

## **Peer Group Assessment**

The use of peer group assessments helps to gauge the relative performance of a transit system in comparison with the tendencies a set of “peer” systems whose operating and financial results might be expected to approximate those of the subject system.

Every transit system is made up of a variety of modes, service area density, fleet characteristics, labor agreements and work rules, management and organization structures, markets, transit histories, funding, working environments, management styles, and financial policies. No system has a directly comparable “peer”.

The primary subject of the assessment consists of a review of a peer group of twelve systems whose general characteristics are “similar” to those of Nashville’s MTA. This assessment includes a system-wide comparison of these agencies to the MTA, as well as a comparative assessment of the performance of the fixed route bus elements of the systems. These systems are identified on Table 2-1 as the “Detailed Peers”.

The selection of a valid peer group that can be used as a guide for decisions is more art than science. A study of national transit data by a team of MIT analysts has postulated that it is statistically valid to use any selection of systems, as long as the group consists of at least 12 systems. This may be correct, but it ignores the likelihood that such a randomly selected set of systems is not likely to be understood or accepted by local decision makers as a valid basis for discussion.

Our approach in selecting a peer group is to start with the 12 systems that are closest to the population of the service area of the subject system. We then tailor the group by eliminating systems that are not intuitively similar to the subject system, and then add systems that have an affinity to the subject system – such as being in the same state – even though they may be in a smaller or larger population range. Systems that fall within the original population group might be excluded for such reasons as operating different modes, or operating in a region with economic, demographic, or topographical differences that are too great to be acceptable. Systems might be added for a number of reasons, even though they may not be close to the population of the subject system. This was the case in adding Knoxville and Chattanooga to the detailed peer group.

The other two peer groups illustrate the order of magnitude differences between Nashville's transit system and the transit systems operating in two larger sets of regions. The first of these is a set of systems operating in substantially larger regions. This group is included in this assessment to illustrate the level of investments in transit that are made in regions which are sometimes cited as examples of major commitments to transit system development. During the course of this audit, several interviewees asked questions about systems in this group, and they are included here in part as a way of answering those questions. The systems in this group are identified as "Large Systems" on Table 2-1.

**Table 2-1  
MTA Performance Audit  
Urban Areas in the Three Sets of Peer Groups**

<b>Region</b>	<b>"Large Systems"</b>	<b>"Policy"</b>	<b>"Detailed"</b>
Austin		x	
Baltimore	x		
Birmingham			x
Charlotte		x	x
Chattanooga		x	x
Cleveland	x		
Columbus		x	
Dallas	x		
Daytona			x
Denver	x		
Greenville		x	
Houston	x		
Indianapolis		x	x
Jacksonville		x	
Knoxville		x	x
Lexington			x
Louisville		x	
Memphis			x
Milwaukee	x		
Minneapolis – St. Paul	x		
Mobile			x
Oakland	x		
Orlando		x	
Pittsburgh	x		
Portland	x		
Raleigh		x	x
Richmond			x
Seattle	x		
St. Louis	x		
West Palm Beach			x

The second of these other two peer groups compares the MTA with the transit systems urban areas that are often used by Nashville business and civic leaders to compare Nashville's economic and other characteristics to those of other urban areas. The lists of the cities that are used in these assessments are identified on Table 2-1 as the "policy group".

All of the data used in these comparisons are from the National Transit Database, a set of data compiled by the Federal Transit Administration from reports filed by the individual transit systems. The large peer

group data are from FY1998. The rest of the data are from the FY1999 reports. The accuracy of these data submissions are certified by the agencies' external auditors and the General Manager or Chief Financial Officer, and then are checked by an FTA contractor after submission. While this is not a perfect data set, it is the best and most consistent data available on this scale on the national level.

**Key Performance Measure Results:  
Comparison of MTA to the Three Groups**

The data on Table 2-2 illustrate comparisons between all three peer groups and the MTA using a selection of operating and financial performance indicators commonly used in transit system assessments. This table shows the results of the average for each of the three groups, the results for the MTA, and the percentage difference between the MTA and the averages of the groups. Collectively, the results for these measures represent a selection of "vital signs" of the fiscal and operating health of the systems.

The first two columns show the relative levels of service provided by the systems on the groups, as measured by revenue miles per square mile, and revenue miles of service per capita per year. In these two measures, the tendency is for the levels of service to decline with the size of the region's population. MTA has a relatively large service area and small service density as measured by revenue miles per square mile.

