SCENARIOS DETAILS: IMPROVE EXISTING SERVICES

DOWNTOWN TRANSIT CIRCULATION

At the present, transit service operates very slowly within downtown Nashville. A common theme among stakeholders has been that changes outside of downtown won't be enough if service continues to be so slow within downtown. Transit is slow within downtown for a number of reasons:

- Most downtown streets are relatively narrow and congested
- Transit operates in mixed-traffic, with no priority
- Many routes operate circuitously
- Street closings for events produce many detours and delays

FIGURE 1 | EXPESS BUS IN TRAFFIC IN DOWNTOWN NASHVILLE

Source: www.wsmv.com

There is no "one thing" that can be done to make service faster in downtown. However, there are combinations of actions that could be taken, which include:

- Development of a second downtown transit center
- Development of Transit Emphasis Corridors
- Service design changes
- Transit priority

SECOND DOWNTOWN TRANSIT CENTER

All MTA and RTA downtown services currently operate to and from Music City Central, which is located at the northern edge of downtown. As MTA and RTA services expand, they will outgrow Music City Central's capacity. In addition, adding significantly more service to Music City Central could overwhelm the area with transit traffic. Finally, as downtown continues to grow outward, more of downtown will be beyond walking distance of Music City Central.

The projected growth of both downtown and transit services suggests that Nashville should shift to a multiple downtown transit center approach, which is the approach used in most larger cities. This would

better distribute transit throughout downtown, and coupled with service design changes, could provide one-seat service to more of downtown.

TRANSIT EMPHASIS CORRIDORS

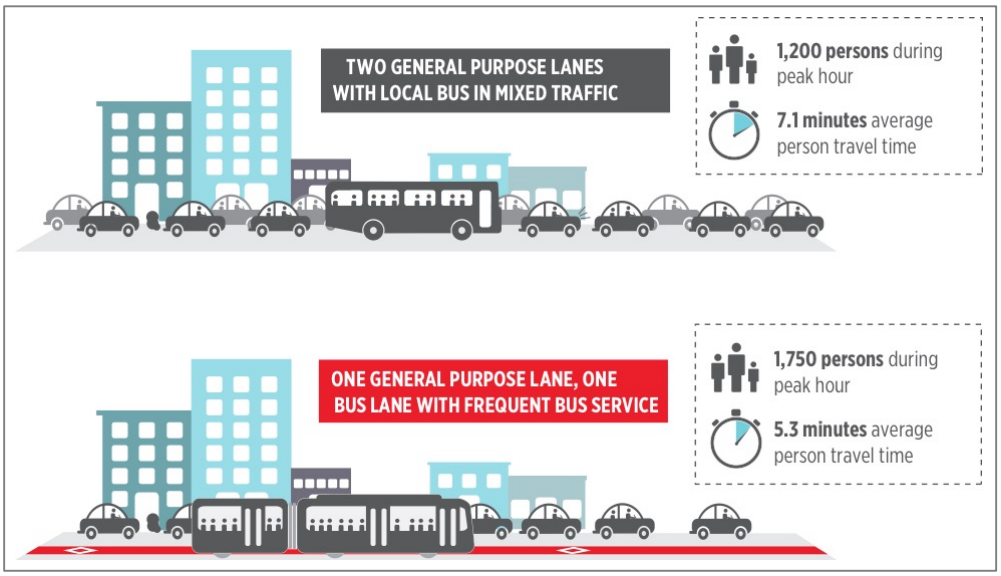
Transit Emphasis Corridors are corridors where priority is given to transit. Examples include Portland's Transit Mall, which is a one-way pair that dedicates two lanes to transit and one lane to other traffic, and San Francisco's Market Street, which is open to all traffic but heavily emphasizes transit (see Figure 2).

FIGURE 2 | TRANSIT EMPHASIS CORRIODORS (PORTLAND, OR AND SAN FRANCISCO)

Major benefits of transit emphasis corridors are that they make transit service faster and more reliable. Transit emphasis corridors also typically include more significant and higher quality stop facilities, which helps to make transit service more comfortable.

