An Audit of the Milwaukee County Transit System's Fare and Data Collection Systems

February 2009

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February 4, 2009

To the Honorable Chairman
of the Board of Supervisors
of the County of Milwaukee

We have completed an audit of fare and data collection by the Milwaukee County Transit System in accordance with a directive in the 2008 Milwaukee County Adopted Budget.

The report identifies the need for additional resources and techniques to improve the accuracy of ridership profiles upon which decisions affecting bus fare structures and service levels are based.

A response from the Milwaukee County Transit System is included as Exhibit 2. We appreciate the cooperation extended by administrators and staff of Milwaukee Transport Services, Inc. during the course of this audit.

Please refer this report to the Committees on Finance and Audit.

Jerome J. Heer
Director of Audits

JJH/cah

Attachment

cc: Milwaukee County Board of Supervisors
Scott Walker, Milwaukee County Executive
Cynthia Archer, Director, Department of Administrative Services
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An Audit of Milwaukee County Transit System's Fare and Data Collection Systems

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Summary

The Transportation Services Division of the Department of Transportation and Public Works (DTPW) includes a Transportation Planning Section that oversees public transit services through the Milwaukee County Transit System (MCTS). The section is currently staffed with four positions to oversee the program. Direct management and operation of the transit system, including Countywide bus service and the related Transit Plus paratransit services, is provided by Milwaukee Transport Services, Inc. (MTS). MTS is a private not for profit corporation that, under contract with the County, employs a work force of approximately 1,100. MTS uses transit facilities and equipment owned and provided by Milwaukee County. For 2009, operating expenditures are budgeted at $171.1 million.

It is critical that options and recommendations regarding MCTS fare structures, route modifications and bus service levels are based on sound data and methodologies that will provide reasonable assumptions upon which policymakers may rely when making important decisions about the allocation of scarce transit resources.

MTS Fare and Data Collection

Our review of MTS cash collection practices indicates that management has proper controls in place to provide reasonable assurance that system-wide fare revenues are accurately recorded and monitored on a regular basis. MTS management does not, however, believe actual passenger and fare data can be reliably obtained from its aging fareboxes (circa 1980s). Rather, it uses a complex series of ratios and formulae to estimate the total number and types of passengers served system-wide based on ticket counts and estimates, cash fares, and bus pass revenues collected.

For purposes of analyzing bus route 'productivity' (number of passengers per hour of bus operation), MTS uses a separate set of electronic passenger counts (from Automatic Passenger Counters, or APCs). Fiscal impacts of potential route revisions are calculated using the APC counts and estimated average fares collected, along with average cost data.

We have concerns with the reliability of some estimates used by MTS under both of these approaches due to MTS' inability, within existing resources, to periodically scrutinize the accuracy of the underlying ratios and formulae used in its calculations. However, we believe the route productivity analyses conducted by MTS, based on actual APC counts, provide a reasonable basis

for recommending service level modifications given the current constraints on available ridership data.

Ratios and Formulae Used to Estimate Ridership

The MTS Finance Department uses a series of ratios and formulae that represent a 'ridership profile' (i.e., typical mix of passengers with varying fares and payment methods that constitute an average busload) for purposes of reporting to the State and for analyzing rate structures. Current staff at MTS, including key individuals that estimate ridership totals using the ratios and formulae, were unable to identify when, or from what source, most of the ratios and formulae originated. An internal memo from a former MTS analyst to the MTS CEO at the time, dated August 20, 1992, indicates the ridership profile upon which the ratios and formulae used today are based, originated in 1988. Another correspondence indicates at least one ratio still in use today was developed prior to 1988. As indicated in the 1992 memo, the accuracy of the ridership profile was in question just four years after its development.

Despite significant variances in revenue rides and passenger make-ups noted in the memo, MTS has retained the same ridership profile developed from patterns established in or prior to 1988. MTS has changed its fare structure in 11 of the 20 years from 1988 through 2008.

Automatic Passenger Counters

MTS makes continual use of 39 Automatic Passenger Counters (APCs) that are rotated among MTS' routes to attain system-wide coverage throughout the year. The instruments use infrared technology to count bodies boarding and exiting the buses. Therefore, the APC cannot collect ridership based on the types of rides such as cash rides, ticket rides, or pass rides, etc. MTS compiles the APC data by route and by segments of routes. The MTS Research and Planning Division (Planning) analyzes route 'productivity' (number of passengers per hour of bus operation) using the APC counts, along with other factors, for consideration of potential route and bus service modifications. The fiscal impact of potential modifications are estimated by combining the APC data with estimated average revenue and with cost information compiled by the Finance Department.

MTS Planning uses a separate ridership profile, different from the profile used by the Finance Department, when estimating the fiscal impacts associated with its route productivity analyses. The Planning ridership profile is based on extensive physical tallies of passenger types for routes and times system-wide during a 17-month period from 2003 through 2005. The data for the 12 months

of 2004 was selected to establish the ridership profile used by Planning. While the effort to update ridership profiles was laudable, we still have concern with MTS' approach:

- **Questionable Validity of Sampling—**While an attempt was made to be comprehensive, there does not appear to have been any effort to obtain a representative sampling of passenger data during the extensive survey period.

- **Questionable Relevance—**Because MTS rate structures changed in 2006, 2007 and 2008, it is doubtful that the same relationships between various fare categories exist today that were present throughout 2004. For instance, MTS no longer sells individual student tickets, which were used in 2004.

- **Inconsistency With Revenue-Rides Estimates—**It is unclear why MTS uses one ridership profile for estimating revenue-rides that are reported to the State and used for analyzing fare structures, and another for purposes of estimating the fiscal impact of potential changes to bus routes and service levels. For 2007, there was a difference of approximately 2.3 million rides (including free rides and transfers) reported using the two separate sources, involving two separate ridership profiles.

Further, one factor used by MTS to justify recommended changes in bus routes—a criteria of serving a minimum of 22 passengers per hour during weekdays—was established in 1977. That policy was predicated on an assumption that rates should be reasonable relative to current economic conditions, and a public subsidy level of 50% should not be exceeded in the implementation of transit service. Public subsidy of MCTS riders is estimated to have been approximately 67% in recent years. Thus, the 22 passengers per hour figure would appear to have little relevance in analyzing potential current route or service level adjustments.

Despite our concerns with the reliability of ridership profiles used by MTS to calculate ridership, analyze rate structures and estimate the fiscal impact of route modifications, the extensive array of statistics maintained and monitored by MTS is noteworthy. Even with flawed data, MTS' consistent monitoring of bus headway times, average hourly costs, average fares and other performance indicators can yield important, if imperfect, information for day-to-day management of the bus system.

Internal Controls and Other Issues

During the course of our audit we identified two areas where we believe internal controls could be strengthened to improve safeguards over bus tickets and other forms of bus admission. We also identified a concern with a contracting issue for ticket and revenue transport services.

Print Shop

While there was a security camera posted outside of the print shop allowing one to see anyone that comes up to the outside door, there were no cameras in the shop to record potential thefts, vandalism or sabotage to raw materials, finished products or equipment.

