

# AN ANALYSIS OF MIAMI-DADE TRANSIT'S OPERATING COST EFFICIENCY

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VOLUME ONE, PEER REVIEW



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**November 07, 2011**

## **Acknowledgements**

The Center for Urban Transportation Research would like to thank staff of the Citizen's Independent Transportation Trust and Miami-Dade Transit for their contributions and assistance during the project.

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## Executive Summary

The Citizen's Independent Transportation Trust (CITT) requested assistance from researchers at the Center for Urban Transportation Research (CUTR) located at the University of South Florida (USF) in the conduct of an objective assessment of the relative efficiency of Miami-Dade Transit (MDT). MDT is the largest transit agency in Miami-Dade County and operates four transportation modes, including Metrorail, Metromover, Metrobus, and Special Transportation System. The MDT Pro Forma, which has been presented publicly on a number of occasions, looks at long term expenses and revenues projected to be available to MDT. The Pro Forma confirms, as payment expenses for bonds increase, the amount of surtax funds available for MDT operations and maintenance reduces significantly. The draft fiscal year 2012 Pro Forma indicates an operating funding gap of approximately \$40 million beginning in 2014.

Financial pressures on all levels of government are a reality in the current economic downturn. The pressures on urban transit operations are no exception, and MDT has struggled with budgetary deficit issues prior to and after adoption of the surtax. Revisions to the original PTP, increasing cost pressures and accumulating debt service are just a few of the factors that require MDT to operate as efficiently as practical.

The CITT contracted with CUTR, through an interlocal agreement, to undertake an operating cost analysis to determine how efficiently MDT was running by means of comparing the agency with peer transit organizations and through a review of the recommendations made during previous studies and analyses performed for the agency that identified potential improvements. The effort included collaborative examination of MDT's efficiency from an operating cost perspective with active participation by CITT and MDT personnel.

This report presents the findings of the assessment of MDT's efficiency in relationship to peer transit agencies. An additional Final Report: Volume Two will report findings related to the documentation and review of previous studies.

CITT required that CUTR incorporate the methodology for screening and selecting peer agencies for comparison as presented in the Transit Cooperative Research Program (TCRP) recently released *TCRP Report 141*. The peer selection methodology incorporates the Web-based Florida Transit Information System (FTIS) software, which provides an interface to the full National Transit Database (NTD).

CITT and MDT staff participated in the process of screening potential peers using common factors that impact performance results between similar agencies, and it was determined that the review would be limited to transit agencies that directly operate service. Fixed-route bus, heavy rail, and automated guideway directly operated by MDT were selected for analysis. Each mode was to be evaluated independently of other modes

The peer-grouping methodology detailed in TCRP Report 141 was applied to each of the three transit modes operated by MDT. Screening criteria related to the operation of a heavy rail system were removed from the screening process to eliminate any potential impact of the operation of a rail system on bus operations. A total likeness score was calculated for each agency using FTIS to identify the

similarity of agencies to MDT. Following the peer grouping process for Metrobus, transit agencies that operated in the north and northeast (north of Baltimore, Maryland) were eliminated from the peer group to achieve a peer group that operated in a climate similar to Miami's. Ten bus peer agencies were selected for comparison. Based on TCRP Report 141, 7 of the 10 peer agencies achieved a total likeness score in the range of 0.50 to 0.74, and, therefore, represented a satisfactory match for the peer review.

The only two automated guideway systems publicly operated were used for Miami's Metromover peer comparison. While neither likeness score was ideal, the comparison did yield performance and trend information specific to the two peer mover systems.

Of the 13 heavy rail peers operating within the U.S., 12 were selected for the Metrorail peer comparison. New York City Transit was excluded from the peer group due to size and a total likeness score of 6.17. The total likeness scores of the 12 heavy rail systems that were selected for inclusion in the peer review ranged from 0.45 to 1.79, with only three agencies achieving a total likeness score in the satisfactory range. Given the higher level of dissimilarity within the heavy rail peer group, as compared to the bus peer group, caution will be exercised in analyzing the comparative data.

Data for MDT and the 24 peer agencies identified for use in the study were assembled from the FTIS system for directly operated service from reporting years 2004 through 2009 for bus, heavy rail, and automated guideway, as directed by CITT. Researchers made every attempt to ensure the integrity of the data used within the analysis. Where discrepancies were identified, researchers relied on data provided in NTD tables. NTD cautions users not to draw conclusions based solely on data contained in the database. In addition, researchers caution that while the NTD reporting process provides agencies with clearly defined parameters for reporting information, some activities are subject to the agency's interpretation of the nature of data requested and reported. Data for 2010 are not yet available from NTD; however, MDT provided researchers with an original set of 2010 NTD data forms that were submitted to NTD, followed by an updated version of the forms that contained a few revisions. While MDT considers the 2010 data to be robust, the data have not yet been published by NTD.

In addition to providing a structure for selection of a peer group, TCRP 141 identifies four primary areas, including cost efficiency; cost effectiveness; labor; and, maintenance, for consideration in comparing an agency's performance to the performance of the peer group. A number of these TCRP Report 141 factors were incorporated in the study along with efficiency and effectiveness measures contained in FTIS.

Each modal review contains an overview of general service metrics to establish the context for MDT's transit operation in comparison to the peer group and a summary of the results of the performance metrics applied to MDT and the peer groups. Individual peer agency data are included to provide context for general service metrics, while performance comparisons are based on the average of the peer group's metrics. Findings in regard to MDT's improved efficiency are summarized at the end of the modal section. An overview of select metrics that provides a side by side look at the performance of MDT's three modes is presented in the final section of the report.

Based on the Metrobus review and analysis of 10 peer agencies, Metrobus served one of the largest populations of the group, and while the Metrobus population grew, it grew at a rate less than the peer group average. Metrobus service area was smaller in size than the peer group average and remained relatively unchanged from 2004 through 2009. Metrobus provided more revenue hours, revenue miles, and passenger miles at a higher total operating cost than the peer group average throughout the period; however, the range of the difference fell slightly beginning in 2008 and declined further in 2009. Metrobus collected significantly more revenue from passenger fares than the peer group average throughout the period and operated more vehicles in maximum service and employed more employee full-time equivalents. The difference between Metrobus and the peer group average for vehicles operated and employees fell in 2008 and 2007, respectively. Despite the fact that the Metrobus fleet was slightly younger, Metrobus reported three times more vehicle system failures than the peer group average.

In relationship to the peer group from a performance perspective, Metrobus reported longer average trips, more passengers per load, and a higher farebox recovery in 2009, continuing trends observed prior to that year. Metrobus reported fewer maintenance employee full-time equivalents per vehicle operated and a lower operating cost per passenger mile than the peer group average in 2009, despite a slight upward trend in these factors compared to 2008. Metrobus fell further below the 2009 peer group average in attaining revenue miles between failures. In terms of operating costs, Metrobus continued to exceed the 2009 peer group average in cost per revenue hour, cost per passenger trip, subsidy per boarding, cost per vehicle operated in maximum service, and vehicle maintenance cost per vehicle mile at levels slightly higher than reported in 2008.

Based on 2010 data assembled to date, Metrobus reported lower operating costs in all areas; fewer maintenance employee full-time equivalents per vehicle operated; and, growth in average trip length, average passenger load, farebox recovery, and revenue miles between failures compared to 2009.

Based on the Metrorail review and analysis of 12 peer agencies, Metrorail served one of the smaller populations of the group, and while the Metrorail population grew, it grew at a rate less than the peer group average. Metrorail service area was smaller in size than the peer group average and remained relatively unchanged from 2004 through 2009. Metrorail consistently provided fewer revenue hours, revenue miles, and passenger miles at a lower total operating cost than the peer group average throughout the period, and the range of the difference grew slightly beginning in 2008. Metrorail collected significantly less revenue from passenger fares than the peer group average throughout the period, operated fewer vehicles in maximum service, and employed fewer employee full-time equivalents. The range of difference between Metrorail and the peer group average for employees and vehicles operated grew in 2007 and 2008, respectively. The Metrorail fleet was slightly older and reported three to four times more vehicle system failures than the peer group average.

In relationship to the peer group from a performance perspective, Metrorail reported longer average trips, continuing a trend observed prior to 2009. Metrorail exceeded the 2009 peer group average in maintenance employee full-time equivalents per vehicle operated and fell well below the 2009 peer group average in attaining revenue miles between failures. In terms of operating costs, Metrorail

continued to exceed the 2009 peer group average in cost per revenue hour, cost per passenger trip, and subsidy per boarding; although, levels were slightly below levels reported in 2008. Vehicle maintenance cost per vehicle mile fell below the 2009 peer group average as did the non-vehicle maintenance cost per transit way mile.

Based on 2010 data assembled to date, Metrorail reported lower operating costs per revenue hour and mile, a lower cost per vehicle operated in maximum service, and a lower non-vehicle maintenance cost per transit way mile as compared to 2009. In 2010 compared to 2009, Metrorail reported fewer maintenance employees per vehicle operated in maximum service, more revenue miles between failures, growth in average trip length, and an increase in farebox recovery.

Based on the Metromover review and analysis of two peer agencies, Metromover served the largest population of the group, and the Metromover population grew at a rate slightly larger than the peer group average. Metromover service area was more than two times the size of the peer group average and remained relatively unchanged from 2005 through 2009. Metromover consistently provided more revenue hours, revenue miles, and passenger miles at a higher total operating cost than the peer group average throughout the period. Metromover offers free passage and, therefore, collected no passenger fare revenue. Metromover operated more vehicles in maximum service and employed more employee full-time equivalents than the peer group average. The range of difference between Metromover and the peer group average for vehicles operated and employees grew in 2009. The Metromover fleet was slightly older until 2009, when Metromover procured new vehicles, which reduced the age of the fleet to almost half of the peer group average. Despite the reduction in age of the fleet, in 2009 Metromover vehicle system failures were more than eight times the peer group average.

In relationship to the peer group from a performance perspective, Metromover reported longer average trips and more passengers per load in 2009, continuing trends observed prior to that year. Metromover exceeded the 2009 peer group average in maintenance employee full-time equivalents per vehicle operated and fell well below the 2009 peer group average in attaining revenue miles between failures. In terms of operating costs, Metromover exceeded the 2009 peer group average operating cost per vehicle operated in maximum service and the non-vehicle maintenance cost per transit way mile, continuing trends observed prior to 2009. Metromover operating cost per revenue hour and mile, operating cost per passenger trip and mile, operating cost per capita, and subsidy per boarding fell below the peer group average throughout the entire period.

Based on 2010 data assembled to date, Metromover reported lower operating costs per revenue hour and mile, lower operating costs per passenger trip and mile, a lower cost per vehicle operated in maximum service, and a lower non-vehicle maintenance cost per transit way mile as compared to 2009. In 2010 compared to 2009, Metromover reported fewer maintenance employees per vehicle operated in maximum service, more revenue miles between failures, growth in average trip length, and a decrease in subsidy per boarding.

## Introduction

The Citizen's Independent Transportation Trust (CITT) requested assistance from researchers at the Center for Urban Transportation Research (CUTR) located at the University of South Florida (USF) in the conduct of an objective assessment of the relative efficiency of Miami-Dade Transit. The CITT was established in July 2002 and was granted certain powers over the use and expenditure of proceeds of the Miami-Dade County (MDC) transit system surtax, and pursuant to Florida Statute 212.055, must assure compliance not only with any limitations imposed in the levy on the expenditure of surtax proceeds but also with any applicable federal and state requirements. MDT, Miami-Dade County Public Works Department, and a number of municipalities within MDC receive surtax proceeds for transit uses, and, therefore, are monitored for compliance by the CITT.

The CITT views partnership and collaboration with MDT as key to success in strengthening the financial outlook and maximizing the service provided to the public. Close coordination and cooperation with MDT staff is particularly important to this study.

MDT is the largest transit agency in Miami-Dade County and operates four transportation modes, including Metrorail, Metromover, Metrobus, and Special Transportation System. MDT is also responsible for construction and equipment programs and projects, which have been financed largely through proceeds of the Charter County System Transit Sales Surtax. The MDT Pro Forma, which has been presented publicly on a number of occasions, looks at long term expenses and revenues projected to be available to MDT. The Pro Forma confirms, as payment expenses for bonds increase, the amount of surtax funds available for MDT operations and maintenance reduces significantly. The draft fiscal year 2012 Pro Forma indicates an operating funding gap of approximately \$40 million beginning in 2014. Analysis of the expense side of the ledger supports the CITT's efforts to help address the projected future gap in MDT operating funds. In conjunction with finding operating efficiencies and controlling costs, closing the funding gap may require continued interagency collaboration for the use of multiple revenue enhancement techniques and sources that fall outside of the scope of this study.

Financial pressures on all levels of government are a reality in the current economic downturn. The pressures on urban transit operations are no exception, and MDT has struggled with budgetary deficit issues prior to and after adoption of the surtax. Revisions to the original PTP, increasing cost pressures and accumulating debt service are just a few of the factors that require MDT to operate as efficiently as practical.

The CITT chose to undertake an operating cost analysis to determine how efficiently MDT was running by means of comparing the agency with peer transit organizations and through a review of the recommendations made during previous studies and analyses performed for the agency that identified potential improvements. The use of comparative data and information is important to all organizations. Standings relative to similar peers and to best practices can add valuable context and affirm beneficial practices. Comparative performance projections and peer performance may reveal organizational challenges as well as areas where innovation is required. Comparative information may also support business analysis and decisions relating to core competencies, partnering, and outsourcing.

Through an interlocal agreement, the CITT contracted with CUTR to perform two primary tasks: to complete an objective assessment of the relative efficiency of MDT and to document actions, activities or policies that have been taken or enacted based on prior work done to assist the agency in creating a more efficient operating environment. The effort included collaborative examination of MDT's efficiency from an operating cost perspective with active participation by CITT and MDT personnel.

This report presents the findings of the assessment of MDT's efficiency in relationship to peer transit agencies. An additional Final Report: Volume Two will report findings related to the documentation and review of previous studies.

## Peer Screening and Selection

The Transit Cooperative Research Program (TCRP) recently released *TCRP Report 141: A Methodology for Performance Measurement and Peer Comparison in the Public Transportation Industry* delineates a specific process for screening and selecting peer agencies. CITT required that CUTR incorporate the TCRP Report 141 methodology in the peer agency selection process. The peer selection methodology incorporates the Web-based Florida Transit Information System (FTIS) software, which provides an interface to the full National Transit Database (NTD) that is maintained by the Federal Transit Administration (FTA). The NTD is a compilation of data from most transit agencies in the United States (U.S.) that operate nine or more vehicles for all modes of transit, excluding commuter rail.

CITT and MDT staff participated in the process for screening potential peers using common factors that impact performance results between similar agencies, as detailed in TCRP Report 141, and it was determined that the review would be limited to transit agencies that directly operate service. Evaluation of cost effectiveness of contracted service, with a heavy emphasis on contract oversight, differs significantly from that used to evaluate directly operated service. In addition, given that data reporting requirements are somewhat limited for purchased service due to the proprietary nature of private contracting, a number of factors fall outside of the analysis process. Fixed-route bus, heavy rail, and automated guideway directly operated by MDT were selected for analysis. Each mode was to be evaluated independently of other modes

The first phase of the TCRP Report 141 peer-grouping methodology incorporates the use of three screening factors that focus on the mix of modes operated and are specific to the operation of rail and heavy rail. The FTIS system is designed to allow the user to include or exclude rail and heavy rail operations from peer-grouping. The next phase of the methodology identifies agencies that are similar to MDT in a variety of characteristics that can impact agency performance. These peer-grouping factors total 14 and include factors such as agency size, urban population, and breadth and type of service provided. FTIS produces a likeness score to identify the level of similarity between a potential peer agency and the target agency (in this case MDT) for each of the peer-grouping factors. A likeness score of "0" indicates that the peer and target agencies are exactly alike. A total likeness score represents the sum of the screening factor scores and peer grouping scores divided by the number of peer grouping factors. A total likeness score of "0" represents a perfect match of agencies. A high total likeness score indicates that the agencies are dissimilar, and the higher the total likeness score, the greater the dissimilarity. TCRP Report 141 offered the following guidelines concerning the significance of the total likeness scores:

- A total likeness score <0.50 indicates a good match
- A total likeness score of 0.50 – 0.74 represents a satisfactory match
- A total likeness score between 0.75 – 0.99 represents potential peers that may be usable, but care should be taken to investigate potential differences that may make them unsuitable
- Peers with scores  $\geq 1.00$  are undesirable due to a large number of differences with the target agency, but may occasionally be the only candidates available to fill out a peer group

The peer-grouping methodology detailed in TCRP Report 141 was applied to each of the three transit modes operated by MDT. The CITT required the evaluation of a minimum a five comparable agencies that operate heavy rail systems, a minimum of five comparable agencies that operate fixed-route bus service, and a minimum of two public agencies that operate automated guideway systems.

### Fixed-route Bus (Metrobus)

Screening criteria related to the operation of a heavy rail system were removed from the screening process to eliminate any potential impact of the operation of a rail system on bus operations. Following the peer grouping process, transit agencies that operated in the north and northeast (north of Baltimore, Maryland) were eliminated from the peer group to achieve a peer group that operated in a climate similar to Miami's. The following ten peer agencies were selected for comparison. Based on TCRP Report 141, 7 of the 10 peer agencies achieved a total likeness score in the range of 0.50 to 0.74, and, therefore, represent a satisfactory match for the peer review.

Fixed-route Bus Peer Agencies	Location	Total Likeness Score
Dallas Area Rapid Transit (DART)	Dallas, TX	0.37
Broward County Transportation Department (BCT)	Pompano Beach, FL	0.52
Washington Metropolitan Area Transit Authority (WMATA)	Washington, DC	0.53
Metropolitan Atlanta Rapid Transit Authority (MARTA)	Atlanta, GA	0.59
Alameda-Contra Costa Transit District (ACCT)	Oakland, CA	0.61
Metropolitan Transit Authority of Harris County (Houston)	Houston, TX	0.69
San Francisco Municipal Railway (MUNI)	San Francisco, CA	0.73
Hillsborough Area Regional Transit Authority (HART)	Tampa, FL	0.95
Bi-State Development Corporation (BiState)	St. Louis, MO	0.97
Maryland Transit Administration (MTA)	Baltimore, MD	0.98

### Automated Guideway (Metromover)

The only two automated guideway systems publicly operated were used for Miami's mover peer comparison. While neither likeness score was ideal, the comparison does yield performance and trend information specific to the two peer systems. The following two peer agencies were selected for comparison.

Automated Guideway Peer Agencies	Location	Total Likeness Score
Detroit Transportation Corporation (DTC)	Detroit, MI	0.77
Jacksonville Transportation Authority (JTA)	Jacksonville, FL	1.38

## Heavy Rail (Metrorail)

Of the 13 heavy rail peers operating within the U.S., 12 were selected for the heavy rail peer comparison. New York City Transit was excluded from the peer group due to size and a total likeness score of 6.17. The total likeness scores of the 12 heavy rail systems that were selected for inclusion in the peer review ranged from 0.45 to 1.79, with only three agencies achieving a total likeness score in the satisfactory range. Given the higher level of dissimilarity within the heavy rail peer group, as compared to the bus peer group, caution will be exercised in analyzing the comparative data. The heavy rail peer agencies selected for comparison are as follows.

Heavy Rail Peer Agencies	Location	Total Likeness Score
Southeastern Pennsylvania Transportation Authority (SEPTA)	Philadelphia, PA	0.45
Metropolitan Atlanta Rapid Transit Authority (MARTA)	Atlanta, GA	0.60
Los Angeles County Metropolitan Transportation Authority (LACMTA)	Los Angeles, CA	0.72
Maryland Transit Administration (MTA)	Baltimore, MD	1.03
Port Authority Transit Corporation (PATC)	Lindenwold, NJ	1.18
Massachusetts Bay Transportation Authority (MBTA)	Boston, MA	1.22
Port Authority Trans-Hudson Corporation (PATHC)	Jersey City, NJ	1.24
Chicago Transit Authority (CTA)	Chicago, IL	1.32
The Greater Cleveland Regional Transit Authority (GCRTA)	Cleveland, OH	1.46
Washington Metropolitan Area Transit Authority (WMATA)	Washington, DC	1.48
Staten Island Rapid Transit Operating Authority (SIRTOA)	Staten Island, NY	1.60
San Francisco Bay Area Rapid Transit District (BART)	Oakland, CA	1.79

## Data Collection and Validation

Data for MDT and the 24 peer agencies identified for use in the study were assembled from the FTIS system for directly operated service from reporting years 2004 through 2009 for bus, heavy rail, and automated guideway, as directed by CITT. In addition to providing the software necessary to screen and group peers, the FTIS system enables the user to access NTD data through a series of forms and reports. FTIS provides access to the NTD data reporting forms used by transit agencies to transfer data to NTD. FTIS also provides users with reports that contain service data in the form of general indicators and effectiveness and efficiency measures, which are automatically calculated for the user. Data for all years and modes are available for each agency. Reports can provide the user with a view of a specific agency over a six-year period or a comparison of seven selected agencies on an annual basis and can be downloaded by the user for individual use.

Researchers made every attempt to ensure the integrity of the data used within the analysis. Several inconsistencies were noted in data reported in FTIS reports, FTIS forms, and NTD tables. For some factors, FTIS reports only composite data (e.g., total operating expense), requiring the user to access

either forms or NTD to obtain additional detail (e.g., vehicle operations and vehicle maintenance expenses). Where discrepancies were identified, researchers relied on data provided in NTD tables. NTD provides the following caution regarding use of the database:

*“CAUTION: Extensive efforts have been made to assure the quality of information contained in this report. It is impossible, however, to achieve complete accuracy and consistency of the reported data. In addition, the reported data do not include all relevant information generally necessary to explain apparent differences in performance (e.g., information related to work rules, topography, climate, and unusual events such as strikes and service start-ups). Users of this report, therefore, should be careful not to draw unwarranted conclusions based solely on the data contained herein.”*

In addition, while the NTD reporting process provides agencies with clearly defined parameters for reporting information, some activities are subject to the agency's interpretation of the nature of data requested and reported.

Data for 2010 are not yet available from NTD; however, MDT provided researchers with an original set of 2010 NTD data forms that were submitted to NTD, followed by an updated version of the forms that contained a few revisions. While MDT considers the 2010 data to be robust, the data have not yet been published by NTD.

## TCRP Report 141 Factors for Analysis of Performance

In addition to providing a structure for selection of a peer group, TCRP 141 identifies four primary areas, including cost, labor, and maintenance, for consideration in comparing an agency's performance to the performance of the peer group.

Cost factors included efficiency and effectiveness. Cost efficiency is commonly used by most transit agencies to evaluate how well they provide service, regardless of where service is going or how much it is used. Metrics used to evaluate cost efficiency include:

- Operating cost per revenue hour or mile
- Operating cost/vehicle operated in maximum service (VOMS), annual cost to operate a VOMS

Cost effectiveness is also commonly used by most transit agencies and is used to compare the cost of providing service. Metrics used to evaluate cost effectiveness include:

- Farebox recovery – costs recovered through passenger fares
- Operating cost per passenger trip, passenger mile or per capita
- Subsidy per boarding – difference between the cost to provide a trip and the average fare paid

Service factors examine how passengers use the system, through a review of:

- Passenger trips – number of system users
- Passenger miles – span of system use
- Average trip length – how far the average user travels on the system

Labor Administration measures day-to-day transit agency operations, using metrics such as:

- Proportion of vehicle operations, vehicle maintenance, non-vehicle maintenance, and general administration costs to total operating cost
- Percent of operating costs that are salaries and wages and fringe benefits to determine how much employee compensation contributes to total operating expense

Maintenance Administration focuses on the performance of the vehicle maintenance function and overall condition of the vehicle fleet. Common metrics used to evaluate maintenance administration include:

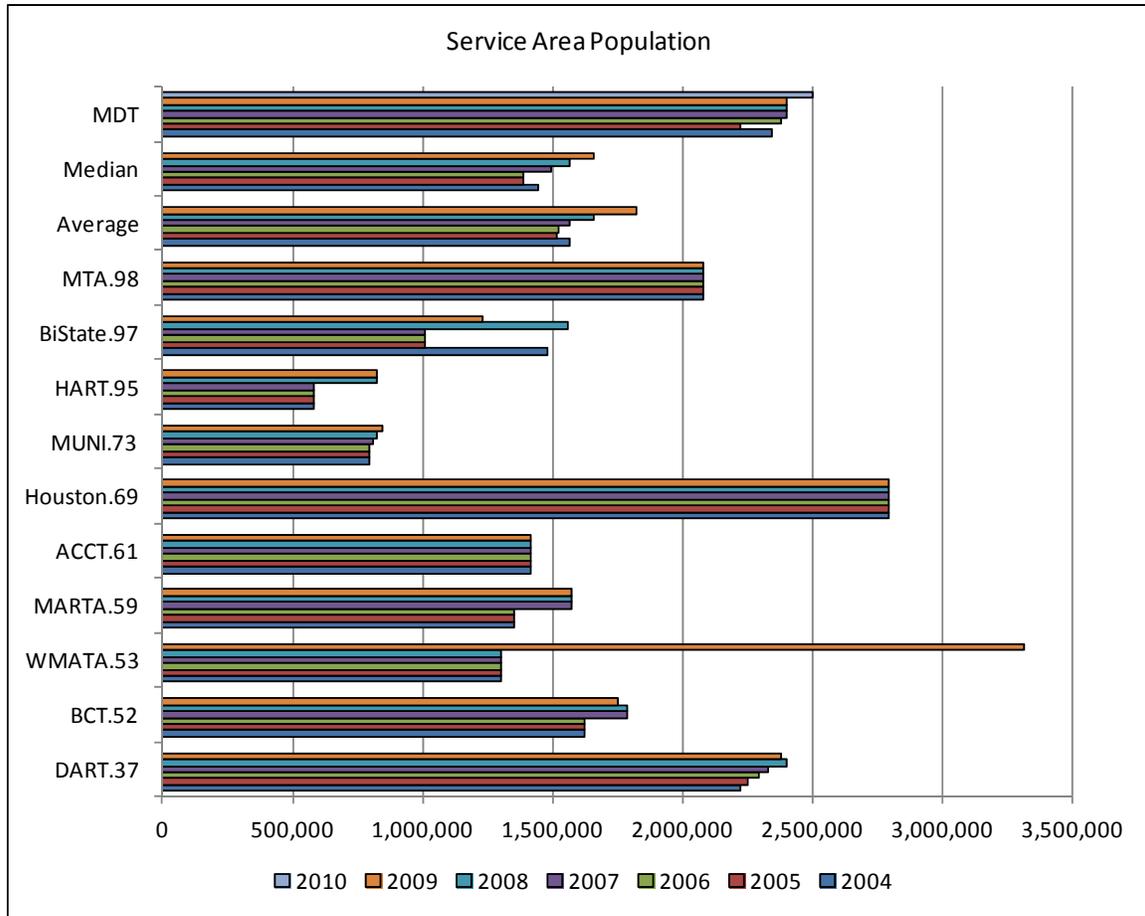
- Number of vehicle system failures and miles between failures
- Percent of operating costs that are maintenance (vehicle plus non-vehicle) costs
- Labor expense per vehicle hour
- Maintenance expense per vehicle available for maximum service (VAMS)
- Vehicle maintenance cost per vehicle mile
- Maintenance employee full-time equivalents (FTEs) per VOMS
- Non-vehicle maintenance cost per track mile

A number of these TCRP Report 141 factors were incorporated in the study along with efficiency and effectiveness measures contained in FTIS.

This report is organized to present a mode by mode analysis of performance, beginning with Metrobus, followed by Metrorail and Metromover, respectively. Each review begins with an overview of general service metrics to establish the context for MDT's transit operation in comparison to the peer group. Following the service metrics is a summary of the results of the performance metrics applied to MDT and the peer groups. Individual peer agency data are included to provide context, but comparisons of performance are based on the average of the peer group's metrics. A summary of findings in regard to MDT's improved efficiency follows the detailed review of each of the factors. This process is replicated for each of the modes. An overview of select metrics that provides a side by side look at the performance of the three modes is presented in the final section of the report.

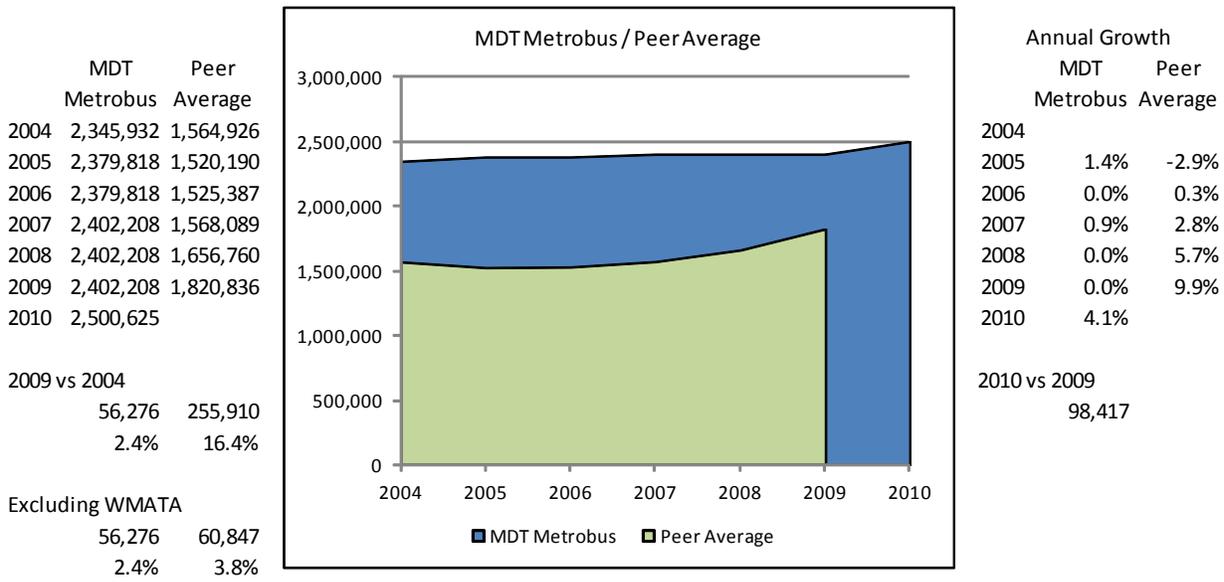
## Metrobus Peer Review and Trend Analysis

### Metrobus Service Area Population



**Figure 1 - Service Area Population**

Metrobus service area population (Figure 1) exceeded the average and the median of the peer group and was consistently larger than all peers with the exception of Houston and WMATA (in 2009). Peer service area population ranged from a maximum of 2,796,994 (Houston) to a minimum of 578,252 (HART) in 2004 and from a maximum of 3,317,169 (WMATA) to a minimum of 821,306 (HART) in 2009.



**Figure 2 - Service Area Population - Metrobus / Peer Average**

Metrobus service area population (Figure 2) grew by 56,276 (2.4%) from 2004 through 2009, while growth in the peer group averaged 16.4 percent. Excluding WMATA from the peer group average in 2004 through 2009, the peer group average growth is 3.8 percent over the period.

Only BiState reported a smaller service area population in 2009 compared to 2004. DART and BCT reported slightly smaller populations in 2009 compared to 2008. Second to WMATA, HART reported a 42 percent increase in service area population in 2009 compared to 2004.

While the Metrobus service area population grew, it appears to have grown at a rate less than the peer group average.

### Metrobus Service Area

The Metrobus service area (Figure 3) was consistently smaller than the average and median of the peer group from 2004 through 2009. The peer group service area ranged from a maximum of 1,795.0 square miles (MTA) to a minimum of 49.0 square miles (MUNI) from 2004 through 2009.

The Metrobus service area (Figure 4) grew by 19.0 square miles (6.6%) from 2004 through 2009, while the peer service area showed a reduction of 16.8 square miles (a decrease of 2.5%). Growth in the service area was reported by Metrobus in 2005. Minimal change in peer group service area size was noted throughout the period, with the exception of BiState. BiState reported a service area of 606.0 square miles in 2004, 574.0 square miles in 2005, 584.0 square miles in 2008, and 449.0 square miles in 2009, resulting in an actual 25.9 percent decrease (157 fewer square miles) in service miles in 2009 compared to 2004. HART reported a 4.3 percent (11 fewer square miles) reduction in service area in 2008.

Throughout the period, the Metrobus service area was larger than 2 of the 10 peer agency service areas.

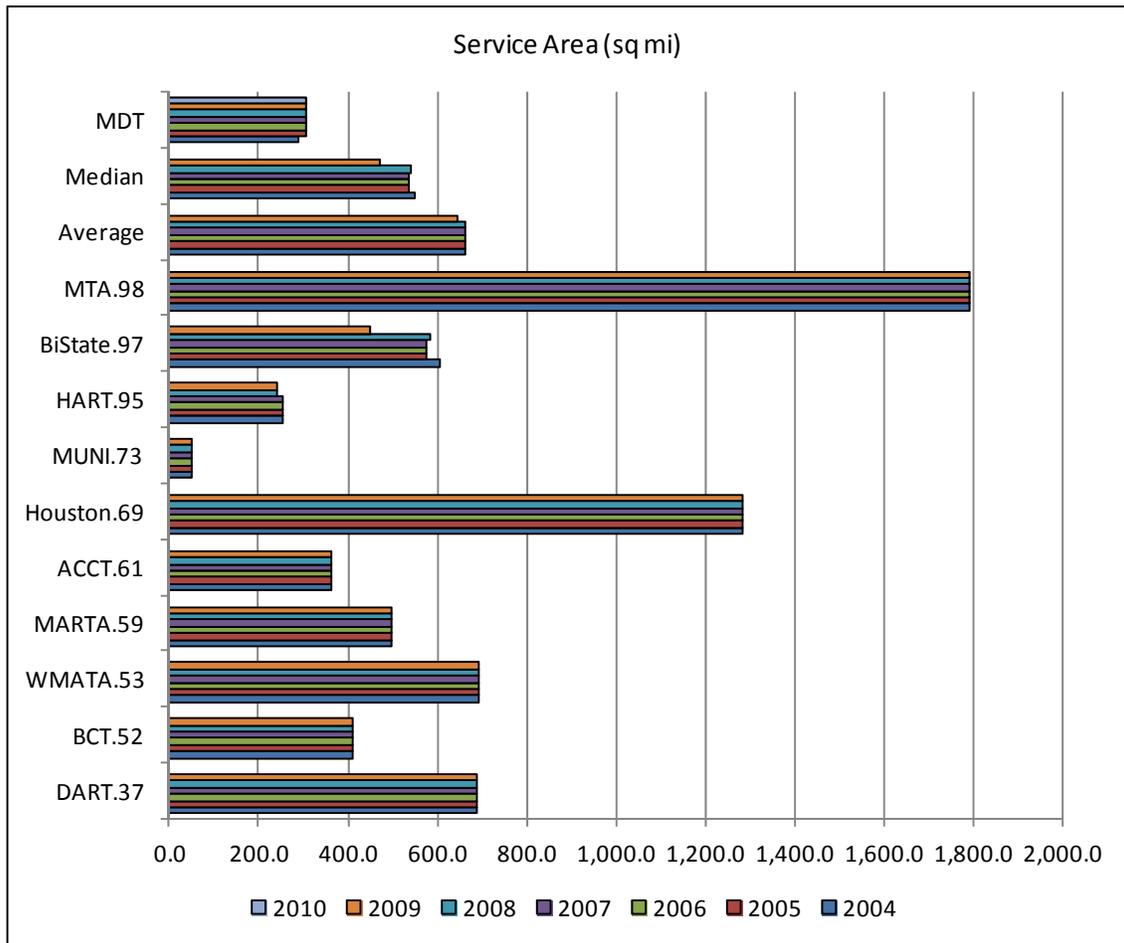


Figure 3 - Service Area (sq mi)

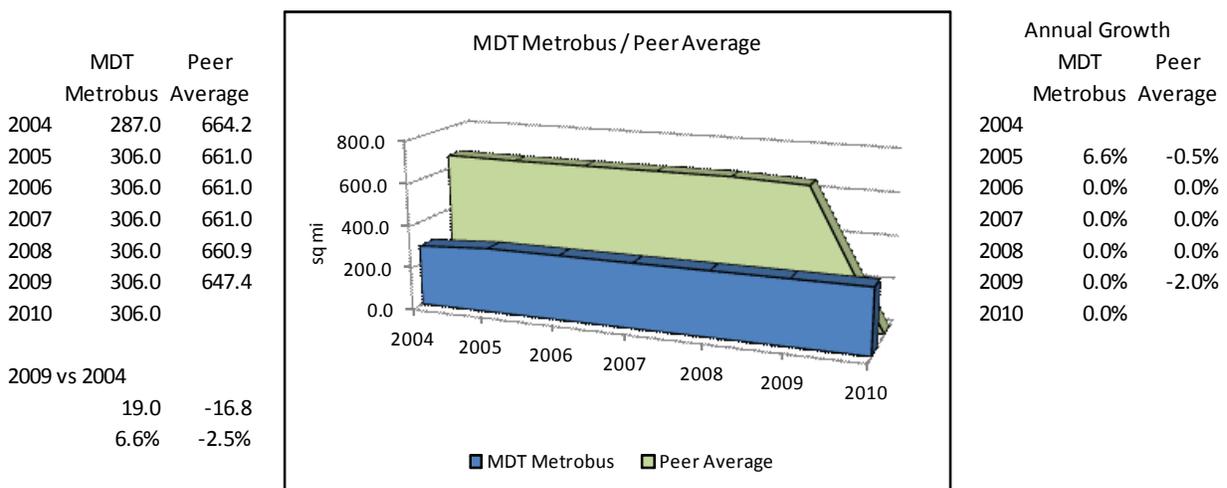


Figure 4 - Service Area - Metrobus / Peer Average

## Metrobus Passenger Trips

From 2004 through 2009, Metrobus passenger trips (Figure 5) exceeded the average and the median of the peer group and were consistently larger than most peers with the exception of WMATA, MUNI, and MTA. Peer passenger trips ranged from a maximum of 146,010,344 (WMATA) to a minimum of 9,818,574 (HART) in 2004 and from a maximum of 133,773,567 (WMATA) to a minimum of 13,125,468 (HART) in 2009.

Peer group average passenger trips (Figure 6) were highest in 2004 and gradually declined from year to year, resulting in a 3.5 percent decrease in 2009 trips versus 2004 trips, while Metrobus passenger trips grew annually from 2004 through 2008. In 2009, Metrobus reported a reduction in passenger trips (10 million fewer trips than in 2008), a trend that continued into 2010, when Metrobus reported 5 million fewer passenger trips than in 2009. Peer agencies that reported significant reductions in passenger trips in 2009 as compared to 2004 included DART (16 million fewer trips, a 27.7% decrease), Houston (12 million fewer trips, a 19.5% decrease), and WMATA (12 million fewer trips, an 8.4% decrease). MARTA, MUNI, and HART reported the most growth in passenger trips.

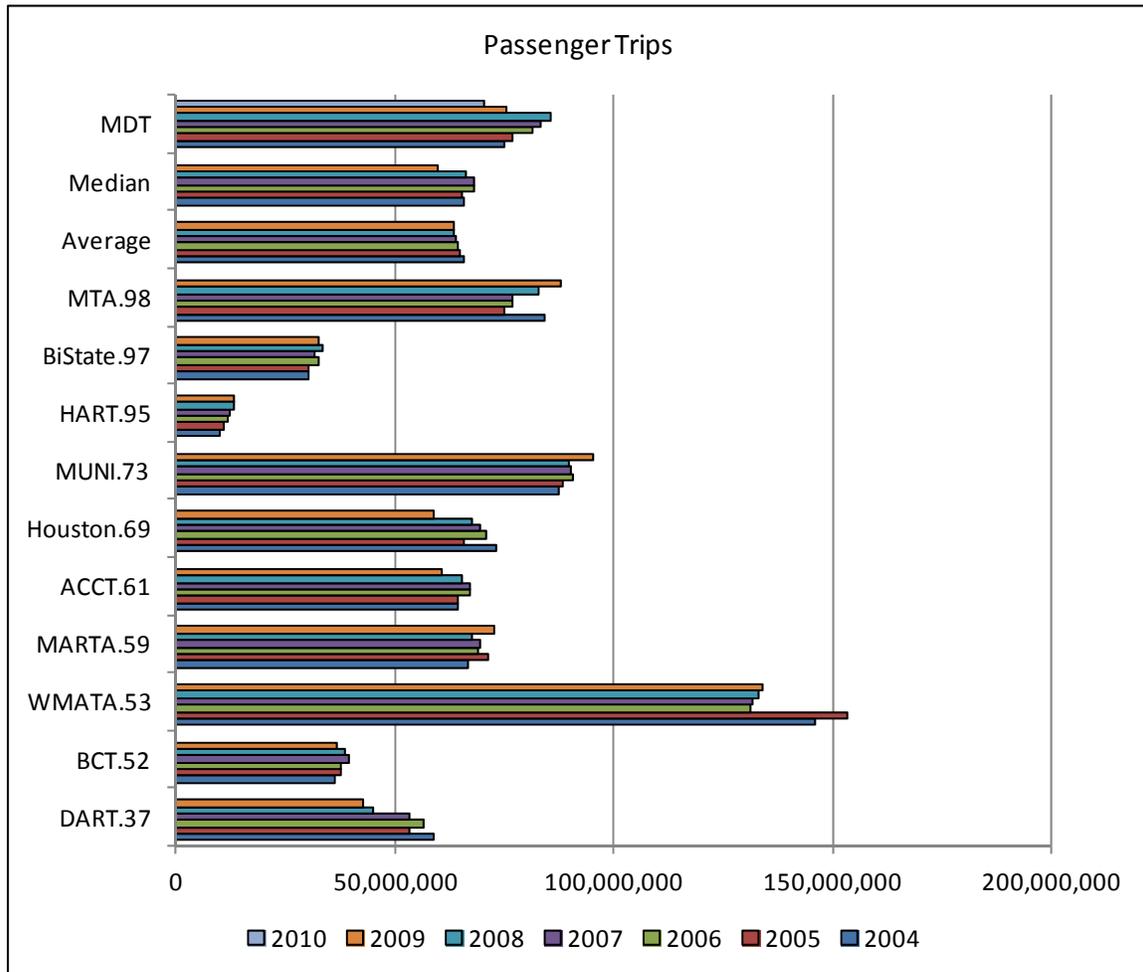


Figure 5 - Passenger Trips



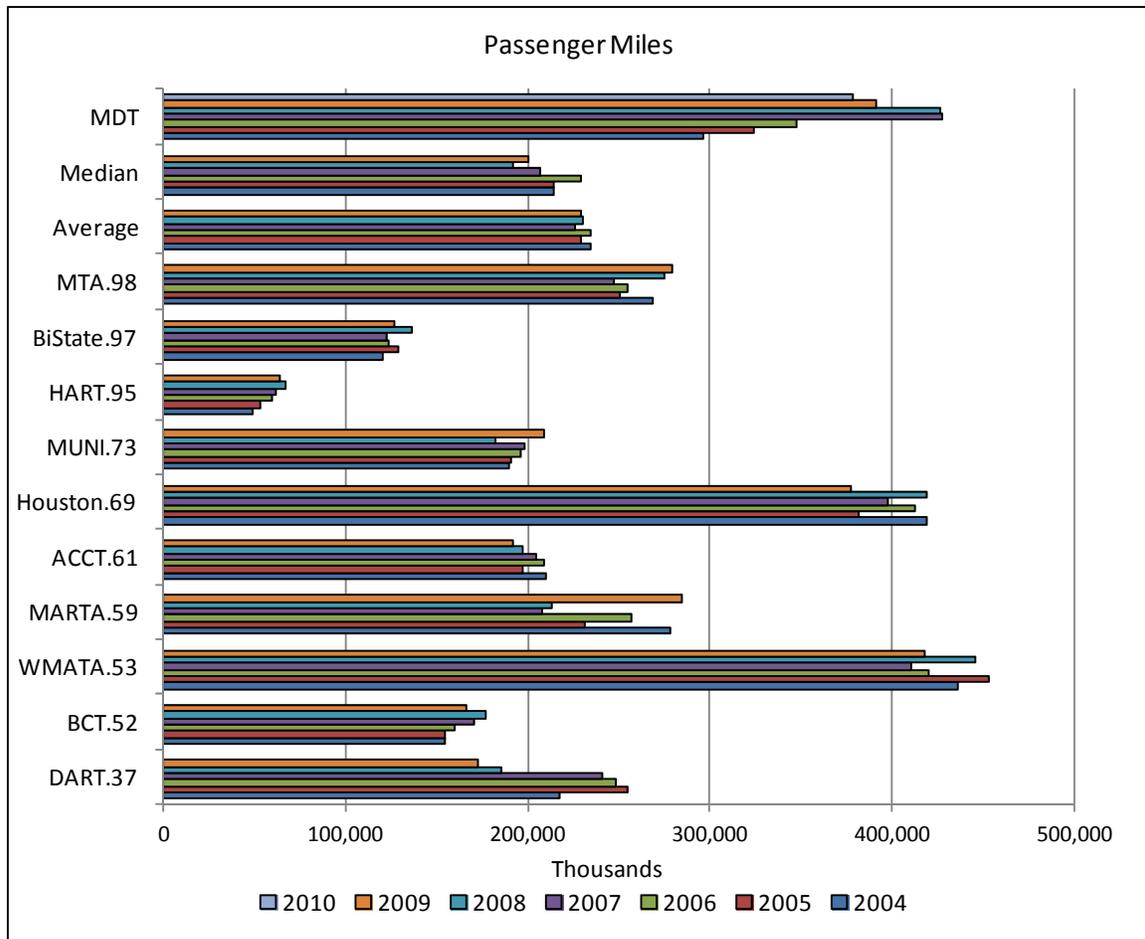


Figure 7 - Passenger Miles

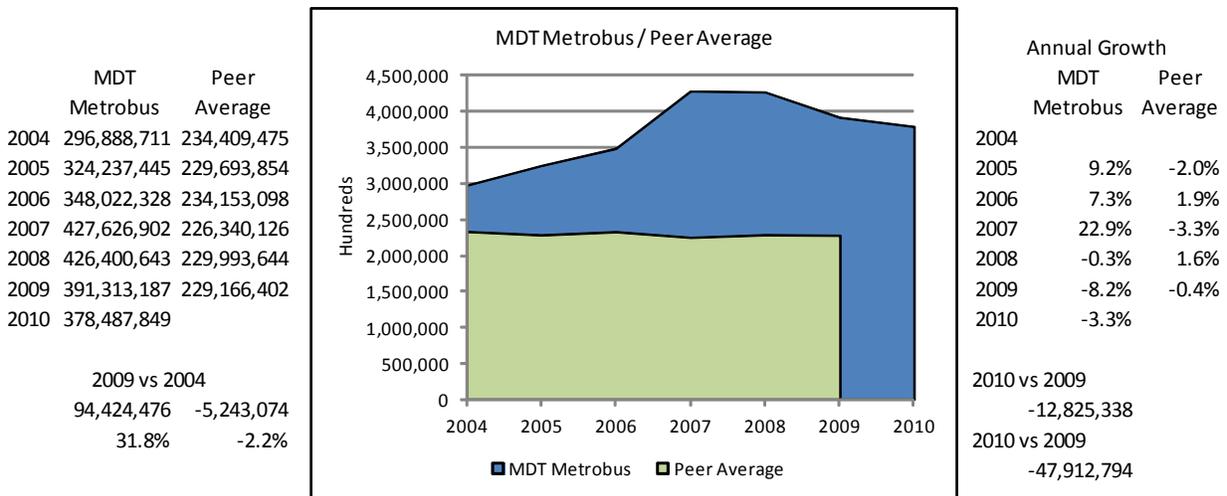


Figure 8 - Passenger Miles - Metrobus / Peer Average

### Metrobus Vehicles Operated in Maximum Service (VOMS)

From 2004 through 2009, Metrobus VOMS (Figure 9) exceeded the average and the median of the peer group and were consistently larger than most peers with the exception of WMATA and Houston. Peer VOMS ranged from a maximum of 1,236 (WMATA) to a minimum of 154 (HART) in 2004 and from a maximum of 1,273 (WMATA) to a minimum of 159 (HART) in 2009.

Peer average VOMS (Figure 10) were highest in 2004 and gradually declined from year to year, resulting in a 9.9 percent decrease in 2009 VOMS versus 2004, while Metrobus VOMS grew annually from 2004 through 2007. In 2008, Metrobus reported a reduction in VOMS (14 fewer than in 2007), a trend that continued into 2009, when Metrobus reported a reduction of 109 VOMS compared to 2008. In 2010 Metrobus reduced 36 VOMS (a 5.0% decrease in VOMS), following reductions reported in 2008 and 2009.

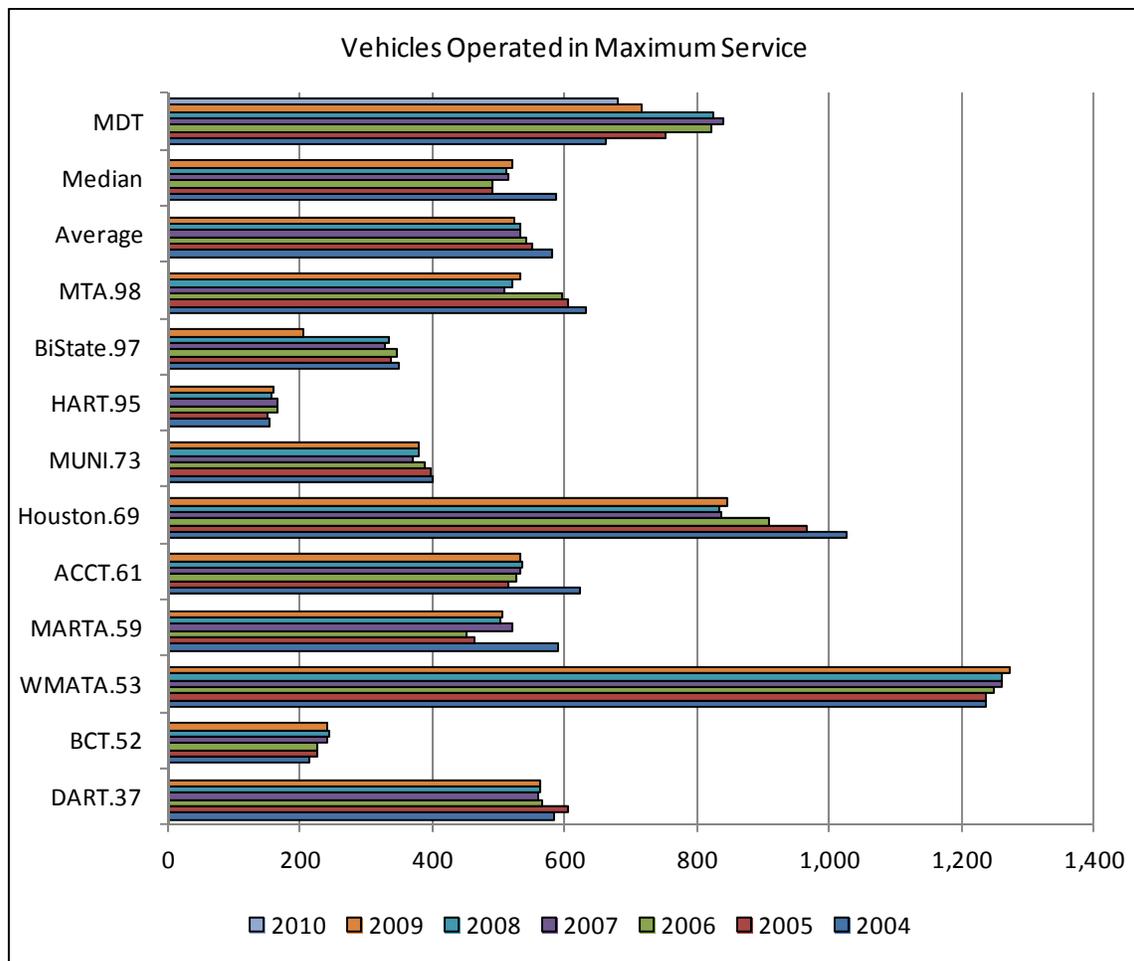


Figure 9 - Vehicles Operated in Maximum Service

Peer agencies that reported significant reductions in VOMS in 2009 as compared to 2004 included BiState (142 fewer VOMS, a 40.8% decrease), Houston (181 fewer VOMS, a 17.6% decrease), and MTA (100 fewer VOMS, a 15.8% decrease). The three peer agencies that reported growth in 2009 VOMS

versus 2004 included WMATA (37 additional VOMS), BCT (25 additional VOMS), and HART (5 additional VOMS).

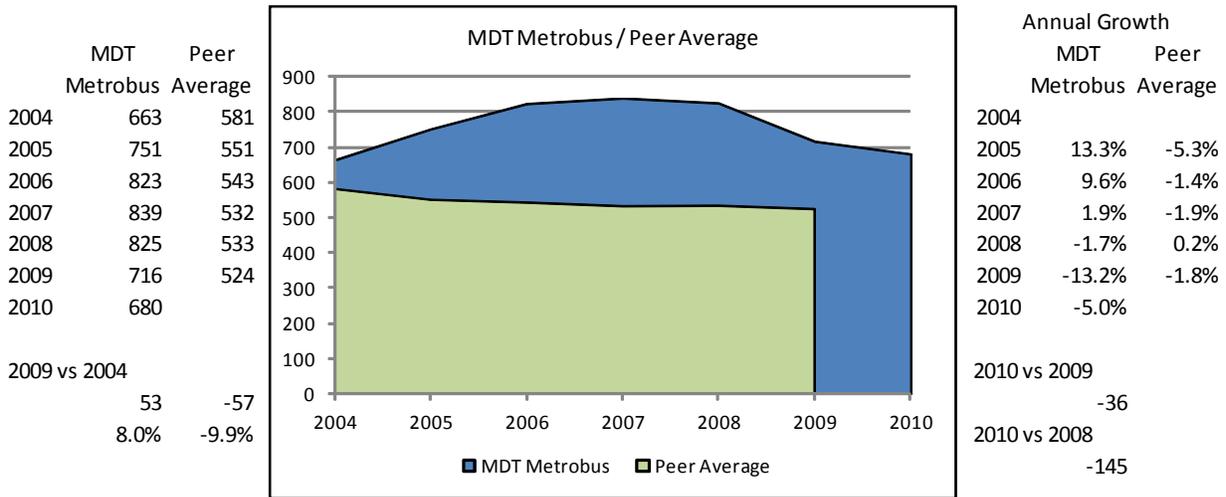


Figure 10 - VOMS - Metrobus / Peer Average

### Metrobus Operating Expense

From 2004 through 2009, Metrobus operating costs (Figure 11) exceeded the average and the median of the peer group and were consistently larger than most peers with the exception of WMATA. Peer operating costs ranged from a maximum of \$396 million (WMATA) to a minimum of \$38 million (HART) in 2004 and from a maximum of \$516 million (WMATA) to a minimum of \$59 million (HART) in 2009.

Peer group average operating costs (Figure 12) grew from year to year, resulting in a 30.7 percent increase in 2009 operating costs versus 2004, while Metrobus operating costs grew annually from 2004 through 2008. In 2009, Metrobus reported a \$2 million reduction in operating costs (a decrease of 0.9%), a trend that continued into 2010, when Metrobus reported a \$27 million reduction in operating costs compared to 2009. Metrobus 2010 operating costs were in excess of \$30 million below peak operating costs reported in 2008.

In addition to Metrobus, three peer agencies reported reductions in operating costs in 2009 as compared to 2008 and included DART (\$6 million reduction, a 2.5% decrease), BCT (\$5 million reduction, a 5.0% decrease), and BiState (\$5 million reduction, a 3.6% decrease).

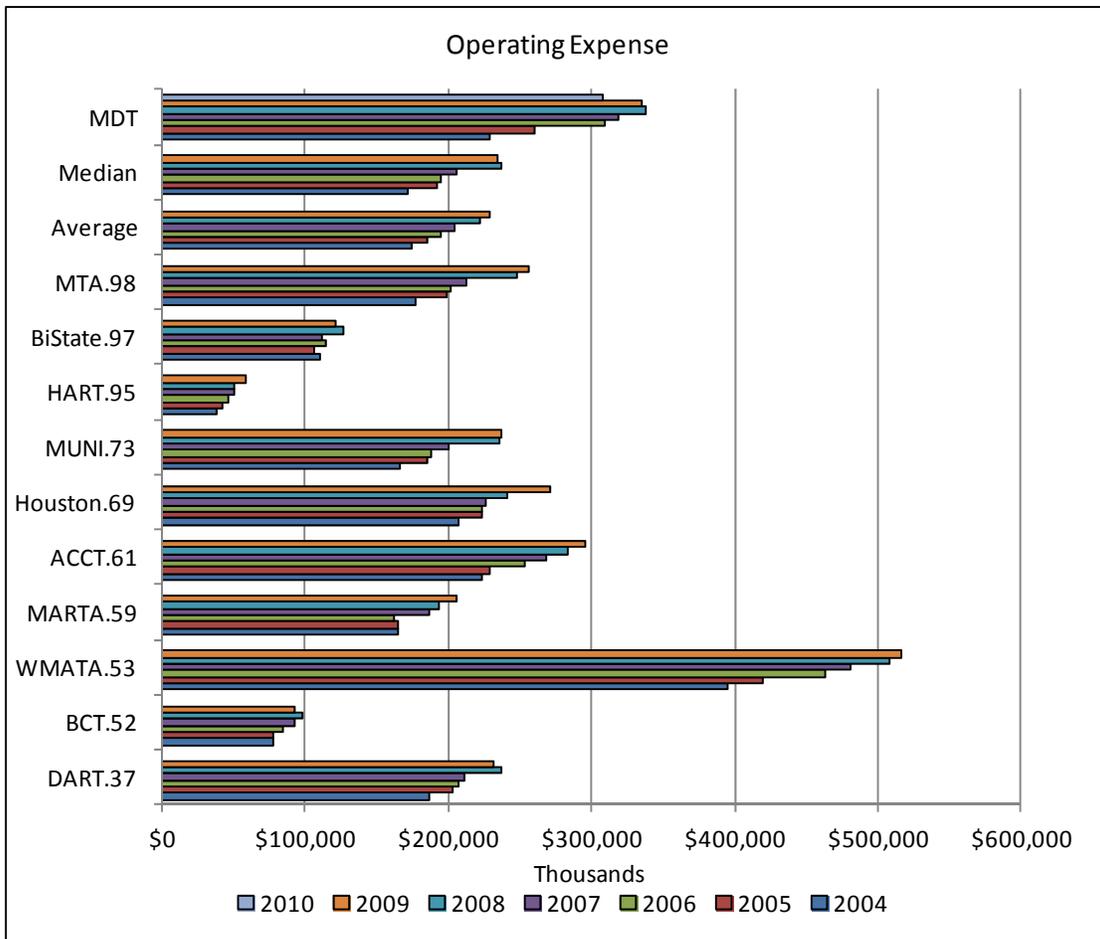


Figure 11 –Operating Expense

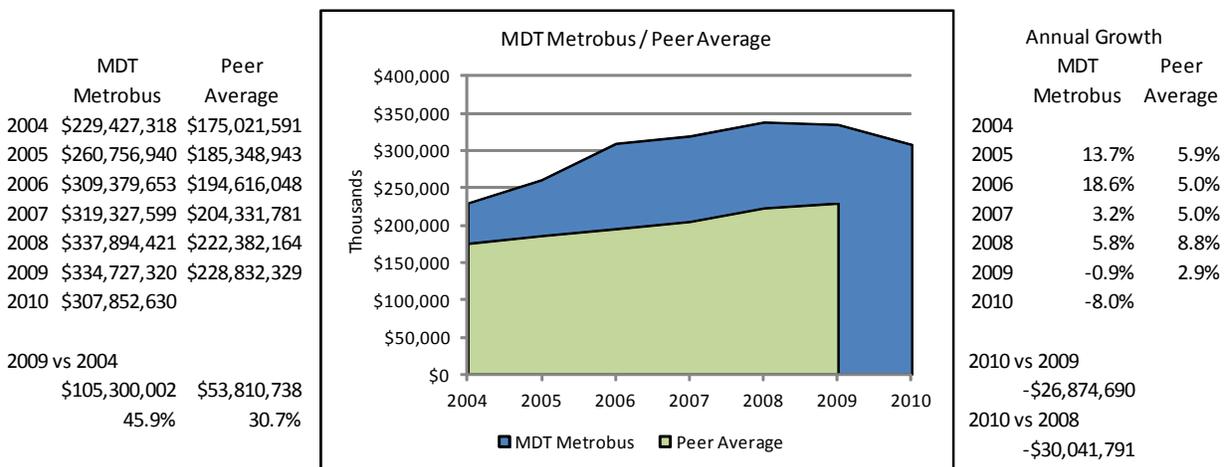


Figure 12 –Operating Expense - Metrobus / Peer Average

### Metrobus Passenger Fare Revenue

From 2004 through 2009, Metrobus passenger fare revenue (Figure 13) exceeded the average and the median of the peer group and was consistently larger than most peers with the exception of WMATA. Peer fare revenue ranged from a maximum of \$97 million (WMATA) to a minimum of \$7 million (HART) in 2004 and from a maximum of \$111 million (WMATA) to a minimum of \$11 million (HART) in 2009.

Peer passenger fare revenue (Figure 14) grew modestly from year to year, resulting in a 16.9 percent increase in 2009 fare revenue versus 2004, while Metrobus fare revenue showed significant growth and declines. Nonetheless, growth in Metrobus fare revenue doubled growth observed at peer agencies during the same period (a 35.4% increase). Despite the significant reduction in passenger trips in 2010, Metrobus 2010 fare revenue fell only slightly compared to 2009.

DART, BCT, MUNI, and MTA reported less fare revenue in 2009 compared to 2008. Only MTA reported a decline in passenger revenue (a 4.0% decrease) for 2009 as compared to 2004.

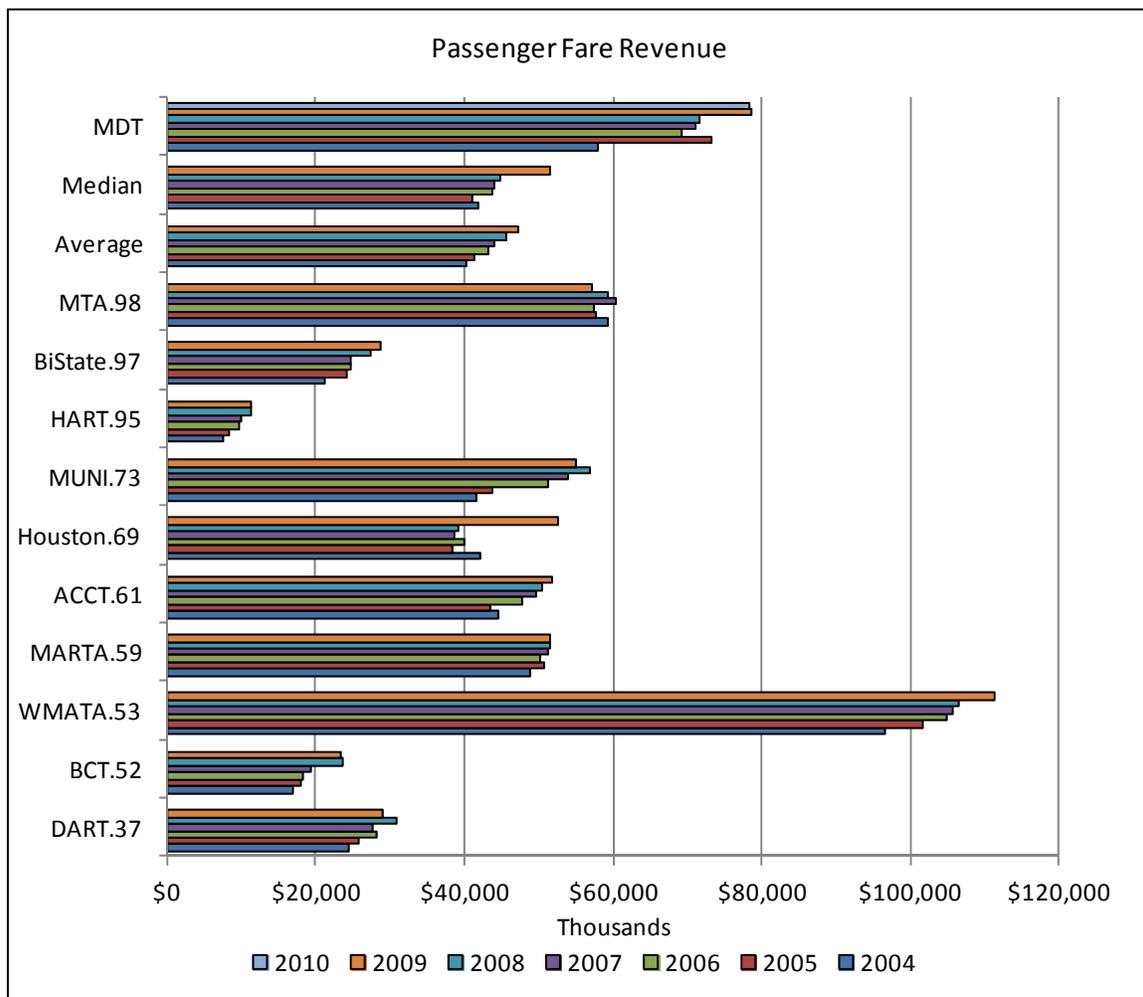


Figure 13 - Passenger Fare Revenue

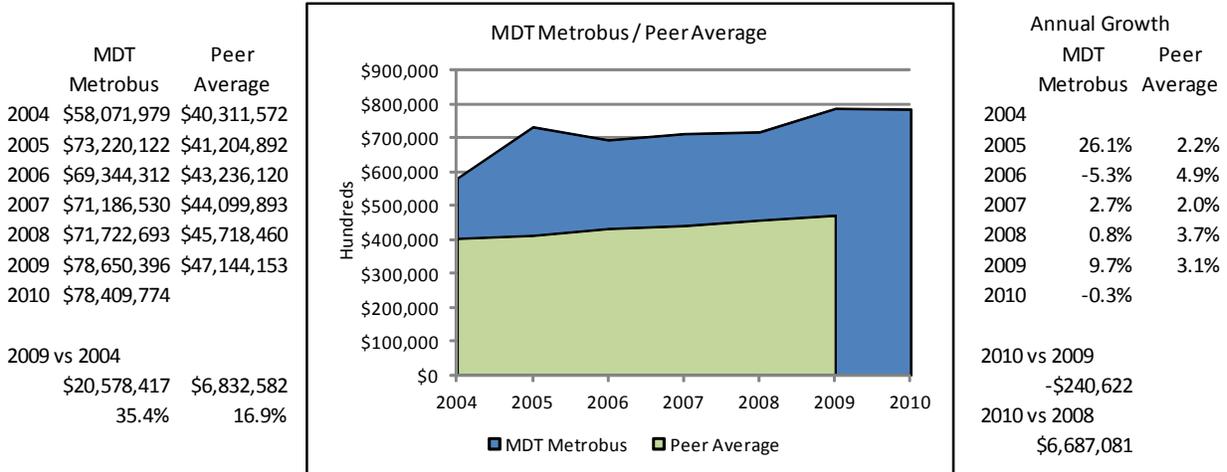


Figure 14 - Passenger Fare Revenue - Metrobus / Peer Average

### Metrobus Maintenance Expense

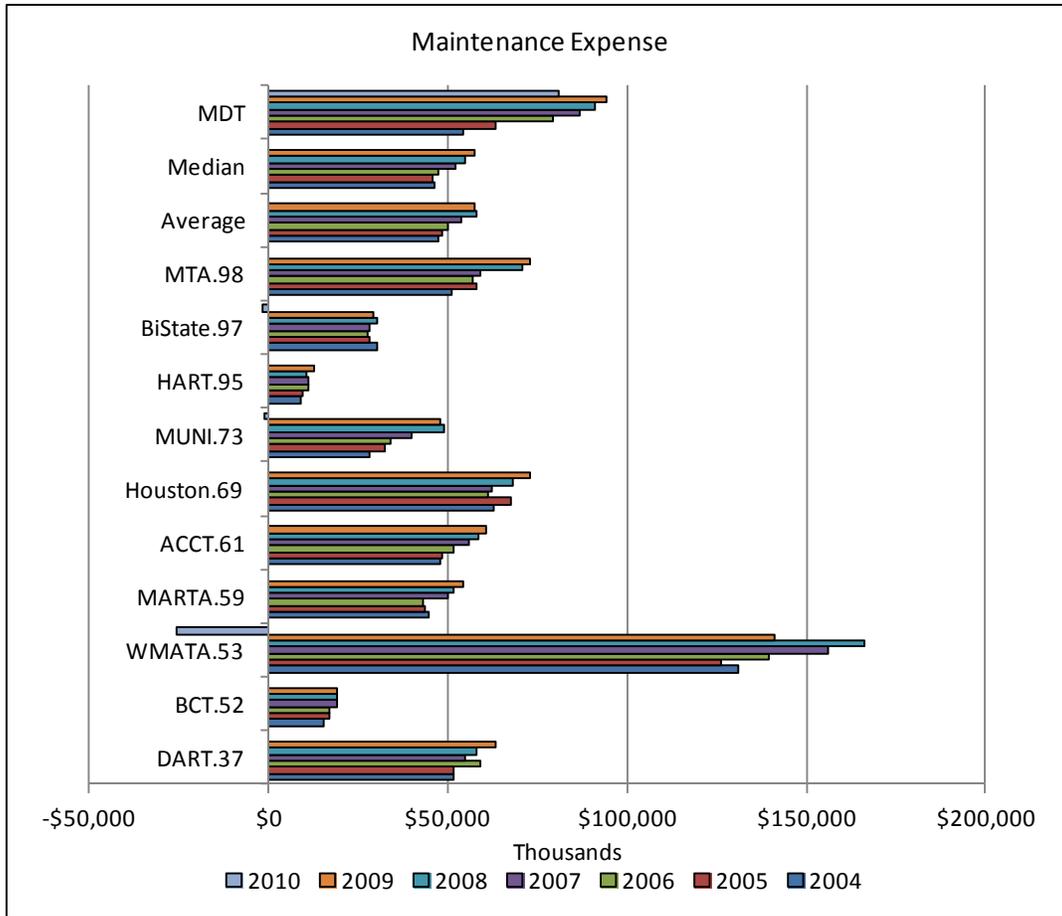


Figure 15 - Maintenance Expense

From 2004 through 2009, Metrobus maintenance costs (Figure 15) exceeded the average and the median of the peer group and were consistently larger than most peers with the exception of WMATA. Peer maintenance costs ranged from a maximum of \$131 million (WMATA) to a minimum of \$9 million (HART) in 2004 and from a maximum of \$141 million (WMATA) to a minimum of \$13 million (HART) in 2009. Three peer agencies reported reductions in operating costs in 2009 as compared to 2008 and included WMATA (\$25 million reduction, a 15.3% decrease), MUNI (a 2.7% decrease), and BiState (a 5.0% decrease of \$2 million).

Peer group average maintenance costs (Figure 16) grew from year to year until 2009, resulting in a 21.5 percent increase in 2009 maintenance costs versus 2004. Metrobus maintenance costs grew annually from 2004 through 2009 by a total of nearly \$40 million (a 73.8% increase versus 2004). In 2010, Metrobus reported a \$13 million reduction in maintenance costs (a decrease of 14.1%) compared to 2009.

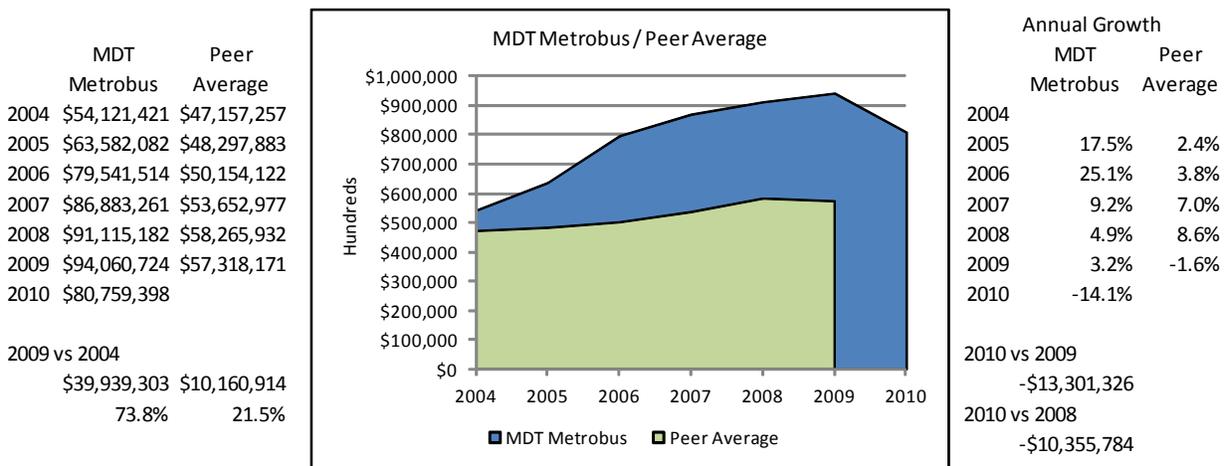


Figure 16 - Maintenance Expense - Metrobus / Peer Average

### Metrobus Employee Full-time Equivalents (FTEs)

From 2004 through 2009, the Metrobus complement of employee FTEs (Figure 17) exceeded the average and the median of the peer group and was consistently larger than most peers with the exception of WMATA. FTEs ranged from a maximum of 3,884 (WMATA) to a minimum of 478 (HART) in 2004 and from a maximum of 3,942 (WMATA) to a minimum of 602 (HART) in 2009. A number of peer agencies (DART, BCT, Houston, and BiState) reported annual reductions in FTEs that resulted in overall decreases in 2009 compared to 2004.

Additional hiring at HART and MTA was not significant enough to offset reductions that caused peer group average FTEs (Figure 18) to fall 45 FTEs in 2009 compared to 2004 (a 2.3% decrease). Metrobus also reported declining FTEs. Since 2006, when Metrobus FTEs peaked, in excess of 800 FTEs (a 23.5% decrease) have been eliminated.

