PLAN CHATTANOOGA

One Chattanooga: Transit for All

Appendix B: High Capacity Corridor Analysis Memo

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Table of Contents

Introduction

The High Capacity Transit (HCT) Corridors Analysis identifies and evaluates potential corridors to deliver faster and more reliable transit service between origins and destinations. “High capacity transit” refers to investments such as dedicated guideways, prioritization treatments at intersections and other pinch points, signal prioritization, premium transit stations, and other investments that improve the customer experience and reduce travel and wait times.

The evaluation process begins with a high-level screening of existing transit ridership, current activity levels, and forecasts of future activity within key corridors. This screening process identifies seven corridors meriting further analysis and results in a shortlist of four corridors with the greatest potential for HCT, pending further analysis. Recognizing the downtown transit center location remains undetermined, routes were truncated before reaching the downtown core for this analysis. Further downtown study to finalize HCT corridors is recommended.

This memo includes summaries of a market analysis, including existing ridership, travel demand, development potential, as well as a corridor compatibility analysis ensuring a comprehensive approach to shaping the future transit landscape.

Identification of Potential Corridors

Initial corridors were identified based on known major travel corridors, high activity areas, and previous planning efforts. Thirteen such corridors were identified and are shown in Figure 1.

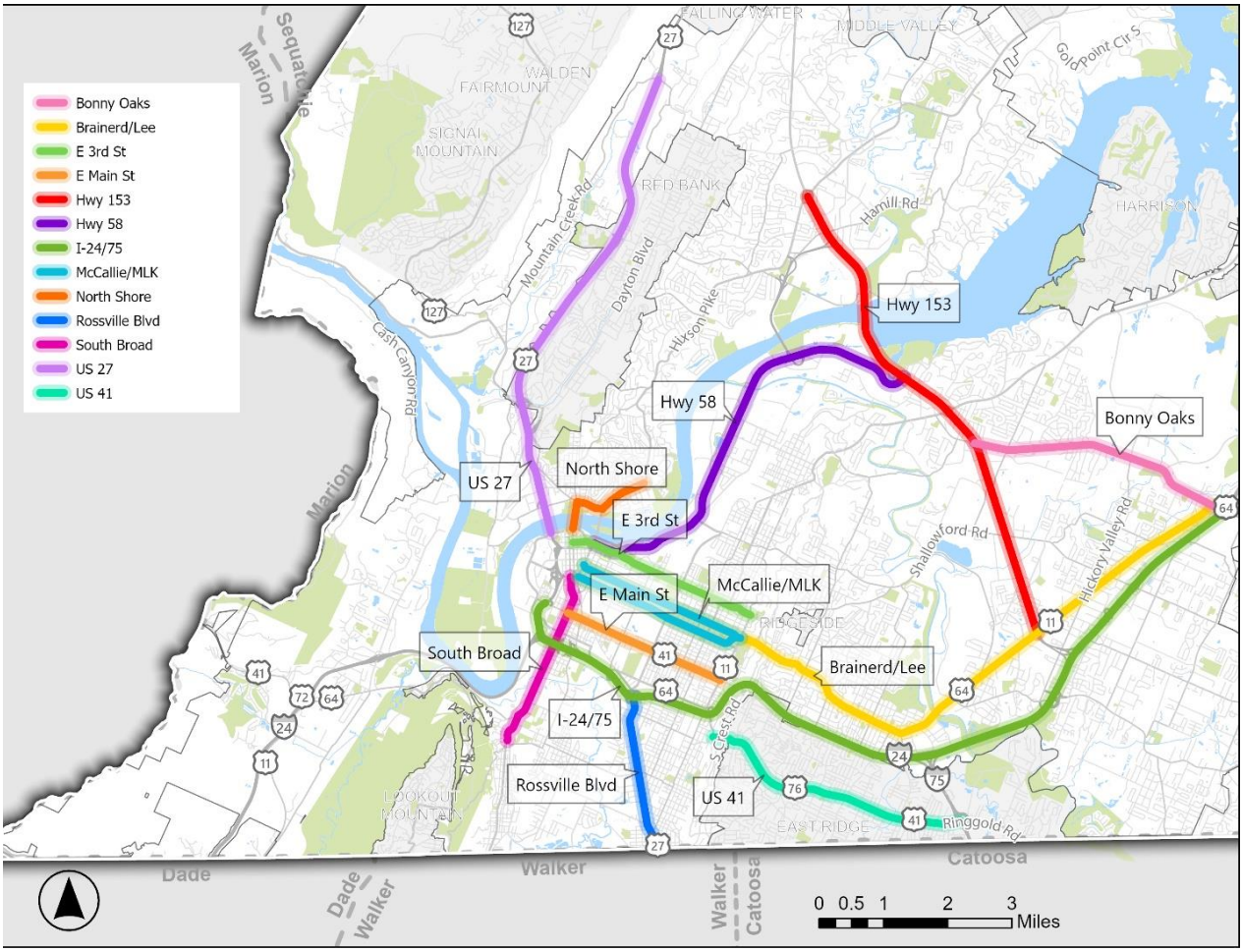

Figure 1: Initial Corridors Considered for Analysis

Initial Corridor Screening

Table 1 shows the results of the high-level screening of potential corridors. Each was evaluated on existing transit ridership, existing and planned activity centers, and consistency with Plan Chattanooga. The top six corridors, as indicated in Table 1, were selected to advance.

Table 1: High-level Results of Initial Corridor Screening

Corridor	Ridership	Existing Activity	Future Activity	Result
US 27	Low	Low	Moderate	**Eliminate**
North Shore	Moderate	Low	Low	**Eliminate**
Hwy 58	Low	Moderate	Moderate	**Eliminate**
Bonny Oaks	Low	Moderate	High	**Advance**
Hwy 153	Low	Moderate	Moderate	**Eliminate**

Corridor	Ridership	Existing Activity	Future Activity	Result
McCallie/MLK only	High	High	High	**Advance**
Brainerd/Lee/McCallie/MLK	High	High	High	**Advance**
I-24/75	Low	Moderate	Moderate	**Eliminate**
E 3rd St	Moderate	High	High	**Advance**
E Main St	Moderate	Moderate	Moderate	**Advance**
South Broad	High	Moderate	Moderate	**Advance**
US 41	Low	Moderate	Moderate	**Eliminate**
Rossville	Low	Low	Low	**Eliminate**

Although North Shore did not perform highly in this initial analysis, its short length and proximity to downtown led to including it further as a potential extension from a downtown route. Figure 2 shows the seven corridors considered for further analysis. These include:

- Brainerd Rd/Lee Hwy (includes McCallie Ave and E M L King Blvd/Bailey Ave)
- McCallie Ave and E M L King Blvd/Bailey Ave
- E 3rd St
- South Broad St
- E Main St
- Bonny Oaks Dr
- North Shore (Market St, Frazier Ave, and Barton Ave)

