CobbLinc Transit Centers Systems Analysis and Needs Assessment Study

Transit Systems Analysis and Needs Assessment

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Cobb County Department of Transportation

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INTEGRATED TRANSPORTATION PLANNING

Table of Contents

List of Tables

List of Figures

Introduction

Cobb County Department of Transportation and CobbLinc are planning to implement new multimodal transit centers in the county, including relocation and improvements to existing bus transfer centers. The Transit Centers System Analysis and Needs Assessment Study (or Phase 1 Study) of this planning process includes examining existing and future transit system conditions, conducting customer surveys, and holding a series of stakeholder meetings to develop planning-level programming needs for three transit centers in the county. Two existing bus transfer centers in Cobb County (Marietta and Cumberland) are being reviewed for potential relocation and a new transit center is being proposed in South Cobb County. This Phase 1 study will not identify specific locations for the transit centers but will define the needs for each transit center and factors that will be used in further identification and evaluation of potential site locations in future phases of planning and implementation.

The purpose of this memo is to identify and highlight areas with relatively high transit need, thereby also providing inputs for determining optimal locations for new transit centers in the Marietta, Cumberland, and South Cobb areas. This analysis will inform the study area for consideration of potential sites in the Site Selection Studies (Phase 2) for Cumberland, Marietta, and South Cobb. This transit systems analysis and needs assessment considers a variety of factors to provide a framework for finding suitable areas for locating these transit centers. The areas of analysis contained within the report are as follows:

- The **Existing Demographics** section considers where transit-oriented populations reside in the county and identify areas with significant employment that are critical to serve with transit.
- The **Transit Propensity** section uses a weighted calculation of existing demographics and other variables to highlight areas where people live and where people go.
- The **County Growth** section looks at how the county will grow through 2040 to highlight future needs.
- The **Travel Patterns** section uses current and future travel flow data to identify corridors with significant travel and highlight destinations.
- The **Existing Services** section considers current transit ridership and how service frequency compares to areas with high transit propensity. This information will help to identify bus bay needs and facility size in order to accommodate the proper number of buses, with service coming from local activity generators, as well as regional destinations.
- The **Zoning and Land Use** section shows how current and future land use patterns can be used to determine suitable areas for siting a transit center.
- The **Summary Findings** section brings together the findings from the needs analysis conducted and provides scores for all block groups in the county to make tiered recommendations for potentially suitable locations within the county for relocating or locating each of the three transit centers under study.

- The **Potential Transfer Centers** section evaluates potential operational and demographic impacts using hypothetical sites in top tier locations from the scoring exercise in the previous section. This shows what potential route realignments and efficiencies could be realized once new transfer center sites are chosen in future phases of study.

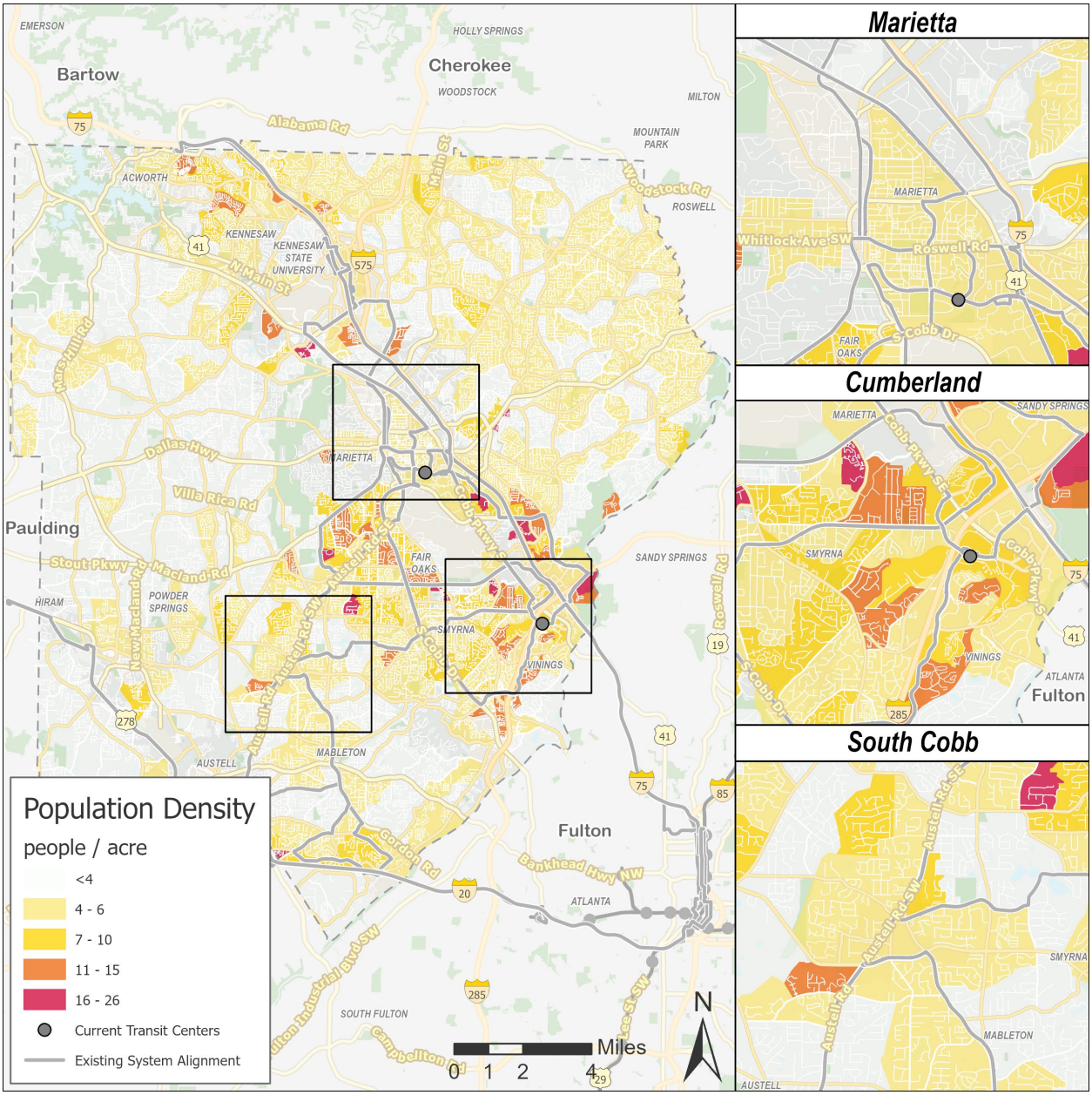
Section 1: Existing Demographics

A variety of demographic characteristics help determine the effectiveness and efficiency of public transportation. These demographic characteristics help to identify where in the community residents live who have no other means of transportation or who rely the most on public transportation to meet their transportation needs. To examine variables such as age, population density, car ownership, and other factors, most recently available demographic data was downloaded from the American Community Survey 2016-2020 at the block group level.

1.1 Population Density

Historically, population density has been used to identify where larger pockets of populations would be best served with transit. **Figure 1** shows the block groups with the highest densities in the county and CobbLinc service area are along I-75 southwest of Marietta and north of Cumberland, and throughout the city of Smyrna. Additionally, there are a few pocket communities in South Cobb, Fair Oaks (near Dobbins Naval Air Station), Kennesaw, and Acworth with high population density.

Figure 1: Population Density (2020)

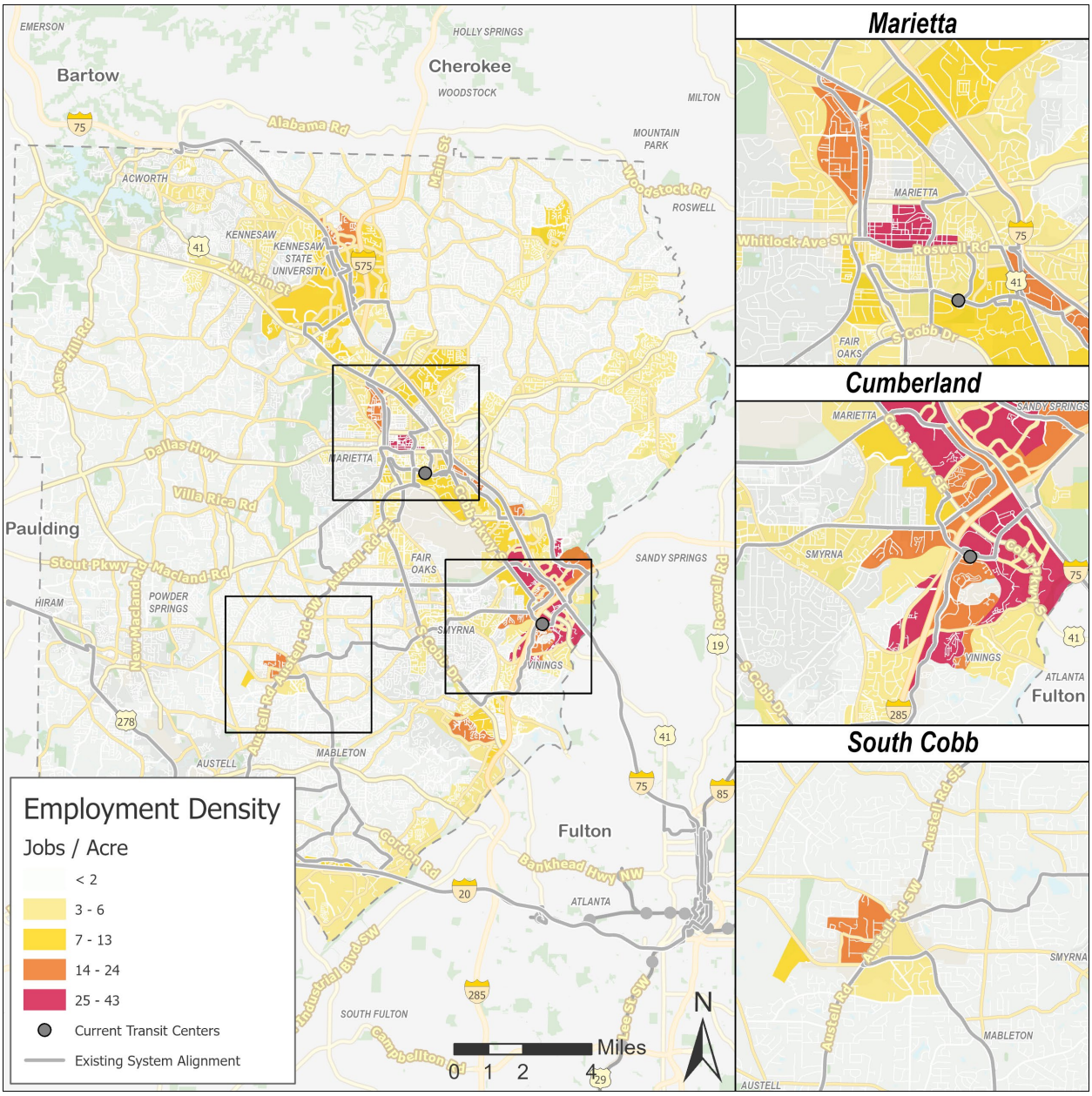


Source: ACS 2016-2020

1.2 Employment Density

Cumberland has the highest employment density in the county, particularly around the existing transit center and Cobb Galleria Mall, the Battery, and northeast of the I-75/I-285 interchange, as seen in **Figure 2** below. Similarly, the block groups that include Marietta's downtown, just north of the transfer center and west of I-75 have high employment density as expected considering a high density of retail of office space is often concentrated in a city's downtown. The small area of higher density employment in the northern portion of the County can be attributed to Kennesaw State University.

