

Benchmarking Efficiency for the Metropolitan Transportation Authority's Services

April 2011



FOREWORD

Founded in 1932, the Citizens Budget Commission (CBC) is a nonprofit, nonpartisan civic organization devoted to influencing constructive change in the finances and services of New York State and New York City governments. A major activity of the Commission is conducting research on the financial and management practices of the State and City. All research by the CBC is overseen by a committee of its Trustees. This report was prepared under the auspices of the Transportation Committee, which we chair. The other members of the Committee are: Cathy Bell, Thomas Brodsky, Lawrence Buttenwieser, Randall Campbell, Vishaan Chakrabarti, Herman Charbonneau, William Gilbane III, Brian Horey, Steven Kantor, Robert Krinsky, James Lipscomb, Robinson Markel, Joyce Miller, Alfredo Quintero, Carol Rosenthal, David Schiff, Timothy Sheehan, Michael Solomon, Sonia Toledo, Claudia Wagner and Kenneth Gibbs, *ex-officio*.

The previous work of the Transportation Committee includes reports analyzing and making recommendations about the Metropolitan Transportation Authority's operating budget (*How to Balance the MTA's Budget*, June, 2006) and its capital plan (*Working in the Dark*, October, 2009). This report has its origins in the CBC's long-standing interest in performance measurement and benchmarking as a useful management technique. In 2006 the CBC report *Managing for Results in New York City Government* made the case for benchmarking, including comparisons of unit costs in a variety of municipal services. This latest analysis applies the approach to the MTA's services with the goal of providing guidance in how to make efficiency improvements.

Charles Brecher, Director of Research and Executive Vice President of the CBC, supervised the research for this report. Brooks Fraser, a graduate intern began the data collection, and Rahul Jain, currently a Research Associate and previously a graduate intern completed much of the empirical analysis. Research Assistant Connor Mealey helped in the analysis and updated the data to 2009. Carol Ryan of the U.S. Department of Transportation's National Transit Database provided valuable technical assistance. A preliminary draft was reviewed by Jeffrey Zupan, Elliot Sander and Robert Paaswell, each of whom provided helpful comments and suggestions. Charles Monheim, Chief Operating Officer, and the Strategic Initiatives team, at the MTA, gave helpful feedback on subsequent drafts.

Seth P. Bernstein, Co-chair

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March 30, 2011

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INTRODUCTION

The Metropolitan Transportation Authority (MTA), which provides mass transit services essential to the New York economy, is in the midst of serious fiscal problems. In 2009, despite enactment of a major new dedicated tax and a substantial fare increase, the agency ended the year with an operating budget deficit of more than \$300 million that was covered primarily by drawing down reserves and deferring expenses into 2010.¹ At the beginning of 2010, the MTA had a projected budget gap of more than \$400 million;² the gaps in subsequent years were projected to grow to nearly \$1.2 billion, or about 9 percent of operating expenses, in 2013.³

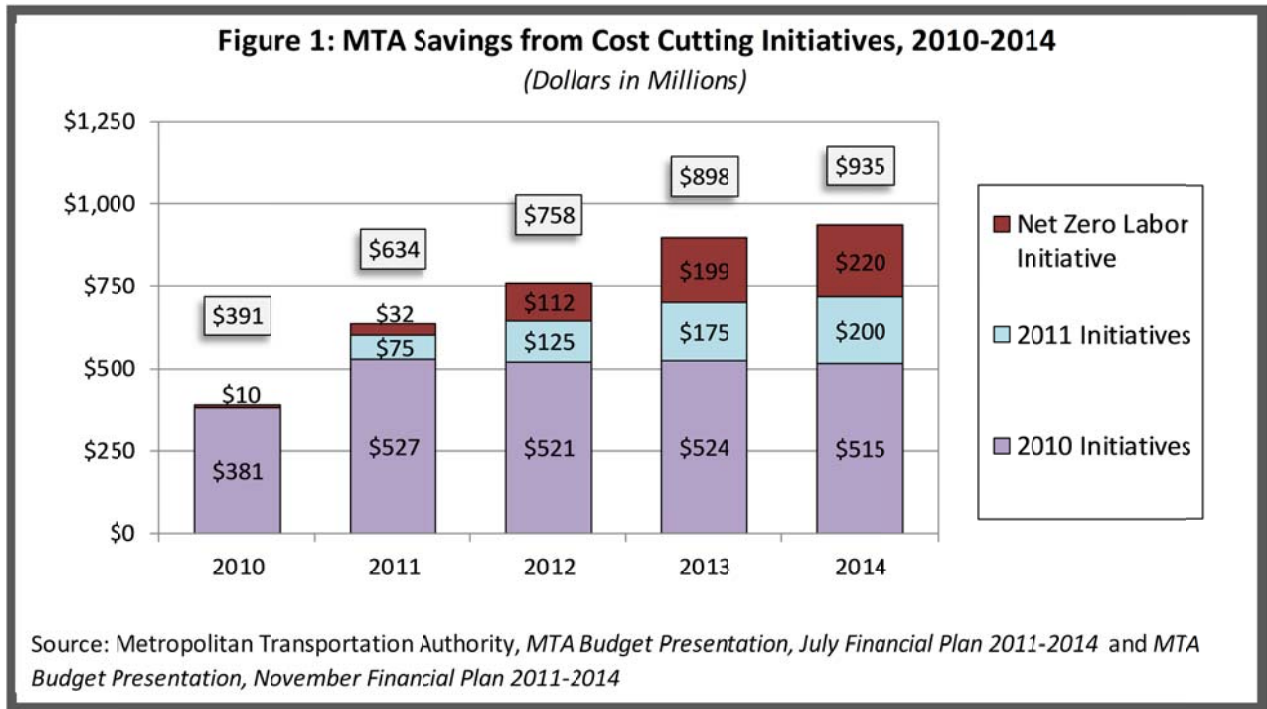
During 2010, the MTA leadership took significant steps to help bring its finances closer to structural balance. Other than previously scheduled fare increases in 2011 and 2013, the measures involve little new revenue;⁴ instead, the emphasis has been on cutting spending through service cuts and efficiency savings. The carefully considered, yet difficult service cuts, which took effect in June 2010, are projected to yield annualized savings of approximately \$100 million.⁵ The cuts included the restructuring of five subway routes and alterations in bus service including fully discontinuing some routes, halting overnight service on some routes and less frequent service on some routes.

