

# Chapter 3 The Plan

This chapter describes the entire package of transit improvements recommended and adopted for implementation under the 2040 nMotion Transit Strategy. The improvements are grouped into seven general strategies, each with several actions designed to work together to produce a strong network of interconnected services. These improvements will develop a comprehensive regional transportation system inclusive of multiple technologies and mobility strategies.

## SERVICE IMPROVEMENT RECOMMENDATIONS



Make Service Easier to Use



Improve Existing Services



Improve Access to Transit



Make Service More Comfortable



Develop a Network of Regional Transit Centers



Expand Services to New Areas



Build High Capacity/Rapid Transit Network

### Make Service Easier to Use

- **Simplify service** to make it easier to understand and ensure that riders get to their destinations without problems
- Develop a **single seamless system** that will operate under a single name with a seamless fare system and with strong connections between Metro and regional services
- Provide a **better passenger experience** through a variety of improvements, including:
  - A “Smart Technology Platform”
  - Better information that’s easier to access
  - Easier fare payment options

### Improve Existing Services

- Provide **more frequent service for longer hours** on nearly all existing routes
- **Improve AccessRide Service** for those who cannot use fixed-route service
- **Streamline service in downtown Nashville** to make it faster and simpler
- Develop new **crosstown and through-city routes** to provide better service to non-downtown locations
- Develop a **Frequent Transit Network** that will provide **frequent service to Davidson County’s** most heavily traveled corridors

### Improve Access to Transit

- Improve **pedestrian and bicycle access**
- Provide more conveniently located **park-and-ride** lots
- Partner with other providers

### Make Service More Comfortable

- Upgrade stations and stops** with more shelters and benches
- Provide service with **more comfortable vehicles**

### Develop a Network of Regional Transit Centers

- Develop **outlying transit centers** to develop a more interconnected network that will further reduce the need to travel via downtown Nashville

### Expand Services to New Areas

- Add **service to new areas**, particularly in outer counties

### Build High Capacity/Rapid Transit Network

- Provide **High Capacity/Rapid services** that will be fast, frequent, and comfortable, including **light rail, commuter rail, Bus Rapid Transit, Rapid Bus, Freeway BRT, and express bus on shoulder service**
- Provide **convenient airport service** – light rail, Rapid Bus, express bus, (and local bus)

A map of recommended major Metro area services under the nMotion 2040 plan is shown in Figure 3-1 and a similar map for regional services is shown in Figure 3-2.

As shown in the table below, each of the recommended strategies helps achieve the four goals identified during the nMotion planning process as described in Chapter 2. The following sections provide more detailed information and specific projects to advance each of the goals of the nMotion 2040 plan.








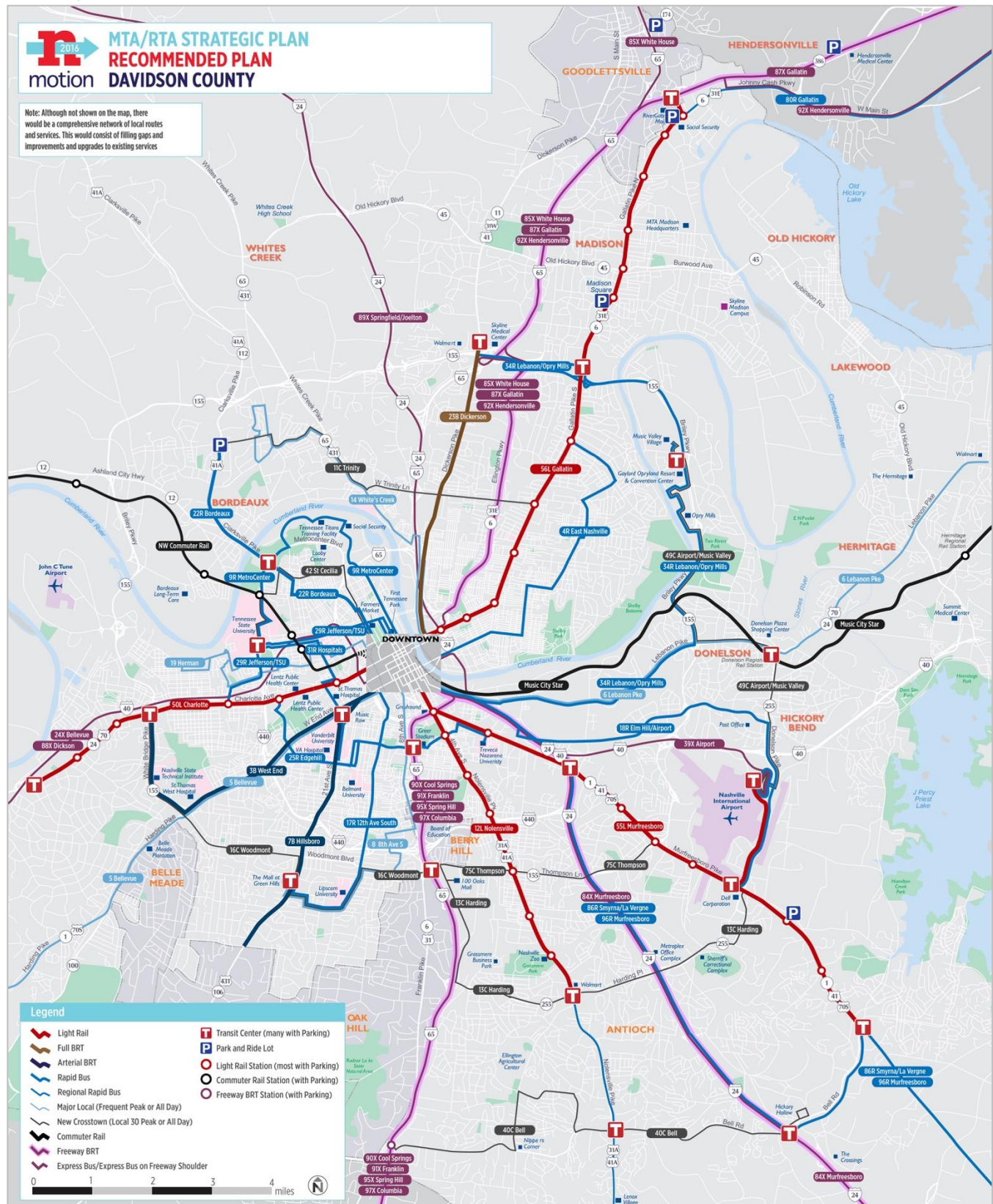
		nMotion Goals			
		CONNECT	ENHANCE	SIMPLIFY	SUSTAIN
	Make Service Easier to Use		✓	✓	
	Improve Existing Services	✓	✓		✓
	Improve Access to Transit	✓		✓	✓
	Make Service More Comfortable		✓	✓	
	Develop a Network of Regional Transit Centers	✓		✓	
	Expand Services to New Areas	✓	✓		✓
	Build High Capacity/Rapid Transit Network	✓	✓		

FIGURE 3-1 | METRO AREA SERVICES











## Make Service Easier to Use

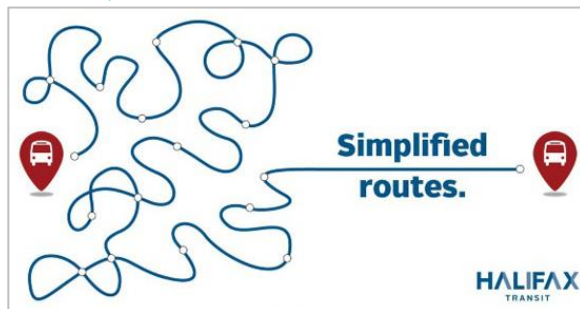
One of the first sets of improvements that MTA and RTA will undertake under the nMotion plan will be to make existing local and regional transit service easier to use.

### Simplify Service

Because Nashville MTA operates a small number of routes relative to Nashville's size, it attempts to serve many people and places with many individual routes. As a result, some service can be very complicated with many route variants and indirect service. MTA and RTA will update their services to make them simpler, which will help riders get where they want to go with a simpler ride. This will be a short-term effort occurring within the first five years of implementation. Improvements will be developed in the following manner:

- Extensive public participation (as in nMotion 2016)
- A market analysis to determine underlying market demands
- A comprehensive evaluation of each individual route to determine strengths, weaknesses, and potential improvement opportunities
- The development of potential short-term service changes
- The evaluation and vetting of potential improvements with stakeholders
- The development and implementation of recommendations

FIGURE 3-3 | HALIFAX TRANSIT AD FOR NEW SIMPLER SERVICE



## Develop a Single Seamless System

MTA and RTA will present the services of their two agencies as part of a single transit network branded under a single name. This effort will include consolidating network information and communications, developing and implementing a simpler unified fare system, improving and strengthening connections between Metro and regional mobility services, and investigating other improvements that may be identified by the region's stakeholders. This process will include significant public and stakeholder conversations during the development and implementation phases. The process will begin immediately and will likely extend over a three to five-year duration for most of the improvements. This will be an ongoing effort to continually improve and connect mobility options seamlessly in the Middle Tennessee region.

