

Chapter 4 Program Benefits & Costs

The nMotion program will provide many benefits. It will also require significant expenditures. This chapter describes both the benefits and the costs. More details of each measure and the methodologies used are provided in the technical memos in Appendix 7.

Program Benefits

Transit Ridership

MTA and RTA currently carry approximately 34,000 passengers per weekday. With all improvements in place, ridership is projected to increase by **550%** to nearly 190,000 passengers per weekday.

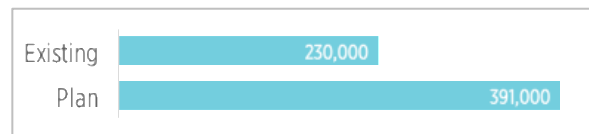
FIGURE 4-1 | PROJECTED WEEKDAY RIDERSHIP INCREASE



Number of Residents Served

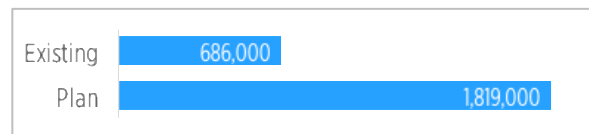
MTA currently provides service within ½ mile of approximately 230,000 Davidson County residents. With the improvements, and including the population growth that will occur, this will increase by **70%**, and service will be provided within ½ mile of 391,000 residents.

FIGURE 4-2 | NUMBER OF DAVIDSON COUNTY RESIDENTS SERVED



In outer counties, approximately 686,000 residents are now within ½ mile of local service or five miles of a commuter lot. With the improvements, this will increase by **165%** to 1.8 million residents.

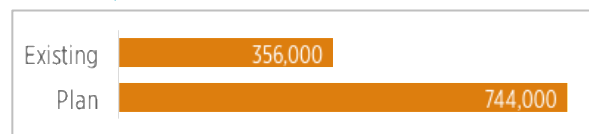
FIGURE 4-3 | NUMBER OF OUTER COUNTY RESIDENTS SERVED



Number of Jobs Served

One of the most important roles that transit serves is providing access to jobs. At the present time, MTA provides service within ½ mile of approximately 356,000 jobs in Davidson County. With the improvements, this will increase by **110%** to 744,000.

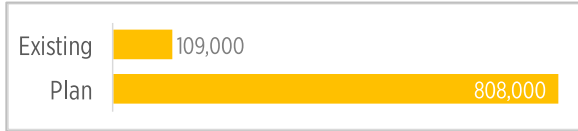
FIGURE 4-4 | NUMBER OF DAVIDSON COUNTY JOBS SERVED



In outer counties, the increase in the number of jobs served would be more dramatic. RTA and local transit providers currently offer service within ½ mile of 109,000 jobs. With the improvements, this will increase by **640%** to 808,000. This increase is particularly important as it will

provide much better links between lower income residents and jobs—jobs that many employers have difficulty filling because potential employees can't get to them.

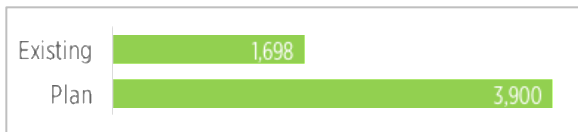
FIGURE 4-5 | NUMBER OF OUTER COUNTY JOBS SERVED



Service to Davidson County Low Income and Minority Residents

While existing service coverage is relatively good in Davidson County, the amount of service that is provided is often limited. Nearly all of the service improvements within Davidson County will also improve service to low income and minority residents. In terms of weekday hours of bus service, the amount of service to low income neighborhoods (those where the number of low income residents exceeds the countywide average) will increase by **231%**.

FIGURE 4-6 | SERVICE HOURS TO LOW INCOME AND MINORITY DAVIDSON COUNTY RESIDENTS



In terms of weekday bus service hours

Service Quality

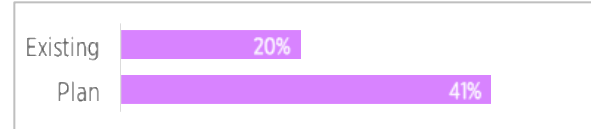
As described above, a large number of the service improvements will significantly improve service quality particularly in terms of service frequency, speed, and access.

Frequent Service

Many stakeholders listed infrequent service as a major reason that transit is not convenient. At present, only 20% of MTA and RTA routes provide service every 15 minutes or more frequently. With the

improvements, this will increase by **105%** to 41% of all service.

