's light rail service, began operations in January 2004 and now carries nearly 12 million passenger trips annually with an 18-vehicle fleet. The METRORail line runs 7.5 miles and serves 16 stations, linking Downtown, Midtown, the Museum District, Hermann Park, the Texas Medical Center (TMC), and Reliant Park.
- METROLift, METRO's paratransit service, provides pre-scheduled, curb-to-curb shared-ride transportation for persons with disabilities. METROLift serves about 1.4 million passenger trips annually, augmented by additional taxi service.

METRO HAD SEVERAL MAJOR ACCOMPLISHMENTS DURING THE AUDIT PERIOD

- Since its opening in January 2004, METRORail ridership has exceeded initial projections. METRORail performance is strong and ridership continues to grow, though further growth is constrained by the size of the current fleet.

- In FY2006, METRO had its highest fixed route single-year ridership in its history, due to effective system management, the relocation of Hurricane Katrina evacuees to Houston, and high gasoline prices. METRO's ridership has fallen just slightly since FY2006.

- METRO effectively controlled operating cost growth during the audit period despite significant unit cost changes in fuel, health benefits, and pension benefits. In part, this has been accomplished by making department managers accountable for developing and managing their budgets, including both labor and parts, and by providing tools such as weekly cost variance reports and performance dashboards to manage performance.

- In April 2008, METRO reduced the number of fare payment methods from over 60 to just two: cash and the new METRO Q® fare card. This greatly simplified the fare structure, reduced the extent of fare discounts, and improved farebox recovery.

METRO HAD SEVERAL MAJOR ACCOMPLISHMENTS DURING THE AUDIT PERIOD (CONTINUED)

- In FY2007, METRO began procuring new hybrid-diesel electric buses that have lower fuel consumption and substantially lower tailpipe emissions. Going forward, METRO will replace about 100 buses per year with new hybrid buses.

- METRO accomplished several technology initiatives during the audit period:
  - The Integrated Vehicle Operations Management System (IVOMS), which went into full operation in October 2007, includes automatic vehicle location, vehicle tracking, bus stop annunciation, and transit signal priority.
  - The SAP upgrade, which was completed in November 2008, after the end of the audit period, provides enhanced user reporting and increased flexibility.
  - Zonar, an electronic pre-trip inspection reporting system, is currently being implemented.

- METRO is currently implementing Phase 2 of the METRO Solutions plan, which will expand the METRORail system along five corridors, add new express bus services, and develop a regional network of High-Occupancy Toll (HOT) lanes by converting High-Occupancy Vehicle (HOV) lanes. METRO Solutions Phase 2 is scheduled for complete implementation in 2012, and will include extensive additions to fixed route bus service that will leverage future METRORail extensions and the HOT lane network.

- Consistent improvements to road call performance during the audit period are attributed to improved training and procurement of new vehicles.

- Improved performance is reflected in downward trends in rider complaints.

METRO ALSO ENCOUNTERED CHALLENGES DURING THE AUDIT PERIOD

- When METRO migrated bus on-time performance measurement from manual point checks to electronic IVOMS data, on-time performance appeared to drop significantly. IVOMS provides a different way of obtaining data used to calculate on-time performance, and METRO staff are evaluating the implications of the collection methodology, the resulting data, and their implications for on-time performance reporting. Equally important, however, is METRO's focus on improving on-time performance by identifying and analyzing low performing routes, making changes such as schedule and route adjustments, and using IVOMS to improve service delivery.

- METRO's accidents trended upwards during the audit period. METRO is addressing this by putting new operators through extensive training and providing refresher training to more experienced operators every two years. Video cameras are used as a training aide, by recording operators' movements to examine issues such as speed, cutting corners, etc.

- METRO previously had a maintenance education apprentice development program, which was eliminated due to management and cost concerns. METRO is currently developing an Automotive Service Excellence (ASE) bus mechanic certification program to build on mechanic skill sets.

- METRO's performance analysis and reporting procedures continue to involve some manual processing and reconciliation of data. Staff indicated they would like to continue to better integrate METRO's IT systems, to automate some of the manual processes and streamline reporting procedures.

METRO ALSO ENCOUNTERED CHALLENGES DURING THE AUDIT PERIOD (CONTINUED)

- While METRO's sales and use tax revenue has not yet been appreciably impacted by the economic recession, it is possible that this revenue source will decline with a worsening economy.

THE REMAINING SECTIONS OF THIS REPORT PROVIDE THE RESULTS OF THE PERFORMANCE INDICATOR REVIEW

- **Section II: Compliance with State-Required Data Items** – includes the verification of METRO's compliance with State-mandated data collection and reporting definitions for eleven data items.

- **Section III: State-Required Performance Indicators** – provides an assessment of METRO's performance over the audit period as measured by nine State-mandated performance indicators.

- **Section IV: Findings and Recommendations** – identifies opportunities to improve compliance with State requirements with respect to reporting performance indicators and improving performance trends.

- **Appendix A** – provides the annual data used in calculating the performance indicators as well as the annual performance measures.

- **Appendix B** – provides the performance indicators by mode, including two additional service effectiveness indicators (passengers per revenue hour; passengers per revenue mile) that are frequently reported as a basis for evaluating performance in the transit industry.

II. COMPLIANCE WITH STATE-REQUIRED DATA ITEMS

DATA USED TO DEVELOP STATE-MANDATED PERFORMANCE MEASURES WERE REVIEWED TO ENSURE COMPLIANCE WITH DEFINITIONS AND TO VALIDATE COLLECTION PROCEDURES

- The data items used to calculate the required performance indicators include the following:
  - Operating cost
  - Passenger fare revenues
  - Sales and use tax receipts
  - Passenger trips
  - Revenue vehicle hours
  - Revenue vehicle miles
  - Total vehicle miles
  - Passenger miles
  - Accidents
  - Road calls
  - On-time performance.

- Data were provided by and discussed with METRO staff. The audit team confirmed that collection and reporting procedures provide data that comply with State definitions.

- METRO complies with State reporting requirements for the data items used in the State-required performance measures.

- The definitions and methodologies used by METRO for each data item are described on the following pages.

OPERATING COST

- **Definition** – Operating cost includes an authority's cost of providing public transit service, including the cost of purchased transit service not performed by an authority, but excluding depreciation, amortization and capitalized charges, charter bus operations cost, and costs associated with coordination of carpool and vanpool activities.

- **Methodology** – METRO maintains a computerized chart of accounts suitable to capture expenses and revenues by object class, including wages and salaries, fringe benefits, temporary help and other services, materials and supplies, fuel and utilities, and miscellaneous. Direct expenses are entered directly into appropriate expense accounts for each responsibility center (RC). Labor and parts that are attributed to capital expenses are capitalized, allocated to capital costs, and are not included in operating costs.

  Most RCs are specific to a particular mode (bus, light rail, paratransit). For RCs that cover multiple modes, such as some administrative labor, costs for those RCs are allocated between METRO's service modes based on service quantities that include ridership, vehicle hours, and vehicle miles.

- **Assessment** – METRO is in full compliance with data collection and reporting of operating cost as defined by the State of Texas.

PASSENGER FARE REVENUE

- **Definition** – Passenger fare revenue is defined as revenues provided by passengers of revenue vehicles of an authority or the sponsors of those passengers, and includes revenue received from cash fares, passes, tokens, tickets and route guarantees. Passenger fare revenues exclude charter revenues and non-farebox revenue such as advertising income, interest income and other non-farebox operating sources.

- **Methodology** – METRO collects, counts and reports fare revenue on a daily basis. On buses, registering fareboxes collect cash revenue. For METRORail, cash revenue is collected from ticket vending machines (TVMs) located in rail stations. Paratransit fares are accounted for by the contractor and submitted to METRO on a monthly basis.

  Prior to April 2008, sales of pre-paid fares (including monthly passes, day passes, and other discounted fare media) were tracked separately. In April 2008, METRO eliminated these pre-paid products and introduced the METRO Q® stored value fare card. METRO Q® fare cards can be purchased and reloaded at fare card retailers, the METRO RideStore, or the METRO website. METRO Q® fare cards can also be reloaded at rail TVMs, credit vending machines (CVMs) at park & ride lots, and at on-board METRO Q® fare card reloader machines on buses. Revenue from each of these sources is tracked and recorded separately.

  Revenue for special event bus services are negotiated upfront with other organizations and are recorded separately, on receipt, in sponsored revenue accounts. Revenue from the Texas Medical Center (TMC) is from a negotiated agreement which provides a fixed dollar amount to METRO based on revenue hours of shuttle services provided.

PASSENGER FARE REVENUE (CONTINUED)

- **Assessment** – METRO is in full compliance with data collection and reporting of passenger fare revenue as defined by the State of Texas.

SALES AND USE TAX RECEIPTS

- **Definition** – Sales and use tax receipts of an authority.

- **Methodology** – Harris County, the City of Houston, and 14 cities that comprise the METRO service area collect a one-cent sales tax that is used to fund public transportation and associated improvements. The sales tax applies to certain consumer items and is collected by the State and allocated to METRO on a monthly basis.

- **Assessment** – METRO is in full compliance with data collection and reporting of sales and use tax receipts as defined by the State of Texas.

PASSENGER TRIPS

- **Definition** – Passenger trips are the total of all passenger boardings, including transfers between buses, but excluding charter passengers, and carpool and vanpool passengers whose trips are only coordinated by an authority.