The efficiency savings come from a variety of measures that the MTA Chairman presented under the theme “Over-hauling How the MTA Does Business.” These measures include eliminating low priority projects, renegotiating vendor contracts, and reducing overtime. Other actions are the consolidation and elimination of many administrative services as well as cuts to maintenance, cleaning and customer service, with the latter creating some adverse service impacts as well as efficiency gains. These efficiency measures and service cuts are expected to result in recurring savings of approximately \$525 million.⁶

In its November 2010 Financial Plan the MTA identifies another \$75 million in efficiency savings for 2011 from re-bidding of health benefits, consolidating IT functions, inventory savings and strategic sourcing. By 2014, further efforts will increase additional savings to \$200 million.⁷ The MTA is also adopting a “net-zero” wage policy, which would require any wage increases to be offset by productivity gains. This policy is projected to save \$32 million in 2011, growing to \$220 million in 2014.⁸ Combining all initiatives identified so far, the total in 2014 will be \$935 million. These measures, shown in Figure 1, are presented as a base that the MTA could build upon in 2011.

Other potential savings advocated by the CBC are linked to conforming the MTA to practices for direct state government employees with respect to a new pension tier and cost sharing for health insurance premiums.

This paper has been prepared by the CBC to support development of ongoing efforts to control costs at the MTA. One way to help identify priorities for these efforts is through benchmarking. In a 2006 report on performance management in municipal agencies, the CBC recommended greater reliance on the techniques of identifying unit cost measures and developing comparative measures.⁹ Comparison of unit cost measures with other large urban transit agencies can point the way to areas in which the MTA is out of line with practices in other places and suggest priorities for new efficiency initiatives.



The Federal Transit Administration (FTA), a division of the U.S. Department of Transportation, gathers comparative information for all major public transit providers in the United States and makes it available in the National Transit Database (NTD). Based on unit cost measures derived from this data, the following key findings are presented in the more detailed analysis below:

- *New York’s subways are among the most efficient in the nation.* Among the ten largest systems in the United States, the MTA ranks first in cost per passenger trip and between second and fifth on four other unit cost indicators. However, there is still room for improvement; one notable opportunity appears to be in non-vehicle operations (stations and other facilities) where the MTA scores only in the middle of the group.
- *The MTA’s bus operations are relatively inefficient.* Among the ten largest systems in the nation, the New York City Transit (NYCT) bus operations rank last in three of five cost indicators and the MTA Bus Company ranks seventh or below in all five.
- *The two MTA commuter railroads, the Long Island Railroad (LIRR) and Metro-North (MNR), also are relatively inefficient.* Among the ten largest commuter railroads in the nation, the LIRR was at or near the bottom on three of five indicators and below the median on the other two. The MNR was in the bottom half of the group on all five indicators.

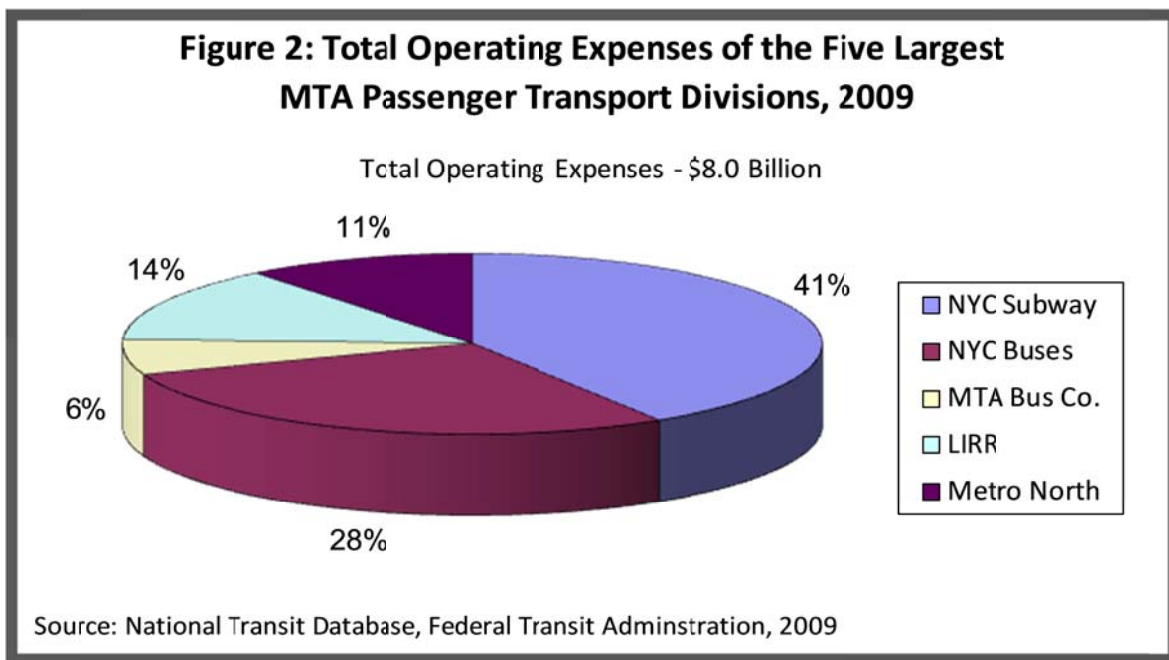
OVERVIEW OF THE ANALYTIC APPROACH

This analysis focuses on three mass transit services provided by the MTA – subways, buses and commuter railroads. Subway service is provided primarily by one unit of the MTA, New York City Transit (NYCT).¹⁰ Bus service is provided primarily by two MTA units; NYCT provides service within New York City, the MTA Bus Company (MTA Bus) in 2006 assumed the operations of seven previously private bus companies providing service within the city.¹¹ The MTA also has two separate commuter railroads - the Long Island Railroad (LIRR) and Metro-North Railroad (MNR).