### Provide Better Information

Different people access information in different ways. In recognition of this, MTA and RTA will provide information in a variety of ways to make it easy to obtain and will improve existing communication methods. These improvements will include:

- A **single website for regional transit information**. This single website would provide information on services provided by the MTA and RTA, as well as other local providers (for example, Clarksville Transit System, Franklin Transit, and the Murfreesboro Rover).
- The provision of **schedule and real-time information via websites and smartphone apps** for all transit services in Middle Tennessee (MTA, RTA, and local providers).
- **Real-time information at major stations and stops and park-and-ride lots.**
- **Route information, including schedules and maps**, at all stops.
- **Wayfinding and local information signage** at major stops.

FIGURE 3-4 | BUS STOP INFORMATION



FIGURE 3-5 | OFF-BOARD TICKETING (NYC) AND ON-BOARD CARD READER (CHICAGO)



## Make Fare Payment Simpler

Fare payment technology is improving rapidly and will likely continue to do so. To take advantage of this, MTA and RTA have already begun to aggressively pursue improvements that would make fare payment much easier. Improvements may include:

- **Regional joint fares**
- **Stored value tickets** to make fare payment easier for occasional riders
- **Open payment systems** that allow use of credit card, debit card, and other third party fare payment systems
- **Mobile ticketing** to provide another payment option and make fare payment easier
- **Off-board ticketing machines** that accept credit and debit cards

- The development of **open systems** that could be used interchangeably with private transportation providers and parking facilities

## Use Smart Technology

The Nashville Chamber of Commerce has proposed that the City of Nashville develop a Smart Technology Platform that would provide “one stop” shopping for a variety of transportation options, including information and payment options for:

- Public transit
- Parking
- First mile/last mile services such as Lyft, Uber, carshare, bikeshare, etc.
- Future mobility options as they are developed

MTA and RTA will work with the City of Nashville, the Nashville Chamber of Commerce, and others to develop this platform.



## Improve Existing Services

In addition to making existing services easier to use, MTA and RTA will make fundamental improvements and upgrades to existing services.

### Provide More Frequent Service for Longer Hours

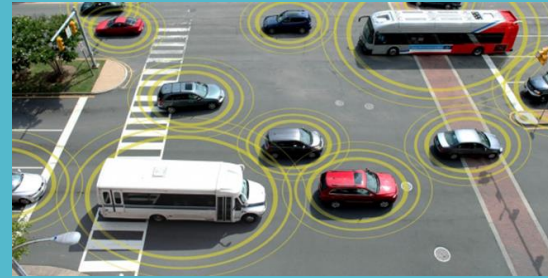
Nearly all services will operate for significantly longer hours during mornings, evenings, and weekends, and much more frequently than they do now. This increased service will begin within the first two years of implementation with longer hours beginning earlier in the day and extended later into the night. Within two to five years, more frequent service will be added as new vehicles are purchased to implement the greater frequency. The increased hours and frequency will be phased in during a five- to 10-year period to match the growth of the region.

- **Metro Area Local Bus:** Increases will depend upon the type of route and ridership levels, but there will be earlier and later service, more weekend service, and more frequent service throughout the day on nearly all routes.
- **Regional Routes:** All day, seven-days-a-week service would be provided on major routes, including commuter rail.
- **Express Routes:** In addition, much more frequent service will be provided on MTA and RTA express routes, including midday and early evening service.

### Improve Service in Downtown Nashville

Transit service in downtown Nashville will be reconfigured to make it simpler and more direct, and more legible.

### What About Autonomous Vehicles?



Source: Wired

Autonomous vehicles are coming. These vehicles could create big changes to how we move between and around our cities and towns. However, while there is much speculation on when and what their impacts will be, there is little agreement.

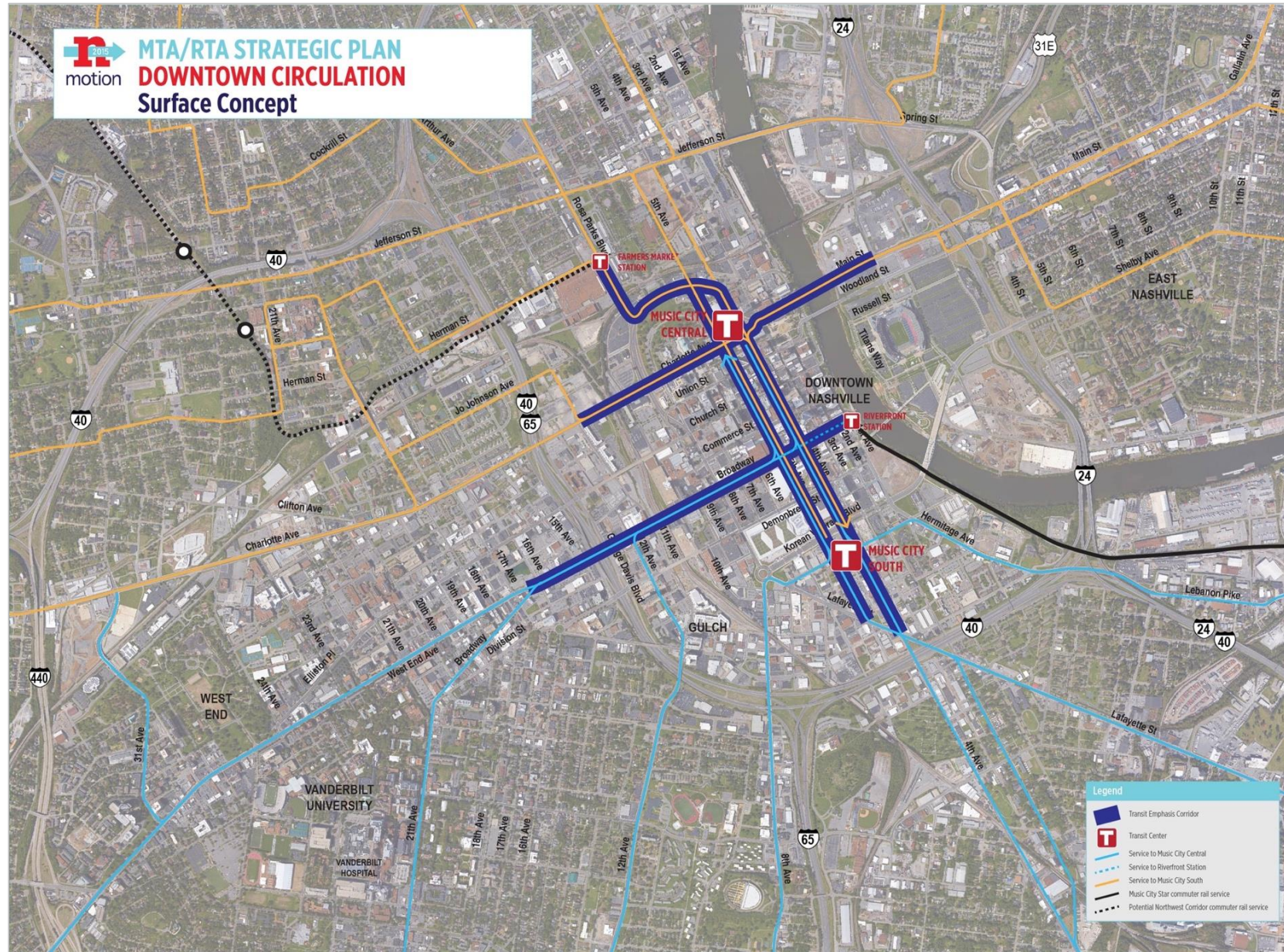
The nMotion plan recognizes that autonomous vehicles will very likely have a connection to future transit service and infrastructure. In particular, fully autonomous vehicles could jointly use “managed lanes” with BRT and emergency vehicles. Neighborhood and regional transit centers could serve as the connecting points between localized, autonomous circulation and the regional mass transit system. Recommendations will continue to be responsive to changes in the industry as these vehicles make their way onto our roads.

Changes may consist of (see Figure 3-6):

- A **second transit center** south of the Convention Center
- **Transit Emphasis Corridors:**
  - North-south through the downtown core
  - Charlotte Avenue/James Robertson Parkway
  - Broadway
- **Much simpler circulation** patterns and **very frequent service** in the Transit Emphasis Corridors. The very frequent service in the Transit Emphasis Corridors will provide shuttle-like service within downtown.
- **Transit priority measures** along Transit Emphasis Corridors and other key locations.



FIGURE 3-6 | DOWNTOWN CIRCULATION CONCEPT



Note: This figure illustrates the overall concept; however, Transit Emphasis Corridors could be use alternative streets and a second transit center could be located elsewhere.



## Downtown Nashville: Where It All Comes Together



Source: Nashville Downtown Partnership

Downtown Nashville is the center of Middle Tennessee and the place where most transit riders travel to and from. However, it is also where transit gets bogged down with buses currently averaging about six miles per hour in downtown. These slow speeds make transit unattractive, and a common theme heard during the nMotion 2016 civic engagement process was, “I’d use transit if it weren’t so slow, especially in downtown Nashville.”

Today’s slow service is due to a combination of relatively narrow streets, traffic congestion, and a lack of transit priority. Other cities with even worse congestion have made transit work more effectively in downtown, and a key to making transit more effective, for both Davidson County and all of Middle Tennessee will be to make it work well within downtown Nashville.

