

INTERNAL AUDIT REPORT

CITY OF MANCHESTER

NEW HAMPSHIRE



**City of Manchester
Manchester Transit Authority
June 2010**

**Prepared by
The Office of the Independent Auditor**

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CITY OF MANCHESTER, NEW HAMPSHIRE
MANCHESTER TRANSIT AUTHORITY
JUNE 2010**

TABLE OF CONTENTS

LETTER OF TRANSMITTAL	2
INTRODUCTION	4
HISTORY OF BUS SERVICE.....	7
STAFFING	8
FARE STRUCTURE	10
OBSERVATION 1 – FARE BOX RECOVERY RATIO.....	11
OBSERVATION 2 – SHORT RANGE STRATEGIC PLAN	13
SERVICE DEVELOPMENT	15
OBSERVATION 3 – INEFFICIENT ROUTES REDUCE RIDERSHIP.....	18
RIDERSHIP	20
OBSERVATION 4 – USE OF MAGNETIC STRIP CARDS AND READERS	22
EMERGENCY COMMUNICATIONS.....	24
OBSERVATION 5 – NO WRITTEN EMERGENCY COMMUNICATION PLAN	24
PARA-TRANSIT SERVICES.....	25



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Office of the Independent City Auditor**

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*Committee on Accounts, Enrollment and Revenue Administration
City of Manchester, New Hampshire
Honorable Aldermen: Ouellette, DeVries, Long, O'Neil, Roy*

Dear Honorable Committee Members:

On June 16, 2009 a request was made at a special meeting of the Board of Mayor and Aldermen to conduct an audit of the Manchester Transit Authority (MTA). The MTA has an annual financial audit as well as regular Federal Audits. Due to the large amount of financial oversight it was determined that I would conduct a performance audit of the agency. Planning and survey work began in July of 2009 but was stopped twice due to other audits taking precedence. Field work began in July of 2010 and concluded on August 20, 2010.

My planning work identified the following areas for testing to determine operational effectiveness and efficiency:

Fare structure design,
Para-Transit services,
Ridership data collection and integrity,
Emergency communications,
Scheduling and service development,
Staffing

Conclusion

My test work revealed that in general the MTA is performing in as efficient and effective manner as possible given the financial and contractual constraints that they operate under. I did note five minor instances that I considered significant enough to include and they are presented in the report that follows.

The draft audit report was sent to the Executive Director for his review and comment. The observations generated and the auditee written responses are included in the report. The auditee responses indicate general agreement with the report recommendations and states that corrective action will be or has been taken. We appreciate the courtesy and cooperation of the staff and administration of the Manchester Transit Authority on this assignment.

Kevin M, Buckley, CPA
Independent City Auditor

September 8, 2010

INTRODUCTION

AUDIT BACKGROUND

On Tuesday June 16, 2009 a request was made at a special meeting of the Board of Mayor and Aldermen to conduct an audit of the Manchester Transit Authority (MTA). Because the MTA has an annual financial audit as well as regular Federal Audits and oversight it was determined that I would conduct a performance audit of the agency. Planning and survey work began in July of 2009 but was stopped twice due to other audits taking precedence. Field work began in July of 2010 and concluded on August 20, 2010.

I conducted my audit in accordance with auditing standards applicable to performance audits contained in *Government Auditing Standards*, Issued by the Comptroller General of the United States. Those standards require that I plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for my findings and conclusions based on my audit objectives. I believe that the evidence obtained provides a reasonable basis for my findings and conclusions based on my audit objectives.

BACKGROUND OF AUDITEE

The MTA was established by the City of Manchester on May 1, 1973 to provide mass transit service for the community. In addition to public transportation the MTA provides pupil transportation for the Manchester School District.

The MTA's mission is to provide safe, accessible, dependable, clean and affordable transportation through a dedicated, professional and customer focused workforce.

The MTA is governed by a five member commission appointed by the Board of Mayor and Aldermen.

Upper management (Executive Director, Assistant Executive Director and Operations Planning Manager) is provided by a management services contract with First Transit, Inc. (FIRST). FIRST provides all normal management functions reasonably required in the day to day operation of the transit system.

As of June 30, 2010 MTA employed 119 employees including 29 transit operators and 75 School bus operators. MTA operates 11 bus routes and a para-transit service. During FY 2010 the MTA transported 446,929 riders on its fixed route service and an additional 13,709 StepSaver para-transit customers.

AUDIT SCOPE AND OBJECTIVES

The audit was an audit of performance activity during FY June 30, 2010 and encompassed the following areas:

FARE STRUCTURE

Objective:

Evaluate the effectiveness of MTA's Fare Structure and Fare Policy Goals.

PARA-TRANSIT

Objective:

Assess MTA Para-transit program's costs and productivity
Determine recent trends and compare MTA's Para-transit service to its peers
Analyze cost containment strategies
Evaluate staffing efficiency and effectiveness

RIDERSHIP DATA

Objective:

Evaluate MTA's access to ridership data
Evaluate the quality of ridership data collected

EMERGENCY COMMUNICATIONS

Objective:

Determine how effectively MTA communicates accurate and timely schedule information to customers during emergency and other events that alter transit schedules

SERVICE DEVELOPMENT (SCHEDULING)

Objective:

Examine MTA's bus service in relationship to general effectiveness and efficiency of scheduling.