- **Methodology** – During the audit period, METRO's methodology for collecting fixed route bus ridership data changed when automatic passenger counters (APCs) were introduced:
  - Prior to FY2007, passenger trips were counted via electronic registering fareboxes (ERFs). Operators keyed all passenger boardings to ERFs, including passengers with pre-paid fare products and free fare passengers. A 7-day sample was used each month, with additional samples collected for holidays and special days (such as days with a major special event or significant weather impacts). The sample period data was then extrapolated to the full month. Traffic checkers were also used to sample passenger volumes and verify counts derived from registering fareboxes. Validation checks were performed on registering farebox data, and errors and missing data were corrected.
  - In FY2007, METRO conducted parallel ridership counts using ERFs and automatic passenger counters. Since FY2007 to present, 100% of METRO's bus fleet has been equipped with APCs. METRO increased its sample size from 7 days per month to the first 23 days in each month, with adjustments for holidays and special days. The variance between the two ridership counting methods was 1.2% for all of FY2007, with higher variation observed on a month-to-month basis.

PASSENGER TRIPS (CONTINUED)

- **Methodology** (continued)**:**
  - Based on FY2007 results, the Federal Transit Administration (FTA) approved the use of APCs for preparing METRO's ridership data, starting in FY2008. METRO is the first major transit authority to report ridership using APCs on 100% of its fleet (most agencies equip ~15% of their fleets). METRO samples all trips using the first 23 days of each month. A methodology is used to fill in data gaps (such as when operators do not log in correctly) and to extrapolate data to the full month.
  - APCs tend to undercount, not overcount, ridership. METRO uses a process to reconcile for APC undercounting, as determined in cooperation with the APC manufacturer. A series of eight point checks are conducted at major locations on an annual basis to verify boardings and alightings on individual buses.

  For other METRO services, a consistent ridership methodology was used during the audit period:

  - Light Rail: APCs count passengers as they board and alight from each car using a 100% sample. An annual check is done to verify special event ridership and to compare manual counts to APCs.
  - Paratransit: Passenger trips are derived from a 100% count, which is obtained from the scheduling system and adjusted for cancellations and no-shows.
  - Special Events: Special event bus ridership is derived from a 100% count.

- **Assessment** – METRO is in full compliance with data collection and reporting of passenger trips as defined by the State of Texas.

REVENUE VEHICLE HOURS AND MILES

- **Definition** – The total scheduled hours and miles that a revenue vehicle accumulates while in revenue service. A revenue vehicle is one that carries paying passengers in scheduled service and is operated by an authority or as a purchased service. Revenue service means the time that a revenue vehicle is in operation to carry passengers, other than charter passengers.

- **Methodology** – METRO uses different methodologies to collect revenue hours and miles for each mode:
  - Bus: Revenue vehicle hours and miles are developed from scheduled revenue hours and miles from METRO's scheduling system, Trapeze. Dispatchers record adjustments for missed service or detours on a daily basis. Quality Assurance staff verifies data on a monthly basis.
  - Light Rail: Revenue vehicle hours and miles are based on scheduled daily revenue trips, also provided by Trapeze. Adjustments are made for variations to the schedule.
  - Paratransit: Drivers track the time that passengers are on a vehicle, and this is reported as revenue vehicle hours. Revenue vehicle miles are recorded from odometers, and adjusted to exclude deadhead.
  - Special Events: METRO records the revenue vehicle hours/miles for each special event service on an actual basis.

REVENUE VEHICLE HOURS AND MILES (CONTINUED)

- **Assessment** – METRO is in full compliance with data collection and reporting of revenue vehicle hours and miles as defined by the State of Texas.

TOTAL VEHICLE MILES

- **Definition** -- Total vehicle miles are the annual total number of miles for all service directly operated by an authority, including charter service and non-revenue service.

- **Methodology** – METRO uses different methodologies to collect total miles for each mode:
  - Bus: Total vehicle miles are taken via FleetWatch from hubometer readings made by cleaners, which are passed to SAP. This number is compared with a figure calculated by taking the daily fuel load and multiplying it by the average miles per gallon for that vehicle.
  - Light Rail: Total vehicle miles are read manually and keyed into the M4 system.
  - Paratransit: Total vehicle miles are tracked by the contractor, based on odometer readings, and reported to METRO on a monthly basis.
  - Special Events: METRO records the total vehicle miles for each special event service on an actual basis.

- **Assessment** – METRO is in full compliance with data collection and reporting of total vehicle miles as defined by the State of Texas.

PASSENGER MILES

- **Definition** – Passenger miles are derived by multiplying annual unlinked passenger trips by the average distance ridden by passengers during the same time period.

- **Methodology** – METRO reports passenger mile information through procedures specified by FTA National Transit Database (NTD) requirements:
  - Bus: Trips are sampled on a random basis for five different service categories (local, express, employee shuttle, local shuttle, park-and-ride). For the sampled trips, ridecheckers determine average passenger trip lengths. The average trip length is multiplied by the number of passenger boardings for each service category to calculate passenger miles. These calculations meet FTA requirements for sampling accuracy.
  - Light Rail: Passengers are counted using APCs and passenger miles are calculated by multiplying the number of passengers by the average trip length, which is determined by ridecheckers who ride the line from end to end. Passenger miles are regularly compared to historical data.
  - Paratransit: Passenger miles are calculated by multiplying the actual number of passengers (100 percent count) by the average trip length, which is determined from the scheduling database.
  - Special Events: Special event passenger miles are derived from a 100 percent count.

- **Assessment** – METRO is full compliance with data collection and reporting of passenger miles as defined by the State of Texas.

ACCIDENTS

- **Definition** – Accidents include: (1) All collisions that involve an authority's revenue vehicle, other than a lawfully parked revenue vehicle, and that results in property damage, injury, or death; and (2) incidents that result in the injury or death of a person on board or boarding or alighting from an authority's revenue vehicle. The State definition requires agencies to report accidents for directly operated vehicles only.

- **Methodology** – Initial accident data and information are based on reports filed by operators of revenue vehicles and supervisors. These reports are supplemented by reports received from witnesses and claimants. Accidents are divided into collision and non-collision categories with details by accident location, types of collision accidents, and results in terms of personal injuries/deaths and property damage. Final report information is based on the investigations and assessments of METRO's claims representatives and safety personnel.

  METRO maintains records on accidents for directly operated services according to the State definition (including all accidents, regardless of the amount of damage), the old FTA standard in place prior to 2002 (incidents resulting in a fatality, injury, a non-arson fire, or transit property damage valued at greater than $1,000), the new NTD definition established in 2002 (similar to the old FTA standard, with the property damage threshold adjusted to $7,500 or more), and the TxDOT safety oversight definition (specific defined thresholds pertaining to fatalities, injuries, property damage, evacuations, mainline derailments, vehicle collisions, and at-grade crossing collisions).

  Accident data are reported to the METRO Board on a monthly basis, using the old FTA definition of an accident, not the State definition.

ACCIDENTS (CONTINUED)

- **Assessment** – Although METRO does not report accidents by the State definition, the Authority tracks and maintains the data. METRO is therefore in full compliance with data collection and reporting of accidents as defined by the State of Texas.

MECHANICAL ROAD CALLS

- **Definition** – Mechanical road calls are defined as an interruption in revenue service caused by equipment failure of a revenue vehicle that requires assistance from someone other than the vehicle operator before the vehicle can be operated normally. The state definition requires agencies to report road calls for directly operated vehicles only.

- **Methodology** – For bus services, when an operator reports a vehicle problem, dispatch goes through a step-by-step process to diagnose the nature of the problem. If the operator is unable to resolve the issue, a repair truck is sent out. The dispatcher captures the information in SAP, including time of failure, location, and lost time incurred. When the bus goes back to the garage, the maintenance foreman prints out this information and provides it to the mechanic. The mechanic makes repairs and documents the repair work. This information is faxed back to the Quality Assurance (QA) Department each morning to code roadcalls by type and by vehicle.

  As of early 2006, a single QA inspector is responsible for coding bus road call information. This streamlines the process and provides consistency. METRO's road call information is comprehensive and categorized by type, including road calls for mechanical problems, fleet defects and warranty issues. The categorization of road calls assists METRO management. For example, the data are used to compare performance across individual garages using road calls for mechanical problems, but excluding road calls such as fleet defects that are not necessarily under the control of a garage and do not provide a good basis for comparing garage performance. One change made during the audit period was to change warranty road calls to treat them as road calls that are chargeable to the garages.

MECHANICAL ROAD CALLS (CONTINUED)

- **Methodology (continued)** – For light rail service, the rail operator reports any vehicle problem to the Operations Control Center (OCC) to diagnose the nature of the problem. If the operator is unable to continue running the vehicle in revenue service, then the vehicle is taken out of service, appropriate personnel are sent out to remedy the situation, and the OCC initiates a work request for repair work. The rail vehicle maintenance superintendent reviews the work requests and determines which of the service interruptions qualify as mechanical road calls.

- **Assessment** – METRO is in full compliance with data collection and reporting of mechanical road calls as defined by the State of Texas.

ON-TIME PERFORMANCE

- **Definition** – On-time performance means the percentage of revenue vehicle trips that depart from selected locations at a time not earlier than the published departure times and not later than five minutes after the published departure time.

- **Methodology** – For fixed route bus services, METRO's methodology for collecting ridership data changed during the audit period:
  - Through FY05, METRO measured on-time performance based on a sample of 485 time points drawn randomly from all time points for the month, including weekdays, Saturdays, and Sundays, for both directly operated and contracted services. Supervisors checked on-time performance at assigned time points and submitted results to a central point for analysis and reporting.
  - In FY06, METRO began to transition to the IVOMS system (automatic vehicle location, or AVL) to measure on-time performance at designated timepoints listed in the bus schedules. The transition took longer than expected, continuing through FY07, and a new methodology for reporting performance using the IVOMS data was not adopted until October 2007.
  - Since October 2007 (i.e., for FY08), METRO has fully implemented the IVOMS-based on-time reporting methodology. The on-time performance results calculated from IVOMS data are significantly lower than those previously derived from point checks. IVOMS data provide the time that every bus passes a timepoint, generating hundreds of thousands of data points per month. At this time, METRO staff continue to evaluate the anomalies of IVOMS data and the implications of using it to report on-time performance.