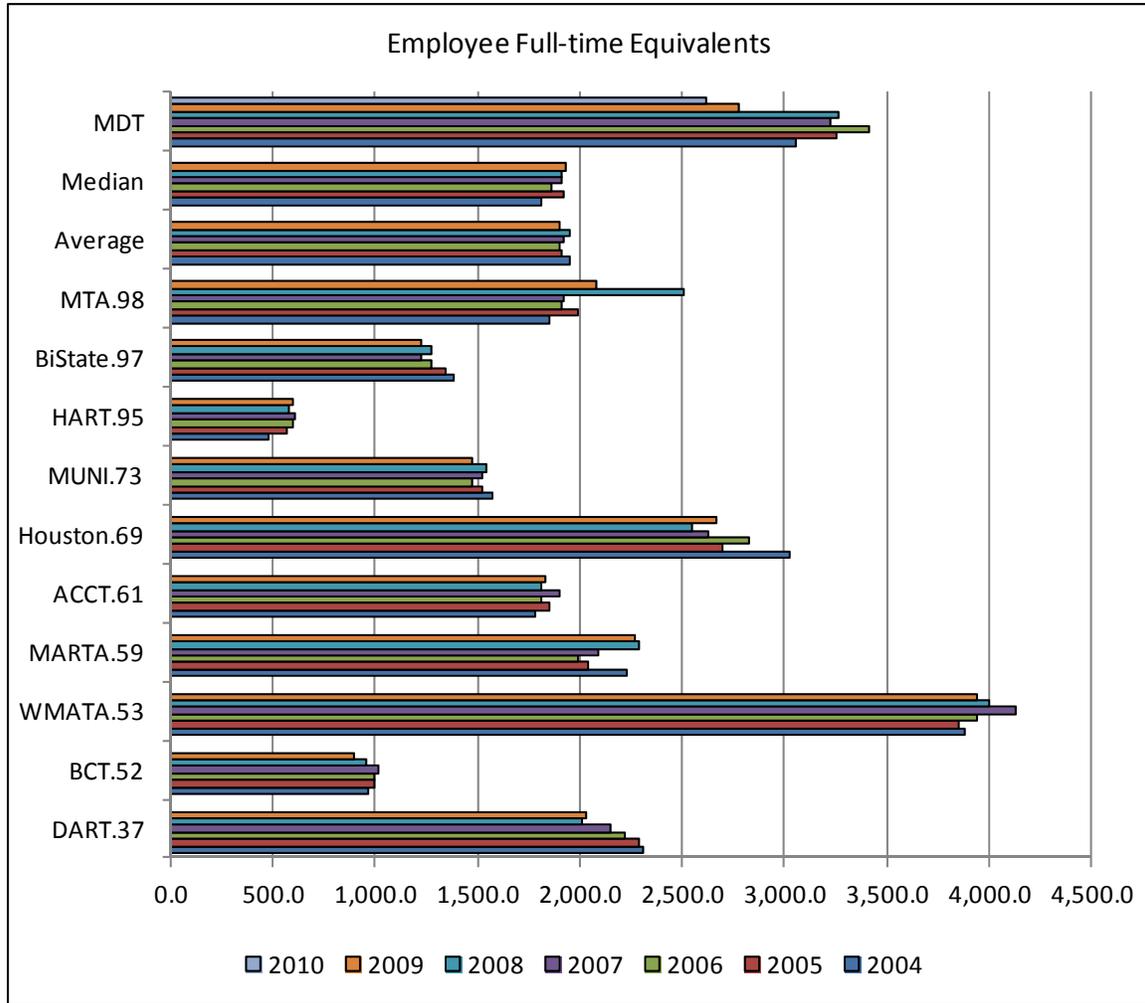


Figure 17 - Employee FTEs

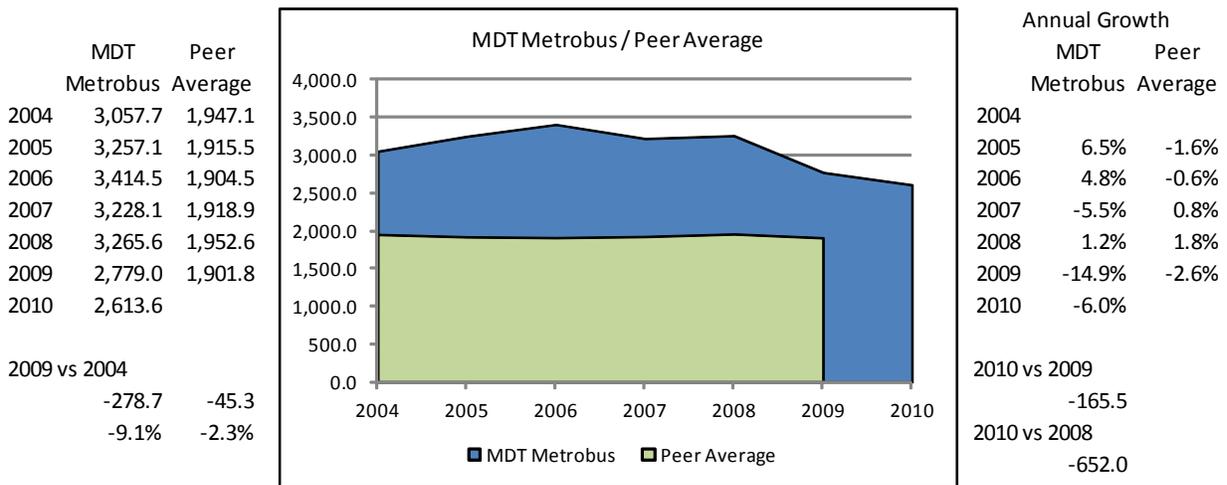


Figure 18 - Employee FTEs - Metrobus / Peer Average

## Metrobus Gallons of Fuel Consumed

From 2004 through 2009, Metrobus fuel consumption (Figure 19) routinely exceeded the average and median of the peer group and was consistently greater than most peers with the exception of WMATA and DART. Fuel consumption ranged from a maximum of 15.5 million gallons (WMATA) to a minimum of 1.9 million gallons (HART) in 2004 and from a maximum of 15.2 million gallons (WMATA) to a minimum of 2.0 million gallons (HART) in 2009. Significant decreases by Houston, MUNI and BiState reported during the time period resulted in a 5.8 percent decline in peer group consumption in 2009 compared to 2004. Since peer group average fuel efficiency showed only modest improvement over the period from 3.20 vehicle miles per gallon in 2004 to 3.38 vehicle miles per gallon in 2009, reduced consumption most likely resulted from the sizeable reduction in vehicle miles reported by Houston (-12.1%), MUNI (-5.0%), and BiState (-4.2%) in 2009 as compared to 2004.

Beginning in 2008, Metrobus (Figure 20) also reported reduced levels of consumption, a trend that continued into 2010. Metrobus consumption in 2010 compared to 2008 fell by almost 2 million gallons (a 15% reduction).

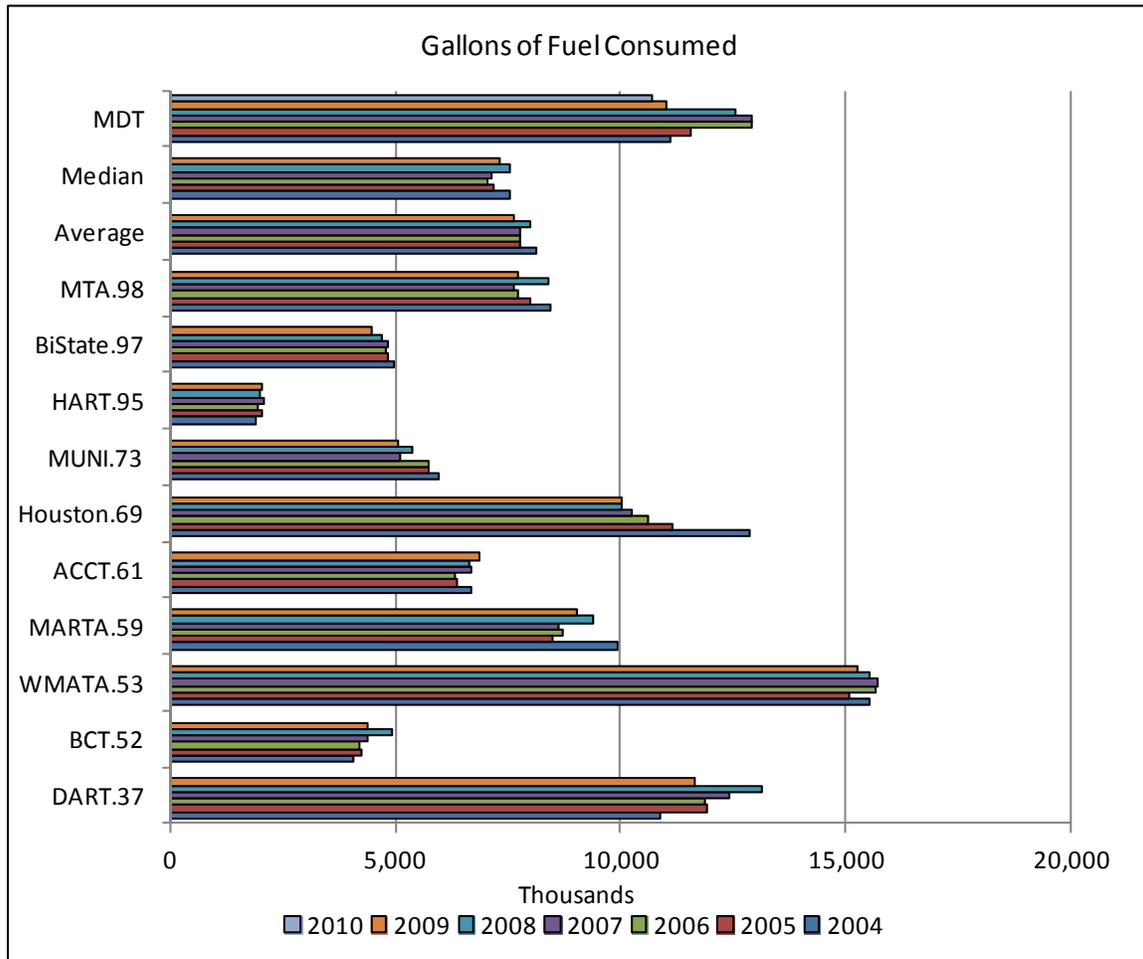


Figure 19 - Gallons of Fuel Consumed

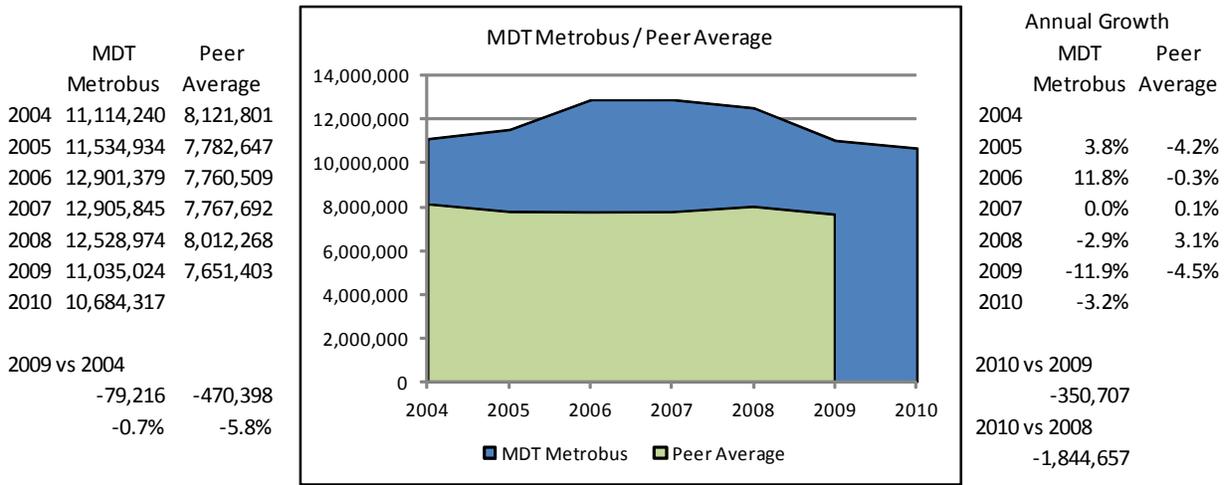


Figure 20 - Gallons of Fuel Consumed - Metrobus / Peer Average

### Metrobus Average Age of Fleet

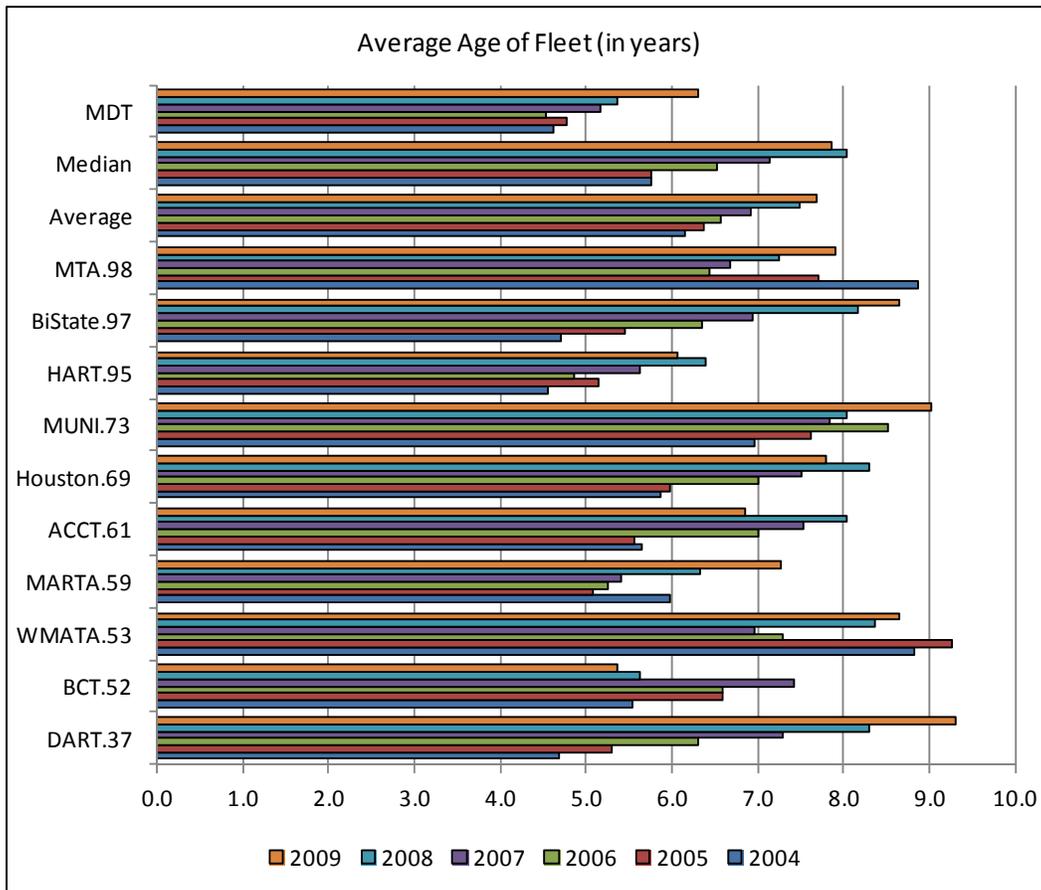
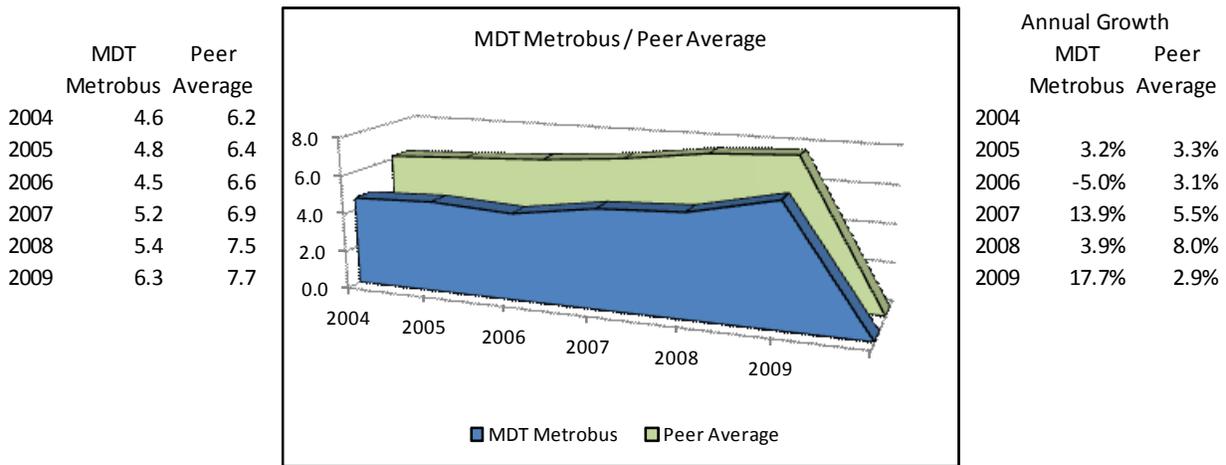


Figure 21 - Average Age of Fleet (in years)

The average age of the fleet (Figure 21) ranged from a maximum of 8.9 years (MTA) to a minimum of 4.6 years (HART) in 2004 and from a maximum of 9.3 years (DART) to a minimum of 5.4 years (BCT) in 2009.

The Metrobus fleet, which mirrored the age of the peer group minimum in 2004, remains slightly younger (Figure 22) than the average age of the peer group.



**Figure 22 - Average Age of Fleet (in years) - Metrobus / Peer Average**

### Metrobus Vehicle System Failures

Vehicle system failures (Figure 23) show a great deal of fluctuation from year to year and from agency to agency. Metrobus failures exceeded the average and median of the peer group and were consistently greater than most peers until 2010. Peer agency failures ranged from a maximum of 13,001 (Houston) to a minimum of 476 (BCT) in 2004 and from a maximum of 13,696 (MARTA) to a minimum of 404 (BCT) in 2009.

In terms of fluctuation in reporting, Houston, which reported the maximum number of failures in 2004 (13,001 failures), reduced failures to 7,121 in 2009 (a 45.2% decrease). MARTA, which reported 8,785 failures in 2004, logged 13,696 failures in 2009 (an increase of 55.9%). Reporting differences of this magnitude need to be examined.

Metrobus reported more failures than the peer group maximum in 2004 (13,097) and 2009 (13,933), and logged 836 more failures in 2009 compared to 2004 (an increase of 6.4%). The 22.3 percent decrease in failures, based on the reduction of more than 3,100 failures during 2010, is significant.

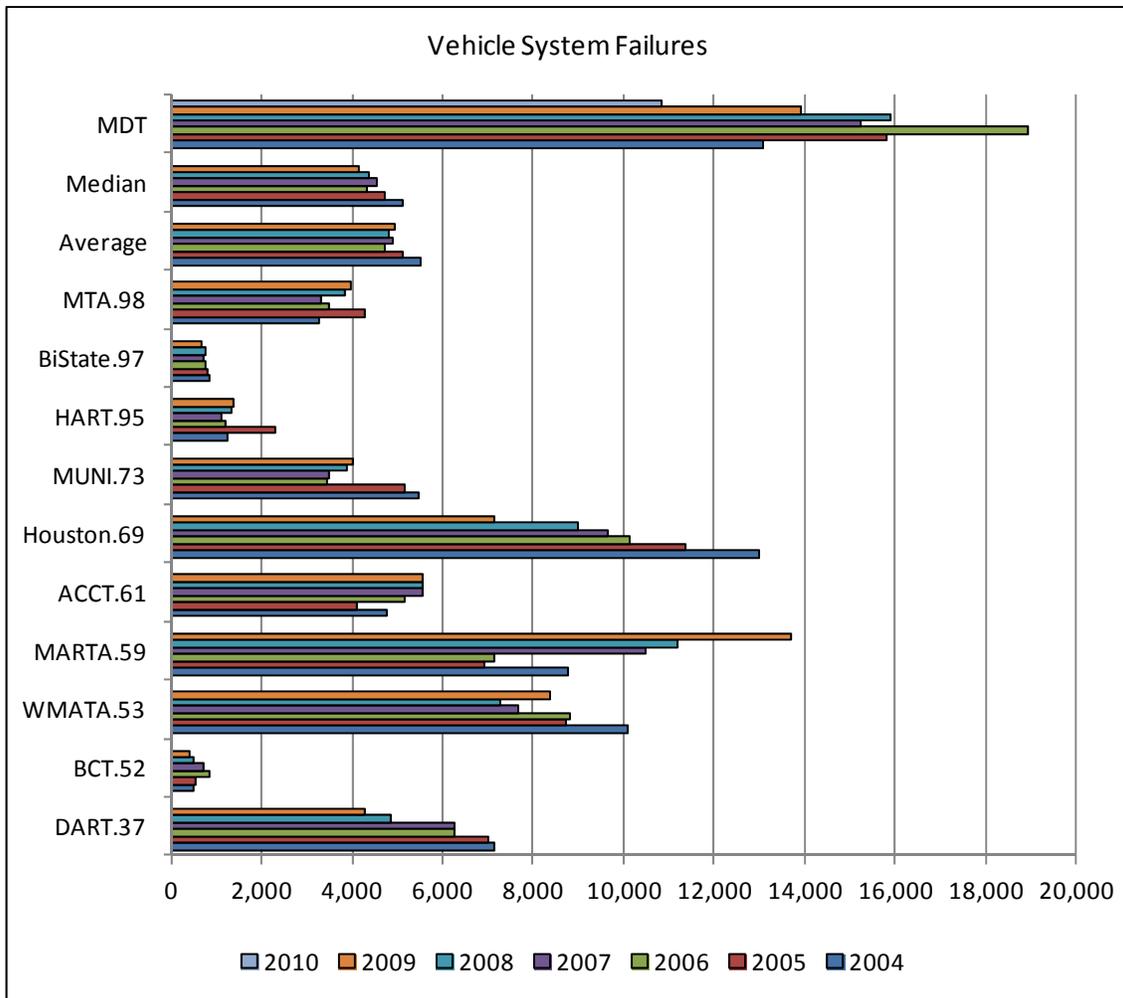


Figure 23 - Number of Vehicle System Failures

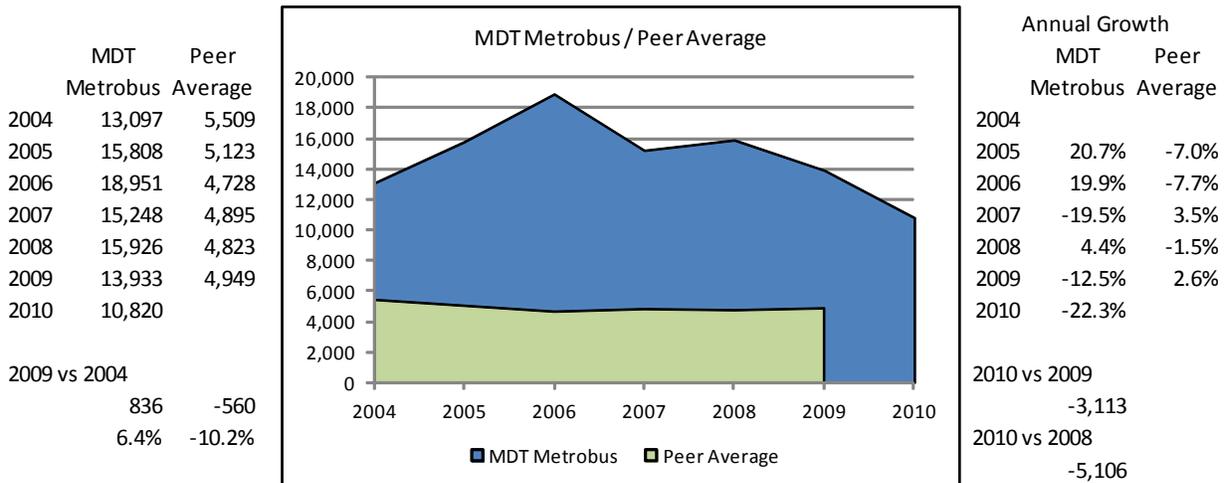
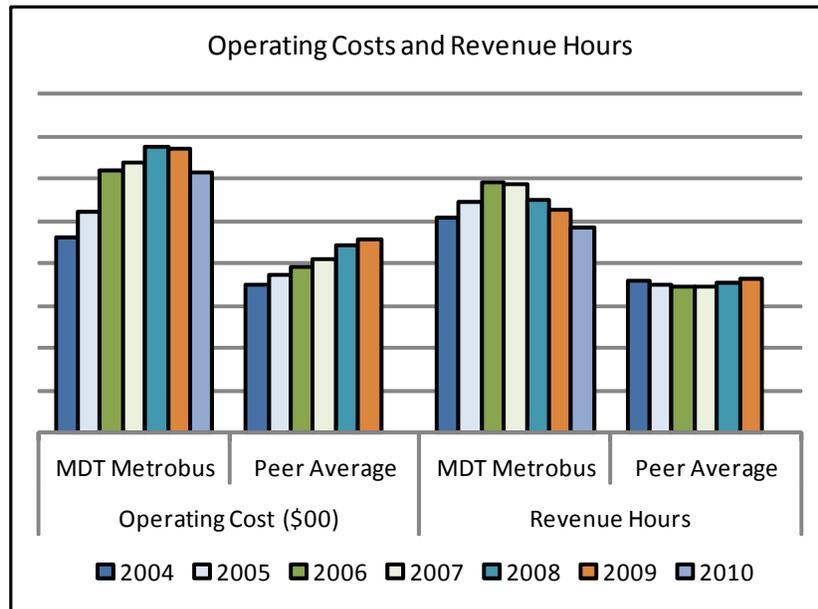


Figure 24 - Number of Vehicle System Failures - Metrobus / Peer Average

## Performance Factors – Metrobus and Peer Agency Average

### Metrobus Cost Efficiency: Operating Cost per Revenue Hour

Operating cost per revenue hour (a measure of cost efficiency) is the first performance factor addressed in the report. Operating cost per revenue hour is derived from total operating costs and revenue hours (Figure 25) and provides an indication of what an hour of revenue service costs. In 2009, Metrobus reduced both operating costs (a 0.9% decrease) and revenue hours (a 4.5% decrease), while the peer group average increased in costs (a 2.9% increase) and revenue miles (a 2.0% increase).

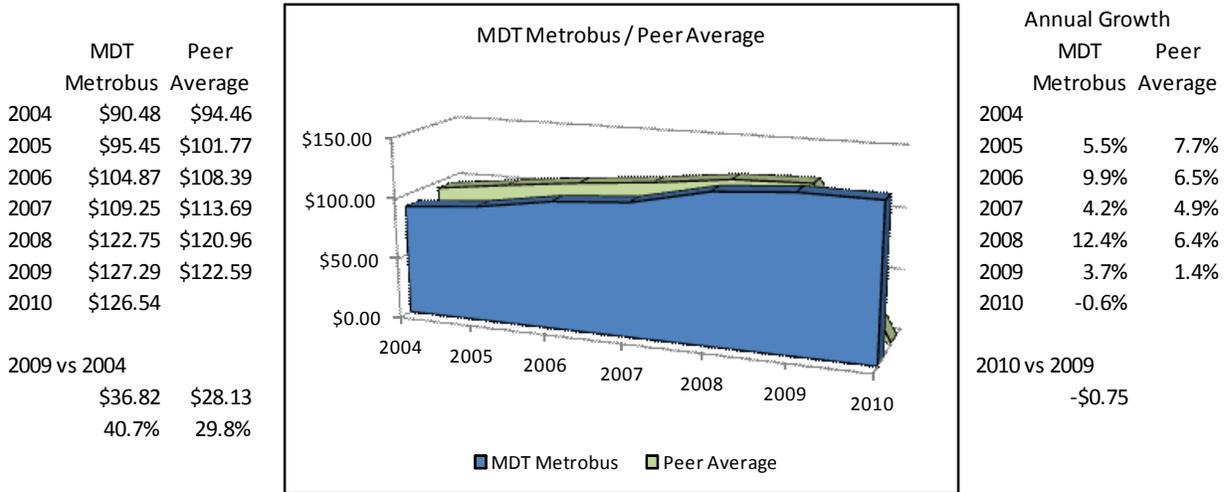


	Operating Cost (\$00)		Revenue Hours	
	MDT Metrobus	Peer Average	MDT Metrobus	Peer Average
2004	\$2,294,273	\$1,750,216	2,535,807	1,792,907
2005	\$2,607,569	\$1,853,489	2,731,978	1,745,559
2006	\$3,093,797	\$1,946,160	2,949,999	1,720,960
2007	\$3,193,276	\$2,043,318	2,923,018	1,720,013
2008	\$3,378,944	\$2,223,822	2,752,703	1,779,260
2009	\$3,347,273	\$2,288,323	2,629,625	1,815,167
2010	\$3,078,526	-	2,432,795	-

**Figure 25 - Operating Costs and Revenue Hours**

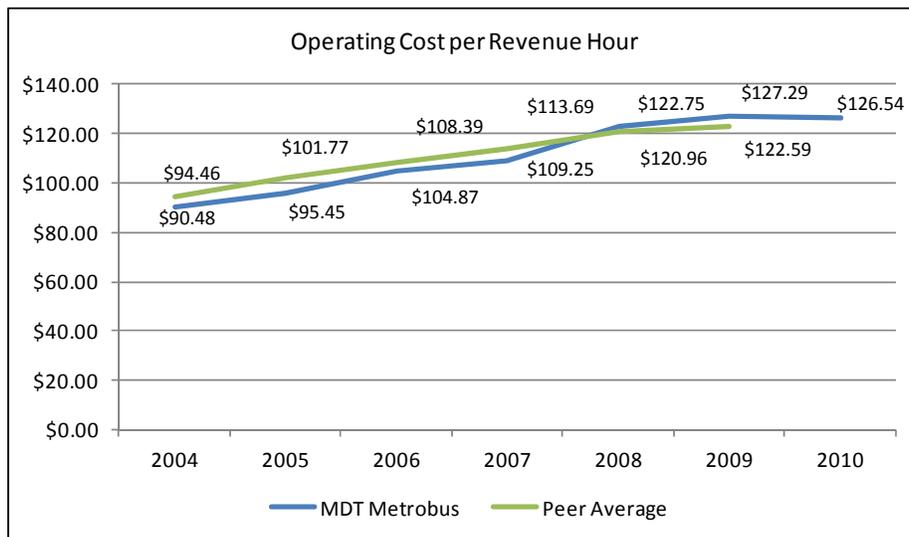
Both Metrobus and the peer group showed regular annual growth in operating cost per revenue hour through 2009 (Figure 26). Metrobus cost was actually less than the peer group average until 2008, when Metrobus reported a 12.4 percent increase in cost.

Metrobus 3.6 percent decline in revenue hours was accompanied by an 8.0 percent reduction in operating costs and was significant enough to reduce the cost per hour. The modest reduction in cost (0.6% decrease) reported by Metrobus in 2010 yields a savings of \$0.75 for each revenue hour of service, which translates into a cost reduction of \$1.9 million.



**Figure 26 - Operating Cost per Revenue Hour - Metrobus / Peer Average**

In 2010, Metrobus reduced operating cost per revenue hour from \$127.29 in 2009 to \$126.54, a 0.6 percent decrease (Figure 27).



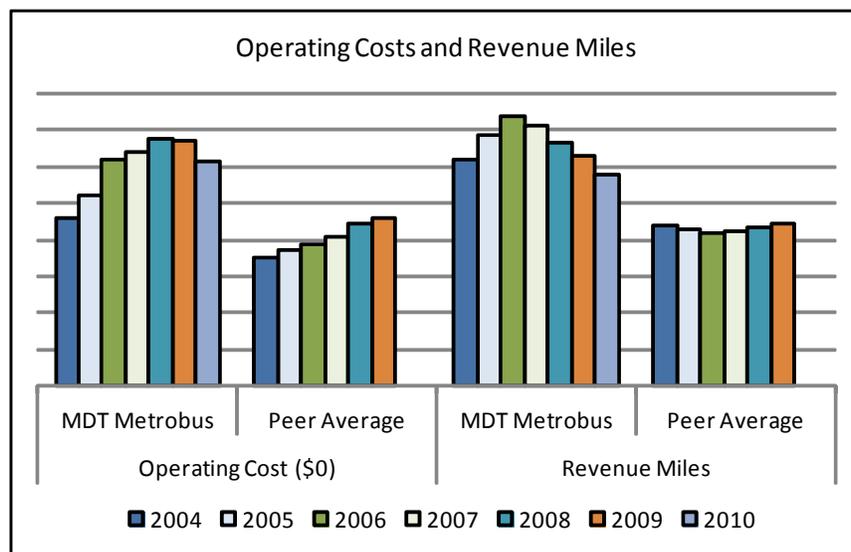
**Figure 27 - Operating Cost per Revenue Hour (Cost Efficiency)**

### Metrobus Cost Efficiency: Operating Cost per Revenue Mile

Operating cost per revenue mile (a measure of cost efficiency) is the next performance factor addressed in the report. Operating cost per revenue mile is derived from total operating costs and revenue miles (Figure 28) and provides an indication of what a mile of revenue service costs. In 2009, Metrobus reduced both operating costs (a 0.9% decrease) and revenue miles (a 5.6% decrease), while the peer group average increased in costs (a 2.9% increase) and revenue miles (a 1.8% increase).

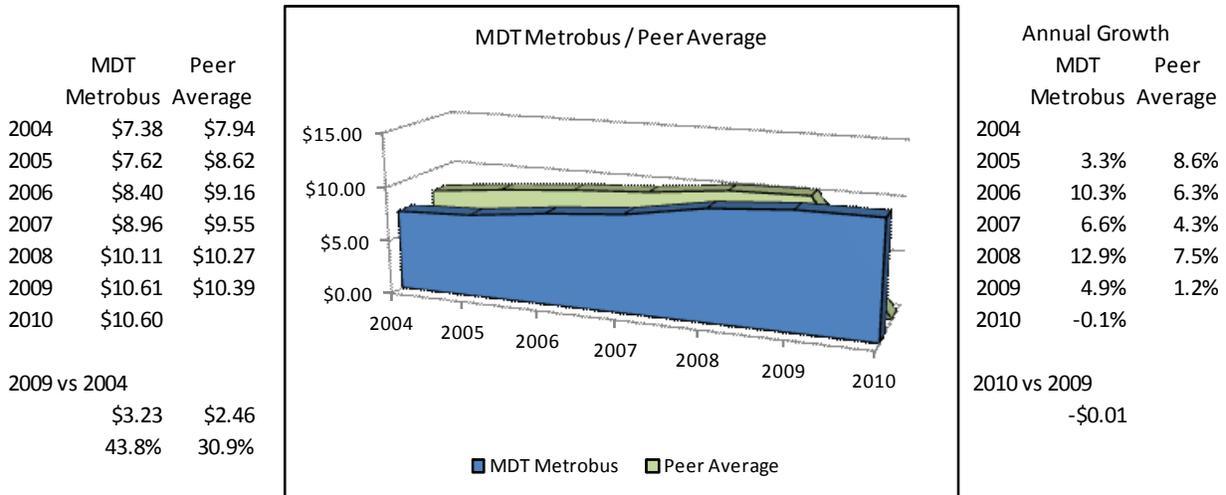
Metrobus cost per revenue mile was actually less than the peer group average until 2009, when Metrobus reported a 4.9 percent increase in cost (Figure 29).

A 7.9 percent decline in revenue miles was accompanied by an 8.0 percent reduction in operating costs in 2010 and was significant enough to reduce the operating cost per revenue mile. The reduction in cost (0.1% decrease) reported by Metrobus in 2010 yields a savings of \$0.01 for each revenue mile of service, which translates into an annual cost reduction of \$300,000.



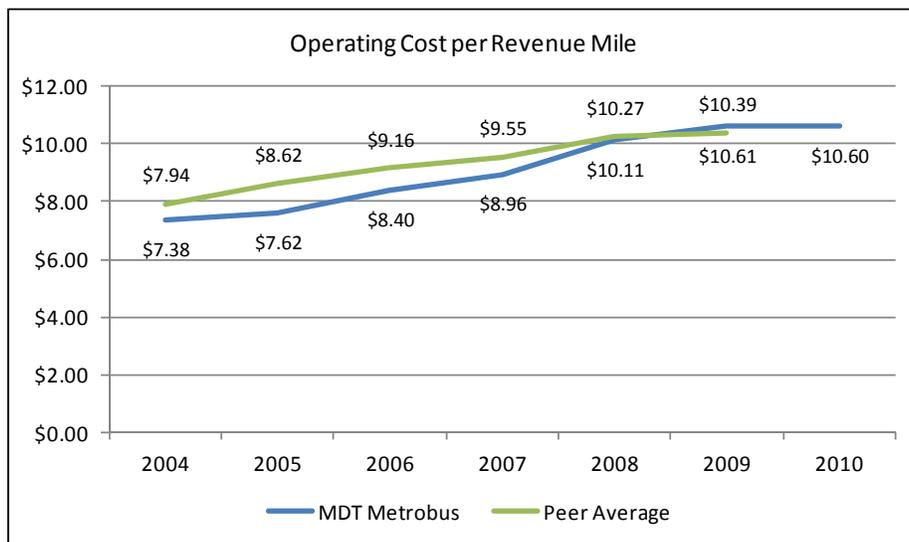
	Operating Cost (\$0)		Revenue Miles	
	MDT Metrobus	Peer Average	MDT Metrobus	Peer Average
2004	\$22,942,732	\$17,502,159	31,100,472	22,040,012
2005	\$26,075,694	\$18,534,894	34,222,523	21,366,686
2006	\$30,937,965	\$19,461,605	36,825,387	20,936,003
2007	\$31,932,760	\$20,433,178	35,654,448	21,160,676
2008	\$33,789,442	\$22,238,216	33,407,289	21,720,627
2009	\$33,472,732	\$22,883,233	31,547,096	22,105,744
2010	\$30,785,263		29,043,637	

Figure 28 - Operating Costs and Revenue Miles



**Figure 29 - Operating Cost per Revenue Mile - Metrobus / Peer Average**

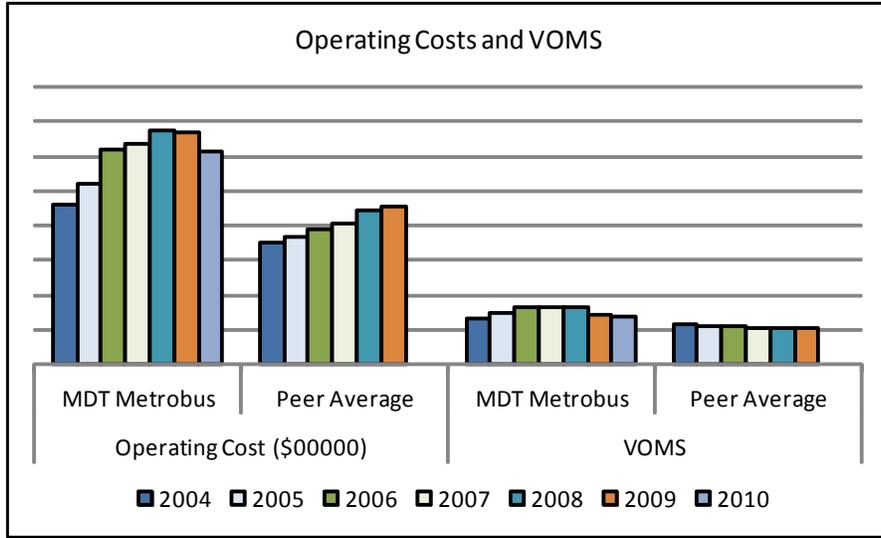
In 2010, Metrobus reduced operating cost per revenue mile from \$10.61 in 2009 to \$10.60, a 0.1 percent decrease (Figure 30).



**Figure 30 - Operating Cost per Revenue Mile (Cost Efficiency)**

### Metrobus Cost Efficiency: Operating Cost per VOMS

Operating cost per vehicle operated in maximum service (a measure of cost efficiency) is the next performance factor addressed in the report. Operating cost per VOMS is derived from total operating costs and VOMS (Figure 31) and provides an indication of what a VOMS costs to operate. In 2009, Metrobus reduced both operating costs (a 0.9% decrease) and VOMS (a 13.2% decrease), while the peer group average increased in costs (a 2.9% increase) but reduced VOMS (a 1.8% decrease).

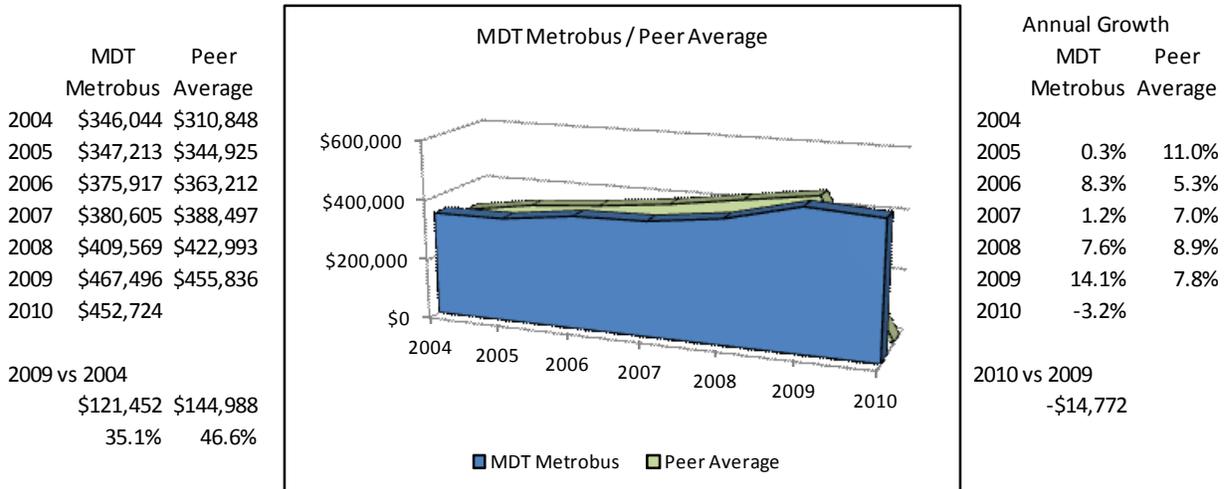


	Operating Cost (\$00000)		VOMS	
	MDT Metrobus	Peer Average	MDT Metrobus	Peer Average
2004	\$2,294	\$1,750	663	581
2005	\$2,608	\$1,853	751	551
2006	\$3,094	\$1,946	823	543
2007	\$3,193	\$2,043	839	532
2008	\$3,379	\$2,224	825	533
2009	\$3,347	\$2,288	716	524
2010	\$3,079		680	

**Figure 31 - Operating Costs and VOMS**

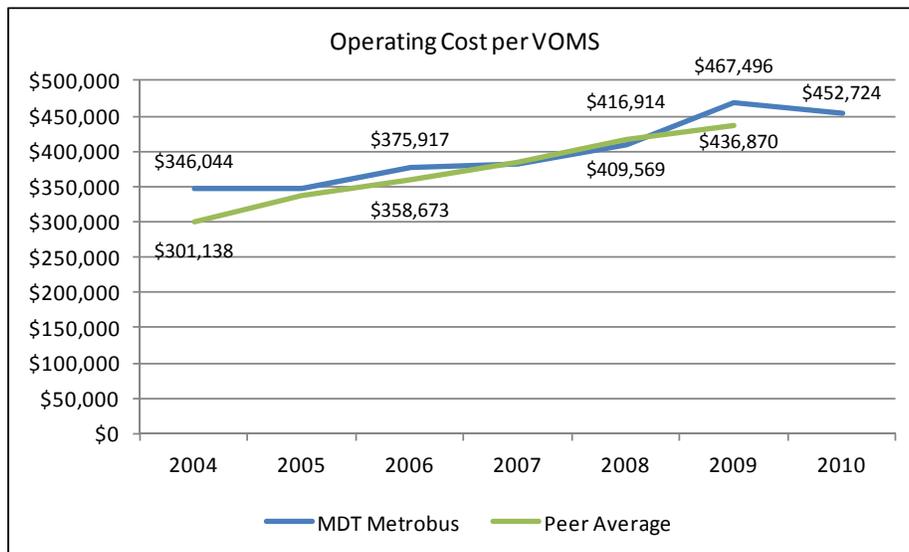
Metrobus cost per VOMS was actually less than the peer group average in 2007 and 2008. It once again exceeded the peer group average cost in 2009, when Metrobus reported a 14.1 percent increase in cost (Figure 32).

Metrobus reduced VOMS from 716 in 2009 to 680 in 2010, a reduction of 36 VOMS (a 5.0% decrease). Metrobus reduction in operating costs was significant enough to reduce operating cost per VOMS by 3.2 percent, despite the operation of fewer VOMS.



**Figure 32 - Operating Cost per VOMS - Metrobus / Peer Average**

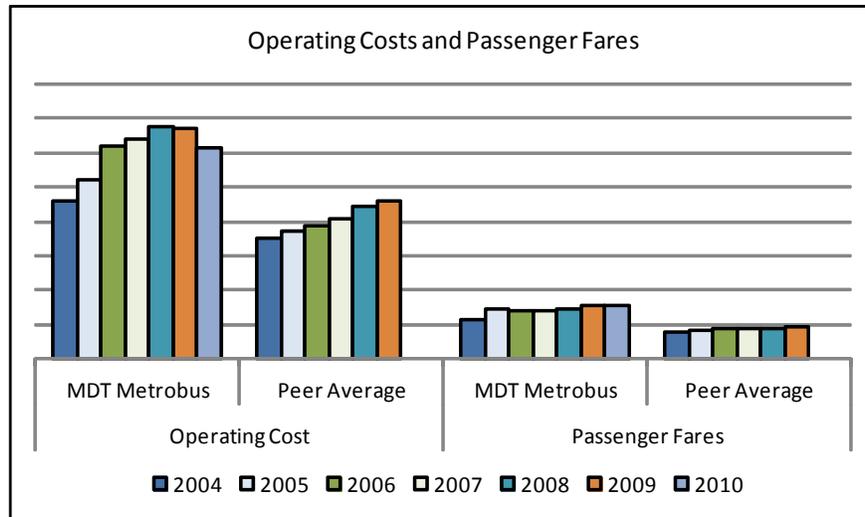
In 2010, Metrobus reduced operating cost per VOMS from \$467,496 in 2009 to \$452,724, a 3.2 percent decrease (Figure 33).



**Figure 33 - Operating Cost per VOMS (Cost Efficiency)**

### Metrobus Cost Effectiveness: Farebox Recovery

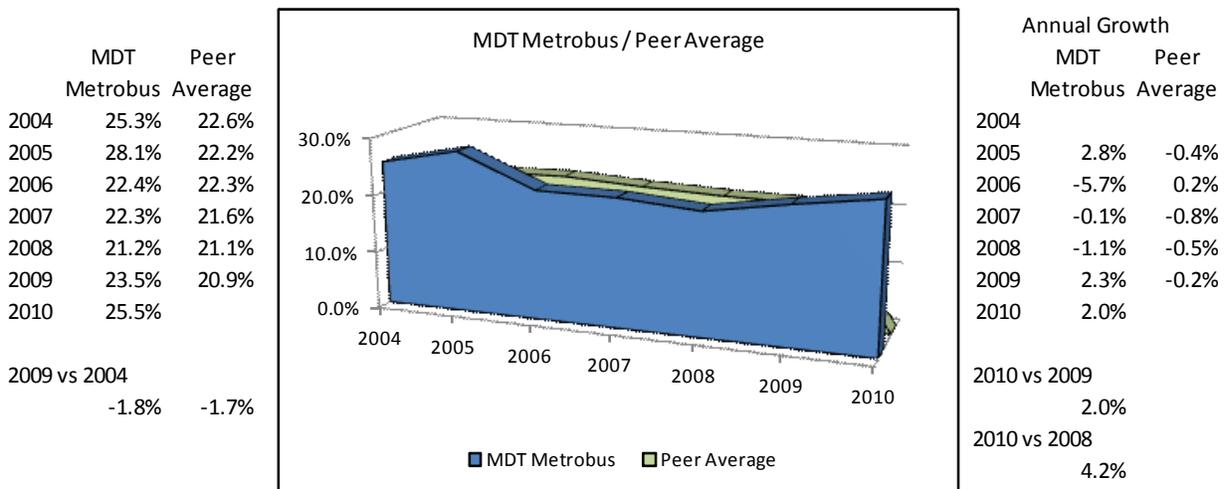
Farebox recovery is derived from operating costs and passenger fare revenue (Figure 34) and is a measure of the agency's effectiveness in recovering passenger fare revenue to cover operating costs. In 2009, Metrobus reduced operating costs (a 0.9% decrease) and increased passenger fare revenue (a 9.7% increase), while the peer group average increased in both costs (a 2.9% increase) and passenger fare revenue (a 3.2% increase).



	Operating Cost		Passenger Fares	
	MDT Metrobus	Peer Average	MDT Metrobus	Peer Average
2004	\$229,427,318	\$175,021,591	58,071,979	40,311,572
2005	\$260,756,940	\$185,348,943	73,220,122	41,204,892
2006	\$309,379,653	\$194,616,048	69,344,312	43,236,120
2007	\$319,327,599	\$204,331,781	71,186,530	44,099,893
2008	\$337,894,421	\$222,382,164	71,722,693	45,718,460
2009	\$334,727,320	\$228,832,329	78,650,396	47,144,153
2010	\$307,852,630		78,409,774	

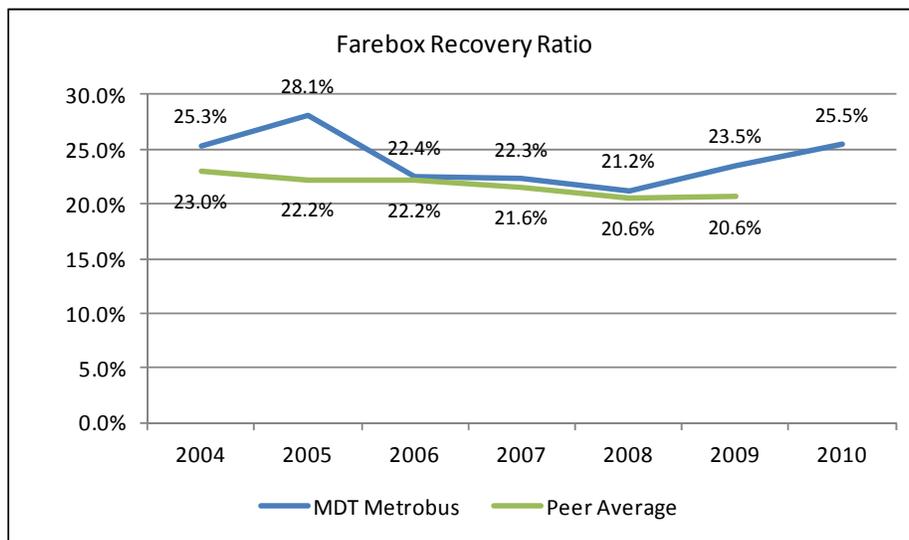
**Figure 34 - Operating Costs and Passenger Fares**

From 2004 through 2009, Metrobus consistently reported a higher level of farebox recovery than the peer group average (Figure 35). Reduced operating costs in 2010 were significant enough not only to offset a slight decline in fare revenue, but also to achieve the highest level of farebox recovery since 2005.



**Figure 35 - Farebox Recovery - Metrobus / Peer Average**

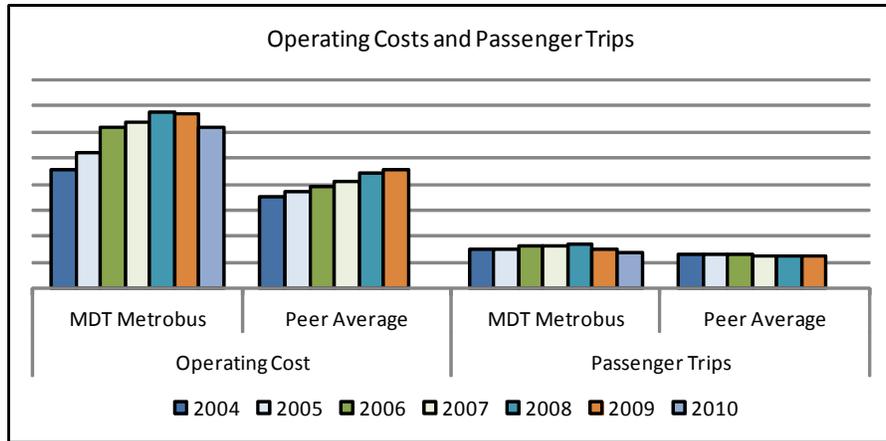
In 2010, Metrobus increased farebox recovery from 23.5 percent in 2009 to 25.5 percent, a 2.0 percent increase (Figure 36).



**Figure 36 - Farebox Recovery (Cost Efficiency)**

### Metrobus Cost Effectiveness: Operating Cost per Passenger Trip

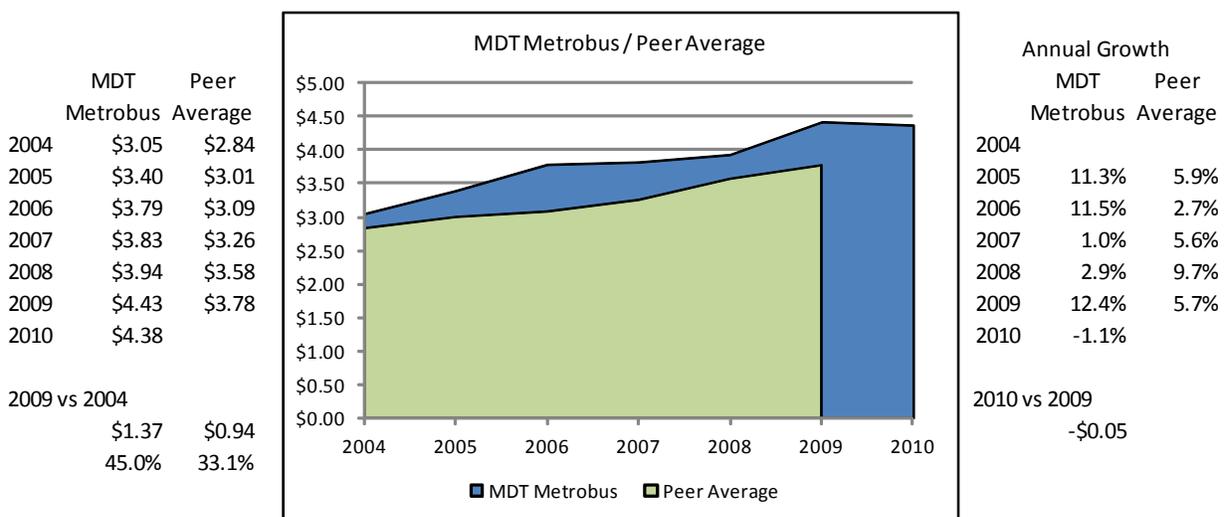
Operating cost per passenger trip is derived from operating costs and passenger trips (Figure 37) and is a measure of the effectiveness of the system in providing service. In 2009, Metrobus reduced both operating costs (-0.9%) and passenger trips (-11.9%) compared to 2008, while the peer group average increased in costs (2.9%) and maintained passenger trips slightly below the 2008 level (-0.2%).



	Operating Cost		Passenger Trips	
	MDT Metrobus	Peer Average	MDT Metrobus	Peer Average
2004	\$229,427,318	\$175,021,591	75,137,426	65,725,731
2005	\$260,756,940	\$185,348,943	76,752,965	64,982,631
2006	\$309,379,653	\$194,616,048	81,637,435	64,383,352
2007	\$319,327,599	\$204,331,781	83,458,376	64,066,915
2008	\$337,894,421	\$222,382,164	85,789,745	63,560,390
2009	\$334,727,320	\$228,832,329	75,608,000	63,403,392
2010	\$307,852,630		70,317,535	

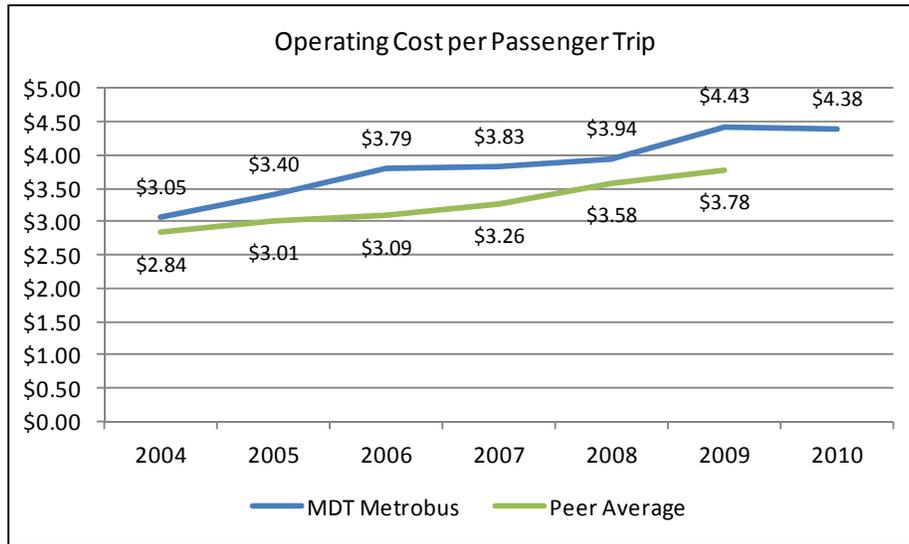
**Figure 37 - Operating Costs and Passenger Trips**

From 2004 through 2009, Metrobus consistently reported a higher cost per passenger trip than the peer group average (Figure 38). Reduced operating costs in 2010 were significant enough to offset a 7 percent reduction in passenger trips that fell from 75 million in 2009 to 70 million.



**Figure 38 - Operating Cost per Passenger Trip - Metrobus / Peer Average**

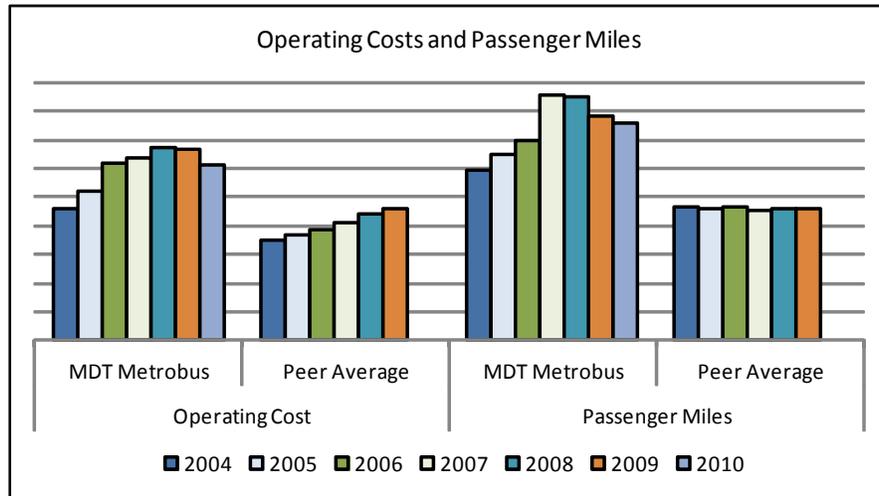
In 2010, Metrobus reduced operating cost per passenger trip from \$4.34 in 2009 to \$4.38, a 1.1 percent decrease (Figure 39).



**Figure 39 - Operating Cost per Passenger Trip (Cost Effectiveness)**

### Metrobus Cost Effectiveness: Operating Cost per Passenger Mile

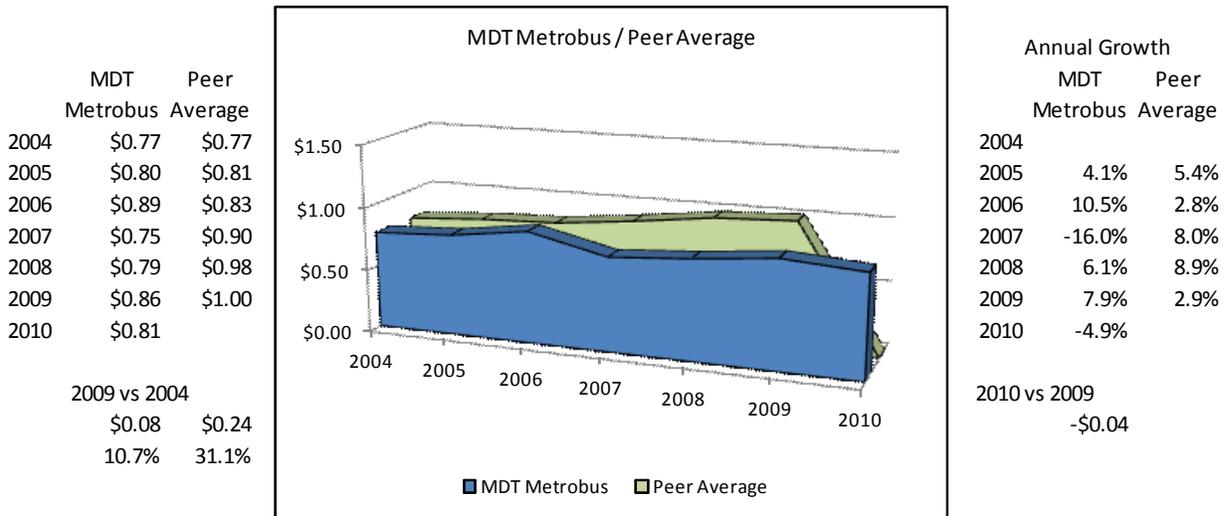
Operating cost per passenger mile is derived from operating costs and passenger miles (Figure 40) and is a measure of the effectiveness of the system in providing service. Unlike passenger trips, passenger miles are sensitive to the length of each trip. In 2009, Metrobus reduced both operating costs (-0.9%) and passenger trips (-8.2%) compared to 2008, while the peer group average increased in costs (2.9%) but failed to maintain passenger trips at 2008 levels (-0.4%).



	Operating Cost		Passenger Miles	
	MDT Metrobus	Peer Average	MDT Metrobus	Peer Average
2004	\$229,427,318	\$175,021,591	296,888,711	234,409,475
2005	\$260,756,940	\$185,348,943	324,237,445	229,693,854
2006	\$309,379,653	\$194,616,048	348,022,328	234,153,098
2007	\$319,327,599	\$204,331,781	427,626,902	226,340,126
2008	\$337,894,421	\$222,382,164	426,400,643	229,993,644
2009	\$334,727,320	\$228,832,329	391,313,187	229,166,402
2010	\$307,852,630		378,487,849	

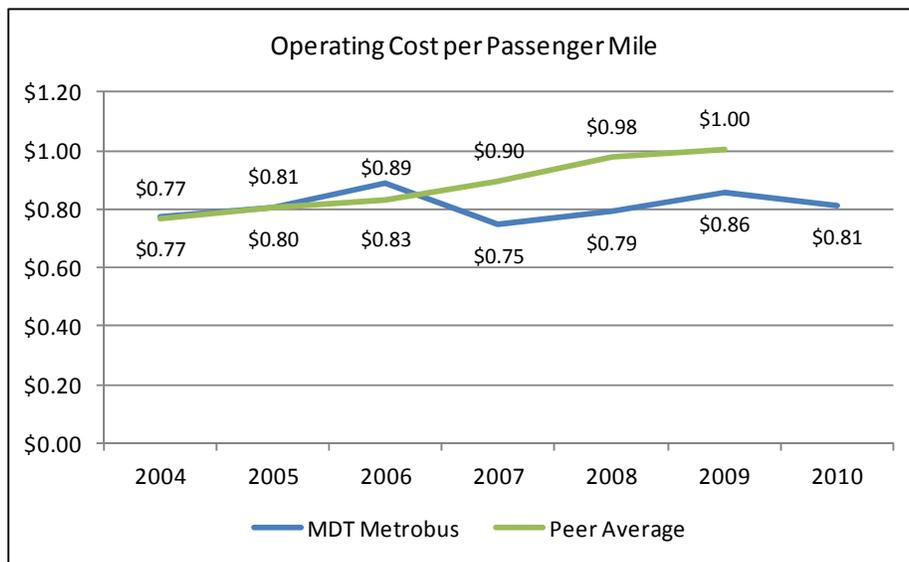
**Figure 40 - Operating Costs and Passenger Miles**

From 2004 through 2009, Metrobus cost per passenger mile fluctuated more than the peer group average (Figure 41), which reflected steady annual growth. Beginning in 2007, Metrobus cost per passenger mile fell below the peer group average, where it has remained. Reduced operating costs in 2010 were significant enough to offset a 3 percent reduction in passenger miles that fell from 391 million in 2009 to 378 million.



**Figure 41 - Operating Cost per Passenger Mile - Metrobus / Peer Average**

In 2010, Metrobus reduced operating cost per passenger mile from \$0.86 in 2009 to \$0.81, a 4.9 percent decrease (Figure 42).

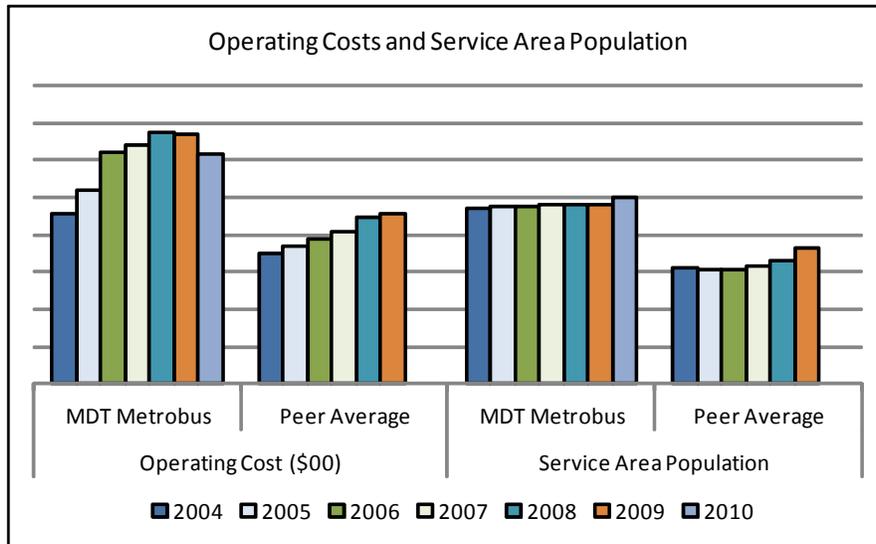


**Figure 42 - Operating Cost per Passenger Mile (Cost Effectiveness)**

### Metrobus Cost Effectiveness: Operating Cost per Capita

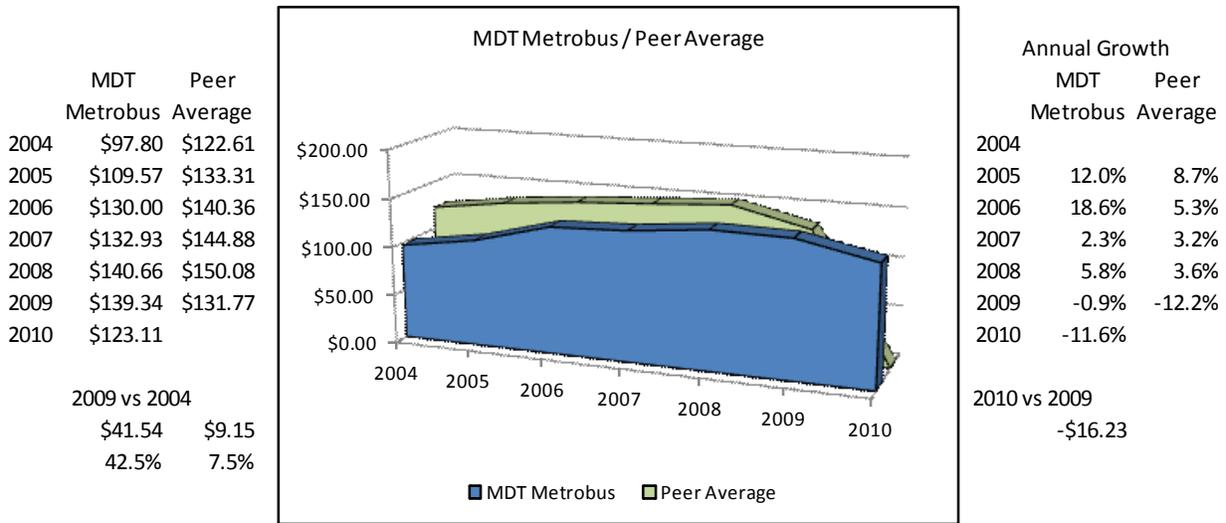
Operating cost per capita is derived from operating costs and service area population (Figure 43) and is a measure of the effectiveness of the system in providing service within the service area. In 2009, Metrobus reduced operating costs (-0.9%) and the service area population remained the same, while the peer group average reported increases in both costs (2.9%) and population (9.9%) as compared to 2008.

From 2004 through 2008, Metrobus cost per capita fell below the peer group average (Figure 44). Both Metrobus and the peer group average grew steadily on an annual basis until 2009, when both reported reductions in cost. Metrobus service area population grew by 4 percent in 2010 compared to 2009.



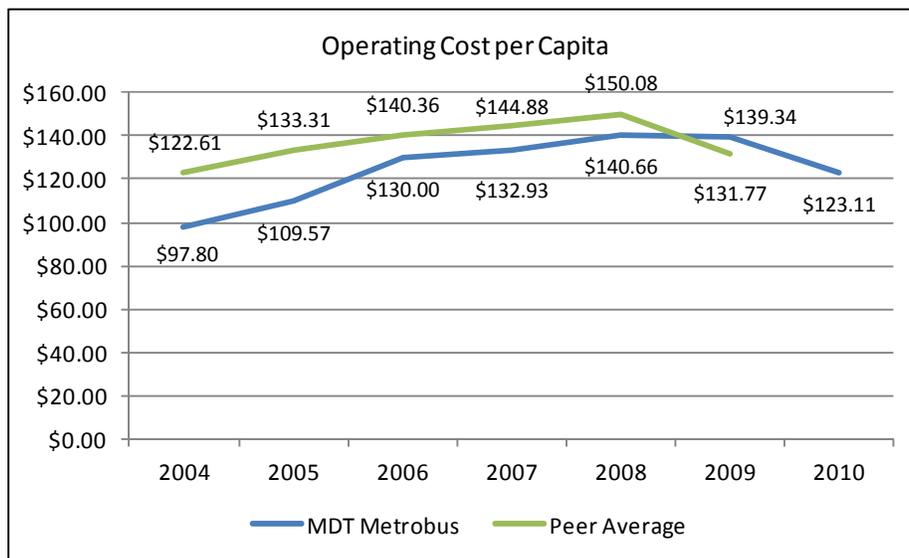
	Operating Cost (\$00)		Service Area Population	
	MDT Metrobus	Peer Average	MDT Metrobus	Peer Average
2004	\$2,294,273	\$1,750,216	2,345,932	1,564,926
2005	\$2,607,569	\$1,853,489	2,379,818	1,520,190
2006	\$3,093,797	\$1,946,160	2,379,818	1,525,387
2007	\$3,193,276	\$2,043,318	2,402,208	1,568,089
2008	\$3,378,944	\$2,223,822	2,402,208	1,656,760
2009	\$3,347,273	\$2,288,323	2,402,208	1,820,836
2010	\$3,078,526		2,500,625	

**Figure 43 - Operating Costs and Service Area Population**



**Figure 44 - Operating Cost per Capita - Metrobus / Peer Average**

In 2010, Metrobus reduced operating cost per capita from \$139.34 in 2009 to \$123.11, an 11.6 percent decrease (Figure 45).



**Figure 45 - Operating Cost per Capita (Cost Effectiveness)**

### Metrobus Cost Effectiveness: Subsidy per Boarding

Subsidy per boarding is derived from the cost per passenger trip and the average fare paid (Figure 46) and is a measure of the effectiveness of the system in recovering service costs. In 2009, Metrobus increased the operating cost per trip by \$0.49 (a 12.4% increase) and increased average fare by \$0.20 (a 24.4% increase), while the peer group average increased in operating cost per passenger trip by \$0.20 (a 5.7% increase) and average fare by \$0.03 (a 4.3% increase).

From 2004 through 2009, Metrobus subsidy per boarding exceeded the peer group average (Figure 47). Both Metrobus and the peer group average subsidy grew steadily on an annual basis through 2009. In 2009, the Metrobus average fare increased from \$0.84 to \$1.04 compared to the peer group average fare that rose from \$0.73 to \$0.76. Metrobus average fare grew to \$1.12 in 2010 and was significant in drawing down the subsidy per boarding.

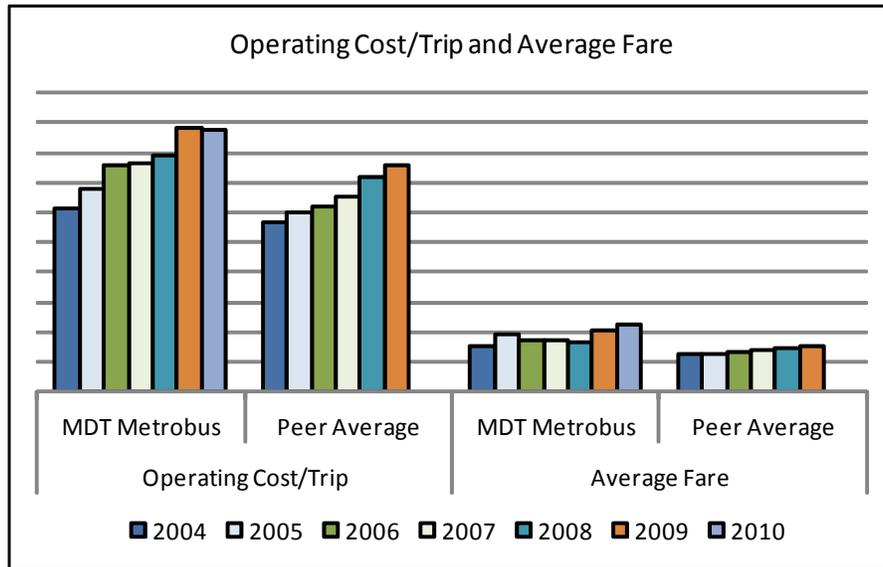
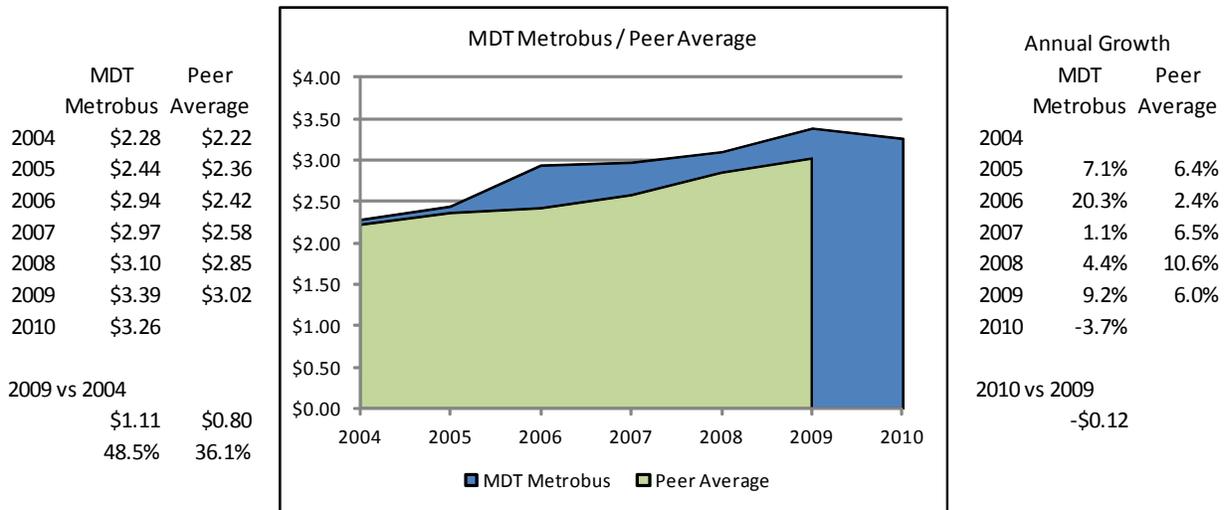
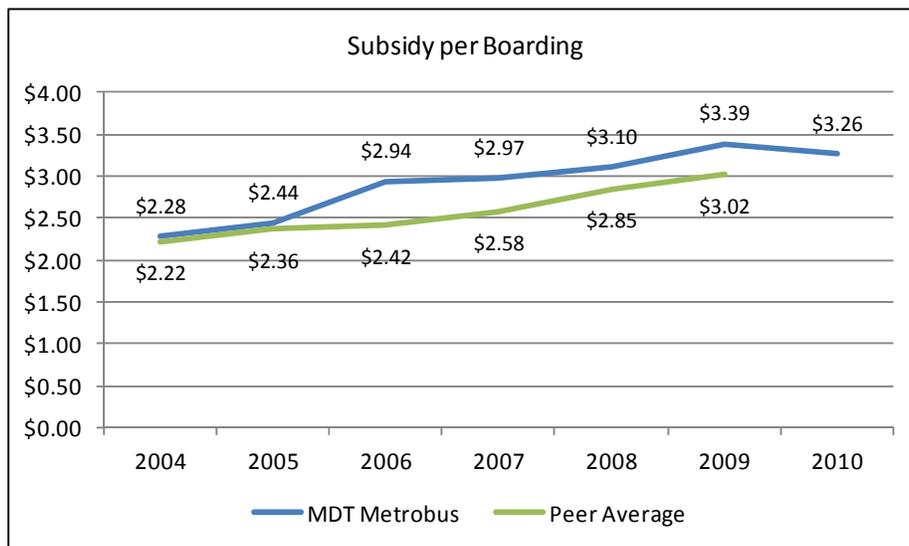


Figure 46 - Operating Cost/Passenger Trip and Average Fare



**Figure 47 - Subsidy per Boarding - Metrobus / Peer Average**

In 2010, Metrobus reduced subsidy per boarding from \$3.39 in 2009 to \$3.26, a 3.7 percent decrease (Figure 48).