Figure 2: Employment Density (2020)

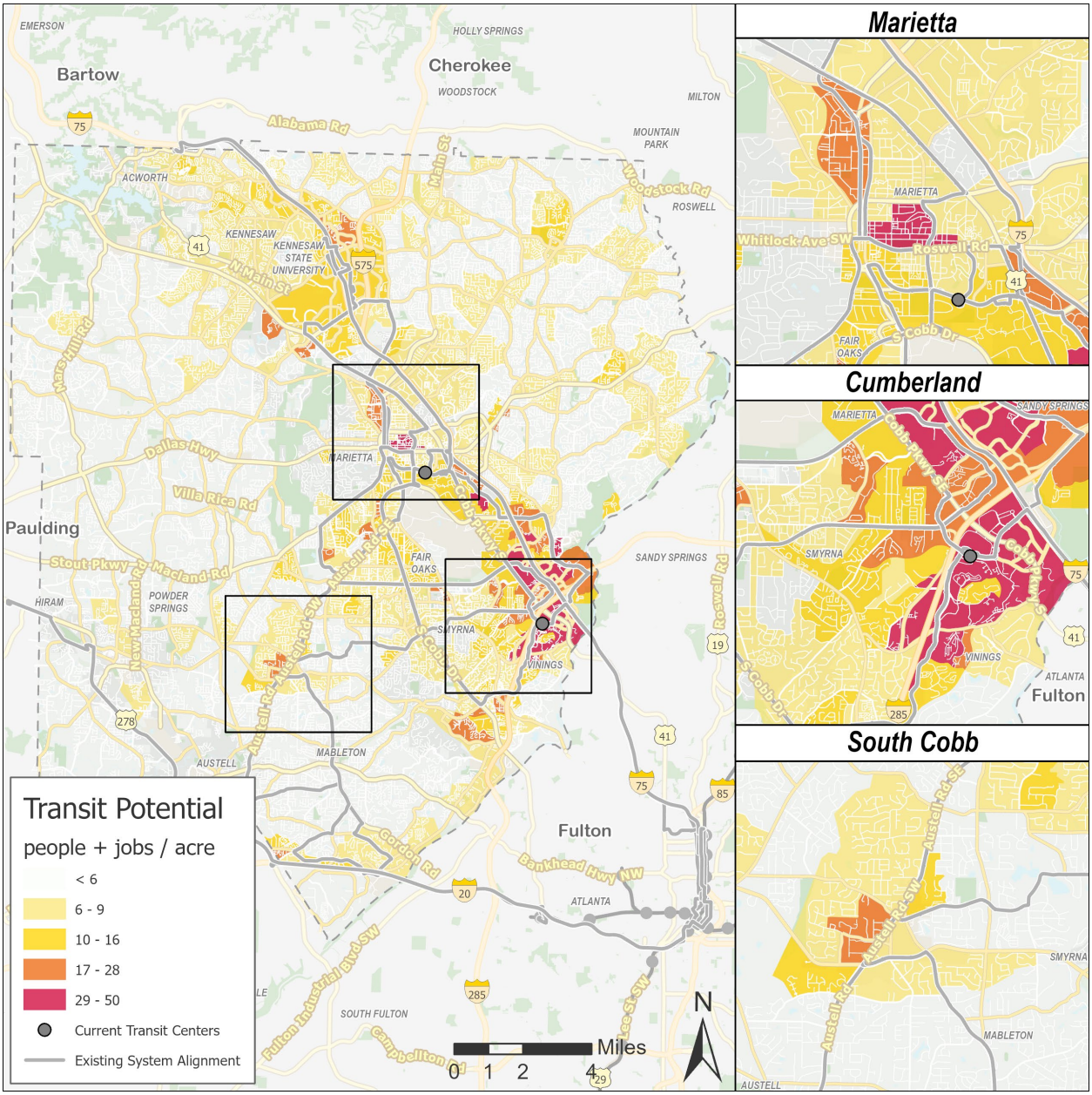


Source: ACS 2016-2020

1.3 Transit Potential

Transit potential is an analysis of combined population and employment density in an area and this is shown in **Figure 3** below. In the CobbLinc service area, block groups in Cumberland and Marietta have the highest transit potential (i.e., the greatest number of people and jobs per acre). Outside of these areas, there are small areas of high transit potential in north Cobb County, primarily in Kennesaw, south of the University where there is a strong mix of retail, warehousing, and residential land uses. These areas typically align with the high-density areas seen in the previous two metrics, population density and employment density.

Figure 3: Transit Potential (2020)

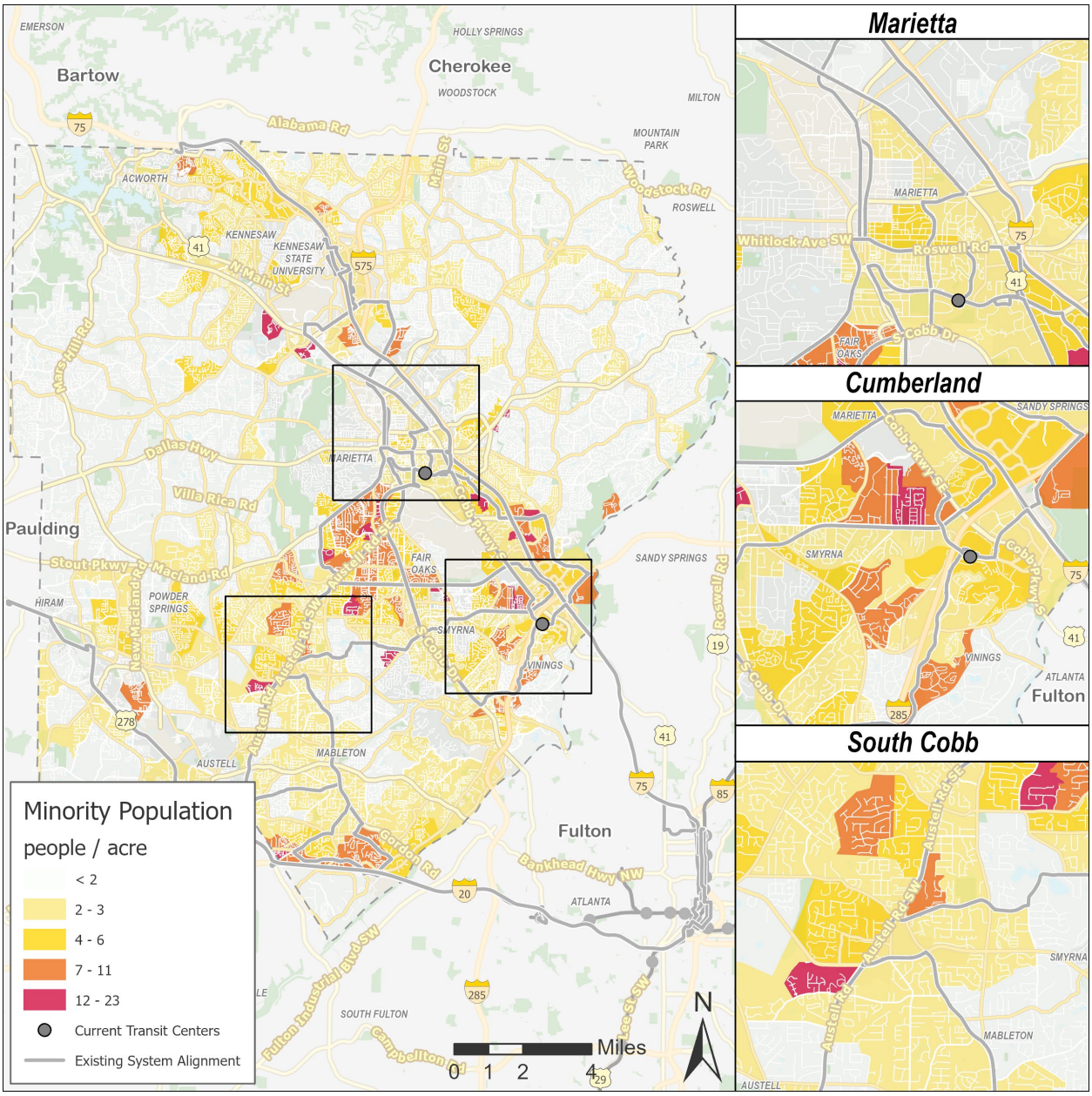


Source: ACS 2016-2020

1.4 Minority Populations

The densest area of minority populations falls in the "triangle" created by Marietta, Cumberland, and South Cobb, primarily in the Fair Oaks area, as seen in **Figure 4**. There is also a high concentration of block groups with a high number of minority populations just south of Kennesaw State University main campus that are west of the existing route alignment. Minority populations are often more reliant on the transit system for everyday tasks, and therefore, impacts to areas of higher density should be considered as a part of any route changes or service improvements.