ON-TIME PERFORMANCE (CONTINUED)

- **Methodology (continued):** For other METRO services, consistent methodologies were used to calculate on-time performance during the audit period:
  - Light Rail: Scheduled departure times are not published for the light rail system. On-time performance is calculated based on actual vs. scheduled departure times from either end of the line.
  - Paratransit: Internally, on-time performance is reported monthly according to METRO's definition, but is not required according to the state definition since there are no published departure times.

- **Assessment** – METRO is in full compliance with data collection and reporting of on-time performance as defined by the State of Texas.

III. STATE-REQUIRED PERFORMANCE INDICATORS

SYSTEMWIDE AND MODAL PERFORMANCE INDICATORS HAVE BEEN VALIDATED AS A BASIS FOR DETERMING PERFORMANCE TRENDS

- Section 451.454 of the Texas Transportation Code requires that the performance audit include an examination of the following indicators over the audit period:
  - Operating Cost per Passenger, a measure of cost effectiveness
  - Operating Cost per Revenue Hour, a measure of cost efficiency
  - Operating Cost per Revenue Mile, a measure of cost efficiency
  - Sales and Use Tax Receipts per Passenger, an indicator of regional subsidization
  - Fare Recovery Ratio, a measure of the share of operating costs paid by riders
  - Average Vehicle Occupancy, a measure of service productivity
  - On-Time Performance, a measure of service quality
  - Accidents per 100,000 Total Miles, an indicator of system safety
  - Miles between Service Interruptions, a measure of service quality.

- Each of these indicators is discussed in this section. Cost-based indicators have been calculated for METRO services systemwide as well as separately for bus, light rail, and paratransit services.

- Performance indicators were calculated based on verified data and in compliance with State definitions. The raw performance statistics used to calculate the performance indicators are provided in the appendices to this report.

SYSTEMWIDE AND MODAL PERFORMANCE TRENDS HAVE ALSO BEEN REVIEWED TO ASSESS THE EFFECTIVENESS AND EFFICIENCY OF METRO'S TRANSIT OPERATIONS

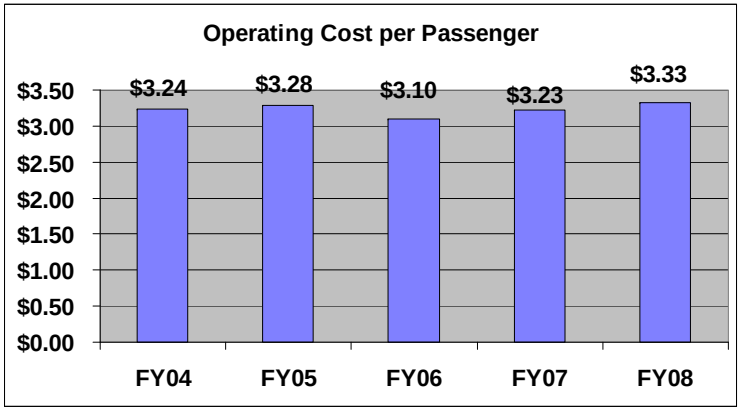
- Performance trends are also discussed in this section. The performance trends cover the period from FY05 through FY08, with FY04 used as a base year to provide a point of reference for the analysis. Cost-based indicators are compared to the change in the CPI-All Urban Consumers for the Houston-Galveston-Brazoria metropolitan area. The growth rates shown correspond to METRO's October 1-September 30 fiscal year.

- The performance trends discussed here provide a high level overview, and have been used as a starting point for the functional review of system maintenance. More in-depth performance indicators and trends specifically pertaining to system maintenance are discussed at a more detailed level in that report.

- Graphs on the following pages show systemwide performance trends for each performance indicator. The mode-specific performance trends discussed in this section are provided in the appendices to this report.

OPERATING COST PER PASSENGER REMAINED STEADY DURING THE AUDIT PERIOD

- Operating cost per passenger is a measure of cost effectiveness:
  - Systemwide operating cost per passenger grew from **$3.24 in FY04** to **$3.33 in FY08**, an increase of just 2.7%. The CPI grew 12.6% from FY04 to FY08.
  - For bus services, including both directly operated and contracted services, operating cost per passenger grew from $3.00 in FY04 to $3.19 in FY08, an increase of 6.2%.



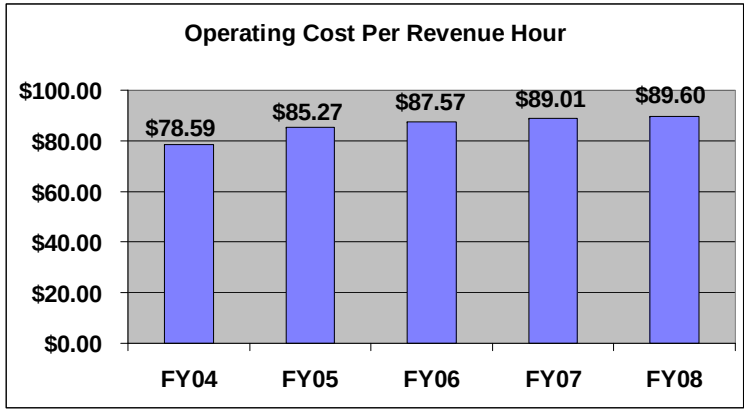
  - Operating cost per passenger for the light rail mode fell from $2.64 in FY04 to $1.78 in FY08, a decrease of 32.5%.
  - For paratransit services, operating cost per passenger grew from $19.42 in FY04 to $24.63 in FY08, an increase of 26.9%.

OPERATING COST PER PASSENGER REMAINED STEADY DURING THE AUDIT PERIOD (CONTINUED)

- The change in operating cost per passenger was a result of these factors:
  - Systemwide operating costs increased just 5.9%, from **$307.5 million in FY04** to **$325.7 million in FY08**, reflecting the steps METRO took during this period to control cost growth.
  - Systemwide passenger trips increased 3.2%, from **94.8 million in FY04** to **97.8 million in FY08**. Overall ridership growth is attributable to light rail, where ridership increased from 5.3 million in nine months of service in FY04 to 11.8 million in FY08. Annual bus ridership fell by about 3.4 million from FY04 to FY08; annual paratransit ridership fell by about 84,000.

OPERATING COST PER REVENUE HOUR INCREASED SOMEWHAT MORE THAN THE INFLATION RATE

- Operating cost per revenue hour is a measure of cost efficiency:
  - Systemwide operating cost per revenue hour grew from **$78.59 in FY04** to **$89.60 in FY08**, an increase of 14.0% that somewhat exceeded the 12.6% growth in the CPI.
  - For directly operated and contracted bus services, operating cost per revenue hour grew from $84.61 in FY04 to $97.06 in FY08, an increase of 14.7%.



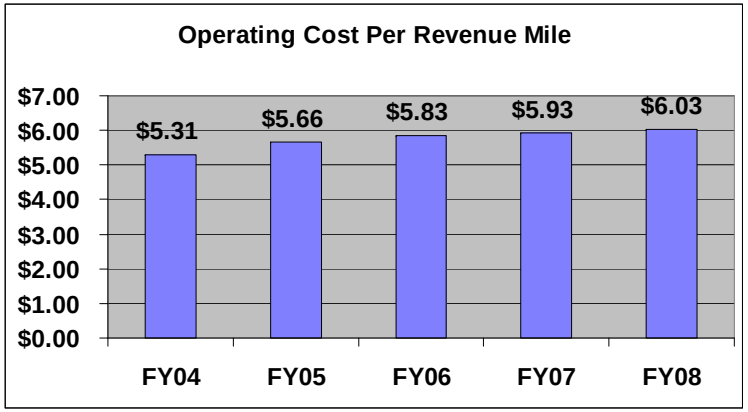
  - Operating cost per revenue hour for the light rail mode fell from $348.77 in FY04 to $332.25 in FY08, a decrease of 4.7%.
  - For paratransit services, operating cost per revenue hour increased from $38.90 in FY04 to $44.09 in FY08, an increase of 13.4%.

OPERATING COST PER REVENUE HOUR INCREASED SOMEWHAT MORE THAN THE INFLATION RATE (CONTINUED)

- The change in operating cost per revenue hour was a result of these factors:
  - As indicated previously, METRO took steps to control systemwide operating costs, which increased just 5.9% from **$307.5 million in FY04** to **$325.7 million in FY08**.
  - Systemwide revenue hours decreased from **3.91 million in FY04** to **3.63 million in FY08**, a decrease of 7.1%. Bus revenue hours were reduced by about 328,000 hours from FY04 to FY05, and have held fairly steady through FY08. Light rail added about 23,000 revenue hours from FY04 to FY08. Paratransit revenue hours grew by about 43,000 from FY04 to FY08.

THE GROWTH IN OPERATING COST PER REVENUE MILE WAS ALSO HIGHER THAN THE GROWTH IN THE CPI

- Operating cost per revenue mile is another measure of cost efficiency:
  - Systemwide operating cost per revenue mile grew 13.6%, from **$5.31 in FY04** to **$6.03 in FY08**, somewhat exceeding the 12.6% growth in the CPI.
  - For directly operated and contracted bus services, operating cost per revenue mile grew from $6.08 in FY04 to $6.83 in FY08, an increase of 12.4%.