STAFFING

Objective:

Evaluate methods used by MTA to determine coverage/relief needs
Evaluate methods MTA uses to schedule planned absences, minimize unplanned absences and use staff resources most effectively
Evaluate MTA's overtime use strategy

Methods used:

Interview management and staff
Survey relevant literature and best practices
Review MTA documentation and agreements
Compare MTA to peer group
Review software used

CONCLUSIONS

Based on my test work management at the MTA has an effective fare structure and policy goals to ensure that the objectives of providing affordable transportation access to its customers are met, that it provides para-transit services in as effective and efficient manner as allowable by federal regulations, collects and evaluates reliable and quality ridership data, provides timely and accurate emergency communication, provides effective and efficient bus service within the fiscal constraints imposed and is adequately staffed to carry out the mission of the MTA.

Management is responsible for establishing and maintaining effective internal controls to help ensure that appropriate goals and objectives are met; resources are used effectively, efficiently, and economically, and are safeguarded; laws and regulations are followed; and reliable data is obtained, maintained and fairly disclosed. I am responsible for using professional judgment in establishing the scope and methodology of my work, determining the tests and procedures to be performed, conducting the work, and reporting the results.

The results of my testing, recommendations and observations are included in the report that follows.

HISTORY OF BUS SERVICE IN MANCHESTER¹

In 1915 private Jitney service offered rides anywhere along Elm Street from Webster to Granite streets and from Kelly Street to Elm street for five cents. Also at that time the Manchester Street Railway offered rides on 10 routes along 28 miles of narrow gauge track including a nine mile run into Goffstown. In addition two urban lines ran into Derry until 1926 and Nashua until 1931.

In 1925 the Notre Dame Bus Line, Inc. was formed to provide regular bus service from the Notre Dame section on the west side of Manchester to Elm Street. It used three buses to provide service for ten cents a ride.

The Manchester Street Railway which in 1921 had been carrying 11.9 million passengers per year had slowly been losing ridership and was eventually sold to Public Service Company of NH in 1937. Under the first full year of ownership by PSNH ridership had fallen to 3.5 Million passengers. During this time the street railway had discontinued the rail service to Goffstown and had been using buses to transport customers from Goffstown to Pinardville. In 1938 they were using two 23 passenger buses for this service which were running at capacity.

In 1940 bus service replaced trolleys using 11 bus routes totaling 34.7 miles. The trolley system was getting old and inefficient and buses were determined to be a much cheaper faster way of transporting passengers. It took only 14 buses to replace the 30 streetcars in service at the time. Bus service immediately was a success carrying 4.2 million passengers in 1940 and increasing to 5.6 million in 1941 with continuous increases to a high of 15.1 million in 1948.

In the after math of World War II the automobile started to take over the transportation of individuals and bus service started to decline. In 1954 the bus ridership dropped to 10 million riders and for the first time since it's inception the bus fare rose from ten cents to fifteen cents per ride. In 1954 PSNH decided to get out of the bus service and sold the business to Manchester Transit, Inc. MTI continued to struggle with falling ridership and profits. In response MTI raised fares to twenty cents at the end of 1957 then to a quarter in the middle of 1963.

By 1968 MTI determined that it could no longer operate as a for profit enterprise and asked the City of Manchester, Board of Mayor and Aldermen for a subsidy to continue in business. The Board, not wanting to subsidize a private business, turned down MTI's request and eventually private ownership ended in 1972 as ridership decreased to below 2.3 million. In response, the Manchester Transit Authority was formed to meet the City's public transportation needs.

In the 1930s the bus line owned 73 buses running 18 regular bus routes that covered 87 miles, employed 88 people and transported approximately 5,000 adults and 3,000 children each weekday. Since then ridership has steadily declined to the current day level of 446,929 passengers in fiscal year 2010 using 11 routes and employing 119 people including 75 school bus operators.

¹ Motor Coach Age, October 1973

STAFFING

EMPLOYEES

TRANSIT OPERATORS	29
SCHOOL BUS OPERATORS	75
MECHANICS	7
DISPATCH AND ROAD SAFETY	5
ADMINISTRATION	3
TOTAL EMPLOYEES	119

Source: MTA Employee Listing as of June 30, 2010

Wages and Benefits FY 2010

Transit Operator Wages	\$ 751,049
Transit Operator Overtime	94,565
StepSaver Operator Wages	160,003
StepSaver Operator Overtime	26,320
Mechanic Wages	152,758
Mechanic Overtime	12,342
Transportation Administrative Wages	129,429
Transportation Administrative Overtime	623
Maintenance Administrative Wages	49,734
General Administrative Wages	84,895
Fringe Benefits	1,070,084
Total Wages and Benefits	\$ 2,531,802

Source: 06/30/2010 Monthly Financial Statements (unaudited)

The design of efficient transit services entails finding a balance that ensures scheduling flexibility and reliability without requiring more staff time and equipment necessary to accomplish these objectives.

It also involves finding a balance between different types of work – full time, part time, four day week, etc. and considering contractual guarantees such as minimum work day, overtime and use of part time employees.

MTA is obligated to design bus service and utilize staff in accordance with provisions of the collective bargaining agreement (CBA) with local 717 of the Amalgamated Transit Workers which dictate the use of overtime and restricts part-time work.

Bus service operates six days per week, Monday through Saturday requiring twenty-four driver schedules that need to be covered each week. Every driver gets Sunday plus one other day off each week. By contract the MTA is very limited on hiring part-time workers to cover non-school work. The scheduling restraints dictate that on any given weekday three drivers will have the day off and thirteen drivers will not be scheduled to work on Saturday.

In most weeks the CBA allows that one driver can be off on vacation the exceptions to this are that two drivers can take each holiday/school vacation week off and four drivers can take each summer week off. Drivers select vacation based on seniority. This whole process is determined by the CBA.

The MTA also employs one list driver who covers unexpected days off and three list drivers who cover scheduled days off. In addition they have five spare drivers who cover vacations and other time off.