FIGURE 4-7 | PERCENT OF SERVICE THAT IS FREQUENT



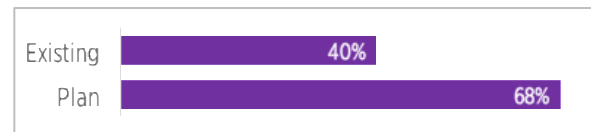
Service that operates at least every 15 minutes during peak periods; large majority would operate every 10 minutes for most of the day

Fast/Faster Service

A second major reason that stakeholders view service as inconvenient is that it is slow. At present, only 40% of routes provide relatively fast service, with fast service defined as the Music City Star, BRT-lite, and express bus routes. However, even though these routes are theoretically fast, as noted by many stakeholders, they often get bogged down in traffic. Furthermore, many provide relatively little service.

With the improvements, the percentage of routes that will provide fast service will increase by **70%** to 68% of routes. Furthermore, these routes will provide much more robust service.

FIGURE 4-8 | PERCENT OF SERVICE THAT IS FAST



Fast services include LRT, BRT, Rapid Bus, commuter rail, Freeway BRT, and express routes

These routes will be fast for a variety of reasons, including the development of High Capacity Transit (HCT) services such as LRT, BRT, Rapid Bus, and others, and use of dedicated or semi-dedicated rights-of-way. For example, there will be more than:

- **150 route miles of HCT services**
- **50 miles of dedicated bus lanes**
- **60 miles of Freeway BRT service in bus or managed lanes**

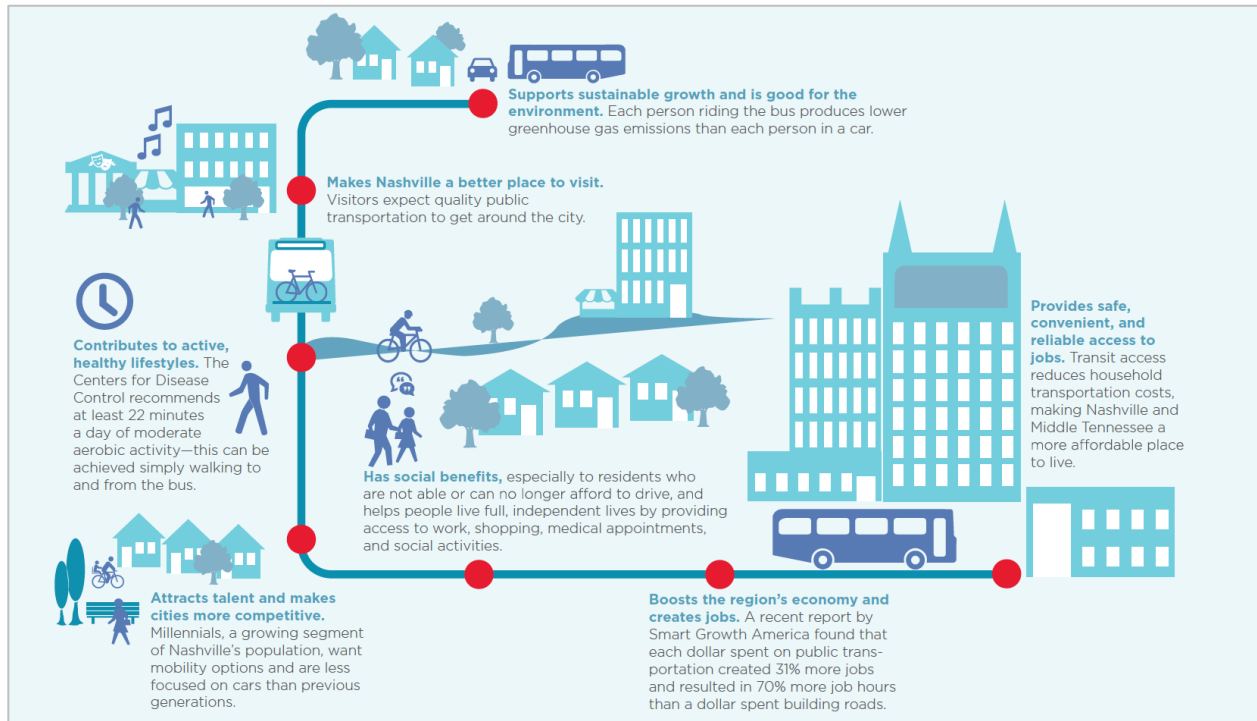
Pedestrian Improvements

One of the key challenges with the use of transit today is poor pedestrian infrastructure—it is difficult to walk to and from transit. To address this situation, the plan includes the reasonable development

and improvement of sidewalks along all LRT, BRT, and Rapid Bus routes. In total, there could be over **200 miles of pedestrian improvements**.