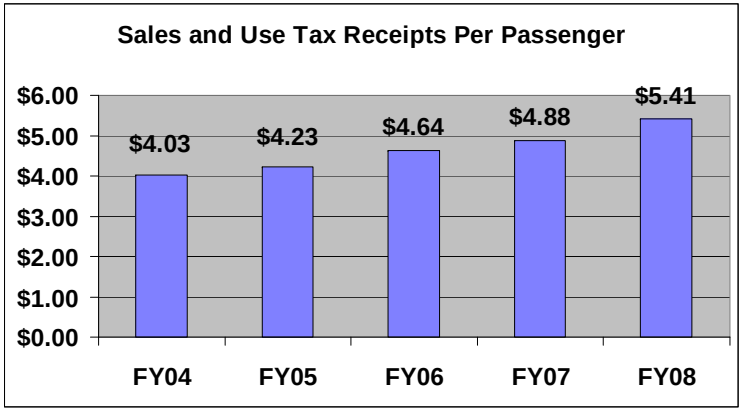
  - Operating cost per revenue mile for the light rail mode fell from $29.55 in FY04 to $26.64 in FY08, a decrease of 9.8%.
  - For paratransit services, operating cost per revenue mile increased from $2.09 in FY04 to $2.54 in FY08, an increase of 21.8%.

THE GROWTH IN OPERATING COST PER REVENUE MILE WAS ALSO HIGHER THAN THE GROWTH IN THE CPI (CONTINUED)

- The growth in operating cost per revenue mile was a result of these factors:
  - As indicated previously, systemwide operating costs increased only 5.9%, from **$307.5 million in FY04** to **$325.7 million in FY08.**
  - Systemwide revenue miles were reduced by 6.7% from **57.9 million in FY04** to **54.0 million in FY08**. Bus revenue miles fell by about 3.7 million from FY04 to FY05, and have held fairly steady since that time. The light rail service added about 311,000 revenue miles from FY04 to FY08. Paratransit revenue miles dropped by about 236,000 from FY04 to FY08.

SALES AND USE TAX RECEIPTS PER PASSENGER BOARDING IMPROVED AS THE LOCAL ECONOMY STRENGTHENED

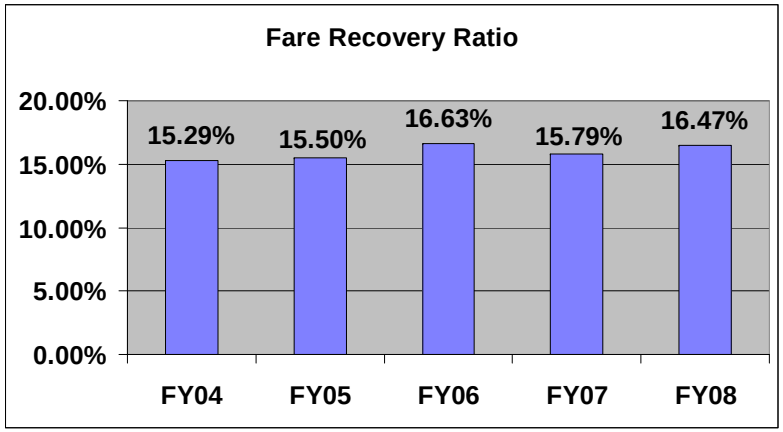
- Sales and use tax receipts per passenger carried is a measure of the regional subsidization of METRO transit services. This measure grew from **$4.03 in FY04** to **$5.41 in FY08**, an increase of 34.4%, compared to the 12.6% increase in the CPI during the same period.



- The trends in sales and use tax receipts per passenger reflect:
  - The growth in sales and use tax receipts, which increased 38.6% from **$381.8 million in FY04** to **$529.3 million in FY08**. Sales receipt growth grew every year during the audit period, with the largest growth occurring in FY06.
  - The 3.2% increase in passenger boardings, from **94.8 million in FY04** to **97.8 million in FY08**. As a result of ridership growth, the regional subsidization per passenger trip increased at a rate that is slightly less than the actual growth rate in sales and use tax receipts.

THE FARE RECOVERY RATE IMPROVED AS THE AMOUNT OF FARE REVENUE INCREASED

- The fare recovery rate is the percentage of METRO's operating costs that are derived from passenger revenues:
  - Systemwide, fare recovery increased from **15.3% in FY04** to **16.5% in FY08**, an increase of 7.7%.
  - For directly operated and contracted bus services, fare recovery increased from 16.4% in FY04 to 17.1% in FY08.

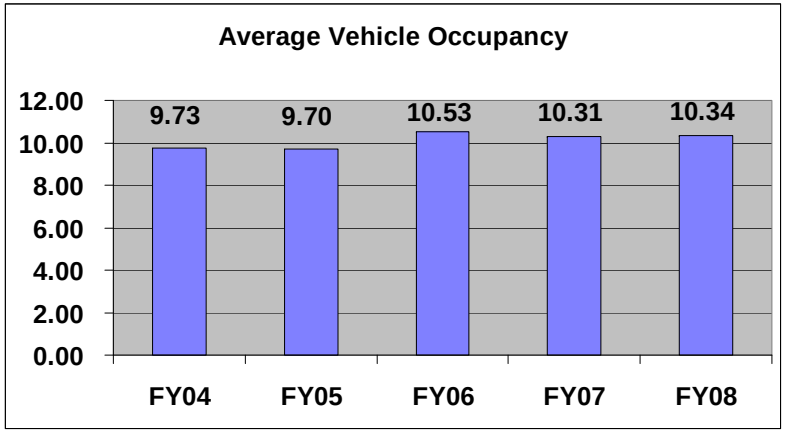


  - Fare recovery for the light rail service increased from 18.1% in FY04 to 30.5% in FY08, indicating that growth in light rail fare revenue greatly exceeded the growth in light rail operating costs.
  - For paratransit services, fare recovery fluctuated, but fell from 3.5% in FY04 to 3.4% in FY08.

- The increase in fare recovery reflects an increase in fare revenue that exceeded the increase in operating costs:
  - Systemwide operating costs increased 5.9%, from **$307.5 million in FY04** to **$325.7 million in FY08.**
  - Systemwide passenger trips increased from 94.8 million in FY04 to 97.8 million in FY08. The ridership growth in conjunction with fare policy changes resulted in a fare revenue increase of 14.1% during the audit period, from **$47.0 million in FY04** to **$53.6 million in FY08.**

AVERAGE VEHICLE OCCUPANCY IMPROVED DURING THE AUDIT PERIOD

- Average vehicle occupancy is an indicator of vehicle utilization and productivity that is measured by dividing total passenger miles by total revenue vehicle miles:
  - Systemwide average vehicle occupancy increased from **9.73 in FY04** to **10.34 in FY08**, an increase of 6.2%.
  - For bus services, average vehicle occupancy increased 6.2%, from 12.19 in FY04 to 12.95 in FY08.



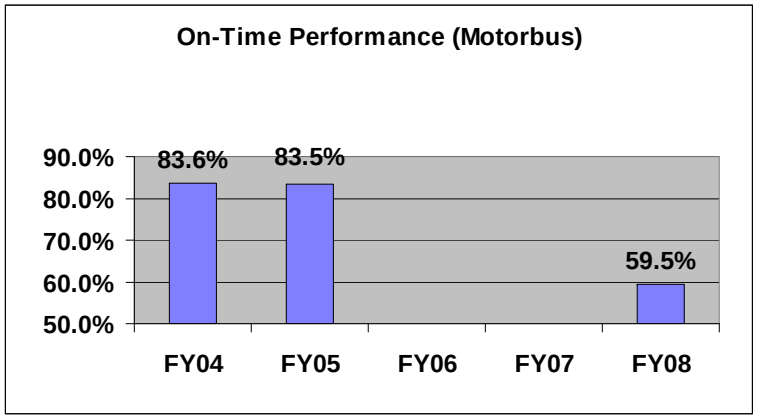
  - Average light rail vehicle occupancy increased from 34.89 in FY04 to 38.59 in FY08, an increase of 10.6%.
  - For paratransit services, average vehicle occupancy fell by less than 1%, from 1.22 in FY04 to 1.20 in FY08.

AVERAGE VEHICLE OCCUPANCY IMPROVED DURING THE AUDIT PERIOD (CONTINUED)

- The increase in average vehicle occupancy was a result of the following factors:
  - Although systemwide boardings increased 3.2% over the audit period, passenger miles declined by just under 1%, from **563.7 million in FY04** to **558.3 million in FY08**. The average passenger trip length fell from 5.9 miles to 5.7 miles.
  - While passenger miles decreased just under 1%, systemwide revenue miles decreased at a faster rate of 6.7%, from **57.9 million in FY04** to **54.0 million in FY08**, resulting in the 6.2% increase in average vehicle occupancy.

REPORTED ON-TIME PERFORMANCE DECLINED DURING THE AUDIT PERIOD DUE TO A CHANGE IN REPORTING METHODOLOGY

- Reported on-time performance for METRO bus services fell from **83.6% in FY04** to **59.5% in FY08.**



- As described in the previous section, METRO's methodology for collecting fixed route bus ridership data changed during the audit period:
  - Through FY05, METRO measured on-time performance based on a time points sampled by Supervisors.
  - In FY06, METRO began to transition to IVOMS to measure on-time performance at designated timepoints. The transition took longer than expected and a new methodology for reporting on-time performance using IVOMS data was not adopted until October 2007. During this time, on-time performance was not reported.
  - For FY08, METRO implemented the IVOMS-based on-time reporting methodology. IVOMS data provide the time that every bus passes a timepoint, generating hundreds of thousands of data points per month and the resulting on-time performance is significantly lower than those previously derived from point checks.

