

SCENARIOS DETAILS: DEVELOP PREMIUM SERVICES

BUS RAPID TRANSIT (BRT)

Since the late 1990s, nearly 200 cities throughout the world have developed Bus Rapid Transit (BRT) services that have made bus service much more attractive and greatly increased ridership. The popularity of BRT is that it can provide light rail-like service without the high costs associated with rail infrastructure. Compared to light rail transit (LRT), BRT typically has much lower capital and operating costs, while it is also faster, more reliable, and more easily identifiable than regular bus service. Characteristics of BRT service include:

- **Frequent service** that typically runs every 10 minutes or less
- **Long span of service**, often 18 hours a day or more
- **Fast service** because stations are spaced farther apart than local bus service, similar to light rail
- **Direct service** that operates along major arterials and without deviations

Beyond the service that is provided, BRT also combines a number of physical elements that are often featured in LRT systems and that work together to produce attractive and compelling service. These elements include unique identify and branding, special vehicles, exclusive bus running ways, transit priority, BRT stations, pre-paid fare collection, and real-time passenger information. These measures work together to make service fast and reliable, to make it convenient and comfortable service, and to establish a strong image and identity for service.

FIGURE 1 | CLEVELAND HEALTHLINE BRT AND BOSTON SILVER LINE BRT



Key elements of BRT service include:

- **Unique Identity** to increase the service's visibility and differentiate it from "regular" bus service.
- **Special Vehicles** that provide greater comfort, reinforce the unique identify, and help differentiate the BRT service from regular bus service.
- **Exclusive Bus Running Ways**—dedicated rights-of-way and reserved lanes on existing roads—to allow buses to avoid the delays experienced in mixed-traffic operations.
- **Transit Signal Priority**, such as signal priority and queue jump lanes, to speed buses through intersections.
- **BRT Stations** that provide similar features, amenities, and levels of passenger comfort as light rail stations.
- **Level Boarding** via the use of either high-platform stations or low-floor buses to reduce dwell times and facilitate boardings and alightings by people with disabilities.

- **Pre-Paid Fare Collection** via either pre-paid passes or the sale of tickets from ticket vending machines at stations and stops to eliminate delays associated with on-board fare collection.
- **Real Time Passenger Information** to inform passengers when buses will actually arrive or depart from stations, which reduces much of the uncertainty that is associated with bus service.
- **Intelligent Transportation System Technologies** such as automatic vehicle location, which can be used to maintain consistent spacing between buses to keep them on schedule.
- **Effective Connections** with other transit and surrounding areas.

Note, however, that the development of BRT would also include some changes that some passengers may not like:

- Many bus routes that now operate near BRT lines would likely be converted from downtown routes to BRT feeder routes. In this case, some riders who now have one-seat rides would instead need to transfer to and from BRT. (The specific routes that would be converted to feeders have not been determined as part of scenario development, and would be determined later as part of project development.
- Stops would be spaced significantly farther apart than with existing bus routes. Most riders prefer longer walks to faster service to shorter walks to slower service, but not all do.

Overall, most riders and potential riders prefer BRT to Rapid Bus, and regular bus. However, as with any potential change, some riders may prefer existing bus services for the reasons described above.

For additional information on BRT service, see: nmotion2015.com/wp-content/uploads/2015/08/nMotion-BRT-150712_FINAL.pdf.

SUMMARY OF SCENARIO SERVICES

Scenarios 1 and 2 include the development of BRT services. In Scenario 1, BRT service would be developed in three major corridors that would not be developed as light rail (see **Error! Reference source not found.**). In Scenario 2, BRT would be the highest level of metro area service, and would be developed in six corridors. (In Scenario 3, Rapid Bus would be the highest level of metro area service.)