The five units providing these services represent 90 percent of the MTA’s operating budget.¹² The remainder includes the bridges and tunnels, the MTA headquarters and other smaller units.

Comparative data for mass transit services are gathered for all major providers in the United States by the FTA and made available in their National Transit Database (NTD). The NTD data is provided to the FTA by the local operating agencies as a condition for federal funding, but it is not audited by the FTA. The NTD is viewed as reliable and widely used for research and other purposes. The latest data in the NTD is for 2009.

Figure 2 summarizes the 2009 expenditure data for the five MTA operating units. Of the over \$8 billion, about 41 percent is accounted for by the subways, 34 percent by the bus services, and 25 percent by the commuter railroads.



The NTD further disaggregates expenditures into four categories - Vehicle Operations, Non-Vehicle Maintenance, Vehicle Maintenance, and General Administration. Vehicle Operations expenses are the costs associated with the routes operated by each vehicle while Non-Vehicle Operations encompass depot, station, and track maintenance operations. Vehicle Maintenance expenses include repair,

maintenance, and cleaning of the vehicle fleet. General Administration covers all administrative functions not associated directly with the three other expense functions.

Table 1 shows the categories of expenditure for each MTA unit. Vehicle operations is the largest category, accounting for 46 percent on average, but the share varies from 58 percent for buses to about one-third for MNR. Vehicle maintenance is the second largest category, 26 percent on average but approaching one-third for the LIRR and only 18 percent for the subways. Non-vehicle maintenance averages 14 percent, but is highest for the subways (26 percent) and commuter railroads and far lower for the bus companies that do not have numerous stations or right-of-way to maintain.

Table 1: Operating Expenses by Type, MTA Passenger Transportation Divisions, 2009
(Dollars in Thousands)

Operating Division	Vehicle Operations	Non-Vehicle Maintenance	Vehicle Maintenance	General Administration	Operating Expenses
NYC Subway	\$1,488,221 (45%)	\$854,207 (26%)	\$586,186 (18%)	\$384,513 (12%)	\$3,313,127 (100%)
NYC Buses	1,318,138 (58%)	116,200 (5%)	561,250 (25%)	293,860 (13%)	2,289,448 (100%)
MTA Bus Co.	272,841 (54%)	7,461 (1%)	140,041 (28%)	86,650 (17%)	506,993 (100%)
LIRR	420,235 (38%)	191,971 (17%)	347,658 (31%)	144,616 (13%)	1,104,479 (100%)
Metro North	287,995 (34%)	185,184 (22%)	228,766 (27%)	156,564 (18%)	858,510 (100%)
Total	\$3,787,430 (46%)	\$1,355,023 (14%)	\$1,863,901 (26%)	\$1,066,203 (15%)	\$8,072,558 (100%)

Source: National Transit Database 2009, Federal Transit Administration

The NTD permits comparison of efficiency measures because it contains indicators of service volume as well as expenditure data. This analysis focuses on five such indicators.

- (1) *Vehicle Revenue Miles (Miles of Service)* are the miles that vehicles are scheduled to or actually travel while in revenue service.
- (2) *Vehicle Revenue Hours (Hours of Service)* are hours that vehicles are scheduled to or actually travel while in revenue service, including layover time.
- (3) *Unlinked Passenger Trips (Passenger Trips)* are the total number of passengers who board public transportation vehicles, counted each time a passenger boards a new vehicle.
- (4) *Passenger Miles Traveled* are the aggregate miles traveled by all passengers.¹³
- (5) *Vehicles Operating at Maximum Service (Vehicle in Use)* is the number of revenue creating vehicles operated during the period of maximum service, such as rush hour.

By dividing total operating expenses and its components by these service volume statistics, it is possible to calculate unit costs for each type of service as well as the components of total unit cost. The following analysis relies primarily on these unit cost measures as indicators of efficiency.

However, unit costs can be affected by regional wage differences and other input cost variations. Accordingly, analysts recommend also measuring efficiency with labor productivity measures based on hours of work.¹⁴ The NTD permits such comparisons and the CBC staff has also calculated three labor productivity measures. The first is a measure of overall labor productivity; the second and third focus on the two largest expense components - vehicle operations and vehicle maintenance:

- (1) Hours of Service per Total Employee Hour – a measure of overall labor productivity affected by size of administrative staff, peak/off-peak staff ratio, and labor rules.
- (2) Hours of Service per Vehicle Operator Employee Hour – a measure of vehicle operator productivity.
- (3) Miles of Service per Maintenance Employee Hour – a measure of maintenance employee productivity.

The following sections present this comparative efficiency analysis for the three types of mass transit – subways, buses and commuter railroads. In each case the MTA units are compared to the other agencies that comprise the ten largest systems in the United States.

SUBWAYS

The New York City subway is by far the largest urban heavy rail system in the United States. Nonetheless, nine other large systems provide a reasonable basis for comparison of unit costs. As shown in Table 2, these other systems range in size from Washington, DC’s Metro system, which carries an average of about 813,000 passengers daily, to the Miami–Dade system with just under 50,000 passengers daily; however, eight of the nine other systems carry at least 100,000 passengers daily.

Table 2: Selected Service Indicators, Ten Largest U.S. Heavy Rail Operators, 2009

City (Transit System)	Operating Expense (in millions)	Active Vehicles	Average Fleet Age*	Daily Passenger Miles	Daily Passenger Trips	Daily Miles of Service	Daily Hours of Service
New York City (NYCT)	\$3,313.1	6,360 (1)	17.4 (4)	27,322,683 (1)	6,461,133 (1)	965,821 (1)	52,934 (1)
Washington D.C. (WMATA)	804.8	1,120 (3)	18.9 (5)	4,569,588 (2)	813,307 (2)	196,721 (2)	7,737 (3)
San Francisco (BART)	484.2	669 (4)	11.7 (1)	3,951,025 (3)	314,122 (5)	185,872 (4)	5,320 (4)
Chicago (CTA)	462.0	1,186 (2)	25.7 (8)	3,290,783 (4)	554,984 (3)	187,924 (3)	10,226 (2)
Boston (MBTA)	298.5	442 (5)	21.8 (7)	1,558,839 (5)	407,354 (4)	61,575 (6)	3,533 (5)
New York/New Jersey (PATH)	233.0	369 (6)	29.4 (10)	934,784 (8)	219,329 (8)	33,433 (8)	1,813 (8)
Atlanta (MARTA)	167.0	270 (8)	19.2 (6)	1,443,898 (6)	228,347 (7)	67,304 (5)	2,523 (6)
Philadelphia (SEPTA)	158.0	369 (6)	16.7 (3)	1,158,870 (7)	260,576 (6)	46,267 (7)	2,375 (7)
Los Angeles (LACMTA)	88.8	104 (10)	13.0 (2)	623,717 (9)	128,469 (9)	16,651 (10)	736 (10)
Miami-Dade (MDT)	78.4	136 (9)	27.0 (9)	363,753 (10)	49,985 (10)	18,333 (9)	806 (9)