In addition, a physical inventory count of finished products (tickets, passes, coupons, etc.) in the print shop is not done. According to the Printing Manager, MTS would not be able to tell the inventory on hand unless they back into it using records from the Cashier's Office.

Given that the finished product of the MCTS print shop is nearly as negotiable as currency, the internal control environment of the printing operation should be strengthened.

Commuter Value Certificates

Commuter Value Certificates (CVCs) are vouchers employers or agencies provide to employees or clients that can be redeemed for weekly passes or strips of 10 tickets. CVCs have no expiration date.

We found previously redeemed CVCs from approximately six weeks of operations stored on-site at MTS' central office. However, we noticed that many of the previously redeemed CVCs were not filled out with required information such as the name and address of the redeemer. Further, the previously redeemed CVCs were not voided or mutilated. Consequently, previously redeemed CVCs that were not properly filled out could easily be re-used. This issue is of particular importance because previously redeemed CVCs were used by a former MTS employee in an embezzlement scheme discovered in 2005.

Ticket and Revenue Transport Services

MTS has about 250 active Ready Fare (retail) outlets that sell bus passes and tickets on a consignment basis. MTS uses a transportation company to deliver the inventory of tickets to Ready Fare outlets. It also picks up sealed bags containing the count of ticket inventory remaining at the store, as well as payments for tickets and passes sold.

However, MTS does not have a written agreement with the transport company. According to the MTS manager of Treasury Services, the arrangement is a 'hand-shake deal' and there does not appear to have been any competitive bidding involved.

We have included recommendations to address the issues identified in this audit report. Management responses from MTS, Inc. as well as the Department of Transportation and Public Works are included as **Exhibit 3**. We wish to acknowledge the cooperation of staff and management at MTS, Inc. throughout the course of this audit.

Background

The Transportation Services Division of the Department of Transportation and Public Works (DTPW) includes a Transportation Planning Section that oversees the Transit Operations Program, which provides public transit services through the Milwaukee County Transit System (MCTS). The section is currently staffed with four positions to oversee the program. Direct management and operation of the transit system, including Countywide bus service and the related Transit Plus paratransit services, is provided by Milwaukee Transport Services, Inc. (MTS). MTS is a private not for profit corporation that, under contract with the County, employs a work force of approximately 1,100. MTS uses transit facilities and equipment owned and provided by Milwaukee County.

Table 1 shows total operating expenditures, funded positions and property tax levy support for MCTS during the five-year period 2003—2007, along with budgeted figures for 2008 and 2009.

Table 1
MCTS Operating Expenditures
And Budgeted Positions
2003—2009

	2003	2004	2005	2006	2007	2008	2009
Expenditures	$138.3	$143.7	$146.6	$153.1	$158.1	$163.8	$171.7
Positions	1,344	1,313	1,295	1,268	1,234	1,151	1.139
Property Tax Support	$20.5	$21.4	$21.0	$20.3	$23.5	$22.2	$21.7
Property Tax As Percent of Total	14.8%	14.9%	14.3%	13.3%	14.9%	13.6%	12.6%

Note: Dollar figures are in millions and are actuals for 2003—2007; 2008 and 2009 are budgeted figures.

Source: Milwaukee County 2003—2009 and MTS records.

As shown in **Table 2**, fare increases since 2000 have ranged from 48.1 % to 71.9 %, depending on the fare category. During that same time, general inflation for the Milwaukee—Racine statistical area was 20.5%. During the same time period routes or bus service has been either eliminated or

reduced 48 times (see **Exhibit 2** for a history of bus service eliminations and fare increases during the period 2000 through 2008).

Table 2
MCTS Fare Increase
2000—2008

Year	Adult Cash Fare	Senior Child Half-Fare	Weekly Pass	Adult Ticket 10-Strip	Senior Child 10-Strip	F. Flyer Cash Fare	F. Flyer Ticket 10-Strip
2000	$1.35	$0.65	$10.50	$10.50	$6.50	$1.60	$13.00
2008	2.00	1.00	16.0	16.00	10.00	2.75	22.00
Increase	0.65	.35	5.50	5.50	3.50	1.15	9.00
Percent	48.1%	53.8%	52.4%	52.4%	53.8%	71.9%	69.2%
CPI-U =	20.5%						

Source: Milwaukee County Adopted Budgets, 2003—2008; U.S. Bureau of Labor Statistics Consumer Price Index—All Urban Consumers for the Milwaukee—Racine statistical area, 2000—2008 (1st half of each year).

Effective January 4, 2009, prices for weekly passes and both Adult and Freeway Flyer 10-strip tickets increased an additional 50 cents, while Freeway Flyer cash fares increased 25 cents. All other fares remained unchanged.

Following is a description of three key areas of MTS operations: the Schedule Division, the Research and Planning Division, and the Finance Department.

Schedule Division

MTS operates approximately 56 different routes with distinct schedules for weekday, Saturday and Sunday service. The Schedule Division (Scheduling) has primary responsibility for the preparation of schedules and driver assignments. The schedule making process is performed four times a year. This involves headway determination (i.e., time between buses), establishing headway tables to assist in monitoring the regularity of headway times, making vehicle assignments and establishing driver assignments. Scheduling monitors, adjusts and maintains running time information for each time period, for each route segment. It continually makes fine-tuning adjustments to the schedules for overloads, running time problems, connection issues, detours, etc. The division also prepares schedules for special events such as the Ethnic Festivals.

In connection with these tasks, Scheduling maintains various data such as vehicle miles and 'platform' hours. Platform hours refer to the total scheduled time a bus spends from pull-out to

pull-in at the garage. A basic platform hour is also referred to as a service hour, and is used as a benchmark to calculate the efficiency of service by comparing 'pay to platform' hours. Scheduling also has been called upon to estimate the driver cost impacts of both labor and management proposals during collective bargaining negotiations.

The Schedule Division installed new scheduling software in 2005 (HASTUS, a French-language acronym which, roughly translated, means Schedules and Assignments for an Urban and Suburban Transportation System). HASTUS, which cost approximately $1.6 million, provides MTS with many expanded features. For instance, HASTUS data is maintained in a relational database allowing MTS to query, analyze and report on a wide variety of statistics that were never accessible to the average user in the past.

Research and Planning Division

The Research and Planning Division (Planning) is responsible for route and service level planning and the collection and maintenance of ridership data. It also is responsible for route and ridership statistics, preparing route-specific analysis and budget reports, Geographic Information System (GIS) based information, representing MCTS at meetings and on transportation and community based committees and special projects.

Activities of Planning include monitoring various aspects of current bus system operations, developing short range service plans, reviewing route ridership information, conducting service level and route modification analyses and making related recommendations, and coordinating with other agencies that have transportation responsibilities such as Milwaukee County Public Works, the Southeastern Wisconsin Regional Planning Commission and the Wisconsin Department of Transportation. Planning also provides support for the Ozaukee County and Waukesha County bus services under a purchase of service agreement.

Collection and maintenance of ridership data activities involve a limited number of direct counts by bus operators, along with the continual use of 39 Automatic Passenger Counters (APCs) that are rotated among MTS' routes to attain system-wide coverage throughout the year.