## Implement Crosstown and Through-City Routes

Existing MTA and RTA services are currently very heavily focused on downtown Nashville. To make it easier to use transit to reach other locations, new “crosstown” and “through-city” routes will be developed. New crosstown services will provide service between (see Figure 3-8):

- Bordeaux and Gallatin Pike via Trinity Lane (Route 11C Trinity)

- 100 Oaks Mall and Murfreesboro Pike via Harding Place (Route 13C Harding)
- Charlotte Avenue and One Hundred Oaks Mall via Woodmont Avenue and the Mall at Green Hills (Route 16C Woodmont)
- Murfreesboro Pike and Nashville International Airport (with continuing service to downtown) (Route 18R Elm Hill/Airport)
- Charlotte Avenue and Trevecca Nazarene University via Edgehill Avenue (Route 25R Edgehill)
- Jefferson Street and Blakemore Avenue via Metro General Hospital, Saint Thomas Midtown Hospital, and Vanderbilt Medical Center (Route 31R Hospitals)
- Gallatin Pike and downtown Nashville via Opry Mills (Route 34R Lebanon/Opry Mills)
- I-65 at Old Hickory Boulevard and Hickory Hollow via Old Hickory Boulevard and Bell Road (Route 40C Bell)
- Nashville International Airport and Opryland/Music Valley via Donelson Station (Route 49C Airport/Music Valley)
- 100 Oaks Mall and Murfreesboro Pike via Thompson Lane (Route 75C Thompson)

In addition, MTA will combine a number of radial routes that now operate to and from downtown Nashville through the city to provide more one-seat rides. The specific routes will be determined as a short-term action, but candidate routes include:

- West End – Dickerson (Routes 3B West End and 23B Dickerson)
- MetroCenter – 12<sup>th</sup> Avenue South (Routes 9R MetroCenter Rapid and 17R 12<sup>th</sup> Avenue South Rapid)
- Whites Creek – 8<sup>th</sup> Avenue South (Routes 14 White’s Creek and 8 8<sup>th</sup> Avenue South)
- Bordeaux – Elm Hill Pike/Airport (Routes 22R Bordeaux Rapid and 18R Elm Hill Rapid)

- Jefferson/TSU – East Nashville (Routes 29R Jefferson/TSU Rapid and 4R East Nashville Rapid)

## Improve AccessRide Service

MTA's AccessRide service currently goes well beyond what is required by the Americans with Disabilities Act (ADA) and, relative to its fixed-route services, is significantly more extensive than what is provided in most other areas. Going forward, MTA will continue to implement improvements, with most aimed at making service more convenient:

- **Real-time information** that will allow users to track the location of their vehicle to provide more accurate pick-up time information
- New “**no advance reservation**” services, such as the ability to use

additional transportation providers such as Uber, Lyft, and regular taxis

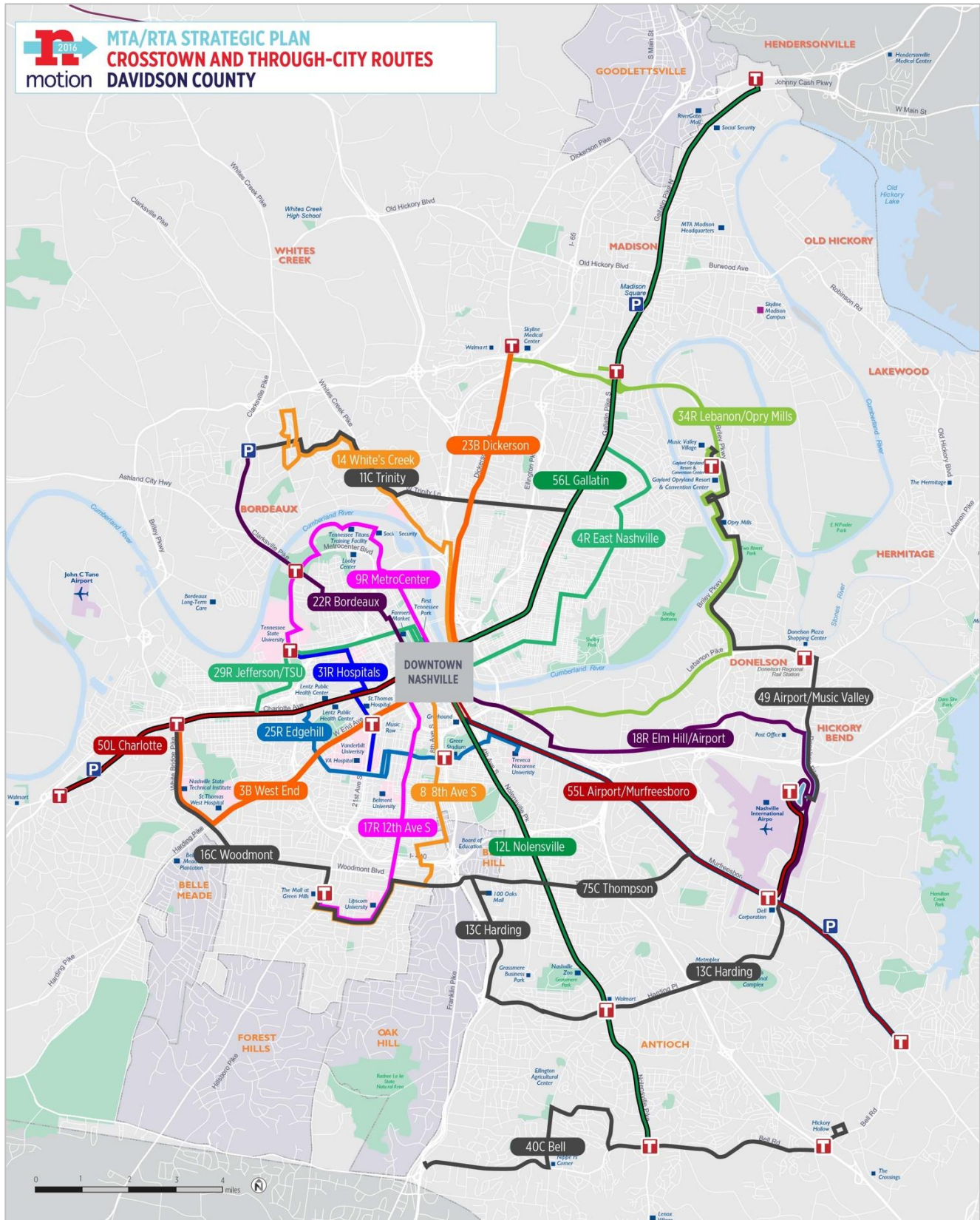
- **New fare payment options** to make fare payment easier
- The development of a **charitable organization to provide fare subsidies for low income riders**

FIGURE 3-7 | ACCESSRIDE SERVICE





FIGURE 3-8 | CROSSTOWN AND THROUGH-CITY ROUTES



## Service to Music Valley/Opryland

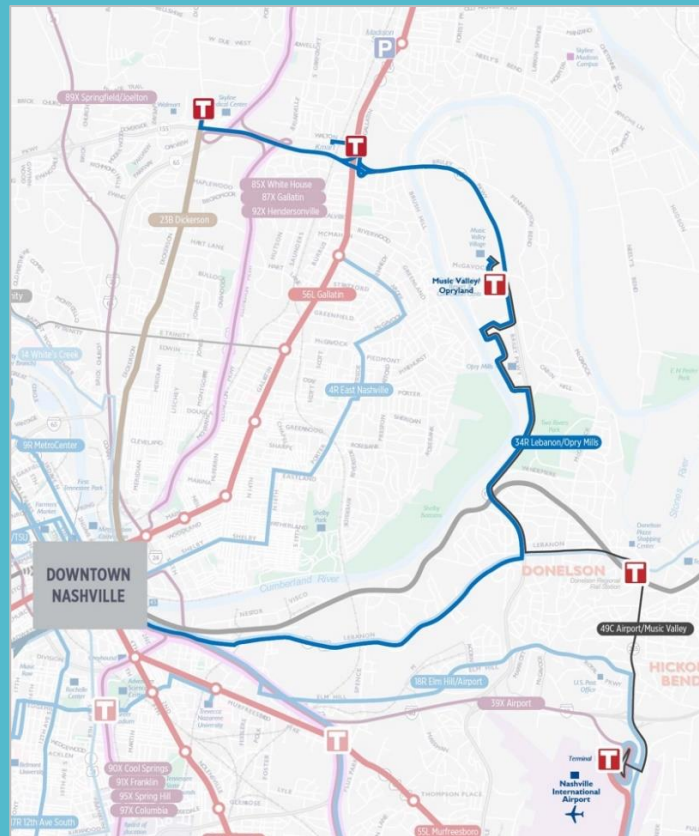


Source: marriot.com

Opryland is one of Nashville's major destinations, but one that now has only limited transit connections. Service will be fundamentally improved in two ways:

- Route 34 Opry Mills, which now provides only very limited service to Music Valley, will be upgraded to a Rapid Bus route (Route 34R Lebanon/Opry Mills) and will provide frequent service from early morning until late night seven days a week. This route will also provide connections to light rail on Gallatin Pike and BRT on Dickerson Pike and to points beyond.
- New local service will be developed between the airport and Music Valley via the Donelson Music City Star Station. This service will operate every 30 minutes seven days a week.

## Music Valley Service



## Develop a Frequent Transit Network

MTA will start the development of a Frequent Transit Network with local bus routes and Rapid Bus routes that will serve as the foundation for a future Frequent Transit Network, eventually including Bus Rapid Transit (BRT) and light rail (see Table 3-1). With this network, riders will be able to travel to Davidson County's most frequented destinations without a schedule and with only very short waits.