(Ranking among all heavy rail transit systems, 1 = most/newest, 10 = least/oldest)

*Age based on end of year 2009 data.

Source: National Transit Database 2009, Federal Transit Administration (Daily numbers calculated from Annual Averages in NTD.)

When the expenditure and service data are combined to yield unit cost measures, the New York City subway is shown to be relatively efficient. (See Table 3.) Among the ten systems it has the lowest cost per passenger trip, the second lowest cost per passenger mile (behind Atlanta) and cost per hour of service (behind Chicago), and is third (behind Philadelphia and Chicago) in cost per vehicle. New York is fifth in cost per mile of service.

Table 3: Selected Unit Cost Measures, Ten Largest Heavy Rail Operators, 2009

City (Transit System)	Total Operating Expenses Per:				
	Mile of Service	Hour of Service	Passenger Trip	Passenger Mile	Active Vehicle
New York City (NYCT)	\$9.40 (5)	\$171.48 (2)	\$1.40 (1)	\$0.33 (2)	\$520,932 (3)
Washington D.C. (WMATA)	11.21 (6)	284.99 (8)	2.71 (7)	0.48 (7)	718,539 (8)
San Francisco (BART)	7.14 (3)	249.36 (6)	4.22 (9)	0.34 (3)	723,733 (9)
Chicago (CTA)	6.74 (1)	123.78 (1)	2.28 (6)	0.38 (5)	389,557 (1)
Boston (MBTA)	13.28 (8)	231.46 (5)	2.01 (5)	0.52 (8)	675,295 (7)
New York/New Jersey (PATH)	19.09 (10)	352.10 (10)	2.91 (8)	0.68 (10)	631,460 (6)
Atlanta (MARTA)	6.80 (2)	181.34 (3)	2.00 (4)	0.32 (1)	618,615 (5)
Philadelphia (SEPTA)	9.36 (4)	182.28 (4)	1.66 (2)	0.37 (4)	428,264 (2)
Los Angeles (LACMTA)	14.61 (9)	330.62 (9)	1.89 (3)	0.39 (6)	853,769 (10)
Miami-Dade (MDT)	11.72 (7)	266.54 (7)	4.30 (10)	0.59 (9)	576,465 (4)
Median, All Systems	\$10.30	\$240.41	\$2.14	\$0.39	\$625,037

(Ranking among all heavy rail transit systems, 1 = best, 10 = worst)

Source: National Transit Database, Federal Transit Administration, 2009

New York’s relatively strong performance holds up with respect to each of the expenditure components, with one notable exception. (See Table 4.) New York ranks in the middle of the group in its non-vehicle operations expenses per unit of service. Several factors may be behind this exception including the pressure of high passenger volume on station maintenance and the age of signal and other infrastructure elements. However, relatively inefficient staffing patterns for stations including the continued use of former token booth clerks may also be a factor, and the MTA’s recent efforts to terminate such staff could lead to efficiency improvements in this area.¹⁵

Table 4: Heavy Rail Unit Costs by Type of Expenditure, New York City Subway and Median for Ten Largest Operators, 2009

New York City Subway	Component Expense Per:				
	Mile of Service	Hour of Service	Passenger Trip	Passenger Mile	Active Vehicle
Types of Expenses					
Vehicle Operations	\$4.22 (4)	\$77.03 (3)	\$0.63 (1)	\$0.15 (2)	\$233,997 (4)
Non-Vehicle Operations	2.42 (5)	44.21 (5)	0.36 (2)	0.09 (5)	134,309 (4)
Vehicle Maintenance	1.66 (4)	30.34 (2)	0.25 (1)	0.06 (1)	92,168 (4)
General Administration	1.09 (2)	19.90 (2)	0.16 (1)	0.04 (1)	60,458 (4)
Median, All Systems	Mile of Service	Hour of Service	Passenger Trip	Passenger Mile	Active Vehicle
Types of Expenses					
Vehicle Operations	\$4.70	\$108.91	\$0.95	\$0.18	\$277,655
Non-Vehicle Operations	2.64	52.81	0.51	0.09	138,877
Vehicle Maintenance	1.73	40.52	0.37	0.07	105,958
General Administration	1.50	33.57	0.30	0.06	78,512

(Ranking among all heavy rail transit systems, 1 = best, 10 = worst)

Source: National Transit Database, Federal Transit Administration, 2009

The labor productivity data evidence a pattern generally consistent with the unit cost data. New York City subways are better than the ten-system median for all three indicators. (See Table 5). New York is behind only Chicago in the total labor productivity indicator, and behind only Chicago and Miami for vehicle operator productivity. However, three other large systems (again including Chicago) do better than New York in maintenance productivity. Despite the relatively good performance of New York, opportunities for improvement still exist, and exploration of practices in Chicago, in particular, may suggest new initiatives.