The division also maintains the route pattern and stop level data necessary to support the Automated Vehicle Location system (AVL), which provides a wealth of information on running times and on-time performance; the GIS system; and the Transit Television Network (TTN), which enhances riders' journeys with News, Weather, and Sports information.

Finance Department

The Finance Department includes four functional areas: Budget, Accounting, Treasury Services and a Print Shop.

Budget

Budgeting is staffed by the Assistant Director of Finance, who is responsible for preparing and monitoring the company's operating, equipment and capital budgets. The unit is responsible for developing and managing the MCTS budget through close consultation and cooperation with all MCTS department directors and under the supervision of the Director of Finance.

Accounting

Accounting's mission is to provide in accordance with generally accepted accounting principles, accurate timely, and reliable financial and statistical information to interested parties. The division is service oriented and supports management throughout the organization in decision-making. Accounting staff provides financial, statistical and performance information to all departments. They maintain a system of accounts and controls, update financial records, prepare reports, and conduct studies and analyses for all departments.

Treasury Services

The main function of the Treasury Services Division is the handling of revenues. It also operates a cashier function and oversees the distribution of bus tickets and passes to various retail outlets, as well as related revenue collections.

Print Shop

The print shop prints, cuts, bundles and stores all fare forms used by MCTS passengers. This includes nine different types of passes, four varieties of tickets and various coupons and customized daily transfers for the bus system.

Public Policy Forum Report

In May 2008, the nonpartisan, nonprofit Public Policy Forum issued a report titled *Milwaukee County's Transit Crisis: How did we get here and what do we do now?* The report details a bleak financial picture for MCTS and bluntly states the following:

> "The recent history of transit in Milwaukee County is one marked by desperation and false hope. Simply put, public funding sources have not kept pace with growth in operating costs. While warning about the consequences, transit officials have averted disaster—and perhaps

> inadvertently delayed a solution—by spending down reserves, deferring needed capital expenditures and implementing gradual service cuts and fare increases.
>
> …Policy makers face a stark choice. They can accept a transit system that is a shell of its former self—one that contains no freeway flyer service, few night and weekend options, and sparse service west of 76th Street, south of Oklahoma Avenue or north of Silver Spring Drive—or they can consider one or more selections from a difficult menu of policy options that could either delay the day of reckoning once again, or perhaps prevent it altogether."

The report also concluded that:

> "The cost effectiveness of MCTS buses was best among peer systems in 2006 based on data from the Wisconsin Department of Transportation and the Federal Transit Administration, indicating that further cost savings due to efficiency improvements may be limited."

Acknowledging the dire condition of MCTS' financial structure, the Milwaukee County Board authorized an advisory referendum in the November 2008 election to ask Milwaukee County voters if they favored a one percent county sales tax increase, with proceeds to fund parks, transit, emergency medical services and property tax relief. The advisory referendum passed, 51% to 49%, but enabling legislation must be approved by the State Legislature and the Governor before taxing authority could be exercised by action of the Milwaukee County Board and the County Executive.

In light of these realities, it is critical that options and recommendations regarding MCTS fare structures, route modifications and bus service levels are based on sound data and methodologies that will provide reasonable assumptions upon which policymakers may rely when making important decisions about the allocation of scarce transit resources. This audit was initiated in accordance with a directive in the 2008 Milwaukee County Adopted Budget.

Section 1: MTS Fare and Data Collection

MTS has proper controls in place to provide reasonable assurance that system-wide fare revenues are accurately recorded and monitored on a regular basis.

Our review of MTS cash collection practices indicates that management has proper controls in place to provide reasonable assurance that system-wide fare revenues are accurately recorded and monitored on a regular basis. MTS management does not, however, believe actual passenger and fare data can be reliably obtained from its aging fareboxes (circa 1980s). Rather, it uses a complex series of ratios and formulae to estimate the total number and types of passengers served system-wide based on ticket counts and estimates, cash fares, and bus pass revenues collected.

MTS uses a complex series of ratios and formulae to estimate the total number and types of passengers served system-wide.

For purposes of analyzing bus route 'productivity' (one factor in evaluating route elimination or revision proposals), MTS uses a separate set of electronic passenger counts (from Automated Passenger Counters, or APC). Fiscal impacts of potential route revisions are calculated using the APC counts and estimated average fares collected, along with average cost data.

We have concerns with the reliability of some estimates used by MTS.

We have concerns with the reliability of some estimates used by MTS under both of these approaches due to the MTS' inability, within existing resources, to periodically scrutinize the accuracy of the underlying ratios and formulae used in its calculations. However, we believe the route productivity analyses conducted by MTS, based on actual APC counts, provide a reasonable basis for recommending service level modifications given the current constraints on available ridership data.

Estimating Revenue-Rides

MTS does not have a bar-coded swipe-card system or other technology to automatically capture ridership data (e.g., adult fare cash passenger, senior half-fare ticket passenger, student weekly pass passenger, etc.) as passengers board the buses. The existing farebox can be used to record such information, but

requires manual keypad entry of the data. Citing the age of the fareboxes, installed during the mid-1980s, a lack of regular keypad system maintenance and questionable accuracy of data entries by bus operators tasked with other priorities, MTS does not rely on the fareboxes to generate actual ridership data. Rather, MTS uses ratios and formulae to derive an estimated number of rides per cash fare collected, per ticket redeemed or per weekly pass sold. These ratios and formulae are intended to collectively replicate MCTS' 'ridership profile' (i.e., typical mix of passengers with varying fares and payment methods that constitute an average busload) for purposes of reporting to the State, as well as for analyzing fare structures.

Ratios and Formulae Used to Estimate Ridership

Each time a bus returns from a day's service, the contents of its farebox are emptied in a vault at one of three MTS locations.

Each time a bus returns from a day's service, the contents of its farebox are emptied in a vault at one of three MTS locations. By the end of the night the vaults will contain the commingled cash and tickets from various buses and routes. The cash is counted daily and the tickets are either sorted and counted, or weighed. Tickets weighed are converted to an estimated count based on an established formula. These counts become the basis for calculating the number of revenue passengers from cash collected and tickets redeemed.

For purposes of estimating daily revenue-rides, the MTS Finance Department uses the following ratios and formulae:

Cash and Prepaid Tickets

In all but one instance, MTS could not document how or when these ratios and formulae were established.

MTS uses the ratio of 1.75 cash half-fare riders for every half-fare ticket to allocate the cash counted between half-fare riders and full-fare riders. This ratio is new for 2008. It represents the lone instance in which MTS could document the basis for a ratio or formula used to calculate revenue-rides. (This ratio is discussed in greater detail on page 17 of this report.)

Prepaid Bus Passes

MTS sells the following passes.

- **Adult Weekly—**MTS assumes that there are 21.6 rides per week for each Adult Weekly Pass sold. An adult is defined as a person age 12 or older. The MTS Director of Finance stated the ratio of 21.6 rides per weekly pass has been used for at least the past ten years.

  MTS multiplies the number of Adult Weekly Passes sold by 21.6 to calculate the number of adult weekly pass riders. This total is then allocated to each day of the week by the following percentages:

Monday – Friday	17%
Saturday	9.7%
Sunday	5.3%

- **School (Special) Weekly—**MTS assumes 15.95 rides per school pass sold, and assumes an even distribution of 20% of the rides taken on each weekday.