**Table 2-2  
MTA Performance Audit  
Comparison of Selected Financial and Operating Results**

<b>Groups</b>	<b>Revenue Miles/SqMile</b>	<b>Revenue Miles/Capita</b>	<b>Rides/Mile</b>	<b>OpExp/Rev Mile</b>	<b>OpExp/Capita</b>	<b>Annual Rides Capita</b>	<b>Local Sub/Capita</b>	<b>Total Sub/Capita</b>	<b>Total Subsidies (Millions)</b>
Large Systems	46,473	15.7	3.0	\$6.31	\$92.00	65.1	NA	\$153.00	\$231.40
Policy Systems	23,761	13.7	1.4	4.41	79.02	20.9	\$21.61	64.09	62.50
Peer Systems	18,952	10.0	1.5	3.43	34.45	13.6	16.90	37.80	17.70
MTA	11,259	9.5	1.5	3.67	34.89	12.2	15.24	42.06	24.00
MTA/Large Group	24.2%	60.5%	50.0%	58.2%	37.9%	18.7%	na	27.5%	10.4%
MTA/Policy Group	47.4%	69.3%	107.1%	83.2%	44.1%	58.4%	70.5%	65.6%	38.4%
MTA/Peers	59.4%	95.0%	100.0%	107.0%	101.3%	89.7%	90.2%	111.3%	135.6%

(1) The operating expenses of the MTA include "normalized" maintenance expenses rather than the actual. During 1999 MTA was attempting to "catch up" on several years of deferred maintenance. We attempted to adjust for this by using an approximate 5 year average maintenance charge as part of total operating expenses. Also see Bus Maintenance below and the separate report section on *Maintenance*.

On the other hand, while the MTA results for riders per mile was 50% of the average of the large group, they carry 7% more riders per mile than the policy group and are right at the average of the detailed peer

group. This suggests that the MTA routes and schedules are well designed. The residents of the MTA service area use the system an average of 12 times a year, compared to 65 times for the large peer group systems, 21 for the policy peer group, and 14 for the peer system.

The operating costs results for the systems are summarized in the columns headed "OperExp/RevMile" and "OperExp/Capita". As the data in these columns suggest, the level of costs per mile and per capita get smaller with the size of the cities in the group. The MTA's results for cost per mile are well below the average of the two groups with the larger cities, right at the average of the detailed peer systems for cost per capita and 7% higher than the peer systems average for cost per revenue mile.

The miles of service per capita was 95% of the detailed peer group while the operating expense per capita was virtually the same as the detailed peer average and the number of rides per year per resident of the region was 10% below that average.

To be complete, some of the cost comparisons must also factor wage scales and service area. Service area can impact costs by increasing or decreasing the "dead head" costs associated with getting buses to and from their assigned routes. For most systems, larger service areas mean increased "dead head" time. MTA has a total service area that is 28% larger than the average of the detail peers. Over this area, MTA operates 5.5 million total revenue miles versus an average of 4.8 million miles for the detail peer group. "Dead head" time is approximately 2% higher for the MTA than the average of the peers. Wages for the MTA are also slightly higher than the average of the detail peers. Top driver wages are approximately 5.5% higher for the MTA than the average of the peers. The peer average is lowered somewhat by the inclusion of smaller market systems of Chattanooga, Knoxville, Lexington and Mobile. When MTA is compared to the larger markets of the detail peers wages are comparable. Combining "dead head" time plus wage differentials probably adds close to \$1 million of incremental cost to the MTA service in comparison to the detail peer group. This would, in turn, explain approximately 5% of the 7% difference in operating costs per revenue mile for MTA versus the peer average.

The levels of subsidy for capital and operating expenses for the groups are shown on the two right hand columns of Table 2-2. The level of subsidy per year for the three groups ranges from an average of \$231 million a year for the large systems to \$17.7 million a year for the average of the peer group, with the MTA at \$24 million in 1999. On a per capita basis, the MTA is lower than the average of the two larger groups, but is 11% higher than the peer group. The funding from local sources for the MTA was 70% of the policy group average and 90% of the detailed peer group.

A different perspective on the public funding for the three groups is shown on Table 2-3. These data show the percentage of the public subsidies by source: Federal funding, appropriated state and local

funding, and “dedicated” funding from the state and local sources. “Dedicated” funding is funding that is generally approved by referenda, and is not subject to the budget or appropriation process of a state or local government. Often, these come from local option sales taxes that are “dedicated” to specified transit purposes. Once the referenda are passed, the funds often are collected by the agency that collects other sales taxes, and are then passed directly to the transit agency for their use.

The nature and extent of state and local funding is a function of state laws relating to transit funding. In cases where there is a “dedicated” source, it usually flows from enabling legislation that allows localities to enact the tax, often from a list of “local option” sales taxes.