Figure 4: Minority Population (2020)

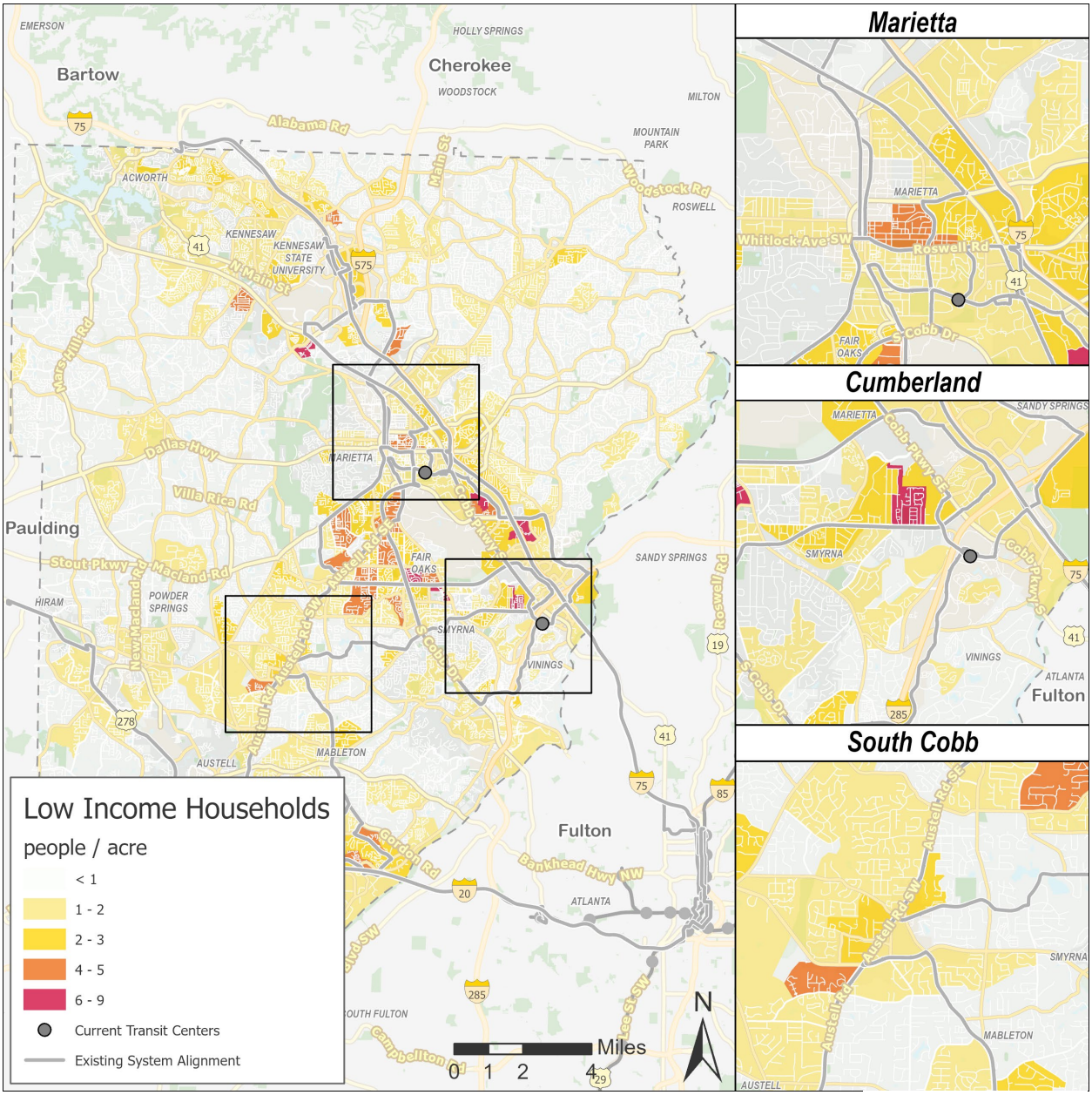


Source: ACS 2016-2020

1.5 Low-Income Households

As with minority populations, low-income households tend to be more reliant on transit and may have jobs that require non-traditional commuting times. The income threshold used for the analysis of low-income households was "those living at or below 150 percent of the poverty line per acre." **Figure 5** shows that there is a moderately dense area of low-income households in Northern Cobb County just south of the University that aligns with a dense minority population. Along the existing system alignment between Marietta and Cumberland, there are a block groups of high density and low-income households. Most low-income households are located north of South Cobb and are concentrated along the existing system alignment.

Figure 5: Low-Income Households (2020)

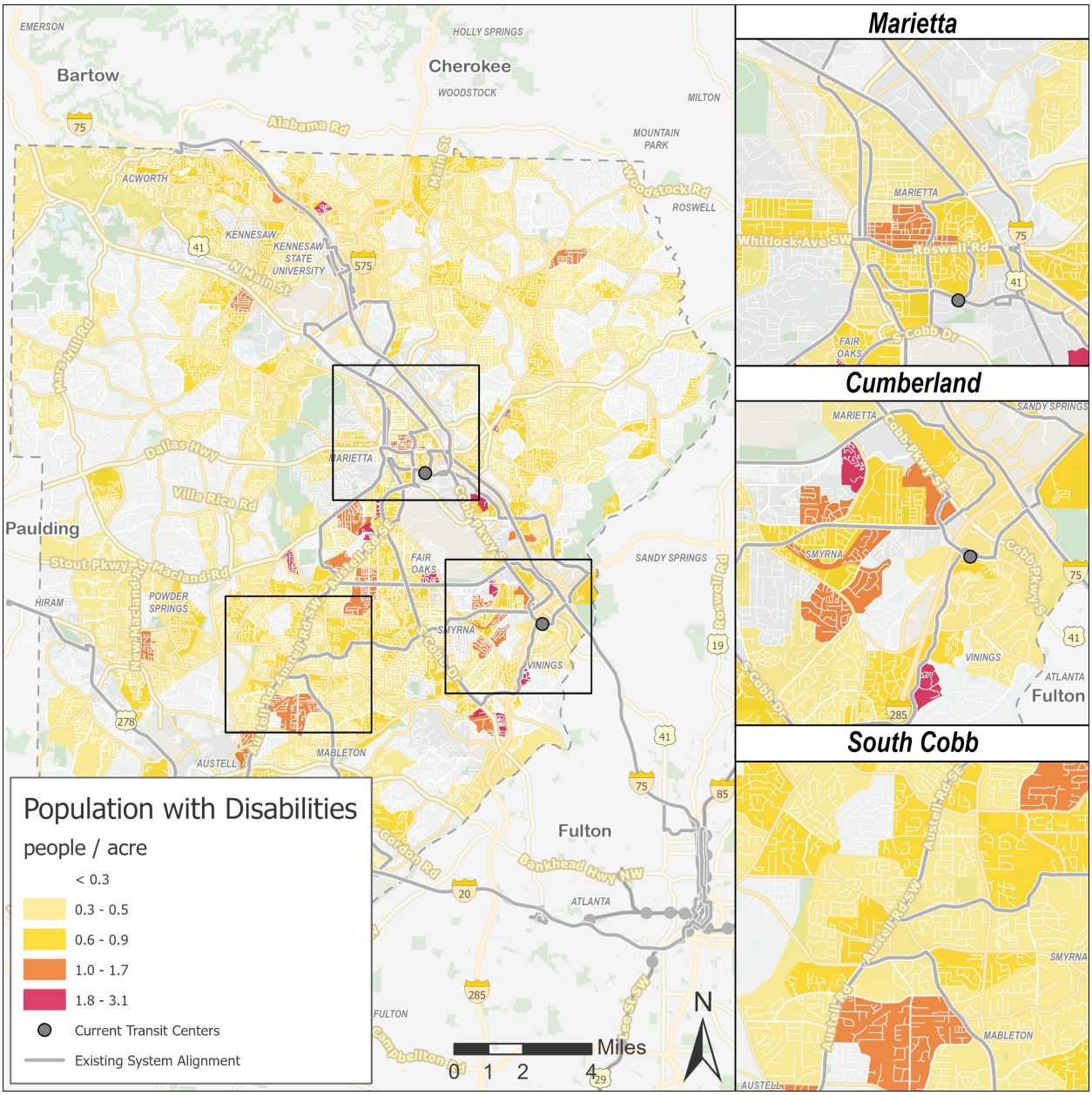


Source: ACS 2016-2020

1.6 Populations with Disabilities

Block groups in Cumberland have the highest concentration of people with disabilities compared to South Cobb and Marietta. **Figure 6** shows that there is a small area to the west in Powder Springs which has a relatively high concentration of people with disabilities, and there is an area in the north central portion of the county along I-75 that has a relatively high concentration. Both areas are located off the existing route alignments and may not be currently well served by the system. The area in South Cobb with a higher density of people with disabilities is a primarily residential area (when compared to population over 65, it appears that most are not disabilities among older adults in this area).

Figure 6: Populations with Disabilities (2020)

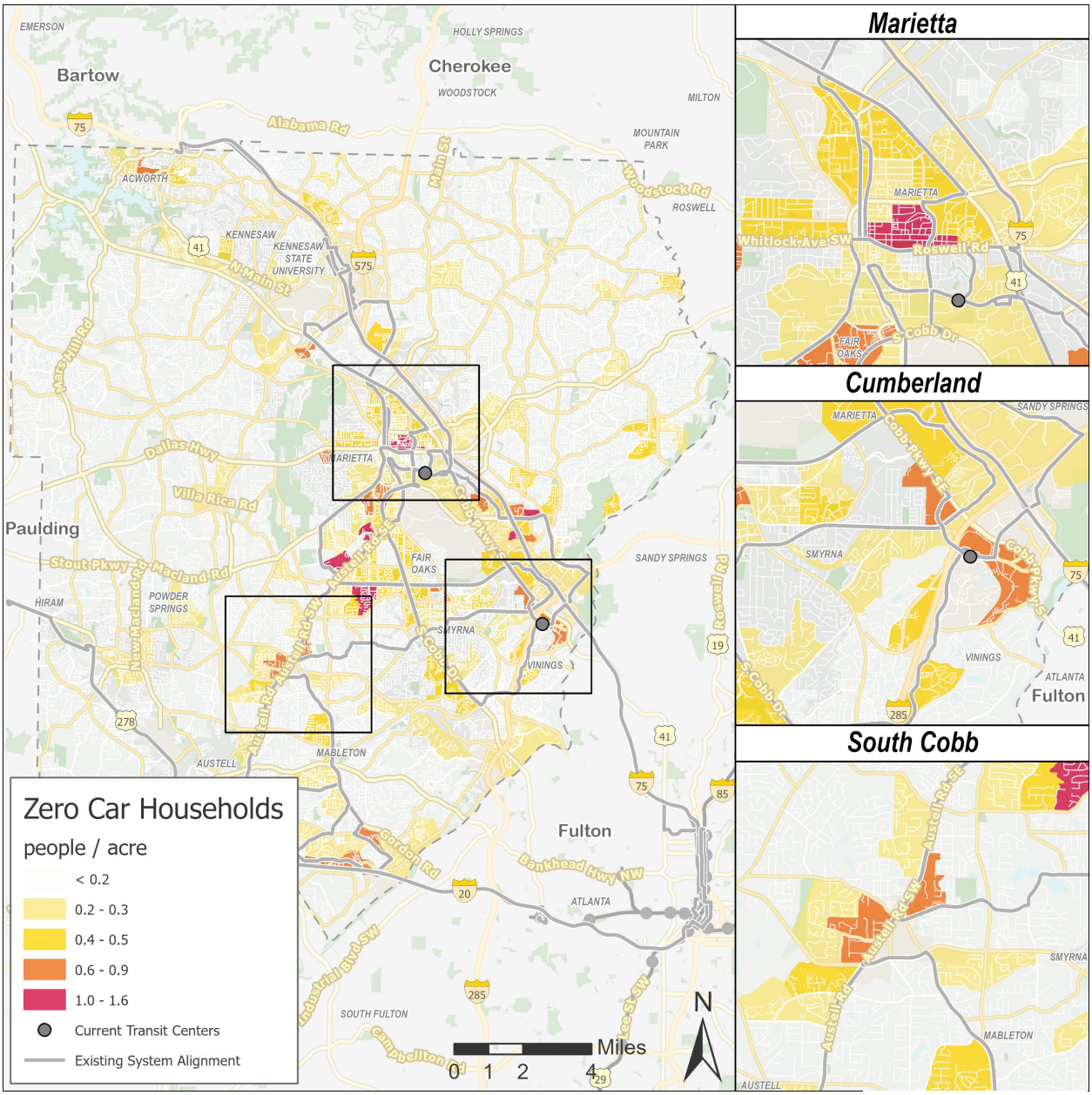


Source: ACS 2016-2020

1.7 Zero-Car Households

Most zero-car households are concentrated around the existing transit centers and existing route alignments; downtown Marietta and the Fair Oaks area have the highest concentrations of zero car households in the county, as seen in **Figure 7**. Block groups in Acworth in the northwest also have a higher concentration of zero car households, though it is not immediately adjacent to the existing route alignment.