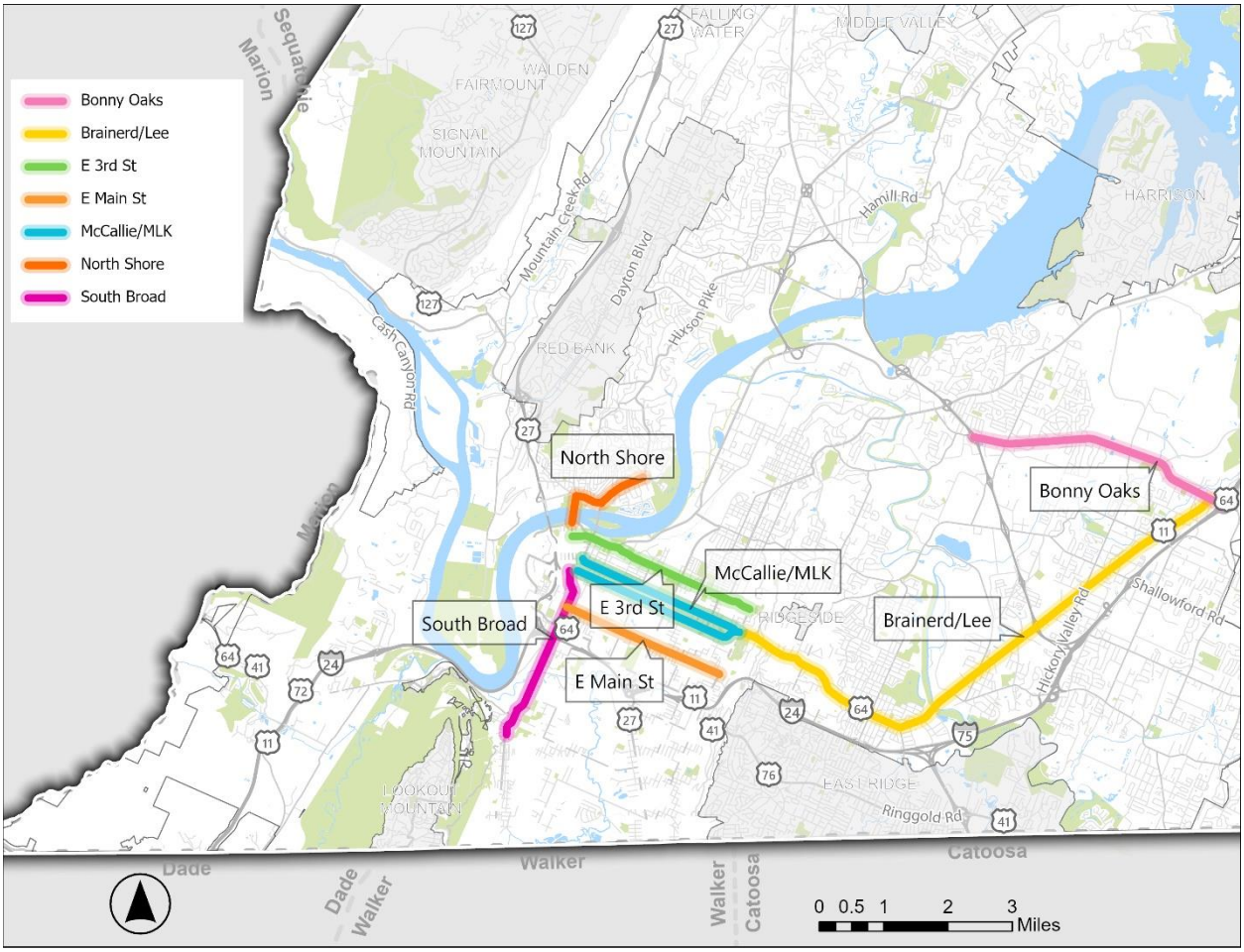

Figure 2: Seven Corridors Selected for Additional Analysis

It is important to note that the Brainerd/Lee corridor includes McCallie/MLK as part of its routing. This analysis treats Brainerd/Lee and McCallie/MLK as a combined unit (Brainerd/Lee/McCallie/MLK), while also evaluating McCallie/MLK as a separate corridor.

As the site of the future downtown Transit Center has not yet been identified, routes were truncated prior to reaching the downtown core as part of this analysis. It can be assumed that the HCT route would serve similar land uses within downtown, and further analysis of downtown is recommended prior to finalizing any downtown HCT corridor.

Corridor Evaluation

To better understand the ability of each corridor to support and benefit from HCT, multiple analyses were conducted. The analyses include a Market Analysis which evaluates the potential use of high-capacity transit by assessing the existing and projected travel demands of CARTA's service area. This includes consideration of existing and future jobs, population, and developments in Chattanooga. Additionally, the Corridor Potential Analysis considered characteristics of the corridors themselves to support HCT. This includes the character and context of the corridors as

well as their ability to host dedicated transit lanes. Together, the Market Analysis and Corridor Potential Analysis work to identify the most suitable corridors for high-capacity transit.

Market Analysis

Evaluating the potential for HCT corridors requires an evaluation of both existing and anticipated future conditions to ensure the selection of optimal routes. Each component of the evaluation helps develop an understanding of the potential for each corridor. The market analysis includes a review of existing ridership on CARTA routes and existing travel demand to identify areas where high-capacity service might be viable and competitive in the current environment. It includes additional analysis of existing and future population and employment, as well as development potential that may increase demand for high-capacity transit in corridors where development is anticipated to occur.

Table 2: Ridership on Corridor, June 2024

Corridor	Total Boardings + Alightings	Overall
Bonny Oaks	40	○
Brainerd/Lee/McCallie/MLK	35,000	●
E 3rd St	7,300	○
E Main St	5,940	○
McCallie/MLK	24,680	◖
North Shore	1,476	○
South Broad	23,270	◖

Key: Best/High ● ◖ ○ Worst/Low

Existing Ridership

Existing ridership on CARTA routes was reviewed to provide a baseline understanding of existing transit demand along each corridor. High ridership in specific corridors may indicate a potential need for higher capacity options to accommodate more passengers efficiently. Corridors with high demand may benefit more from upgraded transit services compared to less-traveled routes.

Using June 2024 stop-level data provided by CARTA, total ridership for each proposed HCT corridor was calculated based on boardings at stops located within one-quarter mile of the corridor alignment. Stop-level ridership was analyzed, rather than route-specific data, to better capture transit demand along the corridor.

Each corridor received a score based on its existing ridership relative to the other corridors as shown in Table 2. As Brainerd/Lee follows the general alignment of Route 4, CARTA's highest ridership route, it is unsurprising that this corridor had significantly more ridership than others.

Travel Demand

Average weekday travel demand was estimated using anonymized data on trip origins and destinations provided by a third-party vendor, Replica. These trips, shown in Figure 3, represent all trips, regardless of transportation mode, beginning and ending within Hamilton County. This data is used to identify significant origin-destination pairs, which can then be used to establish where there is existing demand.

This analysis revealed significant trip pairs that could be served by the proposed HCT routes, including between Hamilton Place and downtown, between Eastgate Town Center/Brainerd Village and downtown, and between Eastgate Town Center/Brainerd Village and Hamilton Place. Additionally, there were significant trip pairs along several corridors including Brainerd/Lee/McCallie/MLK, McCallie/MLK only, Main St, and E 3rd St.