Table 5: Selected Labor Productivity Measures, Ten Largest Heavy Rail Operators, 2009

City (System Name)	Hours of Service per Employee Hour	Hours of Service per Vehicle Operator Hour	Miles of Service per Maint. Employee Hour
<i>New York City (NYCT)</i>	0.413 (2)	0.944 (3)	43.2 (4)
Washington D.C. (WMATA)	0.284 (7)	0.757 (7)	35.0 (5)
San Francisco (BART)	0.367 (3)	0.863 (5)	68.1 (1)
Chicago (CTA)	0.548 (1)	1.227 (2)	51.1 (2)
Boston (MBTA)	0.294 (5)	0.584 (9)	32.5 (6)
New York/New Jersey (PATH)	0.293 (6)	0.762 (6)	24.7 (9)
Atlanta (MARTA)	0.222 (10)	0.484 (10)	44.3 (3)
Philadelphia (SEPTA)	0.315 (4)	0.627 (8)	28.7 (7)
Los Angeles (LACMTA)	0.273 (8)	0.901 (4)	23.3 (10)
Miami-Dade (MDT)	0.271 (9)	1.264 (1)	25.6 (8)
Median, All Systems	0.315	0.813	33.8

(Ranking among all heavy rail transit systems, 1 = best, 10 = worst)

Source: National Transit Database, Federal Transit Administration, 2009

BUSES

Buses are the primary mode of public transportation in the United States, and systems in other cities are closer in scale to those in New York than is the case for subway systems. While the NYCT bus system is the largest in the country, the system in Los Angeles has more than one million passenger trips daily and is close in scale to NYCT in terms of miles of service. (See Table 6.) The MTA’s second bus unit, MTA Bus Company, is smaller in scale than the systems in at least five other cities.

Table 6: Selected Service Indicators, Ten Largest U.S. Bus Operators, 2009

City (Transit System)	Operating Expense (in millions)	Active Vehicles	Average Fleet Age*	Daily Pass Miles	Daily Pass Trips	Daily Miles of Service	Daily Hours of Service
New York City (NYCT Buses)	\$2,289.4	4,538 (1)	7.7 (6)	5,036,703 (1)	2,308,596 (1)	281,351 (1)	36,366 (1)
New Jersey (NJ Transit)	943.3	2,542 (3)	9.2 (10)	2,892,404 (3)	467,777 (5)	221,745 (3)	15,174 (4)
Los Angeles (LACMTA)	939.2	2,712 (2)	8.4 (7)	4,157,938 (2)	1,057,616 (2)	242,564 (2)	20,586 (2)
Chicago (CTA)	786.9	2,056 (4)	4.8 (1)	2,025,392 (4)	873,076 (3)	184,773 (4)	19,201 (3)
Philadelphia (SEPTA)	533.8	1,409 (6)	7.4 (5)	1,451,504 (5)	494,944 (4)	112,000 (6)	10,891 (5)
Washington D.C. (WMATA)	525.9	1,525 (5)	8.5 (8)	1,158,990 (7)	375,052 (6)	115,059 (5)	10,737 (6)
New York City (MTABus)	507.0	1,347 (7)	5.9 (2)	898,069 (9)	328,701 (7)	74,821 (9)	8,667 (7)
Seattle (MetroKC)	424.5	1,248 (8)	8.9 (9)	1,261,148 (6)	250,270 (9)	87,979 (7)	7,186 (9)
Boston (MBTA)	336.0	1,123 (9)	6.9 (4)	632,613 (10)	276,080 (8)	68,968 (10)	6,454 (10)
Miami-Dade (MDT)	334.7	902 (10)	6.3 (3)	1,072,091 (8)	207,145 (10)	86,430 (8)	7,204 (8)

(Ranking among all included bus transit systems, 1 = most/newest, 10 = least/oldest)

*Age based on end of year 2009 data.

Source: National Transit Database 2009, Federal Transit Administration (Daily numbers calculated from Annual Averages in NTD.)

Table 7: Selected Unit Cost Measures, Ten Largest Bus System Operators, 2009

City (Transit System)	Total Operating Expenses Per:				
	Mile of Service	Hour of Service	Passenger Trip	Passenger Mile	Active Vehicle
New York City (NYCT Buses)	\$22.29 (10)	\$172.48 (10)	\$2.72 (3)	\$1.25 (8)	\$504,506 (10)
New Jersey (NJ Transit)	11.65 (3)	170.31 (9)	5.52 (10)	0.89 (3)	371,088 (5)
Los Angeles (LACMTA)	10.61 (1)	124.99 (2)	2.43 (1)	0.62 (1)	346,310 (4)
Chicago (CTA)	11.67 (4)	112.28 (1)	2.47 (2)	1.06 (6)	382,736 (9)
Philadelphia (SEPTA)	13.06 (6)	134.29 (5)	2.95 (4)	1.01 (5)	378,867 (8)
Washington D.C. (WMATA)	12.52 (5)	134.18 (4)	3.84 (6)	1.24 (7)	344,823 (3)
New York City (MTABus)	18.56 (9)	160.27 (7)	4.23 (7)	1.55 (10)	376,387 (7)
Seattle (MetroKC)	13.22 (7)	161.87 (8)	4.65 (9)	0.92 (4)	340,176 (2)
Boston (MBTA)	13.35 (8)	142.62 (6)	3.33 (5)	1.45 (9)	299,165 (1)
Miami-Dade (MDT)	10.61 (2)	127.29 (3)	4.43 (8)	0.86 (2)	371,095 (6)
Median, All Systems	\$12.79	\$138.45	\$3.59	\$1.04	\$371,091

(Ranking among all included bus transit systems, 1 = most/newest, 10 = least/oldest)

Figures for Each City, Except New York, Based on the Largest Bus Transport Provider in Urbanized Area

Source: National Transit Database, Federal Transit Administration, 2009

In terms of cost efficiency, the MTA’s two bus systems perform poorly. (See Table 7.) The systems rank seventh or below for four of the five unit cost measures. With respect to the fifth indicator, cost per passenger trip, the MTA Bus Company remains near the bottom of the pack, but NYCT Bus ranks third (behind Chicago and Los Angeles).

The MTA’s poor performance in efficiency of bus operations is consistent across each of the components of unit costs. (See Table 8.) The two New York agencies are among the highest cost operations for each type of expense. The sole anomaly is the high ranking of the MTA Bus Company for non-vehicle operations, which is a relatively small cost component for most bus transit operators.

The labor productivity indicators also point to poor performance by the New York systems. (See Table 9.) In all three productivity measures, the MTA systems rank as the bottom two. Maintenance productivity was particularly weak with both MTA systems performing at about half the national median. Both indicators based on hours of service should show some relative advantage from the around the clock service provided by New York City, yet fail to do so.