Figure 7: Zero Car Households (2020)

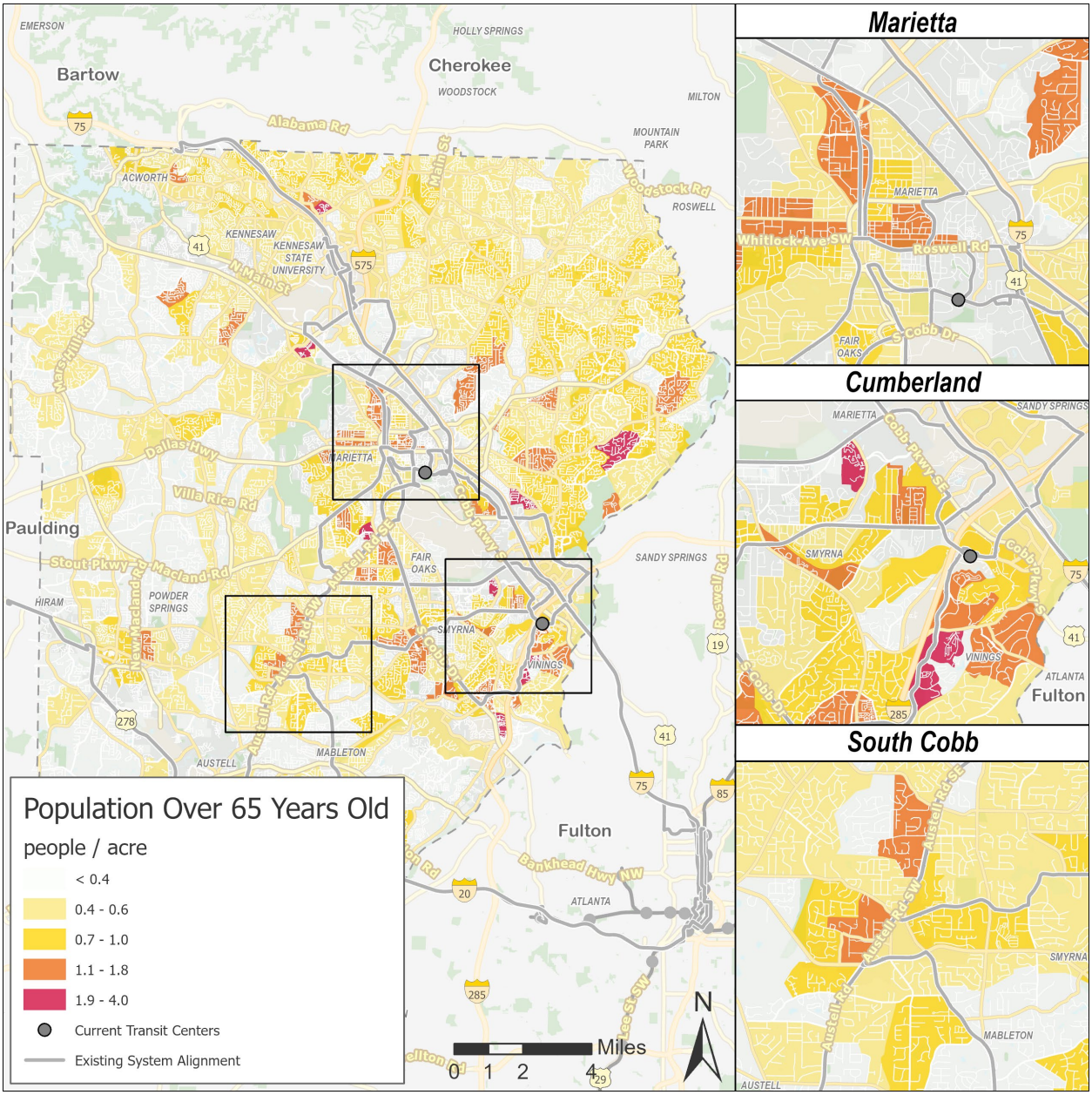


Source: ACS 2016-2020

1.8 Population Over 65 Years Old

Populations over 65 years old are more likely to utilize transit for a number of reasons including feeling more comfortable on a bus rather than operating their own vehicle. This subset of the population is also projected to grow significantly through CTP's planning horizon. This population is spread throughout the county, though higher concentrations are found in block groups around Marietta, Smyrna, South Cobb, and Vinings, as seen in **Figure 8**. Areas with higher densities of people age 65 and older are also distributed throughout the main corridors between Marietta, Cumberland, and South Cobb, and in most cases are adjacent to the existing system.

Figure 8: Population Over 65 Years Old (2020)



Source: ACS 2016-2020

Section 2: Existing Transit Propensity

A key component in understanding the CobbLinc service area is knowing where potential transit users live and where they want to go. This is conveyed through a Transit Propensity Index. Transit propensity combines a broad array of data sources into indices that identify where the highest propensity for transit use exists. Every Census block group in the service area receives a unique score in each propensity index and is then ranked. There are four primary propensity indices: Transit-Oriented Populations Origin Index; Commuter Origin Index; Employment Destination Index; and the Activity Destination Index. A fifth index—the Microtransit Suitability Index—was also developed to help identify where demand-responsive transit solutions may be the most successful.

These indices are designed to be visualized and combined with other information about trip and travel patterns, transit route performance, and transit level of service to help evaluate the need or demand for transit service at the block group level and to develop recommendations for transit service changes or additions of transit service, or more specifically in the case of CobbLinc, the potential location of a transit center. Each of the primary indices is comprised of one or more "analysis factors" (**Table 1**). The income threshold used for the analysis of low-income households was "those living at or below 150 percent of the poverty line per acre." This analysis used 2016 to 2020 ACS 5-year estimates for demographic information and 2019 LEHD employment data.

Table 1: Analysis Factors and Datasets used for Primary Transit Indices

Index		Analysis Factor	Dataset
Primary Indices	Transit-Oriented Population Origins	Population	Total Population
			Non-White or Hispanic Population
		Age	Seniors
			Youth
		Income	Households at or below 150 percent of the poverty line per acre
		Vehicle Ownership	Zero-Car Households
			One-Car Households
		Disability Status	Population with a Disability
	Commuter Population Origins	Labor Force	Labor Force Size
			Employed Persons
			Commuters
		Non-Single Occupancy Vehicle (SOV) Commute Mode	Non-SOV Commuters
	Employment Destinations	Employment	Jobs
	Activity Destinations	Retail & Restaurant	Retail Jobs
			Restaurant Jobs
		Recreation	Entertainment / Recreation Jobs
		Healthcare & Social Assistance	Healthcare & Social Assistance Jobs
		Education	Education Jobs
		Government	Public Administration Jobs

In addition to the primary indices, there are two hybrid indices that combine multiple analysis factors to identify where the highest propensity for transit use exists at specific times of the day: the Peak Service Index and the All-Day Service Index. For example, an office park with a high density of jobs may have a high employment destination index score, but this high level of demand may only exist at peak commuting times due to the lack of other activity generators in the area. It is also worth noting that there are several major event venues in Cumberland that help to drive transportation and transit demand during non-traditional hours, such as Truist Park, the Coca Cola Roxy Theater, the Cobb Energy Center, and the Galleria Convention Center. These locations and the demand that they help drive may not be obvious in the data, yet still need to be considered when considering solutions.

Figure 9 and **Table 2** shows which analysis factors and primary index datasets make up each of the two hybrid indices.

Figure 9: Transit Supportive Locations

Table 2: Analysis Factors and Datasets used for Hybrid Transit Propensity Indices

	Index	Analysis Factors / Primary Index Datasets
Hybrid Indices	Peak Service	Higher of Commuter Population Origins or Employment Destinations Scores
	All-Day Service	Higher of Transit-Oriented Population Origins or Activity Destinations Scores