Transit Emphasis Corridors are designed to improve the overall person-throughput on downtown streets and to reduce overall travel times (see Figure 3). However, their development can also present challenges. Most existing downtown streets are most heavily used by automobiles, for both driving and parking. Efforts to place a greater emphasis on transit often meet resistance if they degrade conditions for automobile users.

FIGURE 3 | PERSON VOLUMES AND TRAVEL TIME EXAMPLE

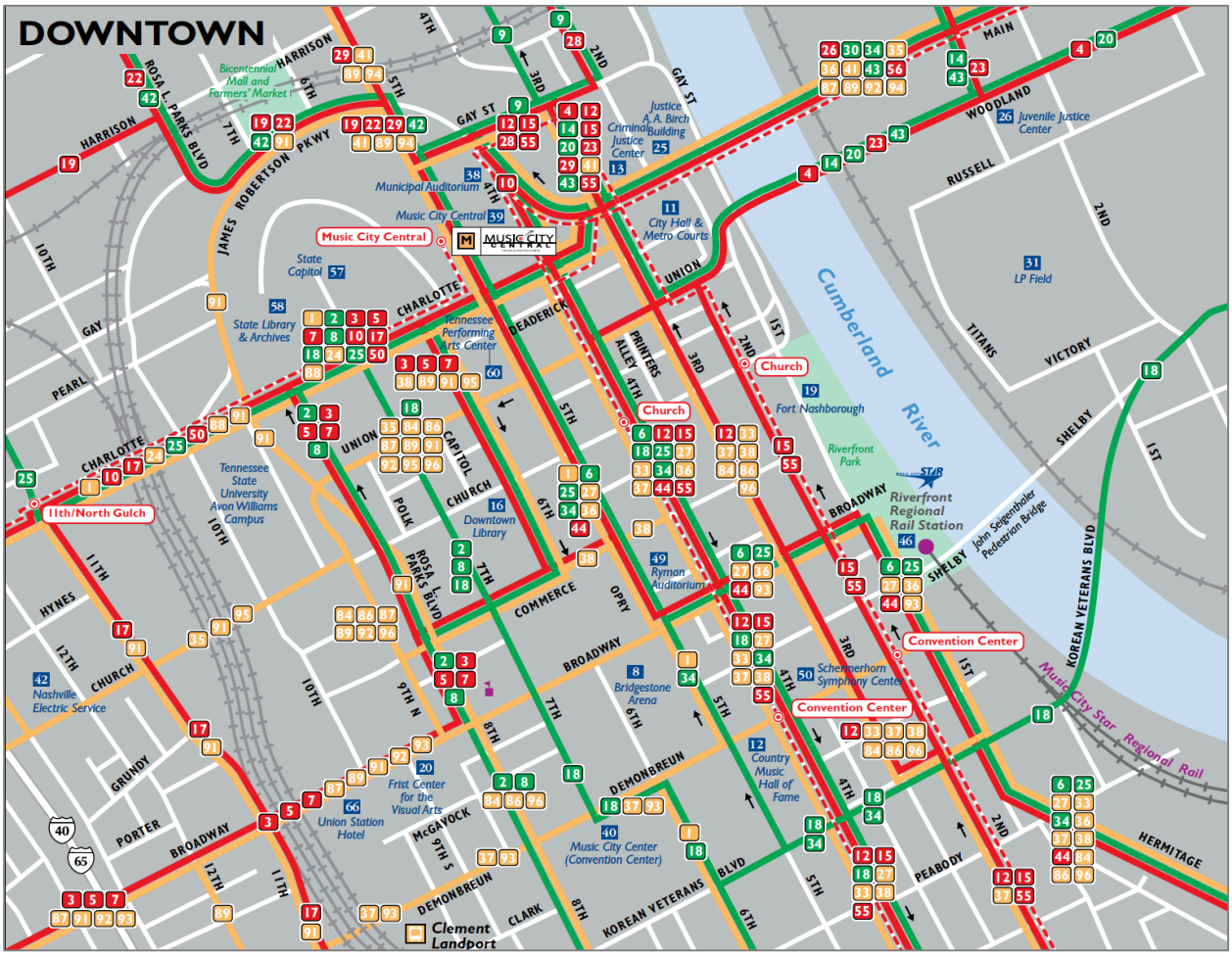


SERVICE DESIGN CHANGES

Existing Downtown Service is dispersed among most downtown streets (see Figure 4). This reduces bus volumes on individual streets, but makes it difficult for passengers to understand and use, and extra turns slow service. Coupled with the development of a second transit center and Transit Emphasis Corridors, service could be redesigned to:

- Provide much simpler circulation patterns that passengers would be able to more easily learn and remember.
- Operate via more direct routes that would be faster.
- Provide transfers at additional locations, which would eliminate the need for many to travel all the way in and out of Music City Central.

FIGURE 4 | MTA EXISTING DOWNTOWN CIRCULATION



TRANSIT PRIORITY

Transit priority would also be used to reduce transit travel times. These measures would include:

- Exclusive transit lanes in some or all Transit Emphasis Corridors
- Queue jump lanes, which typically substitute a short stretch of parking for a curbside bus lane that allows buses to jump to the front of the queue at bus stops or traffic signals.

- Transit signal priority that extends green signals for approaching buses, which allows them pass through the intersection before the light turns red and provides them with an early green signal.

For additional information on downtown service, see the Better Downtown Transit Service Transit Strategies document: nmotion2015.com/wp-content/uploads/2015/08/nMotion-Downtown-Transit-150710_FINAL.pdf

SUMMARY OF SCENARIO SERVICES

All three scenarios include a similar approach to downtown circulation that is designed to simplify service, make it faster, and provide better service to more of downtown. The concept consists of:

- A **second transit center** south of the Convention Center
- **Transit Emphasis Corridors**:
  - North-south through the downtown core, including to the Farmers' Market if that becomes the Nashville terminus for Northwest Corridor commuter rail
  - Charlotte Pike/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 corridor would provide **shuttle-like service** within downtown.
- **Transit priority measures** along Transit Emphasis Corridors and other key locations.
- **Very frequent service** in the Transit Emphasis Corridors that would also provide downtown shuttle service.

To facilitate understanding, the concept presented herein identifies one potential site for a second transit center and the use of 4th and 5th Avenue as the north-south Transit Emphasis Corridor. However, it should be stressed that these and other elements that appear to be specific are used only for illustration purposes and as a starting point. They are not recommendations, and additional work and interagency coordination will be needed to refine the concept and determine specific elements. For example,

- There would be many alternative locations for a second transit centers
- A north-south Transit Emphasis corridor would most likely be implemented as a one-way pair, and potential pairs would be 3rd and 4th Avenues, 4th and 5th Avenues, or others.
- In Scenarios 2 and 3, which do not include the development of rail service, Transit Emphasis Corridors could also be developed with full-time exclusive bus lanes or peak period only exclusive lanes.

In more detail, the concept includes (see Figure 5):

- The development of a second downtown transit center in the vicinity of 4th and 5th Avenue south of Korean War Veterans Boulevard (south of the Convention Center, and called Music City South in Figure 5.
- The development of north-south Transit Emphasis Corridors on 4th and 5th Streets, with dedicated transit lanes. To accomplish this, 4th Avenue would be converted to one-way southbound throughout the length of downtown (which it now is mostly, but not completely), and 5th Avenue would be converted to one-way northbound. Parking would be eliminated along the length of the Transit Emphasis Corridor.
- The development of an east-west Transit Emphasis Corridor on Broadway. On Broadway, transit lanes would be developed through the conversion of the curbside traffic and parking lanes.