TABLE 1 | RAPID BUS SERVICE BY SCENARIO

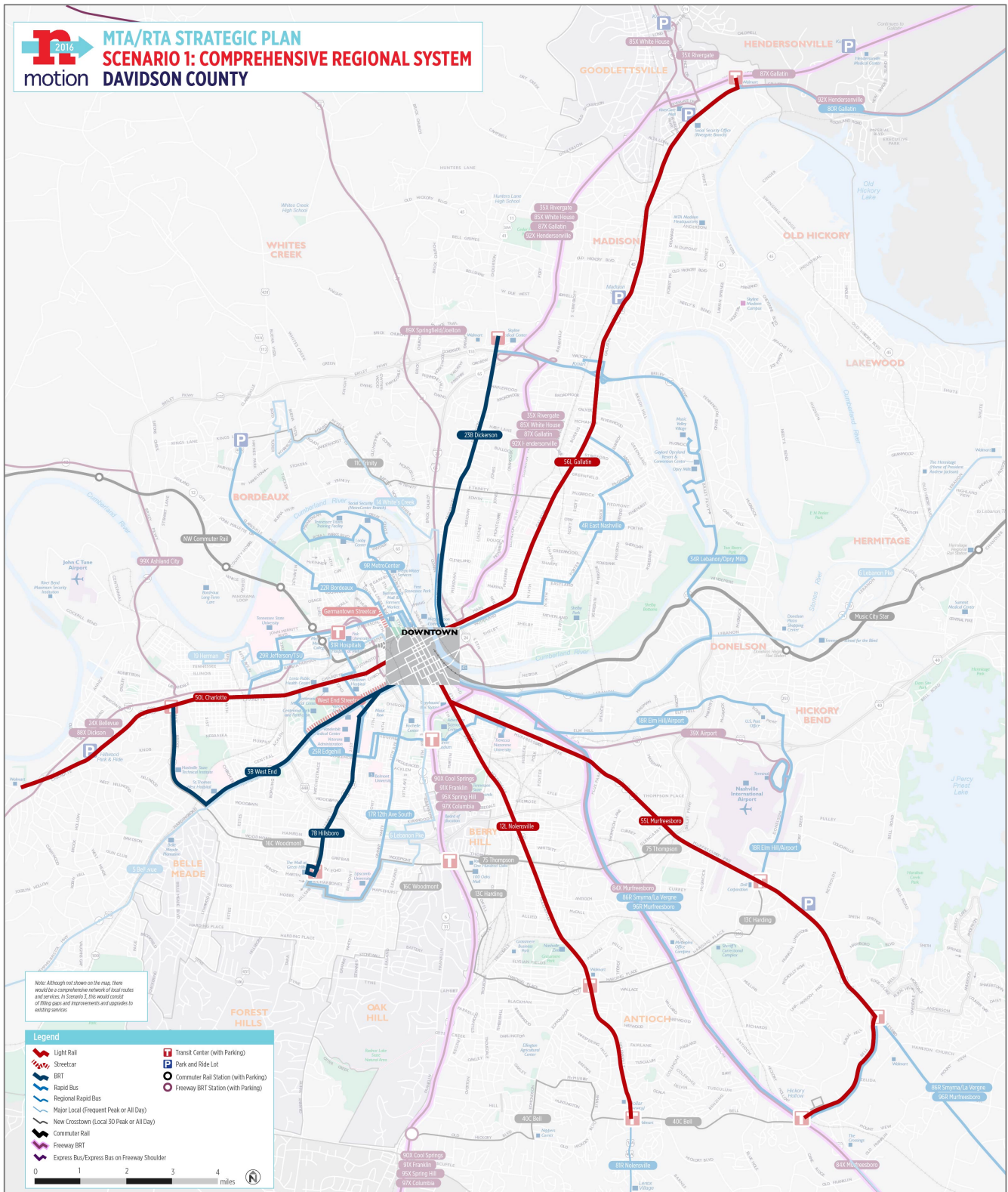
Route/Corridor	Scenario 1 Comprehensive Regional System	Scenario 2 Bus-Focused Expansion	Scenario 3 Modest Improvements
3 West End	BRT	BRT	Rapid Bus
7 Hillsboro	BRT	Rapid Bus	Rapid Bus
12 Nolensville Pike	LRT	BRT	Rapid Bus
43 Dickerson Pike	BRT	BRT	Rapid Bus
50 Charlotte Pike	LRT	BRT	Rapid Bus
55 Murfreesboro Pike	LRT	BRT	Rapid Bus
56 Gallatin Pike	LRT	BRT	Rapid Bus

Note: On maps, the route numbers include a suffix if they are light rail (L), BRT (B), or Rapid Bus (R). For example, Route 12 Nolensville is light rail in Scenario 1 and labeled as Route 12L, BRT in Scenario 2 and labeled as 12B, and Rapid Bus in Scenario 3 and labeled as 12R.

SCENARIO 1: COMPREHENSIVE REGIONAL SYSTEM

Scenario 1 includes both LRT and BRT, and BRT service would be developed in three major corridors that would not be developed as light rail (see Figure 2):

FIGURE 2 | SCENARIO 1 METRO AREA BRT SERVICES (PLUS LIGHT RAIL)



- Route 3B West End BRT in the Broadway/West End Avenue corridor
- Route 7B Hillsboro BRT in the Broadway/21st Avenue South corridor
- Route 43B Dickerson BRT in the Dickerson Pike corridor

BRT lines would provide frequent service for long hours, and would provide the same level of service as light rail (see Table 2).

TABLE 2 | SCENARIO 1 LIGHT RAIL LEVELS OF SERVICE

	Span of Service	Service Frequencies (Minutes)			
		Peak	Midday	Evening	Early/Late
Bus Rapid Transit					
Weekday	5 AM – 1 AM	10	10	10	20
Saturday	5 AM – 1 AM	15	15	15	30
Sunday	6 AM – 11 PM	15	15	15	30

Note: Peak = approximately 6 AM to 8:30 AM and 3:30 PM to 6:00 PM, Midday between those times, Evening from 6 PM to 11 PM, and Early/Late before 6 AM and after 11 PM.

SCENARIO 2: BUS-FOCUSED EXPANSION

In Scenario 2, BRT would be the highest level of metro area service, and would be developed in six corridors (see Figure 3):

- Route 3B West End BRT in the Broadway/West End Avenue corridor
- Route 12B Nolensville BRT in the Nolensville Pike corridor
- Route 43B Dickerson BRT in the Dickerson Pike corridor
- Route 50B Charlotte BRT in the Charlotte Pike corridor
- Route 55B Murfreesboro BRT in the Murfreesboro Pike corridor
- Route 56B Gallatin BRT in the Gallatin Pike corridor

Scenario 2 Rapid Bus service would operate with a high level of service, although lower than in Scenario 1 (see Table 3).

TABLE 3 | SCENARIO 2 BRT LEVELS OF SERVICE

	Span of Service	Service Frequencies (Minutes)			
		Peak	Midday	Evening	Early/Late
BRT					
Weekday	5 AM – 12 AM	10	15	15	20
Saturday	5 AM – 12 AM	15	15	15	30
Sunday	6 AM – 10 PM	15	15	15	30

Note: Peak = approximately 6 AM to 8:30 AM and 3:30 PM to 6:00 PM, Midday between those times, Evening from 6 PM to 11 PM, and Early/Late before 6 AM and after 11 PM.

SCENARIO 3: MODEST IMPROVEMENTS

Scenario 3 does not include the development of BRT service, and instead includes Rapid Bus as the most premium type of bus service. See the Rapid Bus Scenario Details paper for more information.

FIGURE 3 | SCENARIO 2 METRO AREA BRT SERVICES (PLUS RAPID BUS)