- **UPASS—**MTS assumes there are 59.74 rides per semester for each UPASS sold for the spring and fall semesters, and 39.78 rides for each UPASS sold for the summer semester. MTS then applies a percentage to this total to calculate a weekly total. The actual percentage used varies depending on the week of the semester. Finally, another percentage is applied to the weekly total based on the day of the week:

Monday – Friday	17%
Saturday	10%
Sunday	5%

- **EZ Pass—**MTS assumes that each EZ-Pass sold is equivalent to 21 rides per week and are allocated according to the percentages shown below.

Monday – Thursday	19%
Friday	14.3%
Saturday – Sunday	4.75%

- **Commuter Value Pass—**MTS assumes that each Commuter Value Pass sold is equivalent to 21 rides per week and are allocated according to the same percentages as the E-Z Pass.

Free Rides

Children under the age of six that are accompanied by an adult are not charged a fare to ride an MCTS bus. In addition, uniformed police officers and fire fighters, non-uniformed police officers while on duty, and MTS employees also are permitted free rides on MCTS buses. According to quarterly reports filed with the State of Wisconsin Department of Transportation, MTS estimates free rides total approximately 31,500 per week.

MTS estimates free rides total approximately 31,500 per week. The same number has been used to estimate free rides for many years.

However, we question the validity of this number. According to the Director of Finance, the same number has been used to estimate free rides for many years, and he does not know the origin of the number, or the basis upon which it was calculated.

Transfers

Transfer rides are calculated by MTS using a formula of adding all cash and ticket passenger rides (previously calculated) and multiplying by 46.9%. Once again, MTS could not identify the origin of the formula, or the foundation for the assumed relationship to cash and ticket passenger rides. As with the other ridership calculations, staff indicated that this formula has been used for many years. Data collected by MTS during 1992 indicated the 46.9% transfer rate, also used at that time, may have been understated by about 30%. Data collected for a 17-month period during 2003—2005 indicates transfers were approximately 80% of estimated cash and ticket passenger rides, rather than the 46.9% ratio still used today.

Data collected for a 17-month period during 2003—2005 indicates transfers were approximately 80% of estimated cash and ticket passenger rides, rather than the 46.9% ratio still used today.

Origins of Ratios and Formulae

Current staff at MTS, including key individuals that estimate ridership totals using the ratios and formulae previously described, were unable to identify when, or from what source, most of the ratios and formulae originated.

However, one MTS employee in the Accounting Section had previously gone through a box of old documents that had been

An internal MTS memo indicates the ridership profile upon which the ratios and formulae used today are based, originated in 1988.

stored in his office for years and found an internal memo from a former MTS analyst to the MTS CEO at the time, dated August 20, 1992. That memo indicates the ridership profile upon which the ratios and formulae used today are based, originated in 1988. (Another correspondence indicates at least one ratio still in use today was developed prior to 1988.) As indicated in the 1992 memo, the accuracy of the ridership profile was in question just four years after its development. The memo states, in part:

> "The current ridership profile that Milwaukee Transport Services, Inc. utilizes has been in use since 1988 and is the product of various relationships that were developed using either farebox information or tickets redeemed. Relationships were developed between dollar bills collected and adult cash rides, and student tickets redeemed and student cash rides. These relationships were the result of operator counts that tallied adult cash riders or ride checks that counted student cash and ticket rides. By using these known factors, we are able to project the ridership for each cash fare category.
>
> Adult cash rides are calculated by using dollar bills collected in the farebox. Operator counts showed that approximately 80% of dollar bills collected are from adult cash passengers.
>
> Student cash ridership is calculated using the number of student tickets that are redeemed. Results of student rider counts indicated that two students paid a cash fare for every student who used a ticket. Using this information, we are able to calculate the total student ridership as two student cash rides for every student ticket ride.
>
> Half fare cash ridership is determined by using the remaining revenue after adult cash and student cash fares are removed. The remaining cash is apportioned to the three half fare categories [*seniors, children and disabled*] using percentages that were established from operator counts.
>
> This profile has served us well, but I feel that changes to the fare structure have had an impact on its accuracy. When we reduced the deep discount on passes and tickets in 1990, we saw a change in the mix of money being paid into the farebox. We did not have an accurate method to sample our passengers to see if the profile was within reason.

Previous operator counts using the farebox were felt to be quite inaccurate."

The memo goes on to describe a separate sampling methodology used by MTS, beginning in 1990 and in use today, for reporting ridership to federal authorities. Based on 500 samples over an 18-month period, the analyst concluded that the ridership profile used by MTS since 1988 under-estimated adult fare passengers by 23%; over-estimated half-fare passengers by 59%; over-estimated student passengers by 31%; and under-estimated transfer rides by 30% (see **Table 3**).

Table 3
1992 Internal MTS Comparison
1988 Ridership Profile vs. 1992 Data

Fare Category	1988 Profile	1992 Data	Variance	Percent
Adult	8,120,736	9,991,661	+1,870,925	+23.04%
Half Fare	6,128,751	2,510,112	-3,618,639	-59.04
Student	526,270	364,388	-161,882	-30.76
Adult Pass	13,036,105	13,036,105	0	0.00
School Pass	3,494,924	3,494,924	0	0.00
Spec. Services	41,701	41,701	0	0.00
Total Revenue Passengers	31,348,487	29,438,891	-1,909,596	-6.09
Transfer Rides	6,752,783	8,753,382	+2,000,599	+29.63
Free Rides	1,109,159	1,109,159	0	0.00
Total Passengers	39,210,429	39,301,432	+91,003	+0.23%

Source: Internal memo dated August 20, 1992 from MTS analyst to MTS CEO.

While the analyst concluded that the MTS ridership profile and methodology for estimating passenger counts was accurate in total, he indicated that, on an annual basis, revenue generating rides were over-estimated by approximately 3.1 million, while transfer rides were under-estimated by approximately 3.25 million

The 1992 memo concludes:

> "I recommend that we change our ridership profile on January 1, 1993…. With the prospect of a fare increase on January 1, 1993, we will have to monitor our profile to see what effects the fare change will have on our ridership patterns."

It should be noted that in 2007, MTS eliminated its discounted fare for student ticket 10-packs, instead charging adult fares for students.

It should be noted that in 2007, MTS eliminated its discounted fare for student ticket 10-packs, instead charging adult fares for students. This was in response to Milwaukee Public Schools' decision the prior year to purchase and dispense individual tickets to students for school transport, a departure from its historic practice of purchasing discounted weekly student passes. The loss of revenue to MCTS associated with the shift in school policy is difficult to quantify because of partially offsetting increases in adult pass and ticket sales. However, in a July 2007 report and testimony to the Finance and Audit Committee, MTS indicated the change in school purchasing practices was a significant factor in a projected revenue shortfall of $1.9 million.

MTS altered its process for allocating cash receipts for purposes of estimating passenger counts in 2007.