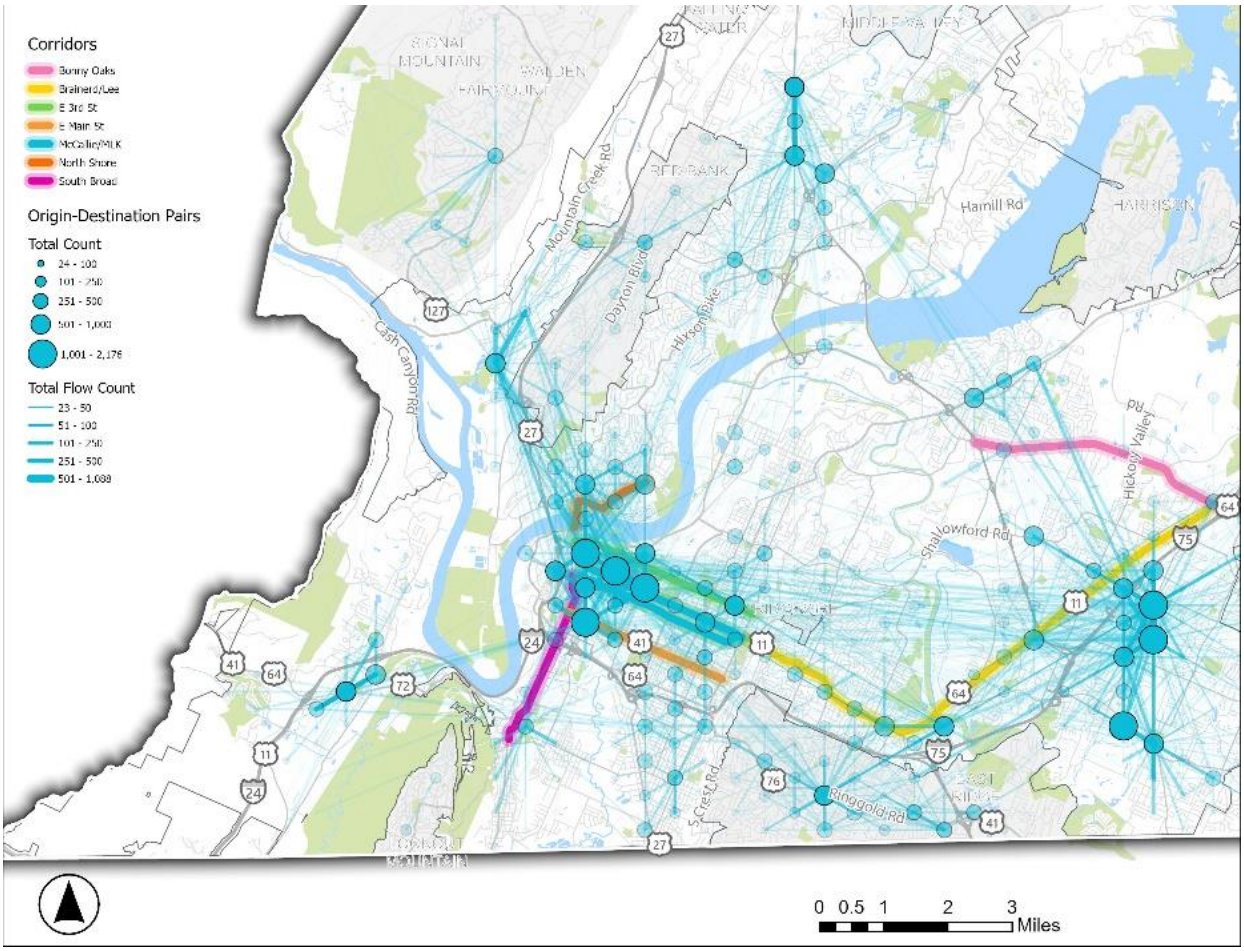

Figure 3: Trips within Hamilton County

Mobility Hub Connectivity

The process of identifying suitable locations for mobility hubs involved a detailed analysis of existing land use patterns, community assets, travel behavior, and existing and future transportation infrastructure. As a result, evaluating potential HCT corridors for their ability to support mobility hubs also served as a proxy for assessing access and multimodal connectivity. One Chattanooga: Transit for All provides a more detailed overview of the mobility hub framework, while Figure 4 illustrates the proposed HCT corridors and mobility hub locations. Corridors were assessed based on their potential to connect key community destinations and enhance multimodal access through strategic mobility hub placement. Mobility hubs may be added or relocated to better support high capacity transit as demand changes.

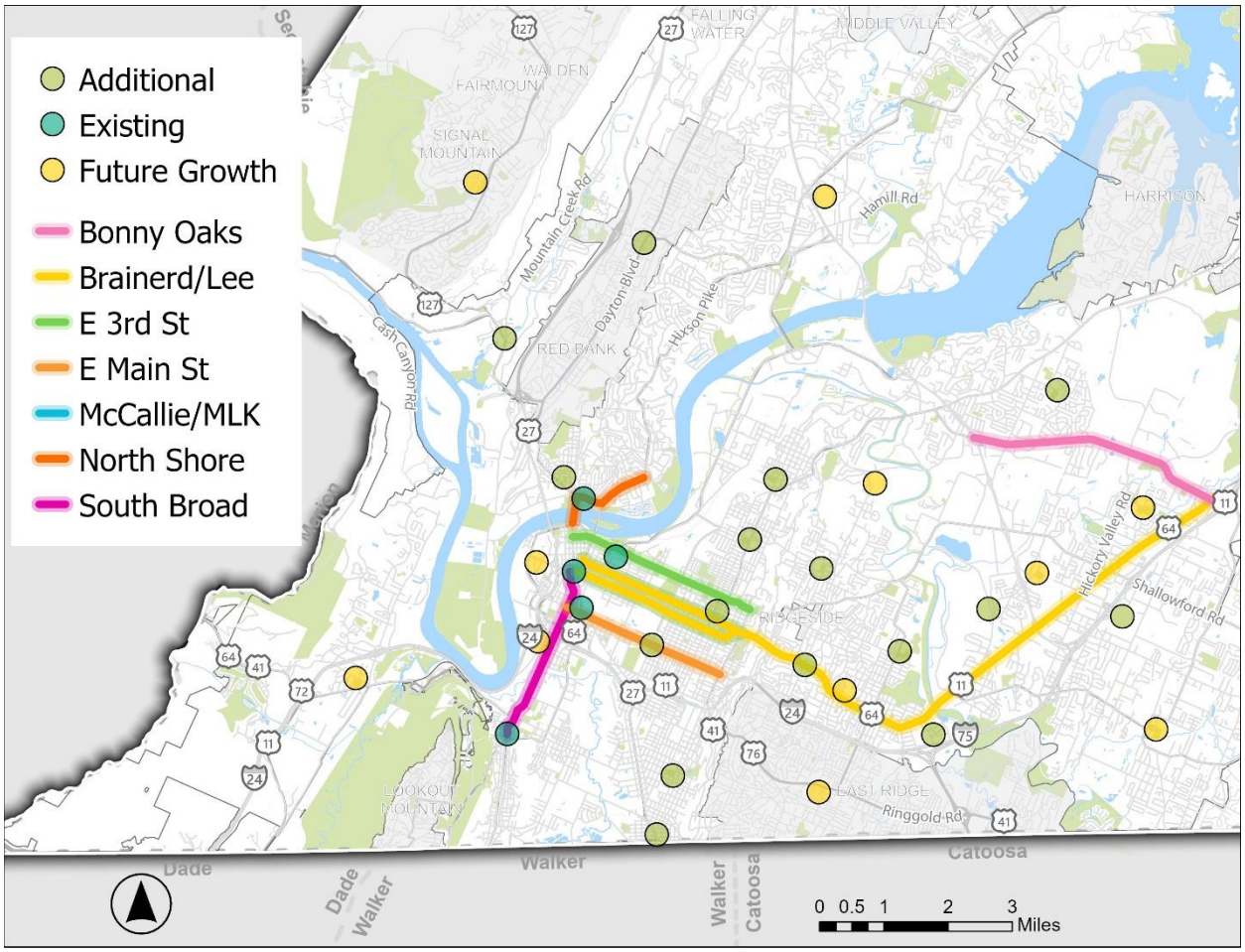

Figure 4: Proposed Mobility Hub Locations with Potential HCT Routes

Development Potential

This section includes a quantitative analysis of development potential along candidate HCT corridors. It also evaluates where land use and growth patterns will positively influence transit demand and support HCT long-term. It considers the location of key activity centers, alignment

with Plan Chattanooga, and projected employment and population trends to assess where increased transit investment could have the greatest impact.