These routes of the Frequent Transit Network will operate seven days a week from early morning to late night/early morning. The major local routes will operate at least every 15 minutes during weekday peak periods and at least every 30 minutes during weekday off-peak

periods and on weekends. The Rapid Bus routes, and eventually the BRT and light rail lines, will operate at least every 10 minutes throughout the day through mid-evening, and slightly less frequently after that time.

## Major Local

- Bellevue to downtown Nashville via Harding Pike and West End Avenue (Route 5 Bellevue)
- Hermitage to downtown Nashville via Lebanon Pike (Route 6 Lebanon Pike)
- Mall at Green Hills to downtown Nashville via Lipscomb University and 8th Avenue South (Route 8 8<sup>th</sup> Avenue South)
- Bordeaux to downtown Nashville via Whites Creek Pike and World Baptist Center Drive (Route 14 Whites Creek)

### Rapid Bus

- East Nashville between Gallatin Road at Ardee Avenue to downtown Nashville via areas east of Gallatin Pike (Route 4R East Nashville)
- TSU to downtown Nashville via MetroCenter and 3<sup>rd</sup> Avenue North (Route 9R MetroCenter)
- Mall at Green Hills to downtown Nashville via 12<sup>th</sup> Avenue South (Route 17R 12<sup>th</sup> Avenue South)
- Nashville International Airport to downtown Nashville via Elm Hill Pike (Route 18R Elm Hill/Airport)
- Bordeaux to downtown Nashville via Clarksville Pike (Route 22R Bordeaux)
- Crosstown service between Charlotte Avenue and Trevecca Nazarene University via Edgehill Avenue (Route 25R Edgehill)
- Charlotte Avenue to downtown Nashville via TSU and Jefferson Street (Route 29R Jefferson/TSU)

- Crosstown service between Jefferson Street and Blakemore Avenue via Metro General Hospital, Saint Thomas Midtown Hospital, and Vanderbilt Medical Center (Route 31R Hospitals)
- Gallatin Pike to downtown Nashville via Opry Mills (Route 34R Lebanon/Opry Mills)

### Bus Rapid Transit (BRT)

- 21<sup>st</sup> Avenue South/Hillsboro Pike (Route 7B Hillsboro)
- Broadway/West End Avenue (Route 3B West End)
- Dickerson Pike (Route 23B Dickerson)

### Light Rail

- Gallatin Pike
- Murfreesboro Pike/Airport
- Nolensville Pike
- Charlotte Avenue

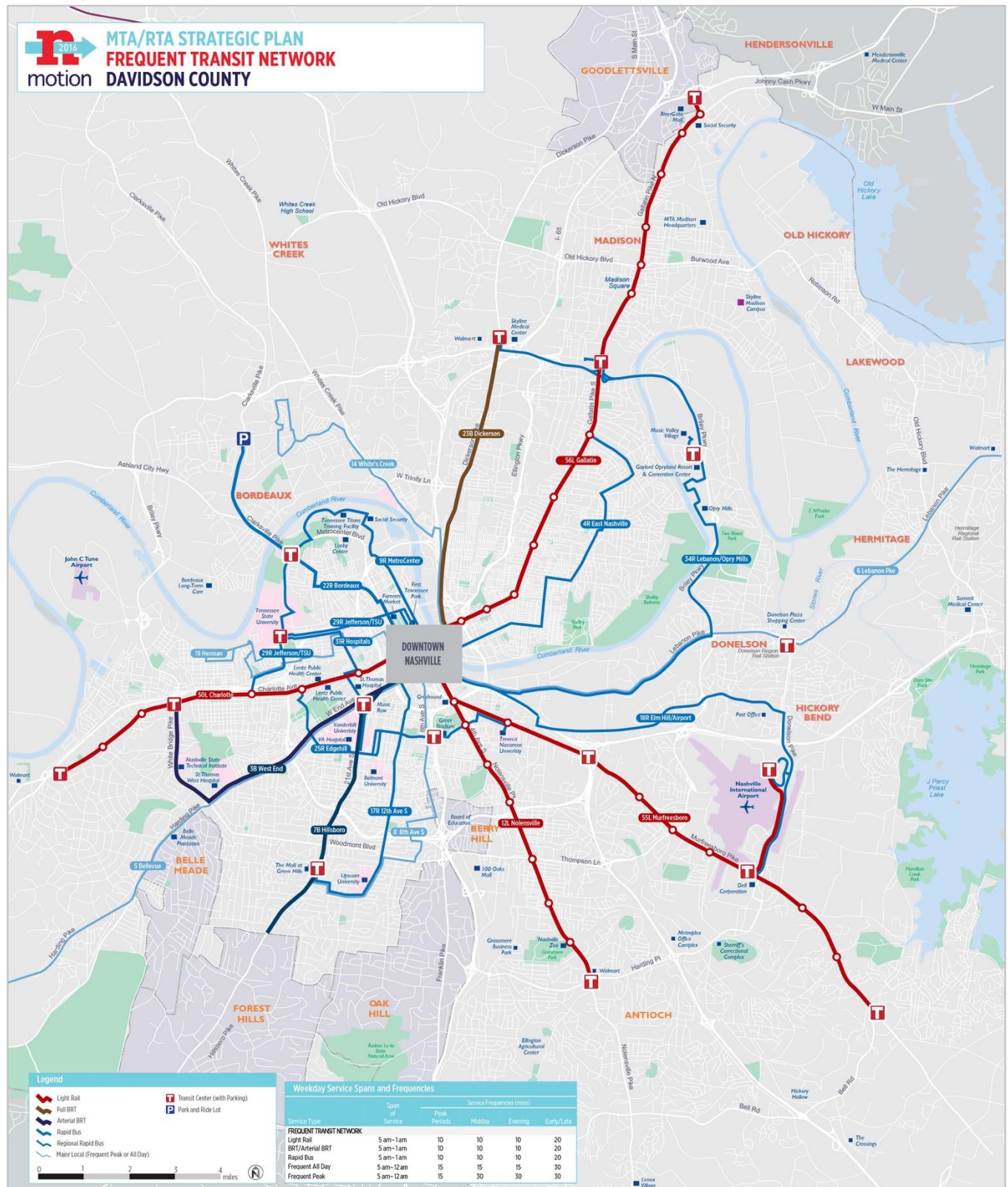
TABLE 3-1 | WEEKDAY SERVICE SPANS AND FREQUENCIES

		Service Frequencies (mins)			
Service Type	Span of Service	Peak Periods	Midday	Evening	Early/Late
Frequent Transit Network					
Light Rail	5 am – 1 am	10	10	10	20
BRT	5 am – 1 am	10	10	10	20
Rapid Bus	5 am – 1 am	10	10	10	20
Regional Rapid Bus	5 am – 11 pm	30	30	30	60
Frequent All Day	5 am – 12 am	15	15	15	30
Frequent Peak	5 am – 12 am	15	30	30	30
Local Routes					
Local 30 All Day	5 am – 11 pm	30	30	30	30
Local 30 Peak	5 am – 11 pm	30	60	60	60
Local 60 All Day	5 am – 9 pm	60	60	60	60
Circulator	5 am – 7 pm	30	30	60	
Lifeline	9 am – 3 pm		60		
Regional Routes					
Commuter Rail	5 am – 11 pm	30	60	60	60
Freeway BRT	5 am – 11 pm	30	60	60	60
Commuter/Express	5 am – 9 pm	30	120	120	

Note: Spans and frequencies represent minimums for each type of service; additional service could be provided.



FIGURE 3-9 | FREQUENT TRANSIT NETWORK





## Improve Access to Transit

At the present time, a significant barrier to using transit is that it is difficult to get to and from existing routes. MTA and RTA will implement and participate in the development of a number of efforts to improve access to transit service for local communities and businesses including improving pedestrian access, creating more conveniently located park-and-ride lots, and making better bicycle connections.

While MTA and RTA will participate in the development of these services, the primary responsibility for providing the services would be with others (local transit agencies; businesses such as taxis, Lyft, and Uber; TMAs; local communities, etc.). However, MTA and RTA will also work to provide transit services in areas where other alternatives are not available. These connections could include.

- Private rideshare services such as Uber and Lyft
- Car share/private short-term car rental companies such as ZipCar and Car2Go
- The development of Transportation Management Associations (TMAs) to provide private connections

Finally, MTA and RTA will also work to partner with Transportation Network Companies such as Lyft and Uber to provide first/last mile connections

## Improve Pedestrian Access

MTA and RTA will work with local communities to develop sidewalks, safe crossing locations, and other pedestrian improvements everywhere transit service is provided. MTA and RTA will also work with local communities to prioritize transit investments in corridors where communities invest in pedestrian and accessible infrastructure.

FIGURE 3-10 | EXAMPLE PEDESTRIAN IMPROVEMENTS





FIGURE 3-11 | BUFFERED BIKE LANE ON BUS ROUTE (SEATTLE, WA); BIKE LOCKERS AT DART STATION (DALLAS, TX)



## Improve Bicycle Connections

In a similar manner as with pedestrian improvements, MTA and RTA will work with local communities to improve bicycling conditions to and from transit service. MTA and RTA will continue to provide bicycle racks on existing buses and will ensure space is provided on future technologies such as BRT vehicles and light rail vehicles.

## Develop More Conveniently Located Park-and-Ride Lots

Most MTA and RTA park-and-ride lots are located at places where local businesses and organizations have agreed to let commuters park for free. This is a very low cost approach, but often results in lots that are inconveniently located. Going forward, MTA and RTA will develop “purpose-built” park-and-ride lots designed to maximize convenience. These lots will be developed along existing express routes, new Freeway BRT routes, and other key locations.