As a result of the elimination of the student ticket and the anticipated significant increase in adult fare ticket use, MTS could no longer perform its standard procedure for estimating passenger counts, which relied on the 1988 ratios for allocating cash receipts among adult, student and half-fare rider categories. MTS streamlined its cash allocation methodology to focus on a ratio of half-fare cash riders for every half-fair ticket counted from the farebox. After an initial 12-month trial period of using a ratio of 3.7 and a brief period of revision to 1.2, a new ratio of 1.75 was established for 2008. The 1.75 ratio was settled upon based on splitting the difference between a small (four dates) sample of data collected by bus operators using the key-entry feature of the existing farebox, and data from the much more extensive survey conducted in 2004 (before Milwaukee Public Schools began purchasing tickets in lieu of student passes).

As another illustration of the impact of changes in the ratios used by MTS in its calculation of passenger revenue-rides, we re-calculated 2007 passenger counts (based on a ratio of 3.7 half-fare cash riders for every half-fare ticket counted) using the 2008 ratio of 1.75. Based on that change, total revenue-rides (total passengers less free rides and transfers) decreased approximately 750,000 revenue-rides, or about 1.8% of the total reported.

The primary reason for MTS' use of the various ratios and formulae to estimate ridership is to meet quarterly reporting requirements of the State Department of Transportation, and for estimating impacts of potential changes to fares and rate structures.

A separate set of data is used for estimating the fiscal impacts of potential adjustments to bus routes and service levels, including the elimination of routes for cost savings.

A separate set of data is used for annual federal reporting requirements and for estimating the fiscal impacts of potential adjustments to bus routes and service levels, including the elimination of routes or portions of routes for cost savings.

Automatic Passenger Counters

As noted in the **Background** section of this report, MTS makes continual use of 39 Automatic Passenger Counters (APCs) that are rotated among MTS' routes to attain system-wide coverage throughout the year. The instruments use infrared technology to count bodies boarding and exiting the buses. Therefore, the APC cannot collect ridership based on the types of rides such as cash rides, ticket rides, or pass rides, etc.

Buses equipped with APCs are assigned to routes for sampling and data is collected and sent electronically to the Management Information Systems Department for downloading and then to a system called the INFODEV. The INFODEV is a system used to compile the APC data and generate reports containing the rider count statistics. The APC counts are used for route and

schedule planning and to determine how routes are performing in terms of ridership clusters.

The MTS Research and Planning Division analyzes route 'productivity' (number of passengers per hour of bus operation) using Automatic Passenger Counter data.

MTS compiles the APC data by route and by segments of routes. The MTS Research and Planning Division analyzes route 'productivity' (number of passengers per hour of bus operation) using the APC counts, along with other factors, for consideration of potential route and bus service modifications. Examples of other factors affecting route and bus service modifications include proximity to alternative bus routes and service to vulnerable populations such as senior citizens or the developmentally and/or physically disabled. The fiscal impact of potential modifications are estimated by combining the APC data with estimated average revenue and with cost information compiled by the Finance Department.

We have previously discussed the inability of MTS, within existing resources, to verify or update ratios and formulae used by the Finance Department to calculate ridership profiles for purposes of reporting to the State and for analyzing rate structures.

While an effort to update ridership profiles in 2004 was laudable, we still have concerns with MTS' approach.

MTS Planning uses a separate ridership profile (different from the profile used by the Finance Department) when estimating the fiscal impacts associated with its route productivity analyses. This profile is based on extensive physical tallies of passenger types for routes and times system-wide during a 17-month period from 2003 through 2005. The data for the 12 months of 2004 was selected to establish the ridership profile used by Planning.

While the effort to update ridership profiles was laudable, we still have concerns with MTS' approach:

- **Questionable Validity of Sampling—**While an attempt was made to be comprehensive, there does not appear to have been any effort to obtain a representative sampling of passenger data during the extensive survey period. MTS

was unable to provide documentation detailing the approach, but we were told the survey started with a limited number of observers, and ended with just one observer riding selected bus routes at various times of the day.

- **Questionable Relevance—**Because MTS rate structures changed in 2006, 2007 and 2008, it is doubtful that the same relationships between various fare categories exist today that were present throughout 2004. For instance, MTS no longer sells individual student tickets, which were used in 2004.

- **Inconsistency With Revenue-Rides Estimates—**It is unclear why MTS uses one ridership profile for estimating revenue-rides that are reported to the State and used for analyzing fare structures, and another for purposes of estimating the fiscal impact of potential changes to bus routes and service levels. Despite problems we have described with the validity and relevance of the 2004 survey data, it would appear to be superior to data of unknown origin, primarily established in 1988, that was internally criticized as erroneous in 1992. MTS annually compares passenger counts reported to the State, based on revenue-ride estimates, and those reported to the federal government, based on APC counts. For 2007, there was a difference of approximately 2.3 million rides (including free rides and transfers) reported using the two separate sources, involving two separate ridership profiles.

Further, one factor used by MTS to justify recommended changes in bus routes—a criteria of serving a minimum of 22 passengers per hour during weekdays—was established in 1977. That policy, adopted by the Milwaukee County Transit Board after the County took over responsibility for the transit system from the City of Milwaukee in 1975, was predicated on an assumption that rates should be reasonable relative to current economic conditions, and a public subsidy level of 50% should not be exceeded in the implementation of transit service. Existing fares and cost structures at the time resulted in the 22 passengers per hour criteria. While not the only factor considered by MTS in recommending current route or service level changes, it is interesting to note that the passenger count 'rule of thumb' remains in use today, some 32 years later, without regard to the underlying reasonable fare or 50% public subsidy objectives.

According to MTS data, based on the revenue-rides methodology described in this report, public subsidy of MCTS riders is estimated to have been approximately 67% in recent years. Thus, the 22 passengers per hour figure would appear to have little relevance in analyzing potential current route or service level adjustments.

Conclusions and Recommendations

Verification of ridership profiles are particularly important in the aftermath of fare structure changes or significant service level adjustments.

MTS' inability, within existing resources, to update or verify its ridership profile on a periodic basis gives us little confidence that decisions regarding potential changes in fare structures or the fiscal impact of potential service level modifications are made with the benefit of solid underlying ridership data. Verification efforts are particularly important in the aftermath of fare structure changes or significant service level adjustments.

The extensive array of statistics maintained and monitored by MTS is noteworthy.

Despite our concerns with the reliability of ridership profiles used by MTS to calculate ridership and analyze rate structures and the fiscal impact of route modifications, the extensive array of statistics maintained and monitored by MTS is noteworthy. Even with flawed data, MTS' consistent monitoring of bus headway times, average hourly costs, average fares and other performance indicators can yield important, if imperfect, information for day-to-day management of the bus system.

The fareboxes currently in use by MTS were designed with the capability of capturing ridership profile data, but for a variety of reasons, MTS questions the ability of the fareboxes to yield reliable data.

In addition, we believe the route productivity analyses conducted by MTS, based on actual APC counts, provide a reasonable basis for recommending service level modifications given the current constraints on available ridership data.

The fareboxes currently in use by MTS were designed with the capability of capturing ridership profile data, but requires key-entry inputs for every passenger by the bus operator. According to MTS management, the fareboxes were first implemented in 1985, and have a useful life of approximately 12 to 13 years. Management also points out that the key-entry aspects of the

fareboxes have not been regularly maintained over the years. Given the other priorities of bus operators and the numerous categories of MCTS fares, management indicated it does not believe the data would be entered accurately, and therefore would not be reliable.