Additional benefits of transit are shown in Figure 4-9.

FIGURE 4-9 | BENEFITS OF TRANSIT



Costs

The proposed plan represents a major investment in Middle Tennessee's future, and costs will be much higher than what the region is spending today for transit-related capital and operational expenditures.

Summary of Costs

In terms of order of magnitude costs, and as shown in

Table 4-1, operating costs for both MTA and RTA would increase from a current total of \$83.2 million to \$346.8 million. Total capital spending through 2040 would be nearly \$6.0 billion.

TABLE 4-1 | SUMMARY OF OPERATING COST ESTIMATES

Annual Operating Costs (millions)	Existing System (FY 2016)	Recommended Plan (\$2015)
MTA	\$73.6	\$227.4
RTA	\$9.6	\$119.2
Annual Operating Costs	\$83.2	\$346.8

TABLE 4-2 | SUMMARY OF CAPITAL COST ESTIMATES

Total Capital Costs (millions)	Recommended Plan (\$2015)
MTA	\$4,157.9
RTA	\$1,841.2
Total Capital Costs	\$5,999.1

Costs by Program Component

As described in this document, the nMotion program has a large number of program components that range in cost from very high to relatively low. The highest capital cost elements would be for the development of light rail and new and

improved commuter rail service (see Table 4-3). Major operating cost increases will be for the development of the Frequent Transit Network (including light rail, BRT, Rapid Bus, and frequent local services) as well as service span and frequency improvements throughout the MTA and RTA systems.

TABLE 4-3 | OPERATING AND CAPITAL COSTS BY PROGRAM COMPONENT (IN MILLIONS)

	MTA		RTA	
	Operating Costs	Capital Costs	Operating Costs	Capital Costs
Frequent Transit Network				
Light Rail	\$45.8	\$3,017.8	\$34.4	\$698.7
Bus Rapid Transit	\$5.2	\$362.9	\$9.3	\$745.7
Rapid Bus	\$54.2	\$316.7	\$18.8	\$83.5
Frequent Local	\$14.1	\$36.7	\$10.6	\$69.5
Total	\$119.4	\$3,734.2	\$73.1	\$50.0
Local Services				\$1,647.4
More Frequent Service for Longer Hours	\$29.4	\$61.6	\$24.1	
New Local Services	\$7.4	\$13.2	\$7.3	\$43.4
First Mile/Last Mile Connections	\$6.5	\$0.0	\$31.5	\$0.0
Total	\$43.2	\$74.8	\$14.9	\$43.4
Regional Services				\$6.2
Commuter / Express Bus Service	\$10.5	\$23.0		
Paratransit Service	\$54.2	\$22.6		\$12.5
Facilities				\$20.0
Station & Stop Improvements		\$75.0		\$16.7
Second Downtown Transit Center		\$40.0		\$17.5
Downtown Circulation Improvements		\$33.3		\$22.5
Outlying Transit Centers		\$50.0		\$30.0
Park-and-Ride Lots		\$15.0	\$119.5	\$1,841.2
Maintenance Facility Expansion		\$40.0		
Total		\$253.3	\$346.8	\$5,999.1
Technology Improvements		\$50.0		
Total	\$227.4	\$4,157.9	\$34.4	\$698.7

Note: Operating costs for facilities included in vehicle operating costs.



Per Capita Costs

On a per capita basis, total annual costs for operations and capital expenditures would increase to \$249, which would be an increase of \$182 from the current level of \$67. Note, however, that a significant—and yet to be determined—portion would likely be funded through non-local sources. As a result, per capita local costs could be much lower.

Finally, the transit improvement programs that have been undertaken in Denver and Salt Lake City have received a significant amount of attention in Middle Tennessee. By comparison, the annual per capita costs for those two programs have been approximately \$420 and \$621, respectively.

TABLE 4-4 | ANNUAL PER CAPITA COSTS

Costs in millions	Existing System (FY 2016)	Recommended Plan (\$2015)
MTA and RTA Total	\$67	\$249

Note: Per capita costs are based on “full build out,” All costs are order of magnitude costs and more detailed estimates would be produced during project development.