2.1 Transit-Oriented Population (TOP) Index

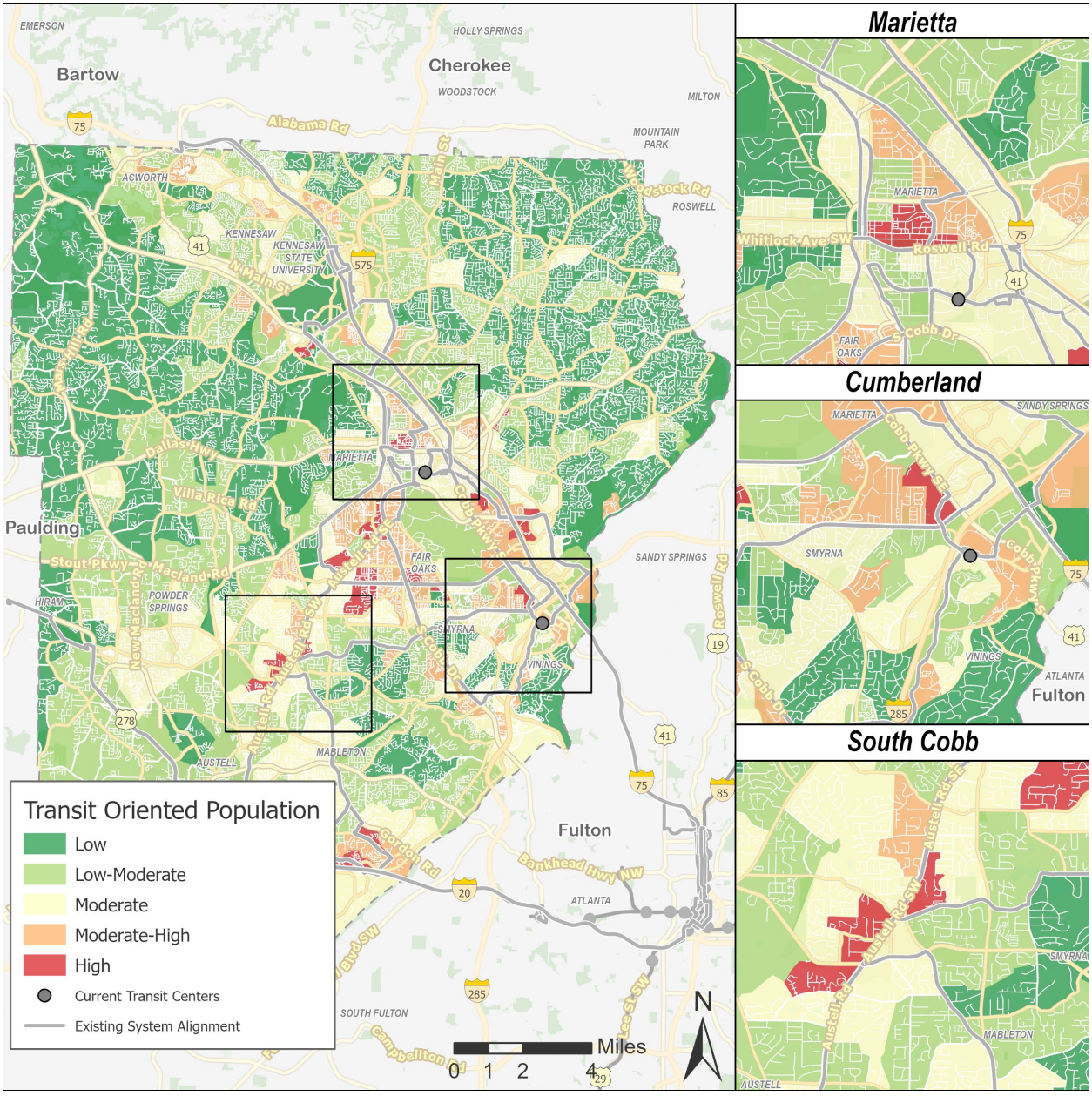
The transit-oriented population index consists of five categories: age, income, vehicle ownership, disabled population, and density of overall population as well as density of minority population and households. The datasets that contribute to these categories are all indicative of persons that are likely to be more reliant on transit (**Table 3**). Therefore, this index is indicative of where transit-oriented populations live. The weights for each category are based on the projected impact of each in defining transit-oriented populations.

Table 3: Transit-Oriented Population Index

Index	Category	Dataset
Transit-Oriented Population	Population	Population Density
		Non-white and Hispanic Population Density
	Age	Senior (65+) Density
		Seniors as Percentage of Total Population
		Youth (<18) Density
		Youths as Percentage of Total Population
	Households	Total Households
		Household Density
	Income	Low-Income Households as Percentage of Total Number of Households
		Low-Income Household Density
		Percentage of Low-Income Households as Percentage of Total Number of Households
	Vehicle Ownership	Percentage of Zero-Car Households as Percentage of Total Number of Households
		Zero-Car Household Density
		Percentage One-Car Households as Percentage of Total Number of Households
		One-Car Household Density
	Disabled Person	Disabled Population Density
		Disabled Persons as Percentage of Entire Population

Figure 10 shows the results of the transit-oriented population index by census block group. The most significant concentrations of transit-oriented populations in the service area around the transit centers and near the existing system alignment. The highest concentration of transit-oriented populations lies in South Cobb along Austell Road. There is also a large area of land along the corridor from South Cobb to Marietta that has a “moderate-high” concentration of transit-oriented population. The area of Fair Oaks has a “moderate-high” concentration of transit-oriented populations as well, likely due to the proximity of Dobbins Air Force Base in addition to several major employment centers and easy access to the Cobb Linc system.

Figure 10: Transit Oriented Populations



2.2 Activity Destinations Index

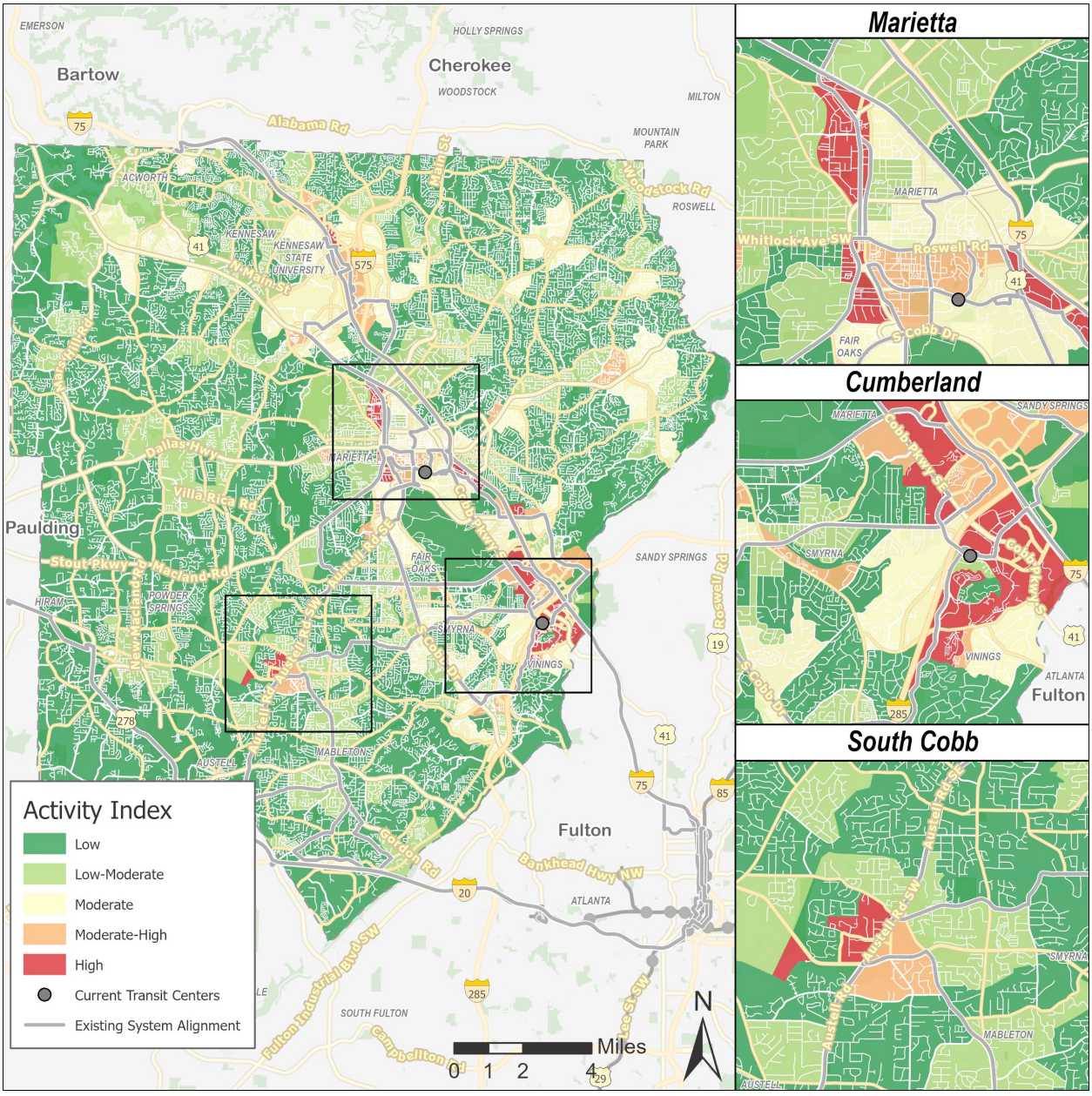
The activity destinations index has five categories: retail/restaurant, recreation, healthcare/social assistance, education, and government (**Table 4**). These categories are weighted based on the typical trip purpose proportions for transit users. The primary datasets that make up these categories are employment in the each of the represented sectors (i.e., the recreation category contains datasets from the entertainment sector and the recreation sector). The employment-by-sector datasets serve as proxies for how much travel demand businesses that fall into these sectors would produce, and therefore, this index is indicative of where people make non-work trips but also where jobs are located that may have non-traditional commute times (i.e., off-peak commutes).

The results of the activity destination index are shown in **Figure 11**. Activity destinations with the highest propensity include south Cumberland (just north of the Vinings neighborhood) where there is a high concentration of retail including the convention center, Cumberland Mall, and an assortment of strip malls. The Fair Oaks neighborhood in Marietta and a small stretch of Austell Road in an area adjacent to Cobb Wellstar hospital in South Cobb also have high propensity.

Table 4: Activity Destination Index

Index	Category	Dataset
Activity Destinations	Retail/ Restaurant	Retail Jobs Density
		Restaurant Jobs Density
	Recreation	Entertainment and Recreation Jobs Density
	Healthcare/ Social Assistance	Healthcare & Social Assistance Jobs Density
	Education	Education Jobs Density
	Government	Public Administration Jobs Density

Figure 11: Activity Destinations Index (2020)