If these do not provide enough coverage they must offer over-time to current drivers and if there is time left that can't be covered by over-time then they can offer routes to part-time school bus drivers.

The MTA has a staffing objective to cover all routes with full-time drivers and limit over-time as much as possible to the 4% that is planned in the system. Over-time has been running around 12% of transit wages the last few years. During FY 2010 OT was approximately 12.5% of transit wages. The MTA also tries to have all scheduled spare drivers to be driving a route during the entire shift if possible.

Drivers are also given one floating personal day off, one personal day off for their birthday and earn one bonus day for perfect attendance in each quarter. Up to two of the perfect attendance days may be taken as time off with pay while the other two bonus days are paid out as eight hours of regular pay. Individual days off shall be requested at least one week in advance.

Over time must be pre-approved and every effort is made to fill the time without the use of OT. OT is offered to drivers on a rotational basis so that all drivers have an equal opportunity for OT. There are some routes that due to route design require a small amount of planned over-time each day.

The MTA employs a number of strategies to reduce OT and encourage attendance such as paying for any unused earned time off in lieu of taking the day off (personal days, perfect attendance days, etc).

The relief factor is the ratio of the time needed for service divided by the time that staff are actually available, taking into account the amount of time absent from work. Relief factor is an indicator of how well an organization is controlling absences. The higher the actual relief factor the better an agency is controlling its time off. The 2009 American Public Transportation Association has calculated that the nationwide average relief factor is 59.7%. The MTA calculated actual relief factor is a significantly better than average 64.6%. If MTA had the national average relief factor they would have required 5,000 additional hours of driver time per year.

FARE STRUCTURE

Fare structure consists of fare prices, fare products and fare media and the relationship between them.

FARE PRICES

The MTA has the following fare prices as of August 31, 2009.

Adult Cash Fare	\$1.50
Senior/Disabled Cash Fare	\$.75
Adult 10 Ride Ticket	\$14.00
Student 10 Ride Ticket	\$11.00
Senior/Disabled 10 Ride Ticket	\$7.00
Adult Monthly Pass	\$50.00
Student Monthly Pass	\$40.00
Senior/Disabled Monthly Pass	\$25.00

Up to three children less than 5 years of age may ride free with a fare paying passenger.

StepSaver Disabled Service	\$3.00
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The MTA also runs a free circulator bus that runs through the downtown business district from approximately 7:00 am to 7:00 pm.

Fare policy is set by the five member Board of Commissioners.

FARE PRODUCTS

Monthly Passes
10 Ride Tickets
Discount Programs for seniors, disabled and students

FARE MEDIA

Fare Media are the physical vehicle through which the customers pay their fare.

Paper Monthly Pass
Paper Transfer Tickets
Half Price IDs

Fares are collected by exact change on the bus. Cash Fares account for the majority of fare revenue (\$301,624 of \$547,405 in FY 2010). Coins and bills are deposited to the on-board collection system (OBS) which calculates the fare and registers the sale. Passengers boarding with a 10 ride punch ticket hand it to the driver who will punch the ticket to signify the ride and then the driver records the fare in the OBS. Similarly a monthly pass holder will show the driver the pass and the driver will record it in the OBS.

Sale of 10 ride punch tickets can be made on the bus directly with the driver, in the office during business hours, over the internet, by mail, or at the transportation center on Canal Street. Monthly passes are similarly sold with the exception that they are not available directly from the driver in an effort to minimize the volume of cash in the possession of the driver. Revenue is recorded on the day of the sale.

When buses get serviced at night the ride information is downloaded to the office computer and the cash is collected from the bus. The cash count is reconciled to the on-board computer and the deposit prepared by office personnel.

In addition to Fare receipts the MTA collected \$11,515 from shopping shuttle and excursions in FY 2010. Shopping shuttles are paid for by the stores to ensure that the bus will stop at their establishments.

Advertising revenue accounted for \$70,310 during the audit period

Monthly the MTA reports the fare box recovery ratio to the Board of Commissioners as well as other financial and performance data. They also are required to report financial and performance data to Federal and State grantors.

OBSERVATION 1 - FARE BOX RECOVERY RATIOS

Monthly the MTA reports its fare box recovery ratio to the MTA commission. Fare box recovery is the proportion of the cost of operating the bus service that is recovered through bus fares. In some cases, fares are “paid” not just at the fare box, but via fees paid in exchange for operating a specific route or service by somebody other than a rider and are not typically included in the fare box recovery calculation but they make sense to include. Like wise the cost of operating the bus service should include only expenses related to bus service.

It was noted during testing that the calculation used to determine the fare box recovery ratio did not include fees paid for shopper shuttles and local colleges to operate specific routes. It did however include such expense items as fuel used in city vehicles, maintenance on city vehicles and revenues and expenses attributable to the step saver program. These items all tend to lower the recovery ratio and not show the true amount that the fare box contributes to bus service.

For example, in its monthly reports for June of 2010 and 2009 the MTA showed fare recovery ratios of 12% and 9% respectively when the actual recovery was closer to 15% and 13.5% for FY 2010 and FY2009 respectively. This is still well below the 2006 national average of 28% but the MTA has been steadily improving the recovery ratio.

Recommendation:

The MTA should revise the methods used to report the fare box recovery ratio so that the commission gets a truer picture of the recovery ration. While it may not be possible for a small bus service like Manchester's to reach a 28% recovery ratio the MTA should continue its effort to improve the recovery ratio.