REPORTED ON-TIME PERFORMANCE DECLINED DURING THE AUDIT PERIOD DUE TO A CHANGE IN REPORTING METHODOLOGY (CONTINUED)

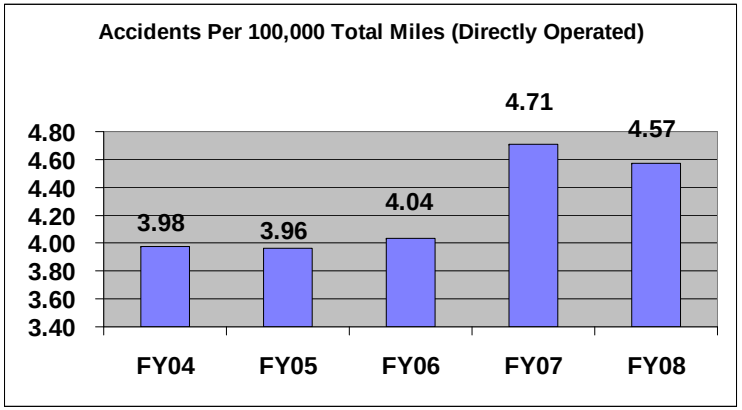
- Because the methodology for determining on-time performance changed during the audit period, and point check data are no longer available, it is not possible to assess the actual change in this indicator during the audit period.

- At this time, METRO staff continue to evaluate the anomalies of IVOMS data and the implications of using it to report on-time performance. As important, however, are METRO's efforts to address and improve on-time performance, by identifying and analyzing low performing routes, making changes such as schedule adjustments and route adjustments, and using IVOMS capabilities and data to improve service delivery.

- For light rail service, on-time performance was **98.6% in FY05 and FY06**, **98.4% in FY07**, and **96.5% in FY08.**

METRO'S ACCIDENT RATE (ACCIDENTS PER 100,000 MILES) INCREASED DURING THE AUDIT PERIOD

- For directly operated service, accidents per 100,000 miles increased from **3.98 in FY04** to **4.57 in FY08**, a 14.9% increase:
  - Total bus accidents on directly operated service declined by 3.6%, from **1,733 in FY04** to **1,671 in FY08**. However, because total bus miles operated fell during the audit period, directly operated bus accidents per 100,000 miles increased 17.1% from 3.88 to 4.54.

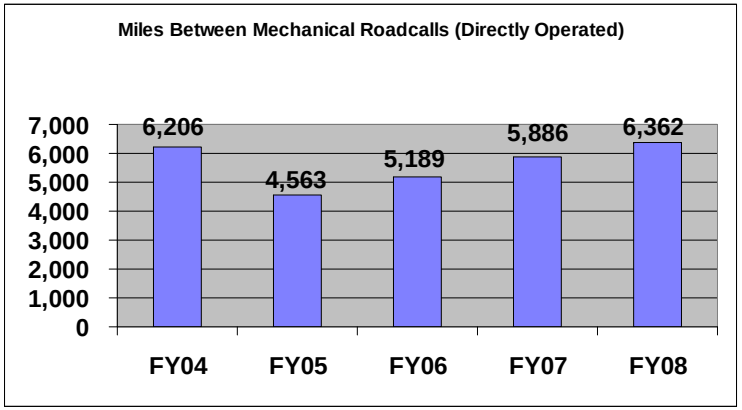


  - Total rail accidents declined by 17.5%, from **63** (for nine months of service) **in FY04** to **52 in FY08**. Because light rail total vehicle miles nearly doubled during the audit period, the light rail accident rate per 100,000 miles dropped 57.1% from 13.16 to 5.64.

- Safety is a major priority for METRO across both bus and light rail services. METRO watches accident trends closely, conducts extensive training for new operators and refresher training for current operators, and also takes other steps to improve safety where feasible (such as improving signaling and installing in-pavement lighting at rail grade crossings).

MILES BETWEEN MECHANICAL ROAD CALLS HAS IMPROVED, PARTICULARLY SINCE FY05

- Miles between mechanical road calls for directly operated services increased from **6,206 in FY04** to **6,362 in FY08**, a 2.5% improvement:
  - The number of mechanical road calls for directly operated bus services increased from 7,264 in FY04 to 8,350 in FY05, but then dropped to 5,793 in FY08. Overall, the number of bus road calls fell 20.3% during the audit period, resulting in a 3.2% improvement in the miles between mechanical road calls indicator.



  - The number of light rail mechanical road calls increased from 12 in FY04 (for nine months of service) to 210 in FY05 (the first full year of revenue service), but since then has dropped to 133 in FY08.

- Replacing older vehicles in the bus fleet, increased road call training, and use of the road call reduction manual by vehicle operators and dispatchers have contributed to the reduction in bus mechanical road calls and the increase in miles between mechanical road calls.

IV. CONCLUSIONS AND RECOMMENDATIONS

METRO IS IN COMPLIANCE WITH DATA VERIFICATION AND PERFORMANCE INDICATOR REPORTING

- The audit team reviewed METRO's data definitions and data collection methodologies to verify that the base data used to develop the State-mandated performance indicators conform to State definitions.

- METRO is in compliance with all data collection and verification requirements. In the case of accidents, METRO uses a different definition for internal reporting, but maintains the data needed to comply with State requirements. Internally, METRO reports accidents using the old FTA definition and the current NTD definition rather than the State's definition of accidents. METRO does track and maintain the State-required accident data and they have been used for this report.

METRO'S FIXED ROUTE PERFORMANCE GENERALLY IMPROVED DURING THE AUDIT PERIOD, WITH THE EXCEPTIONS OF ON-TIME PERFORMANCE AND ACCIDENTS

- Most METRO performance indicators showed improved performance from FY04 to FY08:
  - Bus: Operating cost per passenger increased by only 6.2% during the audit period, compared to the 12.6% growth in the CPI. Operating cost per revenue hour and per revenue mile increased by 14.7% and 12.4%, respectively. Average vehicle occupancy increased 6.2%. Miles between mechanical road calls improved 3.2%.
  - Light Rail: Operating cost per passenger fell by 32.5% during the audit period due to ridership growth that greatly exceeded the increase in operating costs. Operating cost per revenue hour and per revenue mile decreased by 4.7% and 9.8% respectively. Average vehicle occupancy increased by 10.6%, reflecting the capacity constraints light rail is facing.
  - Revenue: Systemwide farebox recovery increased from 15.3% in FY04 to 16.5% in FY08, as fare revenues increased at a faster rate than operating costs. Sales and use tax receipts per passenger trip increased by 34.4%.

- Performance indicators that declined during the audit period include bus on-time performance (from 83.6% in FY04 to 59.5% in FY08, due to a change in the reporting methodology), and the bus accident rate per 100,000 total miles (which increased by 17.1% from FY04 to FY08).

- Paratransit performance fluctuated, but generally declined across the audit period as costs increased while ridership dropped and service levels remained relatively flat.

TWO RECOMMENDATIONS ARE OFFERED FOR METRO'S CONSIDERATION

- Findings from this report indicate both positive performance and opportunities to improve transit service efficiency and productivity.

- This section includes two general recommendations that are intended to help METRO capitalize on improvement opportunities. More specific recommendations are made as part of the system maintenance review, which is the subject of a separate audit report.

- The following recommendations are provided for METRO's consideration:
  - Recommendation #1: Complete the review of the methodology for reporting bus on-time performance and, if appropriate, take steps to improve reporting.
  - Recommendation #2: Continue monitoring the motorbus accident rate and taking steps to improve safety.

- Recommendations are not intended to be viewed negatively, but rather as opportunities for improvement. Recommendations need to be balanced with consideration of METRO's positive performance results during audit review period.

RECOMMENDATION 1: COMPLETE THE REVIEW OF THE METHODOLOGY FOR REPORTING BUS ON-TIME PERFORMANCE AND IF APPROPRIATE, TAKE STEPS TO IMPROVE REPORTING

- **Issues and Opportunities:** Reported on-time performance for METRO motorbus services fell from 83.6% in FY04 to 59.5% in FY08:
  - The decline in on-time performance is a result of METRO's transition from manual point checks to electronic data from the IVOMS AVL system.
  - Because the methodology for determining on-time performance changed during the audit period and parallel records were not maintained, it is not possible to determine whether there was a significant change in on-time performance. METRO staff are evaluating the anomalies of IVOMS data and the implications of using it to report on-time performance. As important, however, are METRO's efforts to address and improve on-time performance, by identifying and analyzing low performing routes, making changes such as schedule adjustments and route adjustments, and using IVOMS capabilities and data to improve service delivery.

- **Recommended Actions:** METRO should complete the evaluation of the methodology for collecting and reporting on-time performance data using IVOMS. This issue has been problematic for three years, first as the data collection methodology changed and more recently, as staff have worked to understand the data and address performance trends indicated by the reporting methodology. Looking forward, it will be important to determine whether the data reported for FY08 (the first full year of reporting using the AVL-based methodology) represents a baseline for the future or whether adjustments are needed to correct data anomalies and the data used to report on-time performance.

RECOMMENDATION 1: COMPLETE THE REVIEW OF THE METHODOLOGY FOR REPORTING BUS ON-TIME PERFORMANCE… (CONTINUED)

- **Expected Results:** Resolving the data issues and making any necessary adjustments to the methodology used in reporting bus on-time performance will permit METRO to identify with confidence the routes and route segments with the most significant schedule adherence issues, and to define strategies that will be effective in addressing on-time performance concerns.