Quantitative Development Potential

The evaluation included an analysis of existing and future dwelling units and jobs, located within one-quarter mile of each corridor for the year 2040. Criteria were evaluated on densities in addition to total numbers in order to help equalize the comparison between corridors that varied greatly in length.

Plan Chattanooga used a data-driven scenario modeling process using the Chattanooga RPA's CommunityViz Scenario 360 land use model and public input to make informed choices about how Chattanooga and Hamilton County should grow in the future.

Using CommunityViz, buildout potential was analyzed. Residential buildout (Figure 5) refers to the potential developable dwelling units, while commercial buildout (Figure 6) refers to the total square feet of potential commercial development. Buildout potential is based on the amount of vacant and redevelopable land, and the residential density and non-residential intensity (floor area ratio) associated with the corresponding Plan Chattanooga place type.

The buildout analysis determines what is possible, not what is desired. As part of Plan Chattanooga's market analysis, it was determined that the county has the potential demand for 46,000 additional households through the year 2040. This growth was then allocated to areas throughout the county through a suitability analysis which considered the relative attractiveness of land for development. The results of this allocation provide the future dwelling units and future jobs are shown in Figure 7 and Figure 8, respectively.

Table 3 shows the results of the evaluation of quantitative development potential. The overall suitability score includes considerations of the densities of development along the corridors. The analysis revealed high development potential along both the Brainerd/Lee/McCallie/MLK and McCallie/MLK only corridors. The South Broad corridor also performed well but currently has lower anticipated jobs and dwelling units than other corridors. Overall, the North Shore corridor was the lowest performing corridor in the quantitative development potential analysis.

Table 3: Development Potential for Candidate Corridors

Corridor	Residential Buildout	Commercial Buildout	Existing + Future Jobs	Future + Existing Dwelling Units	Overall
Bonny Oaks	3,410	2,558,000	15,700	2,730	◖
Brainerd/Lee/McCallie/MLK	4,690	7,208,000	33,800	10,660	●
E 3rd St	1,280	2,017,000	19,300	2,840	◖
E Main St	1,510	1,534,000	6,600	3,190	○
McCallie/MLK only	1,770	2,734,000	20,400	4,520	●
North Shore	480	855,000	2,800	1,890	○
South Broad	2,580	3,568,000	11,900	2,890	●