Auditee Response:

MTA will revise its Commissioners Financial Reports to include only operating expenses rather than total expenses in an effort to more accurately capture fare box recovery. MTA does not include revenue from public private partnerships such as the colleges in the fare box recovery ratio because this statistic is used to determine the fare impact of service changes. Since public private partnerships are contractually based and may be renewed or declined regardless of service changes, their inclusion masks true impacts to the fare box from changes in daily trends. MTA will offer the Commissioners an Operational Revenue Percentage which captures all operational revenue and divides that by all operational expense. This will enable staff to communicate the statistical information recommended in this finding while keeping the fare box recovery statistic in tact for planning purposes.

SHORT RANGE PLAN

The Southern NH Planning Commission is the Municipal Planning Organization (MPO) responsible for developing routes and planning for transportation services in the greater Manchester area. As such they are responsible for the development of the Short Range Transit Plan as required by grant agreements with the federal government. Each MPO is required to develop a short range plan every five years. The most recent plan available is the 2004 – 2008 plan. The 2009 – 2013 plan has not been completed yet.

The Plan describes the existing transit service as of the beginning of the plan year, the quality of the existing service, public transportation needs (both current and projected), and cost and revenue projections.

The plan predicted a large expenditure jump in FY 04 due to insurance increases to \$2,609,890 then increases of expenditures of 5% each year until FY 2008. The prediction was for 2008 expenditures to reach \$3,172,338. Actual expenditures in FY 2004 were \$300,000 higher then predicted with annual average increases of 10.75% for an expenditure of \$4,370,479 in FY 2008 or \$1.2 million more then expected. The Plan also based it's projections on the same level of service but due to the large cost increases service levels have decreased slightly.

The plan predicted an operating deficit of \$569,532 in FY 2008 but the actual deficit was \$589,494.

The plan also predicted an increase in operating assistance of 38.7% to \$2.67 million by FY 2008 but actual operating assistance increased 42.95% to \$2.889 million.

OBSERVATION 2 - SHORT RANGE STRATEGIC PLAN

Federal regulations require that urbanized areas of over 50,000 have a Metropolitan Planning Organization (MPO) to ensure that federal funds spending is based on a comprehensive planning process. One of the duties of the MPO is to develop both a long range (20 year) and short range (5 year) strategic plan. The MPO for the Manchester area is the Southern NH Planning Commission (SNHPC). SNHPC has completed a short range plan for the years 2004 through 2008. The plan was a very in-depth analysis of current conditions and a projection of future transportation needs. As of the end of field work SNHPC has not completed and has only recently started a new short range plan.

The plan is a very important document for the MTA as it sets routes based on the current economic and demographic conditions. The document is a blue print for how the MTA should be allocating their resources now and in the future.

Recommendation:

MTA should be actively working with SNHPC to complete the current short term plan and be more closely monitoring its performance to the plans design. Prior to the end of the next plan MTA should be requesting from SNHPC a time table for completion of the next plan to ensure its timely completion.

Auditee Response:

MTA is in agreement as to the importance of the Short Range Transportation Plan. We have been working with SNHPC to complete the plan in as timely a manner as possible and will ensure a more proactive approach is taken when the next renewal is due in 2012.

FARE DEVELOPMENT

The MTA's fare strategy is to ensure that bus service is available to the maximum amount of people who need transportation services and is based on the income level of riders and fares charged by other regional providers such as Nashua and COAST. Maximization of revenue is not a factor nor is reduction of the subsidy that is required to cover operating costs.

As part of the five year short range plan the Southern NH Planning Commission looks at transit options on a regional basis. They also work with other regional planning commissions to try and integrate service between systems. Currently the SNHPC is working with the Nashua planning commission to develop regional service between Manchester and Nashua.

DOWNTOWN CIRCULATOR

The MTA has started a down town circulator bus service in the City's business district. The service is free and uses new biodiesel hybrid buses. The entire route is approximately 20 minutes and two buses run at a time during peak periods enabling a bus to arrive at each stop about every ten minutes.

The purpose of the circulator is to bring employees from parking areas to their place of employment and back in the mornings and afternoon and to allow people at lunch time to travel quickly around the downtown area. The goal is to get cars off the road during peak hours and to free up parking in the downtown area.

Funding for the circulator currently is from federal funds from the FTA (80/20 match). This is a pilot program for two years that will switch to a federal operating 50/50 grant after one year. At that time the revenue source will consist of advertising and a possible subsidy from the City's Parking Department.

The MTA is also taking advantage of another federal program to start a health care circulator service that will connect all the City's major healthcare facilities with a shuttle that it is hoped will reduce the need for the expensive para-transit service and give seniors a quick efficient way to get to health care appointments.

SERVICE DEVELOPMENT

Number of weekday routes 11

Number of Saturday routes 9

Hours of operation:

Weekdays 5:25 AM to 7:25 PM

Saturdays 8:00 AM to 7:25 PM

(Some routes start earlier and/or end earlier)

Number of 2010 unlinked trips

Weekdays 401,518

Saturday 45,384

Scheduling service for a transit system involves striking a balance between service to customers, operating costs, and operator working conditions. Schedules are developed using typical working conditions while providing a cushion in case buses start running late.

Routes were established based on a study done by the Southern NH Planning Commission several years ago. Transit Services typically update their routes at least annually based on economic concerns such as budget constrictions. There are three phases to the process of route development:

1. Service Trip Definition – When MTA defines service trips, they identify the routes that buses should take, how long it takes for a bus to complete the route, how frequently the buses should run the route and key connection or transfer points. In Manchester all bus routes connect at Veterans Park which is the only major connection/transfer point in the system.
2. Blocking – Blocking activities take the information developed in the trip definition phase and assign vehicles to each service trip to form “blocks”.
3. Runcutting – Four times a year schedulers then take each block and assign them to a “piece of work that will be assigned to an operator. Operators then go through a pick process in which they choose pieces of work based on seniority to determine which routes they will drive until the next schedule is developed. This process is heavily controlled by labor agreements.