Source: ACS 2016-2020

2.3 Commuter Index

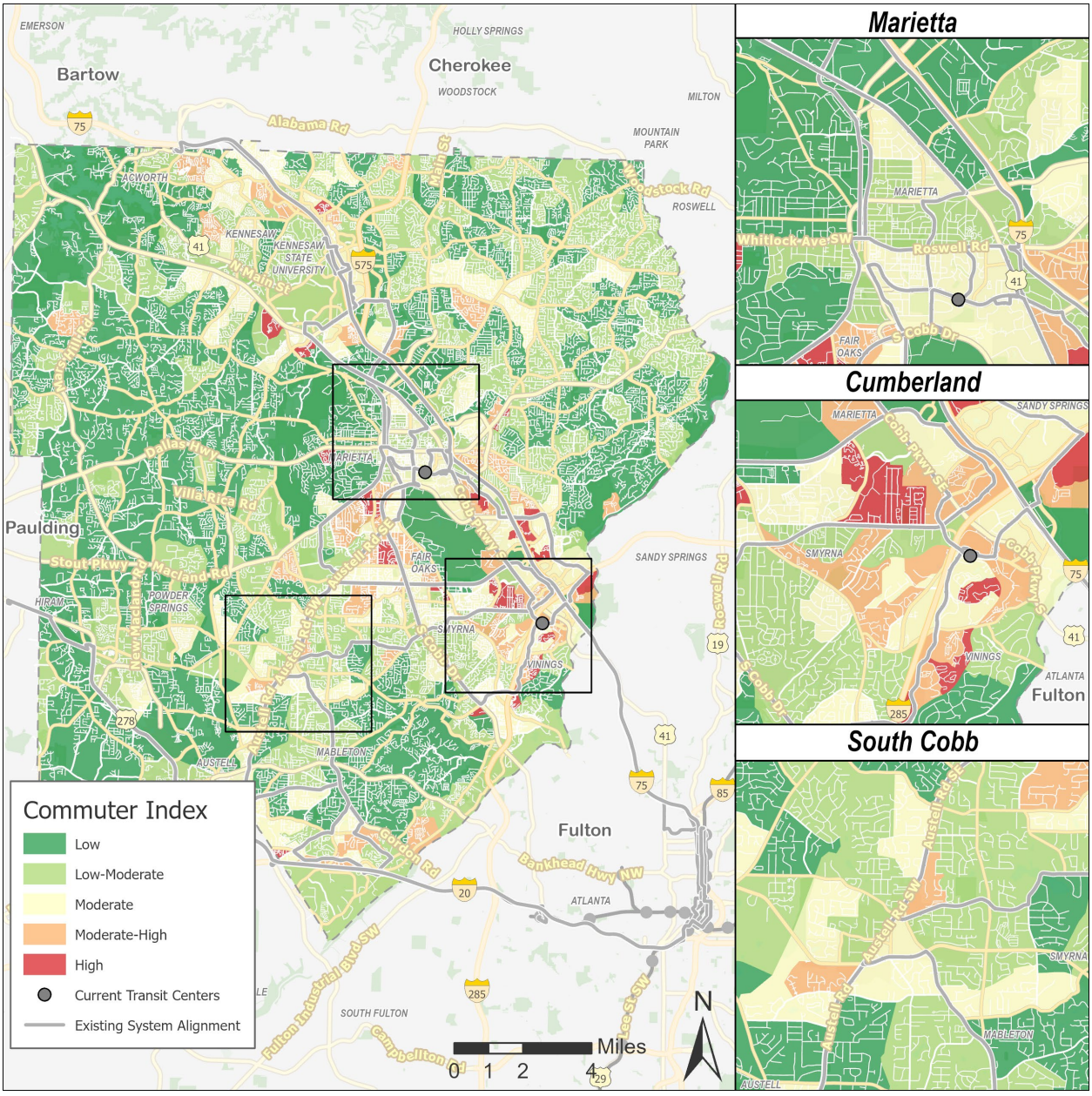
The commuter origin index represents areas that are likely to serve as the origin for transit commuters. This measure includes residents who are employed or in the labor force, with an additional focus on transit and carpool commuters (**Table 5**). This differs from the Transit-Oriented Population (TOP) index, as the TOP index is determined by a number of factors including population density and number of zero-car households, while the commuter index only reflects the labor force and commute mode to work (not including other non-work destinations).

Index	Category	Dataset
Commuters	Labor Force	Labor Force Density
		Employed Person Density
		Employed Persons as Percentage of Total Population
		Commuter Density
	Commute Mode	Transit Commuters as Percentage of Total Commuters
		Transit Commuter Density

Table 5: Commuter Index

As shown in **Figure 12** commuter origins are primarily located in Cumberland and just north of Cumberland around Smyrna. Nearly all additional propensity shown falls along the corridor between Cumberland and Marietta and between South Cobb and Marietta.

Figure 12: Commuter Index (2020)



Source: ACS 2016-2020

2.4 Employment Index

The employment destination propensity index represents areas that serve as the destination for work trips. This measure includes the total number of jobs and job density in each area (**Table 6**).

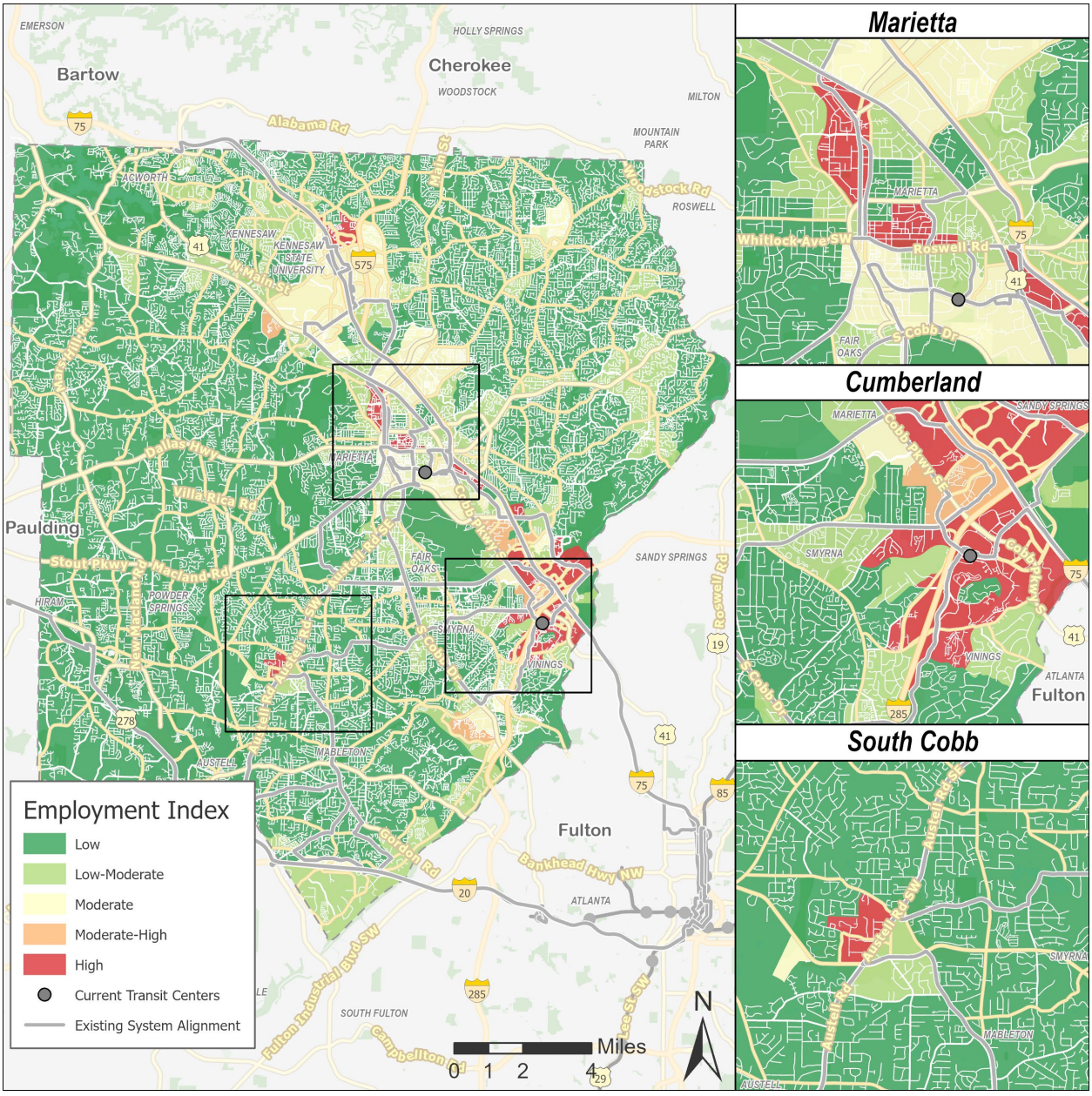
The results for the employment destination index are shown in **Figure 13**. There is high employment destination propensity in Cumberland around the intersection of I-285 and I-75. Additionally, in Cumberland northeast of this intersection, high employment destination propensity is shown around office parks where companies like GE have their regional corporate headquarters. High employment

destination propensity can also be seen in Marietta, in the Fair Oaks area. Block groups in this region contain the Chattahoochee Technical College which represents significant employment destination. Similarly, the area in South Cobb, west of Austell Road has a number of job centers including the East West Medical Center which likely contribute to a higher employment destination propensity.

Table 6: Workplace Index

Index	Category	Dataset
Employment	Employment	Employment Density

Figure 13: Employment Index (2020)



Source: ACS 2016-2020

2.5 Microtransit Suitability Index

Emerging technologies, such as microtransit, allow for greater flexibility in completing short trips. Microtransit is a newer service model that can provide first-mile, last-mile solutions to customers by providing flexible, on-demand transit service in places of high transit need. It often uses smaller vehicles, which can mean a lower cost to operate, along with a technology solution for instant or near-instant trip booking requests. Microtransit service can also dynamically select the optimal route based on requested trips; this usually results in a faster, more direct trip for the rider compared to traditional fixed route transit. Examples of microtransit include existing Flex service operating in areas of high microtransit

suitability. Generally, when considering the addition of new service or a new transit facility, best practice suggests that the location should be easily accessible for fixed route and on-demand service.

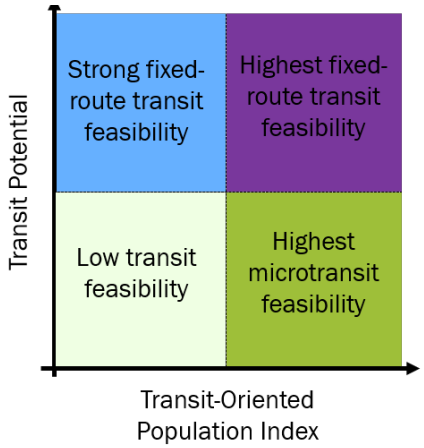
This service model can be successful in areas where short trips are observed, and specifically microtransit, can also be more cost effective in areas where circuitous road networks exist or there is low population and job density. These types of conditions prevent traditional fixed-route transit from being successful. Because of the potential cost savings of microtransit and the improved rider experience – including instant trip booking and shorter travel times — microtransit options were evaluated for Cobb Forward 2040.

Zones for microtransit must be contiguous to deploy the microtransit vehicles in a way that they are consistently available for a rider. Using the criteria noted above, along with the **Figure 14** indices, all block groups in the CobbLinc service area were screened for microtransit feasibility.

Transit Potential is an analysis of population and employment density in an area. Transit Need is an analysis of socioeconomic characteristics that are indicative of a higher propensity to use transit by the existing population. In this methodology, the weighted Transit-Oriented Population Index from the Transit Propensity model was used to identify transit needs.

Block groups that score high in both Transit Potential and Transit Need are typically strong candidates for fixed-route transit services, with microtransit to fill gaps where the need exists, but the potential for success of fixed-route transit is low. A bivariate analysis was used to assess the feasibility of microtransit, the purpose of which is to identify block groups that are higher in transit need but lower in transit potential (**Figure 14**).