Table 8: Bus Service Unit Cost by Type of Expenditure, MTA Operated Bus Units and Median for Ten Largest Operators, 2009

NYC Buses	Types of Expenses				
	Miles of Service	Hours of Service	Passenger Trips	Passenger Miles	Active Vehicle
Vehicle Operations	\$12.84 (10)	\$99.31 (10)	\$1.56 (2)	\$0.72 (6)	\$290,467 (10)
Non-Vehicle Operations	1.13 (9)	8.75 (9)	0.14 (6)	0.06 (8)	25,606 (9)
Vehicle Maintenance	5.47 (10)	42.28 (9)	0.67 (4)	0.31 (8)	123,678 (10)
General Administration	2.86 (9)	22.14 (6)	0.35 (3)	0.16 (6)	64,755 (9)
MTA Bus Co	Miles of Service	Hours of Service	Passenger Trips	Passenger Miles	Active Vehicle
Vehicle Operations	\$9.99 (9)	\$86.25 (6)	\$2.27 (7)	\$0.83 (9)	\$202,555 (5)
Non-Vehicle Operations	0.27 (3)	2.36 (1)	0.06 (2)	0.02 (2)	5,539 (2)
Vehicle Maintenance	5.13 (9)	44.27 (10)	1.17 (10)	0.43 (10)	103,965 (9)
General Administration	3.17 (10)	27.39 (9)	0.72 (8)	0.26 (10)	64,328 (8)
Median, All Systems	Miles of Service	Hours of Service	Passenger Trips	Passenger Miles	Active Vehicle
Vehicle Operations	\$7.64	\$83.57	\$2.18	\$0.65	\$208,227
Non-Vehicle Operations	0.60	7.11	0.13	0.05	17,285
Vehicle Maintenance	2.42	29.51	0.82	0.19	73,305
General Administration	2.00	20.83	0.44	0.16	55,081

(Ranking among all included bus transit systems, 1 = best, 10 = worst)

Source: National Transit Database, Federal Transit Administration, 2009

Table 9: Selected Labor Productivity Measures, Ten Largest Bus Transit Operators, 2009

City (System Name)	Hours of Service per		Hours of Service per		Miles of Service per	
	Employee Hour		Vehicle Operator Hour		Maint. Employee Hour	
<i>New York City (NYCT Buses)</i>	0.375	(10)	0.547	(10)	13.5	(9)
New Jersey (NJ Transit)	0.468	(5)	0.799	(1)	32.4	(2)
Los Angeles (LACMTA)	0.493	(2)	0.726	(5)	27.3	(6)
Chicago (CTA)	0.558	(1)	0.764	(2)	32.0	(3)
Philadelphia (SEPTA)	0.444	(8)	0.729	(3)	25.6	(7)
Washington D.C. (WMATA)	0.478	(4)	0.727	(4)	27.6	(5)
<i>New York City (MTABus)</i>	0.409	(9)	0.614	(9)	13.4	(10)
Seattle (MetroKC)	0.479	(3)	0.677	(6)	33.7	(1)
Boston (MBTA)	0.455	(7)	0.638	(7)	20.9	(8)
Miami-Dade (MDT)	0.455	(6)	0.628	(8)	30.8	(4)
Median, All Systems	0.478		0.701		27.466	

(Ranking among all bus transit systems, 1 = best, 10 = worst)

Source: National Transit Database, Federal Transit Administration, 2009

The relative inefficiency of MTA bus services is sometimes attributed to two factors – poor road conditions causing greater maintenance needs and traffic congestion causing slower and more expensive operations.¹⁶ Comparative data on road conditions are not readily available, so this remains a plausible (if perhaps only partial) explanation. With respect to congestion, the available data point to more severe conditions in New York than elsewhere. Using the data in Table 7 for miles of service and hours of service, it is possible to calculate an average miles per hour for buses in each city. Only three bus systems operated at less than ten miles per hour - New York City Buses (7.8), MTA Bus Company (8.6), and Chicago Transit (9.8). The median speed for all ten systems was 10.8. This slower average speed may help explain the lack of efficiency in cost per mile of service and cost per passenger mile for MTA operated bus service, but it does not explain the MTA’s relative inefficiency in cost per hour of service.

COMMUTER RAIL

The MTA's two commuter railroads are among the largest in the nation, but several other systems comprise a reasonable peer group. (See Table 10.) The New Jersey Transit railroad is second only to the LIRR in number of passengers, and it is larger than LIRR and MNR in terms of passenger miles. The systems in Chicago and Boston each carry an average of more than 100,000 passengers daily.

Table 10: Selected Service Indicators, Ten Largest U.S. Commuter Rail Operators, 2009

City (Transit System)	Operating Expense (in millions)	Active Vehicles	Average Fleet Age*	Daily Pass. Miles	Daily Pass. Trips	Daily Miles of Service	Daily Hours of Service
New York (LIRR)	\$1,104.5	1,185 (3)	8.0 (1)	5,355,465 (3)	266,714 (1)	178,190 (1)	6,098 (1)
New York (MNCR)	858.5	1,073 (4)	18.3 (5)	6,025,911 (2)	217,710 (3)	161,199 (3)	4,403 (3)
New Jersey (NJ Transit)	841.8	1,241 (2)	14.8 (3)	6,417,141 (1)	229,004 (2)	163,773 (2)	5,747 (2)
Chicago (Metra)	548.6	1,434 (1)	26.9 (9)	4,540,905 (4)	196,622 (4)	117,617 (4)	3,820 (4)
Boston (MBTA)	277.2	470 (5)	19.8 (7)	2,241,152 (5)	111,186 (5)	65,684 (5)	2,190 (5)
Philadelphia (SEPTA)	219.8	361 (6)	33.8 (10)	1,374,738 (6)	97,680 (6)	46,710 (6)	1,736 (6)
Los Angeles (Metrolink)	158.8	204 (7)	12.4 (2)	1,150,370 (7)	33,539 (7)	29,194 (7)	721 (7)
Baltimore (MTA)	109.1	157 (8)	20.8 (8)	696,035 (9)	22,140 (9)	13,941 (9)	353 (9)
San Francisco (PCJPB)	87.0	147 (9)	17.7 (4)	801,773 (8)	31,121 (8)	18,892 (8)	543 (8)
Miami (Tri-Rail)	52.9	46 (10)	19.1 (6)	335,533 (10)	11,571 (10)	8,091 (10)	239 (10)

(Ranking among all included commuter rail systems, 1 = most/newest, 10 = least/oldest)

*Age based on end of year 2009 data.