The process is very complicated and is usually assisted by scheduling software with multiple modules designed to work together to maximize all the various elements needed to develop a schedule. To ensure maximum usability the software must be programmed with conditions inherent in the current labor agreements, available fleet, local geography, and other information about a systems unique working environment.

Other important concepts are:

- Recovery time - time a bus is waiting at the end of a route
- In-Service time – Time a bus is available to carry riders
- Ratio of recovery to in-service time – a common metric for measuring scheduling efficiency. 11% to 24% is considered normal.
- Headway – Spaced time periods between buses
- Clock Face Headway – When headway is timed to allow buses to leave on an easily divisible time period such as every 30 minutes.
- Deadhead – Time it takes for a bus to leave the bus center and arrive at the first pickup point and the time from the last pick up point to the garage at the end of the shift.
- Round trip cycle time – time it takes for a bus to complete one full route cycle (run time plus recovery time)

Recovery time provides a cushion to allow for a bus to depart on time for its next trip, maintain evenly spaced time periods between buses, provide time for transfers, and allow time for operator breaks.

SOFTWARE

Scheduling of bus routes is handled by the MTA. The routes were established with aid from the SNHPC based on a study completed in 2006. The MTA makes small changes annually but does not significantly alter the routes unless large changes occur within the demand for service.

MTA uses two software packages to handle scheduling each sitting on its own server in the office. MTA has an emergency back up plan and nightly stores all data off-site heavily encrypted at a private vendor.

School bus scheduling is handled using Versatrans software that is specifically designed for school applications. This software handles route development for regular school runs as well as handling requests for extra-curricular activity bus service.

Fixed route and para-transit bus service is handled using Trapeze software.

The Trapeze software has the following capabilities:

Demand response real time scheduling (para-transit)
Real Time Dispatching
Automatic Vehicle Location (AVL) System
Client Registration
Trip Booking
Mapping
Mobile dispatch for drivers

The only modules MTA regularly uses are AVL and para-transit scheduling.

All data comes from direct input by MTA personnel. The automatic vehicle location system does not send information directly to Trapeze. MTA is in early stage implementation of software that will eliminate the need for manual data entry and tie the live AVL data in with the Trapeze scheduling software to enable real time scheduling.

Because the only function that the software is performing is scheduling para-transit vehicles there is no issues with data integrity or reconciliations needed.

The MTA does not have a need to calibrate the software to local conditions due to the limited use they get out of the software.

Employees are trained on the software only when they first start working with it and when the software is updated. It is felt that this is adequate for their needs.

METRICS

MTA does not formally use any metrics on a regular basis except for on-time performance.

Operating cost efficiency metrics

They do track the key efficiency metrics such as wait time and on-time performance through the use of on-time surveys and will adjust routes that are not working well by extending or contracting the length of the route or changing the schedule times.

Use of standards or guidelines

The MTA does not regularly use standards or guidelines in evaluating its service. The MTA is run by First Transit a large private company that manages many of the country's bus lines and they believe that all bus services are so different that comparing one to another is mostly meaningless. They do collect statistics and compare them to other agencies but do not rely on the analysis to a large extent. The MTA is able to access comparative information from First Transit or call up other authorities and ask how they are doing.

BLOCKING AND RUNCUTTING

MTA does not use its software for blocking or run cutting. The routes were all developed by a study commissioned by SNHPC who is the State approved cognizant agency for transportation planning in the area. The study was conducted several years ago by a private consultant and looked at all areas to develop the most efficient routes.

Since that time the MTA has been constantly re-evaluating the routes and adjusting them to reflect current conditional changes such as the development of "big box" stores at the outside of current routes and large apartment complexes being built.

A straight route, where a bus goes out and back on the same route, is much preferred over a loop route as the passengers can wait for a bus going in either direction thereby cutting down on the time it takes to ride a bus from point A to B. On the loop route the bus is covering twice the territory as it goes up one route then down another route always traveling in the same direction.

If a passenger wants to go to a stop 15 minutes in the opposite direction the bus is traveling they would have to travel on the bus for up to one hour on some routes.

OBSERVATION 3 - INEFFICIENT ROUTES REDUCE RIDERSHIP

During fiscal year 2010 the MTA, in response to budget cuts, combined routes 1 and 7 into one circular route and routes 5 and 9 into one circular route. Prior to this all four routes were straight line routes For passengers this means that their bus commute had doubled on one leg of their journey.

The MTA has done a good job of adjusting the drivers schedules so a bus will still drive by on the same intervals however the length of the commute appears to have negatively affected ridership on those routes due to the inconvenience. Ridership has dropped on the combined routes 1 and 7 as well as 5 and 9 from 2009 to 2010 by -30% and -17% respectively. At the same time ridership increased from 2009 to 2010 on the remainder of the routes by 5.6%.

Recommendation:

One of the reasons that people choose other modes of transportation over bus service is due to the inconvenience of taking the bus. Unfortunately during the current economic downturn tough budget choices had to be made in order to limit the rise in tax rates. However, the reduction in the bus subsidy has caused the MTA to take some measures that are not conducive to growing the ridership base. In the future when financial conditions permit it the subsidy should be restored to a point where routes can be designed to better serve the needs of the public.

Auditee Response:

MTA is in agreement. Circular routes are highly undesirable and exist only as a method to retain service to as many points of interest in the City as possible while operating at the lowest cost. Ridership has shown that circular routes are inefficient and unpopular but with the current economic conditions, they are the best that MTA is able to offer. MTA will continue to urge local communities to support a vibrant transit system that fully meets the needs of the area. Additionally, MTA will continue to seek out other sources of revenue including grants, public private partnerships, advertising, and support from surrounding towns.