RECOMMENDATION #2: CONTINUE MONITORING THE MOTORBUS ACCIDENT RATE AND TAKING STEPS TO IMPROVE SAFETY

- **Issues and Opportunities:** The motorbus accident rate per 100,000 total miles increased by 17.1% during the audit period, from 3.88 in FY04 to 4.54 in FY08. In FY07, it increased to 4.73 before dropping back to 4.54 in FY08.
- **Recommended Actions:** METRO should continue to watch accident trends closely, on an individual garage and route level basis, in order to identify ways to reduce motorbus accidents and improve safety. This includes conducting extensive training for new operators and refresher training for current operators. This also includes discussing with bus operators techniques to reduce accident risk and the causes of the types of accidents that occur frequently, such as assessing proper speeds and turning movements.
- **Expected Results:** METRO's motorbus accident rate should improve during the next audit period.

APPENDIX A: OPERATING DATA BY PERFORMANCE INDICATOR

INFORMATION IN THIS APPENDIX INCLUDES BOTH OPERATING STATISTICS AND THE PERFORMANCE MEASURES THEY HAVE BEEN USED TO CALCULATE

- This appendix provides the performance data that were verified and the performance measures that were validated for the nine State-mandated performance indicators.

- Each performance indicator has been calculated at the mode level for each of the three services that METRO operates (i.e., bus, light rail, paratransit), as well as at the systemwide level.

OPERATING COST PER PASSENGER

Performance Indicators	Base Year FY04	Audit Review Period FY05	FY06	FY07	FY08	Total Change FY04-FY08
Total State Operating Cost	$307,469,663	$306,011,563	$312,404,940	$319,450,318	$325,693,195	$18,223,532
Percent Change		-0.47%	2.09%	2.26%	1.95%	5.93%
Motorbus Operating Cost	$264,158,545	$256,617,479	$262,461,224	$266,367,585	$269,714,971	$5,556,426
Percent Change		-2.85%	2.28%	1.49%	1.26%	2.10%
Light Rail Operating Cost	$14,134,691	$18,329,310	$17,640,564	$19,357,053	$21,030,633	$6,895,942
Percent Change		29.68%	-3.76%	9.73%	8.65%	48.79%
Paratransit Operating Cost	$29,176,427	$31,064,774	$32,303,152	$33,725,679	$34,947,591	$5,771,164
Percent Change		6.47%	3.99%	4.40%	3.62%	19.78%
Total State Transit Passenger Trips	94,836,634	93,278,374	100,852,789	98,960,714	97,838,818	3,002,184
Percent Change		-1.64%	8.12%	-1.88%	-1.13%	3.17%
Motorbus Passenger Trips	87,984,335	81,540,110	88,033,202	85,811,482	84,620,471	-3,363,864
Percent Change		-7.32%	7.96%	-2.52%	-1.39%	-3.82%
Light Rail Passenger Trips	5,349,727	10,233,638	11,333,099	11,708,959	11,799,700	6,449,973
Percent Change		91.29%	10.74%	3.32%	0.77%	120.57%
Paratransit Passenger Trips	1,502,572	1,504,626	1,486,488	1,440,273	1,418,647	-83,925
Percent Change		0.14%	-1.21%	-3.11%	-1.50%	-5.59%
Total Operating Cost per Passenger	**$3.24**	**$3.28**	**$3.10**	**$3.23**	**$3.33**	**$0.09**
Percent Change		**1.19%**	**-5.58%**	**4.21%**	**3.12%**	**2.68%**
Motorbus Operating Cost per Passenger	$3.00	$3.15	$2.98	$3.10	$3.19	$0.19
Percent Change		4.82%	-5.27%	4.12%	2.68%	6.16%
Light Rail Operating Cost per Passenger	$2.64	$1.79	$1.56	$1.65	$1.78	-$0.86
Percent Change		-32.21%	-13.09%	6.21%	7.81%	-32.54%
Paratransit Operating Cost per Passenger	$19.42	$20.65	$21.73	$23.42	$24.63	$5.22
Percent Change		6.33%	5.26%	7.75%	5.20%	26.87%
Change in Consumer Price Index		**3.41%**	**3.84%**	**1.11%**	**3.72%**	**12.61%**

Source: OMB Database. Excludes charter service and METROVan (now called Star) rideshare data.

OPERATING COST PER REVENUE HOUR

Performance Indicators	Base Year FY04	Audit Review Period FY05	FY06	FY07	FY08	Total Change FY04-FY08
Total State Operating Cost	$307,469,663	$306,011,563	$312,404,940	$319,450,318	$325,693,195	$18,223,532
Percent Change		-0.47%	2.09%	2.26%	1.95%	5.93%
Motorbus Operating Cost	$264,158,545	$256,617,479	$262,461,224	$266,367,585	$269,714,971	$5,556,426
Percent Change		-2.85%	2.28%	1.49%	1.26%	2.10%
Light Rail Operating Cost	$14,134,691	$18,329,310	$17,640,564	$19,357,053	$21,030,633	$6,895,942
Percent Change		29.68%	-3.76%	9.73%	8.65%	48.79%
Paratransit Operating Cost	$29,176,427	$31,064,774	$32,303,152	$33,725,679	$34,947,591	$5,771,164
Percent Change		6.47%	3.99%	4.40%	3.62%	19.78%
Total State Transit Revenue Hours	3,912,538	3,588,930	3,567,433	3,589,010	3,634,879	-277,659
Percent Change		-8.27%	-0.60%	0.60%	1.28%	-7.10%
Motorbus Revenue Hours	3,121,943	2,793,675	2,761,060	2,745,674	2,778,938	-343,005
Percent Change		-10.51%	-1.17%	-0.56%	1.21%	-10.99%
Light Rail Revenue Hours	40,527	57,093	57,659	57,654	63,297	22,770
Percent Change		40.88%	0.99%	-0.01%	9.79%	56.18%
Paratransit Revenue Hours	750,068	738,162	748,714	785,682	792,644	42,576
Percent Change		-1.59%	1.43%	4.94%	0.89%	5.68%
Total Operating Cost per Revenue Hour	**$78.59**	**$85.27**	**$87.57**	**$89.01**	**$89.60**	**$11.02**
Percent Change		**8.50%**	**2.70%**	**1.64%**	**0.67%**	**14.02%**
Motorbus Operating Cost per Revenue Hour	$84.61	$91.86	$95.06	$97.01	$97.06	$12.44
Percent Change		8.56%	3.49%	2.06%	0.04%	14.71%
Light Rail Operating Cost per Revenue Hour	$348.77	$321.05	$305.95	$335.75	$332.25	-$16.52
Percent Change		-7.95%	-4.70%	9.74%	-1.04%	-4.74%
Paratransit Operating Cost per Revenue Hour	$38.90	$42.08	$43.14	$42.93	$44.09	$5.19
Percent Change		8.19%	2.52%	-0.51%	2.71%	13.35%
Change in Consumer Price Index		**3.41%**	**3.84%**	**1.11%**	**3.72%**	**12.61%**

Source: OMB Database. Excludes charter service and METROVan (now called Star) rideshare data.

OPERATING COST PER REVENUE MILE

Performance Indicators	Base Year FY04	Audit Review Period FY05	FY06	FY07	FY08	Total Change FY04-FY08
Total State Operating Cost	$307,469,663	$306,011,563	$312,404,940	$319,450,318	$325,693,195	$18,223,532
Percent Change		-0.47%	2.09%	2.26%	1.95%	5.93%
Motorbus Operating Cost	$264,158,545	$256,617,479	$262,461,224	$266,367,585	$269,714,971	$5,556,426
Percent Change		-2.85%	2.28%	1.49%	1.26%	2.10%
Light Rail Operating Cost	$14,134,691	$18,329,310	$17,640,564	$19,357,053	$21,030,633	$6,895,942
Percent Change		29.68%	-3.76%	9.73%	8.65%	48.79%
Paratransit Operating Cost	$29,176,427	$31,064,774	$32,303,152	$33,725,679	$34,947,591	$5,771,164
Percent Change		6.47%	3.99%	4.40%	3.62%	19.78%
Total State Transit Revenue Miles	57,920,697	54,077,007	53,550,026	53,903,590	54,016,023	-3,904,674
Percent Change		-6.64%	-0.97%	0.66%	0.21%	-6.74%
Motorbus Revenue Miles	43,464,472	39,763,727	39,340,258	39,023,888	39,485,100	-3,979,372
Percent Change		-8.51%	-1.06%	-0.80%	1.18%	-9.16%
Light Rail Revenue Miles	478,398	786,778	794,587	794,603	789,307	310,909
Percent Change		64.46%	0.99%	0.00%	-0.67%	64.99%
Paratransit Revenue Miles	13,977,827	13,526,502	13,415,181	14,085,099	13,741,616	-236,211
Percent Change		-3.23%	-0.82%	4.99%	-2.44%	-1.69%
Total Operating Cost per Revenue Mile	**$5.31**	**$5.66**	**$5.83**	**$5.93**	**$6.03**	**$0.72**
Percent Change		**6.60%**	**3.09%**	**1.58%**	**1.74%**	**13.58%**
Motorbus Operating Cost per Revenue Mile	$6.08	$6.45	$6.67	$6.83	$6.83	$0.75
Percent Change		6.19%	3.38%	2.31%	0.07%	12.39%
Light Rail Operating Cost per Revenue Mile	$29.55	$23.30	$22.20	$24.36	$26.64	-$2.90
Percent Change		-21.15%	-4.70%	9.73%	9.37%	-9.82%
Paratransit Operating Cost per Revenue Mile	$2.09	$2.30	$2.41	$2.39	$2.54	$0.46
Percent Change		10.02%	4.85%	-0.56%	6.21%	21.84%
Change in Consumer Price Index		**3.41%**	**3.84%**	**1.11%**	**3.72%**	**12.61%**

Source: OMB Database. Excludes charter service and METROVan (now called Star) rideshare data.