Source: National Transit Database 2009, Federal Transit Administration (Daily numbers determined from Annual Averages in NTD)

The LIRR stands out as a relatively inefficient railroad in terms of unit costs, and MNR ranks only somewhat better. (See Table 11.) The LIRR has the highest cost per passenger mile among the ten largest systems, and it ranked in the bottom half of the group on the other indicators. MNR ranked sixth on three of the five indicators, and it ranked seventh on cost per hour of service and eighth on cost per active vehicle. The large systems in New Jersey, Chicago, Boston and Philadelphia each outperformed the MTA railroads on most of the indicators.

When the MTA commuter railroads' relatively high unit costs are disaggregated by type of expense, three patterns emerge. (See Table 12.) First, both systems have exceptionally high vehicle maintenance costs. The LIRR's costs are the highest among all ten systems on all indicators, and MNR consistently ranks eighth or ninth. This is the case despite the fact that the LIRR has the newest fleet among the ten systems with an average age of 8.0 years, and MNR's fleet is the fifth newest. (Refer to Table 10.) Second, both MTA systems are among the worst with respect to non-vehicle operations. LIRR is sixth or below in all five indicators and in the bottom two in non-vehicle cost per passenger miles and per active vehicles. MNR is in the bottom two in four of the five indicators and eighth in non-vehicle maintenance cost per passenger miles. Third, MNR has relatively low costs for vehicle operations; it consistently ranked between second and fourth on these indicators. In contrast, the LIRR was in the bottom half of the group in four of the five indicators for this type of expense.

Table 11: Selected Unit Cost Measures, Ten Largest Commuter Rail Operators, 2009

City (Transit System)	Total Operating Expenses Per:				
	Mile of Service	Hour of Service	Passenger Trip	Passenger Mile	Active Vehicle
New York (LIRR)	\$16.98 (8)	\$496.19 (6)	\$11.35 (7)	\$0.57 (10)	\$932,050 (9)
New York (MNCR)	14.59 (6)	534.20 (7)	10.80 (6)	0.39 (6)	800,102 (8)
New Jersey (NJ Transit)	14.08 (5)	401.35 (4)	10.07 (5)	0.36 (4)	678,338 (5)
Chicago (Metra)	12.78 (3)	393.49 (3)	7.64 (3)	0.33 (2)	382,600 (1)
Boston (MBTA)	11.56 (1)	346.81 (2)	6.83 (2)	0.34 (3)	589,720 (2)
Philadelphia (SEPTA)	12.89 (4)	346.80 (1)	6.16 (1)	0.44 (9)	608,815 (4)
Los Angeles (Metrolink)	14.90 (7)	602.96 (8)	12.97 (9)	0.38 (5)	778,254 (7)
Baltimore (MTA)	21.45 (10)	846.73 (10)	13.50 (10)	0.43 (7)	695,131 (6)
San Francisco (PCJPB)	12.62 (2)	439.12 (5)	7.66 (4)	0.30 (1)	592,079 (3)
Miami (Tri-Rail)	17.90 (9)	605.53 (9)	12.52 (8)	0.43 (8)	1,149,384 (10)
Median, All Systems	\$14.34	\$467.66	\$10.44	\$0.38	\$686,735

(Ranking among all included commuter rail systems, 1 = best, 10 = worst)
 Source: National Transit Database, Federal Transit Administration, 2009

Table 12: Unit Costs by Type of Expenditure, MTA Commuter Rail Units and Median for Ten Largest Operators, 2009

<i>LIRR</i>	Miles of Service	Hours of Service	Passenger Trips	Passenger Miles	Active Vehicle
Vehicle Operations	\$6.46 (7)	\$188.79 (6)	\$4.32 (6)	\$0.21 (9)	\$354,629 (9)
Non-Vehicle Operations	2.95 (8)	86.24 (6)	1.97 (8)	0.10 (10)	162,001 (9)
Vehicle Maintenance	5.35 (10)	156.19 (10)	3.57 (10)	0.18 (10)	293,382 (10)
General Administration	2.22 (4)	64.97 (4)	1.49 (4)	0.07 (6)	122,038 (4)
<i>Metro North</i>	Miles of Service	Hours of Service	Passenger Trips	Passenger Miles	Active Vehicle
Vehicle Operations	\$4.89 (2)	\$179.20 (3)	\$3.62 (5)	\$0.13 (2)	\$268,402 (3)
Non-Vehicle Operations	3.15 (10)	115.23 (9)	2.33 (10)	0.08 (8)	172,586 (10)
Vehicle Maintenance	3.89 (9)	142.35 (8)	2.88 (9)	0.10 (9)	213,202 (8)
General Administration	2.66 (5)	97.42 (6)	1.97 (6)	0.07 (5)	145,913 (6)
<i>Median, All Systems</i>	Miles of Service	Hours of Service	Passenger Trips	Passenger Miles	Active Vehicle
Vehicle Operations	\$6.05	\$185.03	\$3.97	\$0.15	\$299,696
Non-Vehicle Operations	2.53	84.17	1.69	0.06	103,764
Vehicle Maintenance	3.28	96.01	2.14	0.08	138,370
General Administration	2.67	86.91	1.94	0.07	137,520

(Ranking among all included commuter rail systems, 1 = best, 10 = worst)
 Source: National Transit Database, Federal Transit Administration, 2009

The labor productivity data is more limited for commuter rail systems than for bus and subway systems; only five of the ten large commuter rail systems reported employee hours to the NTD. (See Table 13.) Consistent with the unit cost indicators for maintenance, Metro North and LIRR have mixed rankings in regards to labor productivity. Both do well in terms of vehicle operations, consistent with the unit cost indicators, but MNR ranks last in terms of hours of service per employee hours, while the LIRR ranks last in miles of service per maintenance employee hours.