## Work to Develop Private/Community Shuttles

Elsewhere in the United States, shuttles are a very common way to provide connections between transit stations and locations where volumes are too low for traditional transit service operated with

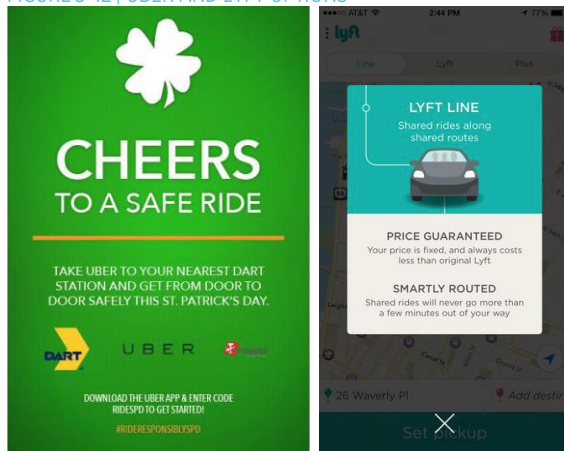
30- or 40-foot buses, where destinations are highly dispersed, and where the times that people travel are highly concentrated. Most shuttles are provided by one of four types of organizations: (1) Transportation Management Associations (TMAs), (2) private employers, (3) cities and towns, and (4) public transit systems. Local shuttles typically provide coordinated connections that make timed transfers to higher-capacity transit routes. MTA and RTA will work with each of these types of organizations to encourage the development of shuttles to and from major transit locations.

## Develop Partnerships with Transportation Network Company (TNC) Services

Services provided by Transportation Network Companies are already being well used to provide “first mile/last mile” connections with transit. MTA and RTA will work with these companies to make the joint use of services easier and to formalize relationships in a manner that will provide for joint fares and/or simpler fare payment. MTA and RTA will also investigate the use of these types of companies to provide MTA and RTA service to lower demand areas, including AccessRide services.



FIGURE 3-12 | UBER AND LYFT OPTIONS



## Make Service More Comfortable

Major components of transit travel consist of waiting at stops and stations and riding in transit vehicles – sometimes for very long periods of time. MTA and RTA will make improvements in both these areas to make using transit more comfortable whether the trip is short or long.

## Upgrade Stations and Stops

MTA and RTA will develop a program to improve amenities at targeted stops and stations to reach the vast majority of riders. Specific amenities to be assessed will include shelters, benches, lighting, trash cans, real-time signage, and more. To do this, MTA and RTA will develop a hierarchy of stops based on stop purpose and volumes and will define the types of facilities and amenities that would be provided at each, barring physical limitations at any site. MTA and RTA will also work closely with cities and counties to ensure ongoing maintenance and security standards around transit facilities.

## Provide Service with More Comfortable Vehicles

As part of the development and provision of premium services, MTA and RTA will improve vehicle comfort levels. This will include local buses, express routes, BRT-lite routes, and Over-the-Road coaches on all RTA express routes. Other improvements including the provision of wi-fi and other amenities will be considered.

FIGURE 3-13 | PORTLAND, OR AND LOS ANGELES BUS STOPS



FIGURE 3-14 | LIGHT RAIL, BRT, AND EXPRESS BUS VEHICLES



## Develop a Network of Regional Transit Centers

In conjunction with the development of new crosstown and through-city routes and the expansion of service to new areas (as described in the next section), MTA and RTA will develop new transit centers throughout Davidson County and the region that will facilitate non-downtown Nashville travel. The transit centers will be designed to act as regional and local “mobility hubs” that provide connections between local services, between local and regional services, and between non-downtown locations (see Figure 3-15).

The transit centers will be sized and developed based on local conditions and needs, and thus will range in size from very large with a wide range of amenities to more modest neighborhood transit centers. All will provide a comfortable location to make connections between transit routes and may include features such as:

- Strong pedestrian connections with the surrounding areas
- Parking (at outer area transit centers) and drop-off areas
- Bikeshare and bicycle parking
- Space for private shuttles and Transportation Network Companies (Lyft, Uber, etc.)
- Real-time passenger information

- Comfortable and attractive waiting areas

The transit centers will be connected to downtown and other outlying areas by reconfiguring existing routes and implementing new routes. Potential locations are shown in Figure 3-16.

FIGURE 3-15 | OUTLYING TRANSIT HUB MODEL

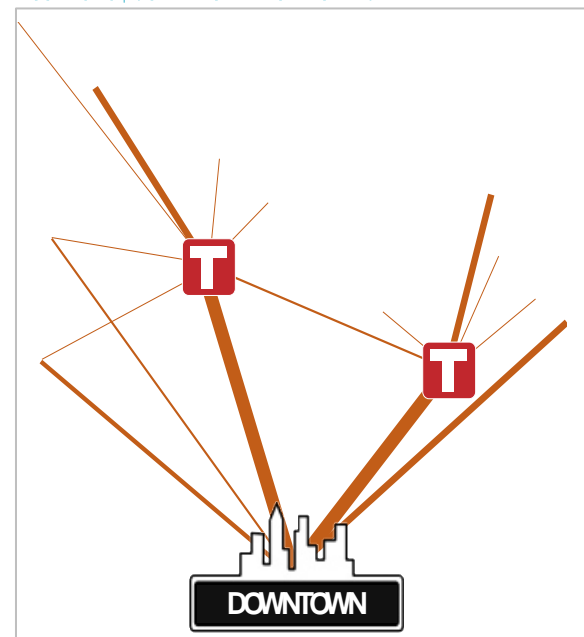
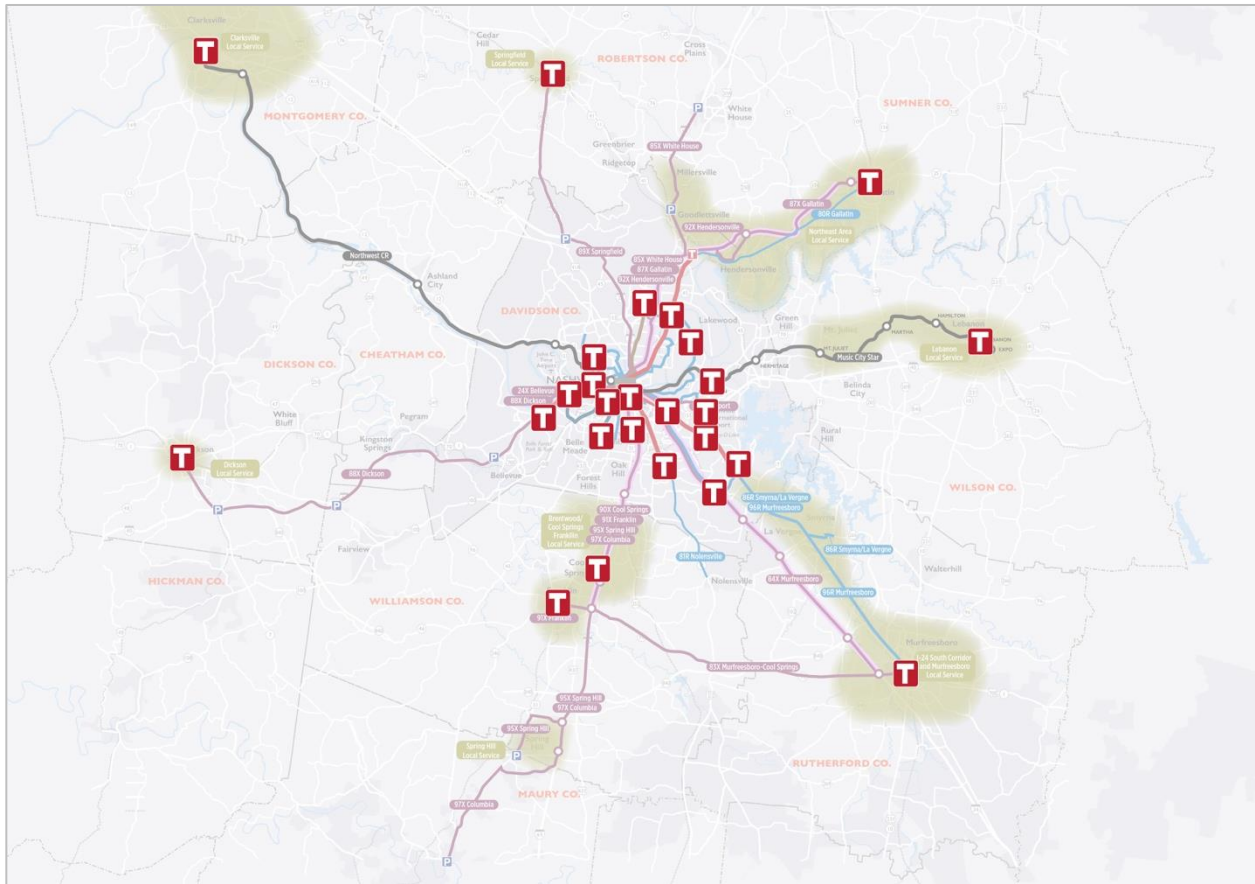




FIGURE 3-16 | TRANSIT CENTER LOCATIONS



Note: Additional transit centers at locations still to be determined will also be developed.