MTA will return to line haul service instead of circular service as soon as economically possible. As noted, line haul routes enjoy much higher support and ridership from passengers and this in turn makes them more desirable from an advertising and community support vantage. Strong ridership on routes benefits the MTA service in many ways.

SERVICE TRIP DEFINITIONS

Use of Round cycle trip analysis

MTA determines routes with aid from the SNHPC. Routes are largely based on a consultant's report that used round cycle analysis to develop the current route system. The study was published in 2006 and no new study has been done since. The SNHPC is currently conducting a new study and short range plan for the MTA.

Average run time vs. schedule

The MTA routinely conducts on time performance surveys to determine how efficiently the routes are being run. The SNHPC also conducted a short range plan for fiscal years 2004 through 2008 and cited a 1995 on-time survey they conducted. Both this survey and current MTA surveys show that the buses are leaving on-time 93% of the time. The SNHPC study showed on-time performance for both arriving and leaving buses to be at 79.4%. The study also showed about an even number of arrivals (16-17%) arriving early as arriving late.

Recovery time to in-service time

Drivers are given a 5 minute recovery time between routes. The recovery ratio averages 9% for all routes with a low of 12.5% for weekday service. This is considered very good with suggested standards being 25% or better.

Round trip cycle time and on-time departures

Round trip cycle times run from 45 to 75 minutes with an average of 61 minutes. Most routes are 60 minutes. As noted above on-time departures are averaging 93% which is considered good for bus systems.

RIDERSHIP

	FY 2010	FY 2009	FY 2008	FY 2007
Weekday Fixed Route	401,518	478,208	426,919	372,074
Saturday Fixed Route	45,411	53,753	48,291	44,048
StepSaver	13,709	11,645	12,160	11,300
UPass Riders –MCC	9,868	9,079	7,225	

Ridership data discusses the tools and methods MTA uses to accumulate and analyze Ridership data. As a recipient of federal funds the MTA is required to accumulate and report such data annually and reports ridership data to its commission monthly.

Ridership data systems include:

- On Board Systems (OBS) used to collect data on the bus as it occurs, including vehicle location, number of passengers, type (adult, student, senior) as well as pick up points being used, transfers made and media in use (10 ride ticket, monthly pass).
- Communications Center System (CCS) used for tracking and monitoring buses.

Ridership data has many uses. It helps planners to determine the demand for transit services and how efficiently the agency’s current and historical service has met this demand. Ridership data is used in reporting to management, commission and federal agencies.

Boardings count the number of passengers who board the bus. It can be gathered using automated passenger counters (APCs) or fare collection systems. APCs are not part of the fare box. Boardings are used for economic and performance analysis.

Linked Trips are a count of trips made by passengers including transfers.

Passenger Load is the number of passengers on board a vehicle for a given route segment.

On-Time Performance is a measure of how often buses arrived at various points on schedule. On time performance can be gathered using Automated Vehicle Location (AVL) systems or APCs.

Running Time is a measure of how long a vehicle takes to complete certain tasks and is measured using AVL or APCs.

MTA RIDERSHIP MAKE-UP

Based on a passenger survey conducted by Wilbur Smith Associates as part of their December 2005 Comprehensive Operations Assessment the following profile of MTA riders was developed.

- Most MTA riders walk to the bus and spend about 25 minutes making their trip, about ten minutes of which is spent waiting for the bus.
- Most people travel between home, work and shopping.
- Riders are frequent users of the service and are largely transit dependent population with limited access to drivers licenses and/or vehicles.
- 99 percent walk to the bus or have transferred from another bus
- 64 percent paid cash and 70 percent paid the adult fare.
- 12 percent were disabled, 10 percent seniors and 8 percent students
- 69 percent used the bus between four and six times per week
- 70 percent had no drivers license and 76 percent had no car available
- Riders are pretty evenly split between males (51%) and females (49%)
- 66 percent are between 25 and 64 years old
- 42 percent are employed full-time and use the bus to commute

COMPUTER SYSTEMS

The MTA uses Trapeze software for all of its bus and para-transit scheduling needs. Trapeze also has an integrated Automated Vehicle Location (AVL) that tracks the movement of each vehicle.

Each Para-transit vehicle has an On-Board system that is linked to the Communication Center so they can make and see changes being made to the schedule in real time. Fixed route systems do not have the same two-way communication abilities as the para-transit vehicles.

Vehicles do not have automatic passenger counters but rely on the stand-alone Fare Box System to collect information on boardings and revenue collections. When a passenger gets on board they will deposit the exact change into the fare box which will count the deposit and record the type of boarding based on the fare deposited. The system defaults to a full adult fare. If a rider displays a senior/handicap or student card or is a child the driver will push a button to display the correct fare and record the boarding.

If a passenger displays a monthly pass the driver will enter that a monthly pass holder has entered the bus. If a ten ride ticket is displayed or a transfer ticket is shown the driver will collect the transfer and record it in the fare box system or punch the card and record the transaction into the system manually.

OBSERVATION 4 - USE OF MAGNETIC STRIP CARDS AND READERS

Currently the MTA issues two types of paper passes, 10 ride tickets and monthly passes. The 10 ride ticket is handed to the driver who must punch the card to indicate that a ride is used and then enter the transaction in the on-board passenger counter. The monthly pass is shown to the driver who then enters the transaction in the on-board system. In addition the MTA offers discounted fares to seniors, disabled and students. These transactions must also be manually entered by the driver. This type of system is inefficient, and prone to input error by the driver.