Table 13: Selected Labor Productivity Measures, Commuter Rail Operators, 2009

City (System Name)	Hour of Service per Employee Hour	Hour of Service per Vehicle Operator Hour	Mile of Service per Maint Employee Hour
<i>New York (LIRR)</i>	0.177 (2)	0.51 (1)	15.35 (5)
<i>New York (MNCR)</i>	0.153 (5)	0.47 (2)	20.18 (3)
New Jersey (NJ Transit)	0.210 (1)	0.46 (3)	21.08 (2)
Chicago (Metra)	0.171 (4)	0.43 (4)	18.89 (4)
Philadelphia (SEPTA)	0.174 (3)	0.33 (5)	27.13 (1)
Median, Five Systems	0.17	0.46	20.18

(Ranking among all commuter rail transit systems, 1 = best, 10 = worst)

Source: National Transit Database, Federal Transit Administration, 2009

CONCLUSIONS

This comparative analysis of unit cost and labor productivity measures provides guidance for priority initiatives to improve the MTA's efficiency. The ripest targets appear to be the two large bus systems; they are inefficient in comparison to other large U.S. bus systems and comprise a major portion of MTA operating expenses. Similarly the two commuter railroads are relatively inefficient with the LIRR often ranking as the worst in the nation; the most troublesome functions in both units are vehicle maintenance and non-vehicle operations. In contrast, the subway service appears to be relatively efficient; however, a substantial function with notable room for improvement is non-vehicle operations.

APPENDIX

Names of Transit Systems

City (Transit System)	Full Name
Atlanta (MARTA)	Metropolitan Atlanta Rapid Transit Authority
Baltimore (MTA)	Maryland Transit Authority
Boston (MBTA)	Massachusetts Bay Transportation Authority
Chicago (CTA)	Chicago Transit Authority
Chicago (Metra)	Northeast Illinois Regional Commuter Railroad Corporation
Los Angeles (LACMTA)	Los Angeles County Metropolitan Transportation Authority
Los Angeles (Metrolink)	Southern California Regional Rail Authority
Miami-Dade (MDT)	Miami-Dade Transit
Miami (Tri-Rail)	South Florida Regional Transportation Authority
New Jersey (NJ Transit)	New Jersey Transit Authority
New York (LIRR)	MTA Long Island Railroad
New York (MNCR)	MTA Metro-North Commuter Railroad Company
New York City (MTABUS)	MTA Bus Company
New York City (NYCT)	MTA New York City Transit
New York/New Jersey (PATH)	Port Authority Trans-Hudson Corporation
Philadelphia (SEPTA)	Southeastern Pennsylvania Transportation Authority
San Francisco (BART)	San Francisco Bay Area Rapid Transit
San Francisco (PCJPB)	Peninsula Corridor Joint Powers Board
Seattle (MetroKC)	King County Department of Transportation - Metro Transit
Washington D.C. (WMATA)	Washington Metropolitan Area Transit Authority

Source: National Transit Database, Federal Transit Administration, 2009

ENDNOTES

¹ Office of the State Comptroller, *Financial Outlook for the Metropolitan Transportation Authority*, Report 2-2011, April 2010, Figure 3.

² Office of the State Comptroller, *Financial Outlook for the Metropolitan Transportation Authority*, Report 2-2011, April 2010, Figure 3.

³ The gap figure is “Baseline Net Cash Balance” and operating expenditures are the sum of “debt service” and “total operating expenses before non-cash liability adjustment.” See Metropolitan Transportation Authority, *MTA Adopted Budget, February Financial Plan 2010-2013*, February 2010, p. II-3.

⁴ The notable exception was a proposal to charge students now receiving free passes that would be phased-in over two years to eventually yield \$172 million annually. This proposal has been withdrawn with an assurance of \$25 million in state aid for the program.

⁵ Metropolitan Transportation Authority, *MTA Proposed Budget, November Financial Plan 2011-2014 Vol. II*, November 2010, pp. II-117.

⁶ Metropolitan Transportation Authority, *MTA Budget Presentation, July Financial Plan 2011-2014*.

⁷ Metropolitan Transportation Authority, *MTA Final Proposed Budget, November Financial Plan 2011-2014 Volume 1*, p. I-1.

⁸ Metropolitan Transportation Authority, *MTA Final Proposed Budget, November Financial Plan 2011-2014 Volume 1*, p. I-2.

⁹ Elizabeth Lynam and Oliver Wise, *Giving Taxpayers More Bang for the Buck: Managing for Results in New York City Government*, Citizens Budget Commission, November, 2006.

¹⁰ The MTA also operates the Staten Island Railway as a separate service unit. It is not included in this analysis.

¹¹ The MTA also operates Long Island Bus as a separate unit providing services in Nassau and Queens. It is not included in this analysis.

¹² For the adopted 2010 budget the five units had combined operating expenses of \$8.9 billion. Total operating expenses, excluding debt service and non-cash liabilities, were \$9.9 billion. See Metropolitan Transportation Authority, *MTA 2010 Adopted Budget February Financial Plan 2010-2013*, February 2010, pp. II-3.

¹³ For New York City services, passenger miles traveled is estimated through sampling.

¹⁴ Gordon J. Fielding, “Performance Indicators for Transit Management” *Transportation*, July 1978, pp. 365-379.

¹⁵ In March of 2009, the MTA decided to eliminate 570 station workers and 26 station supervisors, one of several measures to reduce the agency’s budget deficit. In May of 2010, 478 workers were sent notification that their jobs had been eliminated. The Transport Workers Union challenged the MTA’s decision in court; a State Supreme Court judge ruled on June 4th that the MTA could not go forward with the layoffs of more than 200 of the workers without a public hearing. The MTA subsequently held a hearing and plans to implement the layoffs. See New York Civil Supreme Court, *Samuelson v. Walder*, 2010. Index Number 105957/2010. Filed 5/6/10. Disposition 6/4/10.

¹⁶ Metropolitan Transportation Authority, “Comments on the New York City Traffic Congestion Mitigation Plan,” October 2007, p. 2.

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