FIGURE 3-17 | MOUNTLAKE TERRACE TRANSIT CENTER (MOUNTLAKE TERRACE, WA) AND AIRWAYS TRANSIT CENTER (MEMPHIS, TN)





## Expand Service to New Areas

Within Davidson County, MTA will expand service to fill gaps in coverage and extend service to new areas as the County continues to grow and as demand develops. In addition, and as described earlier, MTA will provide new linkages through the development of crosstown and through-city routes.

In the outer counties, RTA will work with Clarksville Transit, Franklin Transit, and the Murfreesboro Rover to improve and expand local services. In other areas where demand will emerge for local service, RTA will work with communities to develop new services that could be operated by either the communities or RTA. Areas that will be targeted for the development of new services will include:

- Springfield
- Goodlettsville
- Hendersonville
- Gallatin
- Lebanon
- Smyrna and La Vergne
- Spring Hill
- Dickson



## Build High Capacity/ Rapid Transit Services

A large number of new High Capacity and Rapid transit services will be developed. These will include light rail, commuter rail, Bus Rapid Transit (BRT), Rapid Bus, Freeway BRT, Express Bus on Shoulder service, Regional Rapid Bus, and “regular” express bus services (see Figure 3-18 and Figure 3-19).

The larger infrastructure projects such as Light Rail, Commuter Rail, and dedicated BRT corridors will be longer term projects requiring significant effort to complete environmental clearances and detailed engineering prior to construction and operations. MTA and RTA will begin the

regulatory processes for environmental and engineering efforts on these so that they may be phased in over the mid- and long term phases of the nMotion 2040 plan.

Rapid Bus, Freeway BRT, Express Bus on Shoulder service, Regional Rapid Bus, and “regular” express bus services will require lesser degrees of environmental and engineering and will begin being developed in the short to mid-term periods of the nMotion plan.

The following information provides more description of these technologies and proposed alignments.

## Light Rail

Light rail transit (LRT) is electric urban rail service that typically operates in exclusive rights-of-way (see Figure 3-20). Most often, it uses one to three car trains and is designed to serve high volume corridors at higher speeds than a local bus or streetcar service. Design and operational elements of LRT include level boarding (no stairs necessary to go from the station platform onto the vehicle), off-board fare payment (payment is not made on the vehicles), and traffic signal priority (rail vehicles have priority going through traffic lights at intersections with crossing traffic). LRT stations are typically spaced farther apart than bus stops for local transit services and are situated where there are higher population and employment densities. While longer stop spacing can increase walking distances for some riders, people are typically willing to walk farther to reach transit if service is fast and frequent.

Light rail service will be provided in four corridors where transit demand will be the highest and where there is the greatest potential for new development. These corridors are consistent with those identified in and envisioned by NashvilleNext:

- Gallatin Pike
- Murfreesboro Pike/Airport
- Nolensville Pike
- Charlotte Avenue



## Commuter Rail

Commuter rail service is designed to transport large volumes of passengers over long distances in a fast and comfortable manner. The primary market for commuter rail service is usually commuters to and from city centers.

Experience in Middle Tennessee and elsewhere shows that commuter rail can shift far more people out of cars than express bus services. For example, comparing the current Music City Star commuter rail line to express bus services in Williamson and Rutherford Counties, the Music City Star serves a smaller market and has less frequency than the express bus routes, but it carries six times more passengers overall and over seven times more passengers per trip. This is the case for a number of reasons, the most important of which includes faster service with better on-time performance outside of typical rush hour traffic delays on the region's roads and highways.

However, as described in the call-out box on page 3-25, the potential for the development of commuter rail in Middle Tennessee is very limited. This is because most potential lines would need to use CSX tracks. For the foreseeable future, these tracks would be unusable or highly limited for commuter service due to very high volumes of freight traffic.

For this reason, commuter rail improvements are proposed along lines where there is limited freight activity: The Music City Star Line on the Nashville and Eastern Rail Corridor and the Northwest Corridor between Clarksville and Nashville including the Nashville and Western Rail Corridor.

## Music City Star

RTA will work towards upgrading Music City Star service to all day, seven days a week service. A new station will be constructed at Hamilton Springs and service will be extended to Lebanon's planned Expo Center. Much or all of the line will be double-tracked to enable more frequent service. New rail

vehicles will be purchased. These improvements will be made incrementally over the mid- to long-term phases of the nMotion 2040 plan in order to comply with strict railroad agreements and federal regulations.

## Northwest Corridor

RTA is nearing completion of the Northwest Corridor Transit Study, which is examining a number of options for transit improvements between Clarksville, Ashland City, and Nashville. It is expected that the study will recommend the development of commuter rail. However, it has also identified a number of hurdles. Two of the most important are:

1. The inability to bring service all the way into downtown Nashville, with the closest two potential terminals near the Farmer's Market and the Gulch. While very strong connections to local bus service could be provided from either location, the need to transfer from one mode to another could negatively affect ridership levels.
2. Significantly more growth and development needs to occur at key locations along the corridor to increase potential ridership levels and to make the service cost-effective.

The development of Northwest Corridor commuter rail service will be a long-term project. When service is implemented, it is envisioned that two types of service will be provided:

- Commuter service between Clarksville and Nashville
- Local service within Nashville between North Nashville and the vicinity of downtown.

Northwest Corridor service would be provided with self-propelled rail cars that would be similar in appearance to light rail vehicles, and the service within Davidson County would be similar to light rail service in many respects.