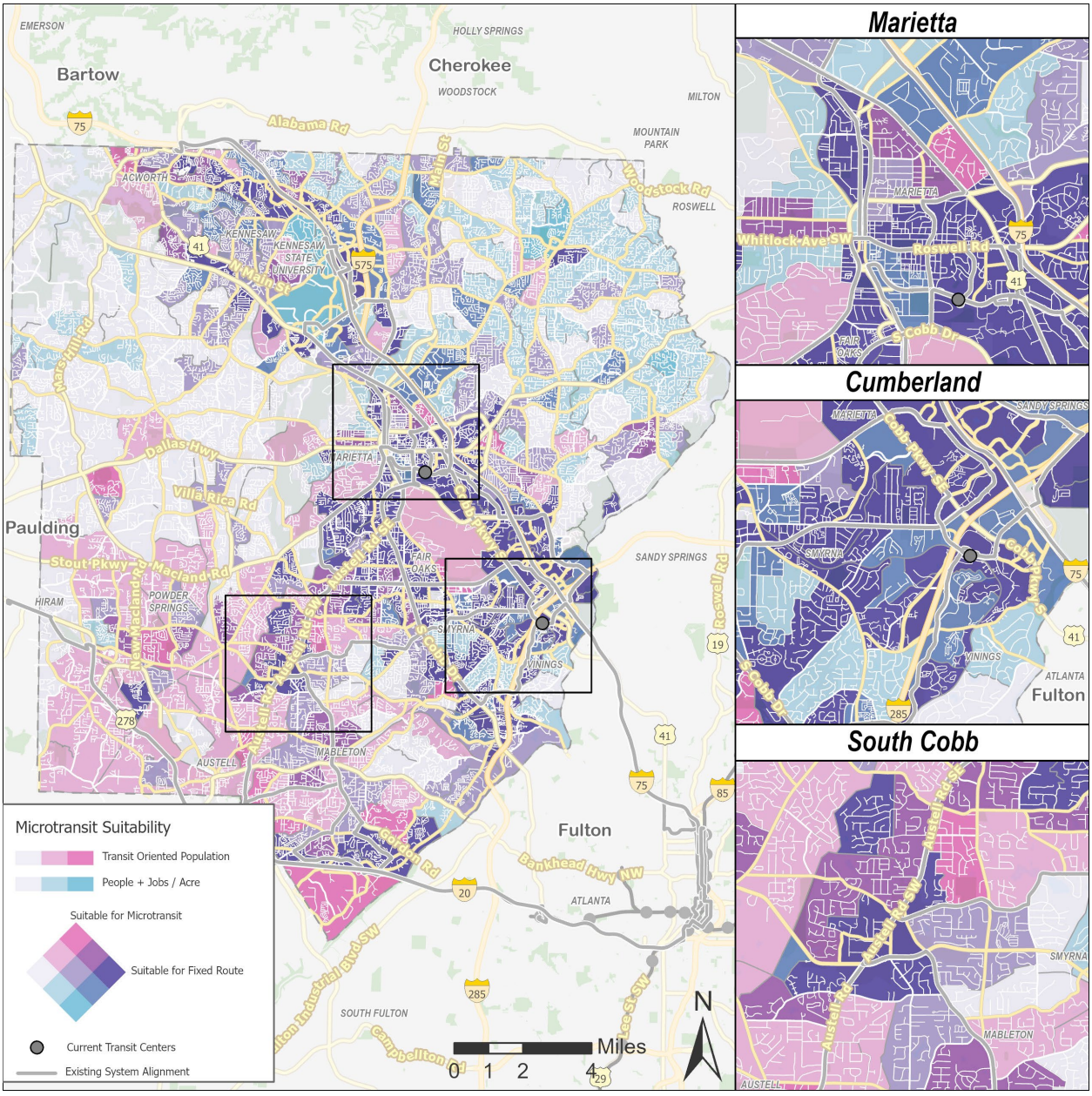
Figure 14: Bivariate Microtransit Suitability Analysis Diagram



The results of the bivariate analysis are displayed in **Figure 15.** The highest concentrations of block groups with high fixed-route transit feasibility are mostly located in and around the urban core in Marietta, Cumberland, and South Cobb, and along arterial roads connecting those cities and the region. It may be worth exploring these area for higher-level transit services, such as Bus Rapid Transit or Arterial Rapid Transit, especially along corridors where service utilization is high, but on-time performance is low (likely impacted by the other modes sharing the corridor).

Some other suburban block groups were also identified as having high suitability for fixed-route transit as well, usually due to the presence of an apartment complex or similarly dense housing unit and nearby retail or other jobs. However, because suburban land uses tend to concentrate residents in one location, and jobs in another, it is the periphery of the city limits where zones of high microtransit feasibility were easiest to identify.

Figure 15: Microtransit Suitability (2020)



Source: ACS 2016-2020

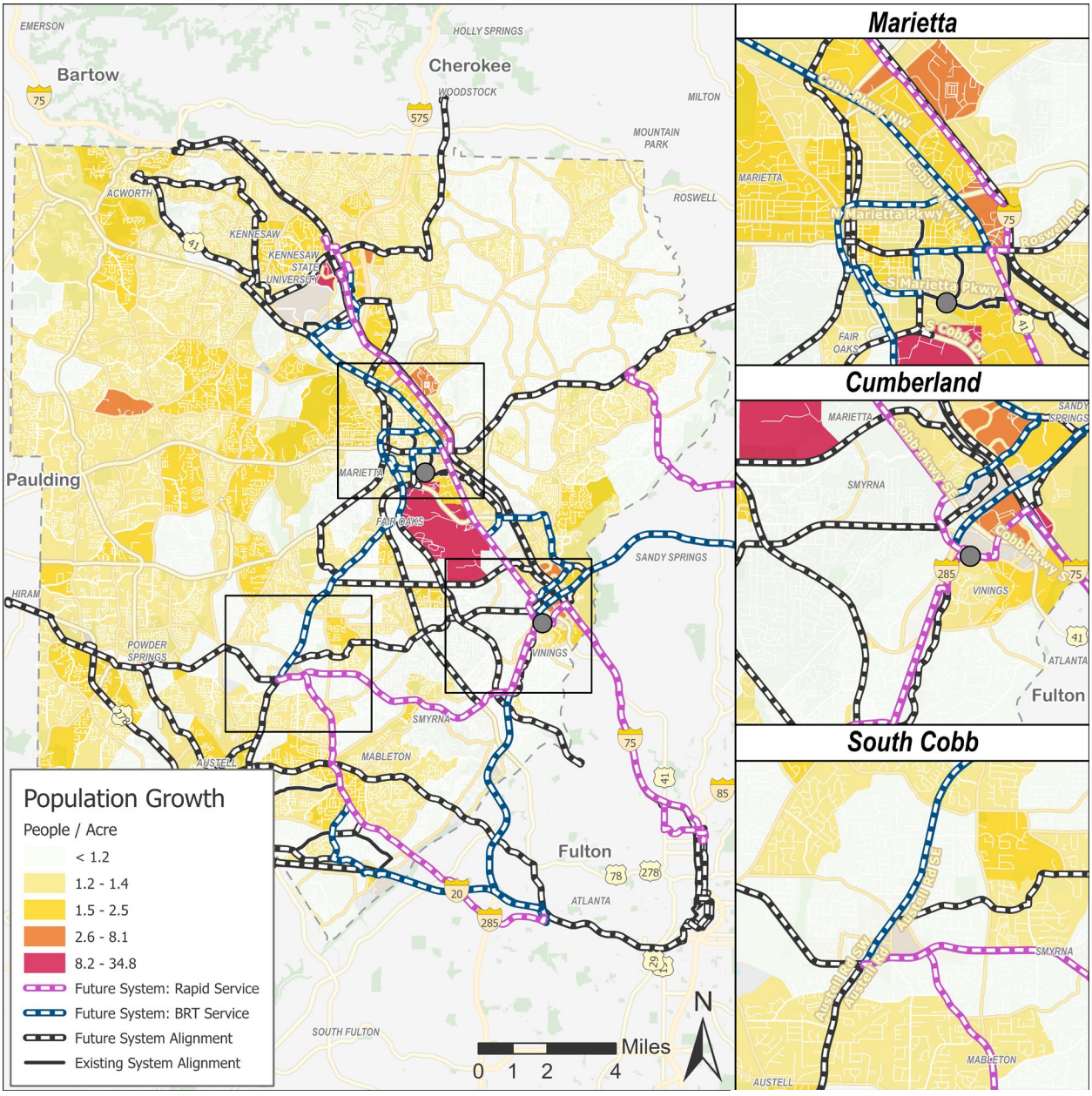
Section 3: County Growth

Population and employment data, including growth projections, were obtained at the county and state level from the Atlanta Regional Commission's (ARC) growth model. The projections allowed for the consideration of population and job trends in the future when considering service allocation and transit center locations. In addition, by overlaying the existing and future system alignments, CobbLinc is able to see how the future system alignment serves the projected future population and job centers.

3.1 Population Growth

Compared to the transit solutions identified in the county's long range transportation plan, Cobb Forward, the region's population is more thoroughly covered with transit. Some developing areas in the western half of the county should be considered for additional flexible transit. The area between Marietta and Cumberland is anticipated to see the greatest growth, in addition to a small area near the University. The area west of Marietta shows moderate growth but has limited transit service.

Figure 16: Population Growth (2050)