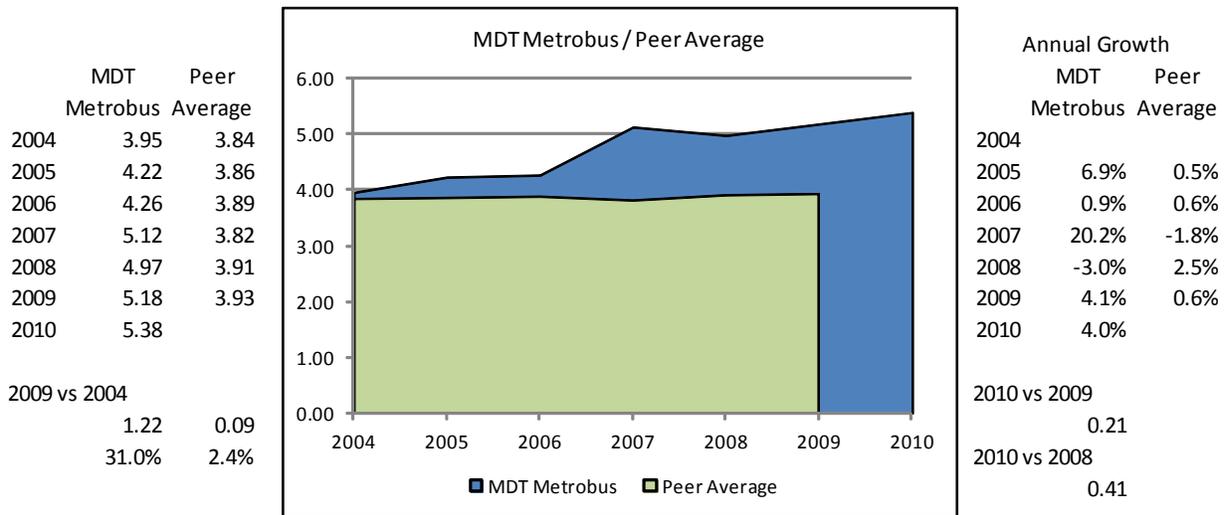
**Figure 48 - Subsidy per Boarding (Cost Effectiveness)**

### Metrobus Service Utilization: Average Trip Length

Average trip length is derived from passenger trips and passenger miles and is a measure of the effectiveness of the system in providing service.

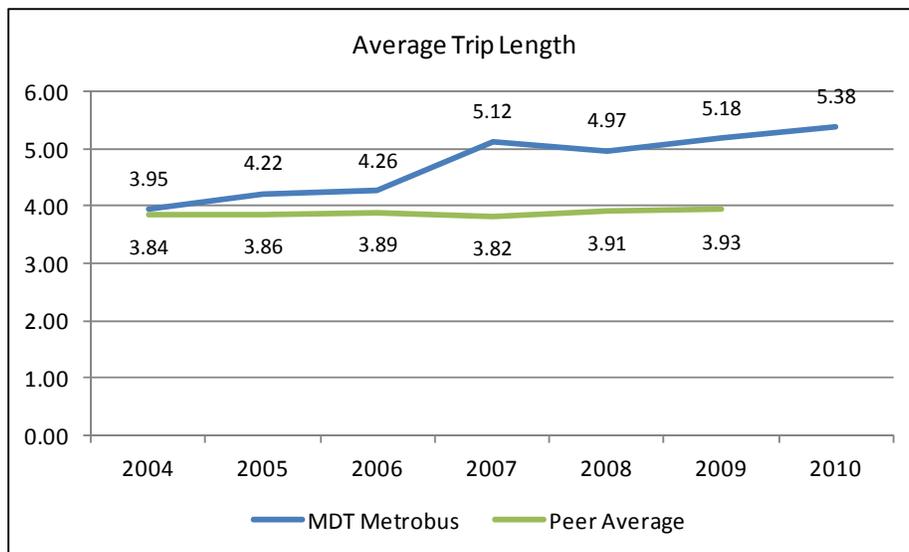
From 2004 through 2009, Metrobus average trip length consistently exceeded the peer group average (Figure 40). Both Metrobus and the peer group average trip length grew on an annual basis from 2004

through 2009, except for a decline in the peer group average in 2007 and a similar Metrobus decline in 2008. In 2009, the peer group achieved an average trip length of 3.93 miles compared to a Metrobus average trip length of 5.18 miles. In 2010, the Metrobus average trip length grew to 5.38 miles.



**Figure 49 - Average Trip Length - Metrobus / Peer Average**

In 2010, Metrobus increased average trip length from 5.18 miles in 2009 to 5.38 miles, a 4.0 percent increase (Figure 50).

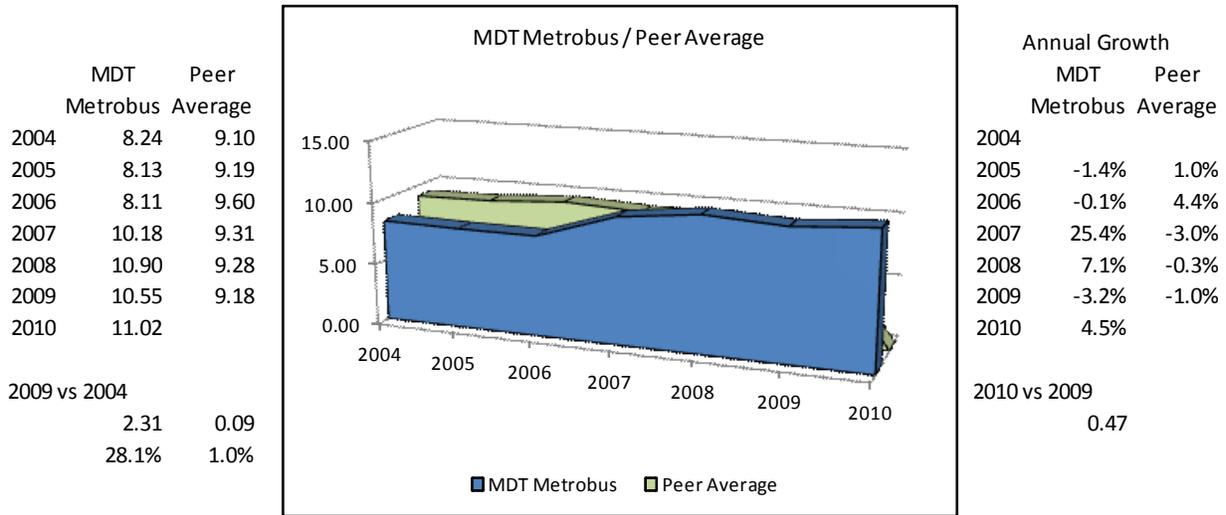


**Figure 50 - Average Trip Length (Service Utilization)**

### Metrobus Service Utilization: Passenger Miles per Vehicle Mile

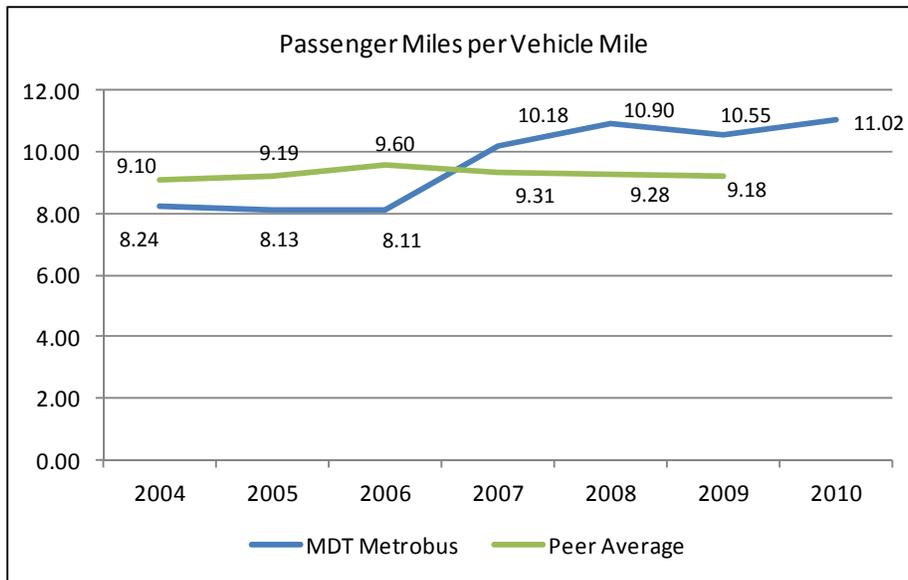
The relationship of passenger miles to vehicle miles is a measure of service utilization and productivity.

From 2004 through 2006, Metrobus provided fewer passenger miles per vehicle mile than the peer group average. Since 2007, Metrobus not only has exceeded the peer group average, but also continues to grow (Figure 51). In 2010, Metrobus achieved a new high of 11.02 passenger miles per vehicle mile.



**Figure 51 - Passenger Miles per Vehicle Mile - Metrobus / Peer Average**

In 2010, Metrobus increased passenger miles per vehicle mile from 10.55 in 2009 to 11.02, a 4.5 percent increase (Figure 52).

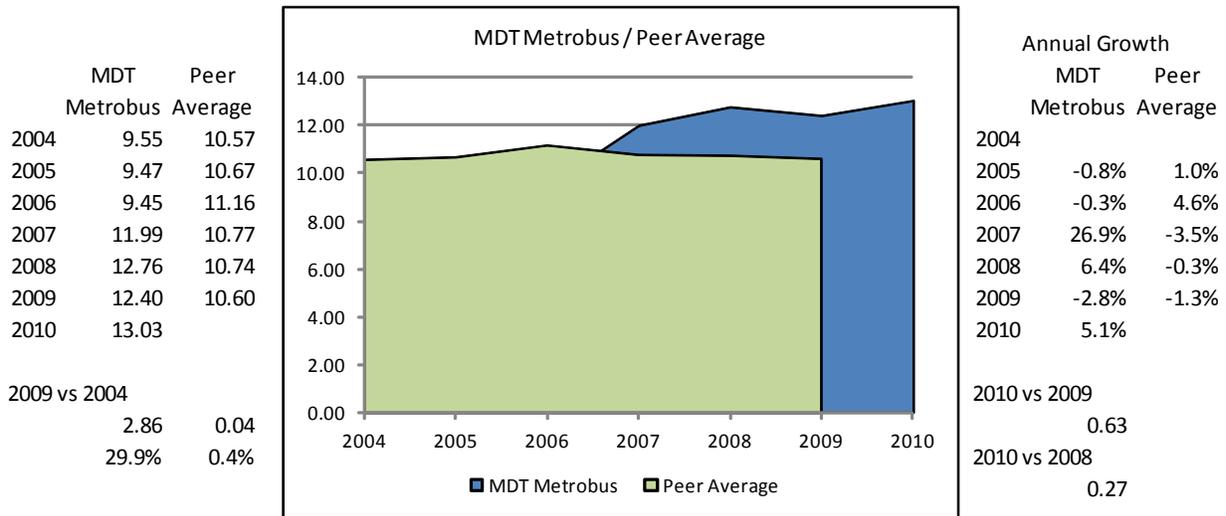


**Figure 52 - Passenger Miles per Vehicle Mile (Service Utilization)**

### Metrobus Service Utilization: Average Passenger Load

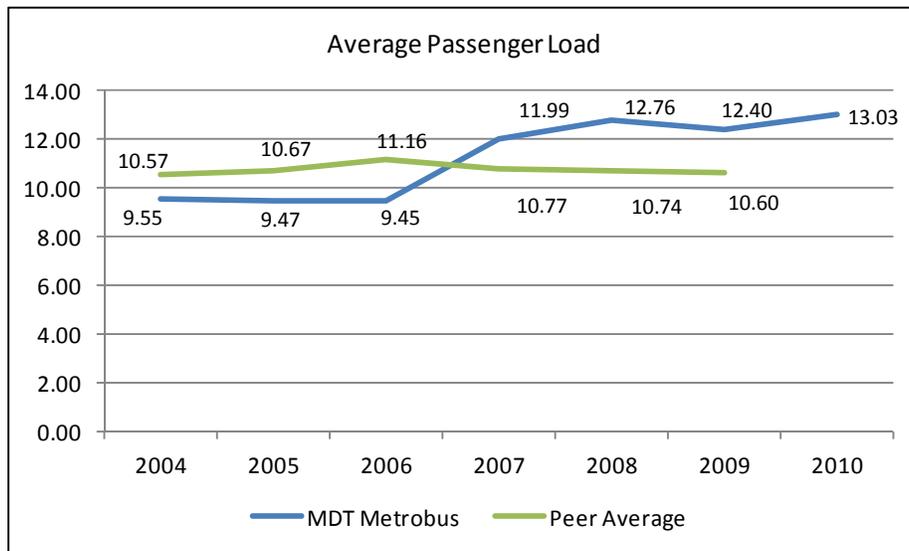
The relationship of passenger miles to revenue miles is referred to as average passenger load and is a commonly used measure of service utilization and productivity.

From 2004 through 2006, Metrobus average passenger load fell below the peer group average. Since 2007, Metrobus has not only exceeded the peer group average, but also continues to grow (Figure 53). In 2010, Metrobus achieved a new high average passenger load of 13.03.



**Figure 53 - Average Passenger Load - Metrobus / Peer Average**

In 2010, Metrobus increased average passenger load from 12.40 in 2009 to 13.03, a 5.1 percent increase (Figure 54).



**Figure 54 - Average Passenger Load (Service Utilization)**

### Metrobus Labor Administration: Vehicle Operations Expense

Vehicle operations expense (Figure 55) is used to measure day-to-day transit operations from a labor management perspective. Metrobus and peer group average vehicle operations expense showed regular consistent growth from 2004 through 2008. Metrobus vehicle operations expense in 2009 as compared to 2004 was 44.9 percent higher, and peer group average growth was 28.0 percent. Metrobus reduced vehicle operations expense in 2009 by 9.8 percent (a reduction of \$20.9 million), while the peer group average grew by 3.5 percent.

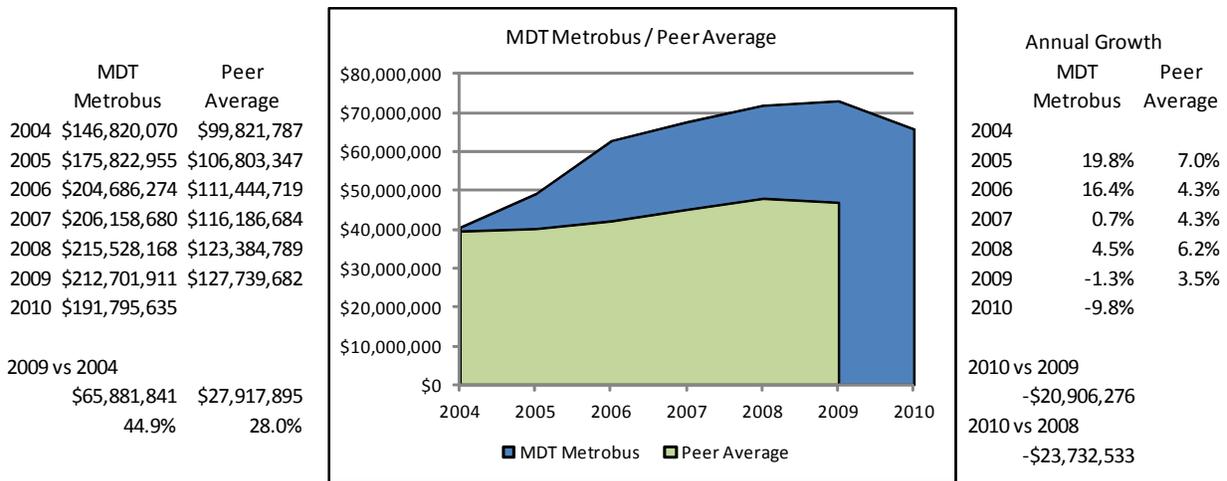


Figure 55 - Vehicle Operations Expense - Metrobus / Peer Average

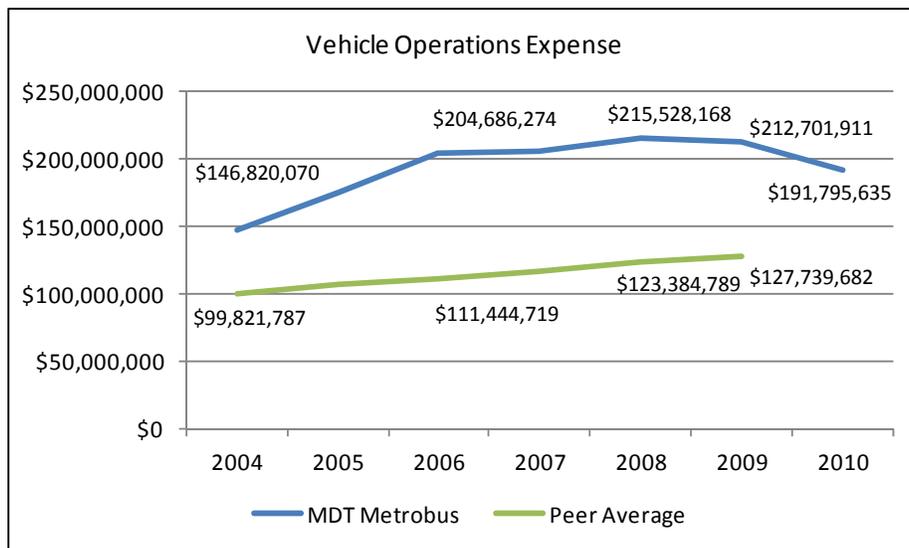


Figure 56 - Vehicle Operations Expense (Labor Administration)

Vehicle operation expense per VOMS identifies the vehicle operation labor commitment for providing a vehicle in maximum service (Figure 57). In 2010, Metrobus reduced vehicle operations expense per VOMS from \$297,070 in 2009 to \$282,052, a 5.1 percent decrease.

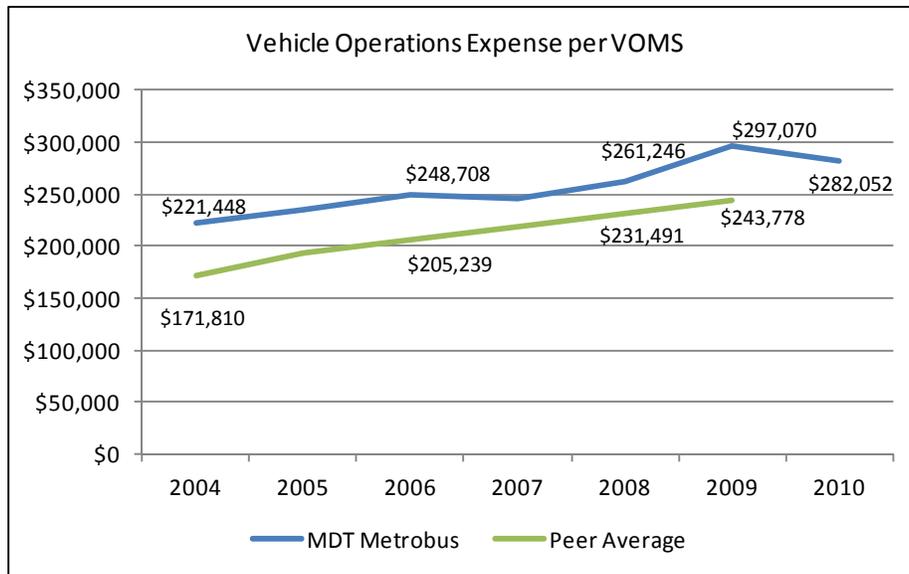


Figure 57 - Vehicle Operations Expense per VOMS (Labor Administration)

### Metrobus Labor Administration: Vehicle Maintenance Expense

Vehicle maintenance expense (Figure 58) is used to measure day-to-day transit operations from a labor management perspective. From 2004 through 2009, Metrobus vehicle maintenance expense continued to rise and grew by 80.3 percent in 2009 compared to 2004, while peer group average vehicle maintenance expense grew by 18.7 percent. In 2010, Metrobus reduced vehicle maintenance expense by more than \$7 million.

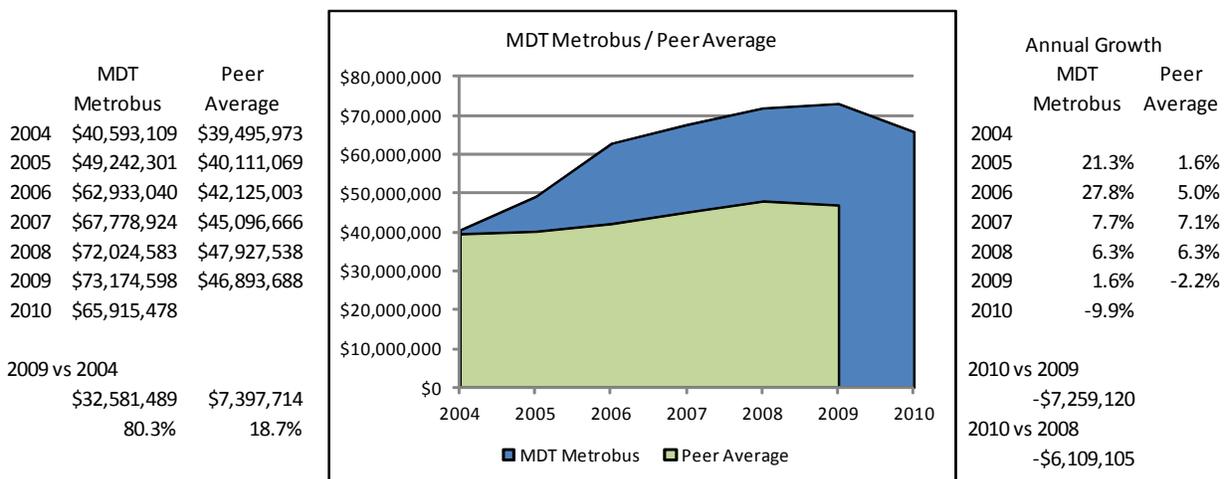
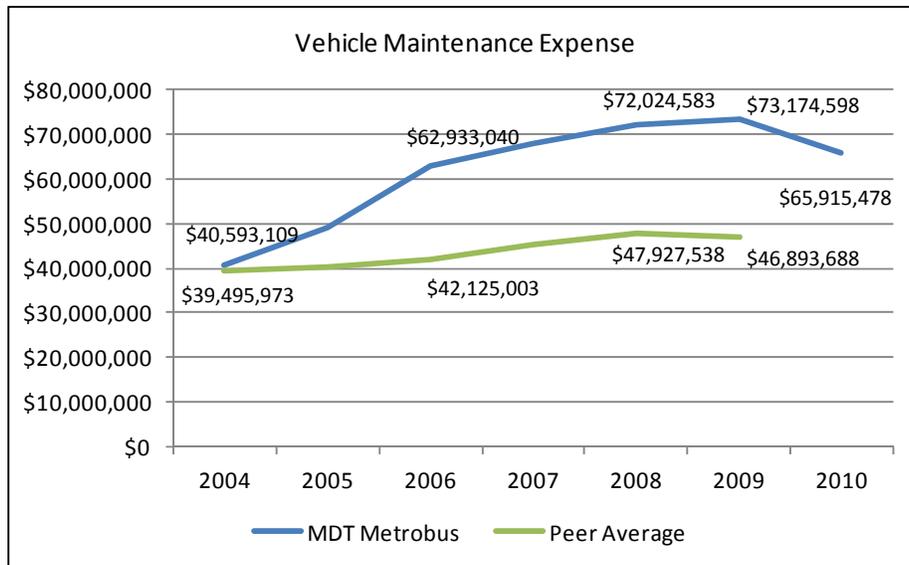
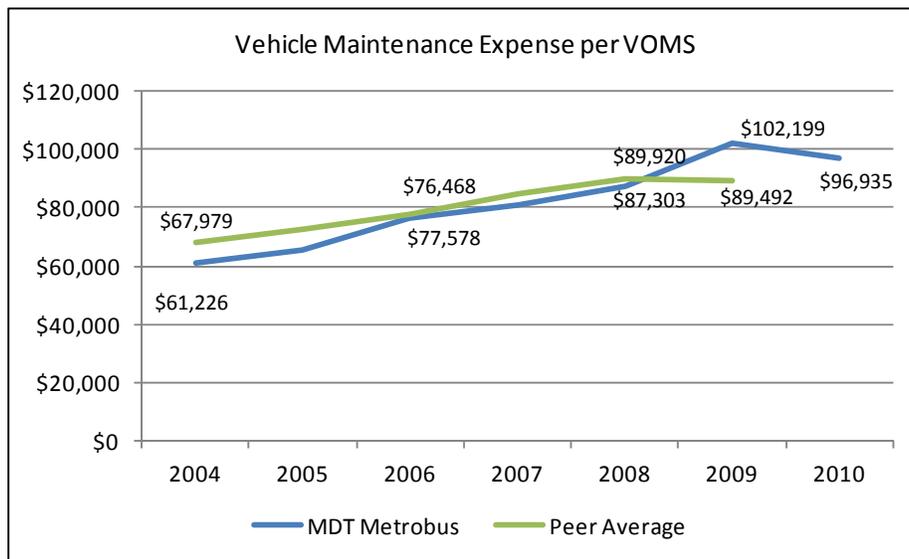


Figure 58 - Vehicle Maintenance Expense - Metrobus / Peer Average



**Figure 59 - Vehicle Maintenance Expense (Labor Administration)**

Vehicle maintenance expense per VOMS identifies the vehicle maintenance labor commitment for providing a vehicle in maximum service (Figure 60). In 2010, Metrobus reduced vehicle maintenance expense per VOMS from \$102,199 in 2009 to \$96,935, a 5.2 percent decrease.

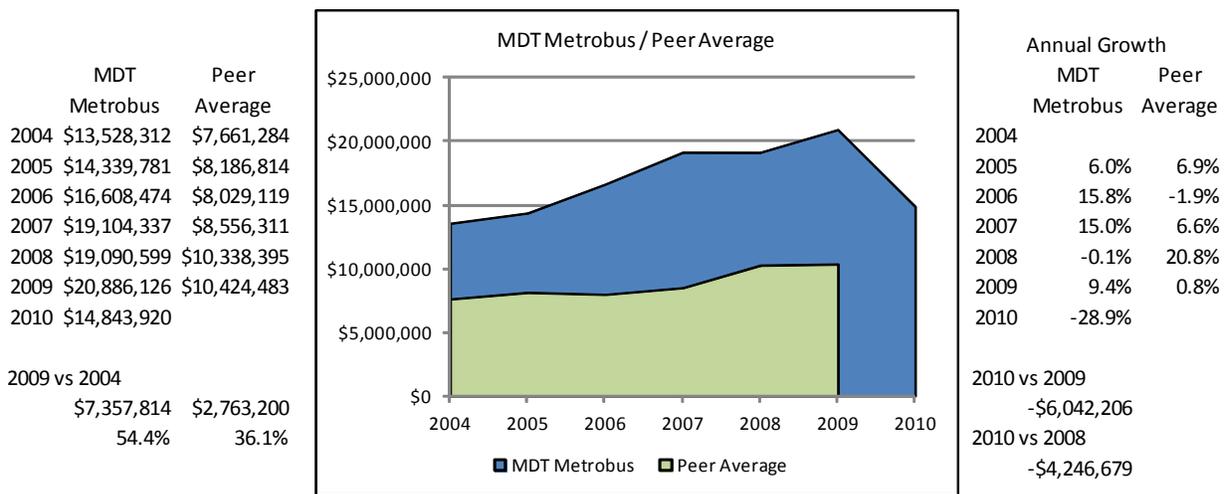


**Figure 60 - Vehicle Maintenance Expense per VOMS (Labor Administration)**

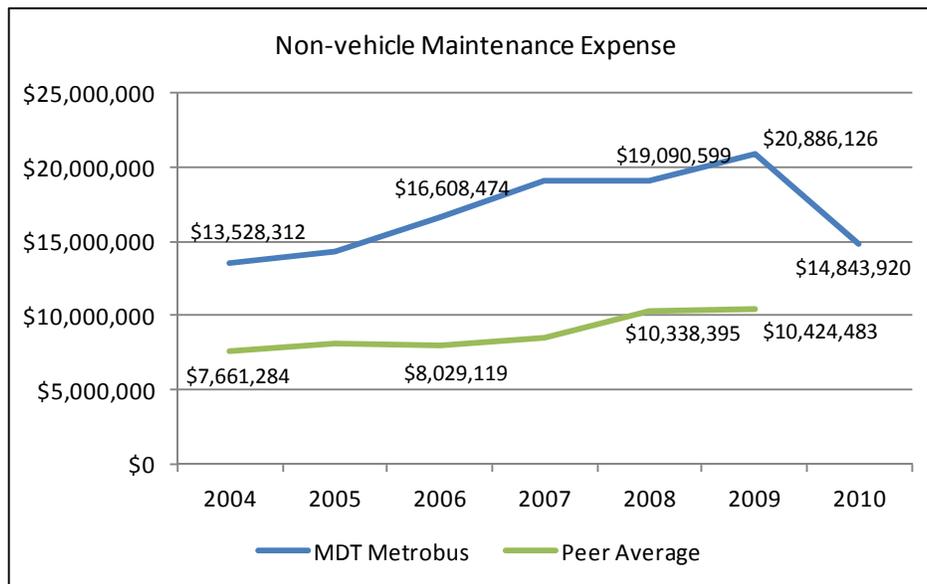
### Metrobus Labor Administration: Non-vehicle Maintenance Expense

Non-vehicle maintenance expense (Figure 61) is used to measure day-to-day transit operations from a labor management perspective. From 2004 through 2009, Metrobus non-vehicle maintenance expense continued to rise and grew by 54 percent in 2009 compared to 2004. During the same period, peer

group average non-vehicle maintenance expense grew by 36.1 percent. In 2010, Metrobus reduced non-vehicle maintenance expense by more than \$6 million.



**Figure 61 - Non-vehicle Maintenance Expense - Metrobus / Peer Average**



**Figure 62 - Non-vehicle Maintenance Expense (Labor Administration)**

Non-vehicle maintenance expense per VOMS identifies the non-vehicle maintenance labor commitment for providing a vehicle in maximum service (Figure 63). In 2010, Metrobus reduced non-vehicle maintenance expense per VOMS from \$29,171 in 2009 to \$21,829, a 25.2 percent decrease.

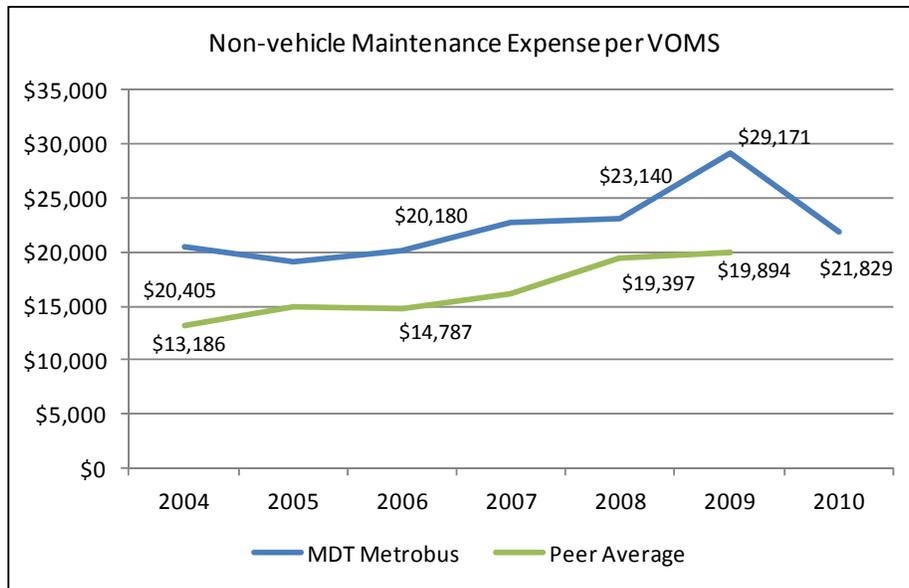


Figure 63 - Non-vehicle Maintenance Expense per VOMS (Labor Administration)

### Metrobus Labor Administration: General Administration Expense

General administration expense (Figure 64) is used to measure day-to-day transit operations from a labor management perspective. From 2004 through 2009, Metrobus general administration expense remained well below the peer group average and grew sporadically. A 10.5 percent decline in 2009 was followed by a 26.2 percent increase in 2010, when general administration expense increased by more than \$7 million.

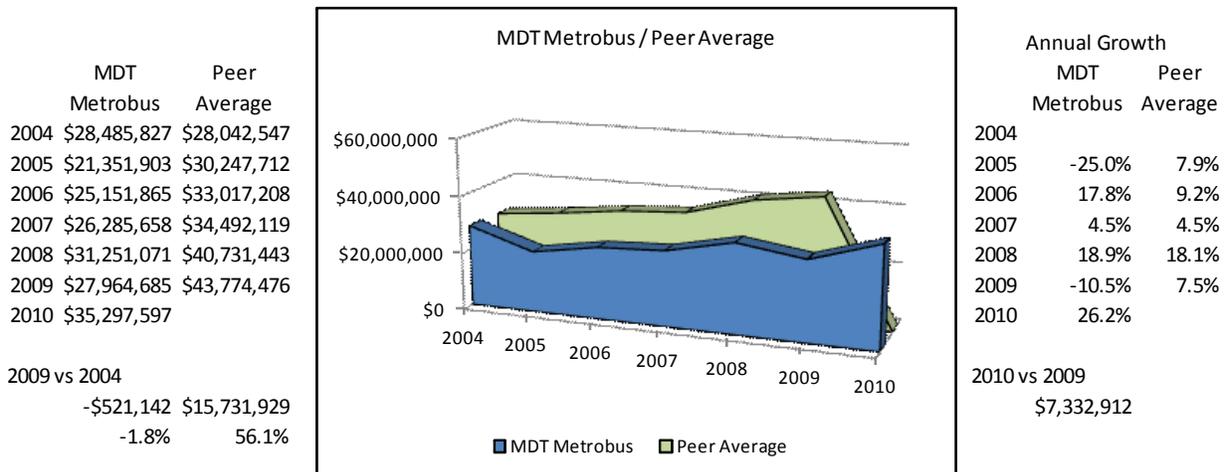
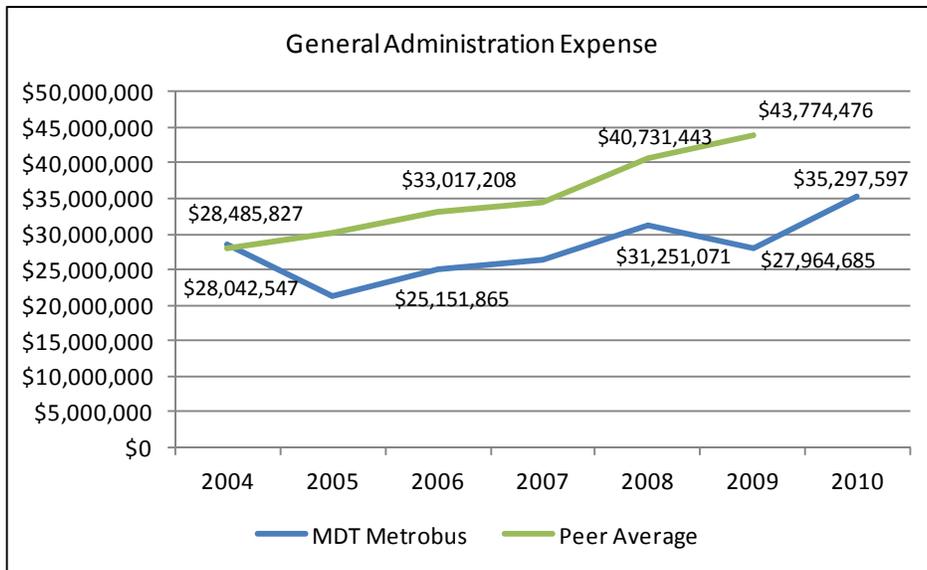
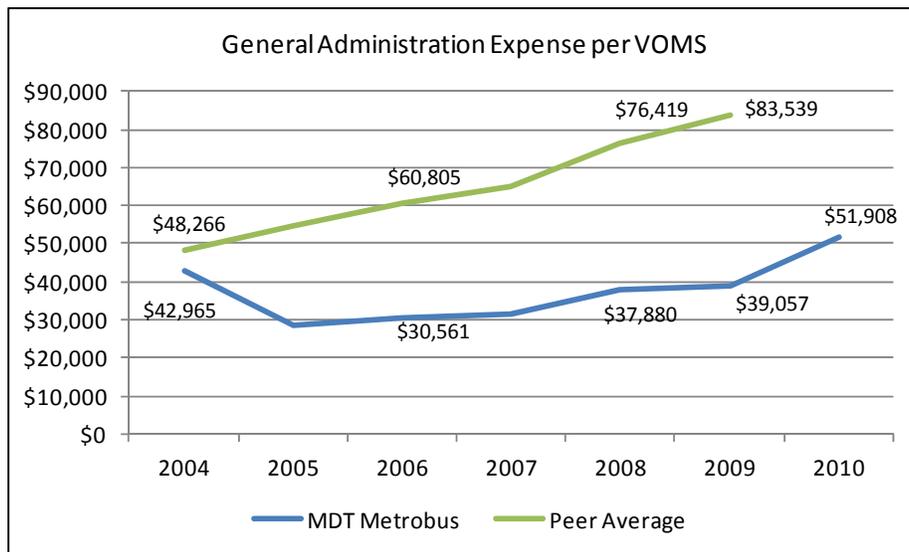


Figure 64 - General Administration - Metrobus / Peer Average



**Figure 65 - General Administration Expense (Labor Administration)**

General administration expense per VOMS identifies the general administration labor commitment for providing a vehicle in maximum service (Figure 66). In 2010, Metrobus increased general administration expense per VOMS from \$39,057 in 2009 to \$51,908 (a 32.9% increase).

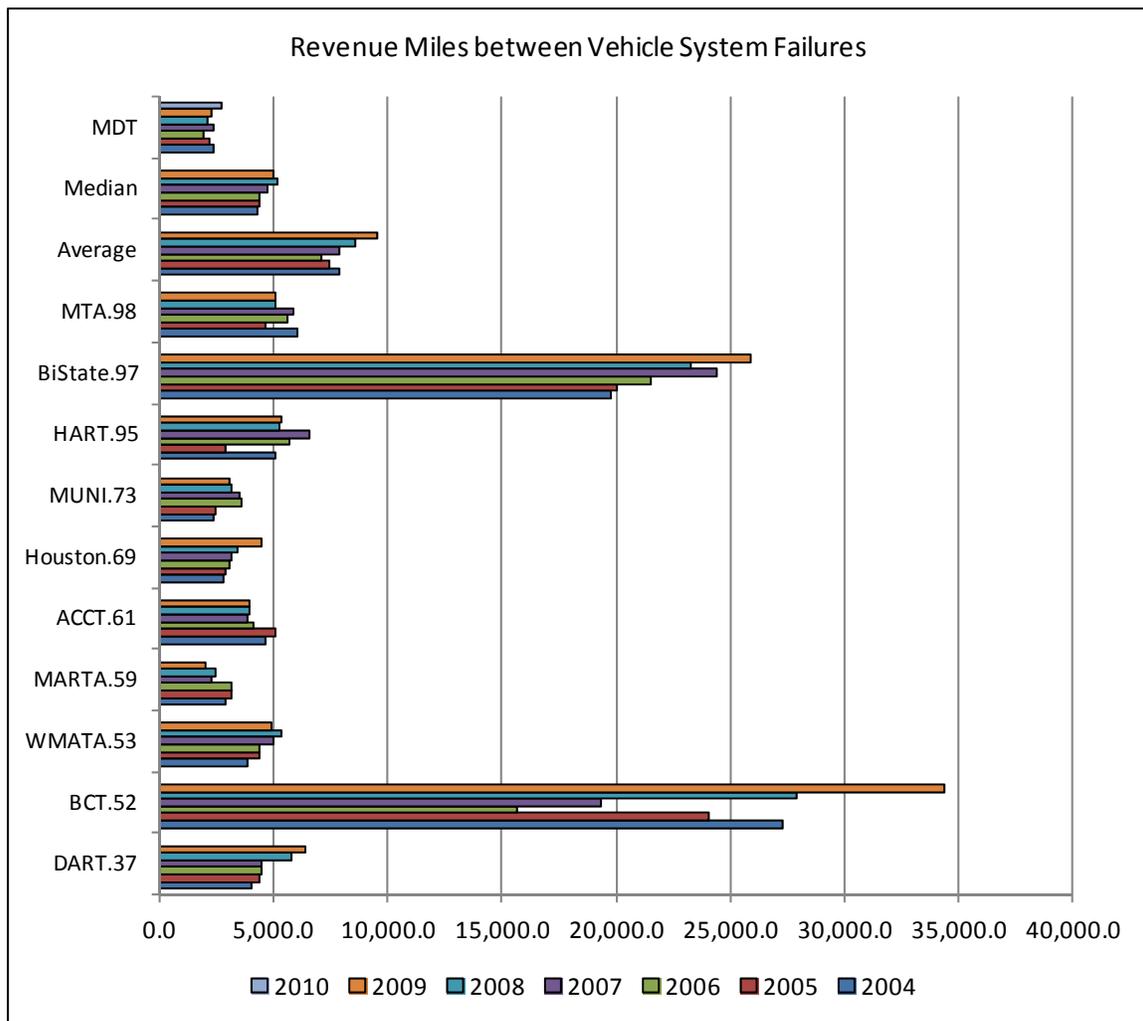


**Figure 66 - General Administration Expense per VOMS (Labor Administration)**

## Metrobus Maintenance Administration: Revenue Miles between Vehicle System Failures

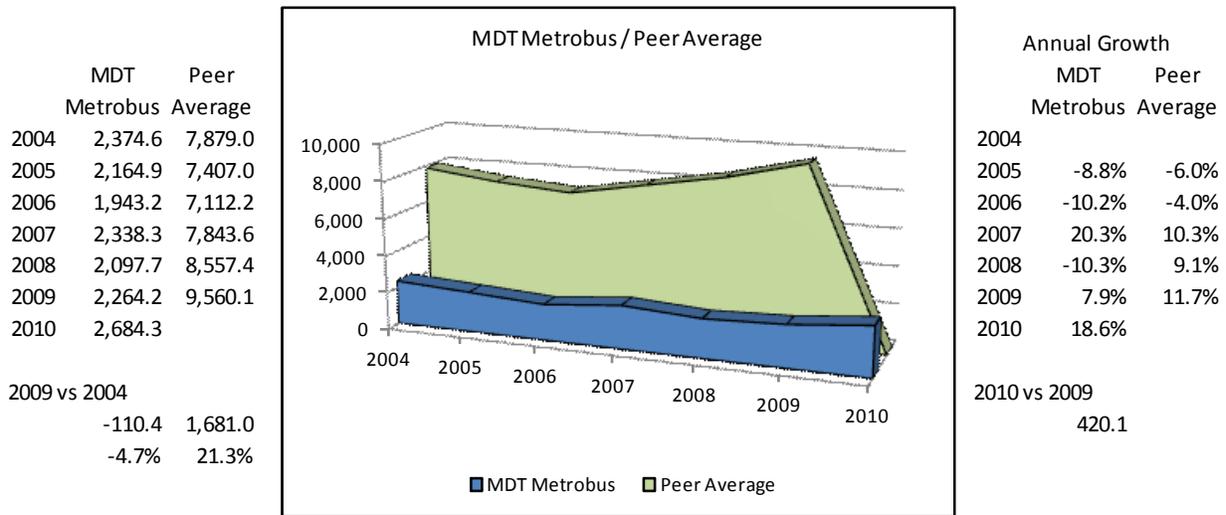
Revenue miles between vehicle system failures (RMBF) is one of the most common performance factors used to evaluate the performance of vehicle maintenance and the vehicle fleet and is a priority metric currently used by Metrobus.

An overview of peer agency RMBF (Figure 67) illustrates a wide range of results. Revenue miles between failures ranged from a maximum of 27,296 (BCT) to a minimum of 2,385 (MUNI) in 2004 and from a maximum of 34,353 (BCT) to a minimum of 1,996 (MARTA) in 2009. In addition, BiState reported RMBF ranging from 19,739 to 25,891 from 2004 through 2009.



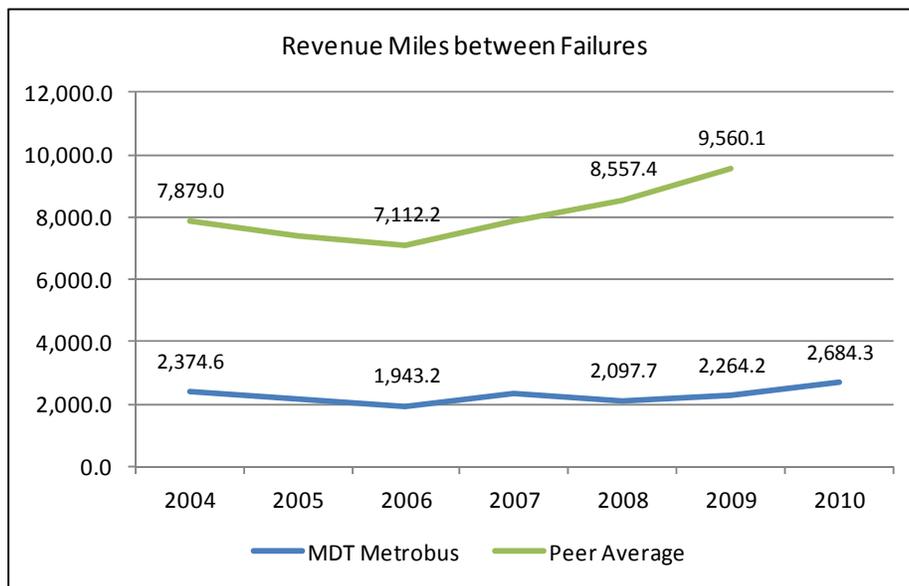
**Figure 67 - Revenue Miles between Failures**

Metrobus reported RMBF below the peer minimum in 2004 (2,375 miles) and continued a decline until 2007 (Figure 68), while the peer group average showed strong consistent growth beginning in 2005. Despite an 8 percent increase in 2009, followed by a 19 percent increase in 2010, Metrobus remained well below the peer group average.



**Figure 68 - Revenue Miles between Failures - Metrobus / Peer Average**

In 2010, Metrobus increased revenue miles between service failures from 2,264 in 2009 to 2,684, an 18.6 percent increase.



**Figure 69 - Revenue Miles between Failures (Maintenance Administration)**

Given the significant disparity in the range of RMBF reported, the peer group median was examined (Figure 70). The peer group median RMBF ranges from 4,322 in 2004 (compared to the peer group average of 7,879) to 5,008 in 2009 (compared to the peer group average of 9,560). An exploration of reporting of this metric should probably be undertaken.

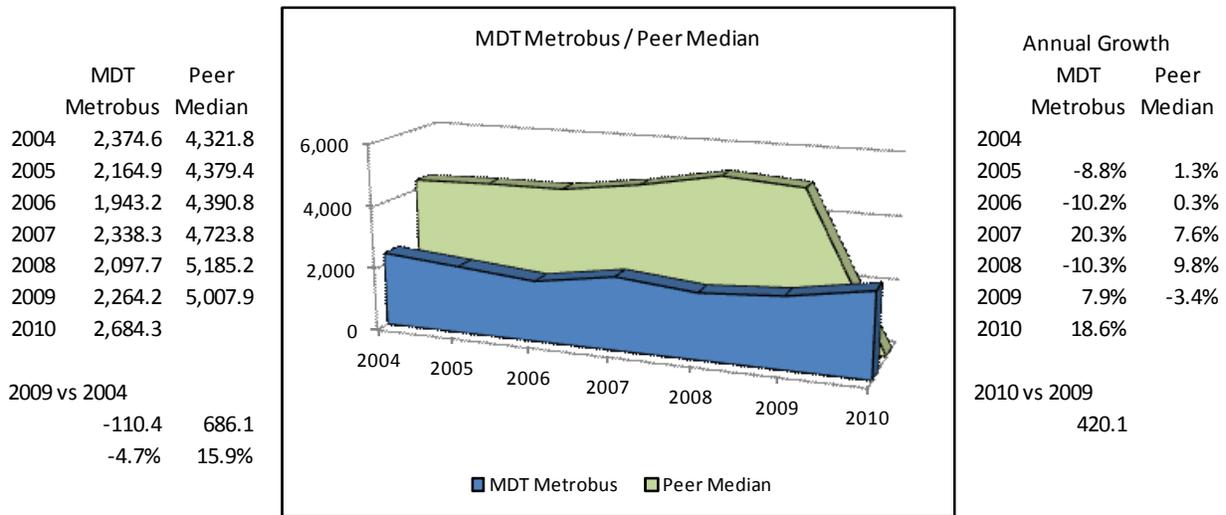


Figure 70 - Revenue Miles between Failures - Metrobus / Peer Median

### Metrobus Maintenance Administration: Maintenance Expense as a % of Total Expense

Maintenance expense as a percent of total expense focuses on performance of the maintenance function, where maintenance expense includes all vehicle and non-vehicle maintenance costs. Metrobus used a smaller percentage of total expense for maintenance than the peer group average until 2007 (Figure 71) and then grew to a high of 28.1 percent, while the peer group average remained relatively flat and then declined.

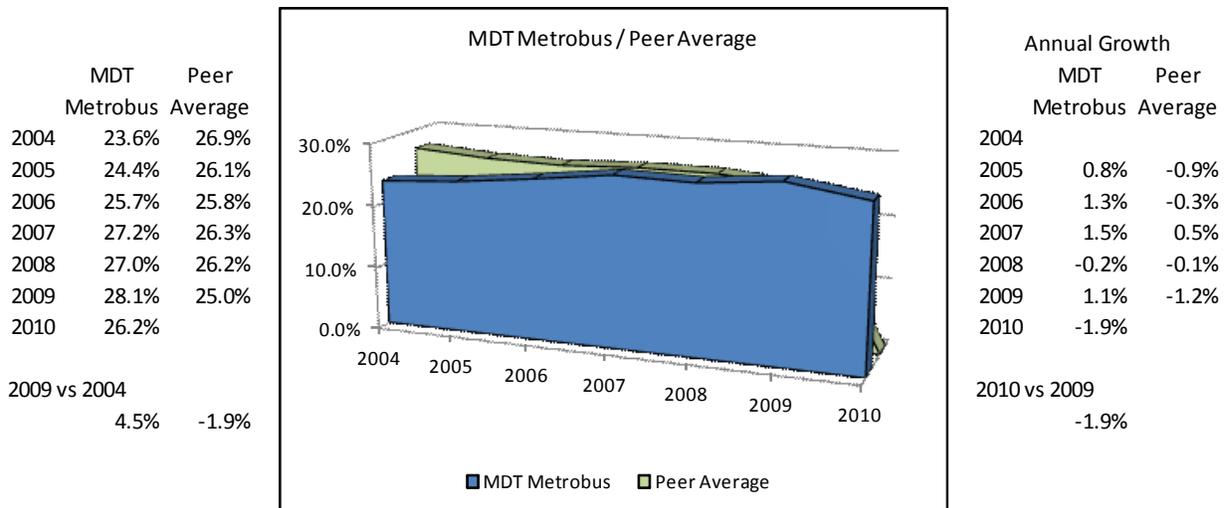


Figure 71 - Maintenance Expense as a % of Total Expense - Metrobus / Peer Average

In 2010, Metrobus reduced maintenance expense as a percent of total operating expense from 28.1 percent in 2009 to 26.2 percent, a 1.9 percent decrease.

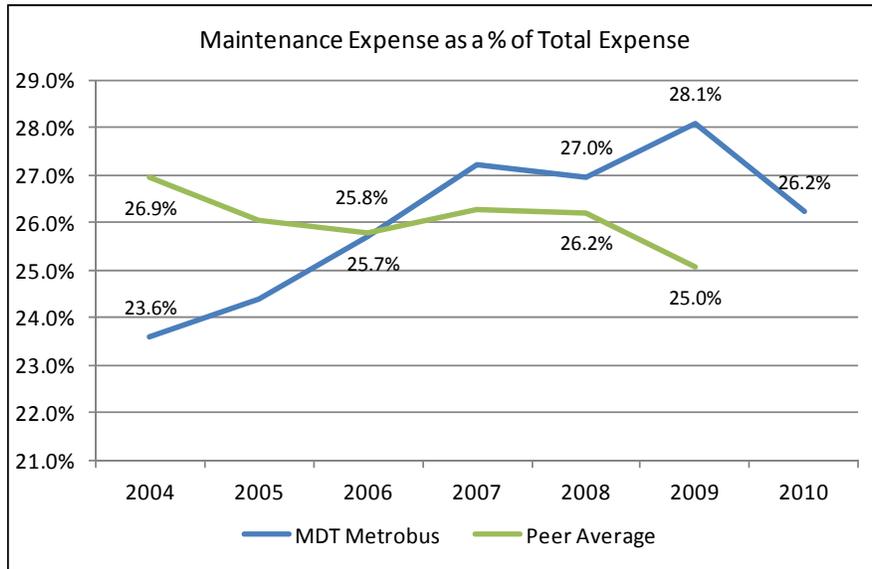


Figure 72 - Maintenance Expense as a % of Total Expense (Maintenance Administration)

### Metrobus Maintenance Administration: Vehicle Maintenance Cost per Vehicle Mile

Vehicle maintenance cost per vehicle mile focuses on the performance of the vehicle maintenance function. Metrobus reported a lower vehicle maintenance cost per vehicle mile than the peer group average until 2007 (Figure 73) and then grew rather significantly to a high of \$2.54 in 2009, while the peer group average remained relatively flat and then declined.

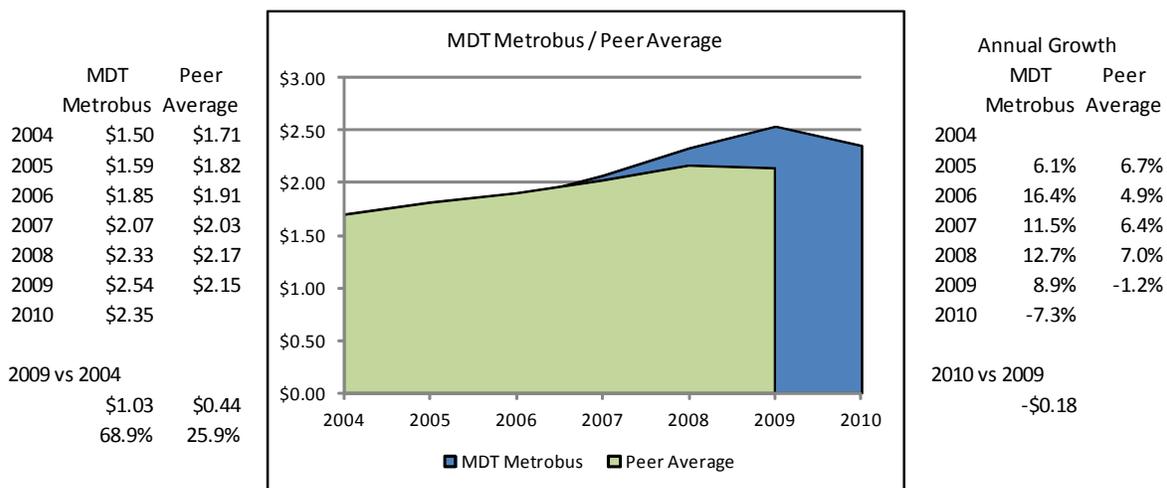


Figure 73 - Vehicle Maintenance Cost per Vehicle Mile - Metrobus / Peer Average

In 2010, Metrobus reduced vehicle maintenance cost per vehicle mile from \$2.54 in 2009 to \$2.35, a 7.3 percent decrease (Figure 74).

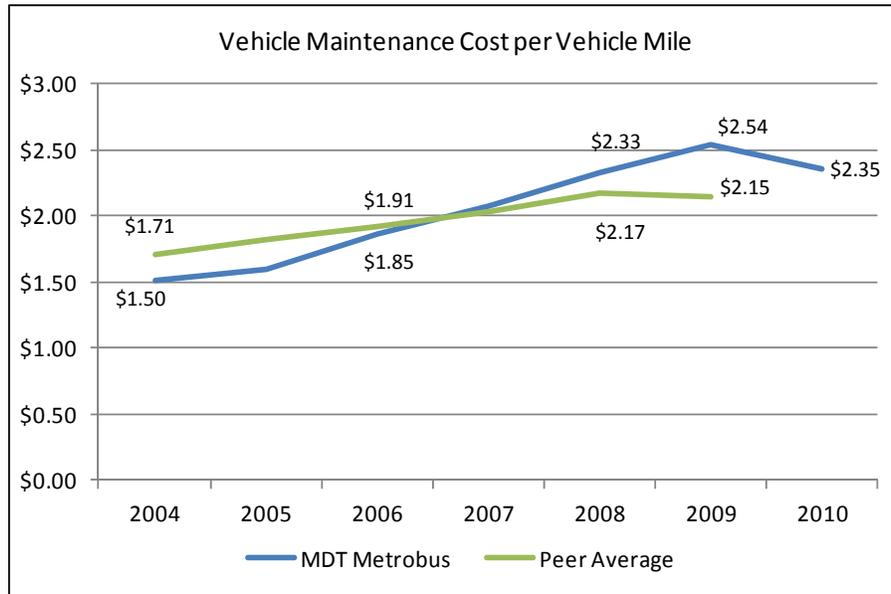


Figure 74 - Vehicle Maintenance Cost per Vehicle Mile (Maintenance Administration)

### Metrobus Maintenance Administration: Maintenance FTEs per VOMS

Maintenance FTEs per VOMS focuses on the performance of the maintenance function. Metrobus maintenance FTEs per VOMS (Figure 75) grew sporadically from 2004 through 2009 and consistently exceeded the peer group average until 2009. Metrobus maintenance FTEs per VOMS declined 2.3 percent over the period, while peer agency average growth exceeded 13 percent.

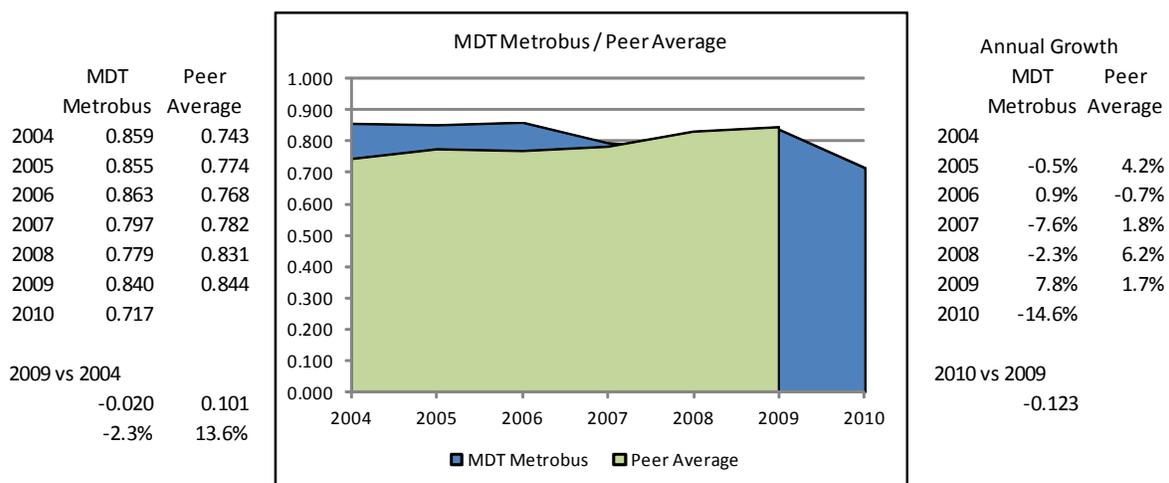
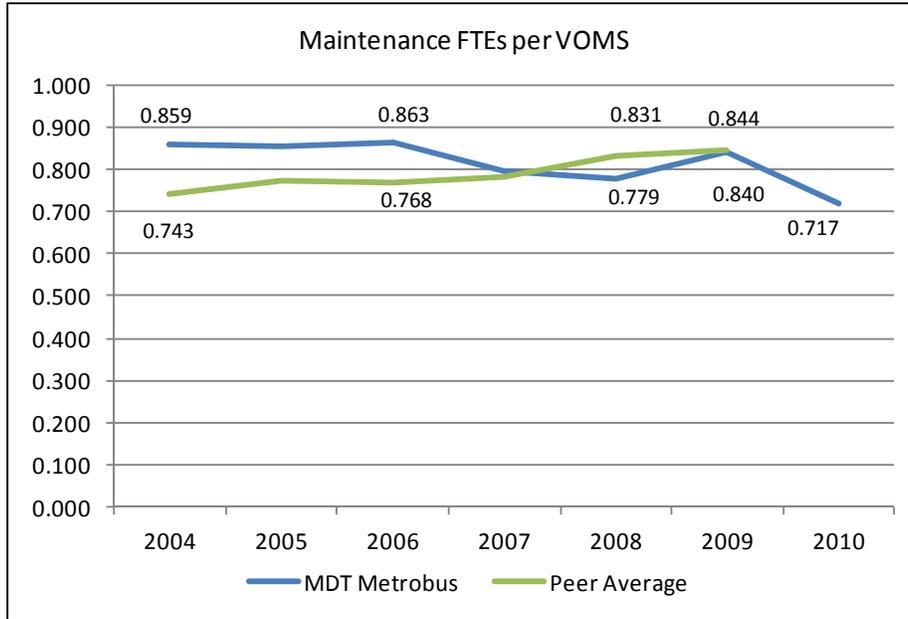


Figure 75 - Maintenance FTEs per VOMS

In 2010, Metrobus reduced FTEs per VOMS from 0.840 FTEs in 2009 to 0.717 FTEs, a 14.6 percent decrease (Figure 76).



**Figure 76 - Maintenance FTEs per VOMS (Maintenance Administration)**

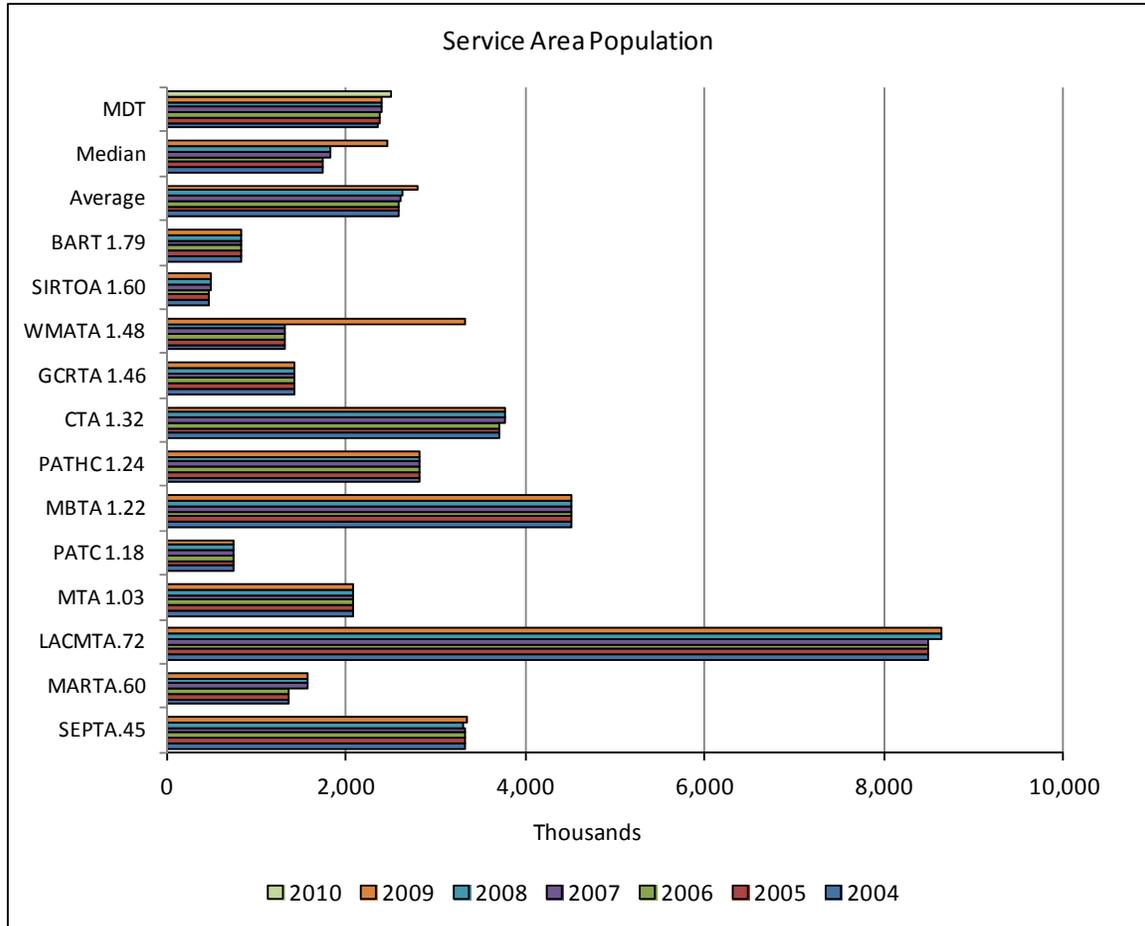
## Metrobus - Summary of Findings

<b>Performance Factor</b>	<b>Metrobus Trend</b>	<b>2008 Metrics</b>	<b>2009 Metrics</b>	<b>2010 Metrics</b>
Operating Cost per Revenue Hour Target ↓	Less than peer group average from 2004 through 2007 and then grew at a faster rate than peers	\$122.75 Peer Average: \$120.96	\$127.29 Peer Average: \$122.59	\$126.54 \$0.75 less than 2009, a 0.6% decrease
Operating Cost per Revenue Mile Target ↓	Less than peer group average from 2004 through 2008 and then grew at a faster rate than peers	\$10.11 Peer Average: \$10.27	\$10.61 Peer Average: \$10.39	\$10.60 \$0.01 less than 2009, a 0.1% decrease
Operating Cost per VOMS Target ↓	Greater than peer group average from 2004 through 2006, less than peer group average in 2007 and 2008, grew in 2009	\$409,569 Peer Average: \$422,993	\$467,496 Peer Average: \$455,836	\$452,724 \$14,772 less than 2009, a 3.2% decrease
Farebox Recovery Target ↑	Greater than peer group average from 2004 through 2009	21.2% Peer Average: 21.1%	23.5% Peer Average: 20.9%	25.5% a 2.0% increase
Operating Cost per Passenger Trip Target ↓	Greater than peer group average from 2004 through 2009	\$3.94 Peer Average: \$3.58	\$4.43 Peer Average: \$3.78	\$4.38 \$0.05 less than 2009, a 1.1% decrease
Operating Cost per Passenger Mile Target ↓	Early fluctuation and then less than peer group average from 2007 through 2009	\$0.79 Peer Average: \$0.98	\$0.86 Peer Average: \$1.00	\$0.81 \$0.04 less than 2009, a 4.9% decrease
Operating Cost per Capita Target ↓	Less than peer group average from 2004 through 2008, peer group average population fell by 12.2% in 2009	\$140.66 Peer Average: \$150.08	\$139.34 Peer Average: \$131.77	\$123.11 \$16.23 less than 2009, an 11.6% decrease
Subsidy per Boarding Target ↓	Greater than peer group average from 2004 through 2009	\$3.10 Peer Average: \$2.85	\$3.39 Peer Average: \$3.02	\$3.26 \$0.12 less than 2009, a 3.7% decrease
Average Trip Length Target ↑	Greater than peer group average 2004 through 2009	4.97 Peer Average: 3.91	5.18 Peer Average: 3.93	5.38 0.12 more than 2009, a 4.0% increase
Passenger Miles per Vehicle Mile Target ↑	Less than peer group average from 2004 through 2006 and then faster growth	10.90 Peer Average: 9.28	10.55 Peer Average: 9.18	11.02 0.47 more than 2009, a 4.5% increase

<b>Performance Factor</b>	<b>Metrobus Trend</b>	<b>2008 Metrics</b>	<b>2009 Metrics</b>	<b>2010 Metrics</b>
Average Passenger Load Target ↑	Less than peer group average from 2004 through 2006, faster growth from 2007 through 2009	12.76 Peer Average: 10.74	12.40 Peer Average: 10.60	13.03 0.63 more than 2009, a 5.1% increase
Vehicle Operations Expense per VOMS Target ↓	Greater than peer group average from 2004 through 2009	\$261,246 Peer Average: \$231,491	\$297,070 Peer Average: \$243,778	\$282,052 \$15,017 less than 2009, a 5.1% decrease
Vehicle Maintenance Expense per VOMS Target ↓	Greater than peer group average 2004 through 2007, 17.1% increase in 2009	\$87,303 Peer Average: \$89,920	\$102,199 Peer Average: \$80,680	\$96,935 \$5,265 less than 2009, a 5.2% decrease
Non-vehicle Maintenance Expense per VOMS Target ↓	Greater than peer group average from 2004 through 2009	\$23,140 Peer Average: \$19,397	\$29,171 Peer Average: \$19,894	\$21,829 \$7,341 less than 2009, a 25.2% decrease
General Administration Expense per VOMS Target ↓	Significantly less than peer group average from 2004 through 2009	\$37,880 Peer Average: \$76,419	\$39,057 Peer Average: \$83,539	\$51,908 \$12,851 more than 2009, a 32.9% increase
Revenue Miles between Vehicle System Failures Target ↑	Significantly less than peer group average from 2004 through 2009	2,098 Peer Average: 8,557	2,264 Peer Average: 9,560	2,684 420 more than 2009, an 18.6% increase
Maintenance Expense as a % of Total Expense Target ↓	Less than peer group average from 2004 through 2006, a high of 28.1% in 2009	27.0% Peer Average: 26.2%	28.1% Peer Average: 25.0%	26.2% 1.9% less than 2009
Vehicle Maintenance Cost per Vehicle Mile Target ↓	Less than peer group average from 2004 through 2006, then significant growth until 2010	\$2.33 Peer Average: \$2.17	\$2.54 Peer Average: \$2.15	\$2.35 \$0.18 less than 2009, a 7.3% decrease
Maintenance FTEs per VOMS Target ↓	Greater than peer group average from 2004 through 2007, then decline	0.779 Peer Average: 0.831	0.840 Peer Average: 0.844	0.717 0.123 less than 2009, a 14.6% decrease

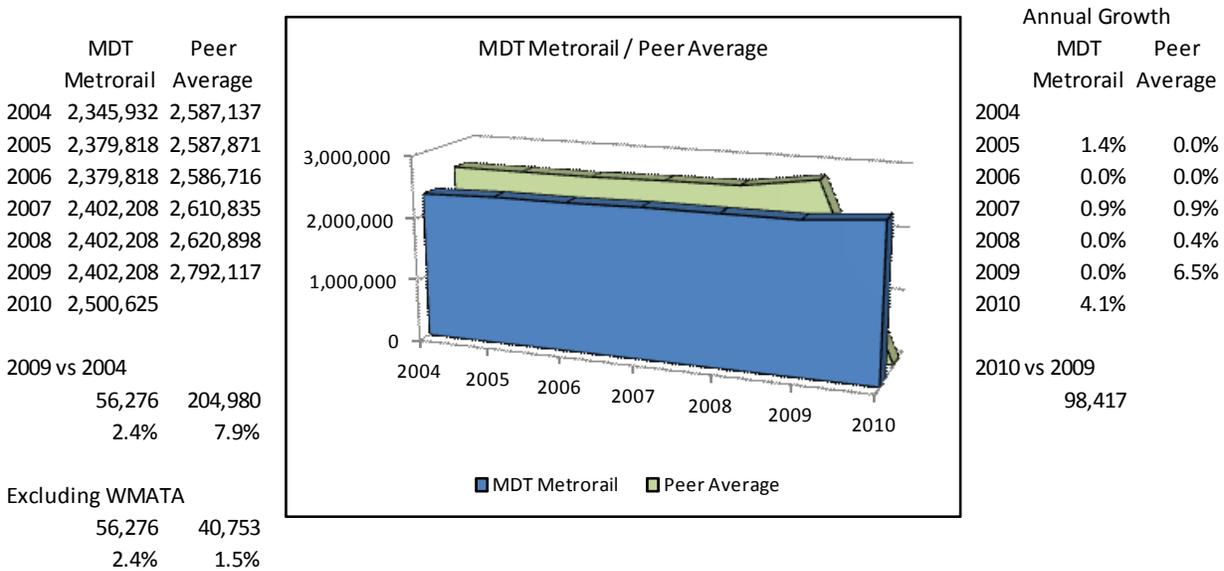
## Metrorail Peer Review and Trend Analysis

### Metrorail Service Area Population



**Figure 77 - Service Area Population**

Metrorail service area population (Figure 77) fell below the peer group average from 2004 through 2009, but exceeded the peer group median from 2004 through 2008. In 2009, a 154.1 percent increase in the WMATA service area population was significant enough to impact both the peer group average and median service area population. Peer service area population ranged from a maximum of 8.5 million (LACMTA) to a minimum of 460,000 (SIRTOA in 2004 and from a maximum of 8.6 million (LACMTA) to a minimum of 487,000 (SIRTOA) in 2009.



**Figure 78 - Service Area Population - Metrorail / Peer Average**

Metrorail service area population (Figure 78) grew by 56,276 (2.4%) from 2004 through 2009, while growth in the peer group averaged 7.9 percent. Excluding WMATA from the peer group average in 2004 through 2009, the peer group average growth is 1.5 percent over the period.

Metrorail service area population fell at the midpoint of the peer group. In terms of the size of the service area population, Metrorail is larger than MARTA, MTA, PATC, GCRTA, SIRTOA, and BART, but smaller than SEPTA, LACMTA, MBTA, PATHC, CTA, and WMATA.

While the Metrorail service area population grew, it appears to have grown at a rate less than the peer group average.

### Metrorail Service Area

The Metrorail service area (Figure 79) was consistently smaller than the average and median of the peer group from 2004 through 2009. The peer group service area ranged from a maximum of 3,244.0 square miles (MBTA) to a minimum of 59.0 square miles (SIRTOA) from 2004 through 2009.

The Metrorail service area (Figure 80) grew by 19.0 square miles (6.6%) from 2004 through 2009, while the peer group service area grew by 24.4 square miles (an increase of 3.0%). Growth in the Metrorail service area was reported in 2005. Minimal change in peer group service area size was noted throughout the period, with the exception of SEPTA, LACMTA, and CTA. SEPTA reduced service area size in 2006 (-1.3%) and then made increases in 2007 (0.7%), 2008 (0.1%), and 2009 (4.4%), which resulted in growth in the service area from 836.0 square miles to 869.0 square miles in 2009. In 2008, LACMTA added 289.0 square miles to its 1,224.0 square mile service area, increasing service area size to 1,513.0 square miles. CTA reduced its 356.0 square mile service area by 29.0 square miles in 2007.

Throughout the period, the Metrorail service area was larger than 3 of the 12 peer agencies.