FIGURE 3-18 | METRO AREA HIGH CAPACITY AND RAPID SERVICES

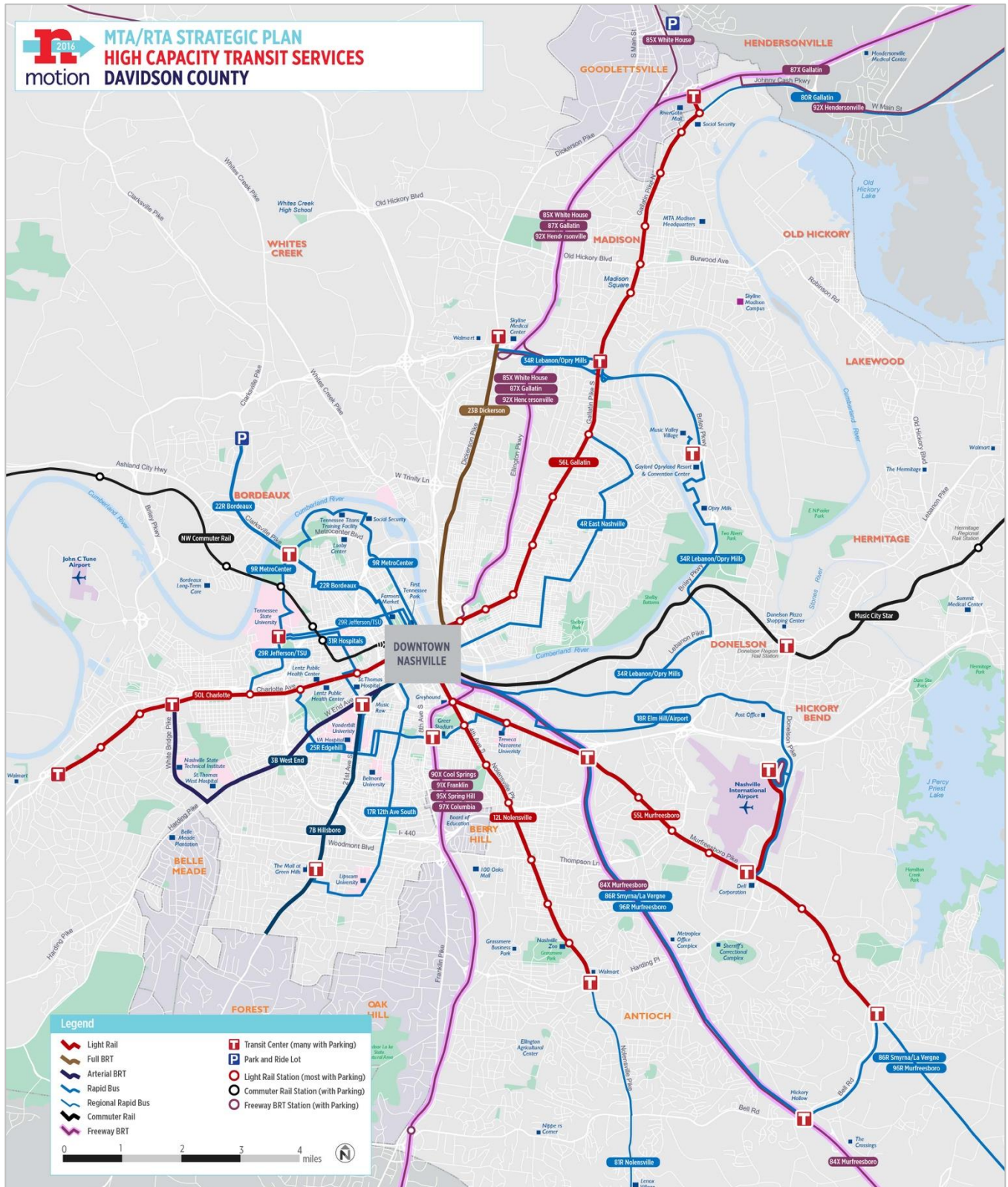




FIGURE 3-19| OUTER COUNTY HIGH CAPACITY AND RAPID SERVICES

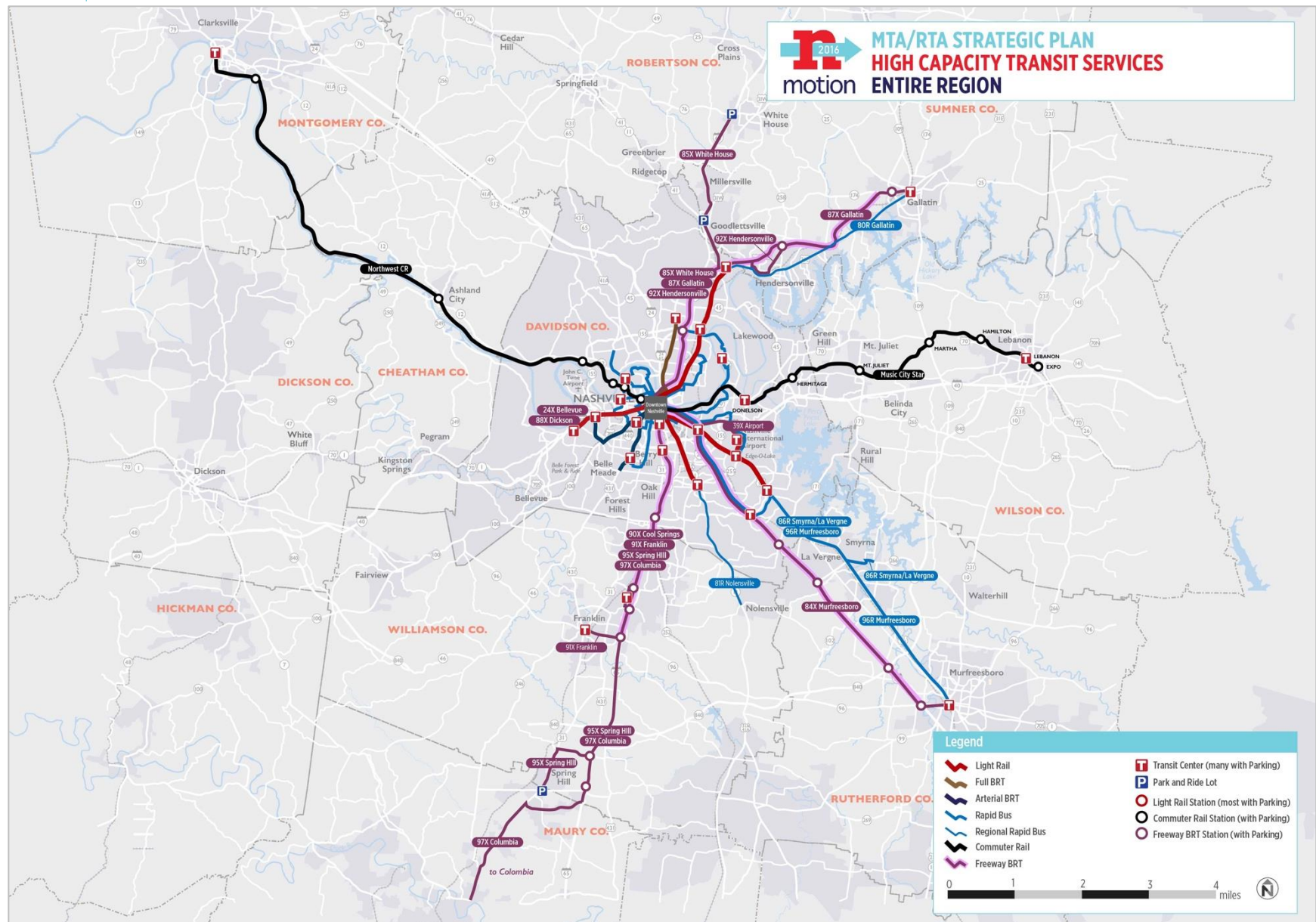


FIGURE 3-20 | MAX LIGHT RAIL (PORTLAND, OR) AND DENVER LIGHT RAIL



FIGURE 3-21 | MINNEAPOLIS NORTHSTAR AND NASHVILLE MUSIC CITY STAR



## Bus Rapid Transit

Bus Rapid Transit, or BRT, is a form of bus service that operates in a similar manner and in similar dedicated corridors as light rail. Typically, BRT serves areas that are not as densely developed as light rail corridors. Under the nMotion plan, BRT will be developed in three corridors:

- Dickerson Pike (Route 23B Dickerson)
- 21<sup>st</sup> Avenue South/Hillsboro Pike (Route 7B Hillsboro)
- Broadway/West End Avenue (Route 3B West End)

It is envisioned that service in the Dickerson Pike corridor will be “full BRT,” with dedicated lanes along most or all of the alignment. BRT service in the Hillsboro and West End corridors is proposed as “Arterial BRT,” which has fewer LRT-like facilities. Arterial BRT will typically include some areas of full BRT service and some areas with service at curbside bus lanes and long sections without dedicated BRT lanes.

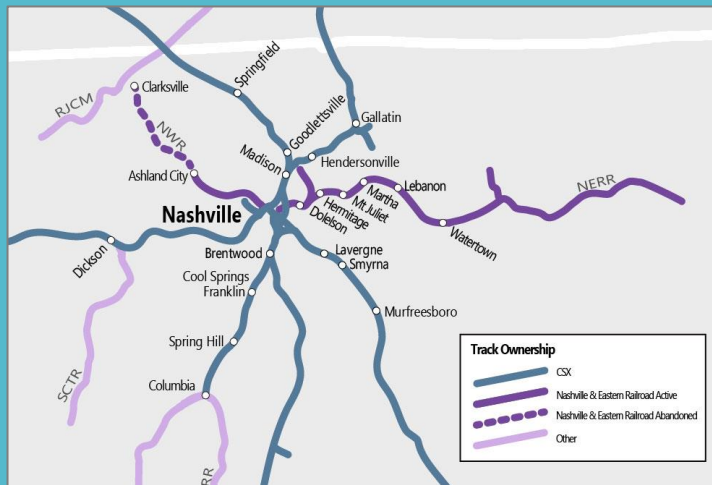


## Why Not Develop More Commuter Rail?

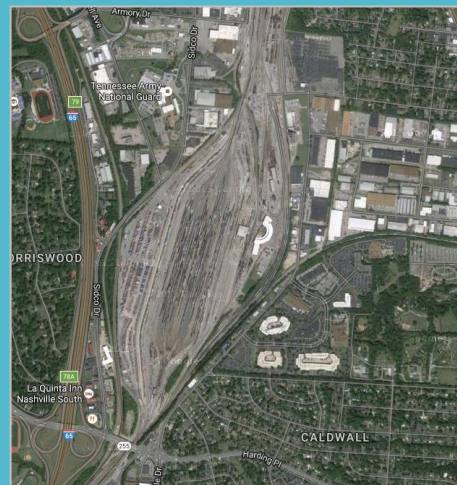
A significant amount of desire has been expressed for the development of new commuter rail lines in Middle Tennessee, particularly to Murfreesboro and Franklin/Spring Hill. However, one of the challenges to the development of new commuter rail lines in Middle Tennessee is that the most desirable rail corridors are CSX lines that have very heavy freight traffic. All new commuter rail lines that have been implemented since the 1990s, including the Music City Star, have been developed in rail corridors with low levels of freight traffic or the ability to develop parallel tracks within existing freight rights-of-way. In those cases, the freight railroads either had sufficient excess capacity to accommodate commuter rail and/or the receipts from the sale of the rail corridors more than offset negative impacts to freight service.

This is not the case in Middle Tennessee. Except for the Nashville and Eastern Railroad line to Clarksville, other potential commuter rail lines would be CSX lines that are heavily used for freight traffic. Beyond the freight traffic alone, Nashville is also a major center for related freight activities, and the company has a major rail yard in Nashville (Radnor), an intermodal terminal, an automobile distribution center, and a bulk transfer terminal. CSX's Nashville area freight traffic is near capacity, and consequently, CSX not willing to share its tracks with passenger traffic.

### Middle Tennessee Track Map (CSX in Blue)



### CSX Radnor Yard



As a result, it will not be possible to expand commuter rail in Middle Tennessee in the foreseeable future. Longer term, this situation may change. For example, continuing increases in freight traffic may exceed the capacity of CSX's Nashville area network, which could require a large-scale solution such as the development of a rail bypass around Nashville for some freight traffic. This type of change would be well beyond the scope of what the MTA or RTA could do, but could also free up the capacity needed to develop new commuter rail lines. To further explore the potential for this type of solution, RTA will work with TDOT and CSX to initiate a study to examine options for freeing sufficient capacity on CSX lines to enable further expansion of commuter rail service.

## Rapid Bus Service

Rapid Bus, in most respects, is BRT service without dedicated bus lanes or only limited bus lanes. It can also be considered as a more full-featured version of MTA's existing BRT lite service.