MTS was criticized in an April 2008 audit report prepared by consultants for the State Department of Transportation for not using fareboxes to obtain ridership profile data. The consultants expressed skepticism of management's belief, noting that many other bus systems they have reviewed utilize such farebox data. Finance staff told us that bus drivers are paid a premium of 10 cents per hour to key-enter passenger data into the fareboxes on occasion, but for limited durations and not for establishing overall ridership profiles.

MTS management has considered requesting funds each year since 2001 to phase in implementation of a 'smart' swipe-card system to replace the existing farebox system.

It should be noted that MTS management has considered requesting funds each year since 2001 to phase in implementation of a 'smart' swipe-card system to replace the existing farebox system. However, budgetary pressures and competing demands for the limited federal capital funding available to MCTS have resulted in MTS management's decision to delay such requests. The Chairman of the County Board of Supervisors has recently included farebox improvements with an estimated cost of $7 million among several projects, including many that would benefit MCTS, submitted to the Governor as candidates for federal stimulus aid.

As previously noted, direct management and operation of Countywide bus service is provided by MTS under contract with the Department of Transportation and Public Works. Therefore, we direct specific audit recommendations to MTS, with the understanding that DTPW is responsible for ensuring contractor accountability.

To improve the accuracy of ridership profiles upon which decisions affecting bus fare structures and service levels are based, we recommend MTS management:

1. *Develop strategies for verifying, on a spot-check basis, key elements of its ridership profile, including the number of rides per week for various weekly pass fare categories, ratios and percentages used for allocating cash receipts, as well as those affecting transfer and free ride estimates. This should involve seeking resources outside of MTS for incorporating sound sampling techniques.*

2. *Once a sound and reliable strategy for verifying key elements of its ridership profile is implemented, use a consistent ridership profile for calculating revenue-ride estimates, fare structure analyses and for estimating the fiscal impact of route and service level adjustments.*

3. *Work with the County Executive and County Board to establish a capital expenditure plan for implementing a swipe-card system for MCTS buses.*

Section 2: Internal Controls and Contract Issues

We identified two areas where we believe internal controls could be strengthened to improve safeguards over bus tickets and other forms of bus admission.

During the course of our audit we identified two areas where we believe internal controls could be strengthened to improve safeguards over bus tickets and other forms of bus admission. We also identified a concern with a contracting issue for ticket and revenue transport services.

Print Shop

The Printing Division prints tickets, passes, Commuter Value Certificates (CVCs) and other MTS internal documents and forms.

The printing operation is entirely in-house; ticket designs are done by an MTS graphic artist and are maintained in electronic file format. The MTS Printing Manager is responsible for the electronic printing files, the manufacture, storage and security of printing plates, and for safekeeping of special security inks.

Based on a walk-through of the print shop and interviews with MTS staff, we identified the following internal control weaknesses regarding MTS printing operations.

- **Security—**While there was a security camera posted outside of the print shop allowing one to see anyone that comes up to the outside door, there were no cameras in the shop to record potential thefts, vandalism or sabotage to raw materials, finished products or equipment.

- **Inventory Controls—**According to the Print Manager, printing requests come from the Marketing Division (forms) or the Cashier's Office (tickets, passes, or coupons). The entire process is manual and a physical inventory count of finished products (tickets, passes, coupons, etc.) is not done. Rather, the print shop relies on the Cashier's Office to reconcile completed print job records with source documents, which is one form of internal control. However, according to the Printing Manager, MTS would not be able to tell the inventory on hand unless they back into it using records from the Cashier's Office.

A related concern is a lack of control over 'botched' jobs. If there is a misprint, or an ink quality problem, such botched jobs are set aside and disposed as refuse. There is no inventory record maintained of the products of botched jobs, and the products are discarded, but not destroyed or mutilated.

Our audit recommendations are directed to MTS management with the understanding that DTPW is responsible for ensuring contractor accountability. Given that the finished product of the MCTS print shop is nearly as negotiable as currency, the internal control environment of the printing operation should be strengthened. Therefore, we recommend MTS management:

4. *Install additional security cameras in the interior of the print shop to record and deter potential theft, vandalism or sabotage.*

5. *Institute a schedule of periodic inventory counts of finished products in the print shop that can be matched against source documents for greater accountability.*

Redeemed Commuter Value Certificates

Further, there is a control weakness regarding Commuter Value Certificates. CVCs are vouchers employers or agencies provide to employees or clients that can be redeemed for weekly passes or strips of 10 tickets.

MTS has about 250 active Ready Fare (retail) outlets that sell bus passes and tickets on a consignment basis. MTS provides the tickets and passes to the outlets and the outlets pay only for the amount they sell, receiving a commission of approximately 2%. This network of Ready Fare outlets accept CVCs as payment for bus tickets and passes, and submit the redeemed CVCs to MTS, along with cash receipts, to account for tickets and passes consigned to them. CVCs have no expiration date.

In 2005, an embezzlement involving redeemed CVCs was discovered at MTS.

In 2005, an embezzlement involving redeemed CVCs was discovered at MTS. At that time, redeemed CVCs were stored in a vault at the Cashier's Office prior to periodic destruction. An

MTS employee had been substituting CVCs previously turned in to the Cashier's Office for cash from current transactions. Subsequent to the discovery of this embezzlement, MTS began storing previously redeemed CVC's in a locked cabinet in the Accounting section. In addition, procedures were implemented for Accounting to conduct weekly audits of redeemed CVC's to prevent similar incidents.

During our audit fieldwork, we inspected the locked cabinet and found previously redeemed CVCs from approximately six weeks of operations stored therein. According to MTS staff, the CVCs are routinely destroyed about once a month.

However, we noticed that many of the previously redeemed CVCs were not filled out with required information such as the name and address of the redeemer. Further, the previously redeemed CVCs were not voided or mutilated. Consequently, previously redeemed CVCs that were not properly filled out could easily be re-used.

Our audit recommendations are directed to MTS management with the understanding that DTPW is responsible for ensuring contractor accountability. To reduce the risk of embezzlement or theft, we recommend MTS management:

6. *Void or mutilate previously redeemed CVCs upon receipt at MTS for storage until they are destroyed.*

Ticket and Revenue Transport Services Contract

We identified problems with respect to MTS' ticket and revenue transport services.

MTS uses a transportation company to deliver the inventory of tickets to Ready Fare outlets. It also picks up sealed bags containing the count of ticket inventory remaining at the store, as well as payments for tickets and passes sold. The company employs five drivers handling about 40-50 outlets each, and has been providing this for many years.

With respect to MTS' ticket and revenue transport services, MTS does not have a written agreement with the transport company. According to the MTS manager of Treasury Services, the arrangement is a 'hand-shake deal' and there does not appear to have been any competitive bidding involved.

Once again, we direct specific audit recommendations to MTS management, with the understanding that DTPW is responsible for ensuring contractor accountability. To test the market for possible cost savings and to avoid ambiguities regarding potential legal liabilities, we recommend MTS management:

7. *Initiate a competitive bidding process for contracted ticket and revenue transport services.*

8. *Employ a written contractual agreement for ticket and revenue transport services.*

Exhibit 1

Audit Scope

The Department of Audit conducted an audit of the Milwaukee Transport Services, Inc. (under contract with Milwaukee County) to assess inputs used in the determination of ridership, rate increases/decreases, route modification or elimination, and how revenue is collected and booked.