**Table 2-3**  
**MTA Performance Audit**  
**Peer Systems Funding By Source**  
**FY1999**

	<b>Total Public Funds (Mil)</b>	<b>Percent Federal</b>	<b>Percent State and Local</b>	<b>Percent (1) “Dedicated”</b>	<b>Total Public Funds/Capita Per Year</b>
<b><u>Large Systems Group</u></b>					
Maximum	\$415.40	49.0%	78.0%	85.0%	\$366.11
Minimum	\$79.10	11.0%	0.0%	0.0%	\$38.90
Average	\$231.40	24.4%	38.1%	37.4%	\$153.30
Nashville	\$24.11	50.1%	49.9%	0.0%	\$42.06
Nashville /Average	10.42%	205.33%	130.97%	0.00%	27.44%
<b><u>Policy Systems Group</u></b>					
Maximum	\$422.70	64.00%	69.00%	73.80%	\$195.91
Minimum	\$1.40	10.00%	7.30%	0.00%	\$5.58
Average	\$62.50	39.10%	48.00%	12.90%	\$64.09
Nashville	\$24.11	50.10%	49.90%	0.00%	\$42.06
Nashville/Average	38.56%	128.13%	103.96%	0.00%	65.60%
<b><u>Detailed Peer Systems</u></b>					
Maximum	\$38.50	52.39%	69.00%	40.00%	\$55.85
Minimum	\$4.86	31.00%	0.00%	0.00%	\$5.20
Average	\$17.70	41.15%	49.00%	3.40%	\$37.80
Nashville	\$24.11	50.10%	49.90%	0.00%	\$42.06
Nashville/Average	135.6%	121.69%	101.84%	0.00%	111.3%

(1) Dedicated funds are not additive, and are included in the state and local figures.

As these figures show, the range of public funds available to these systems ranges from a low of \$1.4 million a year to over \$400 million, with Nashville well below the average of the two larger groups but nearly 36% larger in total than the detailed peer systems. Nashville has been more successful than the average of each group in getting Federal funding (not even counting the commuter rail funding), and has gained slightly higher than average in state funding, while lower than all group averages in local funding (see table 2-2 for local funding comparisons).

Measured in total public funding per capita per year, the MTA received about 27.5% of the large systems peers, 66% of the policy peer systems, and about 11% more subsidy per capita than the detailed peers.

### **The Detailed Peer Group**

The central focus of the peer group assessment was the comparison of the MTA to those systems that are listed on the right hand column of Table 2-1, headed "detail" systems. In forming peer groups for more detailed assessments, we start with systems that have service areas which are in scale with that of the subject organization, and that have some natural and intuitive similarity to each other. We usually start with population as the primary basis for selection of peer group members, to demonstrate the kind of transit systems that cities of a given size tend to provide.

We also try to select systems that operate in environments that are reasonably comparable, considering such factors as climate, topography, cost of living, labor costs, and other external factors that may influence the performance but that are beyond the control of the management and policy-makers. We eliminated several systems that may have seemed like obvious candidates because we were aware of unique operating characteristics within their systems.

No peer group ever perfectly reflects the character of the subject system. In carrying out the peer comparison, we are looking for tendencies that might suggest areas in need of further examination, or that may identify areas of strength and good performance relative to the peers. It is a diagnostic process that is intended to identify symptoms, not solutions.

In undertaking a peer assessment, the expectation is that the subject property will produce results that approximate the average of the peers, and its performance will rank in the middle of the group. Any result that is within 5% of the average and ranks from 5<sup>th</sup> to 9<sup>th</sup> is considered at expected values for the systems.

We have divided the discussion of the detailed peer group into two major sections:

- An evaluation of the performance of the systems as a whole
- An evaluation of the directly operated bus services of the systems

For each performance measure, we present:

- The average value for the twelve peer systems for FY1999, the last year for which NTD data are available
- The value for Nashville in FY 1999
- The percentage of the peer average compared to the MTA results

- The ranking of Nashville among the 13 systems (including Nashville)
- The trends of the MTA over the years 1995-1999.

**System Wide Comparisons**

A summary of the result of the comparison of the MTA and the peer systems in system wide measures is shown on Table 2-4. The numbers behind this assessment include all operating costs, services, and operating revenues for all modes operated by the systems. The effort here is to show the overall effectiveness and efficiency of the system as a whole, including all modes of operation.