Within Davidson County, MTA will upgrade nine major routes to Rapid Bus:

- East Nashville between Gallatin Road at Ardee Avenue to downtown Nashville via areas east

- of Gallatin Pike (Route 4R East Nashville)
- TSU to downtown Nashville via MetroCenter and 3<sup>rd</sup> Avenue North (Route 9R MetroCenter)
- Mall at Green Hills to downtown Nashville via 12<sup>th</sup> Avenue South (Route 17R 12<sup>th</sup> Avenue South)
- Nashville International Airport to downtown Nashville via Elm Hill Pike (Route 18R Elm Hill/Airport)
- Bordeaux to downtown Nashville via Clarksville Pike (Route 22R Bordeaux)
- Crosstown service between Charlotte Avenue and Trevecca Nazarene University via Edgehill Avenue (Route 25R Edgehill)
- Charlotte Avenue to downtown Nashville via TSU and Jefferson Street (Route 29R Jefferson/TSU)
- Crosstown service between Jefferson Street and Blakemore

Avenue via Metro General Hospital, Saint Thomas Midtown Hospital, and Vanderbilt Medical Center (Route 31R Hospitals)

- Gallatin Pike to downtown Nashville via Opry Mills (Route 34R Lebanon/Opry Mills)

In addition, four Regional Rapid Bus routes will be developed in regional corridors:

- Gallatin to the outer end of the Gallatin Pike light rail line (Route 80R Gallatin)
- Nolensville to the outer end of the Nolensville Pike light rail line (Route 81R Nolensville)
- Smyrna and La Vergne to downtown Nashville via Murfreesboro Pike and I-24 (Route 86R Smyrna/La Vergne)
- Murfreesboro to downtown Nashville via Murfreesboro Pike and I-24 (Route 96R Murfreesboro)

FIGURE 3-22 | CLEVELAND HEALTHLINE BRT AND BOSTON SILVER LINE BRT





FIGURE 3-23 | REGULAR BUS VS. RAPID BUS VS. BUS RAPID TRANSIT

REGULAR BUS	RAPID BUS	BUS RAPID TRANSIT (BRT)
<p><b>TYPICAL FEATURES</b></p> <ul style="list-style-type: none"> <li>• No special branding</li> <li>• Frequent stops</li> <li>• Wide range of stop facilities – from very basic to elaborate</li> <li>• Wide range of service frequencies – from very infrequent to very frequent</li> <li>• Wide range of service spans – from early morning to late night to only a few trips</li> </ul>	<p><b>TYPICAL FEATURES</b></p> <ul style="list-style-type: none"> <li>• Special branding</li> <li>• Simple service design</li> <li>• Limited stops</li> <li>• Enhanced stops/stations</li> <li>• Frequent service (at least every 15 minutes)</li> <li>• Service from early morning to late night</li> <li>• Real-time passenger information</li> </ul> <p><b>OTHER COMMON FEATURES</b></p> <ul style="list-style-type: none"> <li>• Unique vehicles, including high-capacity buses</li> <li>• Queue jump lanes</li> <li>• Transit signal priority</li> <li>• Off-board fare collection</li> </ul>	<p><b>TYPICAL FEATURES</b></p> <ul style="list-style-type: none"> <li>• Special branding</li> <li>• Simple service design</li> <li>• Limited stops</li> <li>• High quality stations</li> <li>• High-capacity buses</li> <li>• Exclusive bus lanes</li> <li>• Transit signal priority</li> <li>• Very frequent service (at least every 10 minutes)</li> <li>• Service from early morning to late night</li> <li>• Real-time passenger information</li> </ul> <p><b>OTHER COMMON FEATURES</b></p> <ul style="list-style-type: none"> <li>• Unique vehicles</li> <li>• Level platform boarding</li> <li>• Off-board fare collection</li> </ul>
 <p>Nashville MTA regular bus service</p>	 <p>Nashville MTA "BRT-Lite" service</p>	 <p>Cleveland Healthline BRT service</p>

## Freeway BRT

In the I-24 east, I-65 south, and Ellington Parkway/Route 386 corridors, RTA will develop Freeway BRT service. This service will operate within dedicated or managed lanes in freeway rights-of-way with stations directly linked to the freeways.

Freeway BRT will provide very fast regional and commuter service – service that during peak periods will be faster than traveling by car. Reverse commute service will improve access to jobs in these growing areas.

Eleven RTA routes will operate in these corridors:

### I-24 East

- Route 84X Murfreesboro Express
- Route 86R Smyrna/La Vergne Rapid
- Route 96R Murfreesboro Rapid

### I-65 South

- Route 90X Cool Springs Express
- Route 91X Franklin Express
- Route 95X Spring Hill Express
- Route 97X Columbia Express

### Ellington Parkway/Route 386

- Route 85X White House Express
- Route 87X Gallatin Express
- Route 89X Springfield Express
- Route 92X Hendersonville Express

One route in each corridor (Route 84X Murfreesboro Express, Route 91X Franklin Express, and Route 87X Gallatin Express) will provide all day bi-directional service with at least the same levels of service as proposed for the Music City Star under future conditions.

FIGURE 3-24 | SEATTLE AND MINNEAPOLIS FREEWAY BRT STATIONS



## Express Bus on Shoulder Service

In major corridors where Freeway BRT will not be provided, MTA and RTA will work with TDOT to implement Bus on Shoulder service. With this operation, buses will use freeway shoulders when general traffic lanes are congested, which will also make bus service faster than traveling by automobile. Eight routes will operate in this manner:

### I-24 West

- Route 89X Springfield
- Route 94X Clarksville (until replaced by Northwest Corridor Commuter rail)

### I-40 East

- Route 39X Airport I-40 West
- Route 24X Bellevue
- Route 88X Dickson

### I-65- North

- Route 85X White House (north of I-65/Route 386 intersection)

### I-65 South

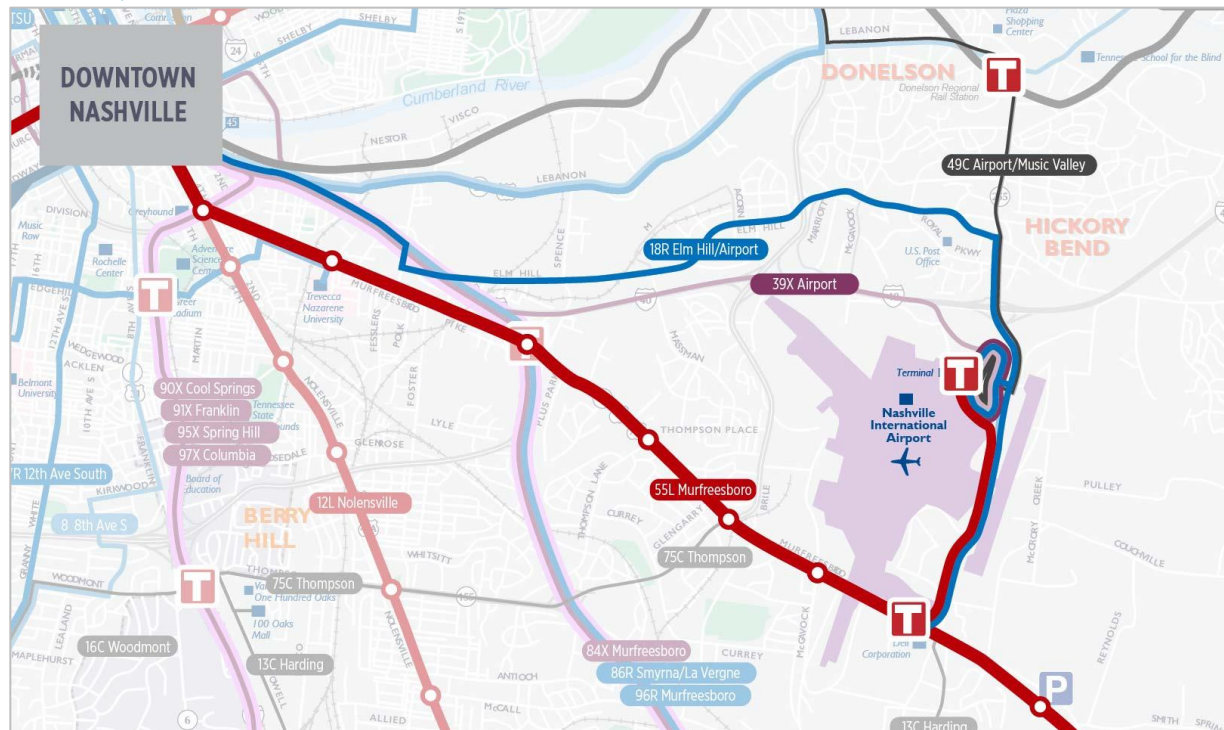
- Route 95X Spring Hill (south of Franklin)
- Route 97X Columbia (south of Franklin)

FIGURE 3-25 | MINNEAPOLIS AND RALEIGH, NC BUS-ON-SHOULDER OPERATIONS





FIGURE 3-26 | AIRPORT TRANSIT SERVICES



## Airport Service

Most major cities have excellent transit service between their airports and downtown. nMotion 2016 envisions the same for Nashville with the development of multiple High Capacity and Rapid services and the use of the airport as a transit hub. Airport services will include:

- Local bus service between the airport and Music Valley/Opryland via Donelson Station (Route 49 Airport/Music Valley)
- Express bus service between the airport and the West End via downtown Nashville (Route 39X Airport). This service will operate seven days a week every 30 minutes from early morning until early morning.
- Rapid Bus service between Murfreesboro Pike and downtown via Elm Hill Pike and the airport (Route 18R Elm Hill/Airport). (This route would primarily serve jobs along Elm Hill Pike, but would also provide an additional option to the airport).
- Light rail service between the airport and downtown as part of the development of light rail service along Murfreesboro Pike (as a branch of Murfreesboro Pike service (Route 55L Murfreesboro/Airport)).