Best/High ● ◖ ○ Worst/Low

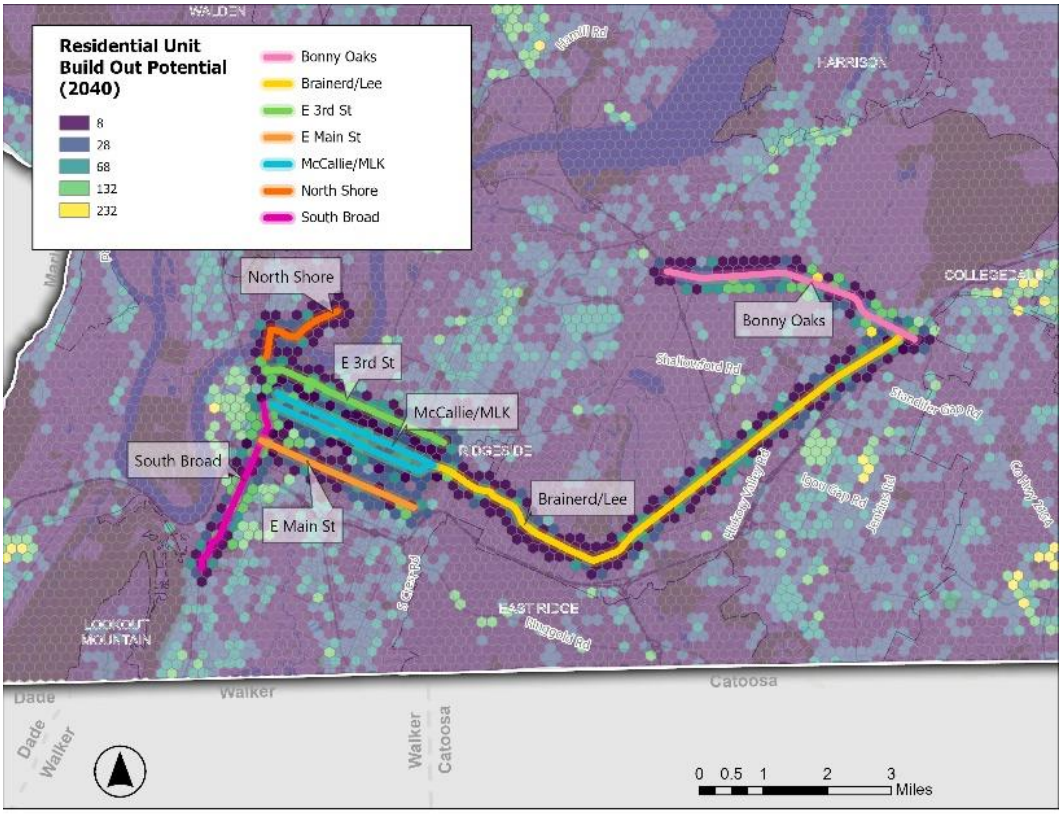

Figure 5: Residential Build Out Potential

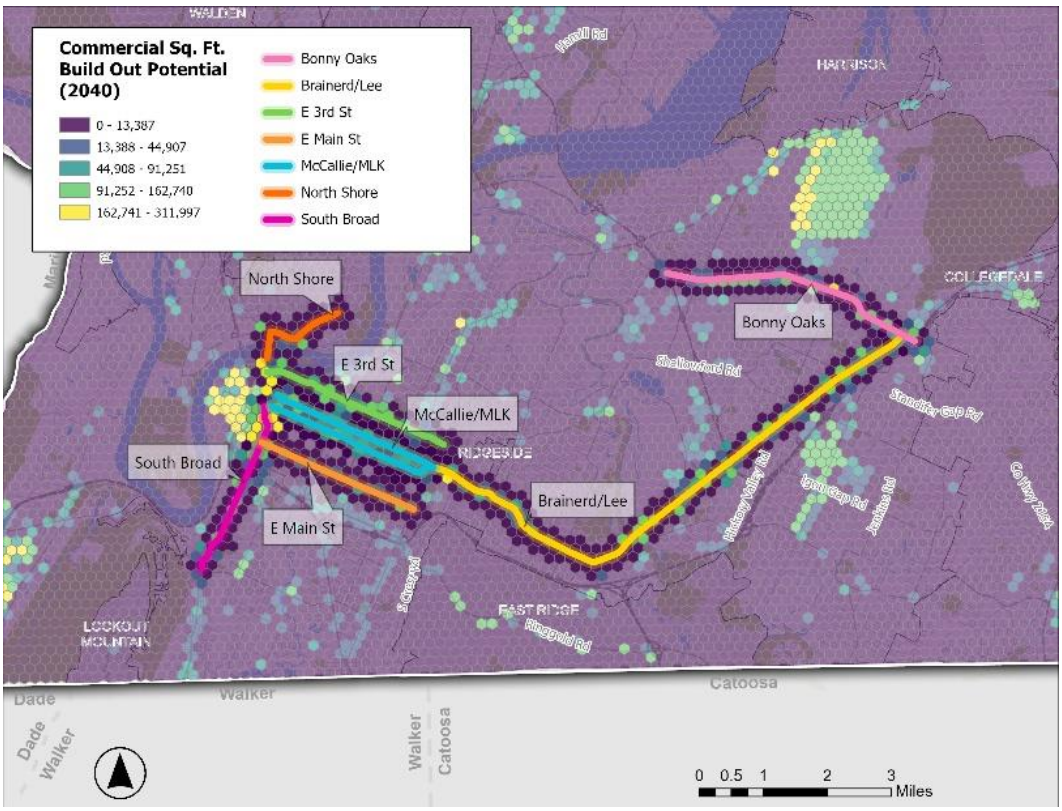

Figure 6: Commercial Build Out Potential

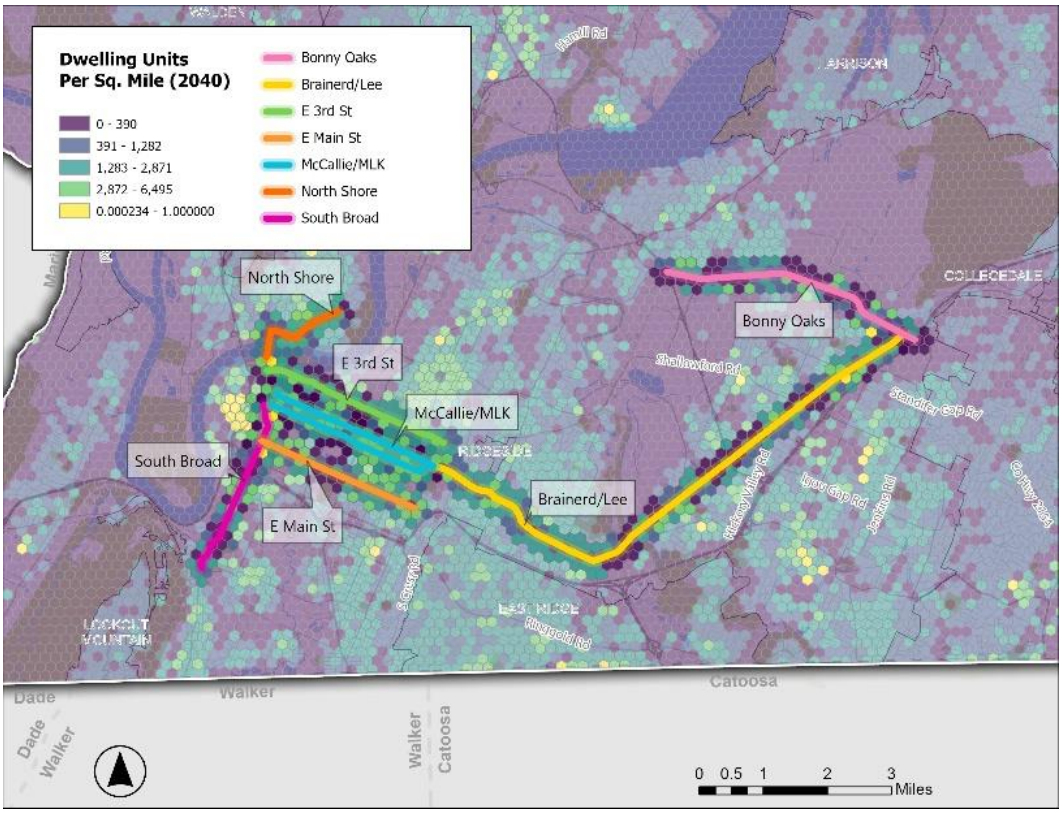

Figure 7: 2040 Projected Future Dwelling Units per Square Mile

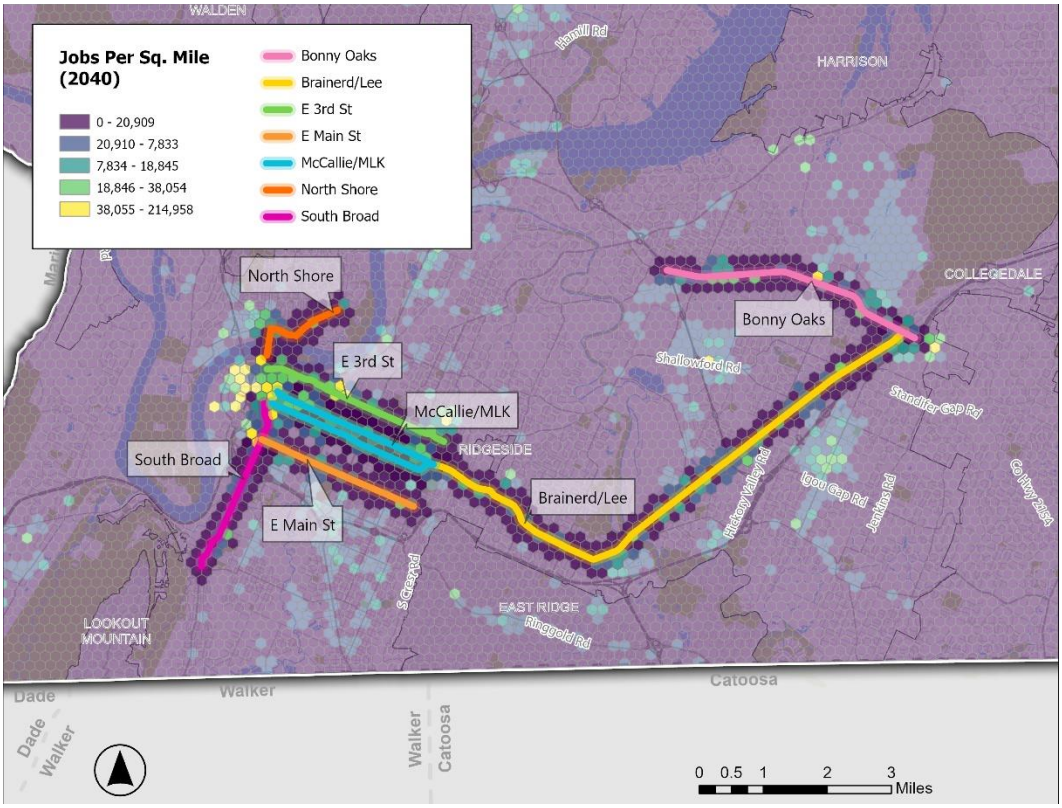

Figure 8: 2040 Projected Jobs per Square Mile

Major Redevelopment and Activity Centers

Figure 9 shows several major future redevelopment and existing activity centers and their alignment with proposed HCT corridors. These locations are identified as major trip generators and employment centers, and include:

- Downtown
- The Bend and Westside Community
- South Broad District
- Hospitals
- University of Tennessee: Chattanooga
- Hamilton Place
- Eastgate Town Center
- Enterprise South
- Airport

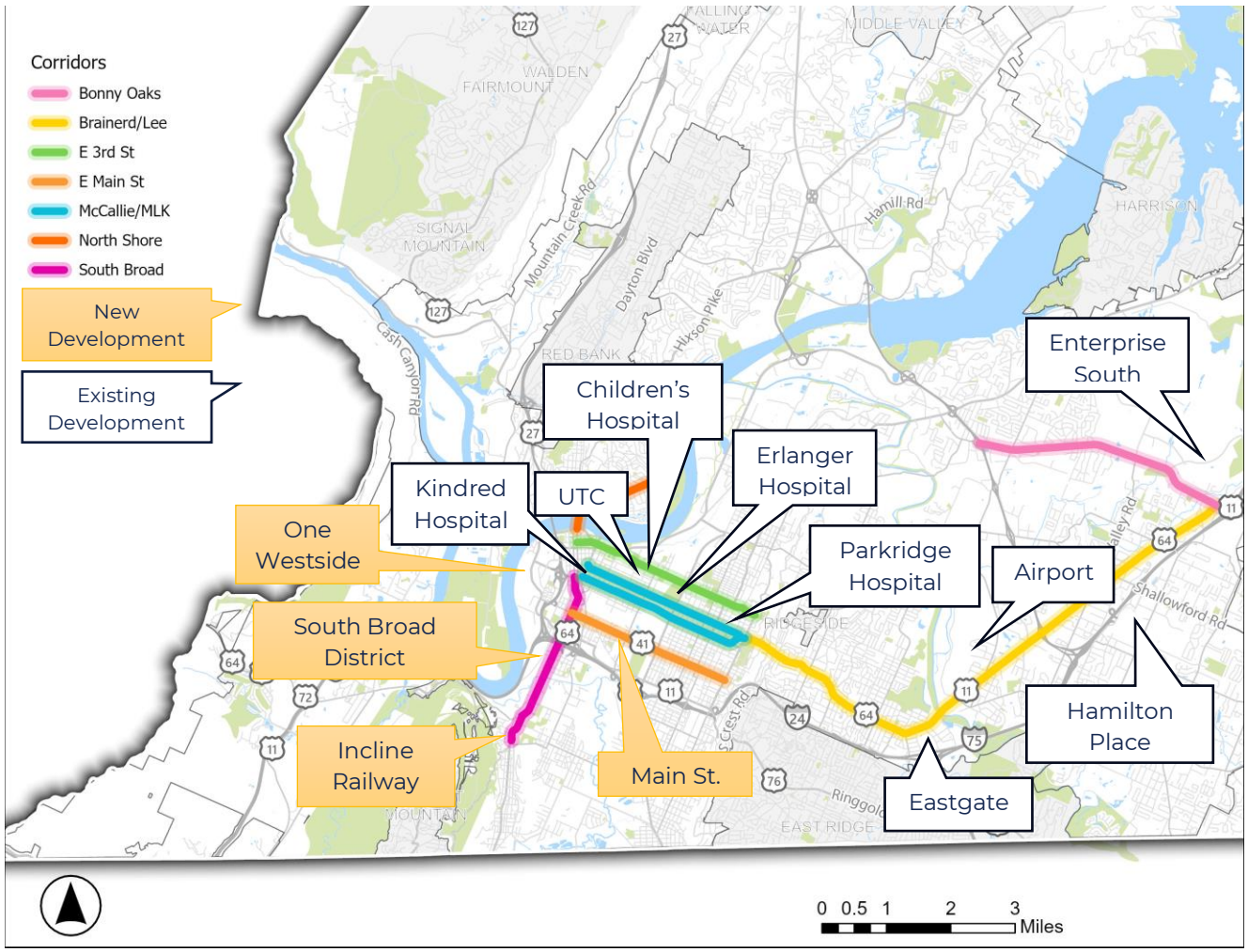

Figure 9: Existing and Future Major Developments

The proposed Brainerd/Lee/McCallie/MLK corridor would serve the largest number and most intensive land uses, including the University of Tennessee - Chattanooga, Eastgate Town Center, and Hamilton Place. This route could potentially be extended along Shallowford Rd and Gunbarrel Rd to provide greater access to Hamilton Place and surrounding developments. Additionally, the E Main St corridor could be extended further west to capture The Bend and Westside Community developments. Neither of these extensions were considered as part of this analysis, but further evaluation of these corridors should explore logical termini.

Plan Chattanooga Center Types

Plan Chattanooga identified a hierarchy of centers based on the corridors and centers development framework. These centers represent key locations where development and future activities are projected to be greatest. Potential HCT corridors were reviewed for their alignment with this framework, as shown in Figure 10. Corridors which supported greater intensities of activities, such as those that service downtown, town centers, and village centers, performed higher in this analysis. Downtown represents the highest order of centers with the greatest density of activities.