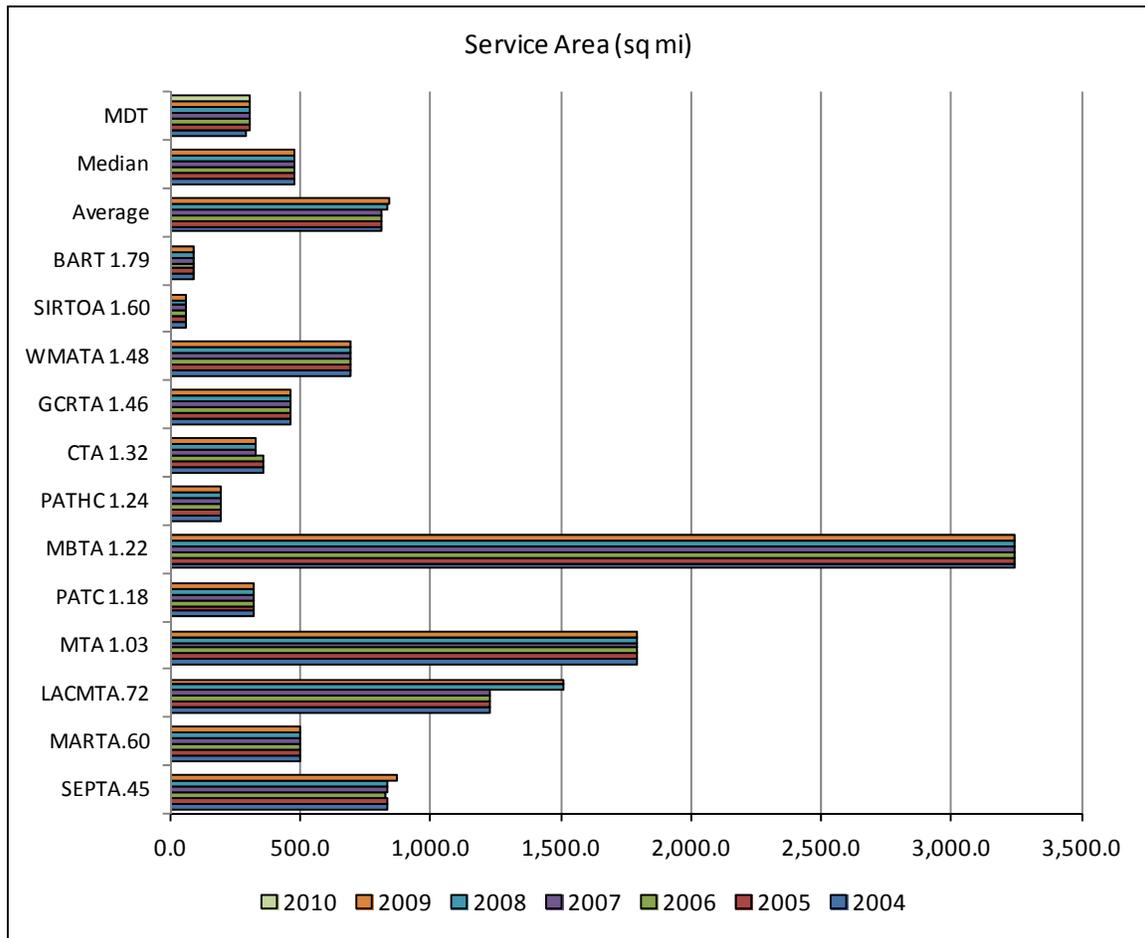


Figure 79 - Service Area

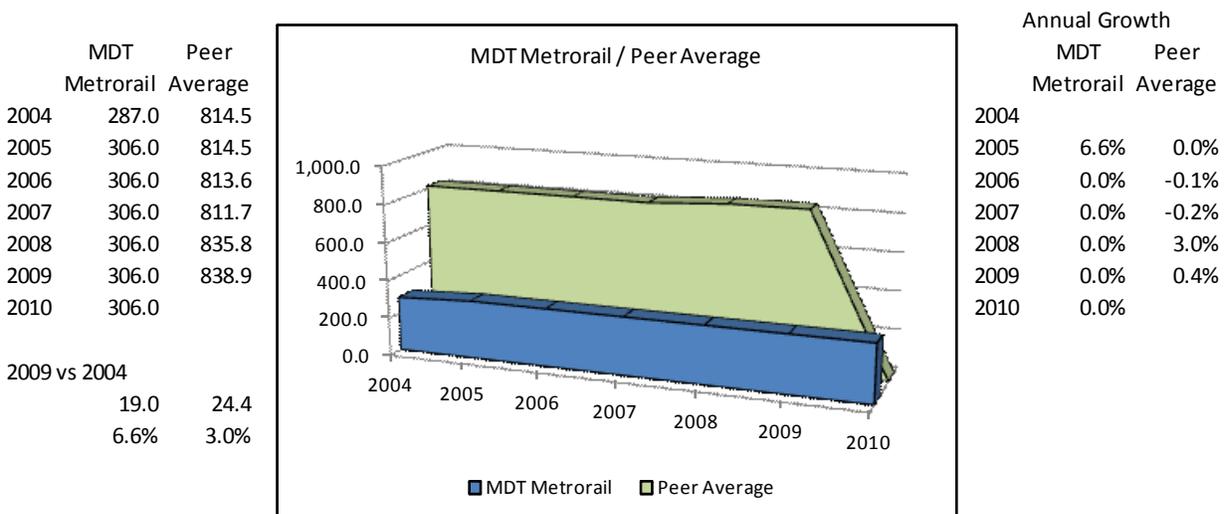


Figure 80 - Service Area - Metrorail / Peer Average

## Metrorail Passenger Trips

From 2004 through 2009, Metrorail passenger trips (Figure 81) fell below the average and the median of the peer group, but Metrorail consistently logged more passenger trips than SIRTOA, GCRTA, PATC, and MTA. Peer group passenger trips ranged from a maximum of 250.7 million (WMATA) to a minimum of 3.4 million (SIRTOA) in 2004 and from a maximum of 296.9 million (WMATA) to a minimum of 4.5 million (GCRTA) in 2009.

Peer group average passenger trips (Figure 82) experienced consistent annual growth that resulted in an increase of 11.0 million passenger trips in 2009 compared to 2004 (a 13.6% increase). Metrorail passenger trips grew annually from 2004 through 2008. In 2009, Metrorail reported a reduction in passenger trips (294,000 fewer trips than in 2008), a trend that continued into 2010, when Metrorail reported 750,000 fewer passenger trips than in 2009. Despite the reduction in 2009, growth in Metrorail passenger trips exceeded the peer group average (16.7% growth) for the period from 2004 through 2009. The only peer agency that reported a reduction in passenger trips in 2009 as compared to 2004 was GCRTA with 2.8 million fewer trips (a 38.3% decrease). Agencies reporting the most growth in passenger trips from 2004 through 2009 included WMATA (46.2 million), CTA (23.8 million), LACMTA (16.0 million), and MARTA (14.3 million).

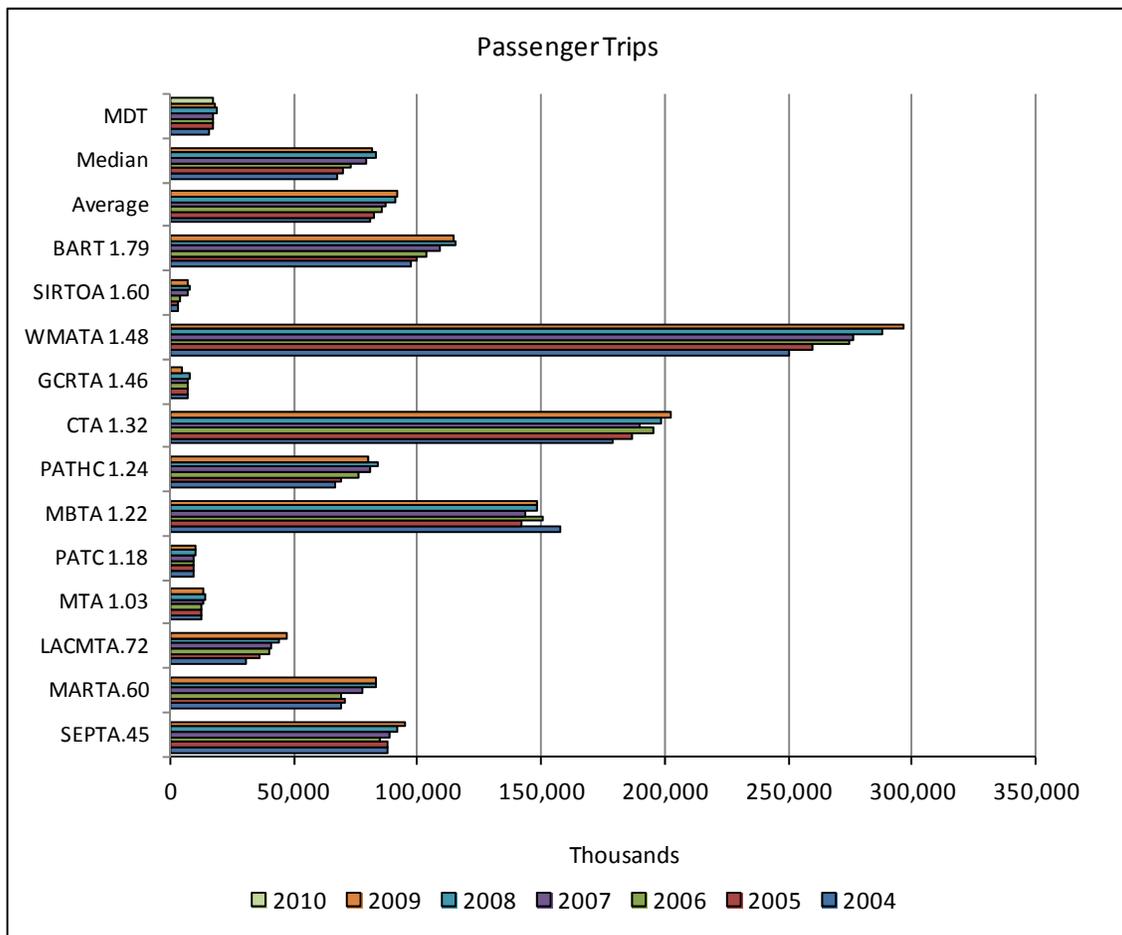


Figure 81 - Passenger Trips

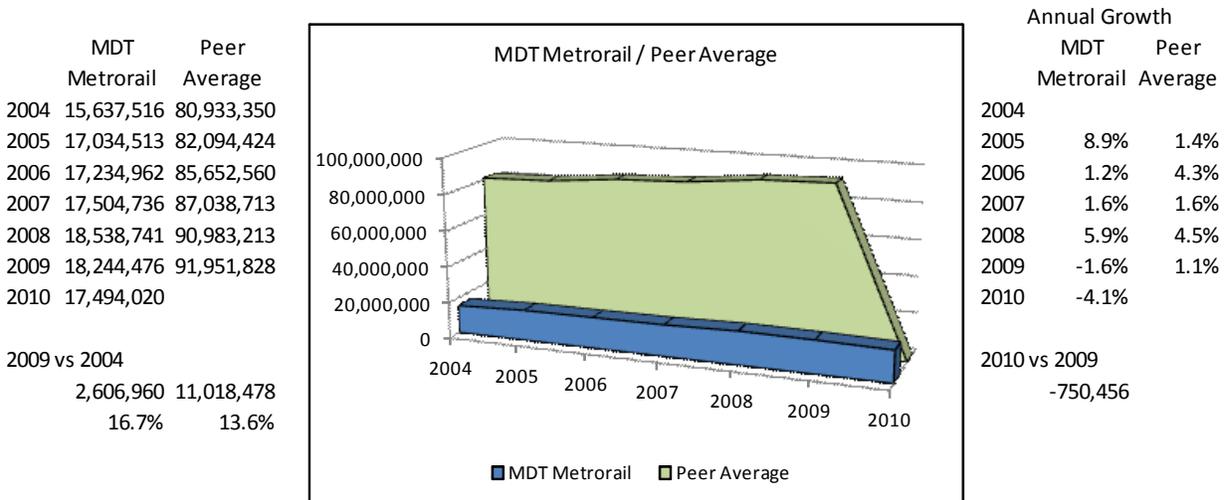


Figure 82 - Passenger Trips - Metrorail / Peer Average

### Metrorail Passenger Miles

From 2004 through 2009, Metrorail passenger miles (Figure 83) fell below the average and the median of the peer group, but Metrorail consistently reported more passenger miles than SIRTOA, GCRTA, PATC, and MTA. Peer group passenger miles ranged from a maximum of 1.5 billion (WMATA) to a minimum of 21.5 million (SIRTOA) in 2004 and from a maximum of 1.7 billion (WMATA) to a minimum of 31.4 million (GCRTA) in 2009.

Peer group average passenger miles (Figure 84) showed consistent annual growth that resulted in an increase of 63.6 million passenger miles in 2009 compared to 2004 (a 13.0% increase). Metrorail passenger miles grew sporadically from 2004 through 2008. In 2009, Metrorail reported a reduction in passenger miles (9.4 million fewer miles than in 2008), a trend that continued into 2010, when Metrorail reported 4.7 million fewer passenger miles than in 2009. Two peer agencies reported a reduction in passenger miles in 2009 as compared to 2004. MBTA reported 12.1 million fewer miles (a 2.1% decrease) and GCRTA reported 16.0 million fewer miles (a 33.8% decrease). Agencies reporting the most growth in passenger miles from 2004 through 2009 included BART (213.7 million), WMATA (160.8 million), and CTA (126.3 million).

While Metrorail passenger miles grew from 2004 through 2009, they appear to have grown at a rate less than the peer group average.

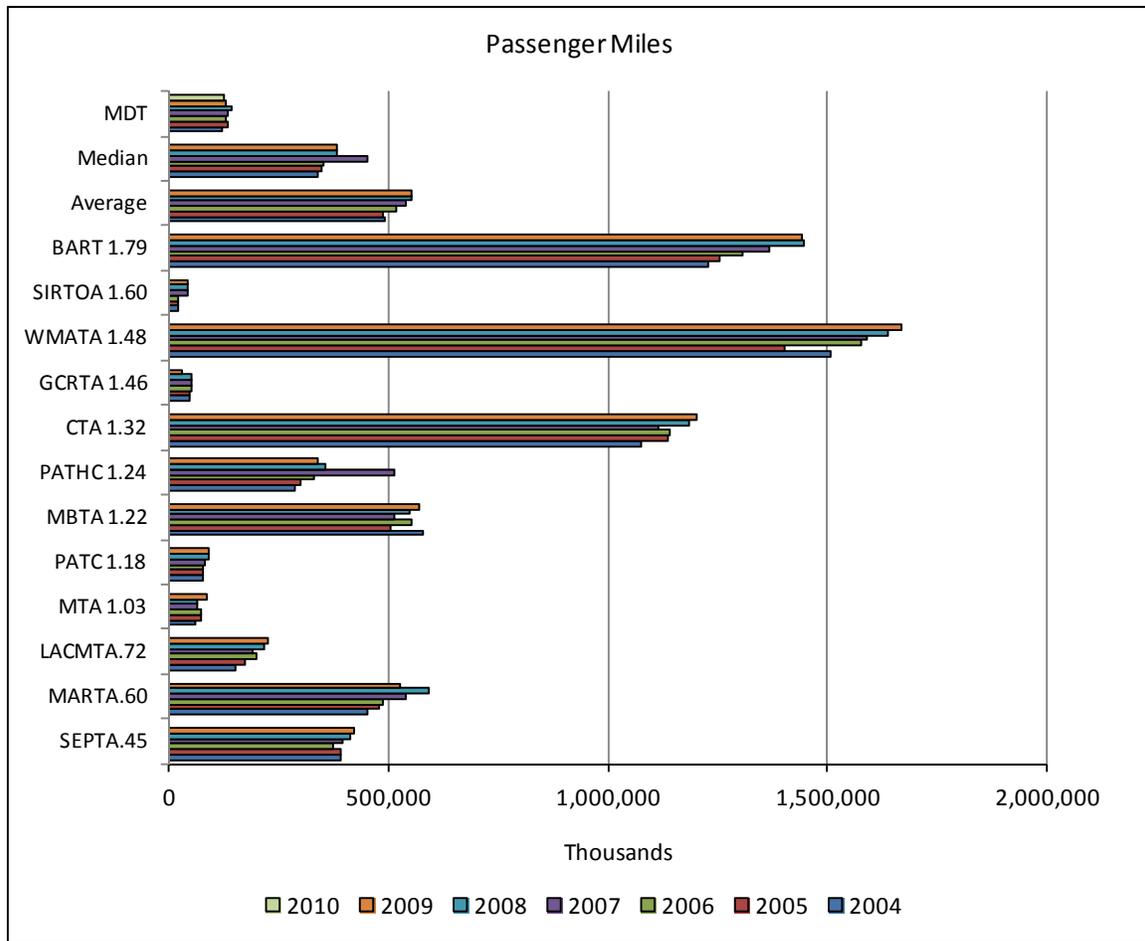


Figure 83 - Passenger Miles

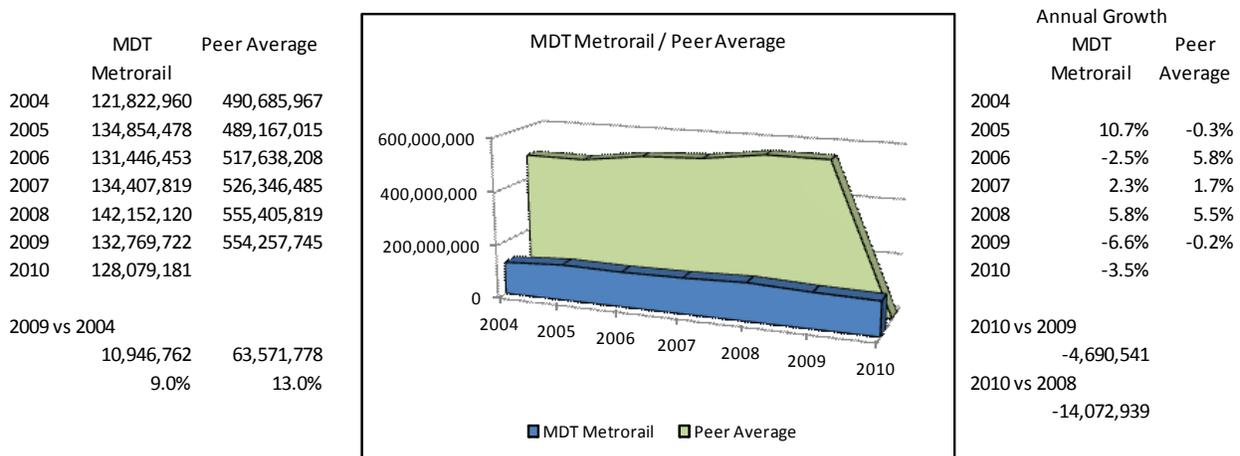


Figure 84 - Passenger Miles - Metrorail / Peer Average

### Metrorail Vehicles Operated in Maximum Service

From 2004 through 2009, Metrorail VOMS (Figure 85) fell below the average and the median of the peer group. Peer group VOMS ranged from a maximum of 1,008 (CTA) to a minimum of 22 (GCRTA) in 2004 and from a maximum of 1,002 (CTA) to a minimum of 22 (GCRTA) in 2009.

Peer group average VOMS (Figure 86) declined in 2005 and 2006, but experienced modest annual growth from 2007 through 2009 that resulted in an increase of 11 VOMS in 2009 compared to 2004 (a 3.6% increase). Metrorail VOMS grew sporadically from 2004 through 2008. Two peer agencies reported a reduction in VOMS in 2009 as compared to 2004. MARTA reported 2 fewer VOMS (a 1.1% decrease), and CTA reported 6 fewer VOMS (a 0.6% decrease), while Metrorail reported a reduction of 19 VOMS (an 18.4% decrease). Agencies reporting the most growth in VOMS from 2004 through 2009 included WMATA (100 additional VOMS), MBTA (14 additional VOMS), and BART (12 additional VOMS).

While the peer group average VOMS grew from 2004 through 2009, Metrorail VOMS declined. In 2009, Metrorail reported a 14.3 percent reduction in VOMS (14 fewer VOMS than in 2008). In 2010, Metrorail maintained VOMS at the 2009 level.

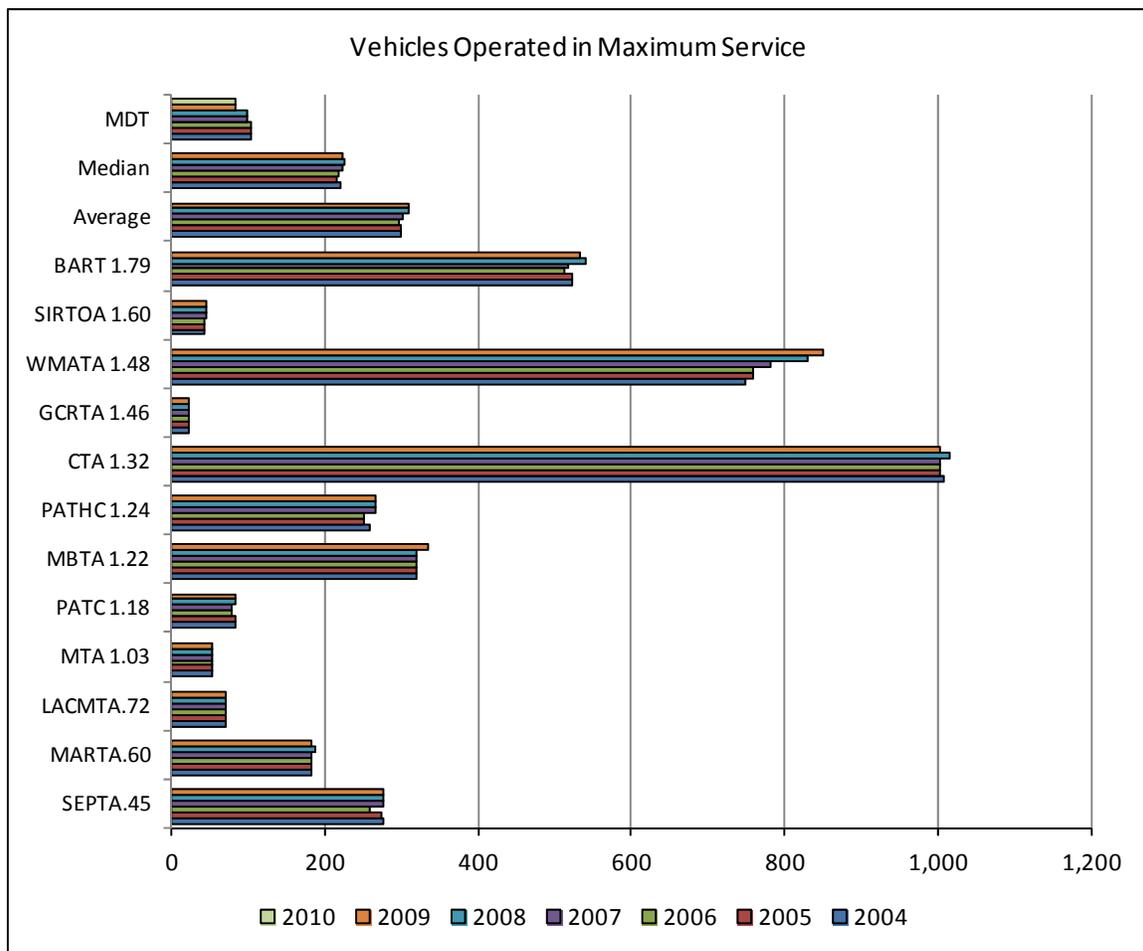
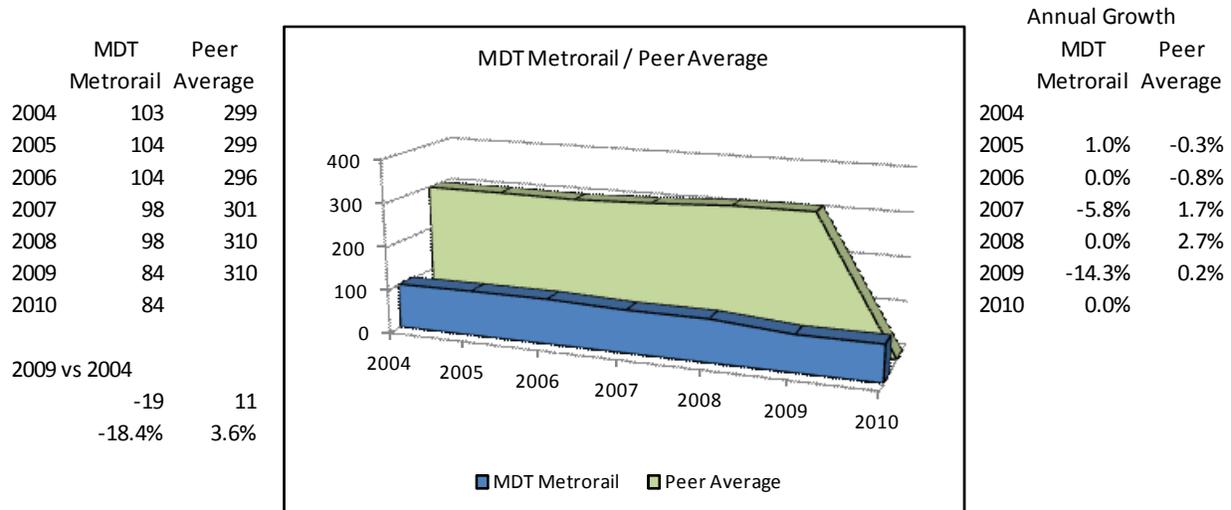


Figure 85 - Vehicles Operated in Maximum Service



**Figure 86 - VOMS - Metrorail / Peer Average**

### Metrorail Total Operating Expense

From 2004 through 2009, Metrorail total operating costs (Figure 87) fell below the average and the median of the peer group. Peer group total operating costs ranged from a maximum of \$525.5 million (WMATA) to a minimum of \$23.9 million (GCRTA) in 2004 and from a maximum of \$804.8 million (WMATA) to a minimum of \$24.4 million (GCRTA) in 2009.

Peer group average total operating costs (Figure 88) showed consistent annual growth, resulting in a 33.8 percent increase in 2009 operating costs versus 2004, while Metrorail operating costs grew annually from 2004 through 2008. In 2009, Metrorail reported a \$4.0 million reduction in operating costs (a decrease of 4.8%), a trend that continued into 2010, when Metrorail reported a \$1.6 million reduction in operating costs compared to 2009. Metrorail operating costs were in excess of \$5.6 million below peak operating costs reported in 2008.

In addition to Metrorail, four peer agencies reported reductions in operating costs in 2009 as compared to 2008 and included LACMTA (\$7.1 million reduction, a 7.4% decrease), MTA (\$2.8 million reduction, a 5.0% decrease), PATHC (\$0.6 million reduction, a 0.3% decrease), and GCRTA (\$4.4 million reduction, a 4.4% decrease).

Agencies reporting the most growth in total operating cost from 2004 through 2009 included WMATA (a \$279.2 million increase), BART (a \$109.2 million increase), and MBTA (an \$84.2 million increase).

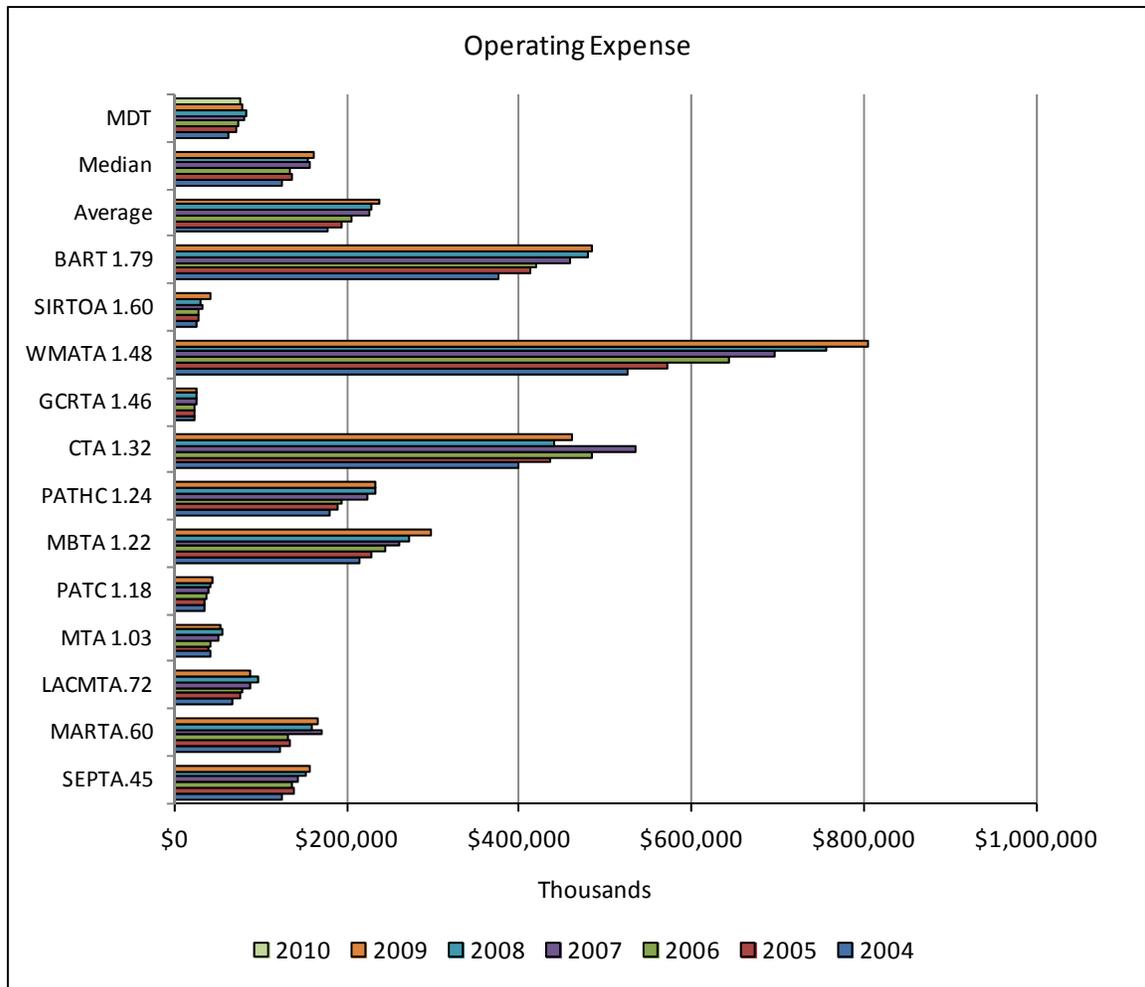


Figure 87 - Operating Expense

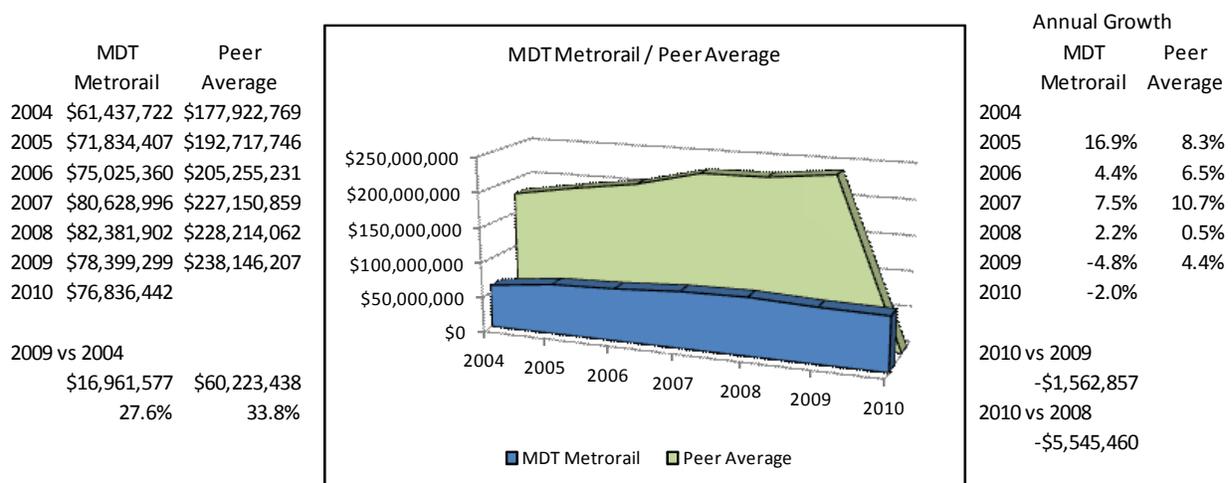


Figure 88 - Operating Expense - Metrorail / Peer Average

## Metrorail Passenger Fare Revenue

From 2004 through 2009, Metrorail passenger fare revenue (Figure 89) fell below the average and the median of the peer group, but was consistently larger than three peer agencies, including MTA, GCRTA, and SIRTOA. Peer agency passenger fare revenue ranged from a maximum of \$322.3 million (WMATA) to a minimum of \$4.4 million (GCRTA) in 2004 and from a maximum of \$506.2 million (WMATA) to a minimum of \$5.0 million (GCRTA) in 2009.

Peer passenger fare revenue (Figure 90) grew modestly from year to year, with the exception of 16.6 percent growth in 2008 compared to 2007, resulting in a 44.9 percent increase in 2009 passenger fare revenue versus 2004, while Metrorail passenger fare revenue showed significant growth and declines. Metrorail reported a 56.8 percent increase (\$5.7 million) in passenger fare revenue in 2009 compared to 2004. Metrorail 2010 passenger fare revenue grew by 12.5 percent compared to 2009 (\$2.0 million).

MARTA, MTA, PATHC, CTA, and GCRTA reported less passenger fare revenue in 2009 compared to 2008. Only MTA reported a decline in passenger fare revenue (a 4.1% decrease) for 2009 as compared to 2004.

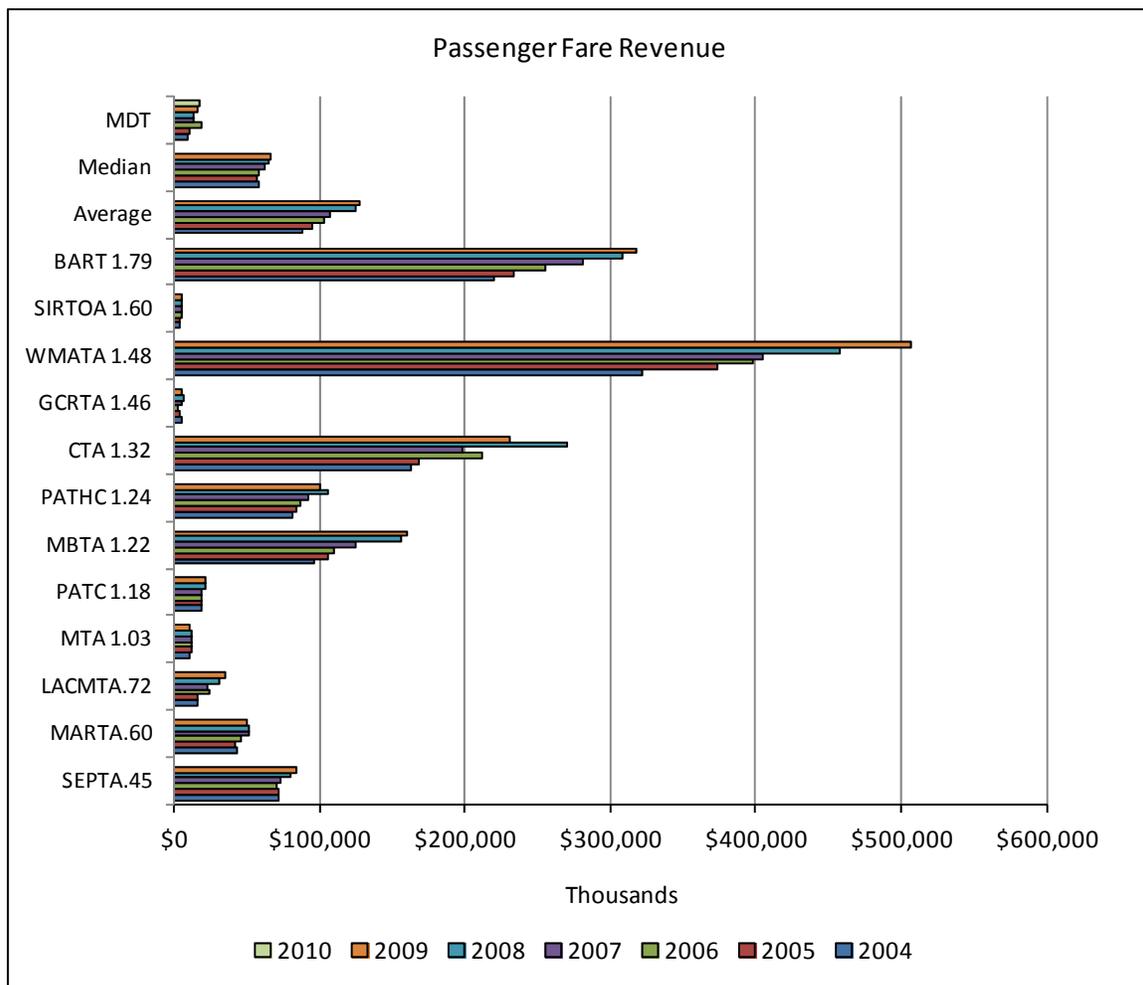


Figure 89 - Passenger Fare Revenue

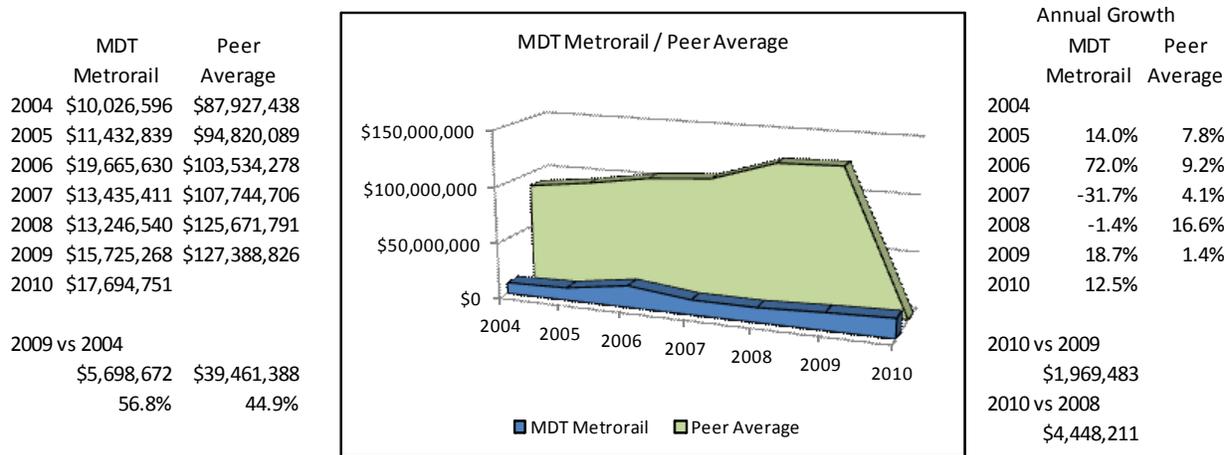


Figure 90 - Passenger Fare Revenue - Metrorail / Peer Average

### Metrorail Maintenance Expense

From 2004 through 2009, Metrorail maintenance costs (Figure 91) fell below the average and the median of the peer group, but were consistently larger than four peer agencies, including MTA, PATC, GCRTA, and SIRTOA. Peer agency maintenance costs ranged from a maximum of \$274.4 million (WMATA) to a minimum of \$12.0 million (SIRTOA) in 2004 and from a maximum of \$362.1 million (WMATA) to a minimum of \$14.7 million (GCRTA) in 2009. Four peer agencies reported reductions in maintenance costs in 2009 as compared to 2008 and included WMATA (a 4.9% decrease of \$18.5 million), MTA (a 10.0% decrease of \$3.1 million), LACMTA (a 5.0% decrease of \$2.3 million), and GCRTA (a 2.1% decrease of \$0.4 million).

Peer group average maintenance costs (Figure 92) grew from year to year until 2009, resulting in a 30.8 percent increase in 2009 maintenance costs versus 2004. Metrorail maintenance costs grew annually from 2004 until 2009 (an 8.0% decrease of \$2.9 million versus 2008), resulting in a 14.2 percent increase in 2009 maintenance costs versus 2004. In 2010, Metrorail reported a \$490,000 reduction in maintenance costs (a decrease of 1.5%) compared to 2009.

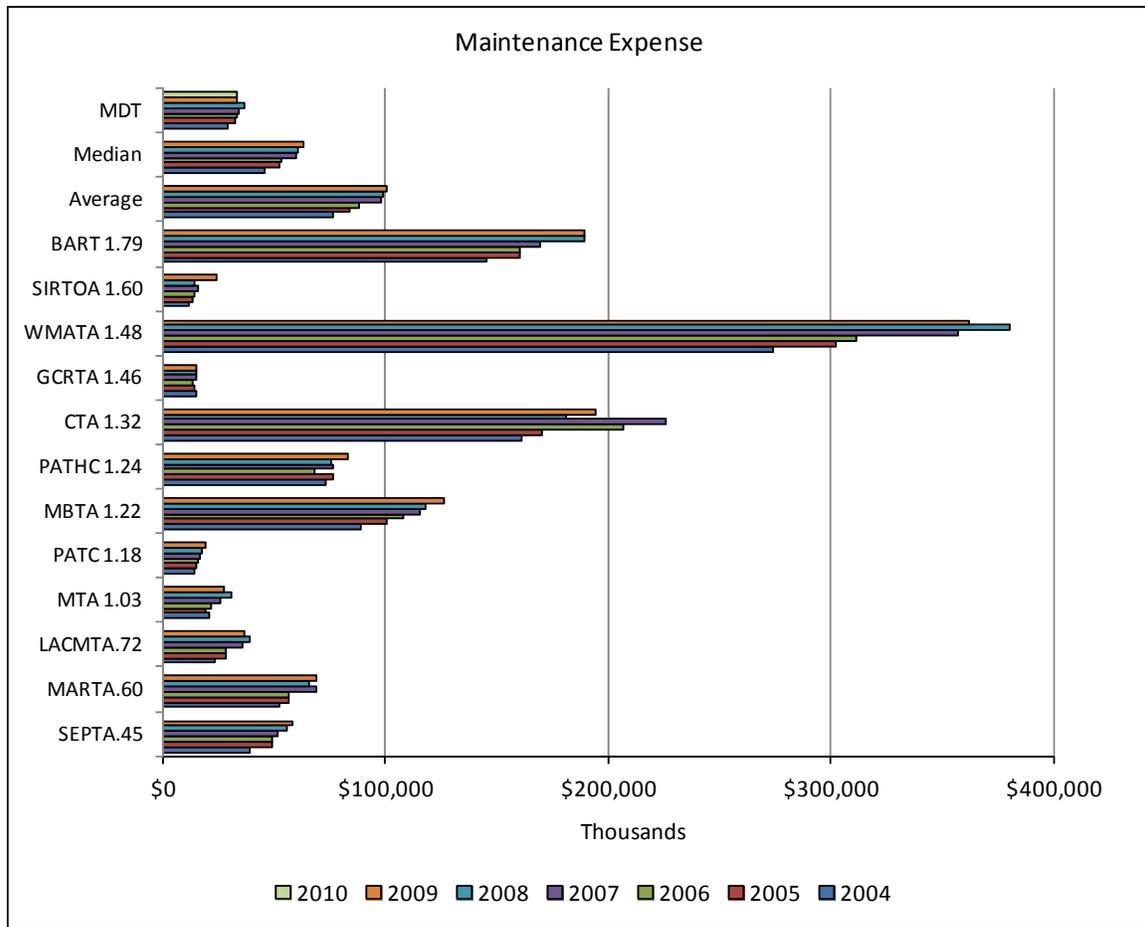


Figure 91 - Maintenance Expense

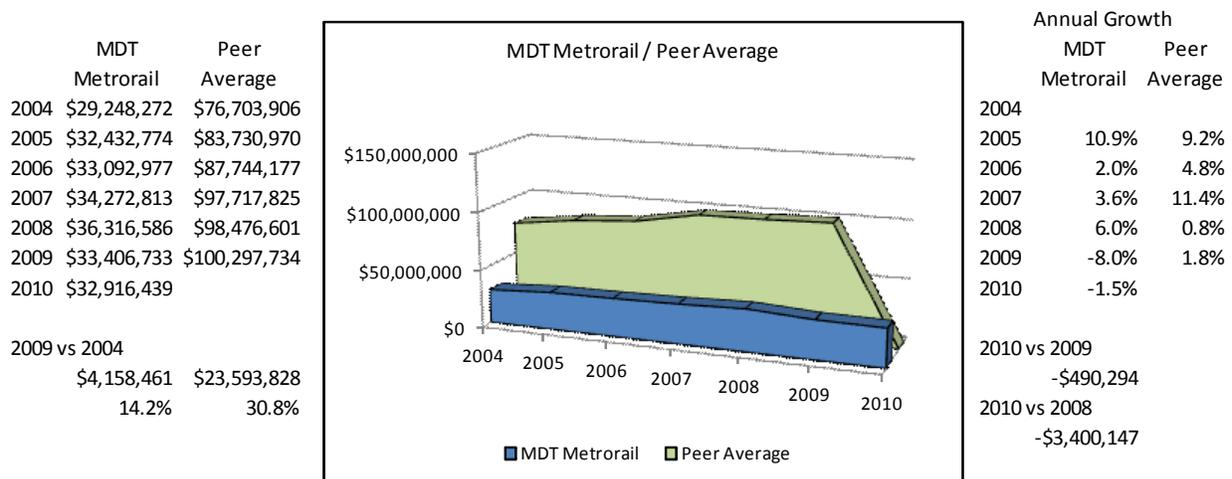


Figure 92 - Maintenance Expense - Metrorail / Peer Average

### Metrorail Employee Full-time Equivalents (FTE)

From 2004 through 2009, the Metrorail complement of employee FTEs (Figure 93) fell below the average and the median of the peer group, but was consistently larger than five peer agencies, including LACMTA, MTA, PATC, GCRTA, and SIRTOA. FTEs ranged from a maximum of 4,537 (WMATA) to a minimum of 220 (GCRTA) in 2004 and from a maximum of 4,786 (WMATA) to a minimum of 234 (SIRTOA) in 2009. While four peer agencies (PATC, CTA, SIRTOA, and BART) reported annual reductions in FTEs that resulted in overall decreases in 2009 compared to 2004, peer group average growth over the period was 4.9 percent (Figure 94).

In 2009, 7 of the 12 peer agencies reduced FTEs from 2008 levels, resulting in a 1.8 percent decline in the peer group average. In 2007, Metrorail began reducing the number of FTEs, which had peaked at 662 in 2006. Since 2006, when Metrorail FTEs peaked, in excess of 127 FTEs (a 19.2% decrease) have been eliminated, despite the addition of 12 FTEs in 2010.

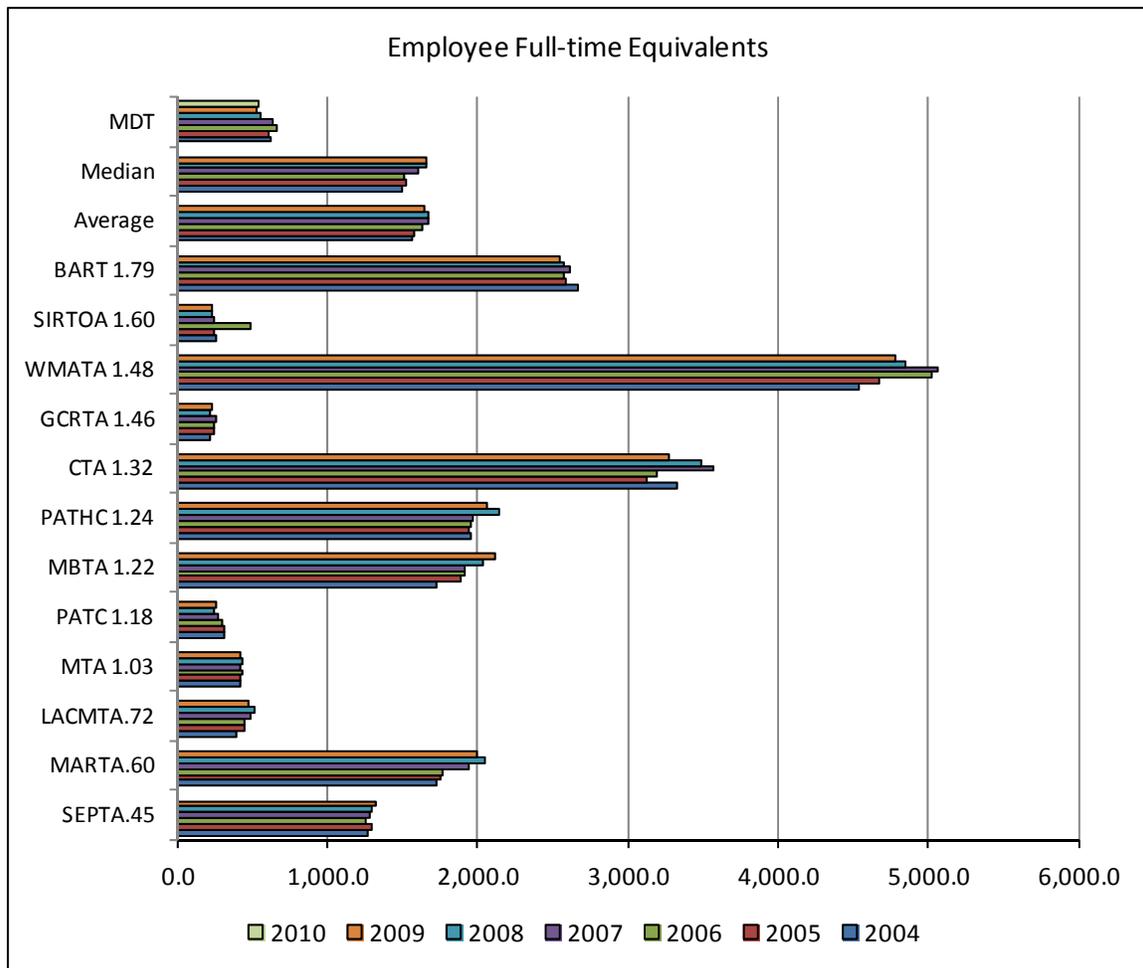


Figure 93 - Employee Full-time Equivalents (FTEs)

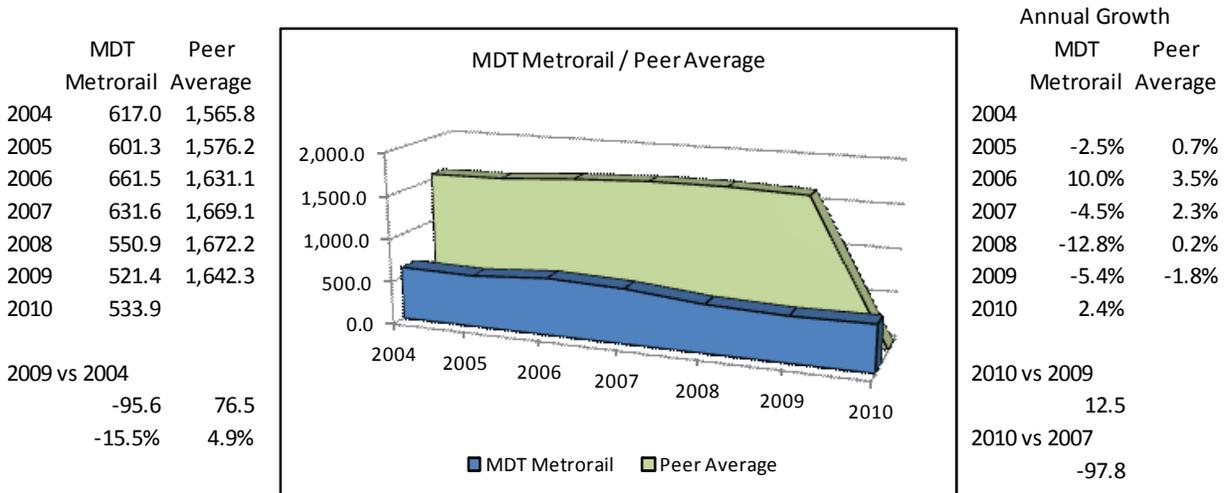


Figure 94 – Employee FTEs - Metrorail / Peer Average

### Metrorail Energy Consumed

From 2004 through 2009, Metrorail energy consumption (Figure 95) fell below the average and median of the peer group, but was consistently greater than MTA, PATC, GCRTA, and SIRTOA. Energy consumption ranged from a maximum of 424.1 million kilowatt hours (kWh) (WMATA) to a minimum of 20.2 million kWh (SIRTOA) in 2004 and from a maximum of 499.4 million kWh (WMATA) to a minimum of 19.2 million kWh (SIRTOA) in 2009. Despite decreases in energy consumption by SEPTA, GCRTA, and SIRTOA reported during the time period, the peer group average consumption rose by 8.3 percent in 2009 compared to 2004. Peer group average vehicle miles logged during this time period increased 2.3 million miles (a 9.9% increase).

Beginning in 2006, Metrorail (Figure 96) reported reduced levels of energy consumption, a trend that continued into 2010. Metrorail energy consumption in 2009 compared to 2004 fell by more than 15.0 million kWh (a 17.7% reduction), while vehicle miles logged during this time period also declined by 2.4 million miles (a decrease of 25.4%). Metrorail consumed 812,210 more kWh in 2010 than in 2009 and logged 14,166 more vehicle miles (a 0.2% increase).

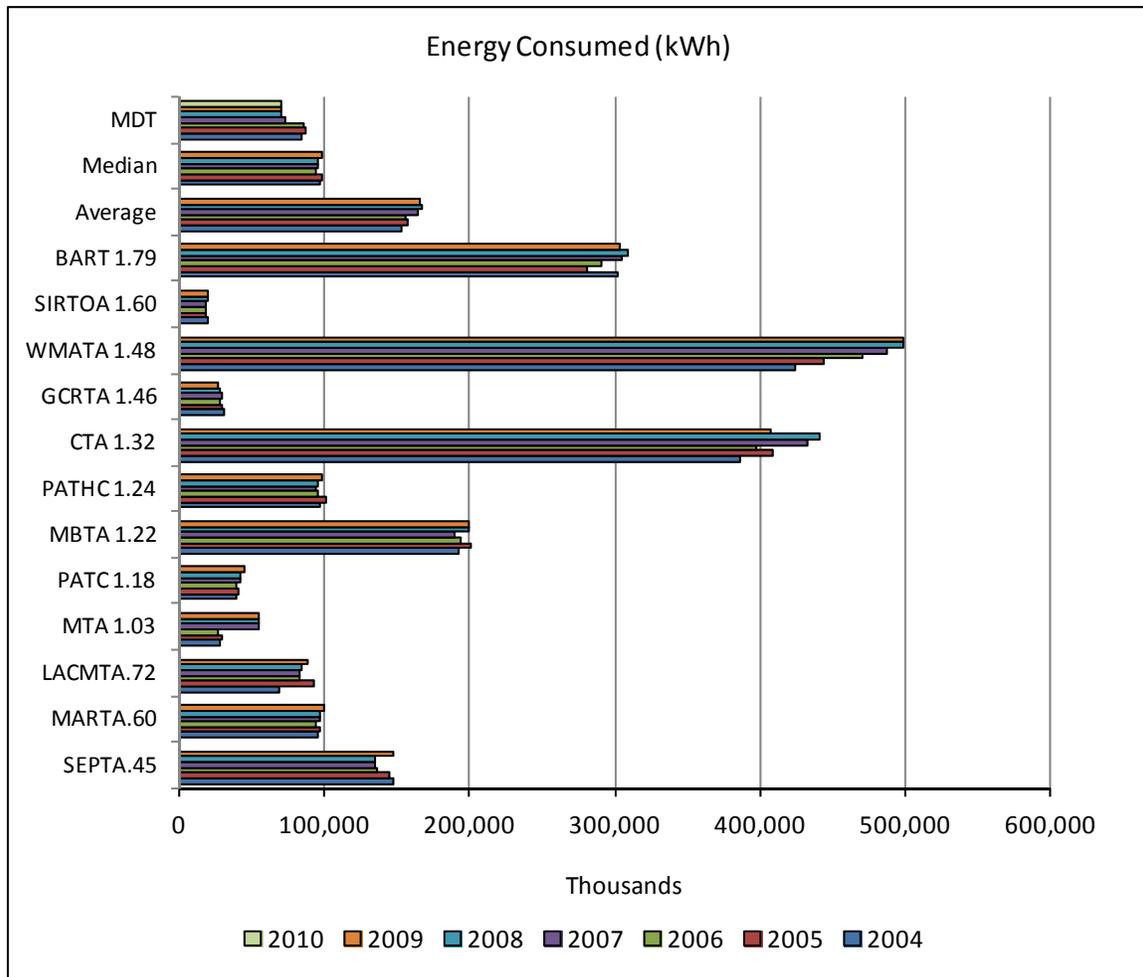


Figure 95 - Energy Consumed (kWh)

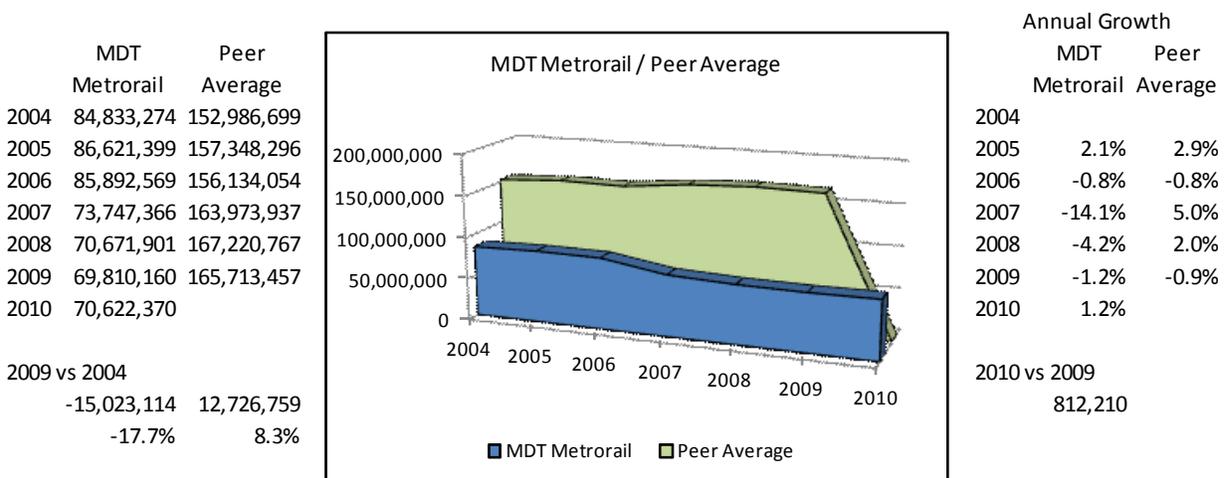


Figure 96 - Energy Consumed - Metrorail / Peer Average

### Metrorail Average Age of Fleet

From 2004 through 2009, the age of the Metrorail fleet exceeded the average and median of the peer group and was older than 9 of the 12 peer group agencies. The average age of the fleet (Figure 97) ranged from a maximum of 33.0 years (SIRTOA) to a minimum of 6.7 years (BART) in 2004 and from a maximum of 38.0 years (SIRTOA) to a minimum of 11.7 years (BART) in 2009.

The Metrorail fleet is slightly older than the average age of the peer group (Figure 98).

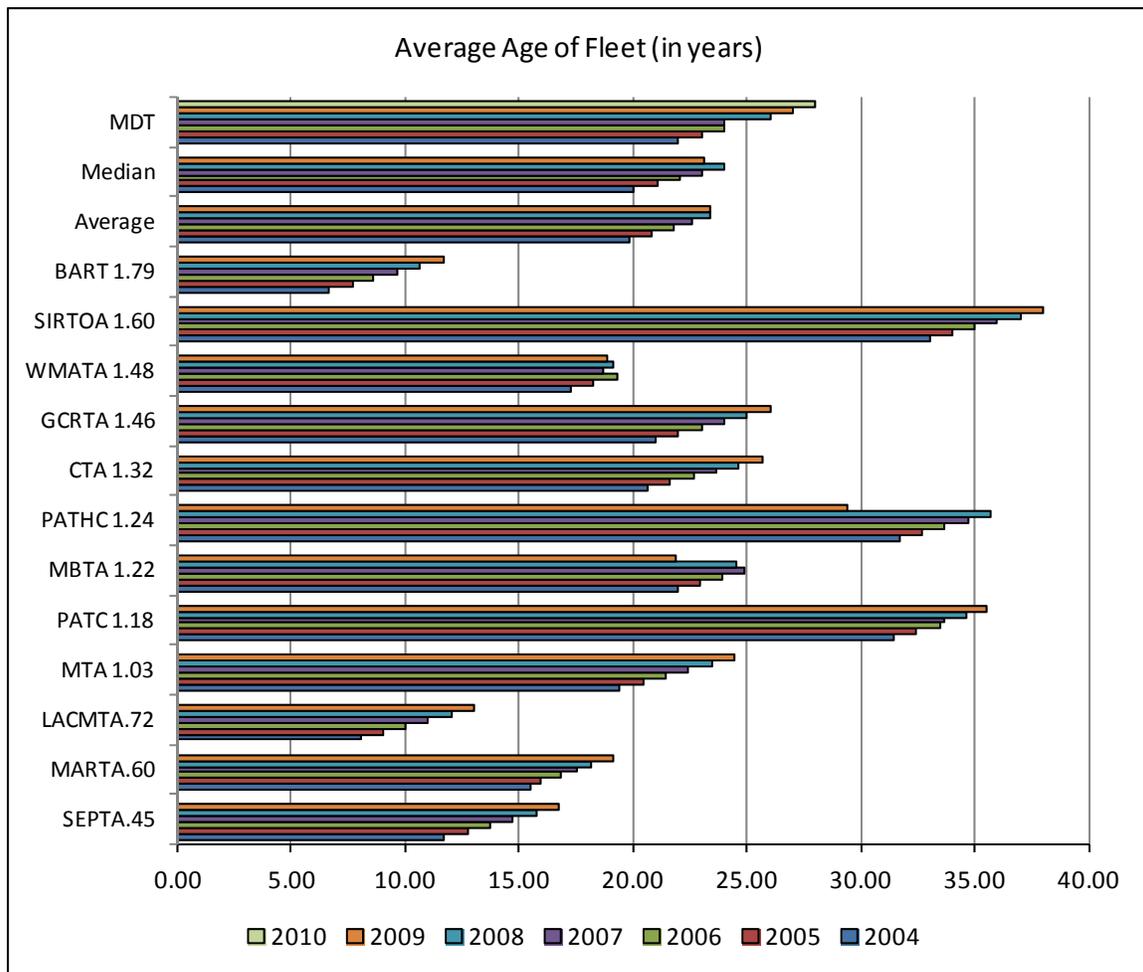


Figure 97 - Average Age of Fleet

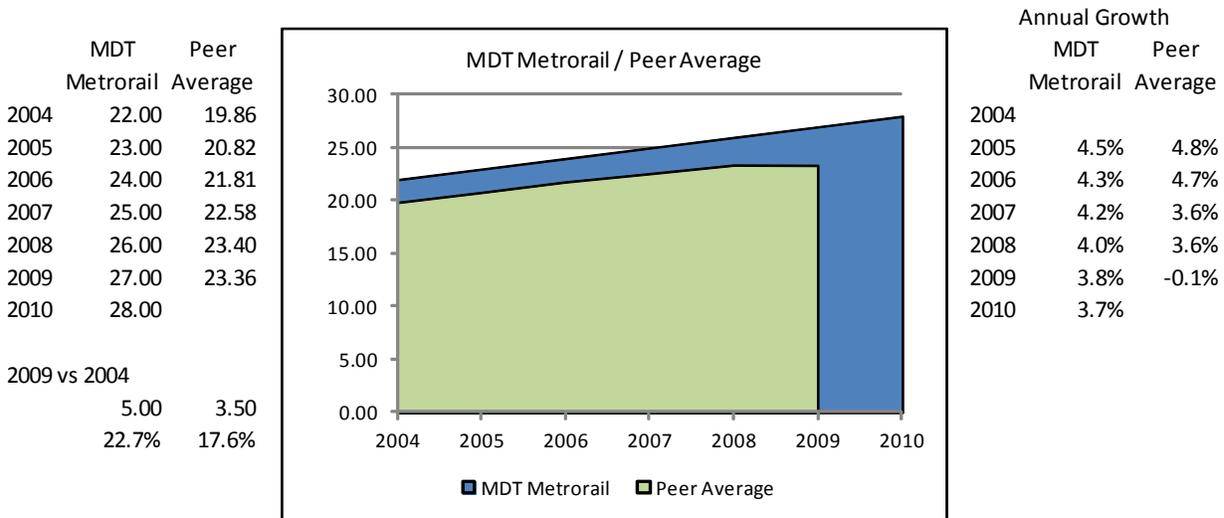


Figure 98 - Average Age of Fleet - Metrorail / Peer Average

### Metrorail Vehicle System Failures

Vehicle system failures (Figure 99) showed a great deal of fluctuation from year to year and from agency to agency. Metrorail failures exceeded the peer group average in 2004 and 2005 (Figure 100), exceeded the median of the peer group from 2004 through 2009 (Figure 101), and were consistently greater than most peers until 2010. Peer agency failures ranged from a maximum of 10,964 (MARTA) to a minimum of 15 (SIRTOA) in 2004 and from a maximum of 17,957 (CTA) to a minimum of 18 (SIRTOA) in 2009. Metrorail failures in 2004 (13,097) and 2009 (13,933) actually exceeded the peer maximum.

In terms of fluctuation in reporting, MARTA, which reported the maximum number of failures in 2004 (10,964 failures), reduced failures to 1,282 in 2009 (an 88.3% decrease). CTA, which reported only 121 failures in 2004, logged 17,957 failures in 2009 (an increase of 14740.5%). Reporting differences of this magnitude need to be examined.

Metrorail reported 1,009 more failures in 2009 compared to 2004 (an increase of 53.2%). The 24.3 percent decrease in failures, based on the reduction of more than 700 failures during 2010, is significant.

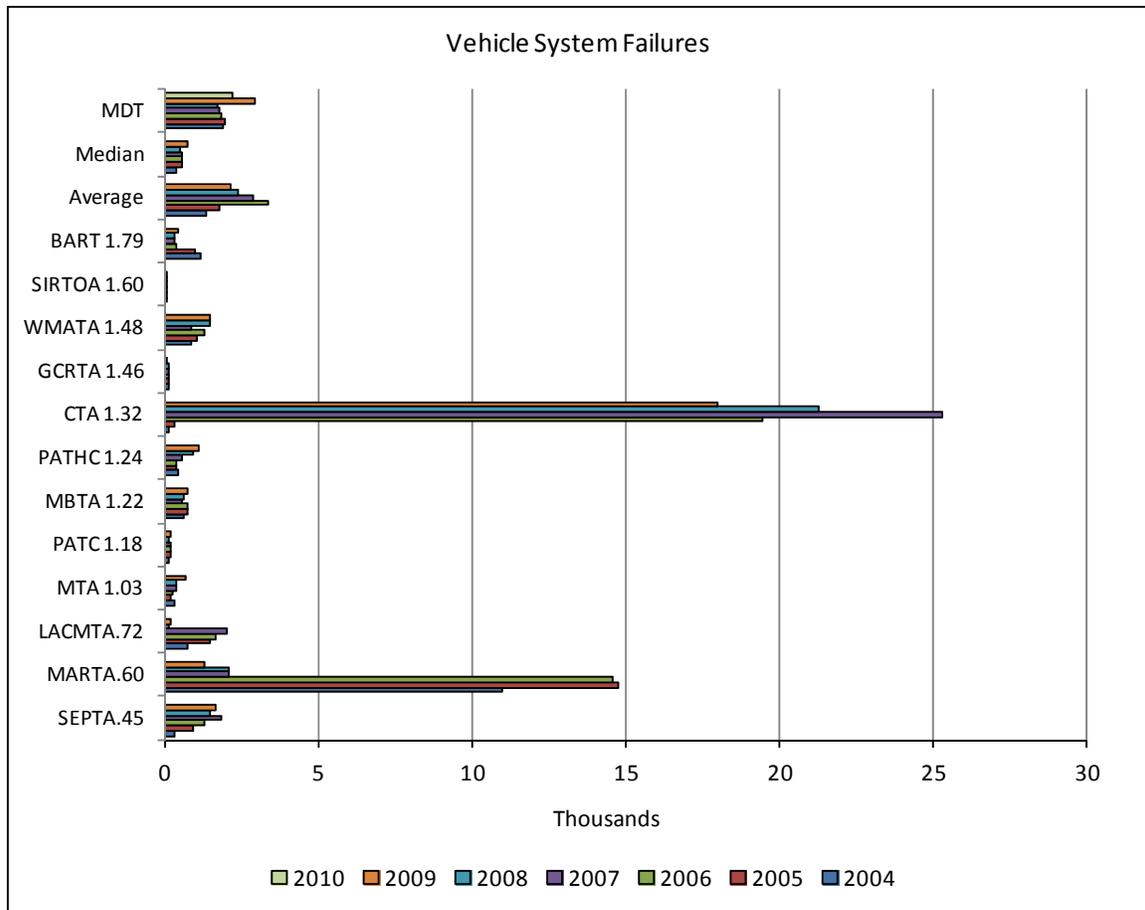


Figure 99 - Vehicle System Failures

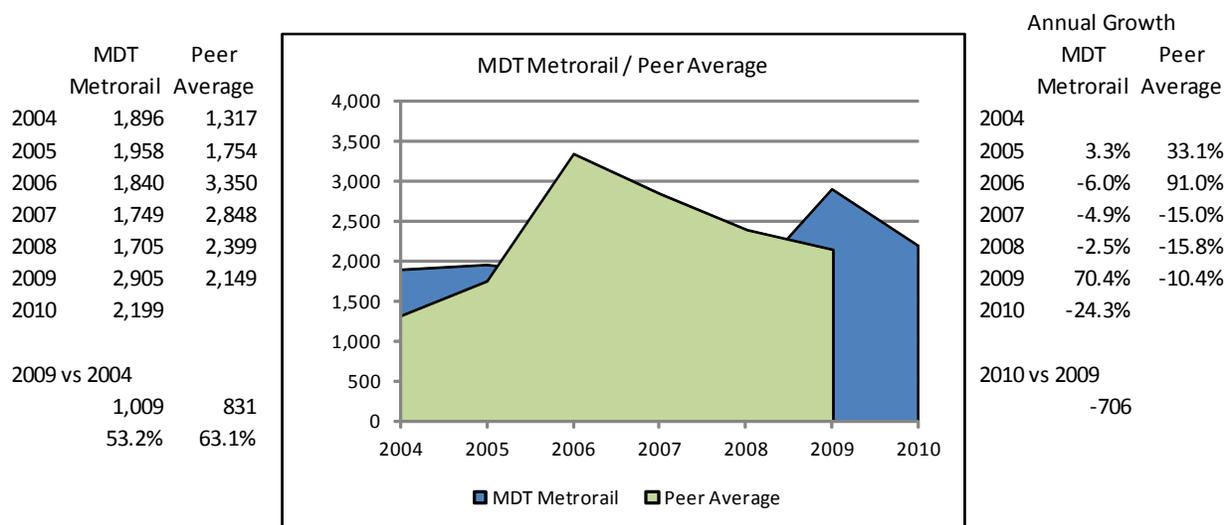


Figure 100 - Vehicle System Failures - Metrorail / Peer Average

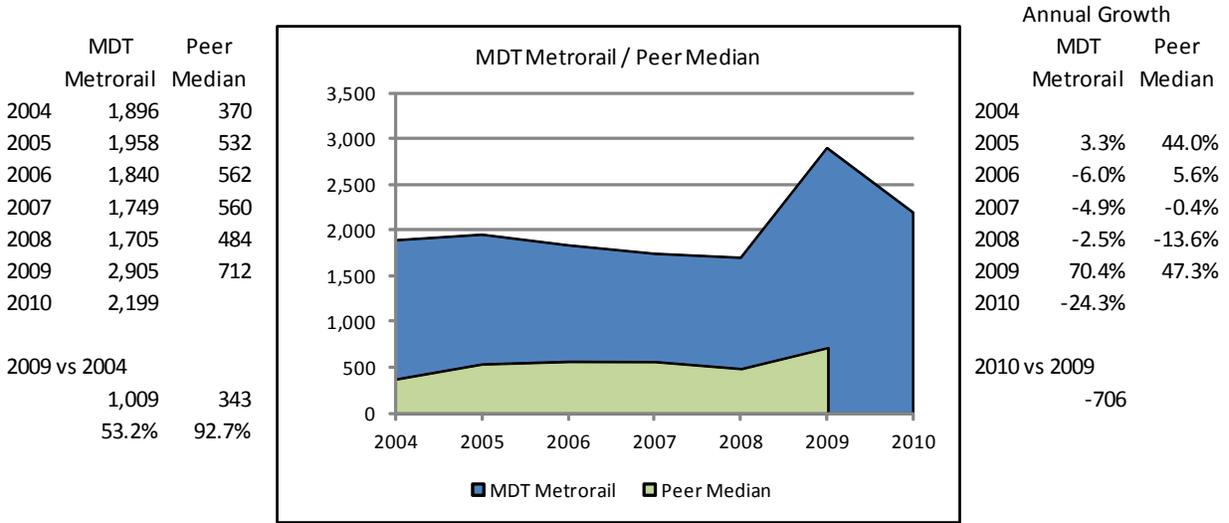


Figure 101 - Vehicle System Failures - Metrorail / Peer Median

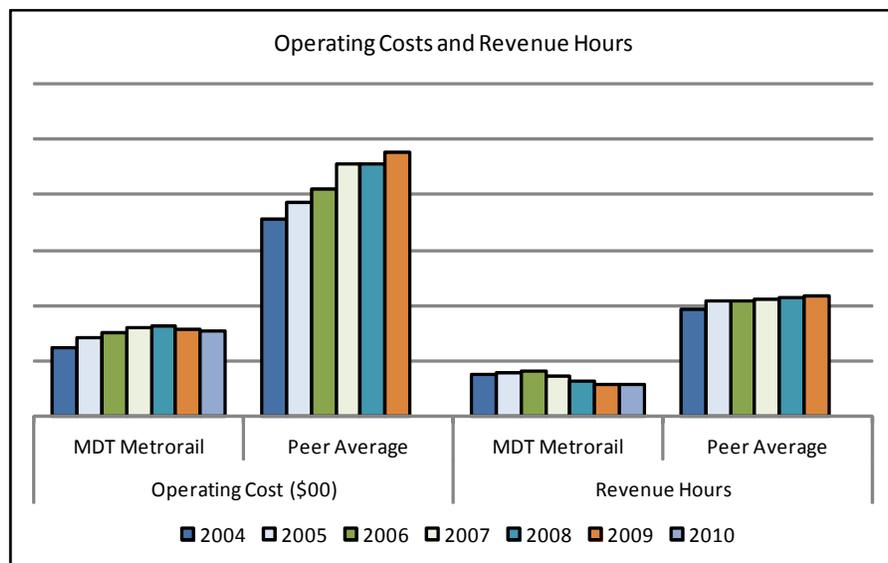
## Performance Factors – Metrorail and Peer Agency Average

### Metrorail Cost Efficiency: Operating Cost per Revenue Hour

Operating cost per revenue hour is derived from total operating costs and revenue hours (Figure 102) and provides an indication of what an hour of revenue service costs. In 2009, Metrorail reduced both operating costs (a 4.8% decrease) and revenue hours (a 7.7% decrease), while the peer group average increased in both costs (a 4.4% increase) and hours (a 1.2% increase).

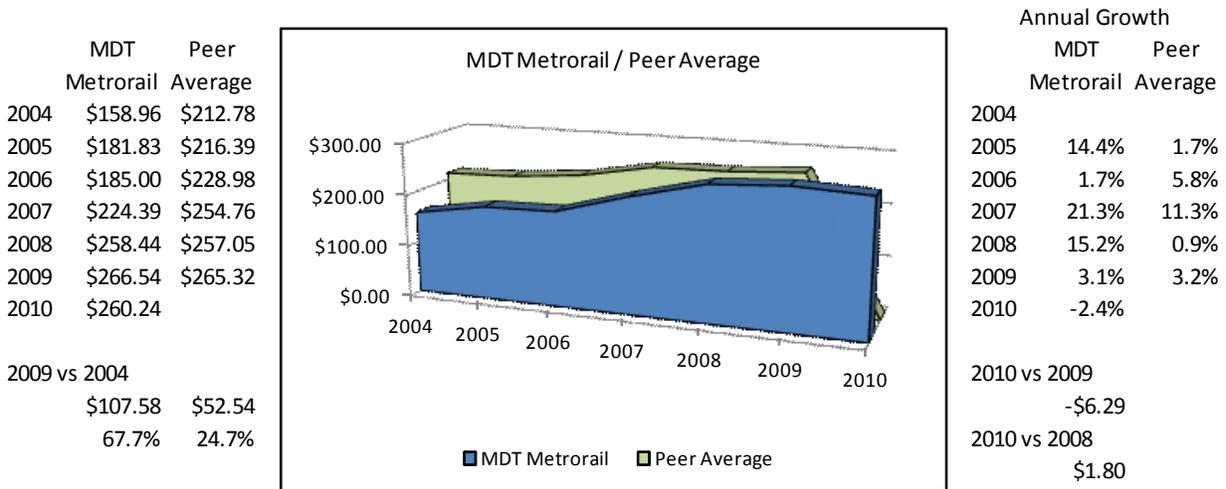
Both Metrorail and the peer group average showed regular annual growth in operating cost per revenue hour through 2009 (Figure 103). Metrorail cost was actually less than the peer group average until 2008, when Metrorail reported a 15.2 percent increase in cost.

Metrorail 2.0 percent decline in operating costs combined with a 0.4 percent increase in revenue hours reduced the operating cost per revenue hour. The reduction in cost (2.4%) reported by Metrorail in 2010 yields a savings of \$6.29 for each revenue hour of service, which translates into a cost reduction of \$1.9 million.