The audit was conducted under standards set forth in the United States Government Accountability Office *Government Auditing Standards (2007 Revision).*

We limited our review to the areas specified in this Scope Section. During the course of the audit, we:

- Reviewed 2000 through 2009 Adopted Milwaukee County Budgets related to MTS operations;
- Reviewed previous audit reports related to MTS operations;
- Reviewed Milwaukee County Ordinances related to MTS operations;
- Reviewed various State of Wisconsin and Federal reports related to MTS operations;
- Reviewed various correspondence and memos submitted to the Milwaukee County Board Committee on Transportation, Public Works and Transit;
- Interviewed various MTS staff regarding revenue collection and accounting procedures;
- Observed various revenue collection and cash and ticket counting procedures;
- Interviewed various MTS staff regarding ridership calculation procedures;
- Interviewed various MTS staff regarding planning and scheduling procedures;
- Interviewed MTS Print Shop staff regarding printing policies and procedures;
- Reconciled Advantage financial transactions, payment data, and budget data with that of MTS;
- Tested MTS formulae used in determining ridership elasticity based on rate change proposals;
- Tested calculations based on ratios used in the determination of ridership, rate increases, and route modifications; and
- Reviewed MTS ridership sampling methodology used for developing ratios.

Milwaukee County Transit System
Route Eliminations and Fare Increases
2000—2008

Route Eliminations

2000
Route 280 discontinued due to low ridership in Winter of 2000

2001
Eliminated Route 52, but replaced this service with a branch of Route 15
Eliminated Route 58, but replaced this service with a branch of Route 80
Eliminated Route 68 service between 7th / North Avenue and Keefe / Atkinson
Eliminated Route 258, but replaced with an extension of Route 27
Eliminated service after 6:PM on Route 64
Eliminated weekend service on Route 64 west of Southridge Mall
Eliminated service after 9:30 p.m. on Route 28
Eliminated Route 65 – West Allis
Eliminated Route 2 – Metrolink Southwest Express
Eliminated mid-day service on Route 13
Eliminated some Freeway Flyer trips on Routes 39, 44, 45 and 49

2002
Route 104 Elimination – Brown Deer Shuttle
Route 1 Elimination – Metrolink Northwest Express; with some service added to Route 23 to address demand
Route 42 Elimination – Northshore Flyer, but serve Northshore lot near Bayshore with Route 49
Elimination of service to Park-Ride lot near Northridge Mall on Route 49 – Brown Deer Flyer
Reduced Hours of Service on Route 13 – Wisconsin – St. Paul
Eliminated Express service via Highland Avenue on Route 30 – Sherman – Wisconsin
Eliminated Service south of Howard Avenue on Route 35 except during weekdays from 9:AM – 6:PM
Eliminated Service on Route 64 west of Southridge
Reduced the number of trips on Freeway Flyer Routes 39, 45 and 47

2003
Elimination of Downtown Trolley Service
Route 227 Elimination – Franklin Shuttle (Winter)
Route 137 Elimination Sunday Service – House of Corrections (Winter)
Route 218 – New Berlin Industrial Park (Operated by MV Transport, not Milwaukee County)

2004 (Spring)
Route 13 Elimination – Wisconsin – St. Paul
Elimination of 6 trips daily on Route 15 south of Columbia Ave. to American Ave.
Route 101 Elimination – Silver Mill – Park Place Shuttle, but with some service to Park Place via Route 23
Route 102 Elimination – West Loop Shuttle, but with some service to Industrial Park via Route 23
Elimination of Route 50 – Morgan Ave. bus, except during school days when some AM/PM service will operate
Elimination of Lisbon Avenue branch of Route 57 (60th St. west to 124th & Capitol)
Elimination of service along Delaware Avenue after 6:30 p.m. (Route 53 – Lincoln)

2004 (Fall)
Routes 5 and 63U Eliminated; however, some extra service will go onto 40U, 49U and 16 (UBUS)
Route 84 Eliminated – Frank Lloyd Wright School
Route 86 Eliminated – Nathan Hale School – West

2004(Winter)
Route 6 – Quad/Graphics West Allis (Discontinued by Waukesha County)
Route 83 – Courthouse Shuttle Eliminated (as a result of Marquette Interchange Reconstruction)

2005
Route 106 – Falls Industrial Park Shuttle (Discontinued by Waukesha County)

2006
Route 44U – Summer Service to UWM (previously known as UBUS Route 44U)
Routes 40U, 44U and 49U – Elimination of nighttime services that were operated with CMAQ grant assistance

2007
Route 53 – Eliminated service on Bay Street, Russel Ave., and Delaware Avenue
Route 9 – Eliminated service (Waukesha County discontinued funding)

2008
Route 11, 14, 19 and 20:
Restructure Route 11 eliminating Vliet Street; add Holton and Greenfield to Route 11
Restructure Route 14 eliminating Mitchell Blvd. segments; change route terminus to DTTC
Route 20 elimination
Restructure Route 19 to include S. 13th and S. 20th
Restructure Route 31 to operate on Vliet Street instead of Washington Blvd.

Fare Increases

Effective	Cash	Pass	F.F.	H.F./C.F.	S.F.	P.F.
1/1/2000*	$1.35	$10.50	10/10.50	10/6.50	10/9.00	10/13.00
12/31/2000	$1.50	$11.00	10/11.00	10/7.50	10/9.00	10/14.00
12/30/2001	$1.50	$12.00	10/12.00	10/7.50	10/10.00	10/15.00
12/28/2003	$1.75	$13.00	10/13.00	10/8.50	10/11.00	10/16.00
12/31/2005	$1.75	$14.00	10/14.00	10/8.50	10/13.00	10/19.00
12/31/2006	$1.75	$16.00	10/16.00	10/8.50	N/A	10/21.00
1/1/2008	$2.00	$16.00	10/16.00	10/10.00	N/A	10/22.00

* 2000 fares in effect since 1/01/1996.

F.F. = Adult Ticket
H.F./C.F. = Senior/Child Ticket
S.F. = Student Ticket
P.F. = Flyer Ticket

Note: Effective 1/4/09, prices for weekly passes and both Adult and Freeway Flyer 10-strip tickets increased an additional 50 cents, while Freeway Flyer cash fares increased 25 cents. All other fares remained unchanged.

Source: Excerpted from County Board Staff report to Committee on Transportation, Public Works and Transit dated 5/23/08 and the 2009 Milwaukee County Adopted Budget.

Milwaukee County Transit System
Inter-Office Communication

To: Jerome J. Heer, Director of Audits

From: Anita Gulotta-Connelly, Managing Director, MCTS

Subject: Milwaukee County Transit System Response
Fare and Data Collection Systems Audit

Date: February 2, 2009

Milwaukee Transport Services, Inc. (MTS) would like to thank the Milwaukee County Department of Audit for their review of and comments on the Milwaukee County Transit System's (MCTS) Fare and Data Collection Systems. MTS staff worked hard to assist the audit process and provide all information required for their review.