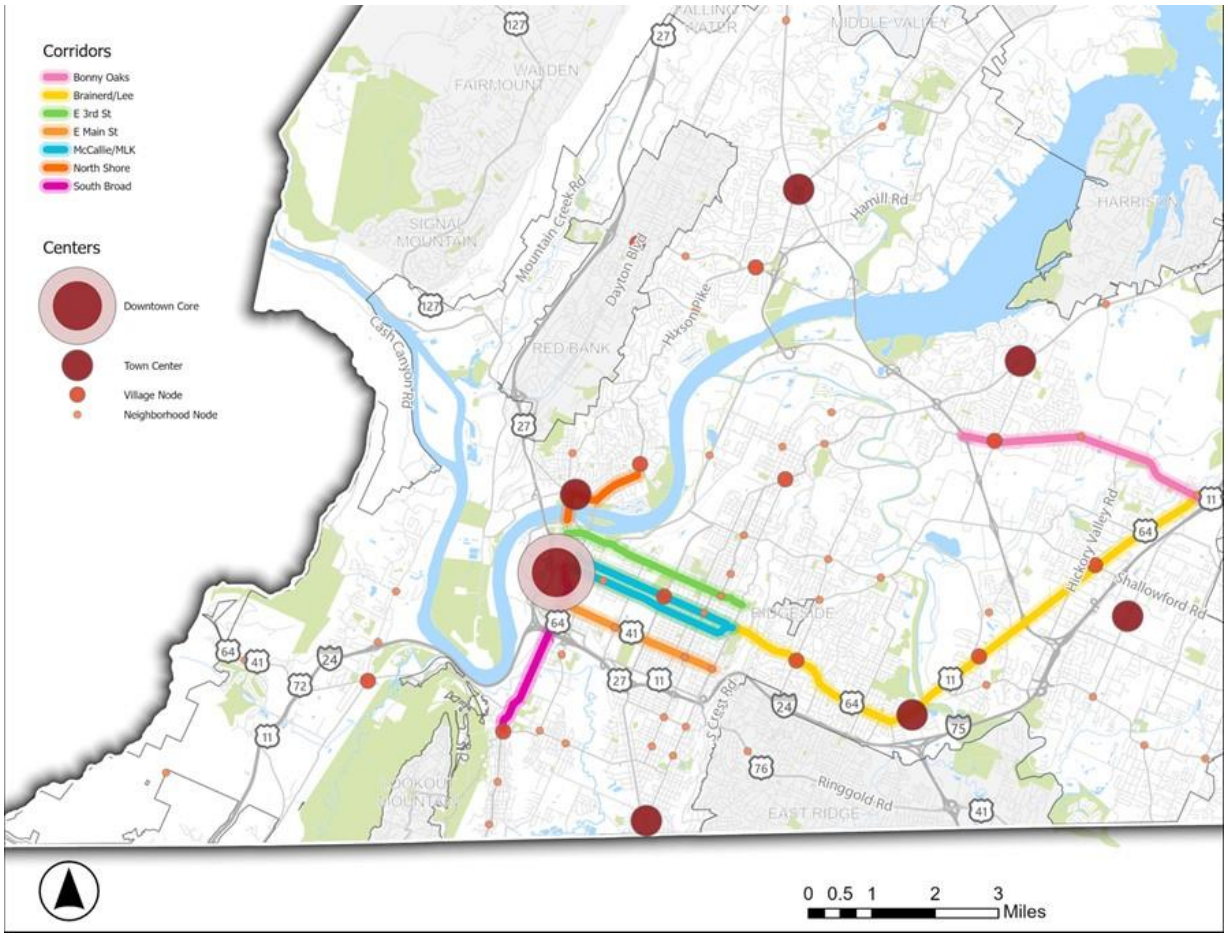

Figure 10: Plan Chattanooga Center Types

Bonny Oaks is the only corridor to not service downtown. Brainerd/Lee/McCallie/MLK services the greatest number of Village Nodes. Brainerd/Lee/McCallie/MLK and North Shore are the only two

corridors to service Town Centers. If Brainerd/Lee/McCallie/MLK were extended along Shallowford Rd and Gunbarrel Rd, it would service an additional Town Center at Hamilton Place.

Market Analysis Results

Table 4 summarizes the results of the market analysis. The Brainerd/Lee/McCallie/MLK corridor outperformed every other corridor within the Market Analysis. McCallie/MLK, separate from Brainerd/Lee also performed well, especially in regards to development potential. The South Broad corridor followed behind with slightly lower development potential.

Bonny Oaks and E 3rd St ranked similarly, with E 3rd St having better travel demand and alignment with the mobility hub framework. Both performed moderately. Overall, North Shore performed lowest when compared to other corridors, with little development potential or major activity centers.

Table 4: Market Analysis Results

Corridor	Existing Ridership	Existing Demand	Mobility Hubs Served	Development	Centers Served	Activity Centers + Redevelopment	Overall
Bonny Oaks	○	○	○	◖	●	◖	◖
Brainerd/Lee /McCallie/MLK	●	●	●	●	●	●	●
E 3rd St	○	◖	◖	◖	◖	◖	◖
E Main St	○	◖	◖	○	◖	◖	○
McCallie/MLK only	◖	◖	◖	●	●	◖	●
North Shore	○	◖	◖	○	●	○	○
South Broad	◖	◖	◖	●	◖	◖	◖

Best/High ● ◖ ○ Worst/Low

Corridor Potential Analysis

The Corridor Potential Analysis assesses the physical characteristics of the underlying roadway and right of way conditions to determine the degree of characteristic compatibility and physical compatibility for infrastructure upgrades needed for HCT corridors. Evaluating the existing character and context of each corridor, including walkability, building orientation, and land use diversity, helps determine their readiness and potential to support HCT. Additionally, assessing dedicated lane potential by examining available right-of-way, traffic volumes, and congestion levels is crucial for improving transit efficiency and reliability. This comprehensive analysis ensures that selected corridors will deliver maximum benefit and align with strategic urban development objectives.

Character and Context

The existing character and context is also an important consideration of a corridor's ability to support high-capacity transit. Transit-supportive development that faces the street and provides direct, pedestrian-friendly access encourages ridership by making it safer and more convenient to walk to and from transit. Walkable environments with connected sidewalks, short block lengths, and active ground-floor uses help create vibrant, transit-oriented communities.

The orientation of buildings, walkability, and mix of uses was evaluated to determine congruence with land uses and design which support HCT. Corridors with high frequency of walkable areas that serve a multitude of trip types were determined to be most supportive for HCT, while suburban areas with large parking lots and building setbacks were noted to be least supportive.

The character and context of Bonny Oaks, Brainerd/Lee, and E 3rd St were determined to be least supportive due to the persistence of large parking lots and auto-oriented design. The other corridors generally feature more walkable areas with street-oriented buildings and more pleasant walking conditions.

Dedicated Lane Potential

High-capacity transit does not always require dedicated lanes, but it is often a desired feature in order to provide improved frequency and reduced delays. Each corridor was evaluated on the available right-of-way (ROW) in which the roadway could potentially expand. Additionally, each corridor was evaluated on its current average daily traffic (ADT) to determine if lane reductions to accommodate dedicated transit lanes could be achieved. Road diet criteria were obtained from the Federal Highway Administration's (FHWA) Road Diet Informational Guide (2014) and from the Tennessee Department of Transportation's (TDOT) Road Diet Manual (2023). Whether or not each corridor was on Plan Chattanooga's Top 20 Congested Corridors was also considered. The results of this analysis are presented in Table 5.

Table 5: Dedicated Lane Potential

Corridor	Top 20 Congestion	Ownership	Available ROW	Lane Reduction Potential	Overall
Bonny Oaks	No	State	◖	○	○
Brainerd/Lee/McCallie/MLK	Yes	State	○	●/○	◖
E 3rd St	No	Local	◖	◖	◖
E Main St	No	State	○	○	○
McCallie/MLK only	No	Local	○	●	●
North Shore	Yes	State (Market) Local (Frazier)	○	○	○
South Broad	No	State S of Main	○	◖ /○	◖

Best/High ● ◖ ○ Worst/Low

Several corridors were determined to be appropriate for lane repurposing, via road diets or one-way conversions, to accommodate dedicated transit lanes. For example, McCallie Ave and E M L King Blvd/Bailey Ave could be converted into one-way streets and provide dedicated transit lanes. S Broad St, particularly north of M L King Blvd, may also be a candidate for lane reductions via a road diet.

The majority of the corridors were determined to have low potential for expansion of the physical roadway due to existing development and lack of available ROW. Bonny Oaks is the only corridor with sufficient ROW for significant expansion, which is included as part of the 2050 Regional Transportation Plan within Funding Tier 2 (2031-2040). However, due to the current and projected traffic volumes, it is unlikely that these lanes could be purposed exclusively for transit.

The E 3rd St corridor is unique in that it is the only corridor the potential for both lane reductions and expansion. Expansion is likely only possible in a few locations, such as where ROW is shared with Riverfront Pkwy. It may also be well positioned to acquire additional ROW as parcels redevelop.

Although there are constrained opportunities for large segments of dedicated transit lanes, there are several treatment options that can help increase transit output on these corridors, such as transit signal priority, queue jump lanes, and business access and transit lanes (BAT). BAT lanes are curbside lanes primarily reserved for transit vehicles but also allow general traffic to make right turns into businesses, side streets, and driveways. These lanes improve bus travel time and reliability by allowing buses to bypass congestion in the general-purpose lanes, while still maintaining access to adjacent properties.