SALES AND USE TAX RECEIPTS PER PASSENGER TRIP

Performance Indicators	Base Year FY04	Audit Review Period FY05	FY06	FY07	FY08	Total Change FY04-FY08
Sales and Use Tax Receipts	$381,778,025	$394,308,599	$467,812,855	$482,575,708	$529,311,281	$147,533,256
Percent Change		3.28%	18.64%	3.16%	9.68%	38.64%
Total State Transit Passenger Trips	94,836,634	93,278,374	100,852,789	98,960,714	97,838,818	3,002,184
Percent Change		-1.64%	8.12%	-1.88%	-1.13%	3.17%
Sales and Use Tax Receipts per Passenger Trip	**$4.03**	**$4.23**	**$4.64**	**$4.88**	**$5.41**	**$1.38**
Percent Change		**5.01%**	**9.73%**	**5.13%**	**10.94%**	**34.39%**
Change in Consumer Price Index		**3.41%**	**3.84%**	**1.11%**	**3.72%**	**12.61%**

Source: OMB Database (for passenger trips) and Director of Treasury Services (for sales and use tax receipts).
Passenger trips exclude charter service and METROVan (now called Star) rideshare data.

FARE RECOVERY RATE

Performance Indicators	Base Year FY04	Audit Review Period FY05	FY06	FY07	FY08	Total Change FY04-FY08
Total State Operating Cost	$307,469,663	$306,011,563	$312,404,940	$319,450,318	$325,693,195	$18,223,532
Percent Change		-0.47%	2.09%	2.26%	1.95%	5.93%
Motorbus Operating Cost	$264,158,545	$256,617,479	$262,461,224	$266,367,585	$269,714,971	$5,556,426
Percent Change		-2.85%	2.28%	1.49%	1.26%	2.10%
Light Rail Operating Cost	$14,134,691	$18,329,310	$17,640,564	$19,357,053	$21,030,633	$6,895,942
Percent Change		29.68%	-3.76%	9.73%	8.65%	48.79%
Paratransit Operating Cost	$29,176,427	$31,064,774	$32,303,152	$33,725,679	$34,947,591	$5,771,164
Percent Change		6.47%	3.99%	4.40%	3.62%	19.78%
Total State Transit Fare Revenue	$47,020,192	$47,426,244	$51,953,473	$50,441,832	$53,635,313	$6,615,121
Percent Change		0.86%	9.55%	-2.91%	6.33%	14.07%
Motorbus Fare Revenue	$43,439,558	$41,424,616	$45,183,763	$43,617,951	$46,030,473	$2,590,915
Percent Change		-4.64%	9.07%	-3.47%	5.53%	5.96%
Light Rail Fare Revenue	$2,556,171	$5,021,061	$5,633,914	$5,757,599	$6,418,610	$3,862,439
Percent Change		96.43%	12.21%	2.20%	11.48%	151.10%
Paratransit Fare Revenue	$1,024,463	$980,567	$1,135,796	$1,066,282	$1,186,230	$161,767
Percent Change		-4.28%	15.83%	-6.12%	11.25%	15.79%
Total Fare Recovery Rate	**15.29%**	**15.50%**	**16.63%**	**15.79%**	**16.47%**	**1.18%**
Percent Change		**1.34%**	**7.30%**	**-5.05%**	**4.29%**	**7.69%**
Motorbus Fare Recovery Rate	16.44%	16.14%	17.22%	16.38%	17.07%	0.62%
Percent Change		-1.84%	6.65%	-4.88%	4.22%	3.78%
Light Rail Fare Recovery Rate	18.08%	27.39%	31.94%	29.74%	30.52%	12.44%
Percent Change		51.48%	16.59%	-6.87%	2.61%	68.77%
Paratransit Fare Recovery Rate	3.51%	3.16%	3.52%	3.16%	3.39%	-0.12%
Percent Change		-10.10%	11.39%	-10.08%	7.36%	-3.33%

Source: OMB Database. Excludes charter service and METROVan (now called Star) rideshare data.

AVERAGE VEHICLE OCCUPANCY

Performance Indicators	Base Year FY04	Audit Review Period FY05	FY06	FY07	FY08	Total Change FY04-FY08
Total State Passenger Miles	563,658,067	524,688,324	563,835,285	555,601,603	558,270,230	-5,387,837
Percent Change		-6.91%	7.46%	-1.46%	0.48%	-0.96%
Motorbus Passenger Miles	529,970,786	481,672,031	518,256,991	508,363,077	511,267,187	-18,703,599
Percent Change		-9.11%	7.60%	-1.91%	0.57%	-3.53%
Light Rail Passenger Miles	16,691,148	26,414,043	29,251,862	30,221,994	30,456,206	13,765,058
Percent Change		58.25%	10.74%	3.32%	0.77%	82.47%
Paratransit Passenger Miles	16,996,133	16,602,250	16,326,432	17,016,532	16,546,837	-449,296
Percent Change		-2.32%	-1.66%	4.23%	-2.76%	-2.64%
Total State Transit Revenue Miles	57,920,697	54,077,007	53,550,026	53,903,590	54,016,023	-3,904,674
Percent Change		-6.64%	-0.97%	0.66%	0.21%	-6.74%
Motorbus Revenue Miles	43,464,472	39,763,727	39,340,258	39,023,888	39,485,100	-3,979,372
Percent Change		-8.51%	-1.06%	-0.80%	1.18%	-9.16%
Light Rail Revenue Miles	478,398	786,778	794,587	794,603	789,307	310,909
Percent Change		64.46%	0.99%	0.00%	-0.67%	64.99%
Paratransit Revenue Miles	13,977,827	13,526,502	13,415,181	14,085,099	13,741,616	-236,211
Percent Change		-3.23%	-0.82%	4.99%	-2.44%	-1.69%
Total Average Vehicle Occupancy	**9.73**	**9.70**	**10.53**	**10.31**	**10.34**	**0.60**
Percent Change		**-0.30%**	**8.52%**	**-2.11%**	**0.27%**	**6.20%**
Motorbus Average Vehicle Occupancy	12.19	12.11	13.17	13.03	12.95	0.76
Percent Change		-0.65%	8.75%	-1.11%	-0.60%	6.19%
Light Rail Average Vehicle Occupancy	34.89	33.57	36.81	38.03	38.59	3.70
Percent Change		-3.78%	9.66%	3.31%	1.45%	10.59%
Paratransit Average Vehicle Occupancy	1.22	1.23	1.22	1.21	1.20	-0.01
Percent Change		0.94%	-0.85%	-0.73%	-0.33%	-0.97%

Source: OMB Database. Excludes charter service and METROVan (now called Star) rideshare data.

ON-TIME PERFORMANCE

Performance Indicators	Base Year FY04	Audit Review Period FY05	FY06	FY07	FY08	Total Change FY04-FY08
Motorbus On-Time Performance	83.6%	83.5%	NR	NR	59.5%	-24.1%
Percent Change		-0.12%	n/a	n/a	n/a	-28.83%
Light Rail On-Time Performance	n/a	98.6%	98.6%	98.4%	96.5%	n/a
Percent Change		n/a	0.07%	-0.22%	-1.98%	n/a

Source: OMB Database. Excludes charter service and METROVan (now called Star) rideshare data.
NR: not reported n/a: not available

ACCIDENTS PER 100,000 TOTAL MILES (DIRECTLY OPERATED)

Performance Indicators	Base Year FY04	Audit Review Period FY05	FY06	FY07	FY08	Total Change FY04-FY08
Total Vehicle Miles (Directly Operated)	45,152,993	39,056,728	37,700,732	37,508,577	37,701,807	-7,451,186
Percent Change		-13.50%	-3.47%	-0.51%	0.52%	-16.50%
Motorbus Total Vehicle Miles (Directly Operated)	44,674,089	38,201,598	36,794,492	36,584,227	36,779,485	-7,894,604
Percent Change		-14.49%	-3.68%	-0.57%	0.53%	-17.67%
Light Rail Total Vehicle Miles	478,904	855,130	906,240	924,350	922,322	443,418
Percent Change		78.56%	5.98%	2.00%	-0.22%	92.59%
Total Transit Accidents (Directly Operated)	1,796	1,548	1,522	1,767	1,723	-73
Percent Change		-13.81%	-1.68%	16.10%	-2.49%	-4.06%
Motorbus Accidents (Directly Operated)	1,733	1,507	1,479	1,730	1,671	-62
Percent Change		-13.04%	-1.86%	16.97%	-3.41%	-3.58%
Light Rail Accidents	63	41	43	37	52	-11
Percent Change		-34.92%	4.88%	-13.95%	40.54%	-17.46%
Total Accidents per 100,000 Total Miles	**3.98**	**3.96**	**4.04**	**4.71**	**4.57**	**0.59**
Percent Change		**-0.36%**	**1.86%**	**16.69%**	**-2.99%**	**14.90%**
Motorbus Accidents per 100,000 Total Miles	3.88	3.94	4.02	4.73	4.54	0.66
Percent Change		1.69%	1.90%	17.64%	-3.92%	17.12%
Light Rail Accidents per 100,000 Total Miles	13.16	4.79	4.74	4.00	5.64	-7.52
Percent Change		-63.55%	-1.04%	-15.64%	40.85%	-57.14%

Source: Safety & Training Department (for accidents) and OMB Database (for total vehicle miles).