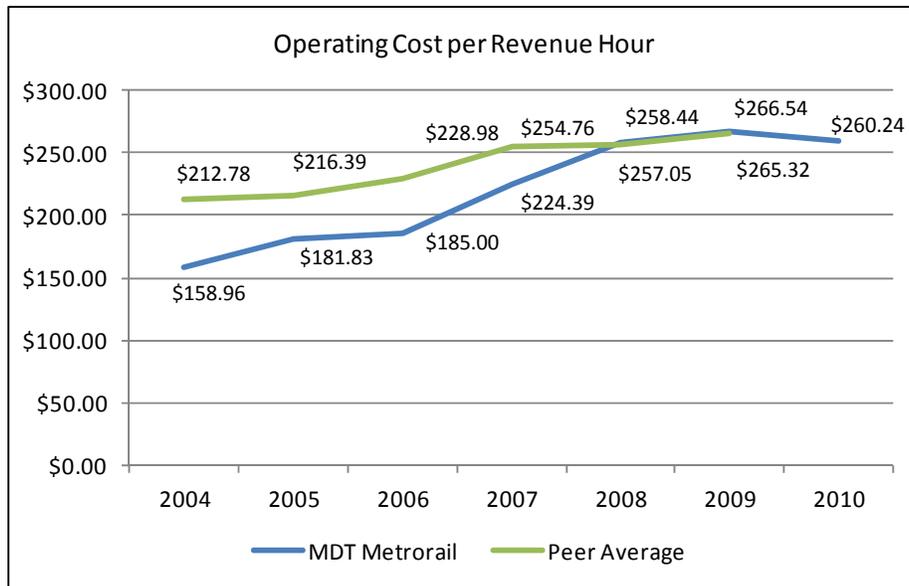
	Operating Cost (\$00)		Revenue Hours	
	MDT Metrorail	Peer Average	MDT Metrorail	Peer Average
2004	\$614,377	\$1,779,228	386,495	974,345
2005	\$718,344	\$1,927,177	395,072	1,044,152
2006	\$750,254	\$2,052,552	405,539	1,039,442
2007	\$806,290	\$2,271,509	359,326	1,060,310
2008	\$823,819	\$2,282,141	318,765	1,074,296
2009	\$783,993	\$2,381,462	294,140	1,087,449
2010	\$768,364		295,247	

Figure 102 - Operating Costs and Revenue Hours



**Figure 103 - Operating Cost per Revenue Hour - Metrorail / Peer Average**

In 2010, Metrorail reduced operating cost per revenue hour from \$266.54 in 2009 to \$260.24, a 2.4 percent decrease (Figure 104).



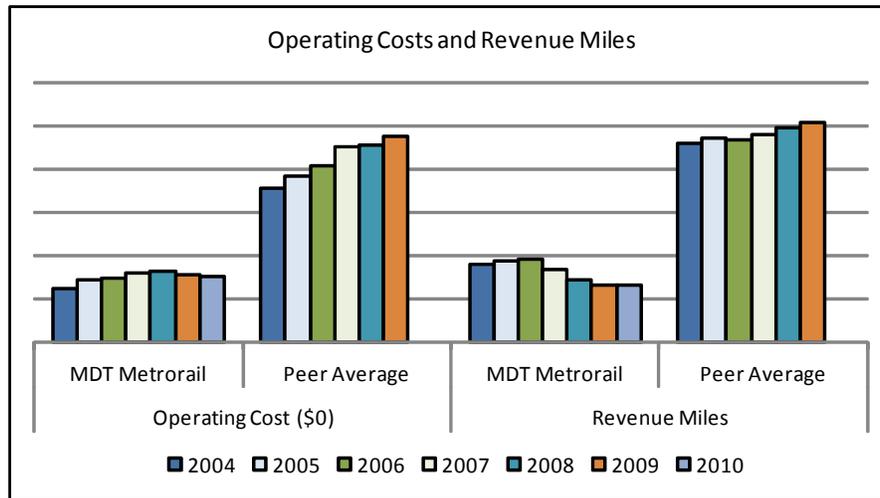
**Figure 104 - Operating Cost per Revenue Hour (Cost Efficiency)**

### Metrorail Cost Efficiency: Operating Cost per Revenue Mile

Operating cost per revenue mile is derived from total operating costs and revenue miles (Figure 105) and provides an indication of what a mile of revenue service costs. In 2009, Metrorail reduced both operating costs (-4.8%) and revenue miles (-6.5%), while the peer group average increased in both costs (4.4%) and miles (2.3%).

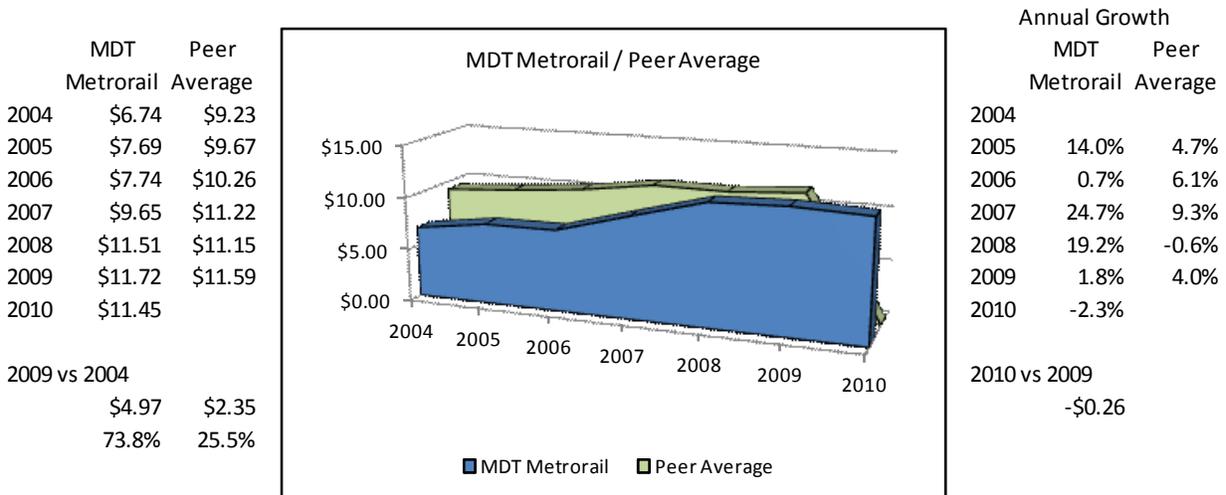
Metrorail cost per revenue miles was actually less than the peer group average until 2008, when Metrorail reported a 19.2 percent increase in cost (Figure 106).

A 0.2 percent increase in revenue miles accompanied by a 1.9 percent reduction in operating cost in 2010 was significant enough to reduce the operating cost per revenue mile. The reduction in cost (a 2.3% decrease) reported by Metrorail in 2010 yields a savings of \$0.26 for each revenue mile of service, which translates into an annual cost reduction of \$1.7 million.



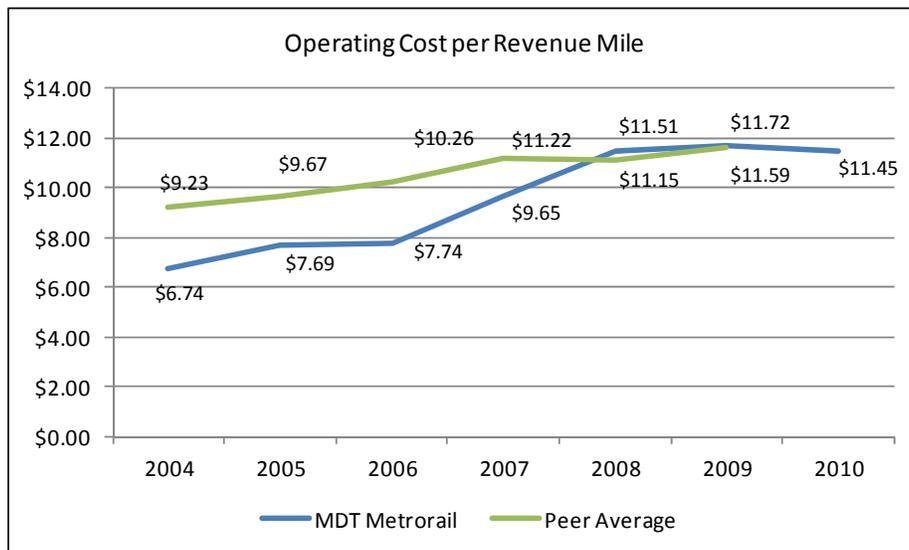
	Operating Cost (\$0)		Revenue Miles	
	MDT Metrorail	Peer Average	MDT Metrorail	Peer Average
2004	\$6,143,772	\$17,792,277	9,112,334	22,969,723
2005	\$7,183,441	\$19,271,775	9,345,661	23,551,054
2006	\$7,502,536	\$20,525,523	9,690,079	23,454,862
2007	\$8,062,900	\$22,715,086	8,354,432	24,038,142
2008	\$8,238,190	\$22,821,406	7,158,361	24,796,370
2009	\$7,839,930	\$23,814,621	6,691,511	25,357,593
2010	\$7,683,644		6,709,386	

**Figure 105 - Operating Costs and Revenue Miles**



**Figure 106 - Operating Cost per Revenue Mile - Metrorail / Peer Average**

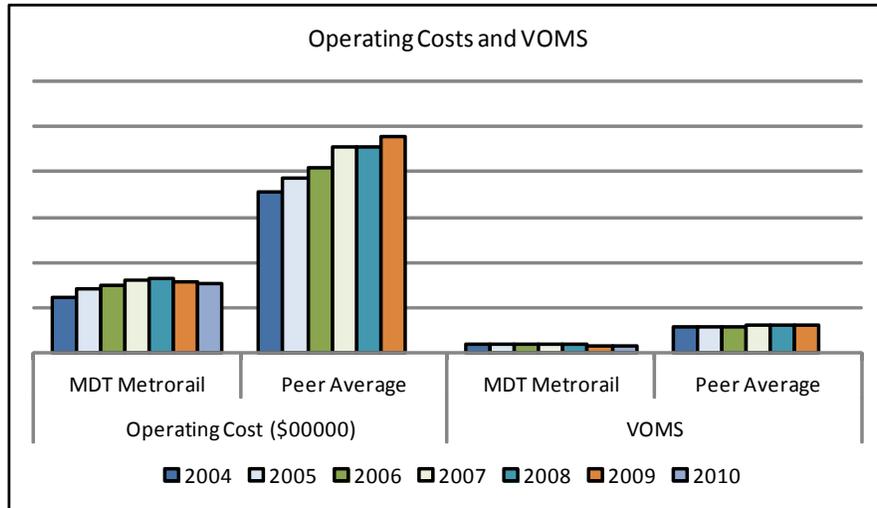
In 2010, Metrorail reduced operating cost per revenue mile from \$11.72 in 2009 to \$11.45, a 2.3 percent decrease (Figure 107).



**Figure 107 - Operating Cost per Revenue Mile (Cost Efficiency)**

### Metrorail Cost Efficiency: Operating Cost per VOMS

Operating cost per VOMS is derived from total operating costs and VOMS (Figure 108) and provides an indication of what a VOMS costs to operate. In 2009, Metrorail reduced both operating costs (a decrease of 4.8%) and VOMS (a decrease of 14.3%), while the peer group average increased in both costs (a 4.4% increase) and VOMS (a 0.2% increase).

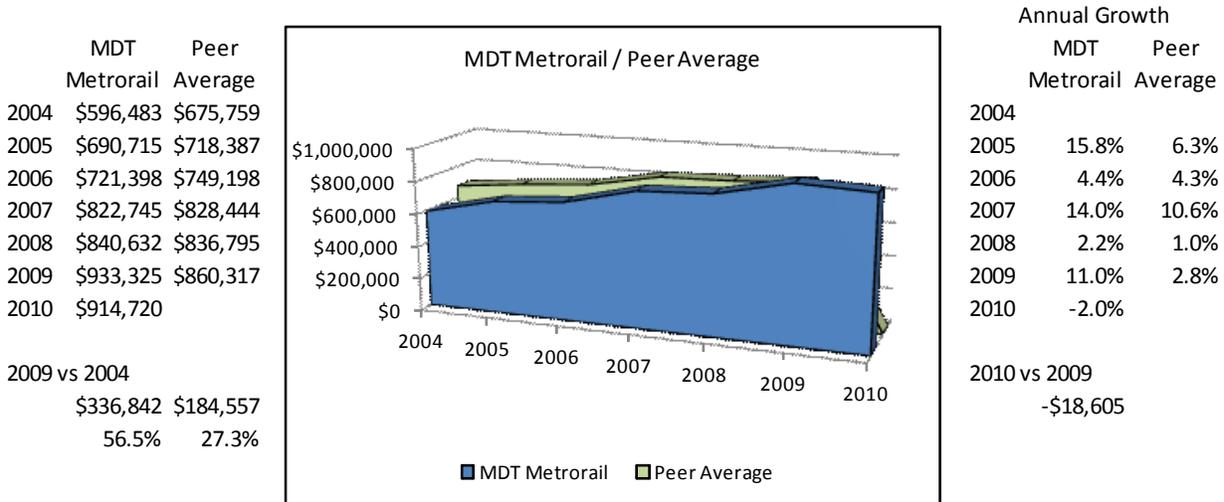


	Operating Cost (\$00000)		VOMS	
	MDT Metrorail	Peer Average	MDT Metrorail	Peer Average
2004	\$614	\$1,779	103	299
2005	\$718	\$1,927	104	299
2006	\$750	\$2,053	104	296
2007	\$806	\$2,272	98	301
2008	\$824	\$2,282	98	310
2009	\$784	\$2,381	84	310
2010	\$768		84	

**Figure 108 - Operating Costs and VOMS**

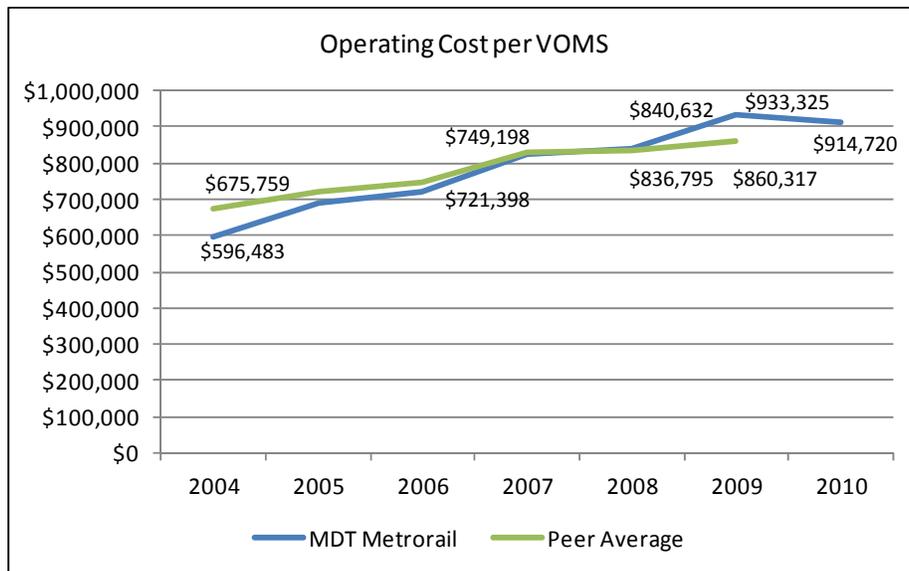
Metrorail cost per VOMS was less than the peer group average from 2004 until 2008, when growth in the Metrorail operating cost per VOMS exceeded the peer group average. Despite a decline in overall operating costs, Metrorail operating cost per VOMS grew to a high in 2009 (increased by 11.0%) and was driven by the sizeable reduction in VOMS. From 2004 to 2009, Metrorail cost per VOMS grew at a faster rate (56.5%) than the peer group average (27.3%).

As the number of VOMS held steady in 2010, Metrorail achieved a reduced operating cost per VOMS (a 2% decrease) due to lower overall operating costs.



**Figure 109 - Operating Cost per VOMS - Metrorail / Peer Average**

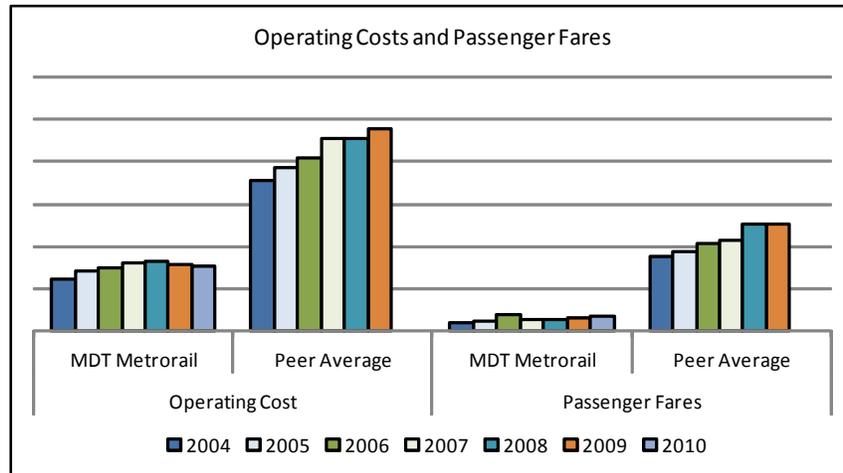
In 2010, Metrorail reduced operating cost per VOMS from \$933,325 in 2009 to \$914,720, a 2.0 percent decrease (Figure 110).



**Figure 110 - Operating Cost per VOMS (Cost Efficiency)**

### Metrorail Cost Effectiveness: Farebox Recovery

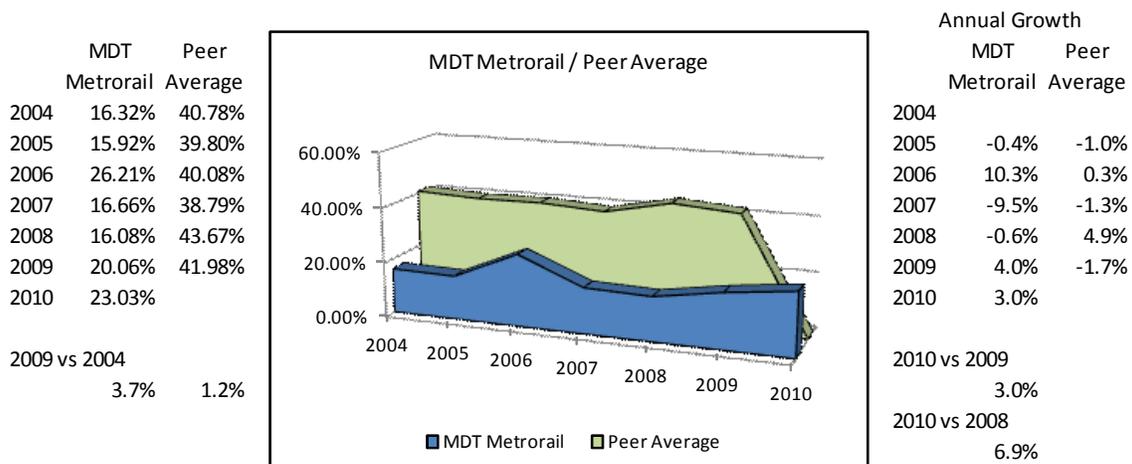
Farebox recovery is derived from operating cost and passenger fare revenue (Figure 111) and is a measure of the agency's effectiveness in recovering passenger fare revenue to cover operating costs. In 2009, Metrorail reduced operating costs (a 4.8% decrease) and increased passenger fare revenue (an 18.7% increase), while the peer group average increased in both costs (a 4.4% increase) and passenger fare revenue (a 1.4% increase).



	Operating Cost		Passenger Fares	
	MDT Metrorail	Peer Average	MDT Metrorail	Peer Average
2004	\$61,437,722	\$177,922,769	\$10,026,596	\$87,927,438
2005	\$71,834,407	\$192,717,746	\$11,432,839	\$94,820,089
2006	\$75,025,360	\$205,255,231	\$19,665,630	\$103,534,278
2007	\$80,628,996	\$227,150,859	\$13,435,411	\$107,744,706
2008	\$82,381,902	\$228,214,062	\$13,246,540	\$125,671,791
2009	\$78,399,299	\$238,146,207	\$15,725,268	\$127,388,826
2010	\$76,836,442		\$17,694,751	

**Figure 111 - Operating Costs and Passenger Fares**

From 2004 through 2009, Metrorail consistently reported a lower level of farebox recovery than the peer group average (Figure 112). Metrorail and peer group average farebox recovery rates fluctuated throughout the period. Metrorail farebox recovery peaked in 2006 at 26.2 percent, while the peer group average peaked at 43.7 percent in 2008. Metrorail reported growth in 2009 compared to 2008, while the peer group average reported a decline.



**Figure 112 - Farebox Recovery - Metrorail / Peer Average**

In 2010, Metrorail increased farebox recovery from 20.1 percent in 2009 to 23.0 percent, a 3.0 percent increase (Figure 113).

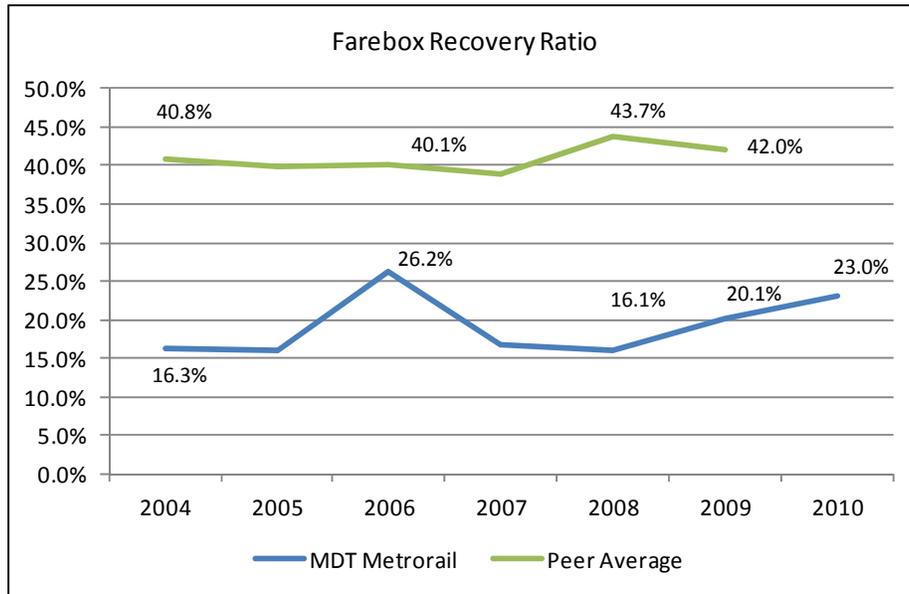
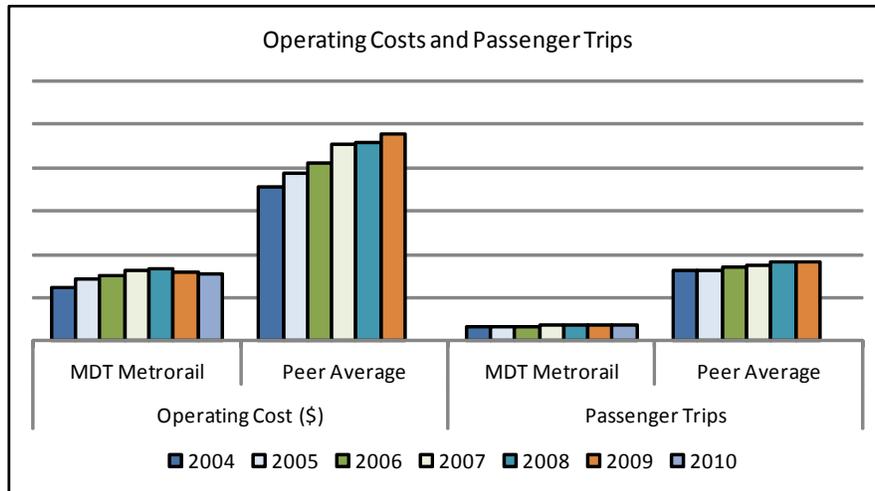


Figure 113 - Farebox Recovery (Cost Effectiveness)

### Metrorail Cost Effectiveness: Operating Cost per Passenger Trip

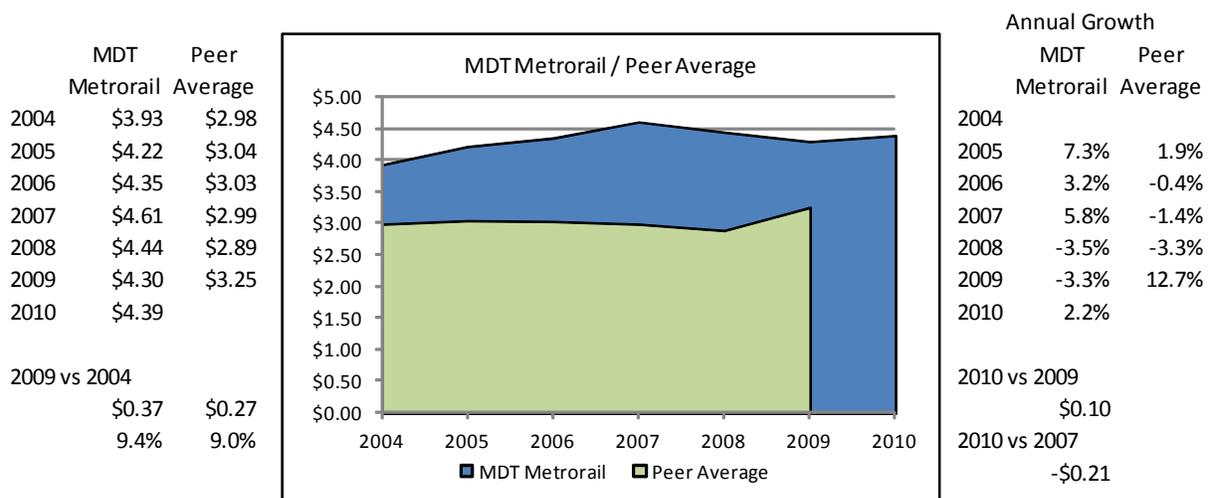
Operating cost per passenger trip is derived from operating costs and passenger trips (Figure 114) and is a measure of the effectiveness of the system in providing service. In 2009, Metrorail reduced both operating costs (a 4.8% decrease) and passenger trips (a 1.6% decrease), while the peer group average increased in both costs (a 4.4% increase) and trips (a 1.1% increase).



	Operating Cost (\$)		Passenger Trips	
	MDT Metrorail	Peer Average	MDT Metrorail	Peer Average
2004	\$61,437,722	\$177,922,769	15,637,516	80,933,350
2005	\$71,834,407	\$192,717,746	17,034,513	82,094,424
2006	\$75,025,360	\$205,255,231	17,234,962	85,652,560
2007	\$80,628,996	\$227,150,859	17,504,736	87,038,713
2008	\$82,381,902	\$228,214,062	18,538,741	90,983,213
2009	\$78,399,299	\$238,146,207	18,244,476	91,951,828
2010	\$76,836,442		17,494,020	

**Figure 114 – Operating Costs and Passenger Trips**

From 2004 through 2009, Metrorail consistently reported a higher cost per passenger trip than the peer group average (Figure 115); although, growth over time was quite similar. Reduced operating costs in 2010 were not significant enough to offset the 4.1 percent reduction in passenger trips that fell from 18.2 million in 2009 to 17.5 million.



**Figure 115 - Operating Cost per Passenger Trip - Metrorail / Peer Average**

In 2010, Metrorail increased cost per passenger trip from \$4.30 in 2009 to \$4.39, a 2.2 percent increase (Figure 116).

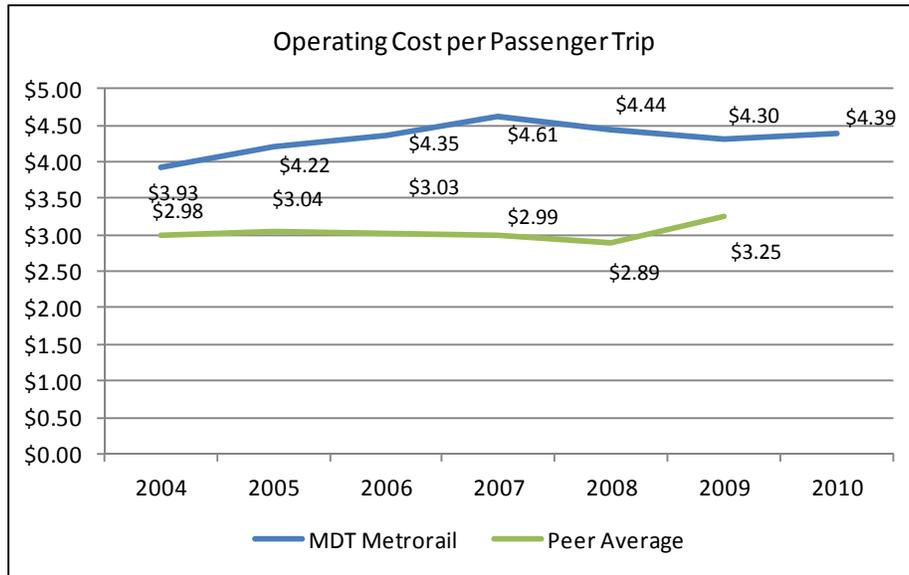
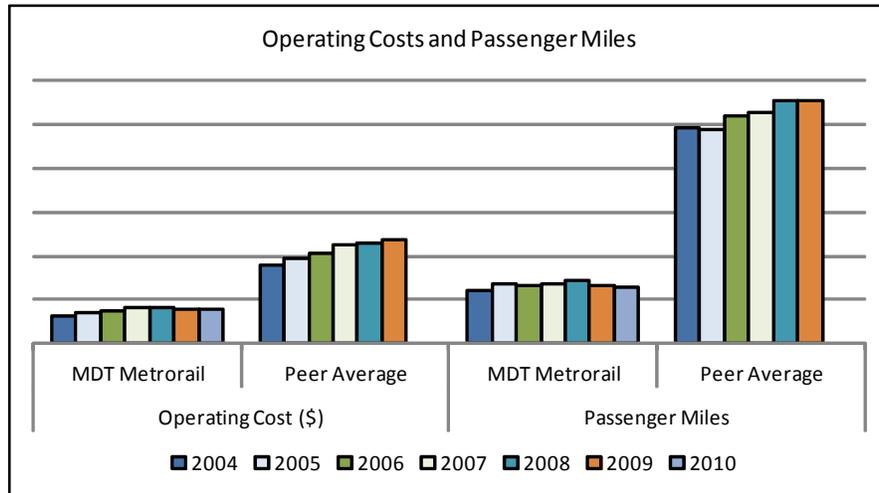


Figure 116 - Operating Cost per Passenger Trip (Cost Effectiveness)

### Metrorail Cost Effectiveness: Operating Cost per Passenger Mile

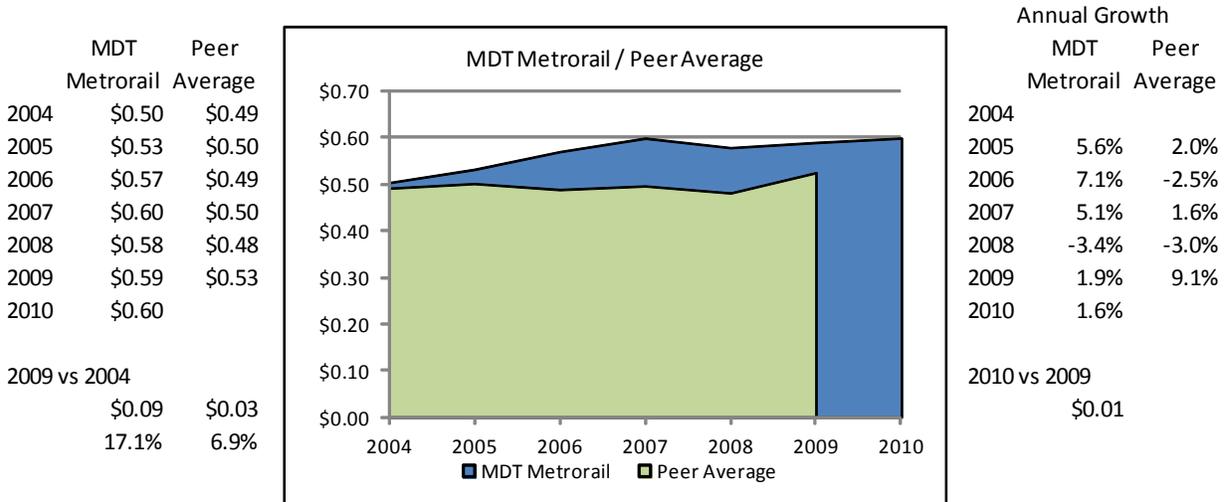
Operating cost per passenger mile is derived from operating costs and passenger miles (Figure 117) and is a measure of the effectiveness of the system in providing service. Unlike passenger trips, passenger miles are sensitive to the length of each trip. In 2009, Metrorail reduced both operating costs (a 4.8% decrease) and passenger miles (a 6.6% decrease), while the peer group average increased in costs (a 4.4% increase), but reduced miles (a 0.2% decrease).



	Operating Cost (\$)		Passenger Miles	
	MDT Metrorail	Peer Average	MDT Metrorail	Peer Average
2004	\$61,437,722	\$177,922,769	121,822,960	490,685,967
2005	\$71,834,407	\$192,717,746	134,854,478	489,167,015
2006	\$75,025,360	\$205,255,231	131,446,453	517,638,208
2007	\$80,628,996	\$227,150,859	134,407,819	526,346,485
2008	\$82,381,902	\$228,214,062	142,152,120	555,405,819
2009	\$78,399,299	\$238,146,207	132,769,722	554,257,745
2010	\$76,836,442		128,079,181	

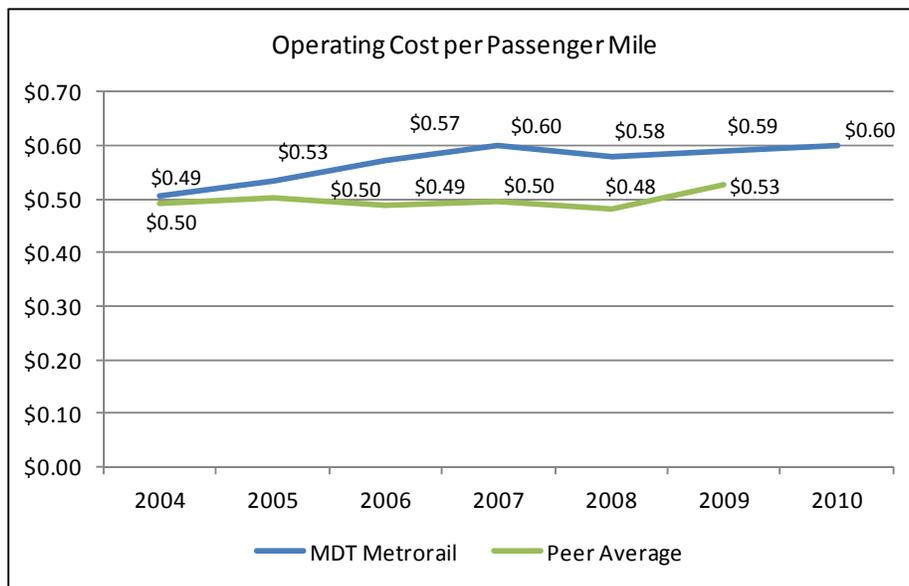
**Figure 117 - Operating Costs and Passenger Miles**

Metrorail cost per passenger mile grew annually until 2007, declined in 2008, and increased in 2009 (Figure 118). The peer group average cost per passenger mile, on the other hand, repeated a cycle of growth followed by decline from 2004 through 2009. Metrorail consistently reported a higher cost per passenger mile than the peer group average and grew at a faster rate overall (17.1% compared to 6.9%). Reduced operating costs in 2010 were not significant enough to offset the 6.6 percent reduction in passenger miles that fell from 132.8 million in 2009 to 128.1 million.



**Figure 118 - Operating Cost per Passenger Mile - Metrorail / Peer Average**

In 2010, Metrorail increased cost per passenger mile from \$0.59 in 2009 to \$0.60, a 1.6 percent increase (Figure 119).

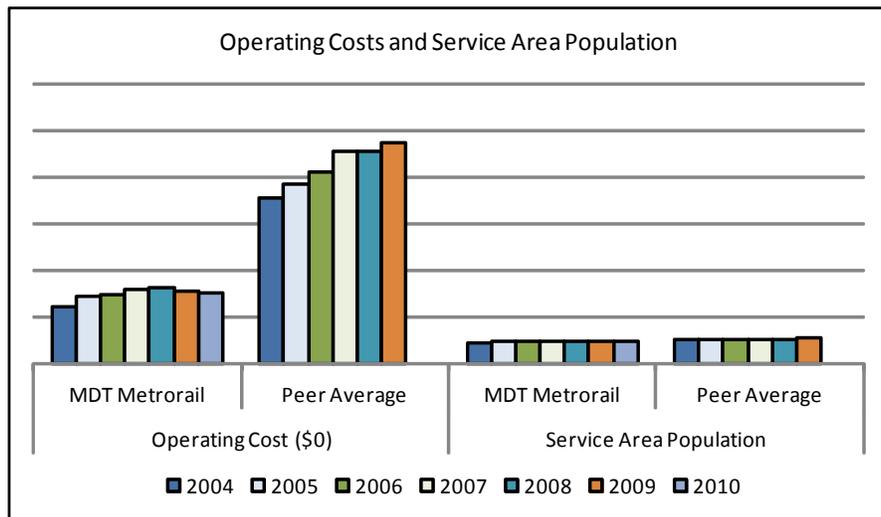


**Figure 119 - Operating Cost per Passenger Mile (Cost Effectiveness)**

### Metrorail Cost Effectiveness: Operating Cost per Capita

Operating cost per capita is derived from operating costs and service area population (Figure 120) and is a measure of the effectiveness of the system in providing service within the service area. In 2009, Metrorail reduced operating costs (a 4.8% decrease) and reported no change in service area population,

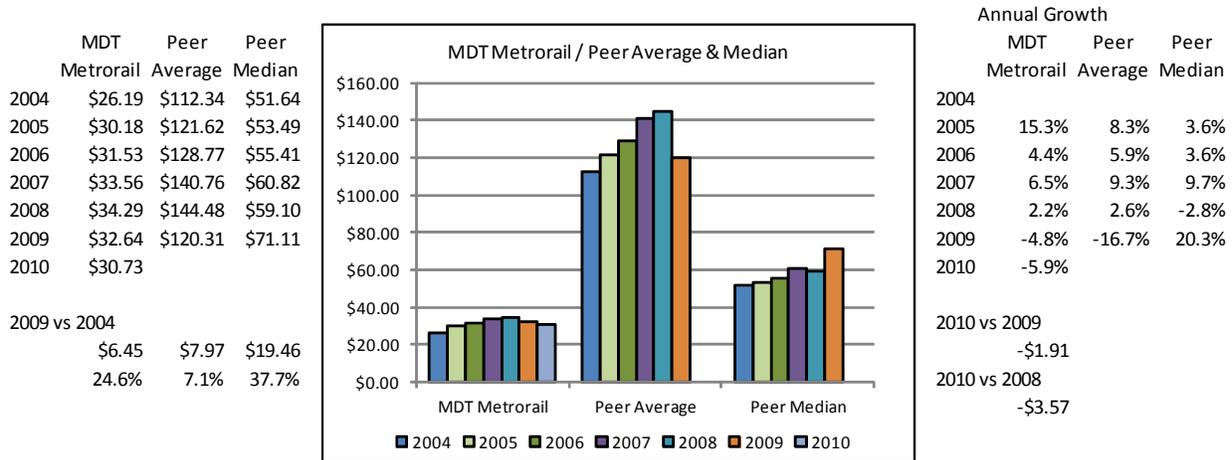
while the peer group average increased in both costs (a 4.4% increase) and service area population (a 6.5% increase).



	Operating Cost (\$0)		Service Area Population	
	MDT Metrorail	Peer Average	MDT Metrorail	Peer Average
2004	\$6,143,772	\$17,792,277	2,345,932	2,587,137
2005	\$7,183,441	\$19,271,775	2,379,818	2,587,871
2006	\$7,502,536	\$20,525,523	2,379,818	2,586,716
2007	\$8,062,900	\$22,715,086	2,402,208	2,610,835
2008	\$8,238,190	\$22,821,406	2,402,208	2,620,898
2009	\$7,839,930	\$23,814,621	2,402,208	2,792,117
2010	\$7,683,644		2,500,625	

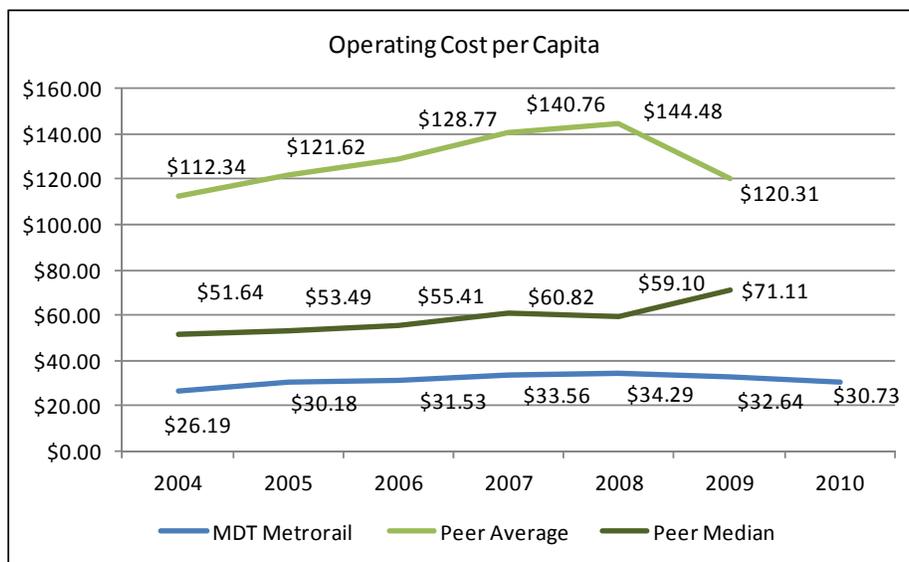
**Figure 120 - Operating Costs and Service Area Population**

From 2004 through 2009, Metrorail cost per capita fell below the peer group average and the peer group median (Figure 121). The peer group median is included in the review due to the growth trends observed in the peer agency service area population (Figure 77). Metrorail, the peer group average, and the peer group median grew steadily on an annual basis through 2007. Metrorail and peer group average, while the peer group median showed a decline in 2008. Metrorail and the peer group average declined in 2009, while the peer group media grew.



**Figure 121 - Operating Cost per Capita – Metrorail / Peer Average and Median**

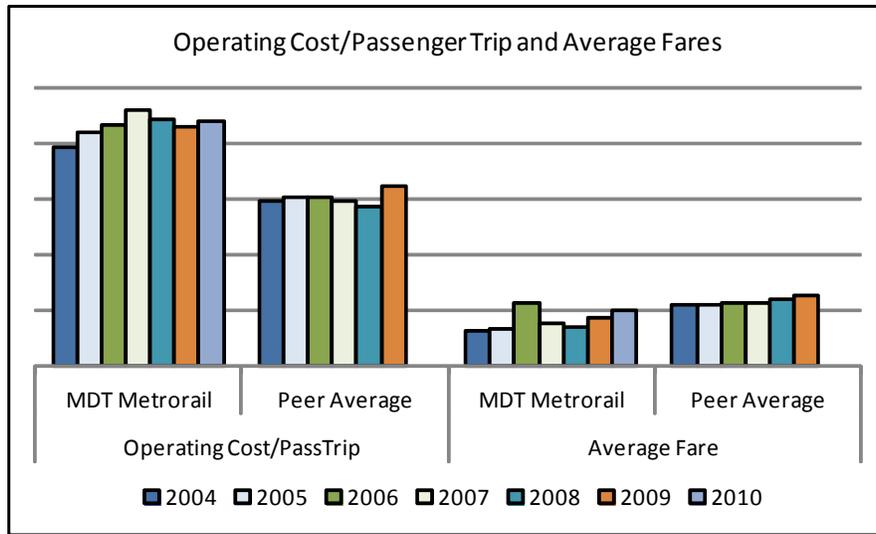
In 2010, Metrorail reduced cost per capita from \$32.64 in 2009 to \$30.73, a 5.9 percent decrease (Figure 122).



**Figure 122 - Operating Cost per Capita (Cost Effectiveness)**

### Metrorail Cost Effectiveness: Subsidy per Boarding

Subsidy per boarding is derived from the cost per passenger trip and the average fare paid (Figure 123) and is a measure of the effectiveness of the system in recovering service costs. In 2009, Metrorail reduced operating cost per passenger trip by \$0.15 (a 3.3% decrease) and increased average fare by \$0.15 (a 20.6% increase), while the peer group average increased in operating cost per passenger trip by \$0.37 (a 12.7% increase) and average fare by \$0.04 (a 3.0% increase).

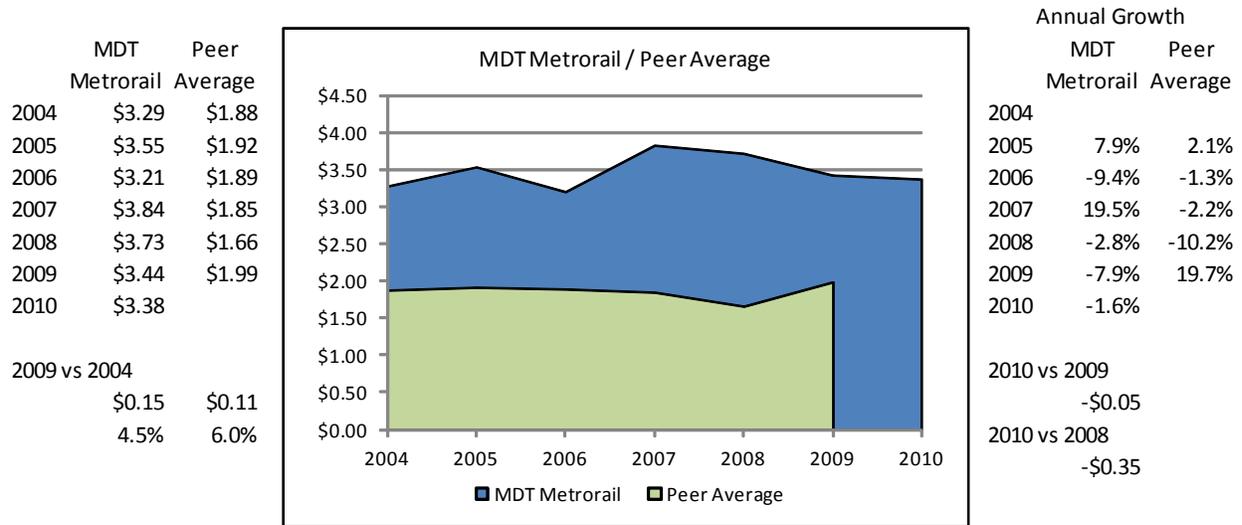


	Operating Cost/PassTrip		Average Fare	
	MDT Metrorail	Peer Average	MDT Metrorail	Peer Average
2004	\$3.93	\$2.98	\$0.64	\$1.10
2005	\$4.22	\$3.04	\$0.67	\$1.12
2006	\$4.35	\$3.03	\$1.14	\$1.13
2007	\$4.61	\$2.99	\$0.77	\$1.13
2008	\$4.44	\$2.89	\$0.71	\$1.22
2009	\$4.30	\$3.25	\$0.86	\$1.26
2010	\$4.39		\$1.01	

**Figure 123 - Operating Cost/Pass Trip and Average Fares**

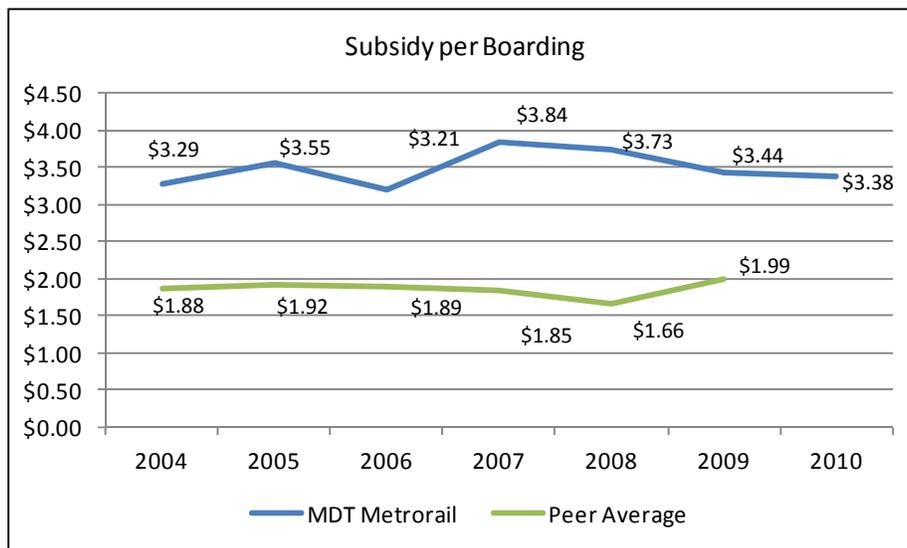
Throughout the period from 2004 through 2009, Metrorail subsidy per boarding exceeded the peer group average (Figure 124). Both Metrorail and the peer group average subsidy grew sporadically on an annual basis through 2009. Metrorail and the peer group average subsidy declined in 2006. The peer group average subsidy declined further in 2007 and 2008 before increasing in 2009 to \$1.99, the highest subsidy reported during the period, representing a 19.7 percent increase compared to 2008.

Following a 19.5 percent increase in subsidy in 2007 compared to 2006, Metrorail subsidy decreased annually. Nonetheless, over the period from 2004 through 2009, both Metrorail and the peer group average increased in subsidy per boarding at similar rates.



**Figure 124 - Subsidy per Boarding - Metrorail / Peer Average**

Growth in Metrorail average fare from \$0.86 to \$1.10 helped to offset the \$0.09 increase in operating cost per passenger trip in 2010. Metrorail reduced subsidy per boarding from \$3.44 in 2009 to \$3.38, a 1.6 percent decrease (Figure 125).

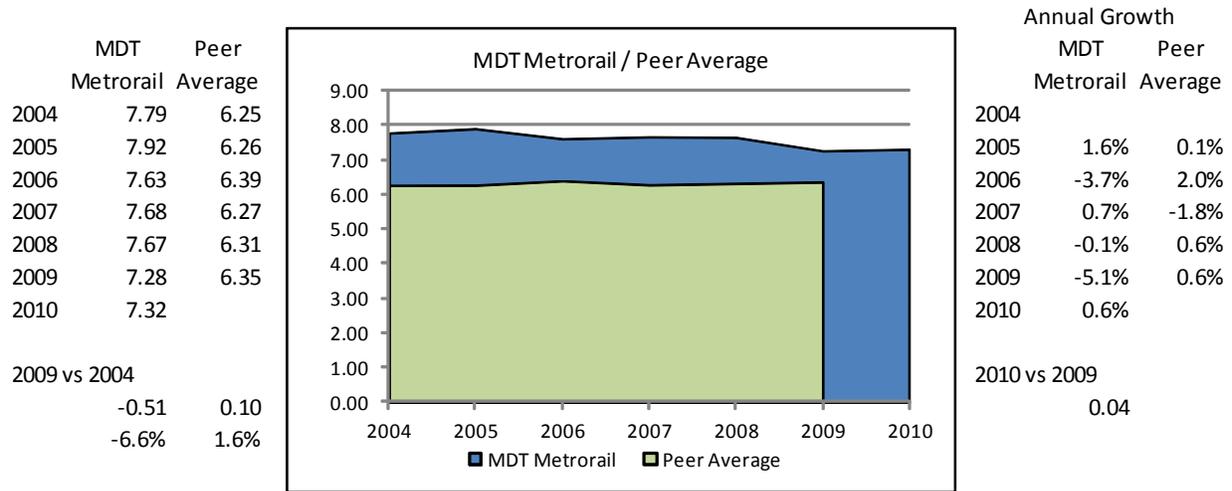


**Figure 125 - Subsidy per Boarding (Cost Effectiveness)**

### Metrorail Service Utilization: Average Trip Length

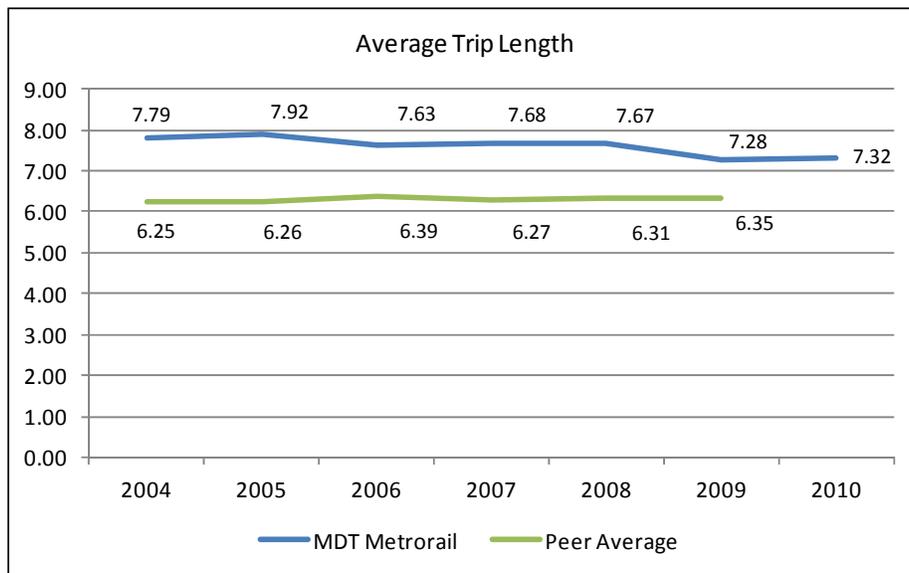
Average trip length is derived from passenger trips and passenger miles and is a measure of the system in providing service. From 2004 through 2009, Metrorail average trip length exceeded the peer group average (Figure 126). Metrorail average trip length in 2009 was shorter compared to 2004, while the peer group average trip length grew slightly. In 2009, the peer group achieved an average trip length of

6.35 miles compared to a Metrorail average trip length of 7.32 miles. In 2010, the Metrorail average trip length grew to 7.32 miles, well below the peak average length of 7.92 miles reported in 2005.



**Figure 126 - Average Trip Length - Metrorail / Peer Average**

In 2010, Metrorail increased average trip length from 7.28 miles in 2009 to 7.32 miles, a 0.6 percent increase (Figure 127).

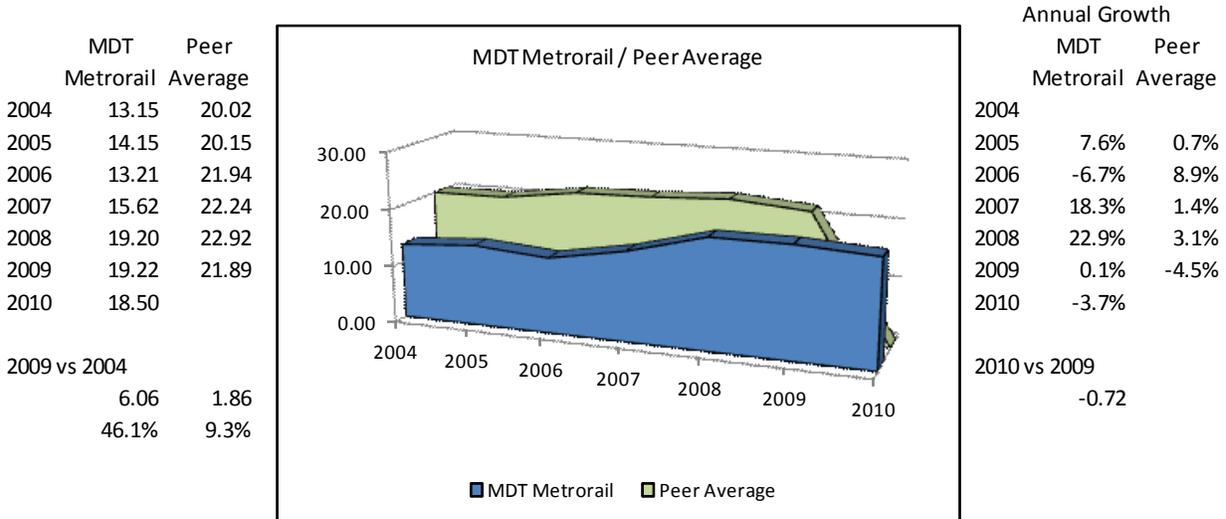


**Figure 127 - Average Trip Length (Service Utilization)**

### Metrorail Service Utilization: Passenger Miles per Vehicle Mile

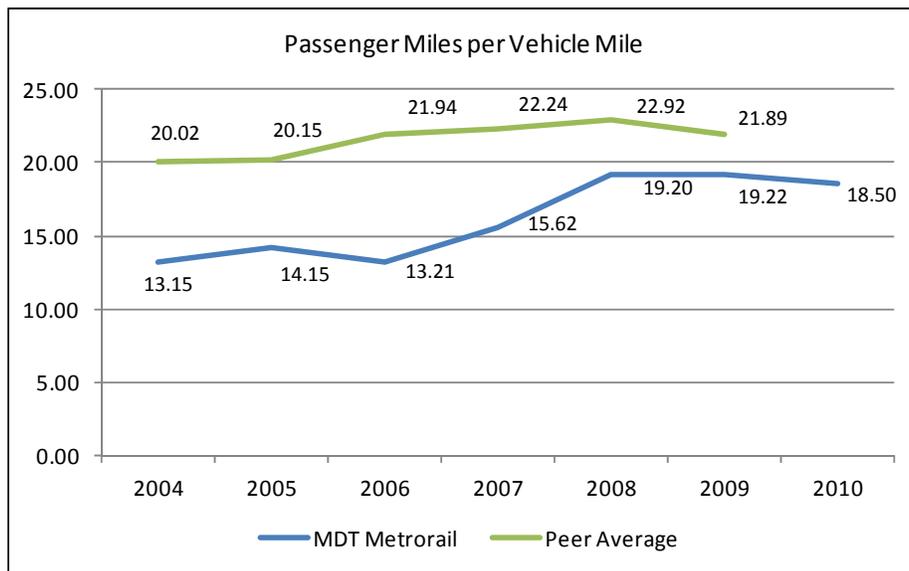
The relationship of passenger miles to vehicle miles is a measure of service utilization and productivity.

From 2004 through 2009 (Figure 128), Metrorail reported fewer passenger miles per vehicle mile than the peer group average. Significant growth in Metrorail passenger miles per vehicle mile occurred in 2007 and 2008, reducing the difference between Metrorail and the peer group passenger miles per vehicle mile from 6.87 miles in 2004 to 2.67 miles in 2009.



**Figure 128 - Passenger Miles per Vehicle Mile - Metrorail / Peer Average**

In 2010, Metrorail reduced passenger miles per vehicle mile from 19.22 in 2009 to 18.50, a 3.7 percent reduction (Figure 129).

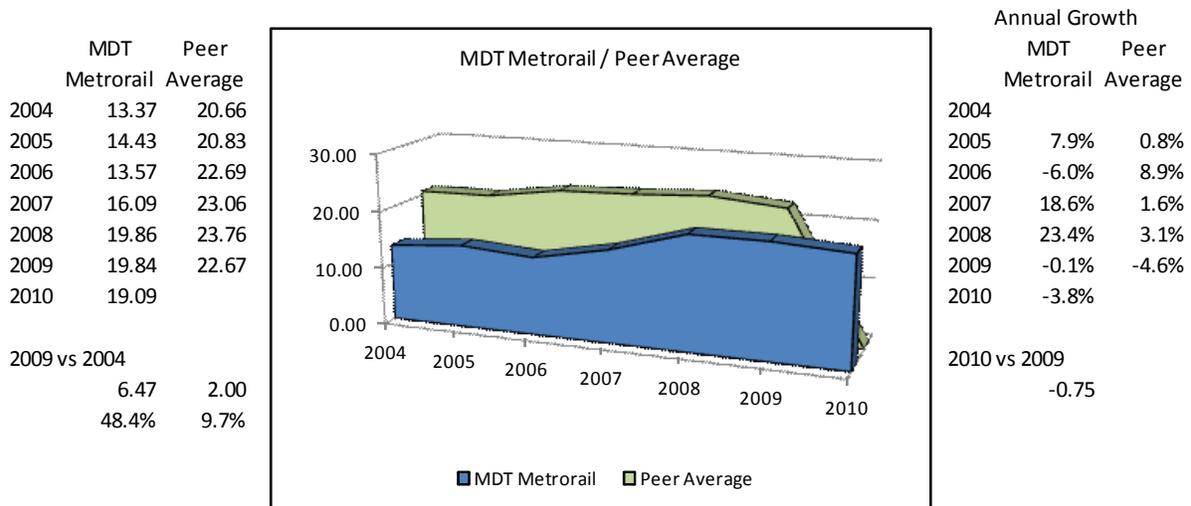


**Figure 129 - Passenger Miles per Vehicle Mile (Service Utilization)**

### Metrorail Service Utilization: Average Passenger Load

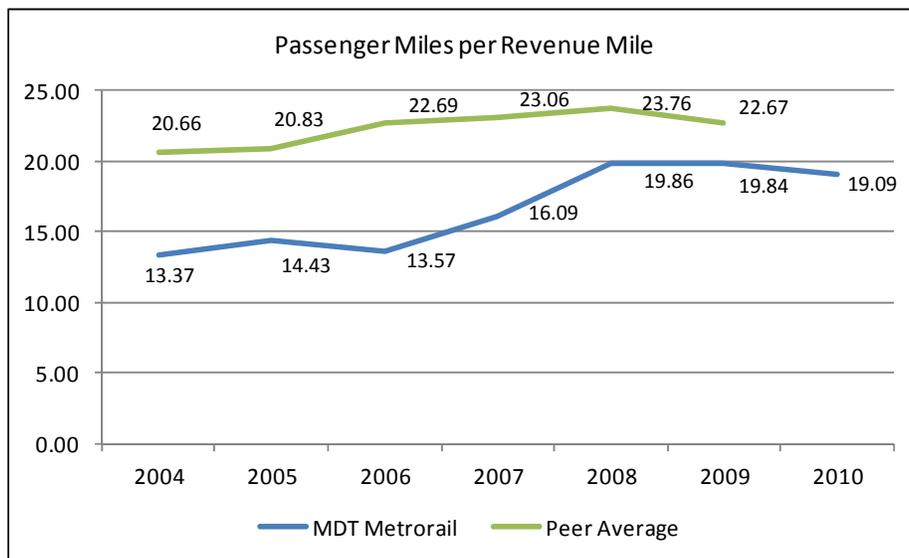
The relationship of passenger miles to revenue miles is referred to as average passenger load and is a commonly used measure of service utilization and productivity.

From 2004 through 2009 (Figure 130), Metrorail reported fewer passenger miles per revenue mile than the peer group average. Significant growth in Metrorail passenger miles per revenue mile occurred in 2007 and 2008, reducing the difference between Metrorail and the peer group passenger miles per revenue mile from 7.29 miles in 2004 to 2.837 miles in 2009.



**Figure 130 - Average Passenger Load - Metrorail / Peer Average**

In 2010, Metrorail reduced passenger miles per revenue mile from 19.84 miles in 2009 to 19.09 miles, a 3.8 percent decrease (Figure 131).



**Figure 131 - Average Passenger Load (Service Utilization)**

### Metrorail Labor Administration: Vehicle Operations Expense

Vehicle operations expense (Figure 132) is used to measure day-to-day transit operations from a labor management perspective. Peer group average growth in vehicle operations expense in 2009 compared to 2004 was greater than Metrorail growth (Figure 133). In 2009 compared to 2008, Metrorail reported a 1.4 percent reduction, while the peer group average increased by 10.2 percent.

Metrorail further reduced vehicle operation expense in 2010 (a 6.9% decrease) by \$2.4 million. Since 2008, Metrorail has reduced vehicle operation expense by \$2.9 million.

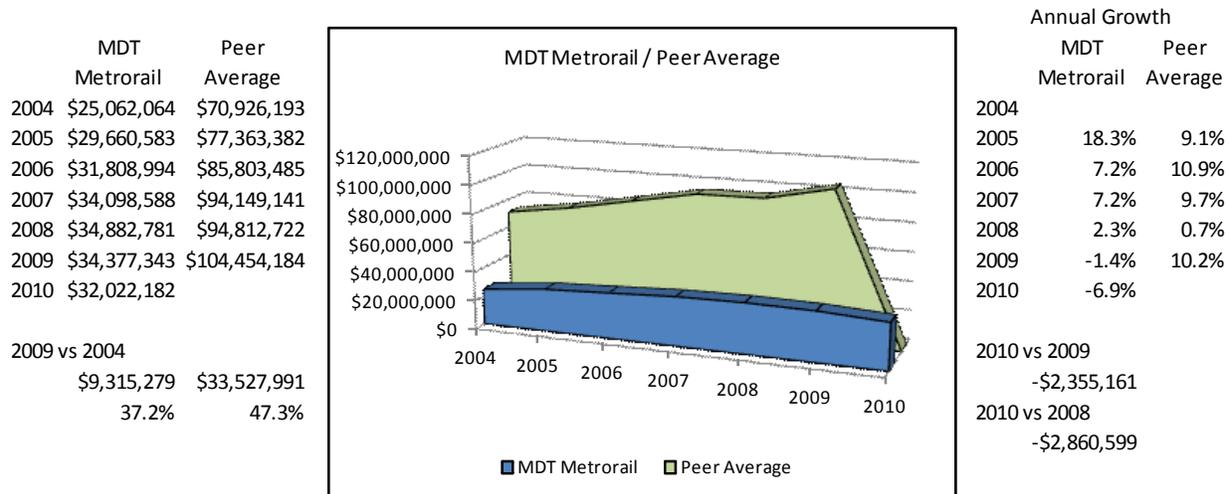


Figure 132 - Vehicle Operations Expense - Metrorail / Peer Average

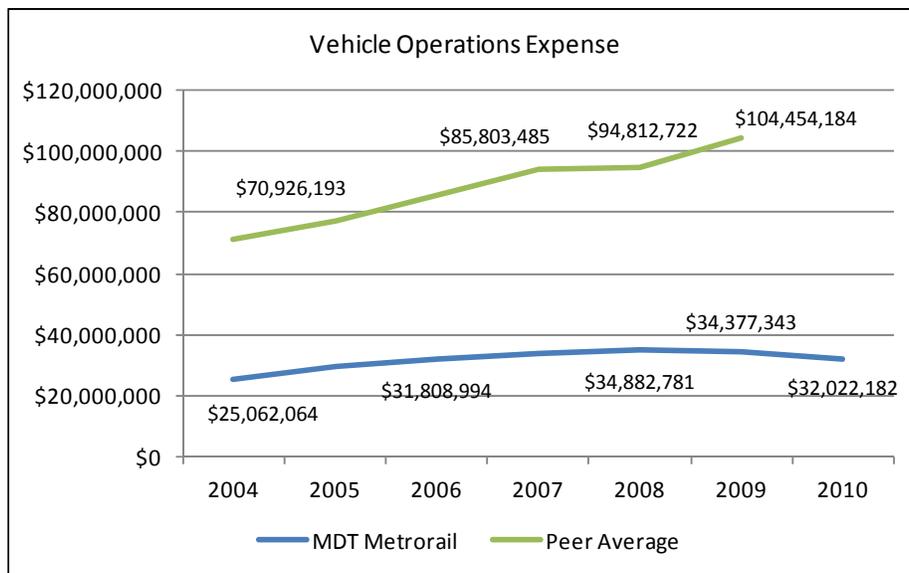
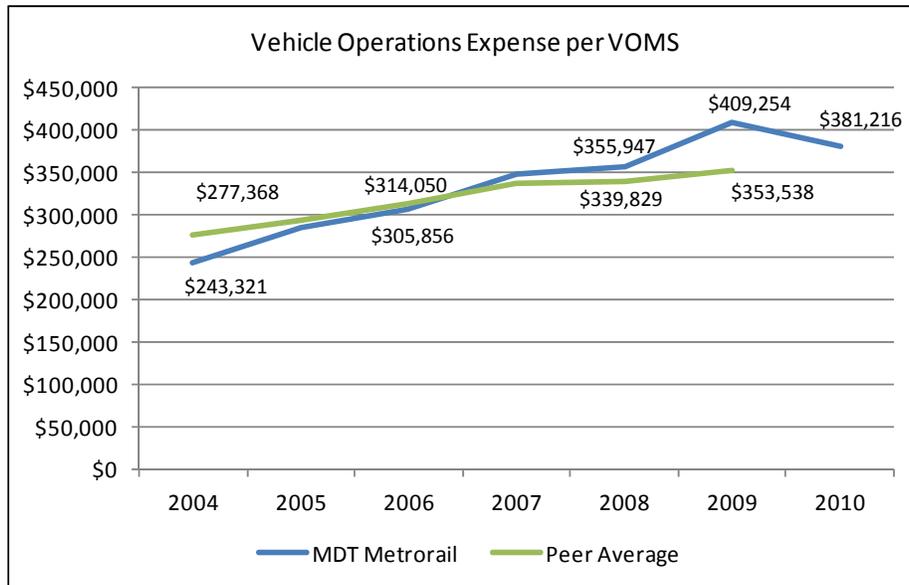


Figure 133 - Vehicle Operations Expense (Labor Administration)

Vehicle operation expense per VOMS represents the vehicle operation commitment for providing a vehicle in maximum service (Figure 134). In 2010, Metrorail reduced vehicle operations expense per VOMS from \$402,254 in 2009 to \$381,216, a 6.9 percent decrease.

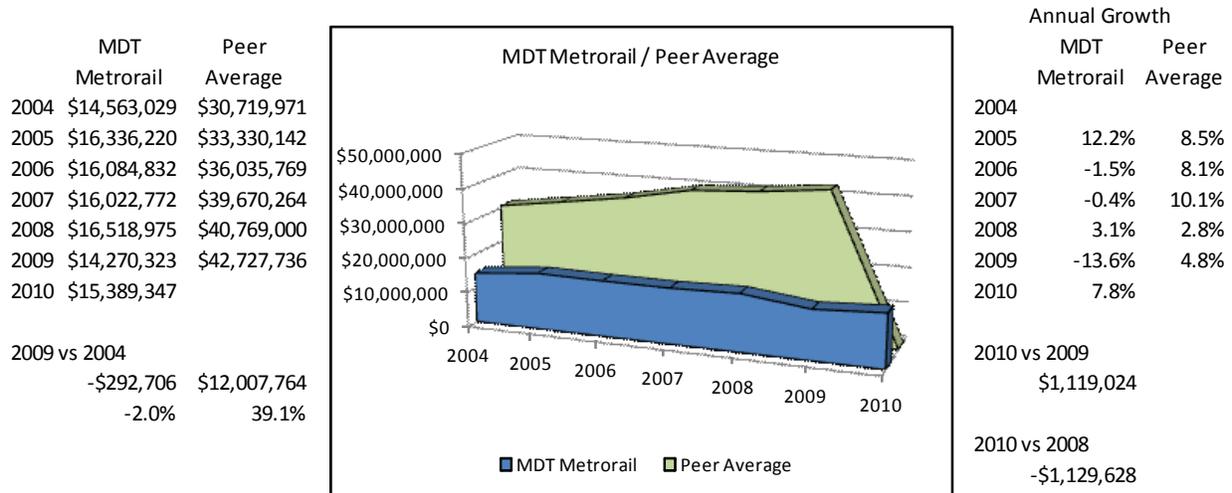


**Figure 134 - Vehicle Operations Expense per VOMS (Labor Administration)**

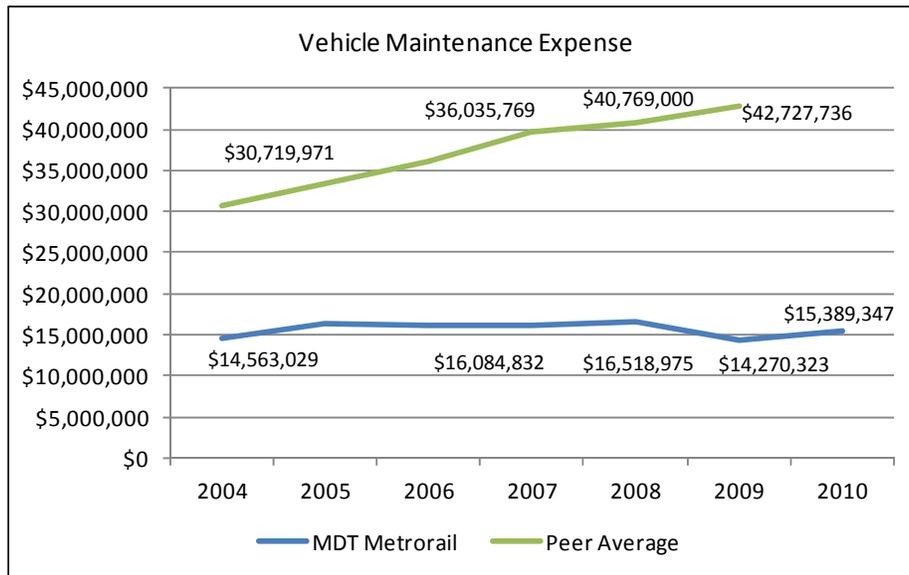
### Metrorail Labor Administration: Vehicle Maintenance Expense

Vehicle maintenance expense (Figure 135) is used to measure day-to-day transit operations from a labor management perspective. While peer group average growth in vehicle maintenance expense in 2009 compared to 2004 increased by 39.1%, Metrorail reported a decrease of 0.2 percent. Metrorail vehicle maintenance expense in 2009 fell below the 2004 expense (Figure 136) and compared to 2008, represented a 13.6 percent reduction in vehicle maintenance expense, while the peer group average increased by 4.8 percent.

In 2010, Metrorail increased vehicle maintenance expense by \$1.1 million (a 7.8% increase).



**Figure 135 - Vehicle Maintenance Expense - Metrorail / Peer Average**



**Figure 136 - Vehicle Maintenance Expense (Labor Administration)**

Vehicle maintenance expense per VOMS represents the vehicle maintenance commitment for providing a vehicle in maximum service (Figure 137). In 2009, Metrorail vehicle maintenance expense per VOMS increased by 0.8 percent compared to 2008 and was slightly higher than the peer group average, which increased by 10.0 percent. In 2010, Metrorail increased vehicle maintenance expense per VOMS from \$169,885 in 2009 to \$183,207 (a 7.8% increase).

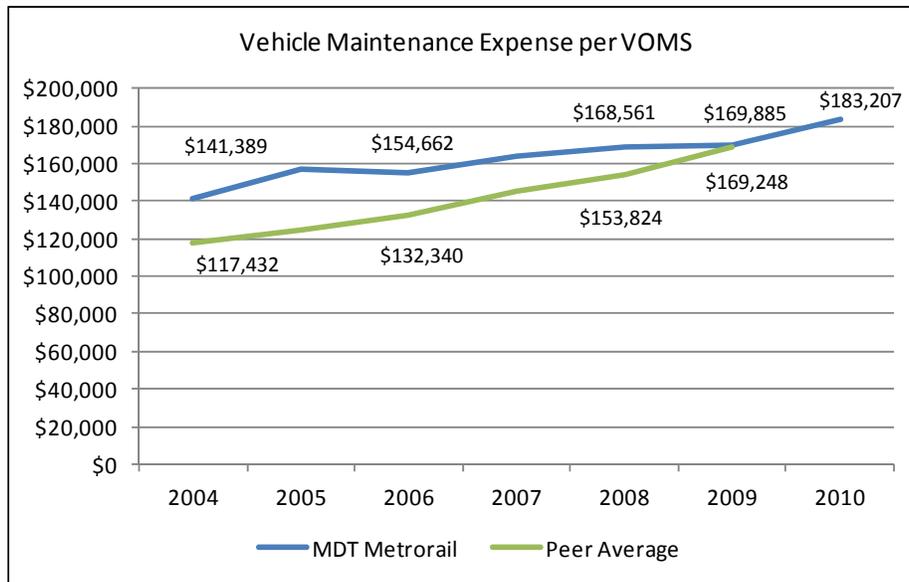


Figure 137 – Vehicle Maintenance Expense per VOMS (Labor Administration)

### Metrorail Labor Administration: Non-vehicle Maintenance Expense

Non-vehicle maintenance expense (Figure 138) is used to measure day-to-day transit operations from a labor management perspective. Metrorail non-vehicle maintenance expense in 2009 compared to 2004 exceeded peer group average growth. Metrorail non-vehicle maintenance expense in 2009 fell below the 2008 expense (Figure 139) and represented a 3.3 percent reduction in non-vehicle maintenance expense. The peer group average non-vehicle maintenance expense also declined in 2009 compared to 2008, by a modest 0.2 percent.