Many transit authorities are changing to either a magnetic strip or contactless prepaid card in addition to cash payments. There are several types of these cards each with its own set of advantages and draw backs. Prepaid cards allow for faster boarding and better control over data collection. Cards can be preprogrammed to various discount programs and have the ability to offer other rewards and discounts to frequent users. They also could allow the MTA to partner up with other vendors to spread the cost or expand its user base. For instance the same card used to board a bus could also be used for parking in the City. Or a regional card can be developed so that it could be used to board buses in Nashua, Concord and Concord Trailways buses.

The biggest draw back is the high initial capital cost and user fees associated with the cards.

Recommendation:

MTA should study the issue of using prepaid cards for its transit customers and if feasible develop an plan for its implementation.

Auditee Response:

MTA is in agreement as to the benefits of prepaid fare media. As noted in the review, the capital costs associated with start up are significant but may prove more practical as new technology emerges and brings down the cost of current systems. MTA has had discussions with the Parking division about a shared use card and has also discussed the idea with the Regional Coordination Council, a collection of local transportation providers. MTA will continue to explore the issue as well as grant opportunities that may assist with the capital costs.

The Fare box system is used to reconcile revenue collected on the vehicle and to collect rider ship data. At the end of the day the bus will pull into the garage to be serviced and as part of the service the information from the fare box will be down loaded to a server. The money will then be collected and brought to the office for counting and reconciliation to the system and deposit to the bank.

Due to the small amount of vehicles the MTA feels that this is an adequate system for its needs.

School bus scheduling is tracked using Versitron software on a separate server. The 3 dispatchers in the office split the duties between school and route drivers with the third person helping both when the need arises.

BOARDINGS

Vehicles do not have automatic passenger counters but rely on the stand-alone Fare Box System to collect information on boardings and revenue collections. When a passenger gets on board they will deposit the exact change into the fare box which will count the deposit and record the type of boarding based on the fare deposited. The system defaults to a full adult fare. If a rider displays a senior/handicap of student card or is a child the driver will push a button to display the correct fare and record the boarding.

Monthly the MTA will accumulate the data into a report for presentation to the MTA Commission. Annually data is collected for reporting to the Federal Government. The MTA records transfers in the system so do have the capabilities to report unlinked trips as well as boardings.

While the new AVL system has the ability of tracking and calculating running time the AVL has only been operational for a few months and the full capabilities of it have not been explored as of yet.

ON-TIME PERFORMANCE

The MTA conducts continuous on-time performance surveys. Managers will sit at stops and record the times that buses arrive and depart. A trip is determined to be late if the bus departs 5 or more minutes after its scheduled departure time.

From September of 2008 through August of 2009 the percent of trips on time were at a low of 86% in September of 2008 to a high of 97% in August of 2009. The average on-time performance for this period was 93%. During the planning phase of the audit the auditor conducted 14 trips on MTA buses and noted no instances of late departures.

In 1995 the Southern New Hampshire Planning Commission conducted an on time performance survey and the results were slightly lower then the current MTA surveys. When looking at just departure times the SNHPC study showed 88% were on-time (0 to 4 minutes behind Schedule) while 67% of arrivals were on time (Less then 5 minutes ahead and less ten 3 minutes behind schedule).

Average on-time performance for both arrivals and departures was 79.4% in the SNHPC study which is considered to be very good performance.

EMERGENCY COMMUNICATIONS

Customer communication during adverse weather or other emergencies is a necessary for riders who count on the bus system to get them to work and other appointments. For some residents bus service is the only alternative for their transportation needs. During adverse weather conditions or route changes due to accidents or road closures the MTA needs a way to communicate with passengers in convenient and timely manner.

Emergency communication at the MTA takes place in several different ways.

1. MTA posts changes on their web site. The web site seems easy to navigate and appears to be very functional.
2. MTA has a Facebook presence that will update anyone registered as a friend any route changes. The Facebook link is advertised on their web page.
3. MTA has a manned phone line to the communication center where customers can call and get information on routes. The communication center is in direct contact with all bus drivers so any problems are relayed from the drivers to the center immediately. All buses are also tracked by GPS so the communication center knows where they are at all times. The system is not in real time but is updated every few minutes so a buses location can be approximated at all times.
4. MTA has recently started a Twitter service.

OBSERVATION 5 – NO WRITTEN EMERGENCY COMMUNICATION PLAN

In order to ensure that customers are kept informed during interruption of service it is important that a transportation agency has in place a plan that outlines how clients are notified, the timing for when a notification goes out, and who is responsible for implementing the plan. An interruption in service can be caused by accidents, street construction, or weather related delays such as large snow storms. The MTA has a variety of methods to get information out in a timely manner. They make use of their web site, have a Facebook presence and recently have been making use of Twitter. All these methods ensure that riders can be kept up to date of delays and changes in a timely manner. However, the MTA does not have a written emergency communication plan that outlines the who, what, where and when of contacting riders in case of emergency.

Recommendation:

It is recommended that the MTA include as part of their Policies and Procedures Manual a section dealing with emergency communications in case of temporary events both planned and unplanned that may occur.

Auditee Response:

MTA is in agreement and will make the addition to the manual.

PARA-TRANSIT SERVICES

2010 Miles	68,963
2010 Revenue Miles	59,754
2010 Unlinked Trips	12,592
2010 Service Hours	11,764
2010 Vehicle Hours	7,751
2010 Revenues	\$ 40,185
2010 Expenditures	Not available
2009 Revenues	\$ 29,013
2009 Expenditures	\$ 508,277

StepSaver is MTA's Para-transit program and is required by the Americans with Disabilities Act (ADA).

The program has six handicapped equipped busses to handle the programs need. There are seven para-transit runs that follow existing bus routes.

MTA has three dispatchers that handle all the dispatching needs. Typically during the school year one dispatcher will handle school buses and one will handle City buses, both transit and para-transit. The third dispatcher will fill in where needed.