**Table 2-4  
MTA Performance Audit  
Comparison of Results**

<b>System Wide Performance Measure</b>	<b>MTA 1999</b>	<b>Peer Average</b>	<b>MTA/Peer Average</b>	<b>MTA Rank</b>	<b>MTA 1995-99</b>
Average fare	\$0.89	\$0.67	132.8%	2	9.7%
Total revenue per passenger	\$1.02	\$0.79	128.7%	3	10.9%
Fares as % of costs *	32.0%	24.3%	131.7%	3	-5.0%
Passengers per revenue hour	21	20.6	101.9%	7	-8.0%
Revenue hour/work hour	0.53	0.60	89.0%	8	9.7%
Riders per work hour	11.25	11.96	94.1%	7	0.9%
Annual rides per capita	12.2	13.6	89.7%	8	4.3%
Miles of service / square mile	11,259	18,952	59.4%	11	7.0%
Passengers per mile	1.5	1.5	101.0%	6	-1.4%
Expense/per passenger mile Bus Only *	.63	.61	103.0%	5	34.0%

\* Maintenance costs have been normalized in these statistics. Cost data includes costs for all services and functions. These costs vary from system to system depending on the mix of services offered.

As these data show, the MTA's average fare at \$0.89 was the second highest among the peers, and was 33% higher than the peer systems average. It increased by 9.7% from 1995 through 1999. The average total operating revenue per passenger was similarly higher than the peer results. It ranked 3<sup>rd</sup> highest among the peer systems, and was 29% above average. Over the five-year period, it increased by 11%. It should be noted that passenger fare revenues for FY2000 recently concluded were up only fractionally despite a fare increase in August 1999. This suggests the possibility that MTA may be pushing the upper limit on average fares for the local transit market.

In two other critical performance measures, fares produced 32% more revenue as a percentage of costs than the peers average, and ranked fifth among the 13 systems. Over the five years, however, this ratio had declined slightly. This is due to the increased maintenance expenses that have not been normalized in this statistic. In the second measure, the number of passengers carried per revenue hour of service was 2% better than average, and ranked 7<sup>th</sup> among the 13 systems. In other words, it was right at par for

this measure. The decline of 8% over the five-year period is better than might be expected given the fare increases during this period.

Results for other measures and their trends are discussed below:

- Revenue hours per work hour was 89% of average, but improved by 9.7% over the period – in spite of the increase in maintenance work hours. The MTA ranked 8<sup>th</sup> among the peers in 1999.
- Rides per work hour was at 94% of the peers average, and ranked 7<sup>th</sup> among the 13 systems. The result for this measure was virtually the same in 1995 as it was in 1999.
- The residents of the service area rode the MTA an average of 12.2 times a year, compared to 13.6 times for the peer group. The MTA result was 10% below average, and ranked 8<sup>th</sup> among the peers.
- The levels of service provided by the MTA, measured in miles of service per square mile, was 59% of the average of the peer systems, and ranked 11<sup>th</sup> among the 13 systems. The results for this measure increased by approximately 7% over the five years.
- Expenses for the bus service on a per passenger mile basis are in line with the peers, but have increased substantially over the 5 year period.

### **Bus Maintenance**

The MTA maintains a fleet of transit vehicles that is relatively varied for a system of this size. Among the varieties are electric powered “trolleys”, regular trolleys, 60-foot articulated buses, traditional 40-foot transit coaches, and 35-foot coaches. This departs from the traditional transit fleet of all 35 foot or 40-foot buses with the same basic components and drive trains. This fleet mix adds to the complexity of the maintenance activities, the parts requirements, and training.

The MTA has been engaged in the past two years in a major effort to catch up on a significant amount of deferred maintenance on the bus fleet. To achieve this recovery program, they have hired additional maintenance staff and have expended large volumes of materials and supplies. To illustrate the magnitude of this program, the cost of materials and supplies for vehicle maintenance was \$859,925 in 1995, but had tripled in 1999 to \$2,859,819.

The maintenance department has achieved a high level of productivity during this effort, and has the third lowest number of work hours per bus among the peer systems, and is about 20% more efficient than the peers average. The MTA has improved about 2% in this category over the five-year period.

**Table 2-6  
MTA Performance Audit  
Bus Maintenance Measures**

<b><u>Bus Maintenance Performance Measure</u></b>	<b><u>MTA 1999</u></b>	<b><u>Peer Average</u></b>	<b><u>MTA/Peer Average</u></b>	<b><u>MTA Rank</u></b>	<b><u>MTA 1995-99</u></b>
Work hours per bus	655	827	79.2%	3	2.1%
Work hours per 1,000 miles	20.57	23.28	88.4%	3	7.0%
Annual miles per bus	31,848	37,209	85.6%	9	-2.5%
Average fleet age	10.4	8.6	120.9%	7	20.0%
Maintenance cost per bus	45,108	25,720	175.4%	1	NM
With normal maintenance-Approx	27,000				
Materials cost per bus	19,760	7,818	252.8%	1	NM
With normal maintenance-Approx	8,000				
Maintenance cost per mile	1.42	0.71	200.0%	1	NM
With normal maintenance-Approx	.85				
Maintenance cost as a % of total	31.7%	20.1%	157.7%	1	NM
With normal maintenance-Approx	19%				

NM = not meaningful

The number of work hours required to support 1,000 miles of operation is about 12% below the average of the peers systems, and the MTA ranked 3<sup>rd</sup> in the group in this measure.