In 2010, Metrorail further reduced non-vehicle maintenance expense by \$1.6 million (an 8.4% decrease).

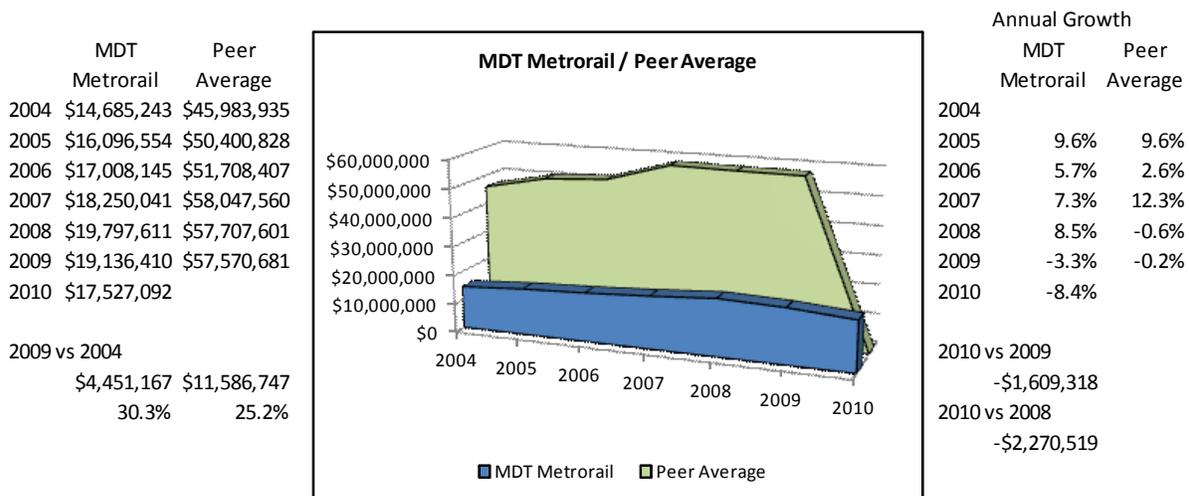
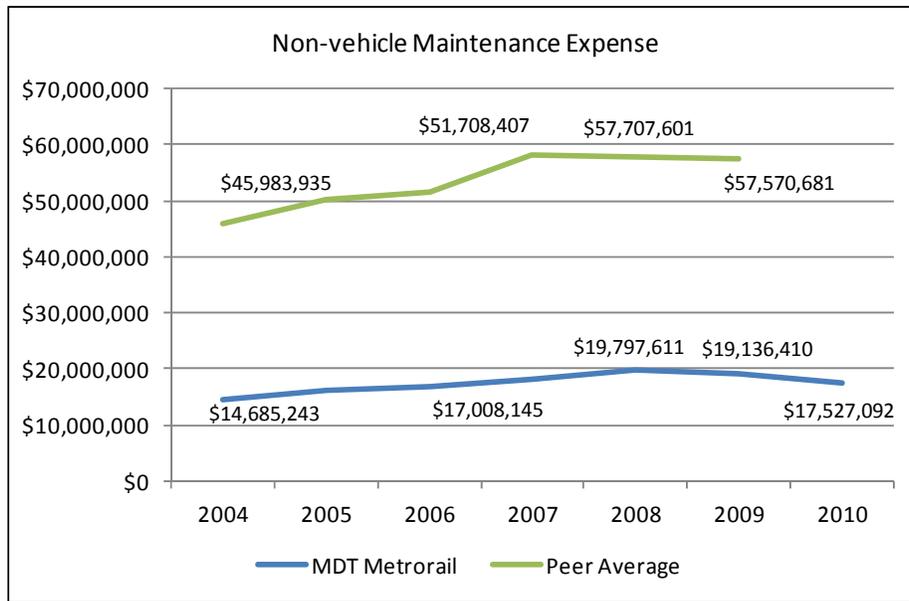
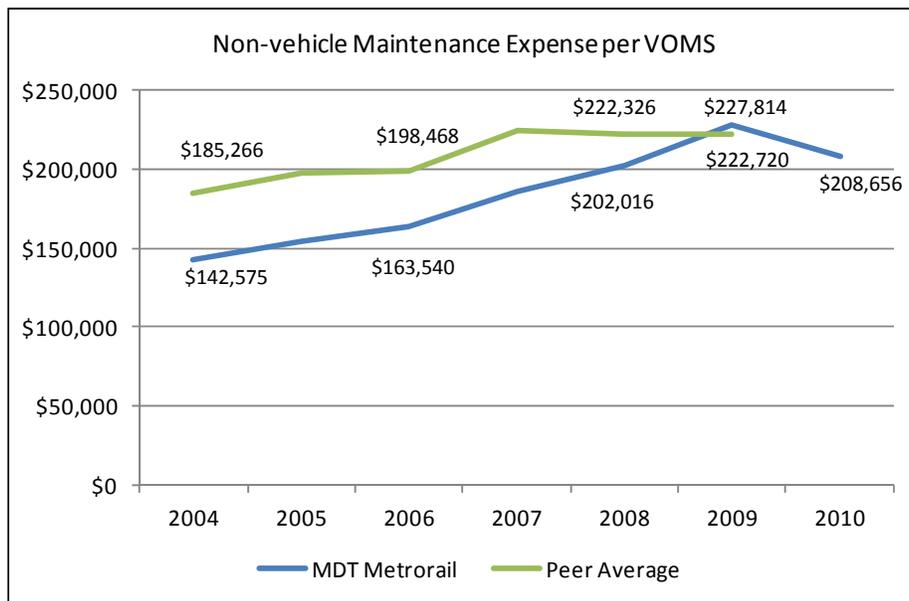


Figure 138 - Non-vehicle Maintenance Expense - Metrorail / Peer Average



**Figure 139 - Non-vehicle Maintenance Expense (Labor Administration)**

Non-vehicle maintenance expense per VOMS represents the non-vehicle maintenance commitment for providing a vehicle in maximum service (Figure 140). In 2009, Metrorail non-vehicle maintenance expense per VOMS increased by 12.8 percent compared to 2008 and was slightly higher than the peer group average, which increased by a modest 0.2 percent. In 2010, Metrorail reduced non-vehicle maintenance expense per VOMS from \$227,814 in 2009 to \$208,656, an 8.4 percent decrease.



**Figure 140 - Non-vehicle Maintenance Expense per VOMS (Labor Administration)**

### Metrorail Labor Maintenance: General Administration Expense

General administration expense (Figure 141) is used to measure day-to-day transit operations from a labor management perspective. Metrorail general administration expense in 2009 compared to 2004 exceeded peer group average growth. Metrorail general administration expense in 2009 fell below the 2008 expense (Figure 142) and represented a 5.1 percent reduction in general administration expense. The peer group average general administration expense also declined in 2009 compared to 2008, by 4.4 percent.

In 2010, Metrorail increased general administration expense by \$1.3 million (a 12.1% increase).

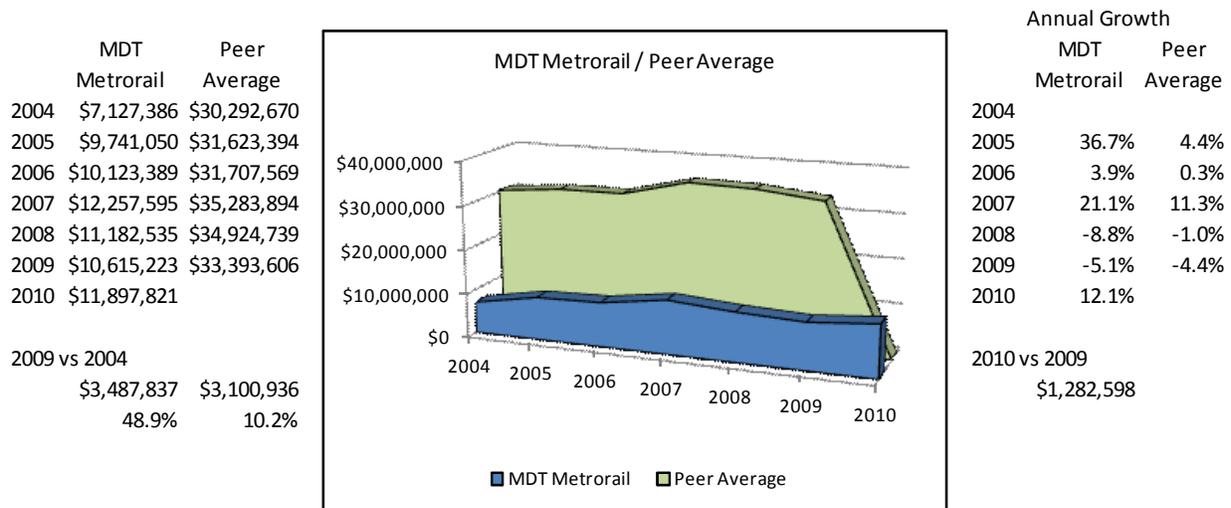


Figure 141 - General Administration Expense - Metrorail / Peer Average

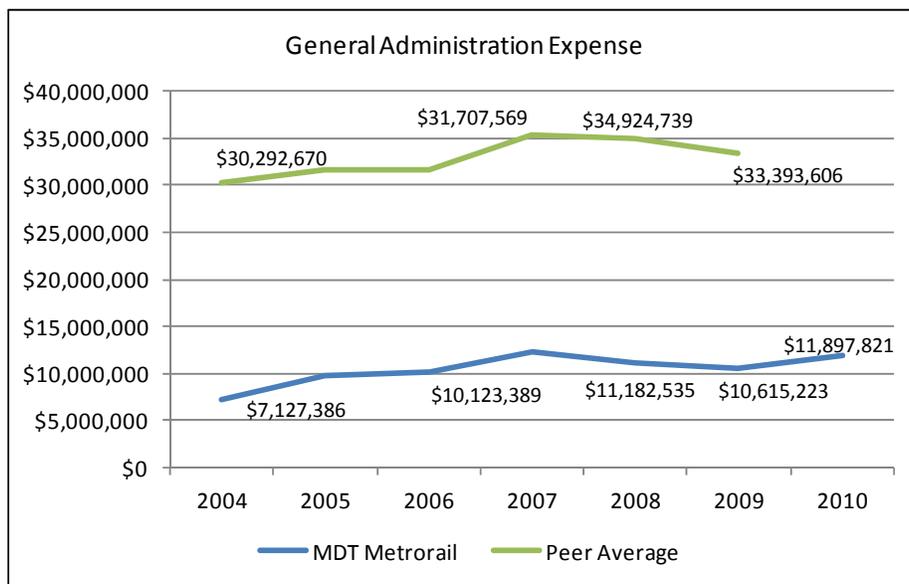


Figure 142 - General Administration Expense (Labor Administration)

General administration expense per VOMS represents the general administration commitment for providing a vehicle in maximum service (Figure 143). In 2009, Metrorail general administration expense per VOMS increased by 10.7 percent compared to 2008 and was higher than the peer group average, which declined by a modest 5.0 percent. In 2010, Metrorail increased general administration expense per VOMS from \$126,372 in 2009 to \$141,641 (a 12.1% increase).

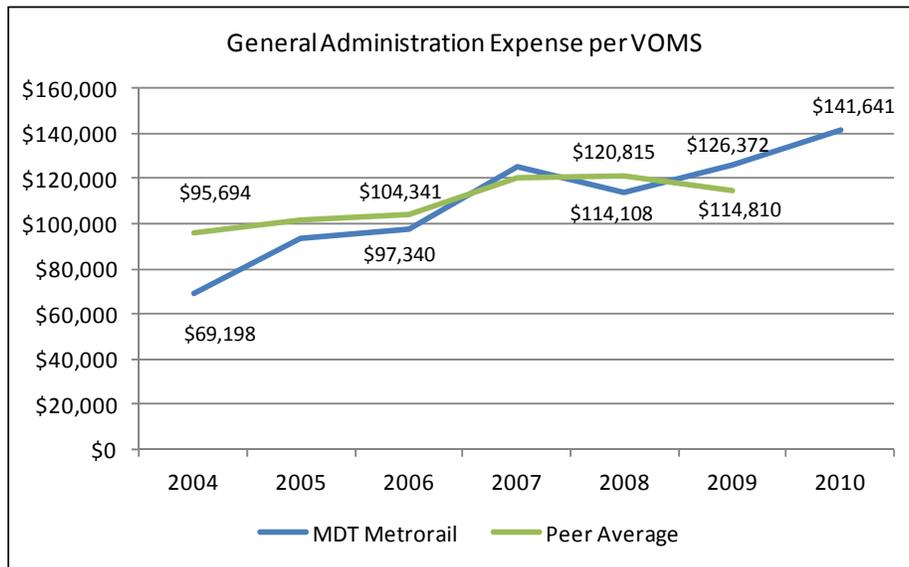
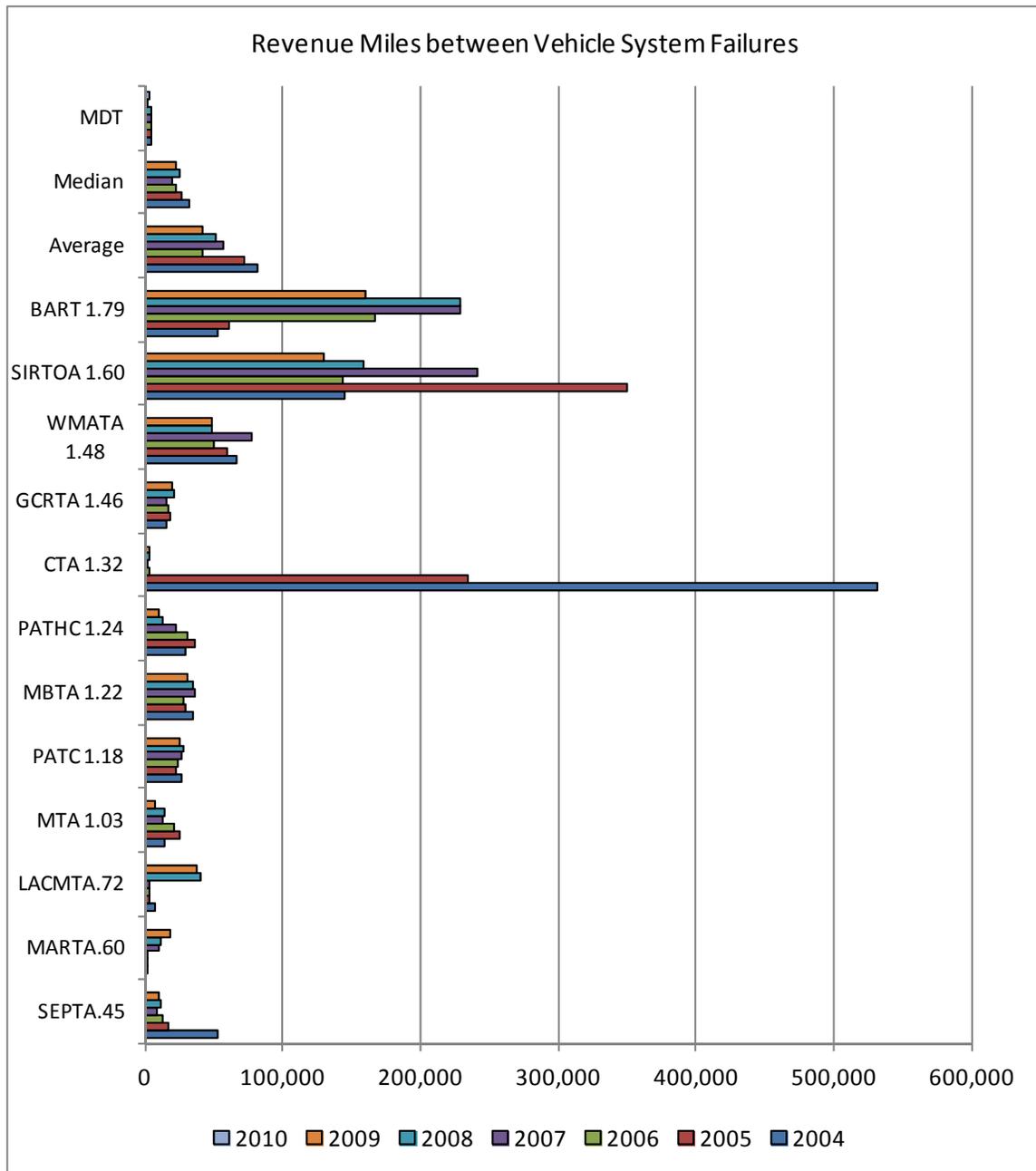


Figure 143 - General Administration Expense per VOMS (Labor Administration)

### Metrorail Maintenance Administration: Revenue Miles between Vehicle System Failures

Revenue miles between vehicle system failures (RMBF) is one of the most common performance factors used to evaluate the performance of vehicle maintenance and the vehicle fleet and is a priority metric currently used by Metrorail.

An overview of peer agency RMBF (Figure 144) illustrates a wide range of results. Revenue miles between failures ranged from a maximum of 531,638 (CTA) to a minimum of 2,011 (MARTA) in 2004 and from a maximum of 159,631 (BART) to a minimum of 3,820 (CTA) in 2009. In addition, SIRTOA reported RMBF ranging from 145,105 to 129,824 from 2004 through 2009.

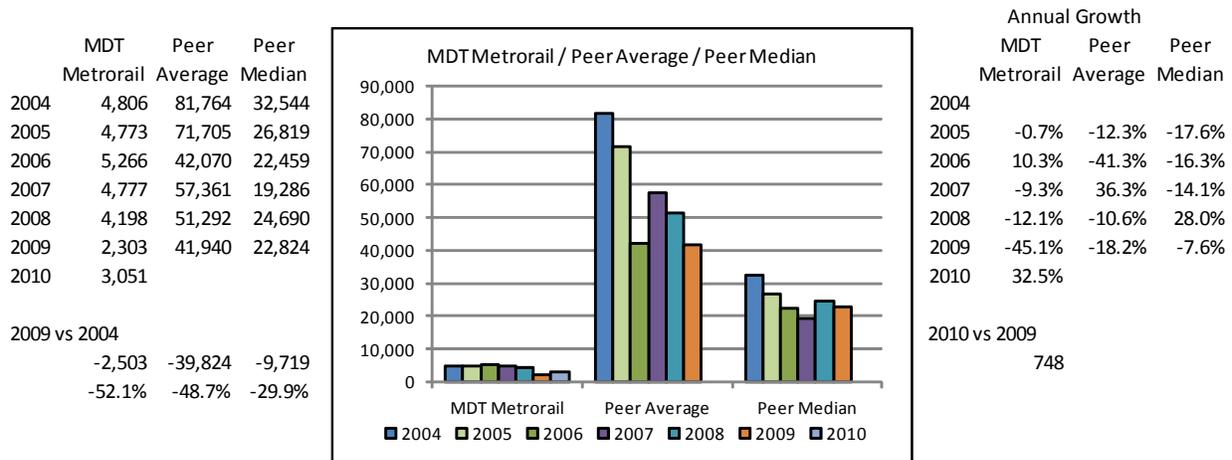


**Figure 144 - Revenue Miles between Failures**

Metrorail and the peer group average showed consistent declines in RMBF from year to year (Figure 145), resulting in a 52.1 percent decrease in Metrorail RMBF in 2009 as compared to 2004 and a 48.7 percent decrease in the peer group average over the same period. In 2009, Metrorail RMBF fell below the peer group minimum (2,303 versus 3,820).

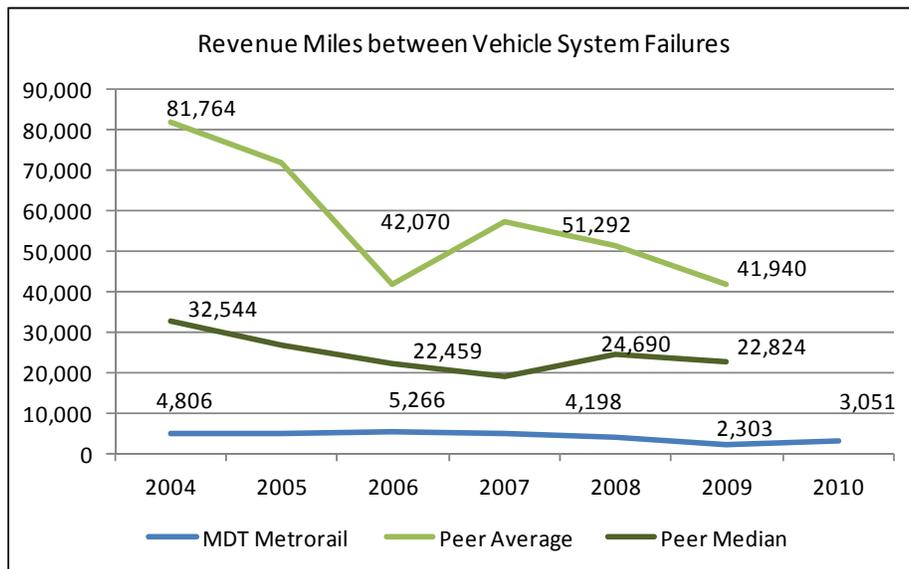
Given the significant disparity in the range of RMBF reported, the peer group median was also examined (Figure 145). The peer group median RMBF was 32,544 (compared to the peer group average of 81,764) in 2004 and 22,824 (compared to the peer group average of 41,940) in 2009. A 29.9 percent decline was

noted in the peer group median in 2009 as compared to 2004. An exploration of reporting of this metric should probably be undertaken.



**Figure 145 - Revenue Miles between Failures - Metrorail / Peer Average / Peer Median**

In 2010, Metrorail increased revenue miles between failures from 2,303 miles in 2009 to 3,051 miles, a 32.5 percent increase (Figure 146).

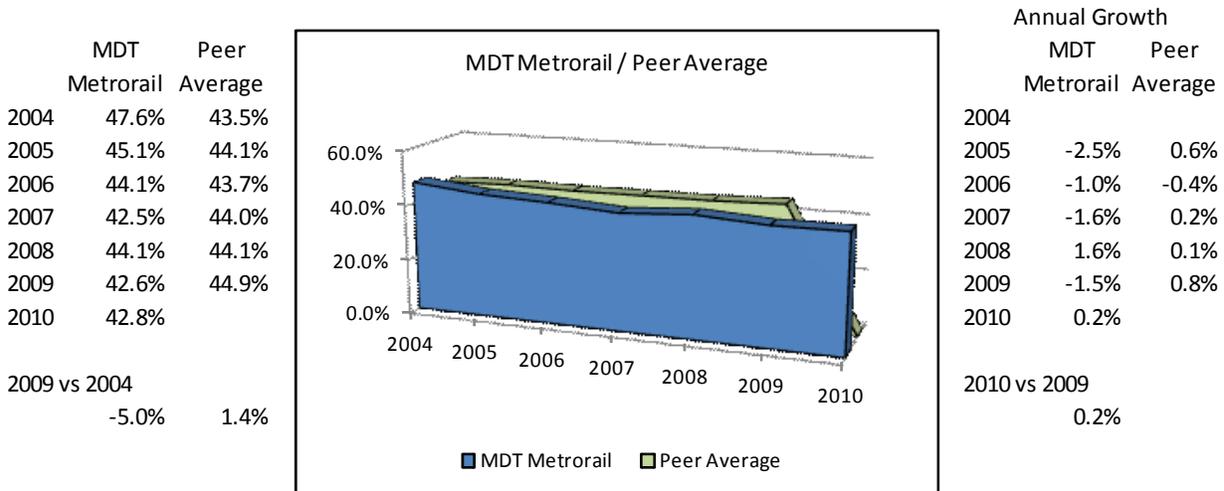


**Figure 146 - Revenue Miles between Failures (Maintenance Administration)**

### Metrorail Maintenance Administration: Maintenance Expense as a % of Total Operating Expense

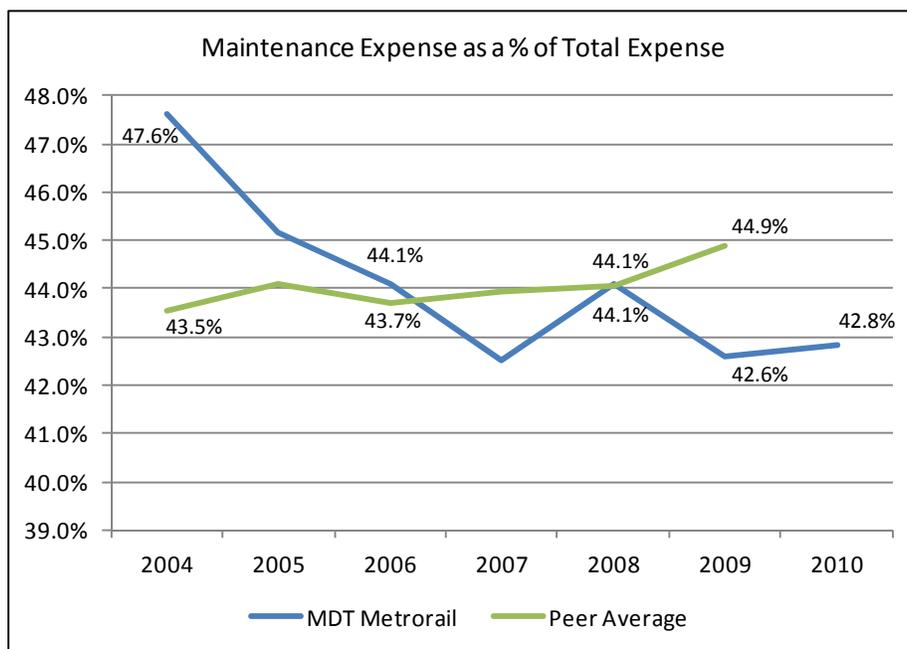
Maintenance expense as a percent of total expense focuses on performance of the maintenance function, where maintenance expense includes all vehicle and non-vehicle maintenance costs. Metrorail

used a larger percentage of total expense for maintenance than the peer group average until 2007 (Figure 147) and then fell to a low of 42.5 percent, while the peer group average grew throughout the period. Metrorail reduced maintenance percent of total expense by 5.0 percent in 2009 compared to 2004, while peer average maintenance percent grew by 1.4 percent.



**Figure 147 - Maintenance Expense as a % of Total Expense - Metrorail / Peer Average**

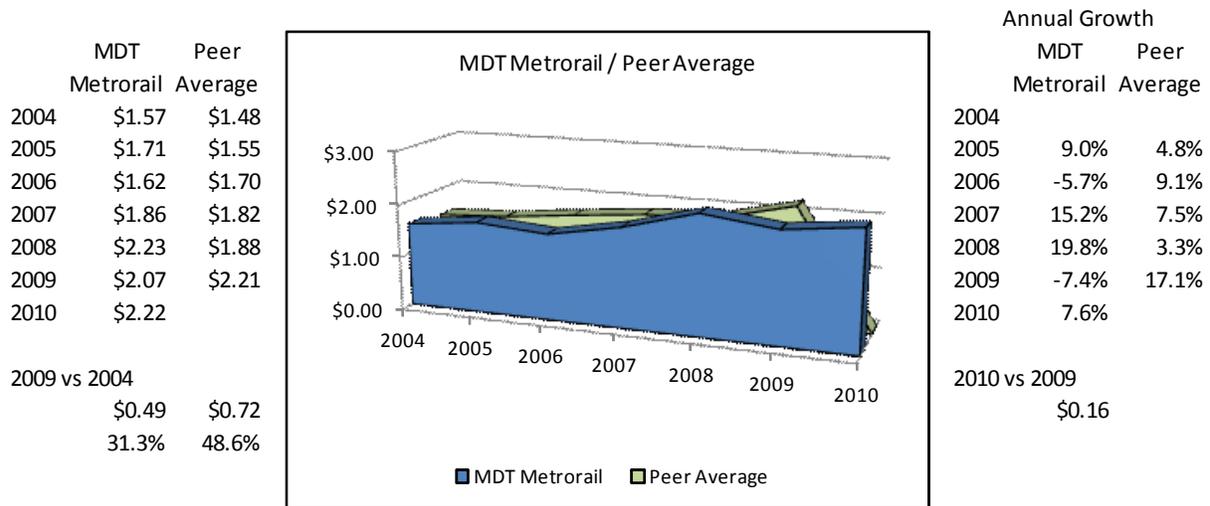
In 2010, Metrorail increased maintenance expense as a percent of total operating expense from 42.6 percent in 2009 to 42.8 percent, a 0.2 percent increase (Figure 148).



**Figure 148 - Maintenance Expense as a % of Total Expense (Maintenance Administration)**

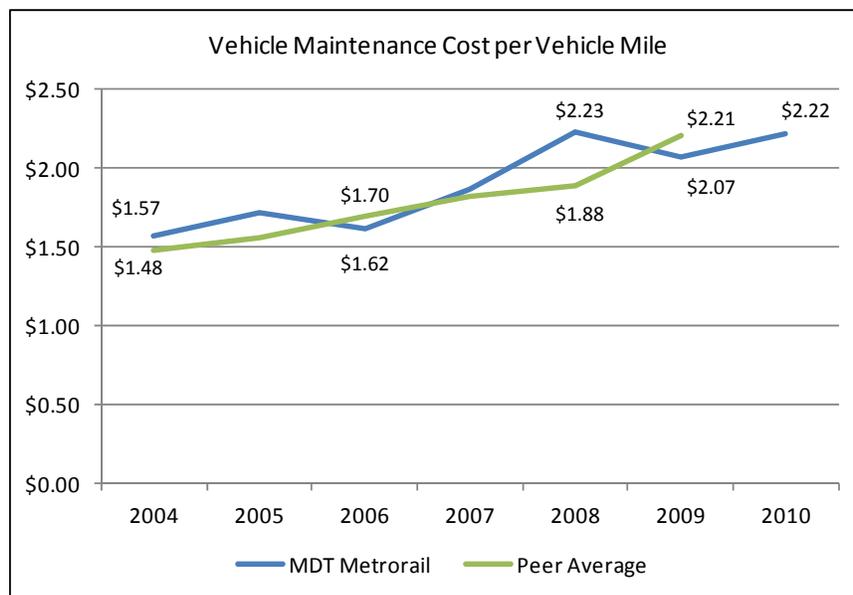
## Metrorail Maintenance Administration: Vehicle Maintenance Cost per Vehicle Mile

Vehicle maintenance cost per vehicle mile focuses on the performance of the vehicle maintenance function. Metrorail vehicle maintenance cost per vehicle mile (Figure 149) repeated a cycle of growth followed by decline from 2004 through 2009, while the peer group average cost showed consistent annual growth. Metrorail vehicle maintenance cost per vehicle mile grew 31.1 percent over the period, below peer agency average growth, and fell below the peer group average cost in 2009.



**Figure 149 - Vehicle Maintenance Cost per Vehicle Mile - Metrorail / Peer Average**

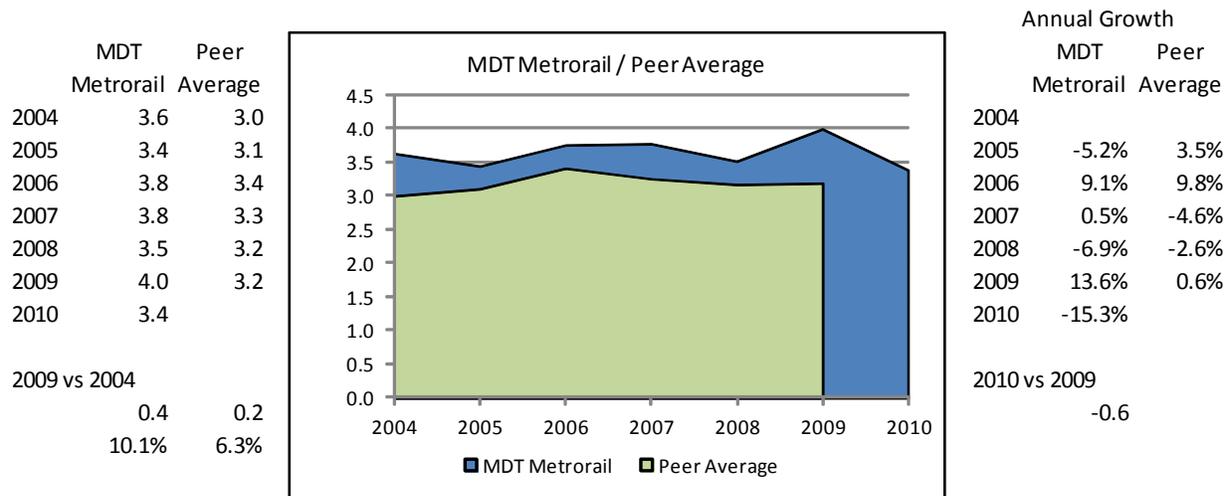
In 2010, Metrorail increased vehicle maintenance expense per vehicle mile from \$2.07 in 2009 to \$2.22, a 7.6 percent increase (Figure 150).



**Figure 150 - Vehicle Maintenance Cost per Vehicle Mile (Maintenance Administration)**

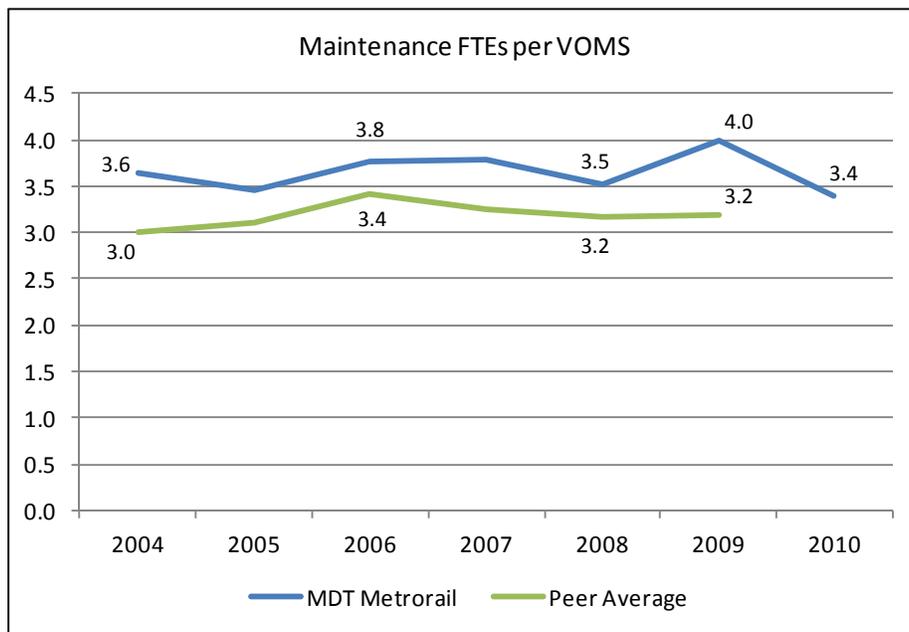
### Metrorail Maintenance Administration: Maintenance FTEs per VOMS

Maintenance FTEs per VOMS focuses on the performance of the maintenance function. Metrorail maintenance FTEs per VOMS (Figure 151) grew sporadically from 2004 through 2009 and consistently exceeded the peer group average. Metrorail maintenance FTEs per VOMS grew 10.1 percent over the period, greater than peer agency average growth of 6.3 percent.



**Figure 151 - Maintenance FTEs per VOMS - Metrorail / Peer Average**

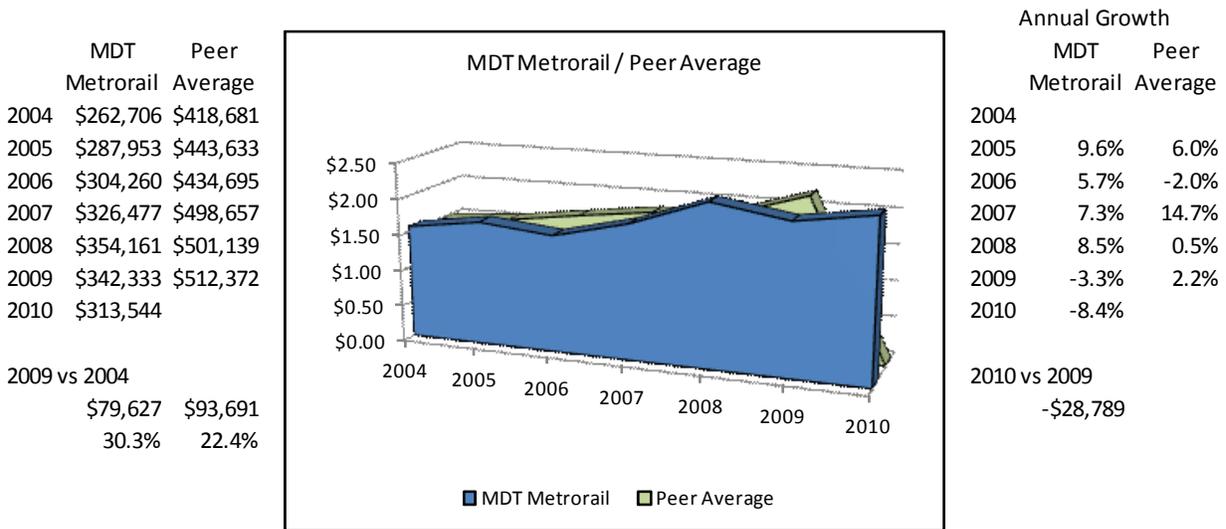
In 2010, Metrorail decreased maintenance FTEs per VOMS from 4.0 in 2009 to 3.4, a 15.3 percent decrease (Figure 151).



**Figure 152 - Maintenance FTEs per VOMS (Maintenance Administration)**

## Metrorail Maintenance Administration: Non-vehicle Maintenance Cost per Transit Way Mile

Non-vehicle maintenance cost per transit way mile focuses on the performance of the maintenance function. Metrorail non-vehicle maintenance cost per transit way mile (Figure 153) showed consistent annual growth from 2004 through 2008. Peer group average growth showed some fluctuation from 2006 through 2007, with growth slightly less than Metrorail growth. Metrorail non-vehicle maintenance cost per transit way mile grew 30.3 percent over the period. Metrorail reduced non-vehicle maintenance cost per transit way mile by 3.3 percent in 2009 compared to 2004, while peer group average non-vehicle maintenance cost grew by 2.2 percent.



**Figure 153 - Non-vehicle Maintenance Cost per Transit Way Mile - Metrorail / Peer Average**

In 2010, Metrorail decreased non-vehicle maintenance cost per transit way mile from \$342,333 in 2009 to \$313,544, an 8.4 percent decrease (Figure 154).

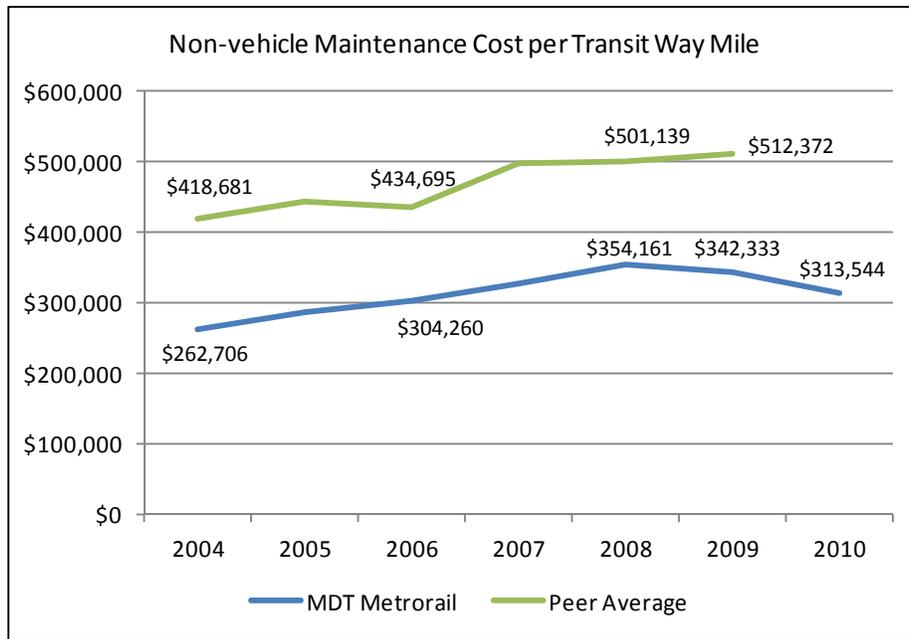


Figure 154 - Non-vehicle Maintenance Cost per Transit Way Mile (Maintenance Administration)

## Metrorail - Summary of Findings

Performance Factor	Metrorail Trend	2008 Metrics	2009 Metrics	2010 Metrics
Operating Cost per Revenue Hour Target ↓	Less than peer group average from 2004 through 2007	\$258.44 Peer Average: \$257.05	\$266.54 Peer Average: \$265.32	\$260.24 \$6.29 less than 2009, a 2.4% decrease
Operating Cost per Revenue Mile Target ↓	Less than peer group average from 2004 - 2007 and then grew at a faster rate	\$11.51 Peer Average: \$11.15	\$11.72 Peer Average: \$11.59	\$11.45 \$0.26 less than 2009, a 2.3% decrease
Operating Cost per VOMS Target ↓	Less than peer group average from 2004 through 2007	\$840,632 Peer Average: \$836,795	\$933,325 Peer Average: \$860,317	\$914,720 \$18,605 less than 2009, a 2.0% decrease
Farebox Recovery Target ↑	Less than peer group average from 2004 through 2009	16.1% Peer Average: 43.7%	20.1% Peer Average: 42.0%	23.0% a 3.0% increase
Operating Cost per Passenger Trip Target ↓	Greater than peer group average from 2004 through 2009	\$4.44 Peer Average: \$2.89	\$4.30 Peer Average: \$3.25	\$4.39 \$0.10 more than 2009, a 2.2% increase
Operating Cost per Passenger Mile Target ↓	Greater than peer group average from 2004 through 2009	\$0.58 Peer Average: \$0.48	\$0.59 Peer Average: \$0.53	\$0.60 \$0.01 more than 2009, a 1.6% increase
Operating Cost per Capita Target ↓	Less than peer group average from 2004 through 2009	\$34.29 Peer Average: \$144.48	\$32.64 Peer Average: \$120.31	\$30.73 \$1.91 less than 2009, an 5.9% decrease
Subsidy per Boarding Target ↓	Greater than peer group average from 2004 through 2009	\$3.73 Peer Average: \$1.66	\$3.44 Peer Average: \$1.99	\$3.38 \$0.05 less than 2009, a 1.6% decrease
Average Trip Length Target ↑	Greater than peer group average 2004 through 2009	7.67 Peer Average: 6.31	7.28 Peer Average: 6.35	7.32 0.04 more than 2009, a 0.6% increase
Passenger Miles per Vehicle Mile Target ↑	Less than peer group average from 2004 through 2009	19.20 Peer Average: 22.92	19.22 Peer Average: 21.89	18.50 0.72 less than 2009, a 3.7% decrease
Average Passenger Load Target ↑	Less than peer group average from 2004 through 2009	19.86 Peer Average: 23.76	19.84 Peer Average: 22.67	19.09 0.75 less than 2009, a 3.8% decrease

<b>Performance Factor</b>	<b>Metrorail Trend</b>	<b>2008 Metrics</b>	<b>2009 Metrics</b>	<b>2010 Metrics</b>
Vehicle Operations Expense per VOMS Target ↓	Less than peer group average from 2004 through 2006	\$355,947 Peer Average: \$339,829	\$409,254 Peer Average: \$353,538	\$381,216 \$28,038 less than 2009, a 6.9% decrease
Vehicle Maintenance Expense per VOMS Target ↓	Less than peer group average from 2004 through 2007	\$168,561 Peer Average: \$153,824	\$169,885 Peer Average: \$169,248	\$183,207 \$13,322 more than 2009, a 7.8% increase
Non-vehicle Maintenance Expense per VOMS Target ↓	Less than peer group average from 2004 through 2008	\$202,016 Peer Average: \$222,326	\$227,814 Peer Average: \$222,720	\$208,656 \$19,159 less than 2009, a 8.4% decrease
General Administration Expense per VOMS Target ↓	Less than peer group average from 2004 through 2006 and in 2008	\$114,108 Peer Average: \$120,815	\$126,372 Peer Average: \$114,810	\$141,641 \$15,269 more than 2009, a 12.1% increase
Revenue Miles between Vehicle System Failures Target ↑	Significantly less than peer group average from 2004 through 2009	4,198 Peer Average: 51,292	2,303 Peer Average: 41,940	3,051 748 more than 2009, a 29.6% increase
Maintenance Expense as a % of Total Expense Target ↓	Greater than peer group average in 2004 and 2005, less in 2007 through 2009	44.1% Peer Average: 44.1%	42.6% Peer Average: 44.9%	42.8% 0.2% more than 2009
Vehicle Maintenance Cost per Vehicle Mile Target ↓	Fluctuated in comparison to peer group average from 2004 through 2009	\$2.23 Peer Average: \$1.88	\$2.07 Peer Average: \$2.21	\$2.22 \$0.16 more than 2009, a 7.6% increase
Maintenance FTEs per VOMS Target ↓	Greater than peer group average from 2004 through 2009	3.5 Peer Average: 3.2	4.0 Peer Average: 3.2	3.4 0.6 less than 2009, a 15.3% decrease
Non-vehicle Maintenance Cost per Transit Way Mile Target ↓	Less than the peer group average from 2004 through 2009	\$354,161 Peer Average: \$501,139	\$342,333 Peer Average: \$512,372	\$313,544 \$28,789 less than 2009, an 8.4% decrease

## Metromover Peer Review and Trend Analysis

### Metromover Service Area Population

Metromover service area population (Figure 155) exceeded the peer group average from 2004 through 2009. Minimal growth occurred in the Metromover and peer group average service area populations. Peer service area population ranged from a maximum of 817,840 (JTA) to a minimum of 92,477 (DTC) in 2004 and from a maximum of 827,543 (JTA) to a minimum of 92,477 (DTC) in 2009.

Metromover service area population (Figure 156) grew by 56,276 (2.4%) from 2004 through 2009, while growth in the peer group averaged 1.1 percent over the period. Metromover service area population exceeded both peer agency populations. Metromover service area population grew by 4.1 percent in 2010.

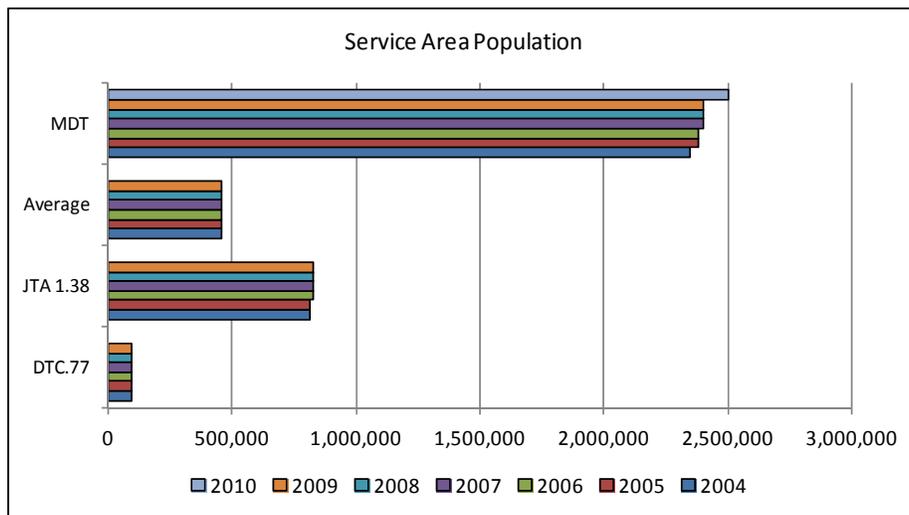


Figure 155 - Service Area Population

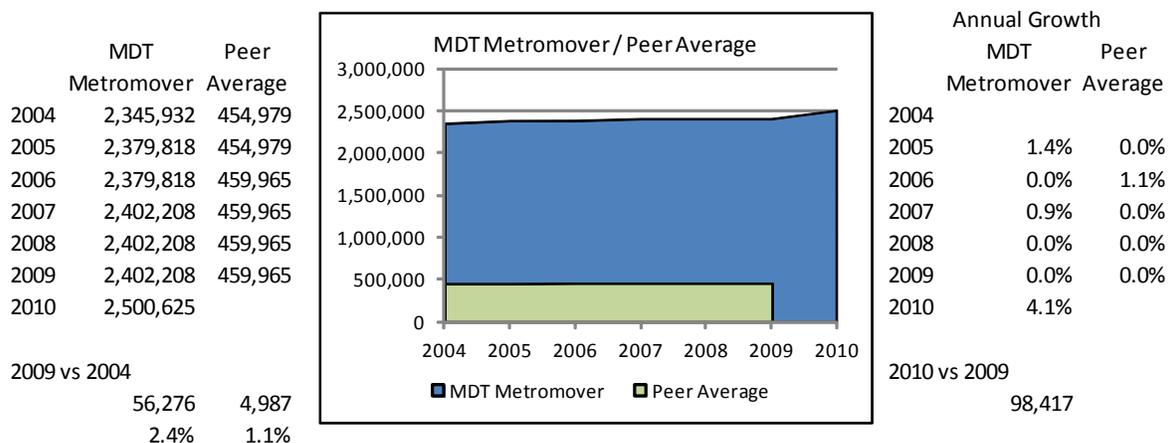


Figure 156 - Service Area Population - Metromover / Peer Average

### Metromover Service Area

The Metromover service area (Figure 157) was consistently larger than the peer group average from 2004 through 2009. The peer group average service area ranged from a maximum of 242.0 square miles (JTA) to a minimum of 3.0 square miles (DTC) from 2004 through 2009.

The Metromover service area (Figure 158) grew by 19.0 square miles (6.6%) from 2004 through 2009, while the peer group service area remained unchanged. Growth in the Metromover service area was reported in 2005.

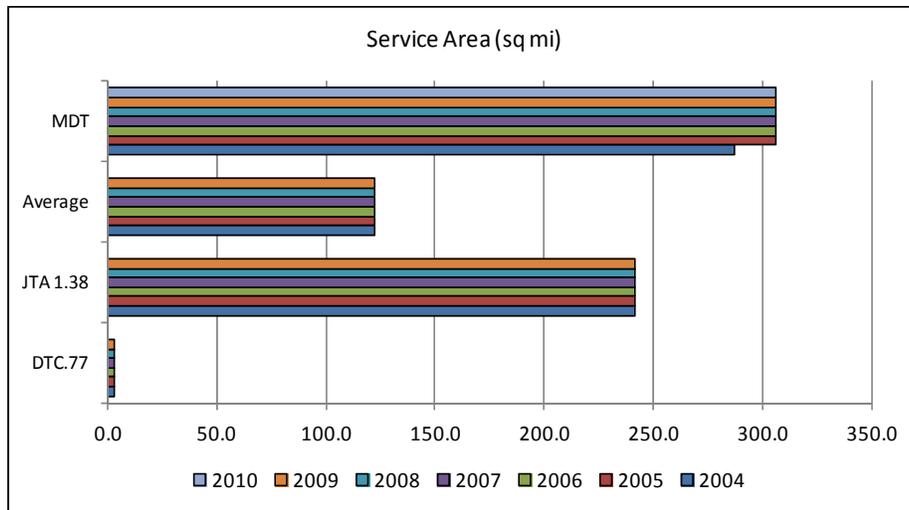


Figure 157 - Service Area

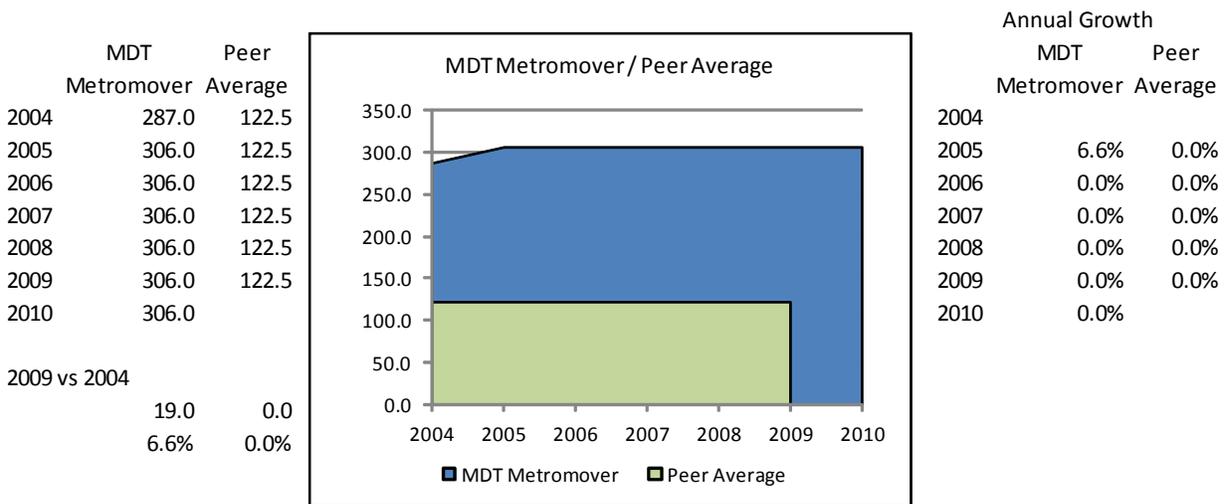


Figure 158 - Service Area - Metromover / Peer Average

### Metromover Passenger Trips

From 2004 through 2009, Metromover passenger trips (Figure 159) exceeded the peer group average and provided more passenger trips than DTC and JTA. Peer group average passenger trips ranged from a maximum of 0.9 million (DTC) to a minimum of 0.7 million (JTA) in 2004 and from a maximum of 1.9 million (DTC) to a minimum of 0.4 million (JTA) in 2009.

Peer group passenger trips grew sporadically from 2004 through 2009 (Figure 160), with significant increases in 2005 and 2006, followed by declines in 2007 through 2009. Metromover passenger trips grew and declined from 2005 through 2009. Peer group average passenger trips grew by 48.2 percent over the period, and Metromover passenger trips grew by 4.3 percent. DTC reported the most growth in passenger trips (a 110.4% increase) from 2004 through 2009, while JTA passenger trips reported a decline of 34.9 percent. Metromover passenger trips grew by 0.8 percent in 2010.

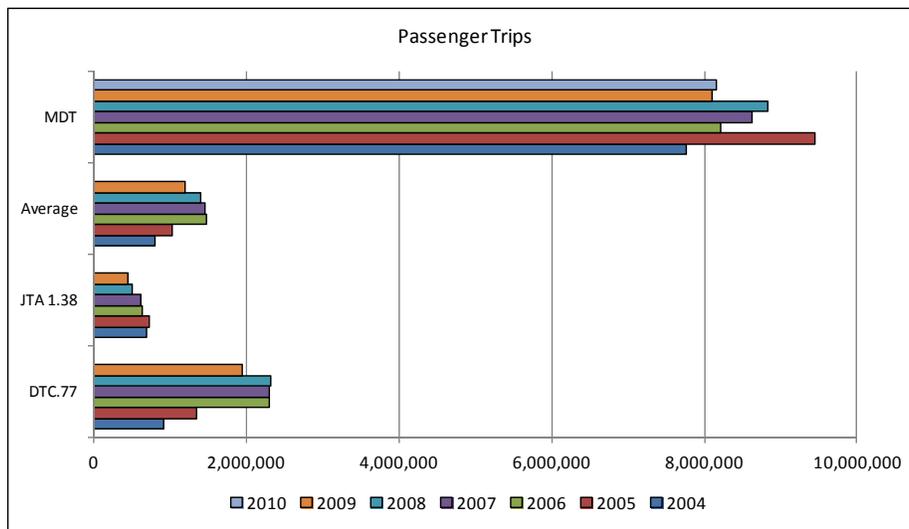


Figure 159 - Passenger Trips

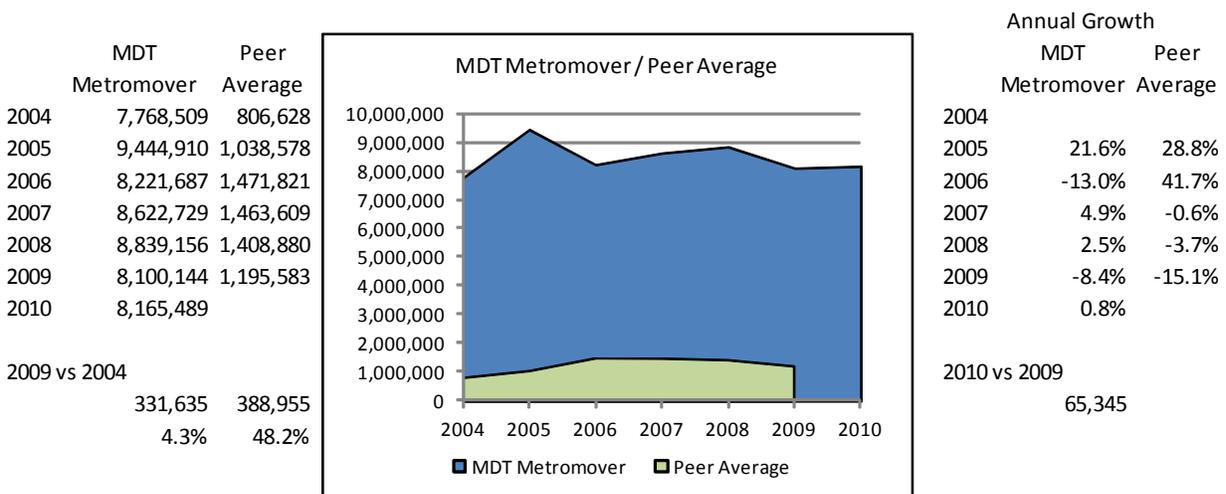


Figure 160 - Passenger Trips - Metromover / Peer Average

### Metromover Passenger Miles

From 2004 through 2009, Metromover passenger miles (Figure 161) exceeded the peer group average and provided more passenger miles than DTC and JTA. Peer group average passenger miles ranged from a maximum of 1.3 million (DTC) to a minimum of 0.3 million (JTA) in 2004 and from a maximum of 3.0 million (DTC) to a minimum of 0.2 million (JTA) in 2009.

Peer group passenger miles grew sporadically from 2004 through 2009 (Figure 162), with significant increases in 2005 and 2006, followed by declines in 2008 and 2009. Metromover passenger miles grew and declined from 2005 through 2009. Peer group average passenger miles grew by 98.8 percent over the period, and Metromover passenger miles grew by 6.3 percent. DTC reported the most growth in passenger miles (a 125.6% increase) from 2004 through 2009, while JTA passenger miles declined by 33.9 percent. Metromover passenger miles grew by 3.6 percent in 2010.

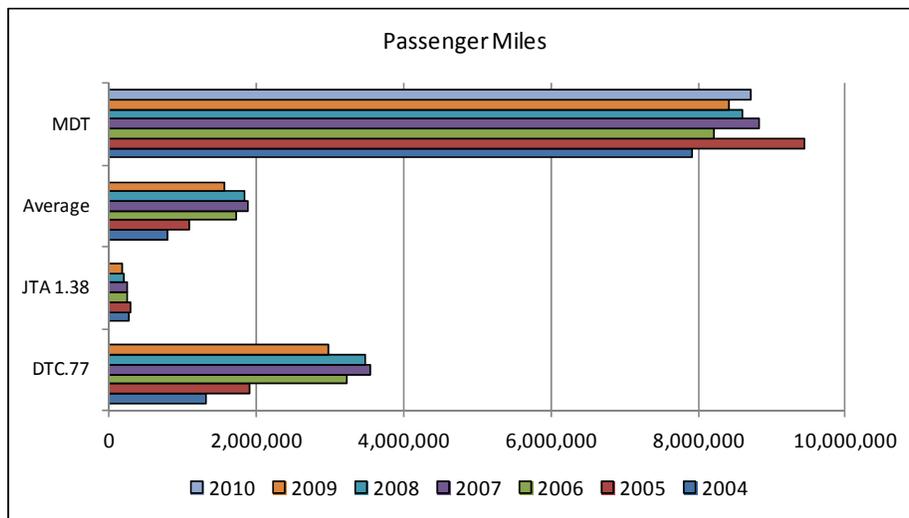


Figure 161 - Passenger Miles

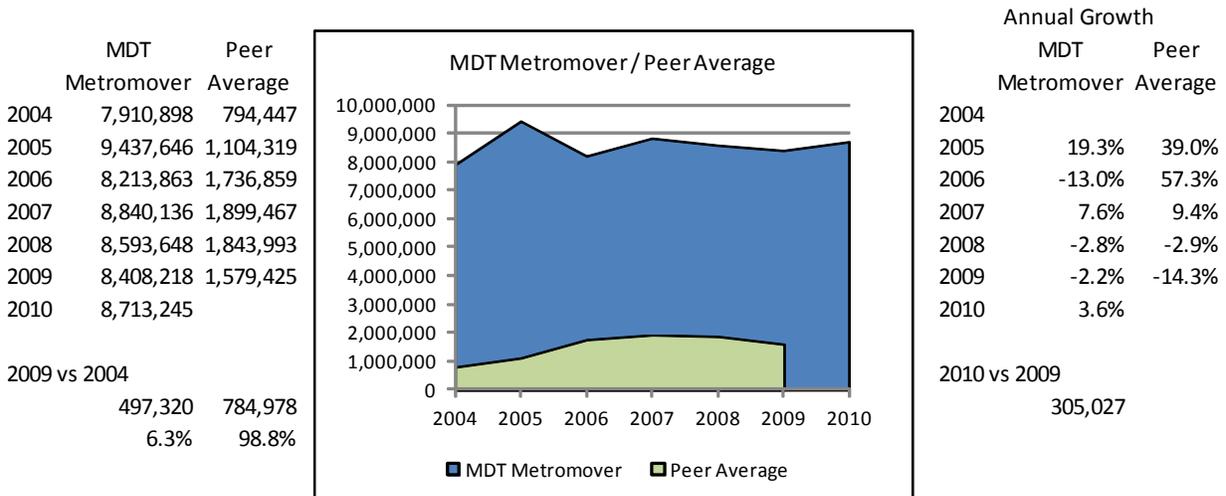


Figure 162 - Passenger Miles - Metromover / Peer Average

### Metromover Vehicles Operated in Maximum Service (VOMS)

From 2004 through 2009, Metromover VOMS (Figure 163) exceeded the peer group average as well as peer agencies DTC and JTA. Peer group average VOMS ranged from a maximum of 7 (DTC) to a minimum of 4 (JTA) in 2004 and from a maximum of 10 (DTC) to a minimum of 7 (JTA) in 2009.

Peer group average VOMS increased in 2005 (Figure 164). Metromover VOMS grew in 2005, 2007, and 2009. Peer group average VOMS grew by 54.5 percent over the period, and Metromover VOMS grew by 23.5 percent. DTC reported the most growth in VOMS (a 150.0% increase) from 2004 through 2009, while JTA VOMS remained unchanged.

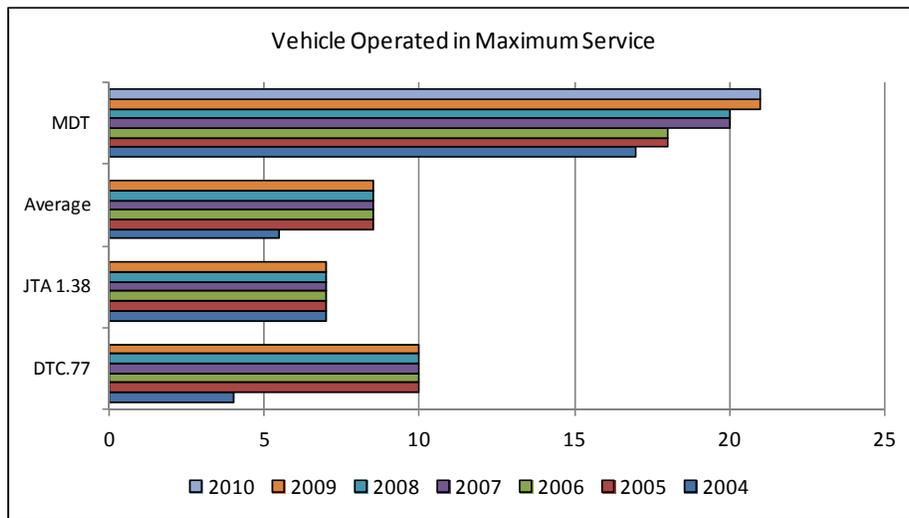


Figure 163 - Vehicle Operated in Maximum Service

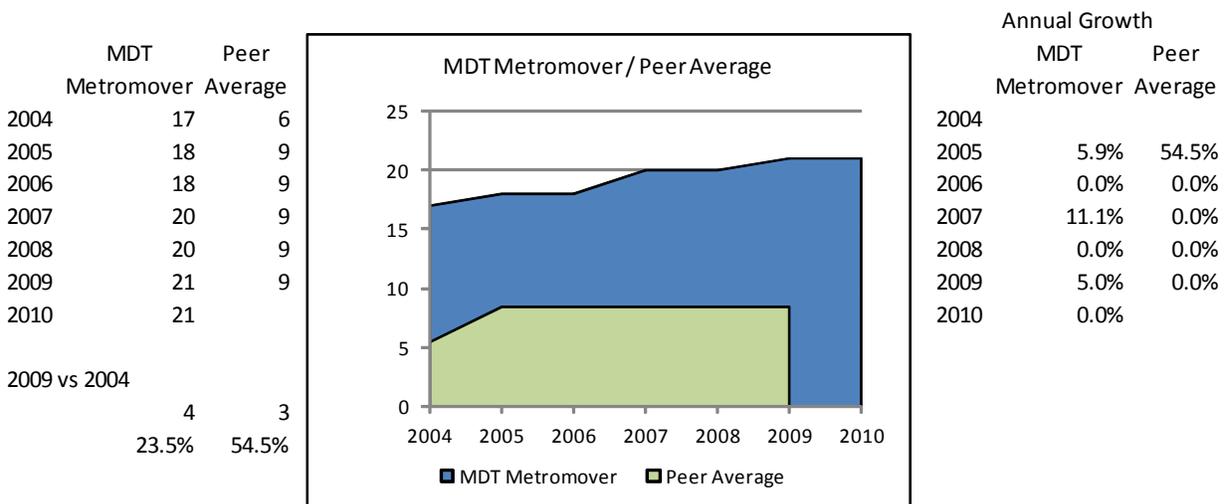


Figure 164 - Vehicle Operated in Maximum Service - Metromover / Peer Average

### Metromover Operating Expense

From 2004 through 2009, Metromover total operating expense (Figure 165) exceeded the peer group average as well as peer agencies DTC and JTA. Peer group average total operating expense ranged from a maximum of \$11.3 million (DTC) to a minimum of \$4.8 million (JTA) in 2004 and from a maximum of \$12.8 million (DTC) to a minimum of \$6.0 million (JTA) in 2009.

Peer group total operating expense grew from 2004 through 2009 (Figure 162), with significant increases in 2006 and 2008. Metromover total operating expense grew from 2004 through 2009, except for a decline in 2006. Peer group average total operating expense grew by 16.4 percent over the period, and Metromover total operating expense grew by 24.6 percent. JTA reported the most growth in total operating expense (a 24.6% increase) from 2004 through 2009, while DTC total operating expense grew by 12.9 percent. In 2010, Metromover total operating expense declined by 10.2 percent.

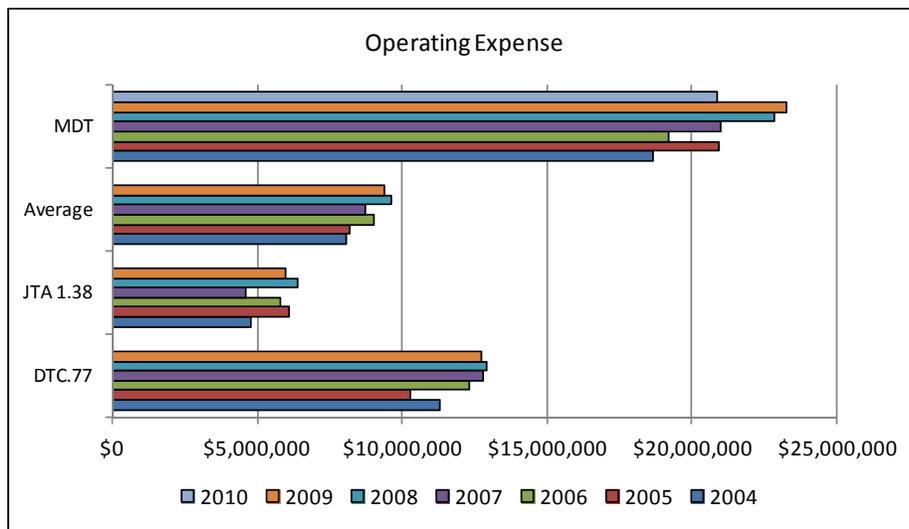


Figure 165 - Operating Expense

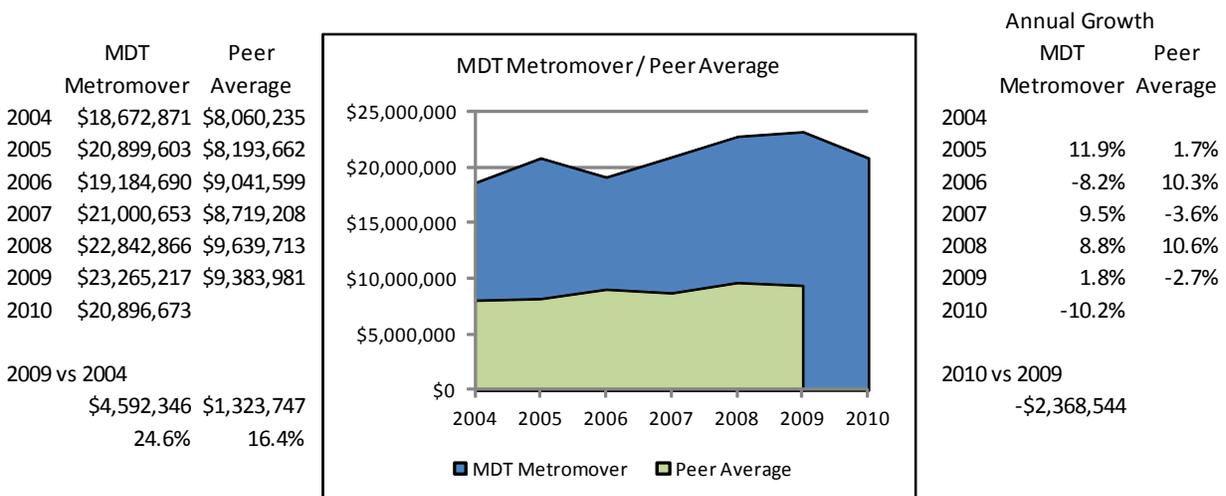


Figure 166 - Operating Expense - Metromover / Peer Average

### Metromover Passenger Fare Revenue

From 2004 through 2009, Metromover provided free service to Metromover customers and collected no passenger fare revenue (Figure 167). Peer group average passenger fare revenue ranged from a maximum of \$367,000 (DTC) to a minimum of \$326,000 (JTA) in 2004 and from a maximum of \$845,000 (DTC) to a minimum of \$307,000 (JTA) in 2009.

Peer group passenger fare revenue grew from 2004 through 2009 (Figure 168), with a significant increase in 2006. Peer group average passenger fare grew by 66.3 percent over the period. DTC reported the most growth in passenger fare revenue (a 130.2% increase) from 2004 through 2009, while JTA passenger fare revenue declined by 5.7 percent. In 2010, Metromover continued to provide free service.

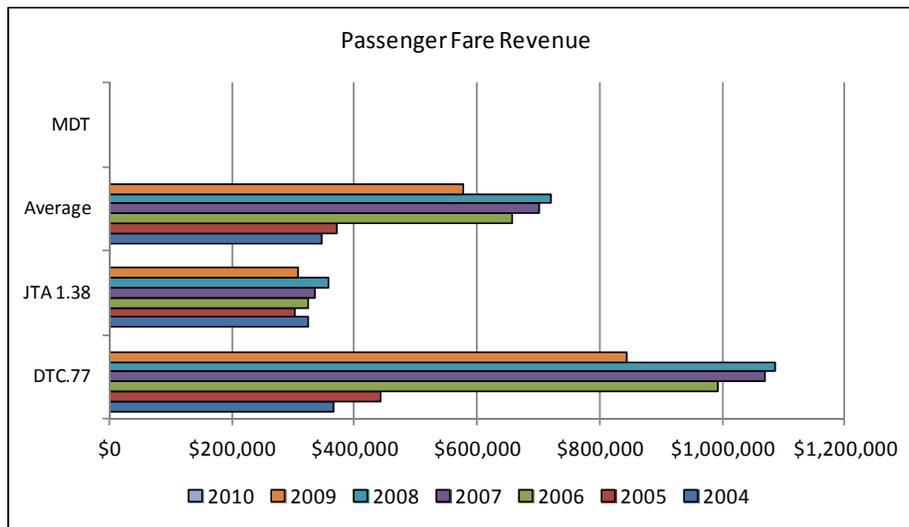


Figure 167 - Passenger Fare Revenue

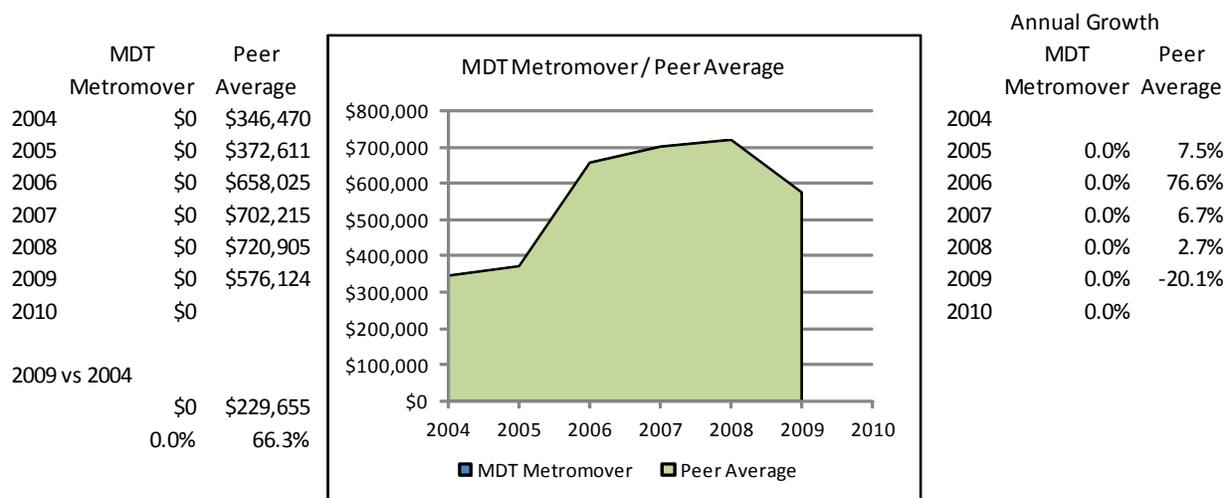


Figure 168 - Passenger Fare Revenue - Metromover / Peer Average

### Metromover Maintenance Expense

From 2004 through 2009, Metromover total maintenance expense (Figure 169) exceeded the peer group average as well as peer agencies DTC and JTA. Peer group average total maintenance expense ranged from a maximum of \$5.2 million (DTC) to a minimum of \$3.5 million (JTA) in 2004 and from a maximum of \$4.9 million (DTC) to a minimum of \$3.5 million (JTA) in 2009.

Peer group total maintenance expense grew from 2004 through 2009 (Figure 170), with significant increase in 2006. Metromover total maintenance expense grew from 2004 through 2009, except for a decline in 2006. Peer group average total maintenance expense grew by 8.1 percent over the period, and Metromover total maintenance expense grew by 5.8 percent. JTA reported the most growth in total maintenance expense (a 36.4% increase) from 2004 through 2009, while DTC total maintenance expense declined by 5.7 percent. In 2010, Metromover total operating expense declined by 18.7 percent.