The dispatchers also act to fill the roles of reservationists and schedulers.

The MTA is currently using Trapeze software to schedule and track para-transit runs. Clients must fill out an application that is signed by their doctor and pre-approved by the ADA coordinator. The ADA coordinator also checks to see if the address of the client is within the pickup zone of $\frac{3}{4}$ mile of an existing route. Drop off points must also be within the pick up zone. When approved the client information is entered into the Trapeze software.

Clients can call between one week in advance and 4:30 the day prior to the requested pick-up. Pick-ups are on a first come-first serve basis. All client requests will be honored but if a client calls late they might not get the exact pick-up time they want. Pick-up is curb to curb service and the bus will arrive between 15 minutes before and after the scheduled time so the client is required to be at the curb during that time period.

Every night after 4:30 the dispatcher will run a pick up report from the system that has assigned clients and pick-up times to the seven runs. In the morning the run sheets are handed to the drivers and a bus is assigned. All buses have an on-board computer that is connected to the office

computer so information is displayed and updated in real time. The bus is also equipped with GPS so the office can see where every bus is at all times.

When the bus arrives at the correct address the driver will click on the perform button indicating that he has arrived. The driver will also log in their time and mileage on the paper printout that they received in the morning. When they drop the client off the driver will note the time and mileage on the sheet and click on the drop off button in the on-board computer.

Drivers are able to call in the office to change pick-up order or note a cancellation so the office can update the computer. Because the software is new and they are still working out the bugs they are keeping the paper copies and comparing the information to the computer daily. Eventually they will eliminate the paper and just be using the computer.

ADA REQUIREMENTS

In order to use the StepSaver service client's must apply and be preapproved.

Part of the application process is to have the applicants doctor verify the medical condition preventing them from using regular bus service.

They then look up the address on the application in the City GIS system and determine if the location is within $\frac{3}{4}$ mile of a fixed bus route.

The StepSaver hours of service is the same as the fixed route service.

StepSaver service is curb to curb service. They will pick a client up directly in front of their residence and drop them off directly in front of the entrance to the address they have requested.

The cost for this service is linked to the cost for a cash adult fare and is always 2 X the cash fare. When the cash fare increases the StepSaver fare increases. Currently the adult cash fare is \$1.50 and the StepSaver Fare is \$3.00 each way.

It appears that the MTA is complying with the ADA regulations and is collecting the maximum allowed by the ADA and picking up only those eligible by medical condition and distance from a fixed route.

CONTRACTED AND COMMUNITY BASED SERVICES

The MTA does not contract with other services to provide para-transit services to its clients. They are able to handle 100% of calls for service in the area. Other agencies also provide ride service for handicap individuals and are reimbursed by Medicare or private insurance. These agencies include:

American Cancer Society
Cardinal Care Transportation
Caregivers Inc
Catholic Medical Center
Elliot Hospital

Lamprey Healthcare Center
Manchester Boys and Girls Club
Manchester Housing and Redevelopment Authority
NH Wheelchair Transport Inc
Southern NH Services
Special Transit Service Inc

In addition Manchester has two Taxi Services to provide transportation.

Elderly medical transportation is paid for by Medicare. Elderly who are unable to drive comprise a large portion of MTA ridership. Medicare will pay for only the least expensive form of transportation. Because the MTA is allowed to only charge up to twice its normal price to elderly/handicapped clients for StepSaver service it is by far the least costly to take and the federal government requires its use when available. When a request is made to MTA and the client is either not within the allowed pick-up area or otherwise ineligible for StepSaver service they will refer clients to the other agencies. If the client is qualified MTA will always make the pick-up.

It appears that MTA is referring to community based services as appropriate.

STAFFING EFFICIENCY

MTA does not formally track call time efficiency of its para-transit service. Management feels that the agency is too small and does not feel that they have any issues with calls going unanswered or long wait times. Because all scheduling calls arrive at the same switchboard the dispatchers may be handling a variety of call types of which StepSaver requests are only a part. In addition the three dispatchers are not assigned to any one area and will handle calls for fixed route, para-transit and school buses. The dispatchers have only two lines and sometimes during the busy morning and afternoon hours a call will occasionally get put in voice mail. The voice mail answering system will allow an individual to leave a request for StepSaver service that the dispatcher will book as soon as they get to the message and call the client back to confirm the pickup.

Because of the way the call center handles calls there are no statistics available for caller time on hold, calls answered in less than three minutes or average time to process trip requests. A review of the complaint logs for the last three years shows no client issues with the way the system currently runs. In four years of complaints reviewed StepSaver had 6 complaints of missed appointments and 3 complaints of bad driving out of approximately 12,000 unlinked passenger trips per year.

Drivers are required to log in the times that they arrived for a pickup but the MTA does not accumulate and report on-time performance in the StepSaver program. A review of the complaint log showed no complaints of late pickup and a review of six months of driver logs showed no instances where the driver did not show up in the ½ hour window allowed by the MTA.

Dispatcher staff handles approximately 4,000 boardings per dispatcher per year which appears very low but they are also handling school and fixed line calls, scheduling and driver issues.

From my observation of call center operations I noted that while busy, dispatchers seemed to be handling all calls in an efficient and courteous manner. I noted that para-transit calls seemed to take priority and fixed route inquiries would be put on hold.

Dispatchers at the MTA seem to have a low turnover with average longevity of 7.3 years indicating that they have a well trained and stable work force.

Trips per service hour was 1.07 in FY 2010 which is a slight improvement over the past years. As the service has been growing this efficiency measure has been improving but is still below the range for large providers of 1.3 to 2.3.