Plan Chattanooga Corridor Types

Potential HCT corridors were also evaluated based on their consistency with Plan Chattanooga corridor types, including Transit Supportive, Mixed Use, and Suburban corridors (Figure 11). Plan Chattanooga defines Suburban corridors as those with spread out commercial development primarily accessed by car. Mixed Use corridors are suburban corridors that are transitioning into a more dense and walkable pattern with new development being pedestrian oriented and facing the street. Transit Supportive corridors are those that have a high intensity, pedestrian oriented development with a mix of uses and ground floor retail. As such, Plan Chattanooga identifies Transit Supportive corridors as those best suited to service high frequency transit. This analysis noted proposed HCT corridors located on Transit Supportive and Mixed Use corridors to be most in congruence with long-term planning efforts. Plan Chattanooga designates S Broad St, McCallie Ave, and E M L King Blvd/Bailey Ave as Transit Corridors and Brainerd Rd/Lee Hwy as a High Frequency Transit Corridor.

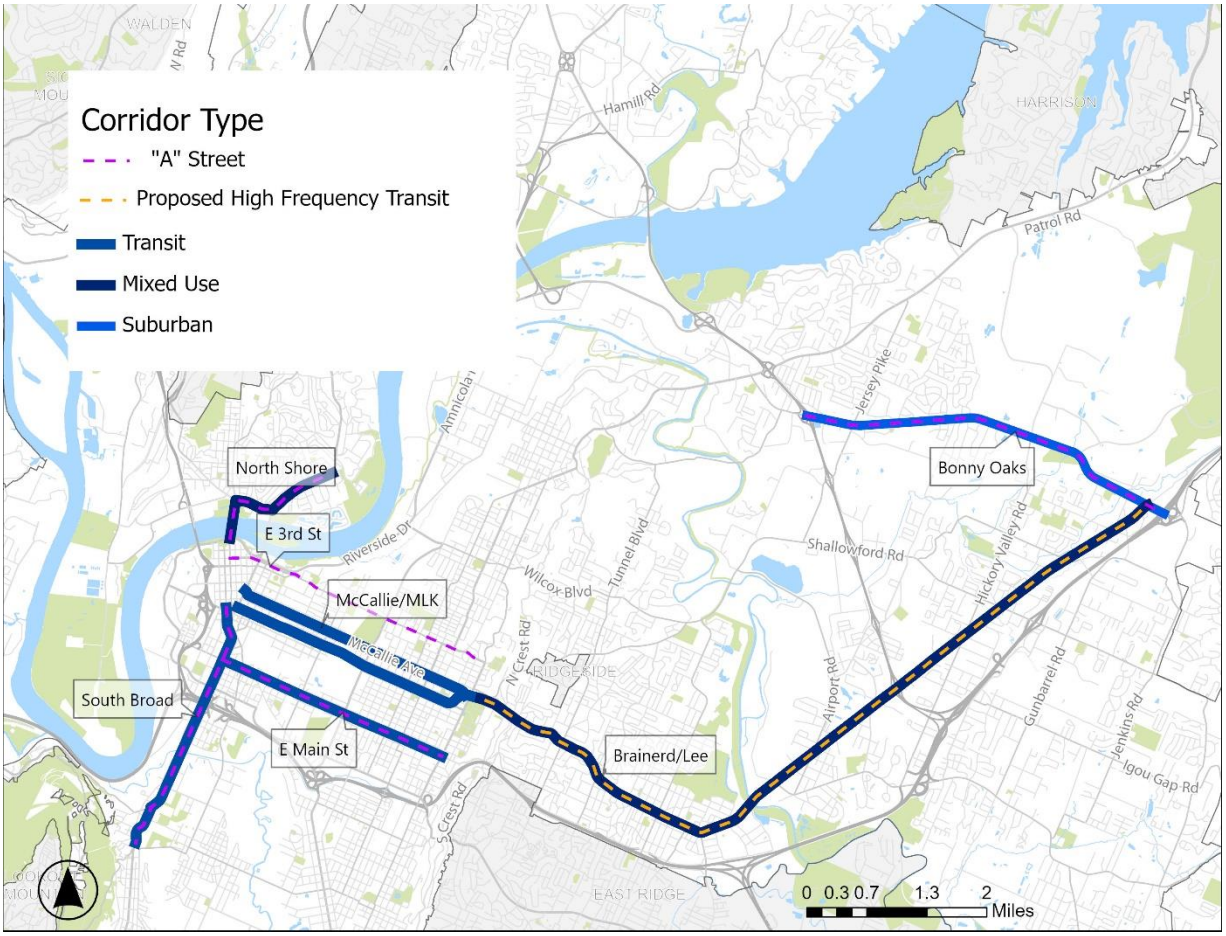

Figure 11: Plan Chattanooga Corridor Types

Corridor Potential Analysis Results

The results of the corridor potential analysis are shown in Table 6. The McCallie/MLK corridor performed the best in the corridor potential analysis due to favorable character and context, as well

as potential for dedicated lanes via one-way conversions or lane reduction. Brainerd/Lee/McCallie/MLK also performed well but had less favorable conditions along Brainerd Rd and Lee Hwy for both building orientation and lane reduction potential. The South Broad and E 3rd St corridors also performed relatively well. Bonny Oaks was the lowest performer in this analysis.

Table 6: Corridor Potential Analysis

Corridor	Corridor Type	Character and Context	Adequate ROW	Lane Reduction Potential	Overall
Bonny Oaks	○	○	◖	○	○
Brainerd/Lee/McCallie/MLK	●/◖	◖	○	●/○	●
E 3rd St	○	◖	◖	◖	◖
E Main St	●	●	○	○	◖
McCallie/MLK only	●	●	○	●	●
North Shore	◖	●	○	○	◖
South Broad	●	●	○	◖ /○	●

Best/High ● ◖ ○ Worst/Low

Conclusion and Recommendations

The results of this analysis are shown in Table 7. Brainerd/Lee/McCallie/MLK and McCallie/MLK corridors performed the best due to the high activity and travel demand, and key locations served. While neither corridor has significant ROW to accommodate widening, McCallie Ave and E M L King Blvd/Bailey Ave are both locally controlled and could potentially be converted into one-way roads which would improve the ability to have dedicated transit lanes.

McCallie/MLK corridor could stand alone as a HCT corridor, but Brainerd/Lee provides transit connections between some of the highest demand trip origins and destinations. Additionally, Brainerd/Lee/McCallie/MLK could be further extended along Shallowford Rd and Gunbarrel Rd to greatly increase the number of destinations served. The Brainerd/Lee/McCallie/MLK and McCallie/MLK corridors are recommended for further analysis as HCT corridors.

Table 7: HCT Suitability

Corridor	Market Analysis	Corridor Potential Analysis	Overall Suitability
Bonny Oaks	◖	○	○
Brainerd/Lee/McCallie/MLK	●	●	●
E 3rd St	◖	◖	◖
E Main St	○	◖	○
McCallie/MLK only	●	●	●
North Shore	○	◖	○
South Broad	◖	●	◖

Best/High ● ◖ ○ Worst/Low

In addition, South Broad and E 3rd St should also be further explored as HCT corridors. These corridors showed strong residential and commercial build out potential as well as high future job densities. The weak points for these corridors were largely lacking existing and allocated future dwelling units, but as development occurs in the future these may emerge as prime opportunities for HCT.