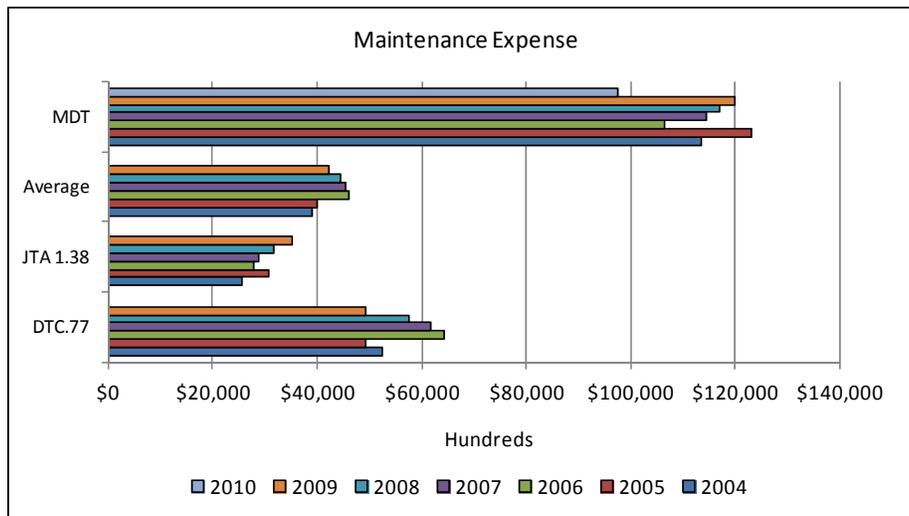


Figure 169 - Maintenance Expense

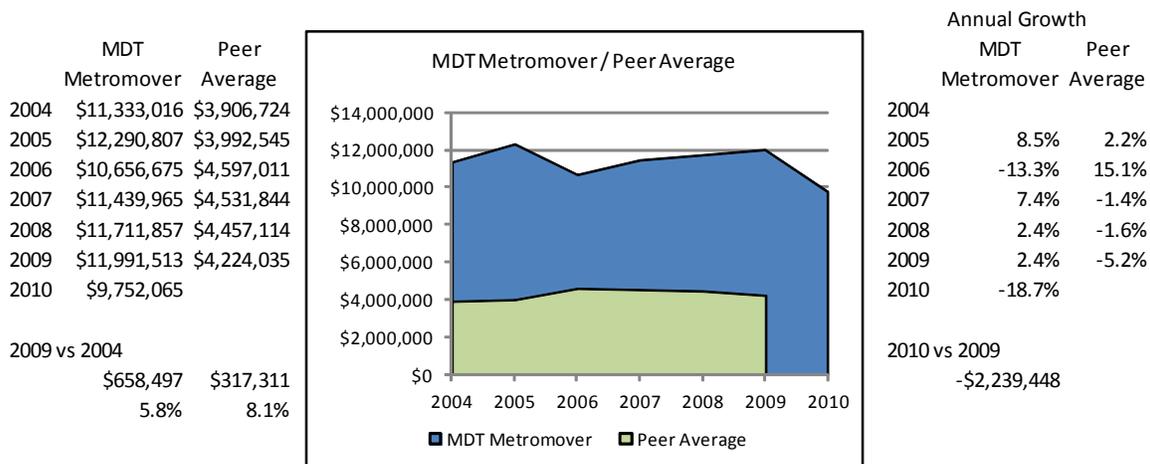


Figure 170 - Maintenance Expense - Metromover / Peer Average

### Metromover Employee FTEs

From 2004 through 2009, Metromover FTEs (Figure 171) exceeded the peer group average as well as peer agencies DTC and JTA. Peer group average FTEs ranged from a maximum of 96.5 (DTC) to a minimum of 46.0 (JTA) in 2004 and from a maximum of 82.8 (DTC) to a minimum of 38.1 (JTA) in 2009.

Peer group average FTEs generally declined from 2004 through 2009 (Figure 172). Metromover FTEs grew in 2005, 2007, and 2009. Peer group average FTEs declined by 15.1 percent over the period, and Metromover FTEs fell by 0.7 percent. DTC reported the largest decline in FTEs (a 17.1% decrease) from 2004 through 2009, while DTC FTEs fell by 14.2 percent. In 2010, Metromover reported 19 fewer FTEs than in 2009, a decrease of 11.1 percent.

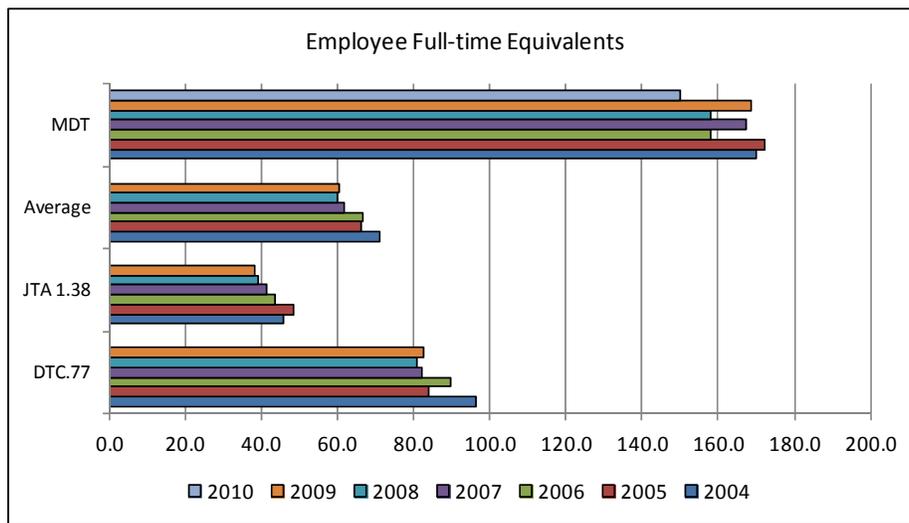


Figure 171 - Employee FTEs

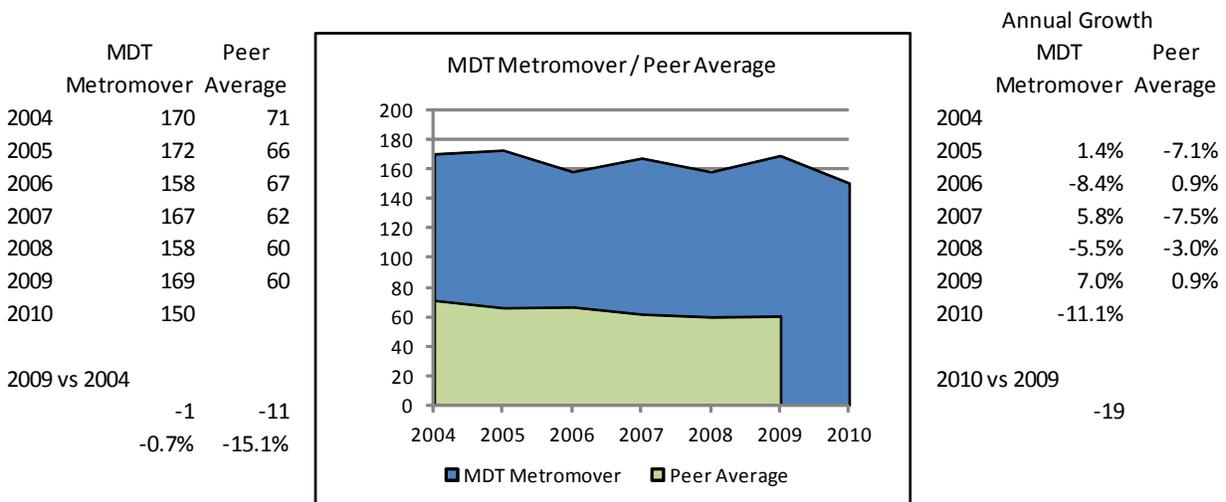


Figure 172 - Employee FTEs - Metromover / Peer Average

### Metromover Energy Consumed

From 2004 through 2009, Metromover energy consumption (Figure 173) exceeded the peer group average as well as peer agencies DTC and JTA. Peer group average energy consumption ranged from a maximum of 4.0 million kWh (DTC) to a minimum of 1.5 million kWh (JTA) in 2004 and from a maximum of 5.3 million kWh (DTC) to a minimum of 0.9 million kWh (JTA) in 2009.

Peer group average kWh grew from 2004 through 2008 (Figure 174) and then declined in 2009. Metromover kWh grew in 2005 and 2006, declined slightly in 2007, and then increased in 2008 and 2009. Peer group average kWh grew by 11.8 percent over the period, and Metromover kWh grew by 93.2 percent. DTC reported the largest increase in kWh (a 32.5% increase) from 2004 through 2009, while JTA kWh fell by 42.3 percent. In 2010, Metromover reported 1.1 million fewer kWh than in 2009, a decrease of 9.6 percent.

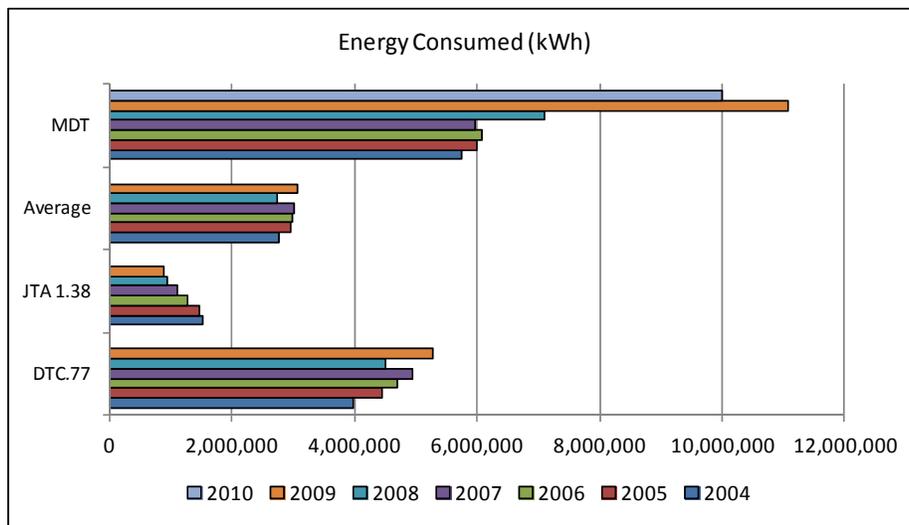


Figure 173 - Energy Consumed

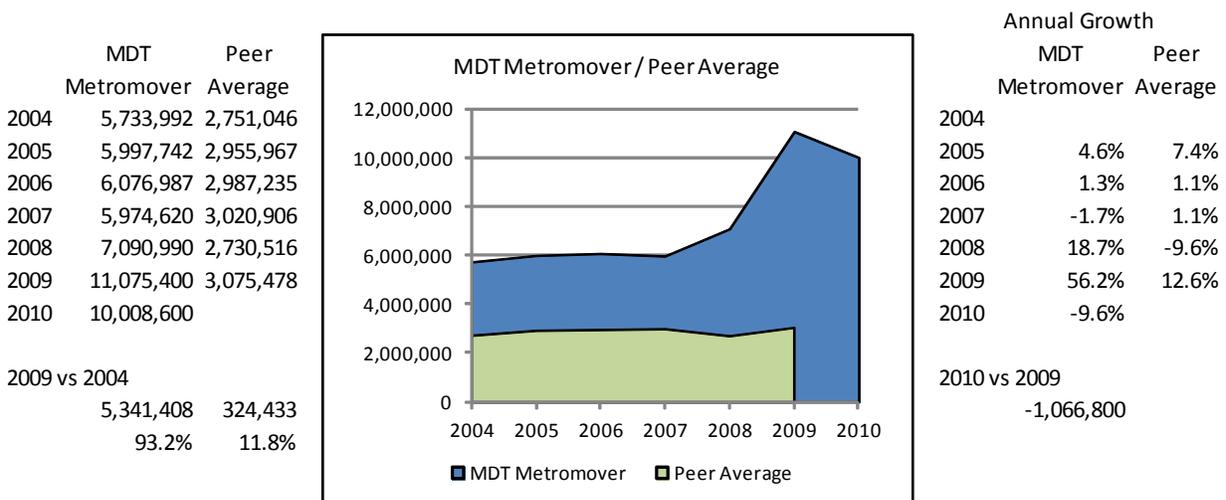


Figure 174 - Energy Consumed - Metromover / Peer Average

### Metromover Average Age of Fleet

From 2004 through 2008, the age of the Metromover fleet was slightly greater than the peer group average. The average age of the fleet (Figure 175) ranged from a maximum of 18.0 years (DTC) to a minimum of 5.7 years (JTA) in 2004 and from a maximum of 23.0 years (DTC) to a minimum of 10.6 years (JTA) in 2009. In 2009, Metromover reduced average fleet age from 16.3 years to 9.4 years (a decrease of 42.1%).

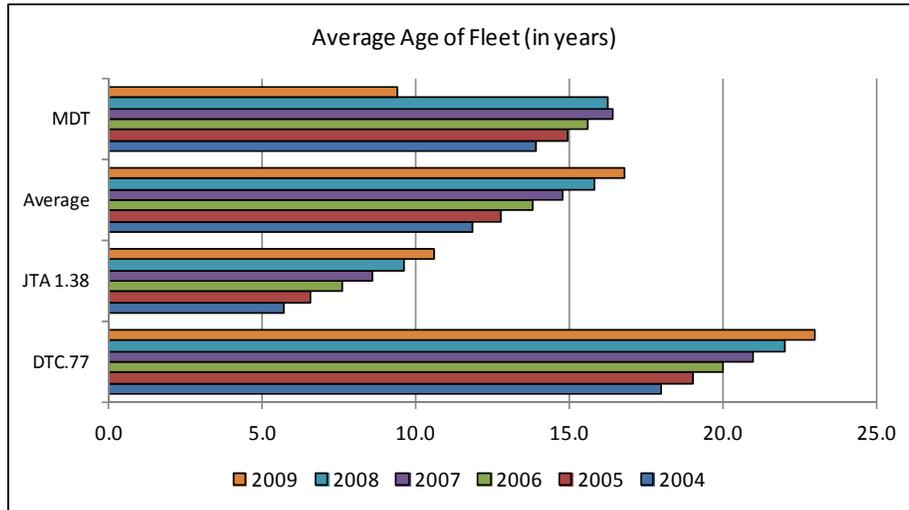


Figure 175 - Average Age of Fleet (in years)

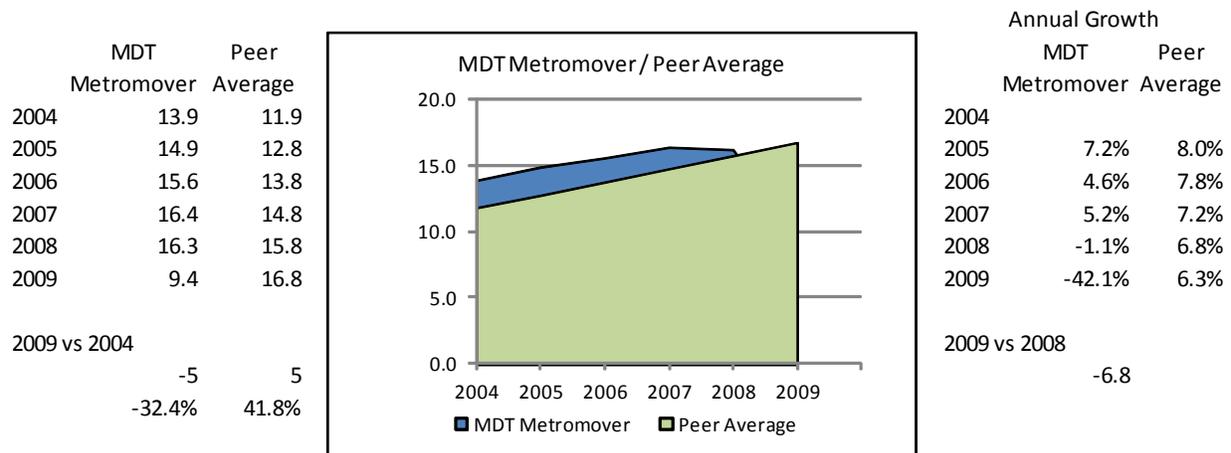


Figure 176 - Average Age of Fleet - Metromover / Peer Average

### Metromover Vehicle System Failures

From 2004 through 2009, Metromover vehicle system failures (Figure 177) exceeded the peer group average as well as peer agencies DTC and JTA. Peer group vehicle system failures ranged from a

maximum of 59 (JTA) to a minimum of 9 (DTC) in 2004 and from a maximum of 107 (DTC) to a minimum of 22 (JTA) in 2009.

Peer group average vehicle system failures declined in 2005, grew in 2006, declined in 2007 and grew from 2008 through 2009 (Figure 178). Metromover vehicle system failures grew from 2005 through 2006 and then declined from 2007 through 2009. Peer group vehicle system failures grew by 89.7 percent over the period, and Metromover failures grew by 95.1 percent. DTC reported the largest increase in failures (a 1008.9% increase) from 2004 through 2009, while JTA failures fell by 62.7 percent. In 2010, Metromover reported 88 fewer failures than in 2009, a decrease of 15.7 percent.

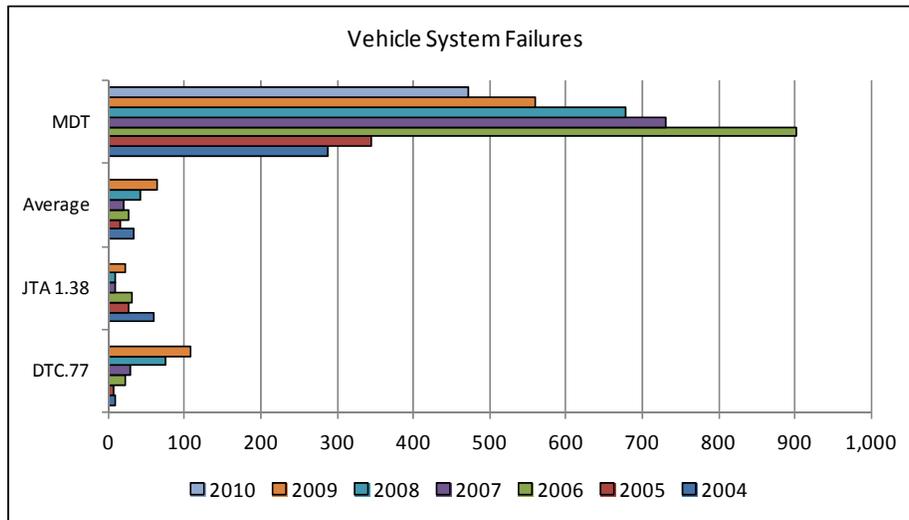


Figure 177 - Number of Vehicle System Failures

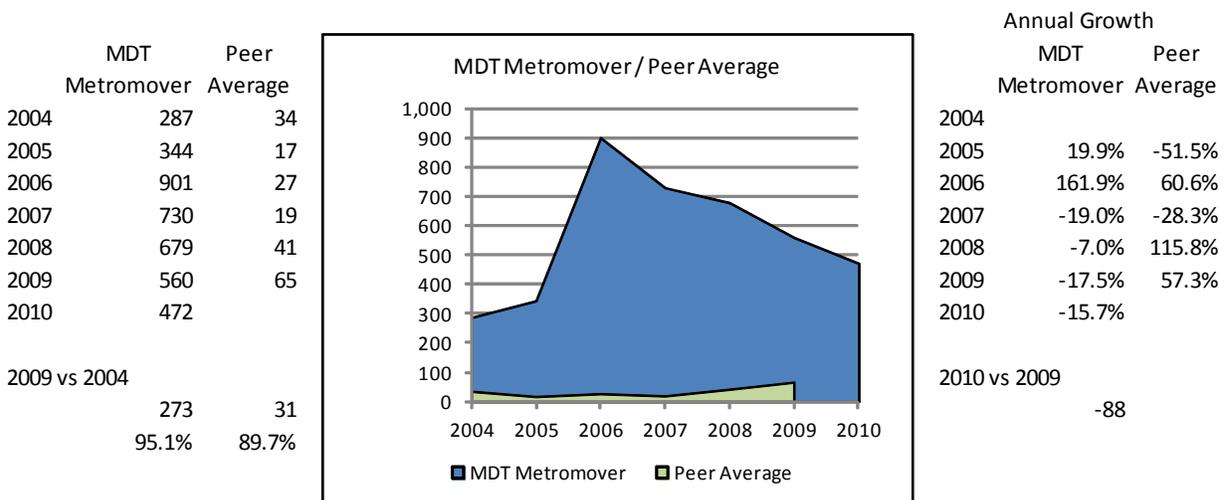


Figure 178 - Number of Vehicle System Failures - Metromover / Peer Average

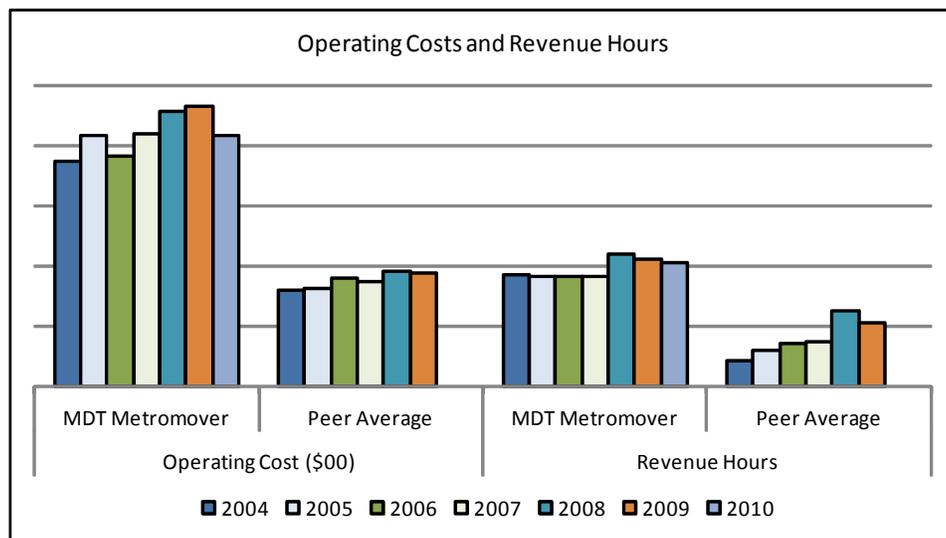
## Performance Factors – Metromover and Peer Agency Average

### Metromover Cost Efficiency: Operating Cost per Revenue Hour

Operating cost per revenue hour is derived from total operating costs and revenue hours (Figure 179) and provides an indication of what an hour of revenue service costs. In 2009, Metromover increased operating costs (a 1.8% increase) and decreased revenue hours (a 4.3% decrease), while the peer group average decreased in both costs (a 2.7% decrease) and hours (a 25.7% decrease).

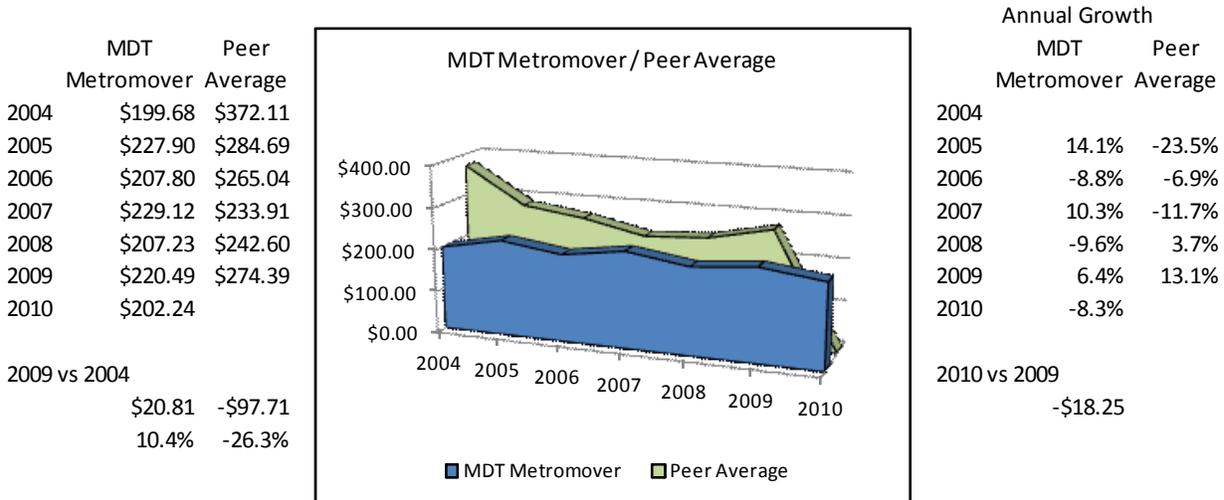
Both Metromover and the peer group average showed sporadic annual growth in operating cost per revenue hour through 2009 (Figure 180). Metromover cost per revenue hour was less than the peer group average from 2004 through 2009.

Metromover operating cost per revenue hour increased in 2009 as compared to 2004 (a 10.4% increase), while the peer group average declined by 26.3 percent.



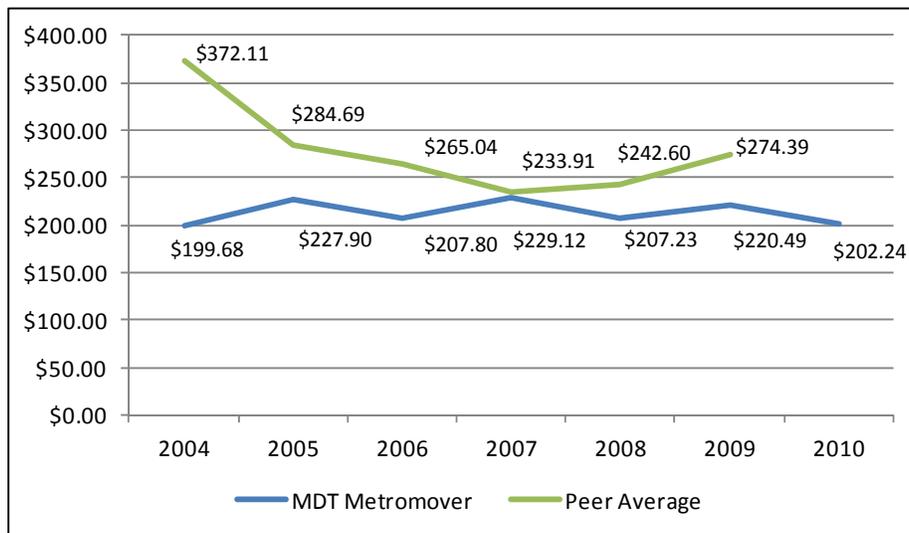
	Operating Cost (\$00)		Revenue Hours	
	MDT Metromover	Peer Average	MDT Metromover	Peer Average
2004	\$186,729	\$80,602	93,515	21,472
2005	\$208,996	\$81,937	91,705	29,632
2006	\$191,847	\$90,416	92,321	36,008
2007	\$210,007	\$87,192	91,657	37,973
2008	\$228,429	\$96,397	110,228	62,728
2009	\$232,652	\$93,840	105,517	52,909
2010	\$208,967		103,328	

**Figure 179 - Operating Costs and Revenue Hours**



**Figure 180 - Operating Cost per Revenue Hour - Metromover / Peer Average**

In 2010, Metromover reduced operating cost per revenue hour (Figure 181) from \$220.49 in 2009 to \$202.24, a decrease of 8.3 percent.

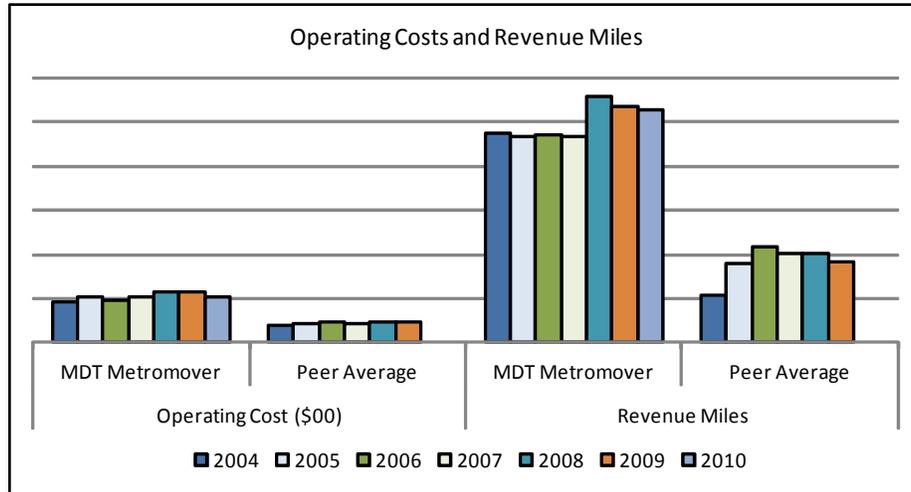


**Figure 181 - Operating Cost per Revenue Hour (Cost Efficiency)**

### Metromover Cost Efficiency: Operating Cost per Revenue Mile

Operating cost per revenue mile is derived from total operating costs and revenue miles (Figure 182) and provides an indication of what a mile of revenue service costs. In 2009, Metromover increased operating costs (a 1.8% increase) and decreased revenue miles (a 4.2% decrease), while the peer group average decreased in both costs (a 2.7% decrease) and miles (a 10.1% decrease).

Metromover cost per revenue mile was less than the peer group average from 2004 through 2009 (Figure 183). Metromover operating cost per revenue mile increased in 2010 as compared to 2004 (a 10.7% increase), while the peer group average declined by 41.1 percent.



	Operating Cost (\$00)		Revenue Miles	
	MDT Metromover	Peer Average	MDT Metromover	Peer Average
2004	\$186,729	\$80,602	953,848	213,729
2005	\$208,996	\$81,937	935,393	360,182
2006	\$191,847	\$90,416	941,678	433,913
2007	\$210,007	\$87,192	934,906	403,434
2008	\$228,429	\$96,397	1,120,647	403,335
2009	\$232,652	\$93,840	1,073,135	362,763
2010	\$208,967		1,055,731	

Figure 182 - Operating Costs and Revenue Miles

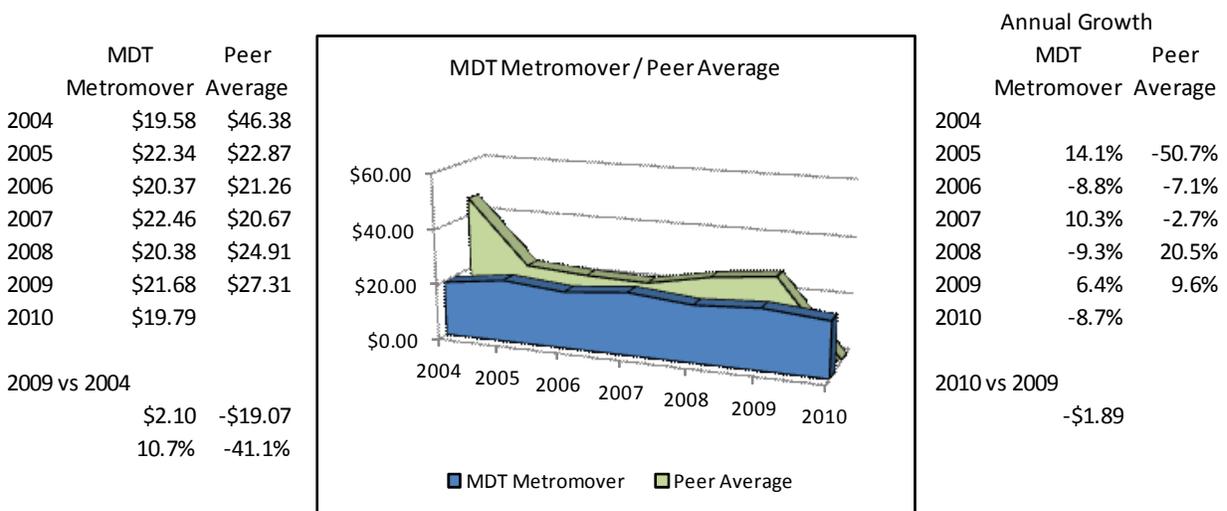
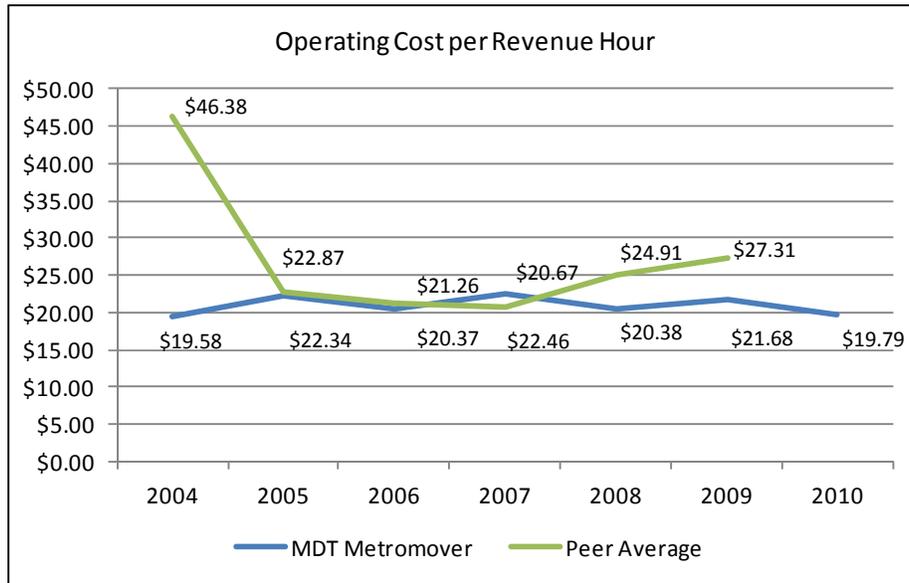


Figure 183 - Operating Cost per Revenue Mile - Metromover / Peer Average

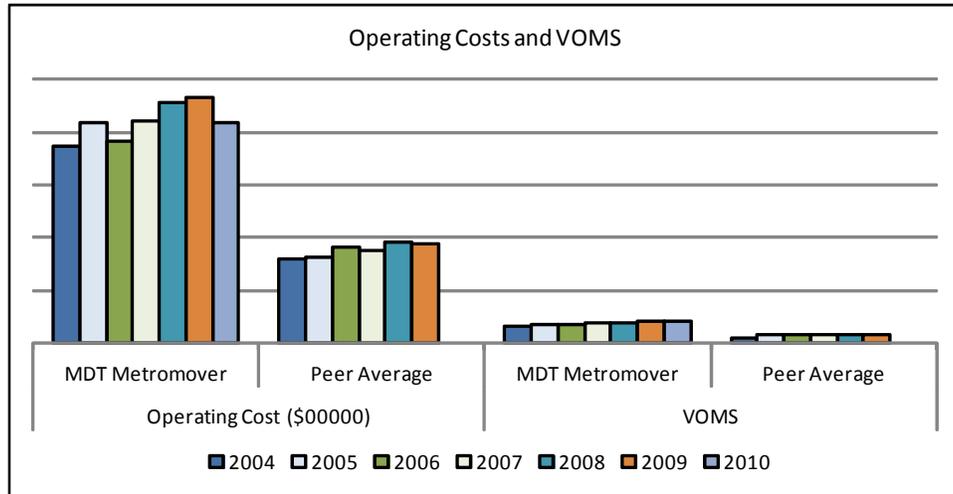
In 2010, Metromover reduced operating cost per revenue mile (Figure 184) from \$21.68 in 2009 to \$19.79, a decrease of 8.7 percent.



**Figure 184 - Operating Cost per Revenue Mile (Cost Efficiency)**

### Metromover Cost Efficiency: Operating Cost per VOMS

Operating cost per VOMS is derived from total operating costs and VOMS (Figure 185) and provides an indication of what a VOMS costs to operate. In 2009, Metromover increased both operating costs (a 1.8% increase) and VOMS (a 5.0% increase), while the peer group average decreased in costs (a 2.7% decrease) and maintained the same number of VOMS. Metromover cost per VOMS was less than the peer group average in 2005, but exceeded the peer group average cost from 2006 through 2009 (Figure 186). Metromover operating cost per VOMS increased in 2009 as compared to 2004 (a 0.9% increase), while the peer group average declined by 39.3 percent.



	Operating Cost (\$00000)		VOMS	
	MDT Metromover	Peer Average	MDT Metromover	Peer Average
2004	\$187	\$81	17	6
2005	\$209	\$82	18	9
2006	\$192	\$90	18	9
2007	\$210	\$87	20	9
2008	\$228	\$96	20	9
2009	\$233	\$94	21	9
2010	\$209		21	

Figure 185 - Operating Costs and VOMS

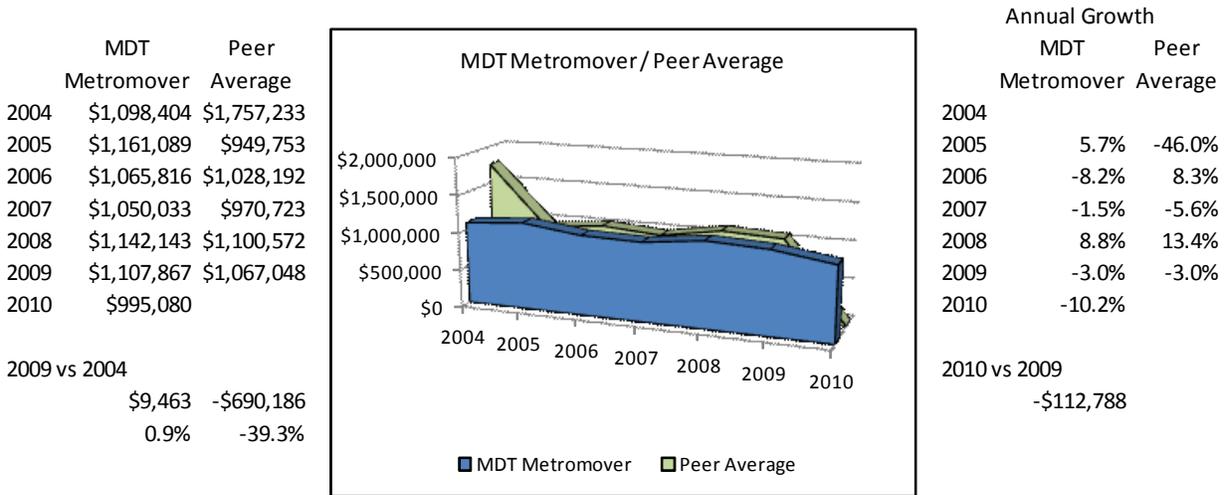
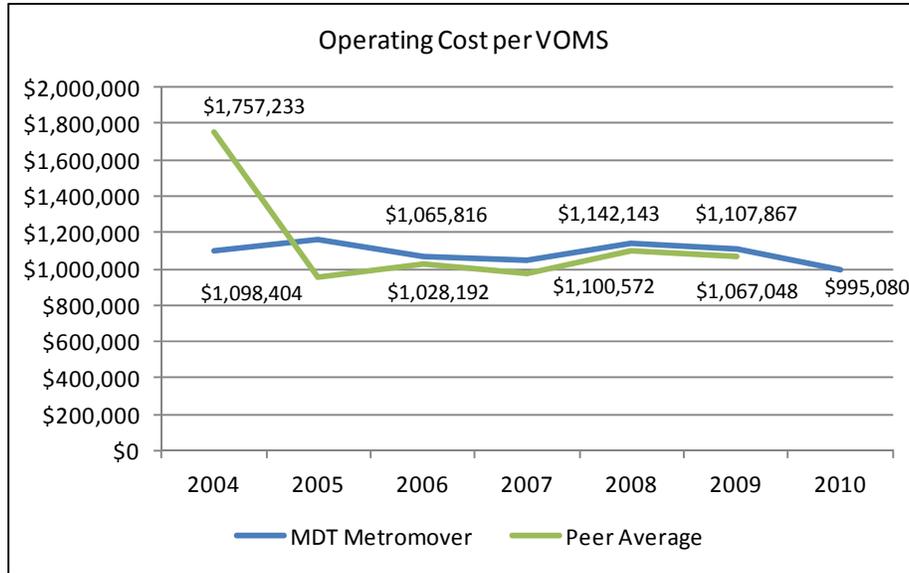


Figure 186 - Operating Cost per VOMS - Metromover / Peer Average

In 2010, Metromover reduced operating cost per VOMS (Figure 187) from \$1,107,867 in 2009 to \$995,080, a 10.2 percent decrease.

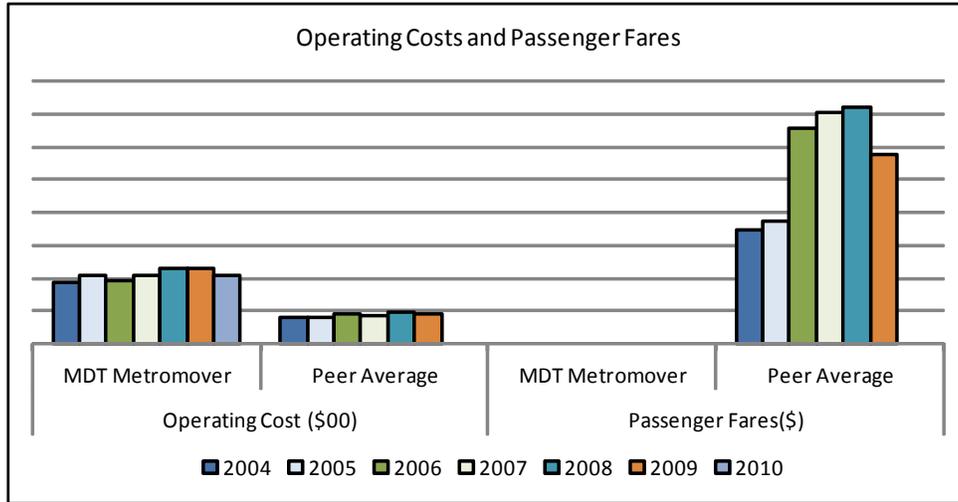


**Figure 187 - Operating Cost per VOMS (Cost Efficiency)**

### Metromover Cost Effectiveness: Farebox Recovery

Farebox recovery is derived from operating cost and passenger fare revenue (Figure 188) and is a measure of the agency's effectiveness in recovering passenger fare revenue to cover operating costs. From 2004 through 2009, Metromover provided free service to Metromover customers and collected no passenger fare revenue. In 2009, the peer group average decreased both in costs (a 2.7% decrease) and passenger fare revenue (a 20.1% decrease).

Peer group average farebox recovery peaked in 2007 at 7.8 percent (Figure 189) and fell to 5.9 percent in 2009, when DTC reported 6.6 percent farebox recovery and JTA reported farebox recovery of 5.1 percent.



	Operating Cost (\$00)		Passenger Fares(\$)	
	MDT Metromover	Peer Average	MDT Metromover	Peer Average
2004	\$186,729	\$80,602	\$0	\$346,470
2005	\$208,996	\$81,937	\$0	\$372,611
2006	\$191,847	\$90,416	\$0	\$658,025
2007	\$210,007	\$87,192	\$0	\$702,215
2008	\$228,429	\$96,397	\$0	\$720,905
2009	\$232,652	\$93,840	\$0	\$576,124
2010	\$208,967		\$0	

Figure 188 - Operating Costs and Passenger Fares

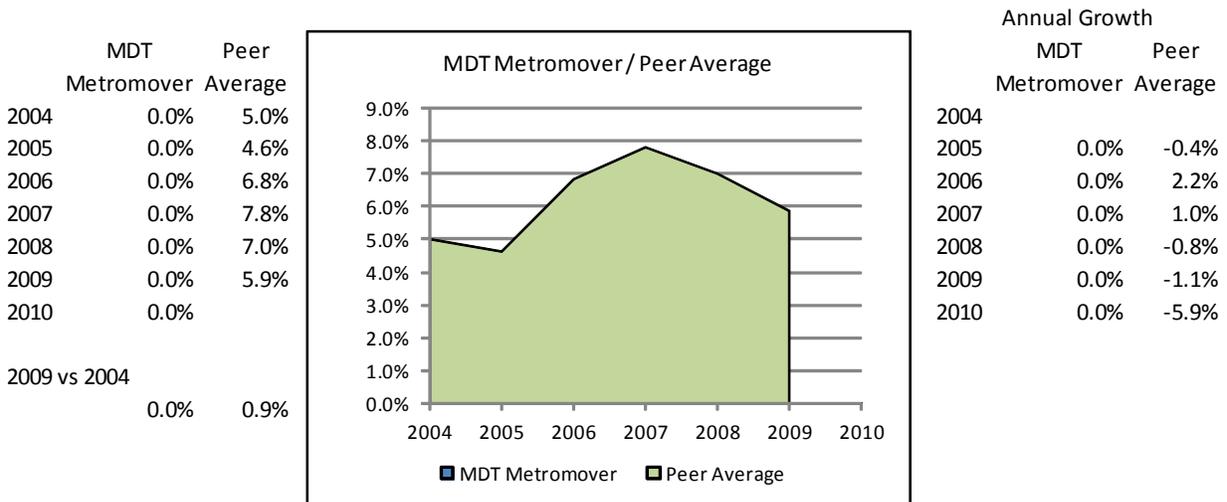
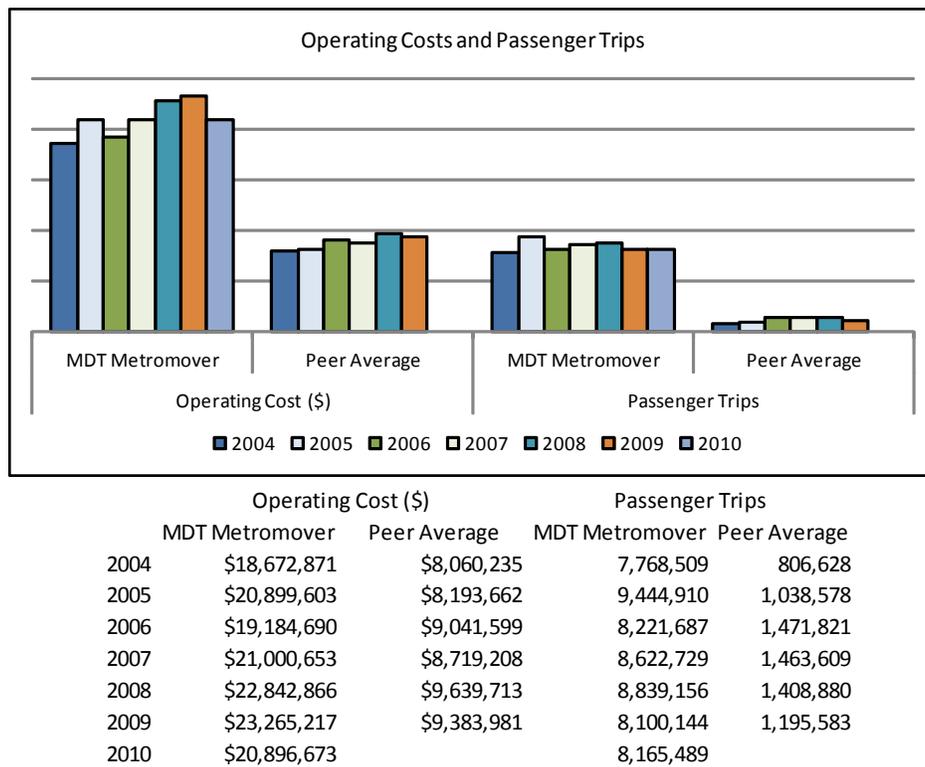


Figure 189 - Farebox Recovery - Metromover / Peer Average

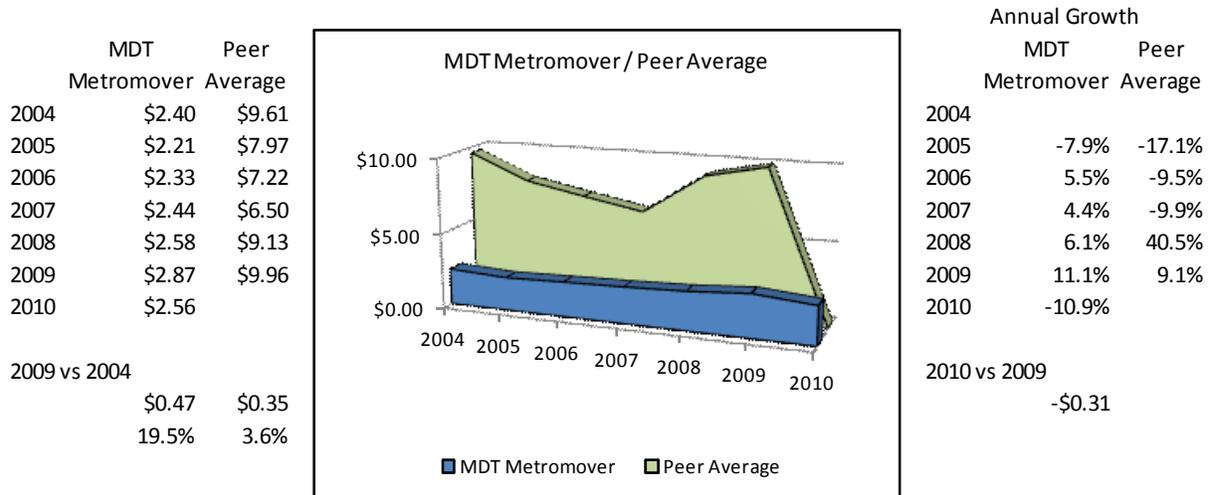
### Cost Effectiveness: Operating Cost per Passenger Trip

Operating cost per passenger trip is derived from total operating costs and passenger trips (Figure 190) and is a measure of the effectiveness of the system in providing service. In 2009, Metromover increased operating costs (a 1.8% increase) and decreased passenger trips (an 8.4% decrease), while the peer group average decreased in both costs (a 2.7% decrease) and trips (a 15.1% decrease).

Metromover cost per passenger trip was less than the peer group average from 2004 through 2009 (Figure 191). Metromover operating cost per passenger trip increased in 2009 as compared to 2004 (a 19.5% increase), and the peer group average increased by 3.6 percent.

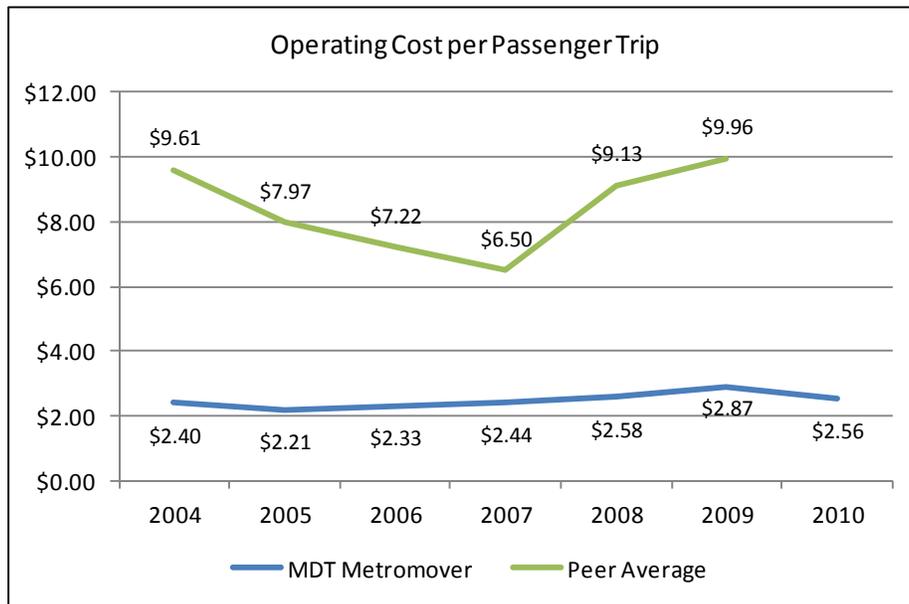


**Figure 190 - Operating Costs and Passenger Trips**



**Figure 191 - Operating Cost per Passenger Trip - Metromover / Peer Average**

In 2010, Metromover reduced operating cost per passenger trip, based on lower operating costs and a rise in passenger trips, from \$2.87 in 2009 to \$2.56 (Figure 192).



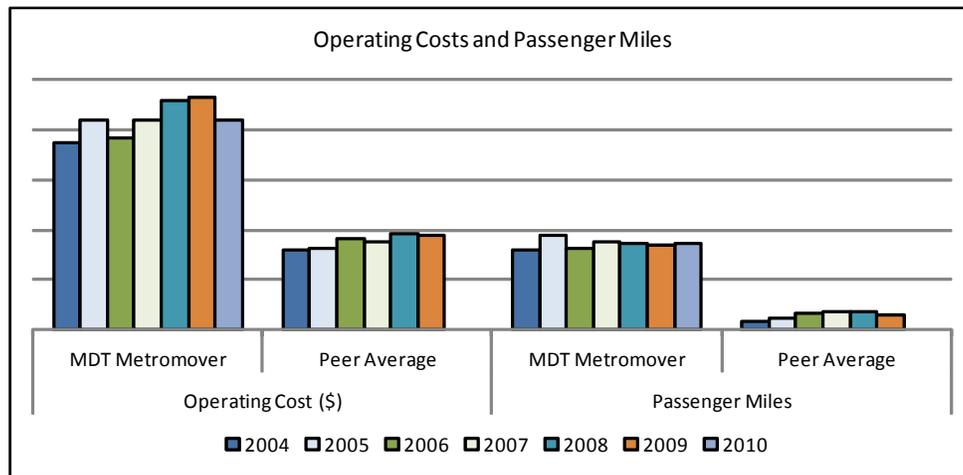
**Figure 192 - Operating Cost per Passenger Trip (Cost Effectiveness)**

### Cost Effectiveness: Operating Cost per Passenger Mile

Operating cost per passenger mile is derived from total operating costs and passenger miles (Figure 193) and is a measure of the effectiveness of the system in providing service. Unlike passenger trips, passenger miles are sensitive to the length of each trip. In 2009, Metromover increased operating costs

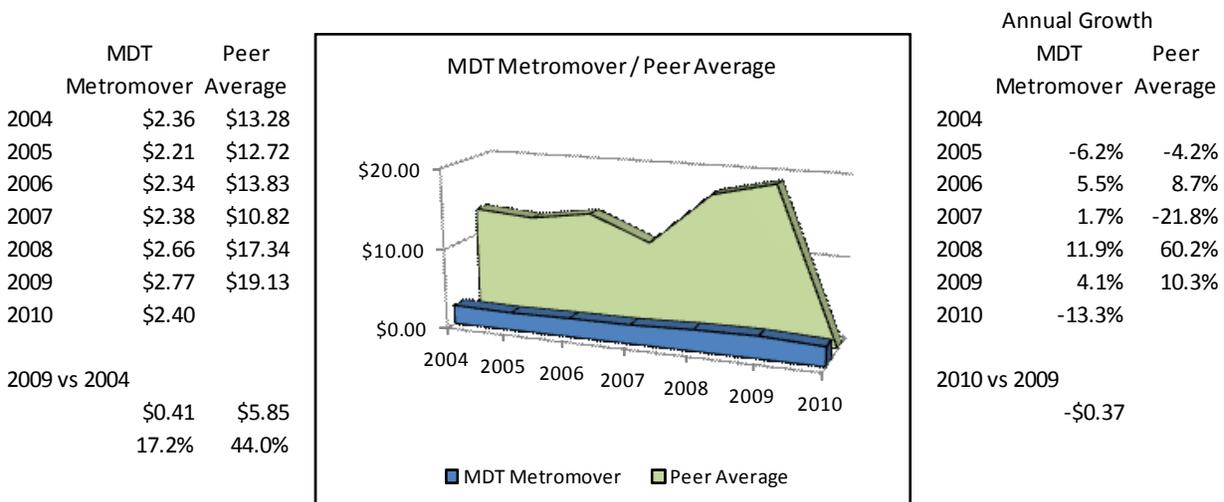
(a 1.8% increase) and decreased passenger miles (a 2.2% decrease), while the peer group average decreased in both costs (a 2.7% decrease) and miles (a 14.3% decrease).

Metromover cost per passenger mile grew annually from 2006 through 2009 (Figure 194), while growth in the peer group average repeated a cycle of decline followed by growth from 2004 through 2009. Metromover consistently reported a lower cost per passenger mile than the peer group average and grew at a slower rate overall (17.2% compared to 44.0%).



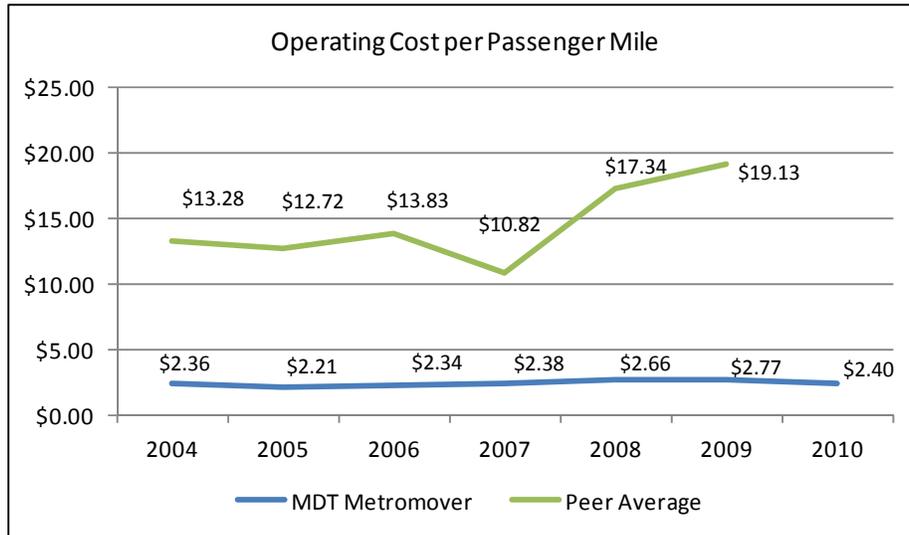
	Operating Cost (\$)		Passenger Miles	
	MDT Metromover	Peer Average	MDT Metromover	Peer Average
2004	\$18,672,871	\$8,060,235	7,910,898	794,447
2005	\$20,899,603	\$8,193,662	9,437,646	1,104,319
2006	\$19,184,690	\$9,041,599	8,213,863	1,736,859
2007	\$21,000,653	\$8,719,208	8,840,136	1,899,467
2008	\$22,842,866	\$9,639,713	8,593,648	1,843,993
2009	\$23,265,217	\$9,383,981	8,408,218	1,579,425
2010	\$20,896,673		8,713,245	

Figure 193 - Operating Costs and Passenger Miles



**Figure 194 - Operating Cost per Passenger Mile - Metromover / Peer Average**

In 2010, Metromover reduced operating cost per passenger mile, based on lower operating costs and a rise in passenger miles, from \$2.77 in 2009 to \$2.40 (Figure 195).

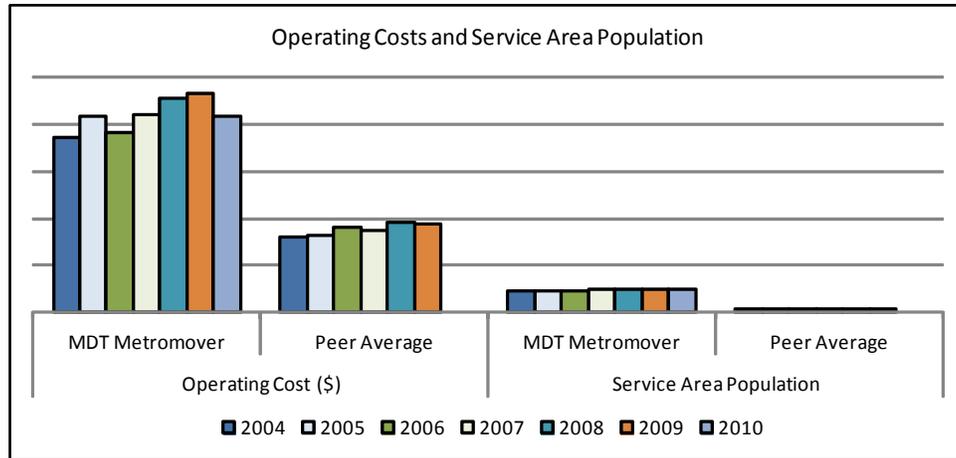


**Figure 195 - Operating Cost per Passenger Mile (Cost Effectiveness)**

### Cost Effectiveness: Operating Cost per Capita

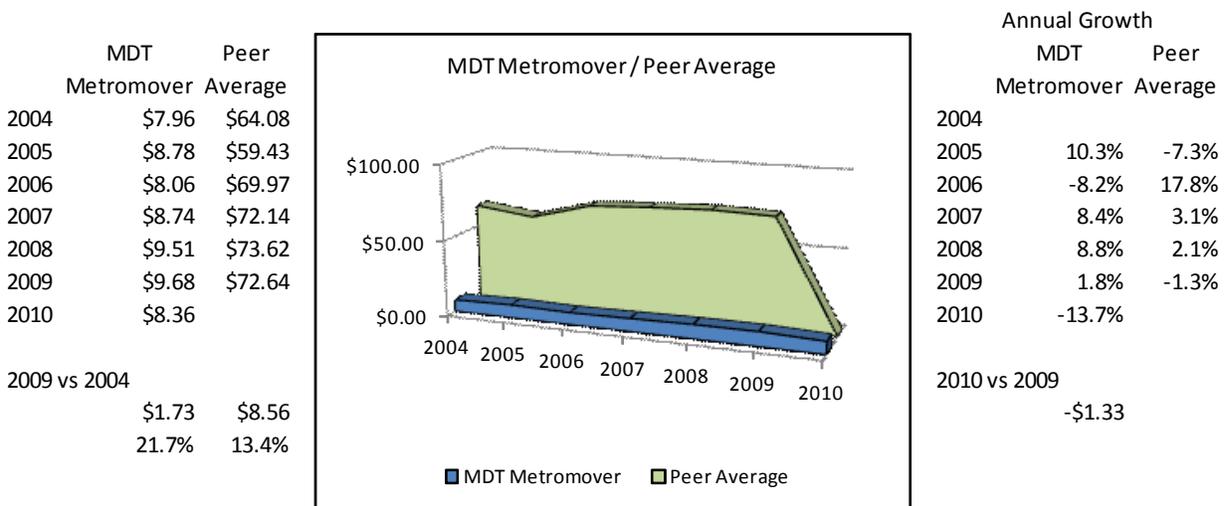
Operating cost per capita is derived from operating costs and service area population (Figure 196) and is a measure of the effectiveness of the system in providing service within the service area. In 2009, Metromover reduced operating costs (a 1.8% decrease) and reported no change in service area population, while the peer group average decreased in costs (a 2.7% decrease) and also reported no change in service area population.

Both Metromover and the peer group average cost per capita grew annually from 2004 through 2009 (Figure 197). Metromover consistently reported a lower cost per capita than the peer group average, but grew at a faster rate overall (21.7% compared to 13.4%).



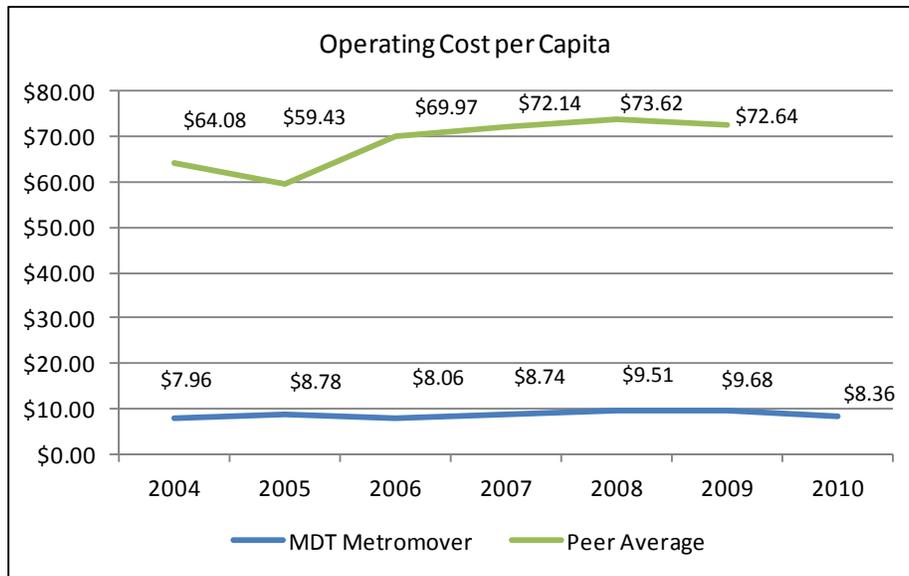
	Operating Cost (\$)		Service Area Population	
	MDT Metromover	Peer Average	MDT Metromover	Peer Average
2004	\$18,672,871	\$8,060,235	2,345,932	454,979
2005	\$20,899,603	\$8,193,662	2,379,818	454,979
2006	\$19,184,690	\$9,041,599	2,379,818	459,965
2007	\$21,000,653	\$8,719,208	2,402,208	459,965
2008	\$22,842,866	\$9,639,713	2,402,208	459,965
2009	\$23,265,217	\$9,383,981	2,402,208	459,965
2010	\$20,896,673		2,500,625	

**Figure 196 - Operating Costs and Service Area Population**



**Figure 197 - Operating Cost per Capita - Metromover / Peer Average**

In 2010, Metromover reduced operating cost per capita, based on lower operating costs and a rise in service area population, from \$9.68 in 2009 to \$8.36 (Figure 198).



**Figure 198 - Operating Cost per Capita (Cost Effectiveness)**

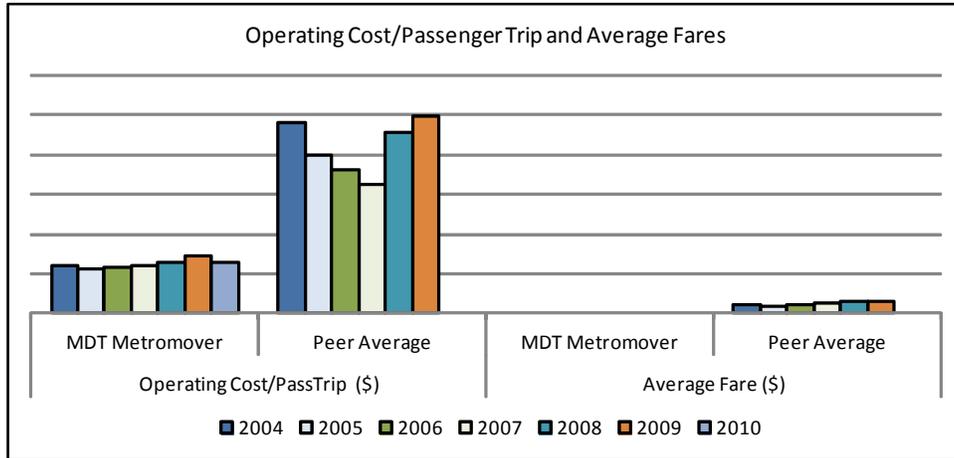
### Cost Effectiveness: Subsidy per Boarding

Subsidy per boarding is derived from the cost per passenger trip and the average fare paid (Figure 199) and is a measure of the effectiveness of the system in recovering service costs. From 2004 through 2009, Metromover provided free service to Metromover customers and, therefore, collected no passenger fare revenue. Metromover subsidy per boarding is not offset by passenger fare revenue, given an average fare of \$0.00.

In 2009, Metromover increased operating cost per passenger trip by \$0.29 (an 11.1% increase), while the peer group average increased in operating cost per passenger trip by \$0.83 (a 9.1% increase) and decreased in average fare by \$0.03 (a 5.1% decrease).

Throughout the period from 2004 through 2009, Metromover subsidy per boarding fell below the peer group average (Figure 200). Both Metromover and the peer group average subsidy were high in 2004 and then declined prior to reporting a new peak subsidy in 2009.

Over the period from 2004 through 2009, Metromover subsidy per boarding increased by \$0.47 (19.5%), and the peer group average subsidy per boarding increased by \$0.23 (2.5%).



	Operating Cost/PassTrip (\$)		Average Fare (\$)	
	MDT Metromover	Peer Average	MDT Metromover	Peer Average
2004	\$2.40	\$9.61	\$0.00	\$0.43
2005	\$2.21	\$7.97	\$0.00	\$0.37
2006	\$2.33	\$7.22	\$0.00	\$0.47
2007	\$2.44	\$6.50	\$0.00	\$0.50
2008	\$2.58	\$9.13	\$0.00	\$0.59
2009	\$2.87	\$9.96	\$0.00	\$0.56
2010	\$2.56		\$0.00	

Figure 199 - Operating Cost/Passenger Trip and Average Fare

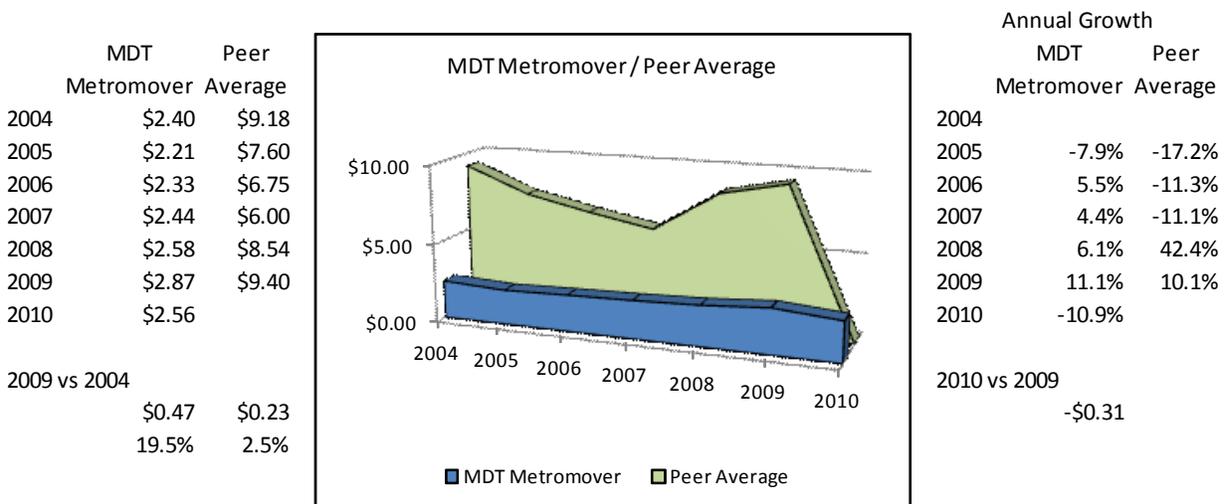


Figure 200 - Subsidy per Boarding - Metromover / Peer Average

In 2010, Metromover reduced subsidy per boarding, based on lower operating costs and a rise in passenger trips, from \$2.87 in 2009 to \$2.56 (Figure 201).

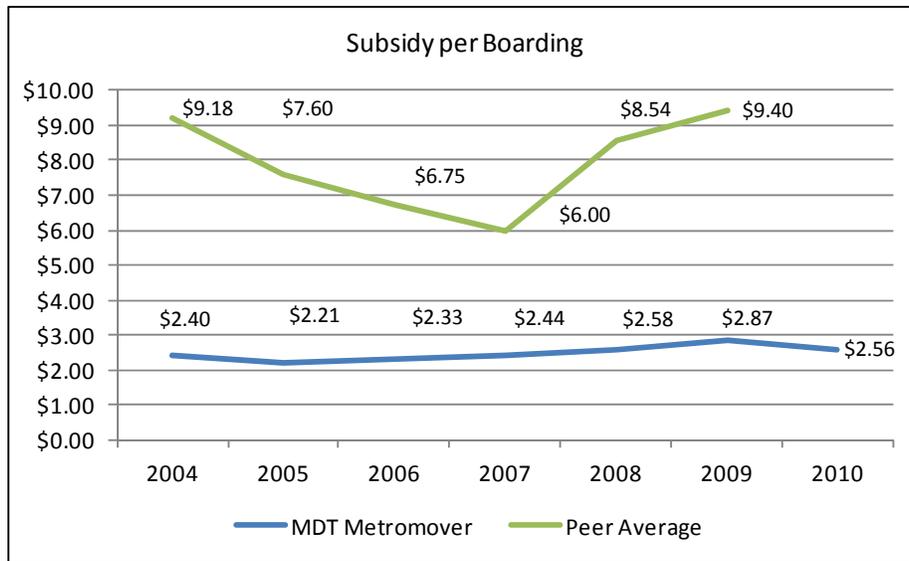


Figure 201 - Subsidy per Boarding (Cost Effectiveness)

### Metromover Service Utilization: Average Trip Length (in miles)

Average trip length is derived from passenger trips and passenger miles and is a measure of the system in providing service. From 2004 through 2009, Metromover average trip length exceeded the peer group average (Figure 202), while average trip length for both Metromover and the peer group grew.

In 2009, the peer group achieved an average trip length of 0.96 miles compared to a Metromover average trip length of 1.04 miles. In 2010, the Metromover average trip length grew to 1.07 miles, longer than peak average length of 1.02 miles reported in 2004.

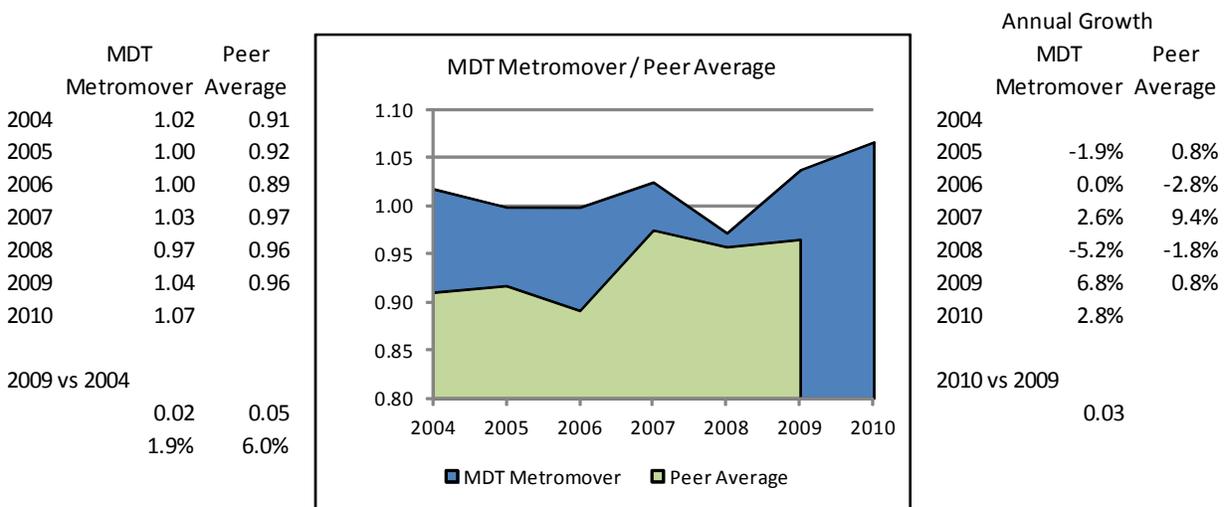
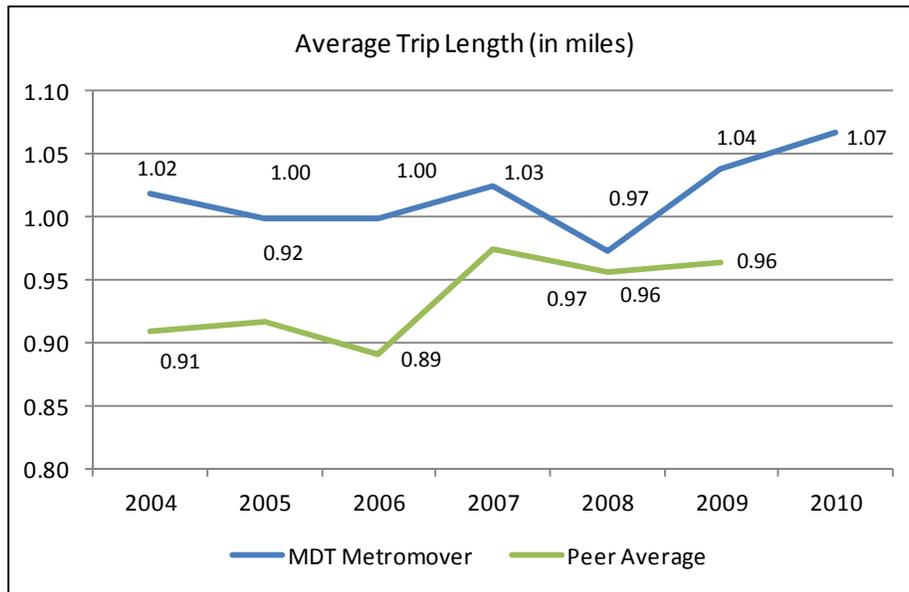


Figure 202 - Average Trip Length - Metromover / Peer Average

In 2010, Metromover average trip length grew from 1.04 miles in 2009 to 1.07.