FIGURE 5 | SCENARIO 1 DOWNTOWN CIRCULATION CONCEPT

- The development of an east-west Transit Emphasis Corridor on Charlotte Pike and James Robertson Parkway. Transit lanes would be developed through the conversion of the outside traffic lanes to bus lanes.
- The reconfiguration of most downtown service to operate via the Transit Emphasis Corridors. Service from the north would operate to Music City South via 4th and 5th Avenues (indicated in Orange in Figure 3), and service from the south would operate to Music City Central via 4th and 5th Avenues (indicated in light blue on Figure 5). This reconfiguration would provide much better service to the heart of downtown on many routes, and very frequent service within downtown. Some routes could also be through-routed, or combined, to operate through downtown.

Differences between how this concept would be applied in the three scenarios are described in the following sections.

SCENARIO 1: COMPREHENSIVE REGIONAL SYSTEM

In Scenario 1, which includes light rail, the 4th/5th Avenue, and Charlotte Pike/ James R. Robertson Transit Emphasis Corridors would be used by light rail and bus services. While light rail could technically operate in mixed traffic, the development of reliable light rail service would effectively require the development of full time exclusive transit lanes through downtown. The transit infrastructure related to Scenario 1 would be the most significant of the three scenarios, largely due to the development of commuter rail stations designed to serve multiple car trains (which could also be used by BRT and other bus services).

In addition, light rail has been presented in these scenarios as four lines that would radiate from Nashville. However, as a practical matter, these lines would almost certainly be paired to provide service that ran through downtown (for example, Gallatin Pike to Charlotte Pike). In this case, these lines would operate through downtown rather than terminating at one of the downtown transit centers. Bus routes could also be similarly paired. Finally, Scenario 1 includes Northwest Corridor commuter rail service that would like terminate in Nashville at the Farmer's Market, and streetcar service between Germantown and the West End. The streetcar service would provide connections between commuter rail and the West End.

SCENARIO 2: BUS-FOCUSED EXPANSION

As with Scenario 1, full time transit lanes would be essential for the provision of faster and more reliable service. However, Scenario 2 would provide more flexibility with the development of bus lanes in Transit Emphasis Corridors in that transit lanes could be developed as peak period only lanes with parking permitted during other times. As a last resort, the simplified service concept could be implemented in mixed traffic. However, in this case, time savings would be minimal. The transit infrastructure that would be required with Scenario 2 would also be less extensive than in Scenario 1 as BRT stations would be significantly smaller than light rail stations. Finally, in a similar manner as Scenario 1, BRT, Rapid Bus, and other bus route pairs could be combined to provide through-routed service through downtown.

SCENARIO 3: MODEST IMPROVEMENTS

The implementation of downtown improvements in Scenario 3 would be very similar to Scenario 2, as would related considerations. The most significant difference would be that downtown bus stations would likely be less substantial.

TUNNEL OPTION

Finally, it should be noted that design specifics of individual services would be developed during project development. In many cities, light rail operates on the surface in outer areas and in subways in downtown areas (for example, Boston, Seattle, Pittsburgh and San Francisco, among others). With Scenario 1, Nashville light rail could be developed in a similar manner. In that event, some bus service – for example, BRT and Rapid Bus –could also operate in the same tunnel or tunnels, as in the case in Seattle (see Figure 6). This approach would place the most significant transit infrastructure underground, and eliminate all heart of downtown-related traffic delays. Scenario 2 could also use a similar approach for major bus services. While not included in any of the scenarios, or cost estimates, a very preliminary examination of this option indicates that tunnels could be constructed under downtown Nashville at a cost of $100 to $300 million per mile (as a frame of reference, the distance between Charlotte Avenue and Broadway is about 0.4 miles). The development of stations would be additional.

FIGURE 6 | SEATTLE TRANSIT TUNNEL WITH LIGHT RAIL AND BUS OPERATIONS