Motorbus data includes directly operated motorbus services only. Excludes charter service and METROVan (now called Star) rideshare data.

MILES BETWEEN MECHANICAL ROADCALLS (DIRECTLY OPERATED)

Performance Indicators	Base Year FY04	Audit Review Period FY05	FY06	FY07	FY08	Total Change FY04-FY08
Total Vehicle Miles (Directly Operated)	45,152,993	39,056,728	37,700,732	37,508,577	37,701,807	-7,451,186
Percent Change		-13.50%	-3.47%	-0.51%	0.52%	-16.50%
Motorbus Total Vehicle Miles (Directly Operated)	44,674,089	38,201,598	36,794,492	36,584,227	36,779,485	-7,894,604
Percent Change		-14.49%	-3.68%	-0.57%	0.53%	-17.67%
Light Rail Total Vehicle Miles	478,904	855,130	906,240	924,350	922,322	443,418
Percent Change		78.56%	5.98%	2.00%	-0.22%	92.59%
Total Mechanical Roadcalls (Directly Operated)	7,276	8,560	7,266	6,372	5,926	-1,350
Percent Change		17.65%	-15.12%	-12.30%	-7.00%	-18.55%
Motorbus Mechanical Roadcalls (Directly Operated)	7,264	8,350	7,005	6,190	5,793	-1,471
Percent Change		14.95%	-16.11%	-11.63%	-6.41%	-20.25%
Light Rail Mechanical Roadcalls	12	210	261	182	133	121
Percent Change		1650.00%	24.29%	-30.27%	-26.92%	1008.33%
Total Miles Between Mechanical Roadcalls	**6,206**	**4,563**	**5,189**	**5,886**	**6,362**	**156**
Percent Change		**-26.48%**	**13.72%**	**13.45%**	**8.08%**	**2.52%**
Motorbus Miles Between Mechanical Roadcalls	6,150	4,575	5,253	5,910	6,349	199
Percent Change		-25.61%	14.81%	12.52%	7.42%	3.23%
Light Rail Miles Between Mechanical Roadcalls	39,909	4,072	3,472	5,079	6,935	-32,974
Percent Change		-89.80%	-14.73%	46.27%	36.54%	-82.62%

Source: OMB Database. Motorbus data includes directly operated motorbus services only. Excludes charter service and METROVan (now called Star) rideshare data.

APPENDIX B: PERFORMANCE DATA BY MODE

THE PERFORMANCE INDICATORS INCLUDED IN THIS SECTION ARE REPORTED BY MODE

- The performance indicators included in this appendix report performance by each of the three modes that METRO operates (i.e., bus, light rail, paratransit).

- In addition to the nine State-mandated performance indicators, two additional performance indicators are included that are often reported as a basis for evaluating performance: passengers per revenue hour and passengers per revenue mile.

PERFORMANCE INDICATORS – BUS

Performance Indicators	Base Year FY04	Audit Review Period FY05	FY06	FY07	FY08	% Change FY04-FY08
Operating Cost	$264,158,545	$256,617,479	$262,461,224	$266,367,585	$269,714,971	2.10%
Passenger Fare Revenues	$43,439,558	$41,424,616	$45,183,763	$43,617,951	$46,030,473	5.96%
Unlinked Passenger Trips	87,984,335	81,540,110	88,033,202	85,811,482	84,620,471	-3.82%
Revenue Vehicle Hours	3,121,943	2,793,675	2,761,060	2,745,674	2,778,938	-10.99%
Revenue Vehicle Miles	43,464,472	39,763,727	39,340,258	39,023,888	39,485,100	-9.16%
Total Vehicle Miles	55,614,322	49,338,421	48,314,459	48,289,095	47,762,569	-14.12%
Passenger Miles	529,970,786	481,672,031	518,256,991	508,363,077	511,267,187	-3.53%
Accidents	1,733	1,507	1,479	1,730	1,671	-3.58%
Mechanical Roadcalls	7,264	8,350	7,005	6,190	5,793	-20.25%
Operating Cost Per Passenger	$3.00	$3.15	$2.98	$3.10	$3.19	6.16%
Operating Cost Per Revenue Hour	$84.61	$91.86	$95.06	$97.01	$97.06	14.71%
Operating Cost Per Revenue Mile	$6.08	$6.45	$6.67	$6.83	$6.83	12.39%
Fare Recovery Ratio	16.44%	16.14%	17.22%	16.38%	17.07%	3.78%
Average Vehicle Occupancy	12.19	12.11	13.17	13.03	12.95	6.19%
On-Time Performance	83.6%	83.5%	NR	NR	59.5%	-28.83%
Accidents Per 100,000 Total Miles	3.88	3.94	4.02	4.73	4.54	17.12%
Miles Between Mechanical Roadcalls	6,150	4,575	5,253	5,910	6,349	3.23%
Passengers Per Revenue Hour	28.18	29.19	31.88	31.25	30.45	8.05%
Passengers Per Revenue Mile	2.02	2.05	2.24	2.20	2.14	5.87%
Percentage Change						
Consumer Price Index (CPI-U)		3.41%	3.84%	1.11%	3.72%	12.61%

Source: OMB Database. Includes contracted motorbus and special event data. Excludes charter service and METROVan (now called Star) rideshare data.

Accident data was provided by the Safety & Training Department.

Accident and mechanical roadcall numbers and performance statistics are for directly operated motorbus services only.

NR: not reported.

PERFORMANCE INDICATORS – LIGHT RAIL

Performance Indicators	Base Year FY04	Audit Review Period FY05	FY06	FY07	FY08	% Change FY04-FY08
Operating Cost	$14,134,691	$18,329,310	$17,640,564	$19,357,053	$21,030,633	48.79%
Passenger Fare Revenues	$2,556,171	$5,021,061	$5,633,914	$5,757,599	$6,418,610	151.10%
Unlinked Passenger Trips	5,349,727	10,233,638	11,333,099	11,708,959	11,799,700	120.57%
Revenue Vehicle Hours	40,527	57,093	57,659	57,654	63,297	56.18%
Revenue Vehicle Miles	478,398	786,778	794,587	794,603	789,307	64.99%
Total Vehicle Miles	478,904	855,130	906,240	924,350	922,322	92.59%
Passenger Miles	16,691,148	26,414,043	29,251,862	30,221,994	30,456,206	82.47%
Accidents	63	41	43	37	52	-17.46%
Mechanical Roadcalls	12	210	261	182	133	1008.33%
Operating Cost Per Passenger	$2.64	$1.79	$1.56	$1.65	$1.78	-32.54%
Operating Cost Per Revenue Hour	$348.77	$321.05	$305.95	$335.75	$332.25	-4.74%
Operating Cost Per Revenue Mile	$29.55	$23.30	$22.20	$24.36	$26.64	-9.82%
Fare Recovery Ratio	18.08%	27.39%	31.94%	29.74%	30.52%	68.77%
Average Vehicle Occupancy	34.89	33.57	36.81	38.03	38.59	10.59%
On-Time Performance	n/a	98.6%	98.6%	98.4%	96.5%	n/a
Accidents Per 100,000 Total Miles	13.16	4.79	4.74	4.00	5.64	-57.14%
Miles Between Mechanical Roadcalls	39,909	4,072	3,472	5,079	6,935	-82.62%
Passengers Per Revenue Hour	132.00	179.25	196.55	203.09	186.42	41.22%
Passengers Per Revenue Mile	11.18	13.01	14.26	14.74	14.95	33.69%
Percentage Change						
Consumer Price Index (CPI-U)		3.41%	3.84%	1.11%	3.72%	12.61%

Source: OMB Database. Accident data was provided by the Safety & Training Department.

PERFORMANCE INDICATORS – PARATRANSIT

Base Data and Performance Indicators	Base Year FY04	Audit Review Period FY05	FY06	FY07	FY08	% Change FY04-FY08
Operating Cost	$29,176,427	$31,064,774	$32,303,152	$33,725,679	$34,947,591	19.78%
Passenger Fare Revenues	$1,024,463	$980,567	$1,135,796	$1,066,282	$1,186,230	15.79%
Unlinked Passenger Trips	1,502,572	1,504,626	1,486,488	1,440,273	1,418,647	-5.59%
Revenue Vehicle Hours	750,068	738,162	748,714	785,682	792,644	5.68%
Revenue Vehicle Miles	13,977,827	13,526,502	13,415,181	14,085,099	13,741,616	-1.69%
Total Vehicle Miles	15,890,816	15,464,255	15,735,037	16,328,781	15,797,165	-0.59%
Passenger Miles	16,996,133	16,602,250	16,326,432	17,016,532	16,546,837	-2.64%
Operating Cost Per Passenger	$19.42	$20.65	$21.73	$23.42	$24.63	26.87%
Operating Cost Per Revenue Hour	$38.90	$42.08	$43.14	$42.93	$44.09	13.35%
Operating Cost Per Revenue Mile	$2.09	$2.30	$2.41	$2.39	$2.54	21.84%
Fare Recovery Ratio	3.51%	3.16%	3.52%	3.16%	3.39%	-3.33%
Average Vehicle Occupancy	1.22	1.23	1.22	1.21	1.20	-0.97%
Passengers Per Revenue Hour	2.00	2.04	1.99	1.83	1.79	-10.66%
Passengers Per Revenue Mile	0.11	0.11	0.11	0.10	0.10	-3.96%
Percentage Change Consumer Price Index (CPI-U)		3.41%	3.84%	1.11%	3.72%	12.61%

Source: Financial data from OMB Database; other data from Transportation Programs Status Report.