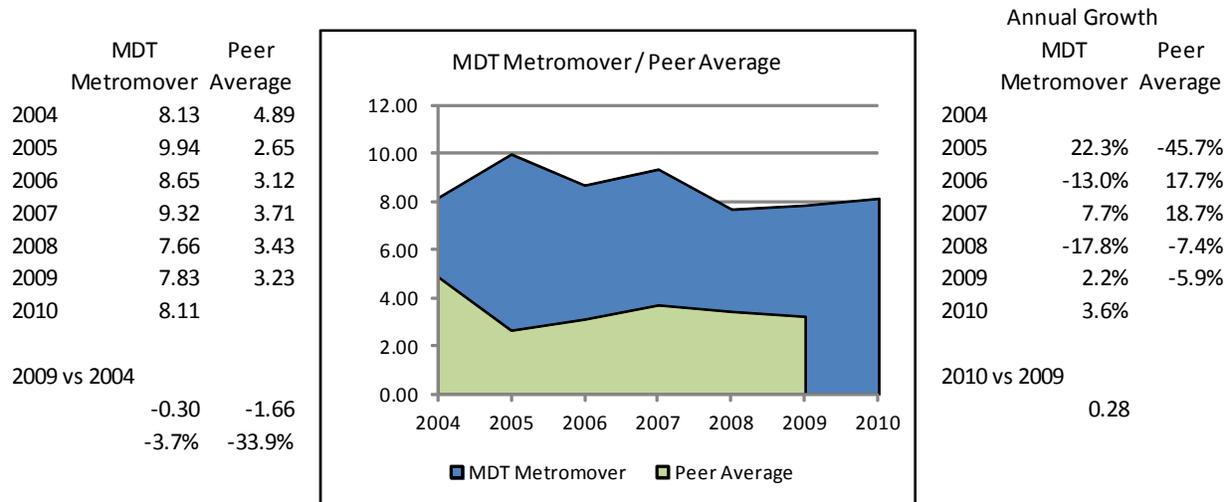


**Figure 203 - Average Trip Length (Service Utilization)**

### Metromover Service Utilization: Passenger Miles per Vehicle Mile

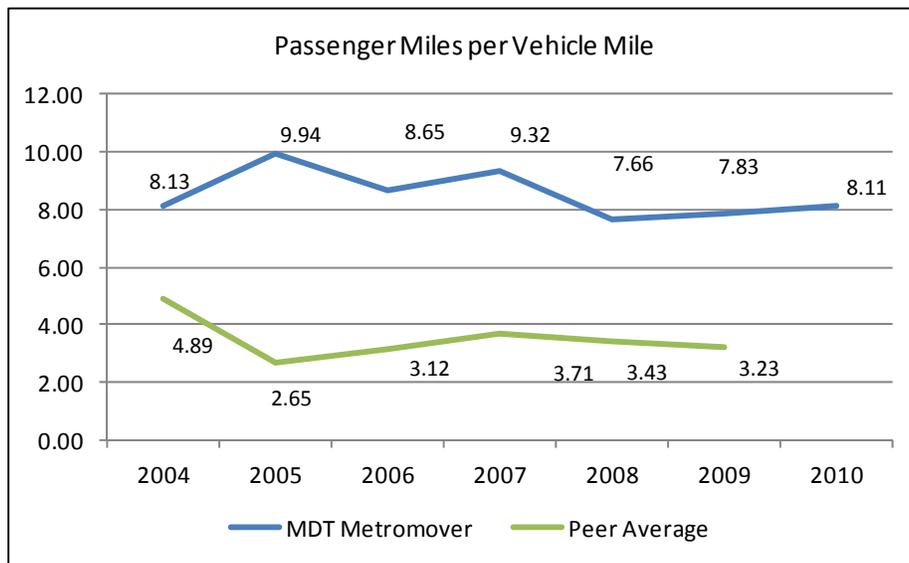
The relationship of passenger miles to vehicle miles is a measure of service utilization and productivity.

From 2004 through 2009 (Figure 204), Metromover exceeded the peer group average passenger miles per vehicle mile. From 2004 through 2009 growth in passenger miles per vehicle mile for Metromover and the peer group average fluctuated. Declines in passenger miles per vehicle mile in 2009 compared to 2004 were noted for Metromover (a decrease of 3.7%) as well as the peer group average (a 33.9% decrease).



**Figure 204 - Passenger Miles per Vehicle Mile - Metromover / Peer Average**

In 2010, Metromover increased passenger miles per vehicle mile by 0.28 miles, a 3.6 percent increase (Figure 205).



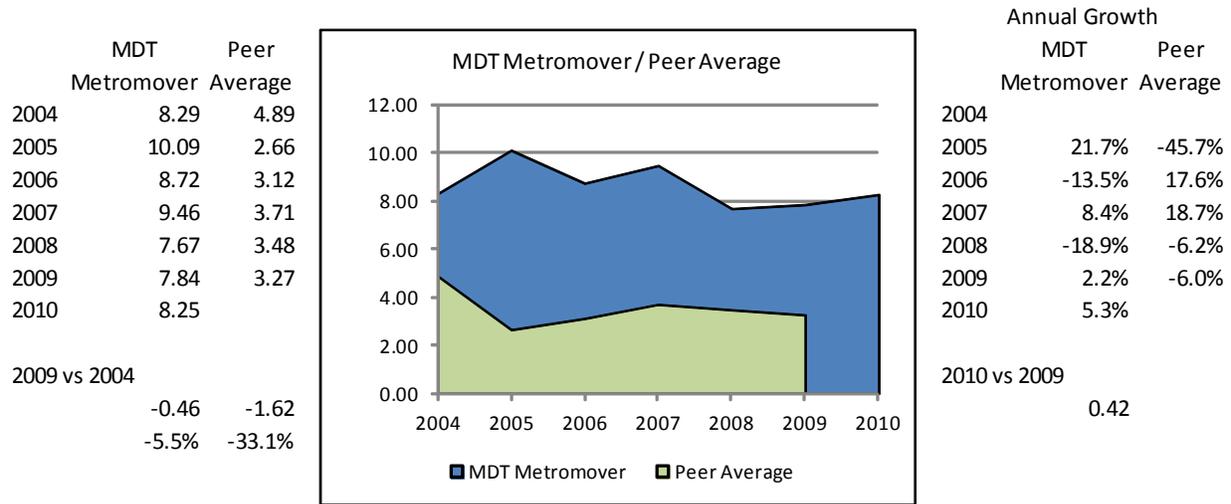
**Figure 205 - Passenger Miles per Vehicle Mile (Service Utilization)**

### Metromover Service Utilization: Average Passenger Load

The relationship of passenger miles to revenue miles is referred to as average passenger load and is a commonly used measure of service utilization and productivity.

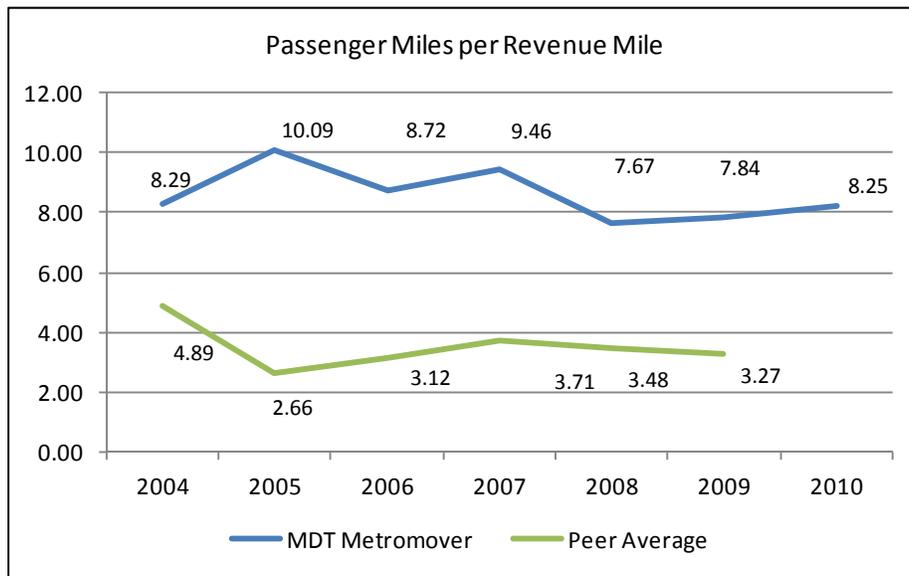
From 2004 through 2009 (Figure 206), Metromover and peer group average passenger miles per revenue mile declined over time and fell by 5.5 percent and 33.1 percent, respectively, in 2009

compared to 2004. In 2009, Metromover reported 7.84 passenger miles per vehicle compared to the peer group average of 3.27 miles.



**Figure 206 – Average Passenger Load - Metromover / Peer Average**

In 2010, Metromover increased passenger miles per revenue mile, from 7.84 in 2009 to 8.25, a 5.3 percent increase (Figure 207).



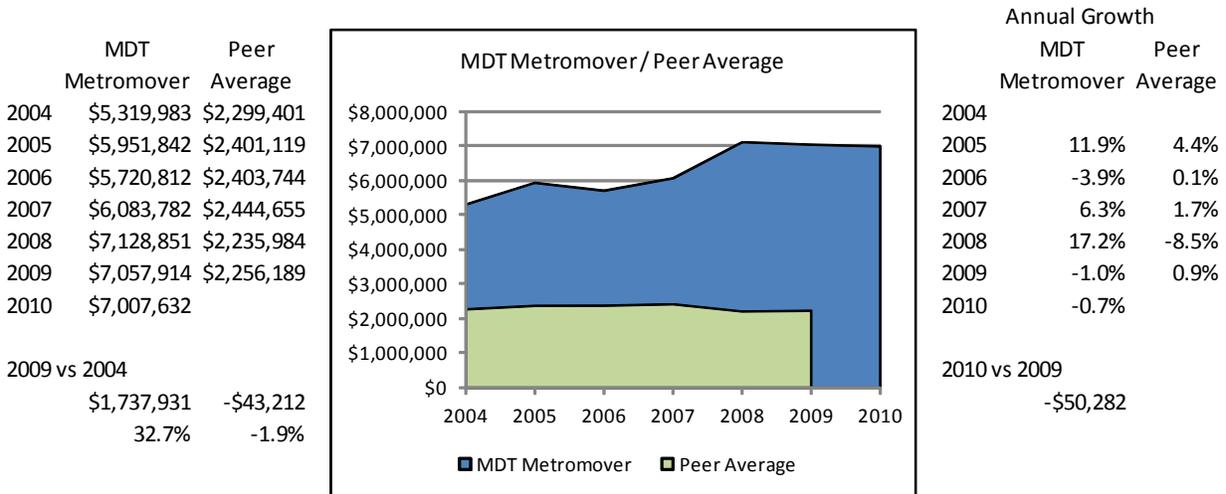
**Figure 207 – Average Passenger Load (Service Utilization)**

### Metromover Labor Administration: Vehicle Operations Expense

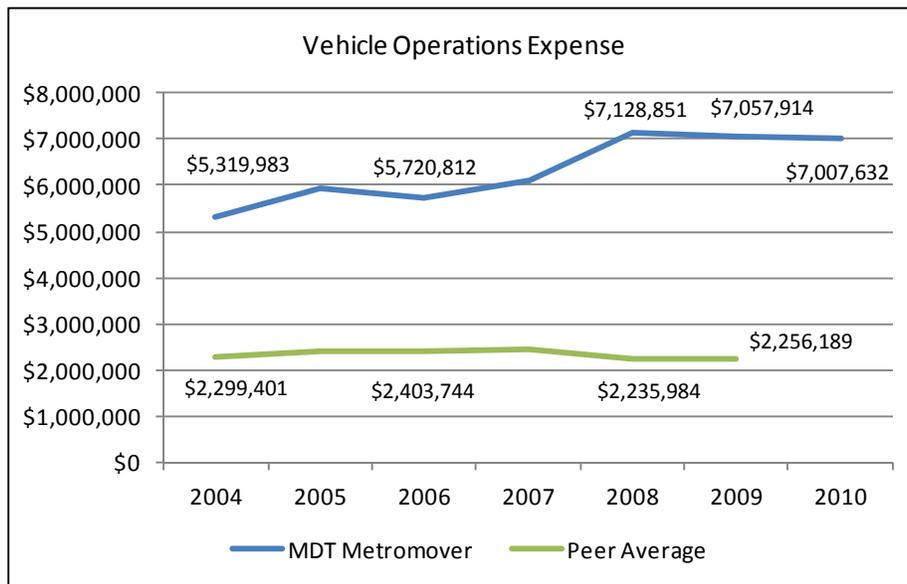
Vehicle operations expense (Figure 208) is used to measure day-to-day transit operations from a labor management perspective. Metromover growth in vehicle operations expense in 2009 compared to

2004 was greater than peer group average growth. In 2009 compared to 2008, Metromover reported a 1.0 percent reduction, while the peer group average increased by 0.9 percent.

Metromover further reduced vehicle operation expense in 2010 by \$50,000 (Figure 209).



**Figure 208 - Vehicle Operations Expense - Metromover / Peer Agency**



**Figure 209 - Vehicle Operations Expense (Labor Administration)**

Vehicle operation expense per VOMS represents the vehicle operation commitment for providing a vehicle in maximum service (Figure 210). In 2010, Metromover reduced vehicle operations expense per VOMS, from \$336,091 in 2009 to \$333,697, a 0.7 percent decrease (Figure 210).

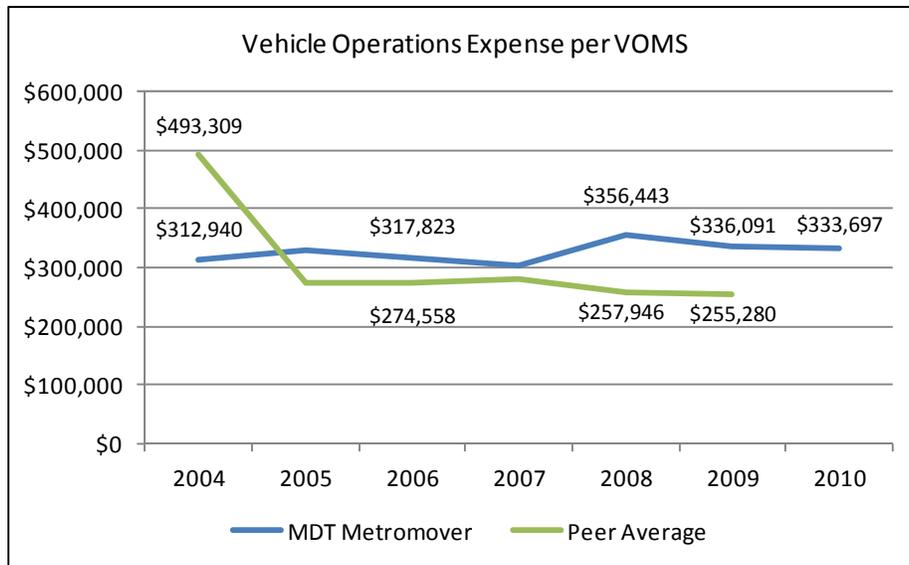


Figure 210 - Vehicle Operations Expense per VOMS (Labor Administration)

### Metromover Labor Administration: Vehicle Maintenance Expense

Vehicle maintenance expense (Figure 211) is used to measure day-to-day transit operations from a labor management perspective. While peer group average growth in vehicle maintenance expense in 2009 compared to 2004 increased by 40.4 percent, Metromover reported a decrease of 0.2 percent. Metromover vehicle maintenance expense in 2009 grew by 1.9 percent compared to 2008, while the peer group average fell by 8.8 percent.

In 2010, Metromover reduced vehicle maintenance expense by \$1.5 million (a 20.3% decrease) compared to 2009 (Figure 212).

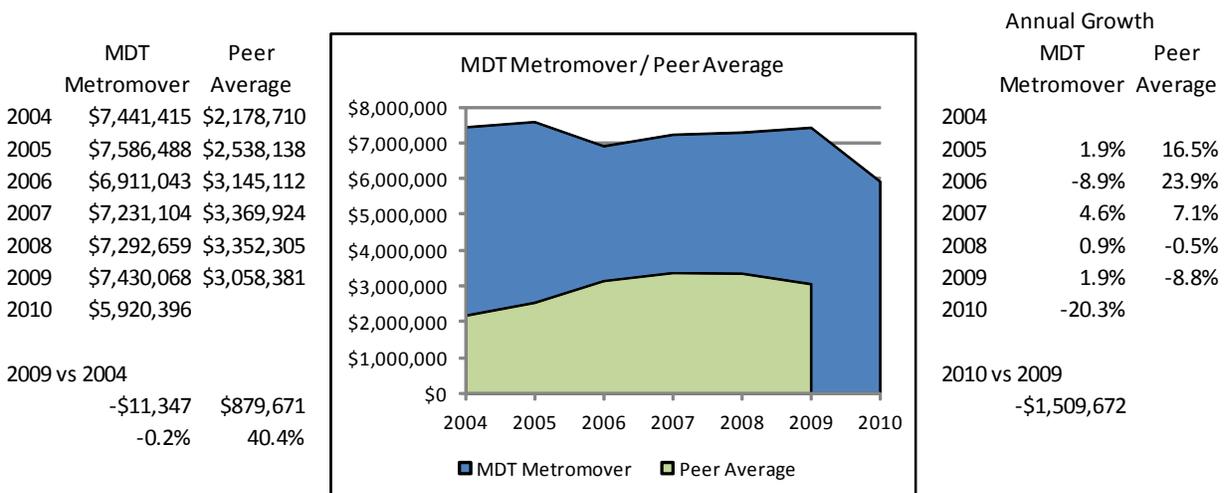
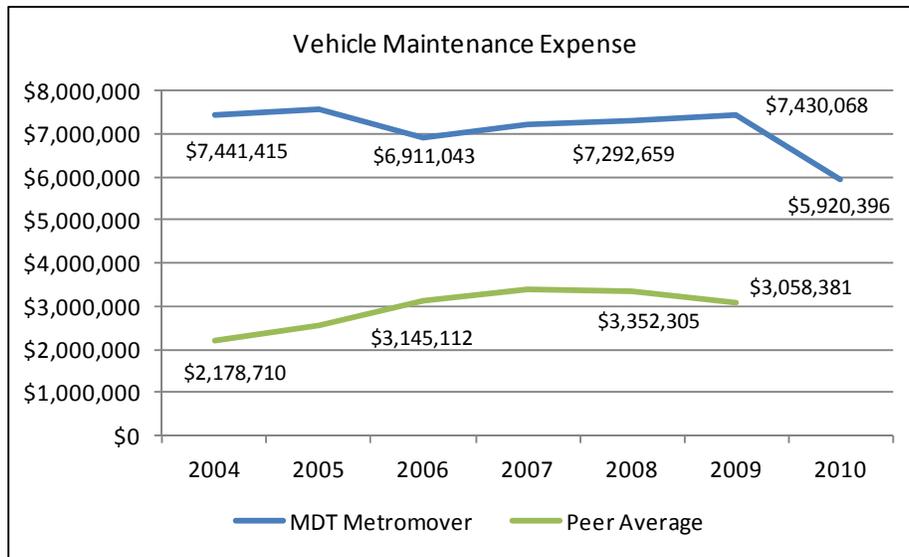
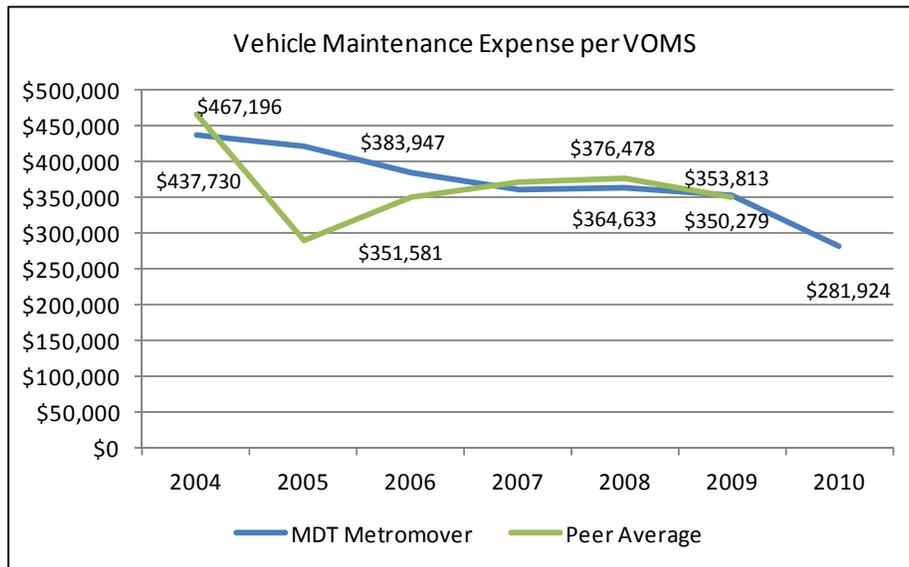


Figure 211 - Vehicle Maintenance Expense - Metromover / Peer Agency



**Figure 212 - Vehicle Maintenance Expense (Labor Administration)**

Vehicle maintenance expense per VOMS (Figure 210) represents the vehicle maintenance commitment for providing a vehicle in maximum service (Figure 213). In 2010, Metromover reduced vehicle maintenance expense per VOMS, from \$353,813 in 2009 to \$281,924 (a 20.3% decrease).



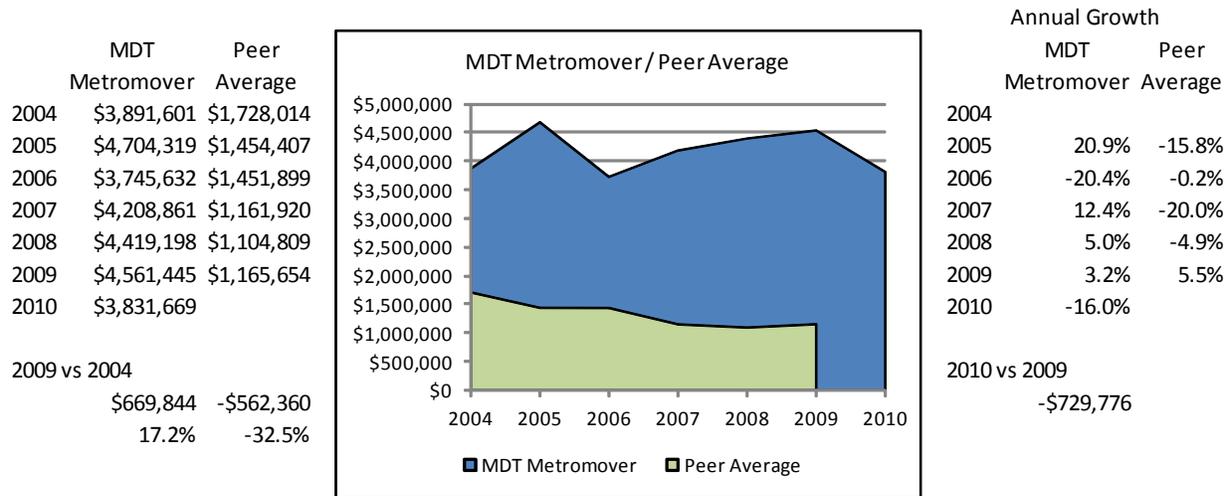
**Figure 213 - Vehicle Maintenance Expense per VOMS (Labor Administration)**

### Metromover Labor Administration: Non-vehicle Maintenance Expense

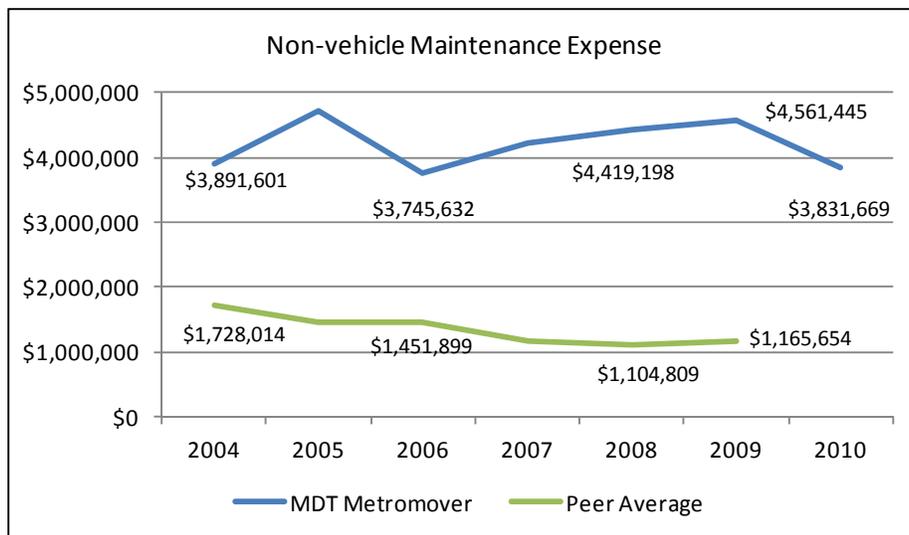
Non-vehicle maintenance expense (Figure 214) is used to measure day-to-day transit operations from a labor management perspective. While peer group average growth in non-vehicle maintenance expense in 2009 compared to 2004 decreased by 32.5 percent, Metromover reported an increase of 17.2

percent. Metromover non-vehicle maintenance expense in 2009 grew by 3.2 percent compared to 2008, while the peer group average grew by 5.5 percent.

In 2010, Metromover reduced non-vehicle maintenance expense by \$0.7 million, a 16.0 percent decrease compared to 2009 (Figure 215).



**Figure 214 - Non-vehicle Maintenance Expense - Metromover / Peer Average**



**Figure 215 - Non-vehicle Maintenance Expense (Labor Administration)**

Non-vehicle maintenance expense per VOMS (Figure 216) represents the non-vehicle maintenance commitment for providing a vehicle in maximum service. In 2010, Metromover reduced non-vehicle maintenance expense per VOMS, from \$217,212 in 2009 to \$182,460 (a 16.0% decrease).

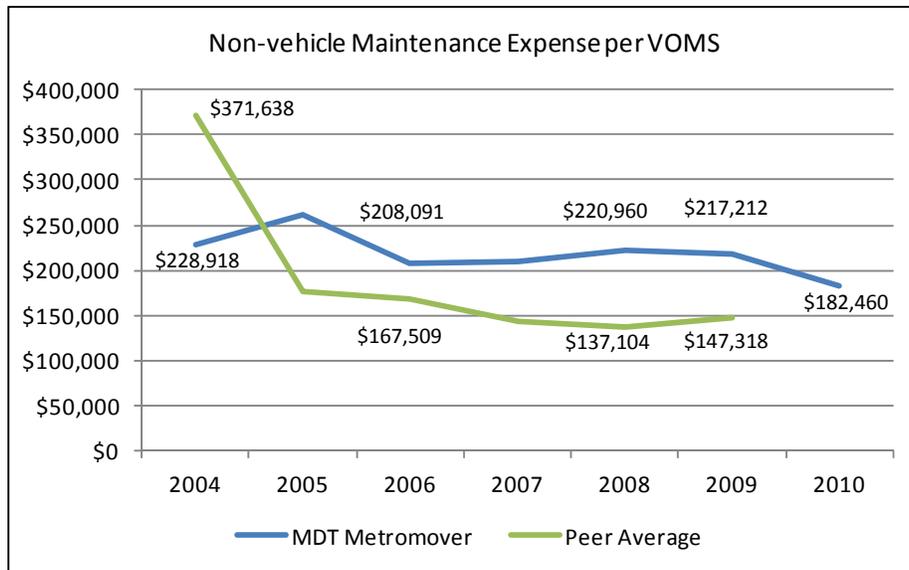


Figure 216 - Non-vehicle Maintenance Expense per VOMS (Labor Administration)

### Metromover Labor Administration: General Administration Expense

General administration expense (Figure 217) is used to measure day-to-day transit operations from a labor management perspective. While peer group average growth in general administration expense in 2009 compared to 2004 increased by 56.6 percent, Metromover reported an increase of 108.7 percent. Metromover general administration expense in 2009 grew by 5.3 percent compared to 2008, while the peer group average declined by 1.5 percent.

In 2010, Metromover reduced general administration expense by 1.9 percent compared to 2009 (Figure 218).

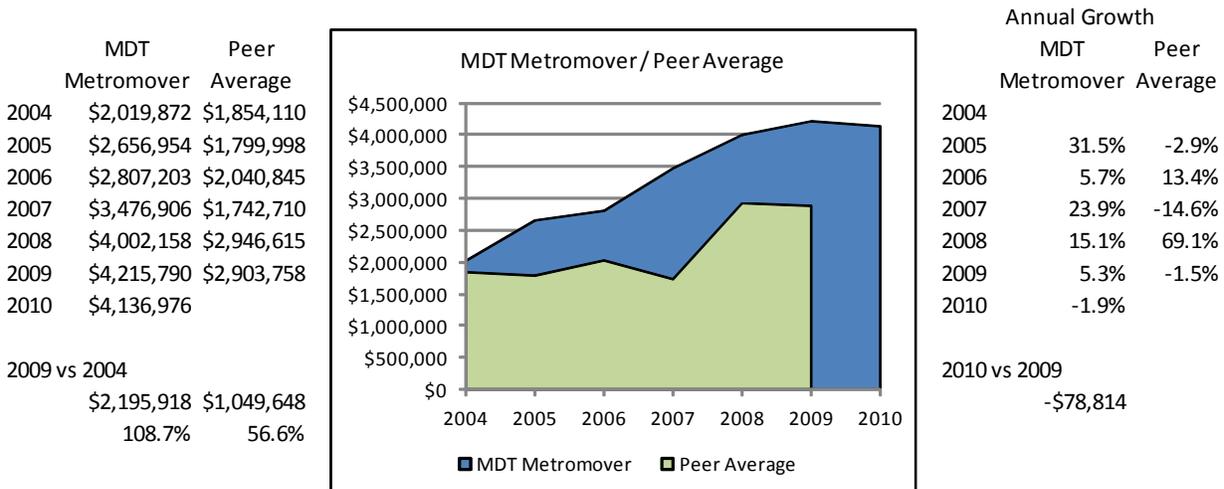
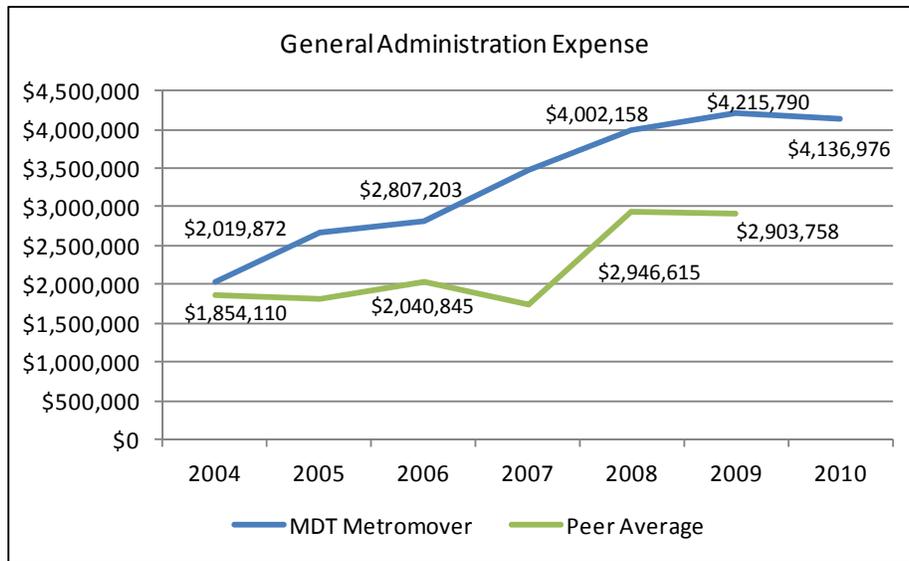
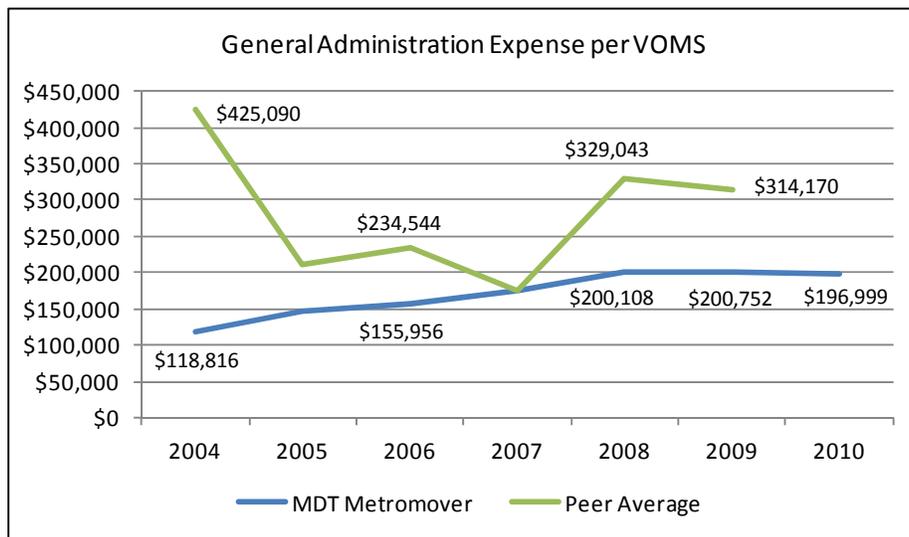


Figure 217 - General Administration Expense - Metromover / Peer Average



**Figure 218 - General Administration Expense (Labor Administration)**

General administration expense per VOMS (Figure 219) represents the general administration commitment for providing a vehicle in maximum service. In 2010, Metromover reduced general administration expense per VOMS, from \$200,752 in 2009 to \$196,999 (a 1.9% decrease).

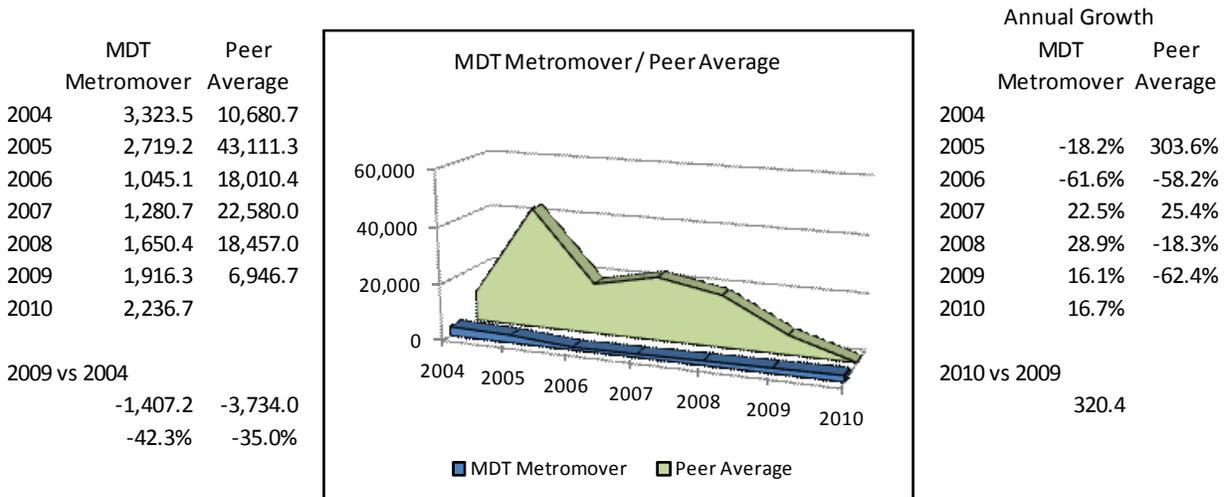


**Figure 219 - General Administration Expense per VOMS (Labor Administration)**

### Metromover Maintenance Administration: Revenue Miles between Vehicle System Failures

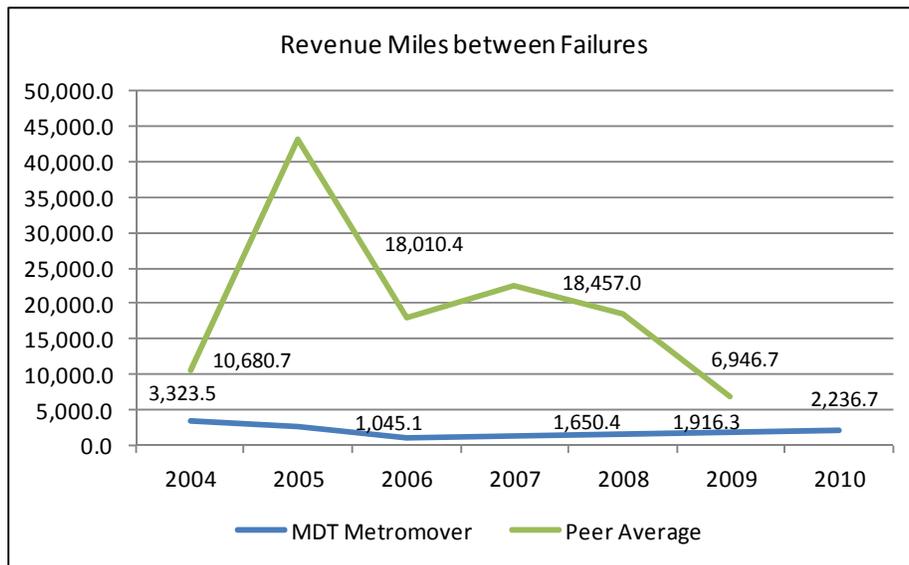
Revenue miles between vehicle system failures (RMBF) is one of the most common performance factors used to evaluate the performance of vehicle maintenance and the vehicle fleet and is a priority metric currently used by Metromover.

Metromover and the peer group average showed variation in RMBF from year to year (Figure 220), resulting in a 42.3 percent decrease in Metromover RMBF in 2009 as compared to 2004 and a 35.0 percent decrease in the peer group average over the same period. Metromover RMBF declined significantly in 2006 and then improved annually, while the peer group average showed a cycle of decline and growth.



**Figure 220 – Revenue Miles between Failures – Metromover / Peer Average**

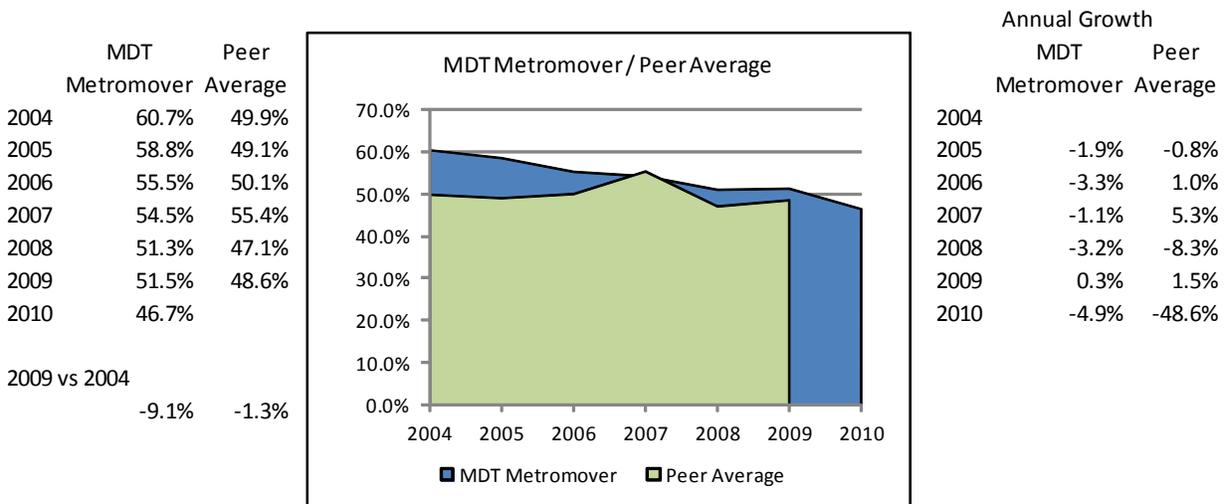
In 2010, Metromover increased RMBF, from 1,916.3 miles in 2009 to 2,236.7 miles, a 16.7 percent increase (Figure 221).



**Figure 221 - Revenue Miles between Failures (Maintenance Administration)**

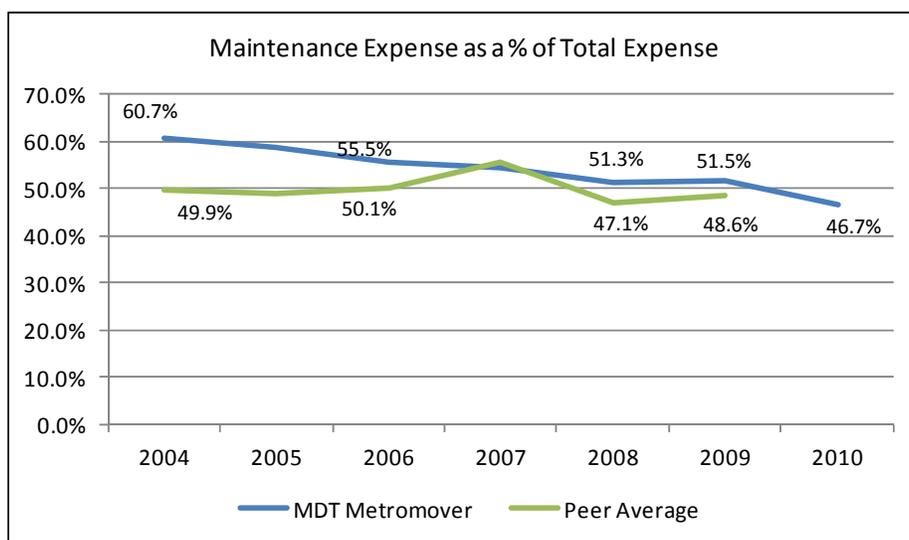
## Metromover Maintenance Administration: Maintenance Expense as a % of Total Expense

Maintenance expense as a percent of total expense focuses on performance of the maintenance function, where maintenance expense includes all vehicle and non-vehicle maintenance costs. Metromover used a larger percentage of total expense for maintenance than the peer group average from 2004 through 2009, with the exception of 2007 (Figure 222). Metromover reduced maintenance percent of total expense by 9.1 percent in 2009 compared to 2004, while peer group average maintenance percent fell by 1.3 percent.



**Figure 222 - Maintenance Expense as a % of Total Expense - Metromover / Peer Average**

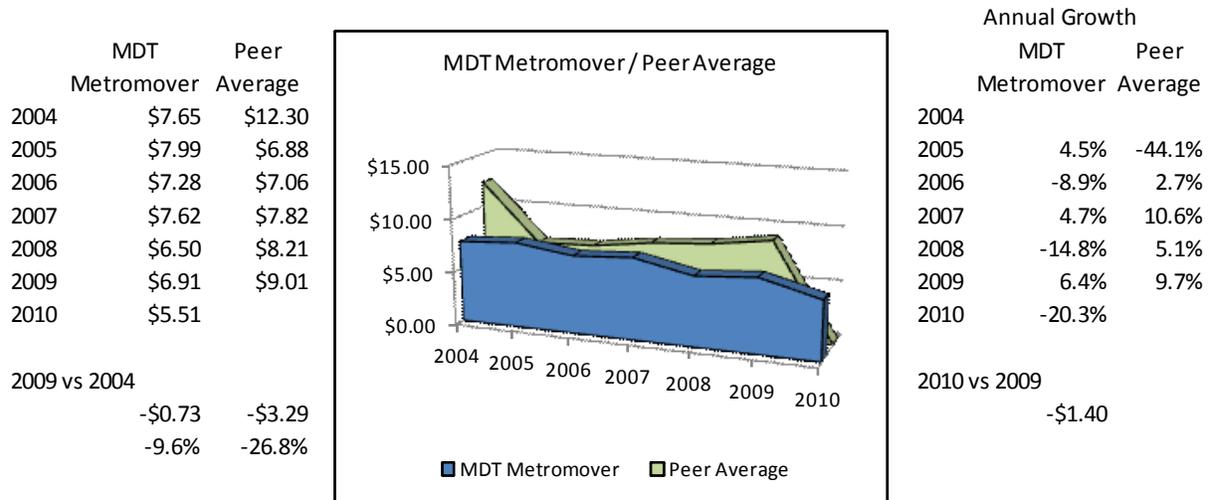
In 2010, Metromover reduced maintenance expense as a percent of total expense from 51.5 percent in 2009 to 46.7 percent (Figure 223).



**Figure 223 - Maintenance Expense as a % of Total Expense (Maintenance Administration)**

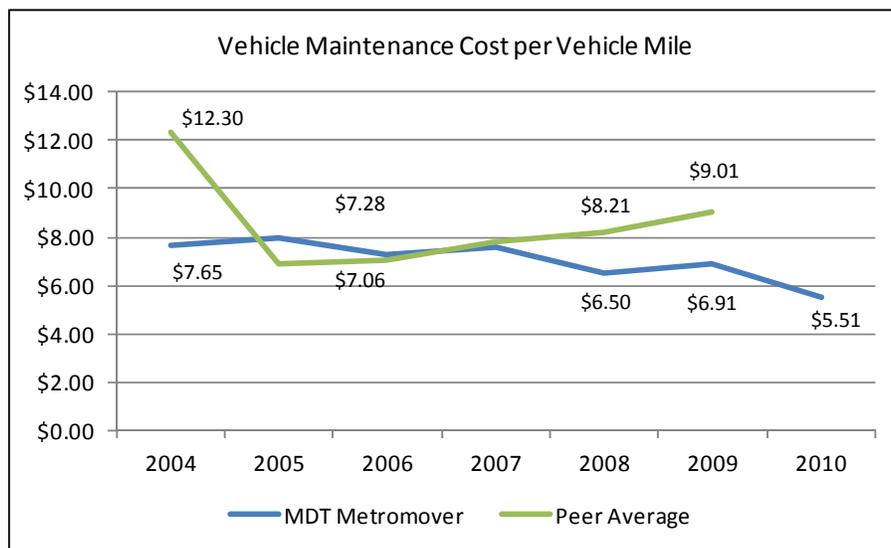
## Metromover Maintenance Administration: Vehicle Maintenance Cost per Vehicle Mile

Vehicle maintenance cost per vehicle mile focuses on the performance of the vehicle maintenance function. Metromover vehicle maintenance cost per vehicle mile (Figure 224) repeated a cycle of growth followed by decline from 2004 through 2009, while the peer group average cost showed consistent annual growth after 2005. Metromover vehicle maintenance cost per vehicle mile exceeded the peer group average in 2005 and 2006. Metromover vehicle maintenance cost per vehicle mile fell 9.6 percent over the period, which was less than the peer group average decline of 26.8 percent.



**Figure 224 - Vehicle Maintenance Cost per Vehicle Mile - Metromover / Peer Average**

In 2010, Metromover reduced vehicle maintenance cost per vehicle mile, from \$6.91 in 2009 to \$5.51 (a 20.3% decrease).



**Figure 225 - Vehicle Maintenance Cost per Vehicle Mile (Maintenance Administration)**

### Metromover Maintenance Administration: Maintenance FTEs per VOMS

Maintenance FTEs per VOMS focuses on the performance of the maintenance function. Metromover maintenance FTEs per VOMS (Figure 226) exceeded the peer group average from 2004 through 2009. Metromover maintenance FTEs per VOMS declined 1.7 percent over the period, below peer group average decline of 3.3 percent.

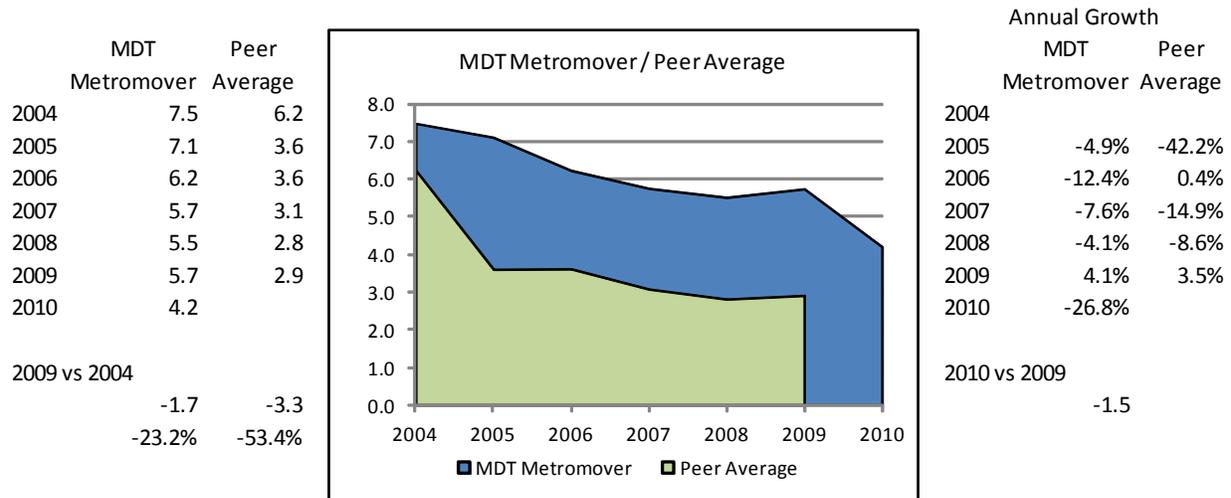


Figure 226 - Maintenance FTEs per VOMS - Metromover / Peer Average

In 2010, Metromover reduced maintenance FTEs per VOMS from 5.7 in 2009 to 4.2, a 26.8 percent decrease (Figure 227).

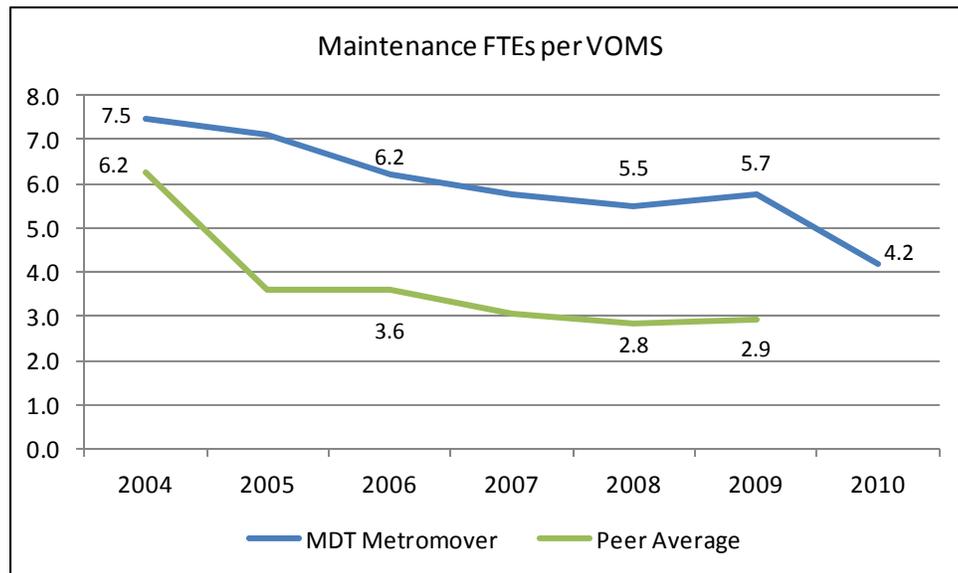
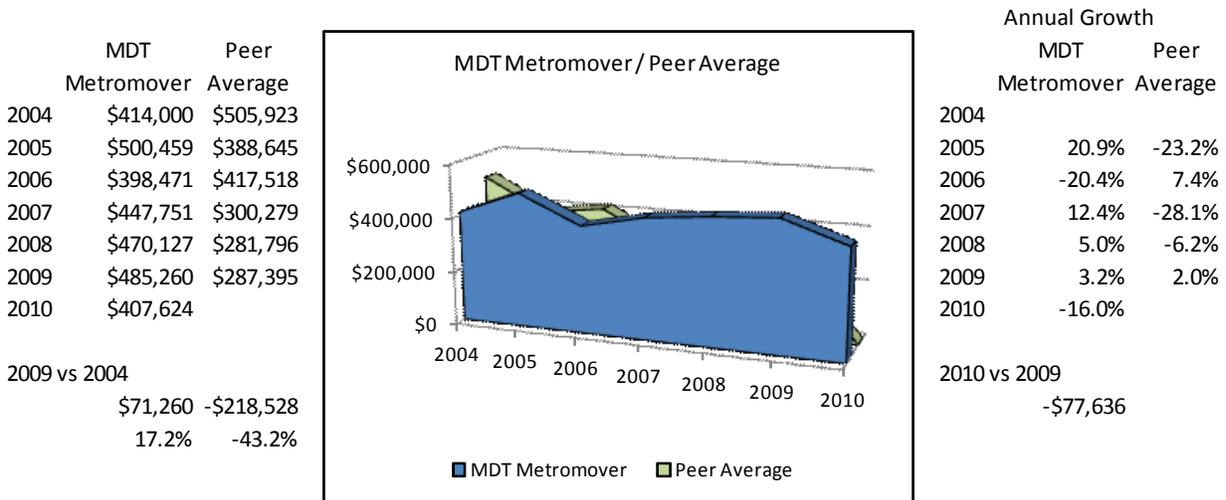


Figure 227 - Maintenance FTEs per VOMS (Maintenance Administration)

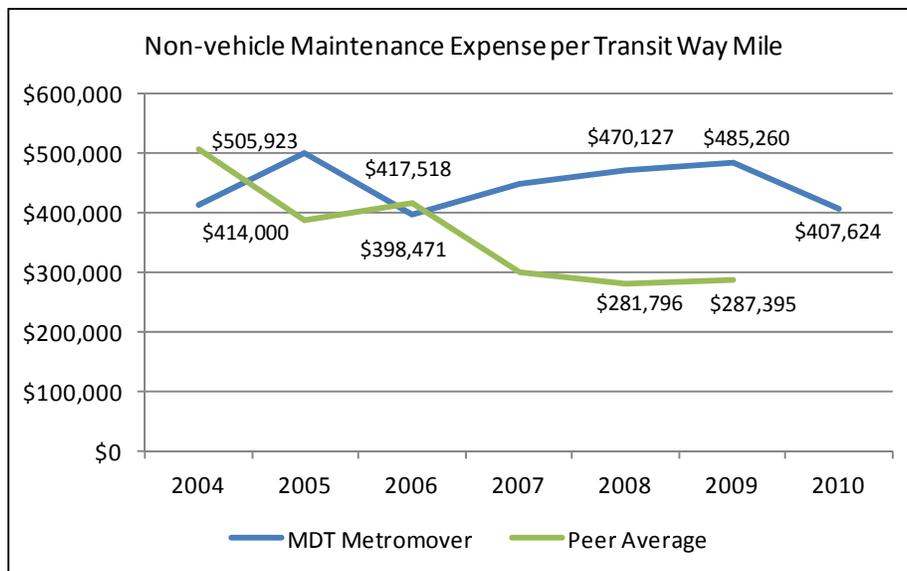
## Metromover Maintenance Administration: Non-vehicle Maintenance Expense per Transit Way Mile

Non-vehicle maintenance cost per transit way mile focuses on the performance of the maintenance function. Metromover non-vehicle maintenance cost per transit way mile (Figure 228) showed consistent annual growth from 2005 through 2009. Peer group average growth showed some fluctuation in 2007 and 2008. Metromover non-vehicle maintenance expense per transit way mile grew by 17.2 percent in 2009 compared to 2004, while the peer group average fell 43.2 percent.



**Figure 228 - Non-vehicle Maintenance Cost per Transit Way Mile – Metromover / Peer Average**

In 2010, Metromover reduced non-vehicle maintenance cost per transit way mile, from \$485,260 in 2009 to \$407,624 (a 16.0% decrease).



**Figure 229 - Non-vehicle Maintenance Cost per Transit Way Mile (Maintenance Administration)**

## Metromover - Summary of Findings

Performance Factor	Metromover Trend	2008 Metrics	2009 Metrics	2010 Metrics
Operating Cost per Revenue Hour Target ↓	Less than peer group average from 2004 through 2009	\$207.23 Peer Average: \$242.60	\$220.49 Peer Average: \$274.39	\$202.24 \$18.25 less than 2009, an 8.3% decrease
Operating Cost per Revenue Mile Target ↓	Less than peer group average from 2004 through 2006 and then in 2008 and 2009	\$20.38 Peer Average: \$24.91	\$21.68 Peer Average: \$27.31	\$19.79 \$1.89 less than 2009, an 8.7% decrease
Operating Cost per VOMS Target ↓	Greater than peer group average from 2005 through 2009	\$1,142,143 Peer Average: \$1,100,572	\$1,107,867 Peer Average: \$1,067,048	\$995,080 \$112,788 less than 2009, a 10.2% decrease
Farebox Recovery Target ↑	Free Passage	Peer Average: 7.0%	Peer Average: 5.9%	
Operating Cost per Passenger Trip Target ↓	Less than peer group average from 2004 through 2009	\$2.58 Peer Average: \$9.13	\$2.87 Peer Average: \$9.96	\$2.56 \$0.31 less than 2009, a 10.9% decrease
Operating Cost per Passenger Mile Target ↓	Less than peer group average from 2004 through 2009	\$2.66 Peer Average: \$17.34	\$2.77 Peer Average: \$19.13	\$2.40 \$0.37 less than 2009, a 13.3% decrease
Operating Cost per Capita Target ↓	Less than peer group average from 2004 through 2009	\$9.51 Peer Average: \$73.62	\$9.68 Peer Average: \$72.64	\$8.36 \$1.33 less than 2009, a 13.7% decrease
Subsidy per Boarding Target ↓	Less than peer group average from 2004 through 2009	\$2.58 Peer Average: \$8.54	\$2.87 Peer Average: \$9.40	\$2.56 \$0.31 less than 2009, a 10.9% decrease
Average Trip Length Target ↑	Greater than peer group average 2004 through 2009	0.97 Peer Average: 0.96	1.04 Peer Average: 0.96	1.07 0.03 more than 2009, a 2.8% increase
Passenger Miles per Vehicle Mile Target ↑	Greater than peer group average from 2004 through 2009	7.66 Peer Average: 3.43	7.83 Peer Average: 3.23	8.11 0.28 more than 2009, a 3.6% increase
Average Passenger Load Target ↑	Greater than peer group average from 2004 through 2009	7.67 Peer Average: 3.48	7.84 Peer Average: 3.27	8.25 0.42 more than 2009, a 5.3% increase

<b>Performance Factor</b>	<b>Metromover Trend</b>	<b>2008 Metrics</b>	<b>2009 Metrics</b>	<b>2010 Metrics</b>
Vehicle Operations Expense per VOMS Target ↓	Greater than peer group average from 2005 through 2009	\$356,443 Peer Average: \$257,946	\$336,091 Peer Average: \$255,280	\$333,697 \$2,394 less than 2009, a 0.7% decrease
Vehicle Maintenance Expense per VOMS Target ↓	Fluctuated with peer group average from 2004 through 2009	\$364,633 Peer Average: \$376,478	\$353,813 Peer Average: \$350,279	\$281,924 \$71,889 less than 2009, a 20.3% decrease
Non-vehicle Maintenance Expense per VOMS Target ↓	Greater than peer group average from 2005 through 2009	\$220,960 Peer Average: \$137,104	\$217,212 Peer Average: \$147,318	\$182,460 \$34,752 less than 2009, a 16.0% decrease
General Administration Expense per VOMS Target ↓	Significantly less than peer group average from 2004 through 2009	\$200,108 Peer Average: \$329,043	\$200,752 Peer Average: \$314,170	\$196,999 \$3,753 less than 2009, a 1.9% decrease
Revenue Miles between Vehicle System Failures Target ↑	Significantly less than peer group average from 2004 through 2009	1,650 Peer Average: 18,457	1,916 Peer Average: 6,947	2,237 320 more than 2009, a 16.7% increase
Maintenance Expense as a % of Total Expense Target ↓	Greater than peer group average from 2005 through 2009	51.3% Peer Average: 47.1%	51.5% Peer Average: 48.6%	46.7% 4.9% less than 2009
Vehicle Maintenance Cost per Vehicle Mile Target ↓	Less than peer group average from 2005 until 2009	\$6.50 Peer Average: \$8.21	\$6.91 Peer Average: \$9.01	\$5.51 \$1.40 less than 2009, a 20.3% decrease
Maintenance FTEs per VOMS Target ↓	Less than peer group average from 2005 through 2009	5.5 Peer Average: 2.8	5.7 Peer Average: 2.9	4.2 1.5 less than 2009, a 26.8% decrease
Non-vehicle Maintenance Cost per Transit Way Mile Target ↓	Less than the peer group average in 2004 and 2006, significantly higher from 2007 through 2009	\$470,127 Peer Average: \$281,796	\$485,260 Peer Average: \$287,395	\$407,624 \$77,636 less than in 2009, a 16.0% decrease

## Overview of Select Performance Metrics for Bus, Rail, and Mover

The CITT selected the following factors for inclusion in the report to provide a side by side look at the performance of the three modes.

### Operating Cost per Revenue Mile

	Operating Cost per Revenue Mile			Annual Growth		
	Bus	Rail	Mover	Bus	Rail	Mover
2004	\$7.38	\$6.74	\$19.58			
2005	\$7.62	\$7.69	\$22.34	3.3%	14.0%	14.1%
2006	\$8.40	\$7.74	\$20.37	10.3%	0.7%	-8.8%
2007	\$8.96	\$9.65	\$22.46	6.6%	24.7%	10.3%
2008	\$10.11	\$11.51	\$20.38	12.9%	19.2%	-9.3%
2009	\$10.61	\$11.72	\$21.68	4.9%	1.8%	6.4%
2010	\$10.60	\$11.45	\$19.79	-0.1%	-2.3%	-8.7%

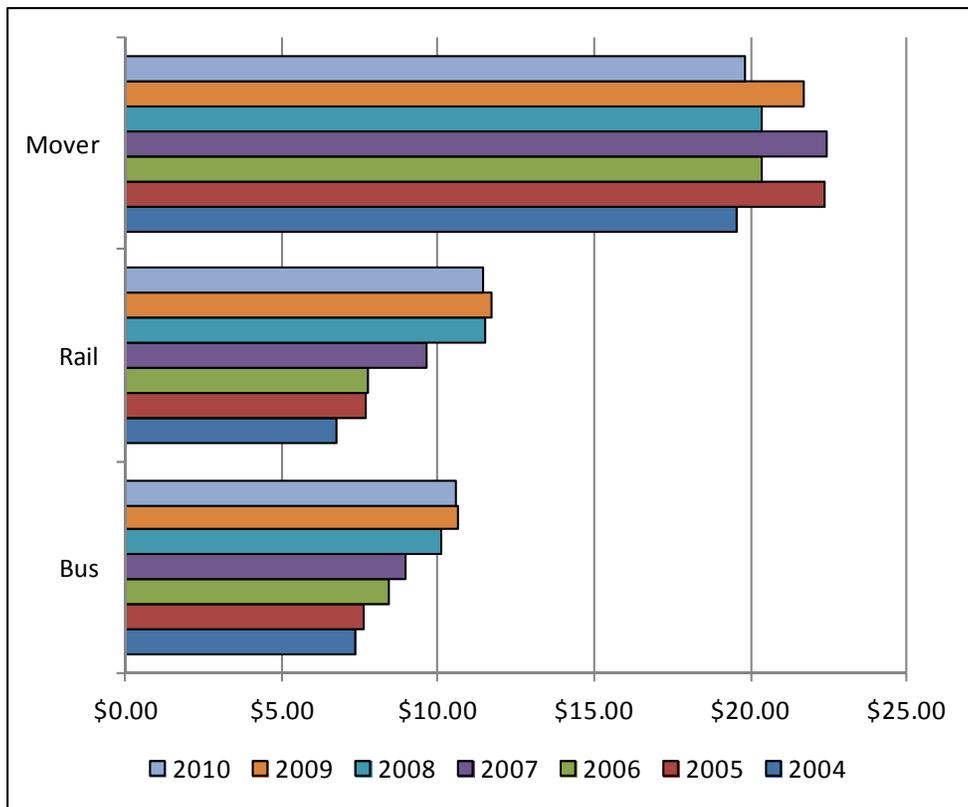


Figure 230 - Operating Cost per Revenue Mile by Mode

	Operating Cost per Revenue Mile			Annual Growth		
	Bus	Rail	Mover	Bus	Rail	Mover
2004	\$7.38	\$6.74	\$19.58			
2005	\$7.62	\$7.69	\$22.34	3.3%	14.0%	14.1%
2006	\$8.40	\$7.74	\$20.37	10.3%	0.7%	-8.8%
2007	\$8.96	\$9.65	\$22.46	6.6%	24.7%	10.3%
2008	\$10.11	\$11.51	\$20.38	12.9%	19.2%	-9.3%
2009	\$10.61	\$11.72	\$21.68	4.9%	1.8%	6.4%
2010	\$10.60	\$11.45	\$19.79	-0.1%	-2.3%	-8.7%



Figure 231 – Modal Operating Cost per Revenue Mile

### Operating Cost per Passenger Mile

	Operating Cost per Passenger Mile			Annual Growth		
	Bus	Rail	Mover	Bus	Rail	Mover
2004	\$0.77	\$0.50	\$2.36			
2005	\$0.80	\$0.53	\$2.21	4.1%	5.6%	-6.2%
2006	\$0.89	\$0.57	\$2.34	10.5%	7.1%	5.5%
2007	\$0.75	\$0.60	\$2.38	-16.0%	5.1%	1.7%
2008	\$0.79	\$0.58	\$2.66	6.1%	-3.4%	11.9%
2009	\$0.86	\$0.59	\$2.77	7.9%	1.9%	4.1%
2010	\$0.81	\$0.60	\$2.40	-4.9%	1.6%	-13.3%

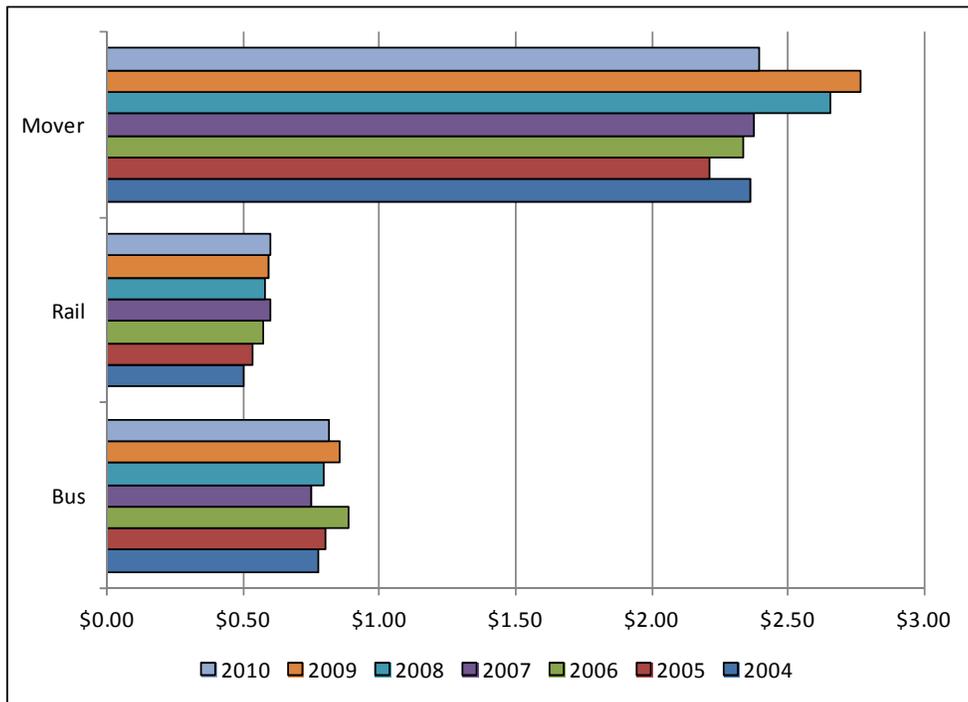


Figure 232 - Operating Cost per Passenger Mile by Mode

	Operating Cost per Passenger Mile			Annual Growth		
	Bus	Rail	Mover	Bus	Rail	Mover
2004	\$0.77	\$0.50	\$2.36			
2005	\$0.80	\$0.53	\$2.21	4.1%	5.6%	-6.2%
2006	\$0.89	\$0.57	\$2.34	10.5%	7.1%	5.5%
2007	\$0.75	\$0.60	\$2.38	-16.0%	5.1%	1.7%
2008	\$0.79	\$0.58	\$2.66	6.1%	-3.4%	11.9%
2009	\$0.86	\$0.59	\$2.77	7.9%	1.9%	4.1%
2010	\$0.81	\$0.60	\$2.40	-4.9%	1.6%	-13.3%

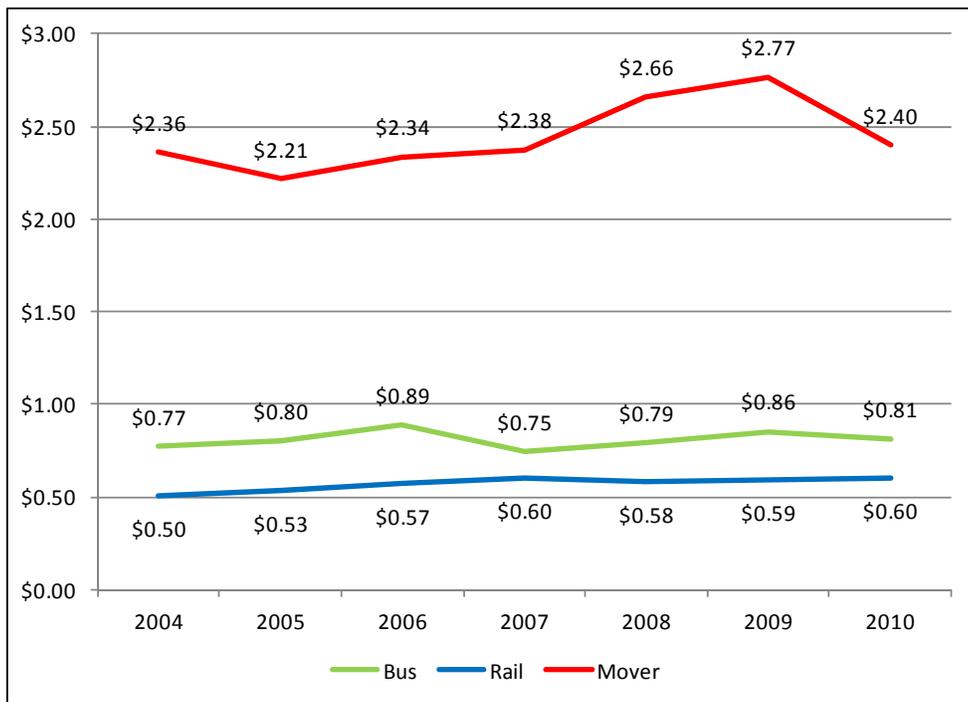


Figure 233 - Modal Operating Cost per Passenger Mile

### Passenger Trips per Revenue Hour

	Passenger Trips per Revenue Hour			Annual Growth		
	Bus	Rail	Mover	Bus	Rail	Mover
2004	29.6	40.5	83.1			
2005	28.1	43.1	103.0	-5.2%	6.6%	24.0%
2006	27.7	42.5	89.1	-1.5%	-1.4%	-13.5%
2007	28.6	48.7	94.1	3.2%	14.6%	5.6%
2008	31.2	58.2	80.2	9.2%	19.4%	-14.8%
2009	28.8	62.0	76.8	-7.7%	6.7%	-4.3%
2010	28.9	59.3	79.0	0.5%	-4.5%	2.9%

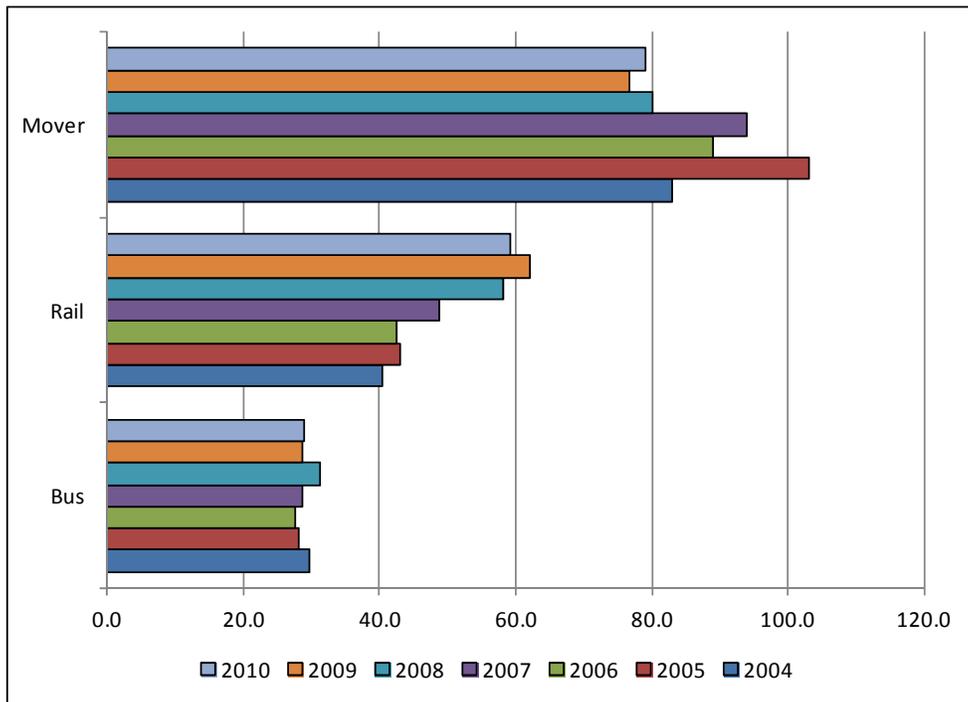


Figure 234 – Passenger Trips per Revenue Hour by Mode

	Passenger Trips per Revenue Hour			Annual Growth		
	Bus	Rail	Mover	Bus	Rail	Mover
2004	29.6	40.5	83.1			
2005	28.1	43.1	103.0	-5.2%	6.6%	24.0%
2006	27.7	42.5	89.1	-1.5%	-1.4%	-13.5%
2007	28.6	48.7	94.1	3.2%	14.6%	5.6%
2008	31.2	58.2	80.2	9.2%	19.4%	-14.8%
2009	28.8	62.0	76.8	-7.7%	6.7%	-4.3%
2010	28.9	59.3	79.0	0.5%	-4.5%	2.9%

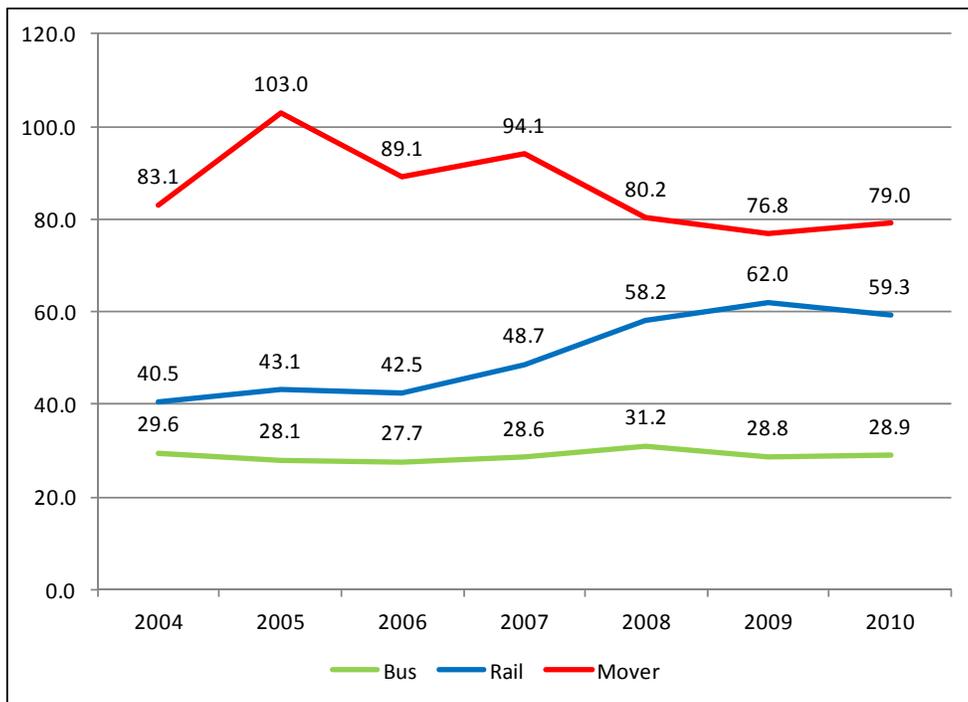


Figure 235 - Modal Passenger Trips per Revenue Hour