The individual vehicles in the bus fleet operated about 15% fewer miles per year than the average of the peers, and ranked 9<sup>th</sup> among the 13 systems. The figure declined by about 2.5% over the period. At the same time, the average age of the fleet increased by 20%, and ranked seventh in the peer systems.

The cost of bus maintenance at the MTA in 1999 was the highest of the peers in all measures, reflecting the on-going catch-up program. The total cost per bus and per mile, and the cost of materials per bus and per mile, were all significantly higher than the average of the peers, than the 1995 results for the MTA. Much of the increase in costs, and in the difference between the MTA and the peer average, was in the cost of materials and supplies connected with the major maintenance recovery effort.

#### **General Management and Administration**

The MTA's overall managerial, administrative, and clerical expenses are consistently and significantly below the average of the peer systems, and rank in the top levels among the peers. While the costs of compensation have increased with the overall increases in costs of the system, the percentage of total costs represented by administration and the administrative costs per mile have both decreased significantly over the five years.

**Table 4-7  
MTA Performance Audit  
Administrative Expenses**

<b><u>Administrative Performance Measure</u></b>	<b><u>MTA 1999</u></b>	<b><u>Peer Average</u></b>	<b><u>MTA/Peer Average</u></b>	<b><u>MTA Rank</u></b>	<b><u>MTA 1995-99</u></b>
Compensation costs/work hour	18.71	20.03	93.4%	5	29.1%
Admin costs as % total costs	11.7%	19.5%	60.0%	2	(58.0%)
Admin costs per mile	\$0.52	\$0.69	.4%	3	(.9%)

These results suggest a general level of costs for general and administrative expenses that is markedly lower than the peer systems average, and among the lowest of the systems. This reflects in part the fact that MTA's administrative resources are minimal and well less than might be expected at a system of this size. As the functional reviews reflect, the MTA operates with a smaller administrative staff, less than adequate information systems software and technology, and minimal planning and marketing programs.

**Conclusions**

A number of conclusions and observations may be drawn from the peer review statistics:

Funding- From a local funding perspective only, MTA is funded at approximately \$15 per capita versus nearly \$17 per capita for the detail peers. When all sources of funds are examined, MTA's receives \$42 per capita versus \$38 per capita for peers. When compared to the larger peer groups, however, the per capita funding is dramatically lower, \$42 per capita versus \$64 per capita for policy group versus \$153 per capita for the large system group.

Fares- Average fares at MTA are higher than the detail peer average and represent a higher percentage of overall operating costs than the average for the peers. They also, for now, appear to be about as high as the market will tolerate. Therefore, increased pricing for the average fare does not represent any significant revenue opportunity.

Operating Costs- With maintenance costs normalized (as discussed above), Operating Cost per Capita for MTA is right at the detail peer average of approximately \$35. Expenses per revenue mile are \$3.67 versus \$3.43 per rev mile for detail peers versus \$4.41 for the policy group. This slightly higher cost per mile is caused by 5% higher labor rates than the peer average and 2% higher "Dead Head" miles due to larger service area. The peer average labor rate is lowered somewhat by inclusion of several smaller market systems. MTA's wages are on target with the larger market peers in the detail peer group.

Ridership- MTA is close to the detail peer average in terms of riders per work hour and annual rides per capita and exactly matches the average in passengers per mile.

Other- In most other key metrics of performance and efficiency examined as part of this review, MTA did not deviate significantly from the detail peer systems. One exception to this was the low administrative cost. This subject is further discussed in the *Governance* section of this report.

**Recommendations/Cost Estimates**

Making recommendations as a result of a peer analysis is difficult since many operating results are outcomes directly attributable to public policy decisions. Overall, MTA operates in a manner that is consistent with average performance of the detailed peer group used for comparison. While some of the recommendations of this audit may result in modest improvements within the context of this detail peer group, it should be clear that moving the yardstick significantly in terms of expanded service area, increased ridership, etc. will mean an increased financial commitment to the public transit.