MTS maintains that the route modification and fare change alternatives provided to policy makers have been reliable estimates of the potential impact of those changes. While always striving to be as accurate as possible with the resources available, MTS recognizes that there is always room for improvement when compiling financial and statistical information.

On the fare collection and revenue handling portion of the audit, the Department of Audit report highlights that MTS has "proper controls in place to provide reasonable assurance that system-wide fare revenues are accurately recorded and monitored on a regular basis". MTS takes pride in its efforts to be responsible stewards of the County's resources and will continue to review controls to ensure that MCTS revenues are properly accounted for. The audit also points out that despite recommendations regarding these specific statistics, MTS uses a wide variety of valid statistical data to monitor the performance of the system and recommend potential changes.

Over the years, MTS has been consistent in applying various ratios and formulas in estimating ridership numbers. However, MTS does agree with the Department of Audit's recommendations that strategies need to be developed to update MCTS' ridership profile and estimates of revenue passengers and total ridership to better reflect the current usage of the transit system.

Listed below are the audit recommendations and MTS' response to each item:

1. *Develop strategies for verifying, on a spot-check basis, key elements of its ridership profile, including the number of rides per week for various weekly pass fare categories, ratios and percentages used for allocating cash receipts, as well as those affecting transfer and free ride estimates. This should involve seeking resources outside of MTS for incorporating sound sampling techniques.*

MTS agrees with the audit recommendation. It makes sense to verify the ridership profile, and update if necessary, but it is also important to keep the use of this profile in perspective. The

profile is used by MCTS to provide a breakdown of type of ridership by category of fare payment for a report required by the State of Wisconsin. Neither State nor Federal funding for MCTS is based on these numbers. In addition, these numbers are not the basis of the comparisons of the efficiency or effectiveness of MCTS versus peer systems which have been made in WisDOT audits.

The categories of ridership generated by these formulas do play a part in estimating the impact of fare changes. The audit has pointed out one aspect of the estimates that could be updated to improve them and we concur that this should be done. The primary factor used to estimate the impact of proposed fare changes in the transit industry is the Simpson-Curtain formula of fare elasticity. MCTS uses this formula as well. In the end, however, even with updated ratios, we will still be providing estimates that are based on a variety of factors and assumptions. Actual ridership and revenue for the following year will always vary from those estimates based on weather, gasoline prices, unemployment rates and a variety of other external conditions.

MTS has done a preliminary review of the sampling levels and support surveys needed to regenerate these formulas. The formulas will have to be developed by manual counts of boarding passengers by fare type on a statistically significant sample across all days and times that service is provided. In addition, we anticipate that usage surveys of sub-groups, such as UPASS and Commuter Value Pass users, will also be required. In the past, MCTS has been unable to commit the resources needed to conduct this type of survey, particularly given the fact that these statistics are not critical for the continuation of transit services.

MTS will work with appropriate parties to develop a strategy, incorporating sound sampling techniques, to update key elements of its ridership profile, including various ratios and formulas that are used to develop revenue passengers and total transit ridership. Additional funding may be required to fully implement this recommendation.

2. *Once a sound and reliable strategy for verifying key elements of its ridership profile is implemented, use a consistent ridership profile for calculating revenue-ride estimates, fare structure analyses and for estimating the fiscal impact of route and service level adjustments.*

The audit pointed out that the revenue factors play a part in estimating the financial impact of route modifications and that the estimates would be potentially more accurate if updated ratios were used. In fact, these ratios only come into play in estimating an average fare per passenger in the case of service modifications that are being reviewed. The average fare is only one small piece of a total financial calculation that takes into account ridership, hours, cost per hour, potential passengers lost, and the revenue lost per passenger. The only item in question is the revenue per passenger, and that is the least significant part of the equation. Most importantly, because the same average fare was used in all of the analyses, having more recent ratios would not have changed the results of the relative ranking of routes for elimination.

MTS agrees with the audit recommendation that once the strategies to develop an updated ridership profile have been finalized and the results of the strategy meet the appropriate statistical requirements, MCTS should utilize the updated ridership profile to consistently calculate revenue-ride estimates, fare structure analyses, and to estimate the fiscal impact of route and service level adjustments.

3. *Work with the County Executive and County Board to establish a capital expenditure plan for implementing a swipe-card system for MCTS buses.*

It is expected that new fareboxes could potentially allow for nearly continuous updating of the ridership profile, thereby eliminating the need for manual data collection methods required to address the first and second findings of the audit. MCTS has included a new fare collection system in its 5-year Capital Budget Plan since 2001. Due to the lack of either local and/or Federal dollars to finance this project, the request has been moved to subsequent years. A new fare collection system will be included in MCTS' 2010 Capital Budget request. The fare collection system replacement is one of the items included in Chairman Holloway's list of possible stimulus projects that was presented to the State.

Either through the budget process or if approved as part of the stimulus package, MCTS will work with the County Executive's office and County Board to establish an expenditure plan to implement an updated fare collection system for MCTS buses. While this may or may not resolve all passenger counting issues, it will certainly improve the level of data that is available through the farebox.

4. *Install additional security cameras in the interior of the print shop to record and deter potential theft, vandalism or sabotage.*

The MCTS Print Shop currently works in a locked and secured environment. As an additional security measure, MTS will seek funding to install cameras in the interior of the Print Shop to record and deter potential theft, vandalism, and sabotage.

5. *Institute a schedule of periodic inventory counts of finished products in the print shop that can be matched against source documents for greater accountability.*

Since being interviewed by the Department of Audit, the Print Shop manager has developed a job numbering system to track each fare series from start to finish. This system will be used in conjunction with a periodic inventory of finished fare forms in the Print Shop and will be reconciled to source documents to ensure greater accountability of finished printing products.

6. *Void or mutilate previously redeemed CVCs upon receipt at MTS for storage until they are destroyed.*

Approximately four years ago, changes were made in the handling and retention of redeemed Commuter Value Certificates. Prior to that time, redeemed CVCs were stored in the Cashier's vault for safekeeping. A change was made to transfer the redeemed certificates to the

Accounting Department where they are audited and held in a locked filing cabinet for destruction. These steps have vastly reduced the potential for fraudulent use of the certificates. As an additional safeguard, MCTS Cashier staff will mark each certificate upon receipt so as to prevent any reuse of these certificates.

7. Initiate a competitive bidding process for contracted ticket and revenue transport services.

The MCTS Treasury Services division will develop a specification for contracted ticket and revenue transport services and will work with the Materials Management Department to initiate a competitive bidding process to award this contract to the successful bidder.

8. Employ a written contractual agreement for ticket and revenue transport services.

As a result of the competitive bidding process for contracted ticket and revenue transport services, a formal written contract will be issued for these services.

NOTE: This response was prepared by MTS, Inc. and has been reviewed by the Department of Transportation and Public Works.

Anita Gulotta-Connelly

cc: Douglas C. Jenkins, Deputy Director of Audits
Jack Takerian, Interim Director, Department of Transportation and Public Works
Brian Dranzik, Budget and Policy Administrator, Department of Transportation and Public Works