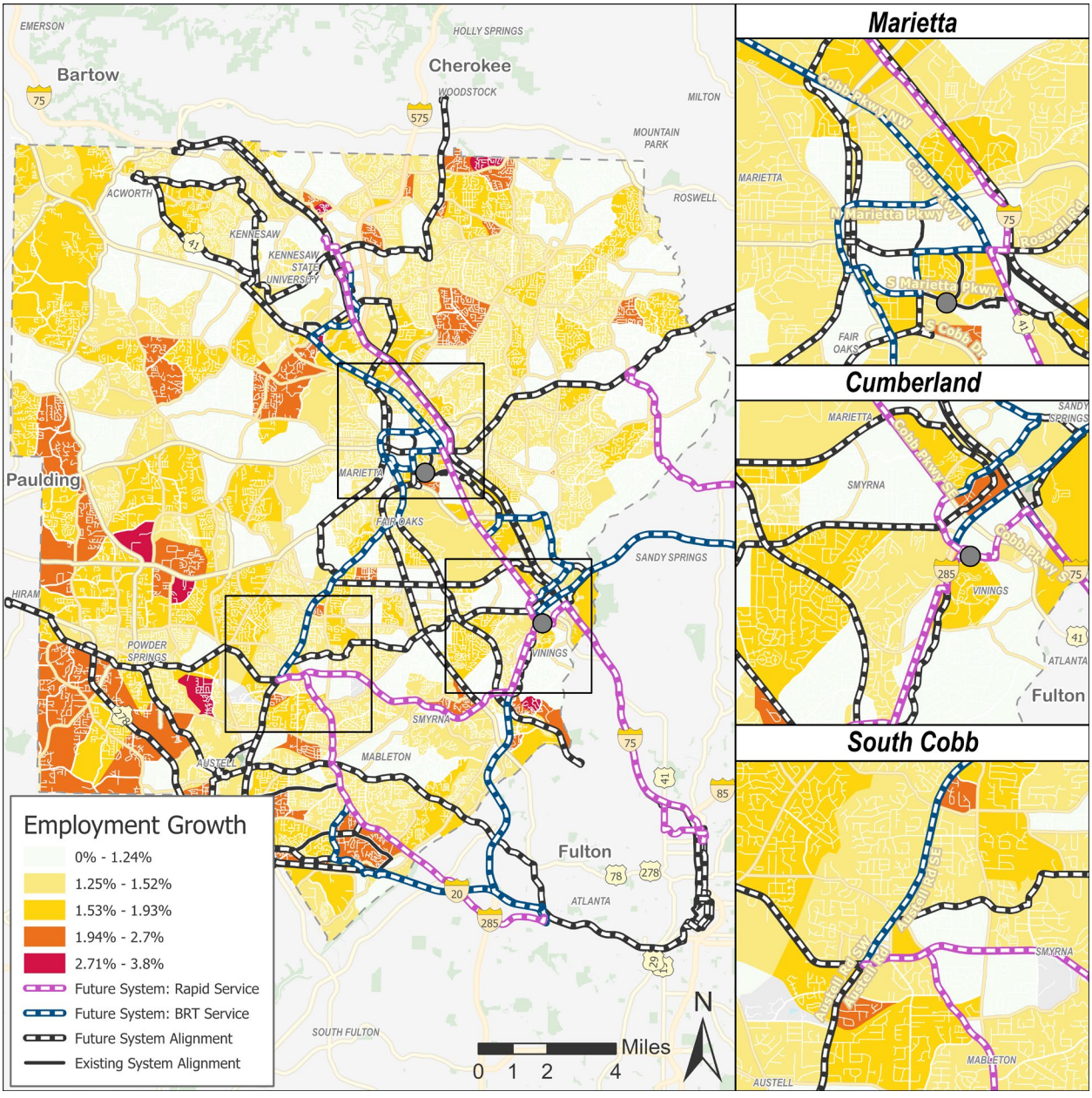


Source: Atlanta Regional Commission

3.2 Employment Growth

Compared to the Cobb Forward transit solutions identified and based on where growth is expected (western half of the county) and where transit is focused (north-south corridors), both the Marietta and South Cobb facilities will be vital connection points to future employment. There is significant job growth in the west of Cobb County, with some moderate growth also in the south and north.

Figure 17: Employment Growth (2050)



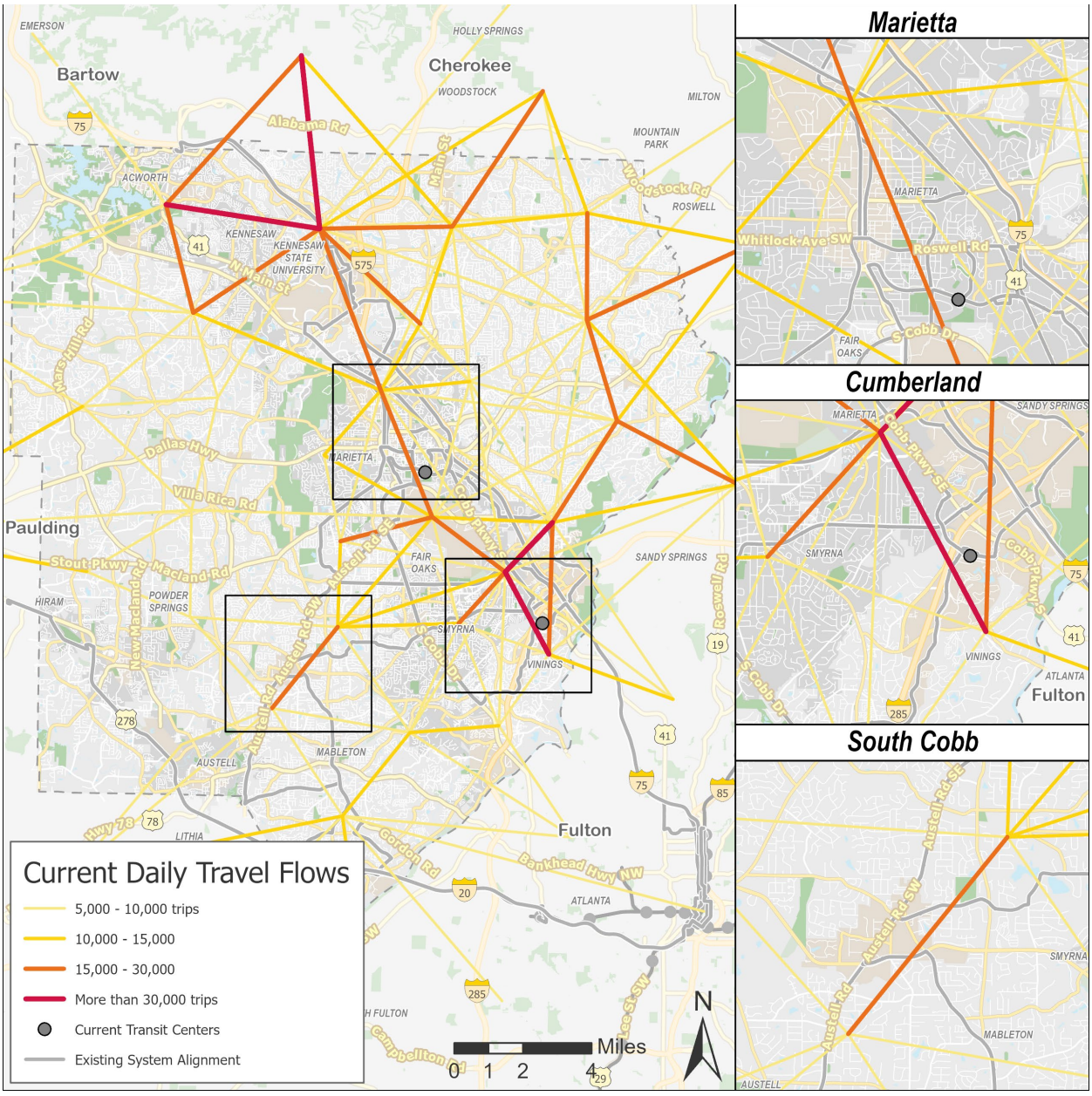
Source: Atlanta Regional Commission

Section 4: Travel Patterns

4.1 Current Daily Total Travel Flows

Figure 18 details current travel flows across all transportation modes in Cobb County. Much of the intra-county flow occurs along the I-75/I-575 corridor between Cumberland, Marietta, and Kennesaw, with notable flows to South Cobb.

Figure 18: Current Daily Travel flows (>5,000 Trips), 2017

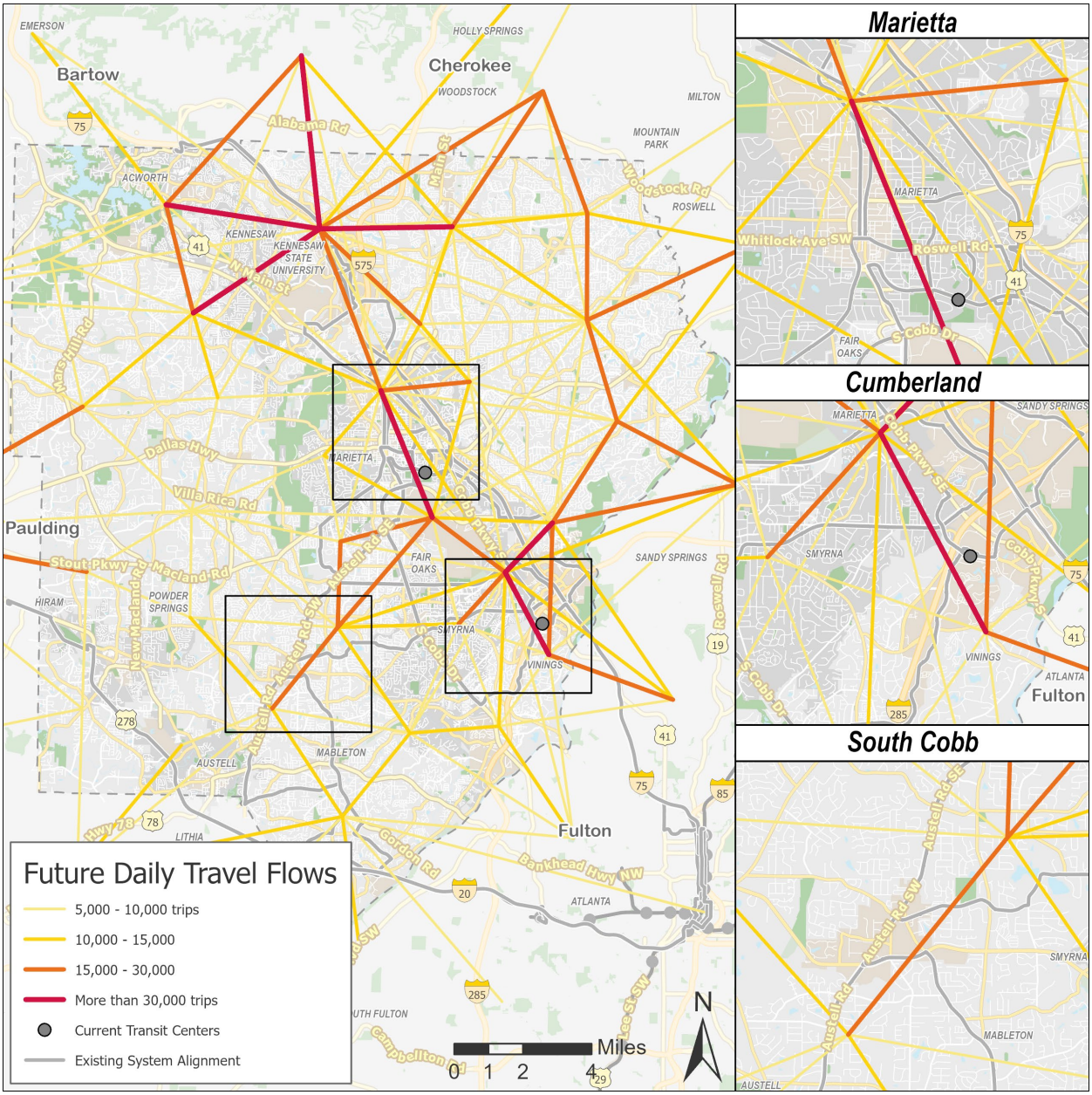


Source: Cobb Forward Comprehensive Transportation Plan

4.2 Future Daily Total Travel Flows

Figure 19 shows predicted travel flows for all transportation modes in 2040, demonstrating additional growth in travel to major destinations, such as Marietta and Cumberland. The expanded service envisioned in Cobb Forward will provide additional transit options to serve these flows between major destinations and trip generators.

Figure 19: 2040 Daily Travel Flows (>5,000 Trips)

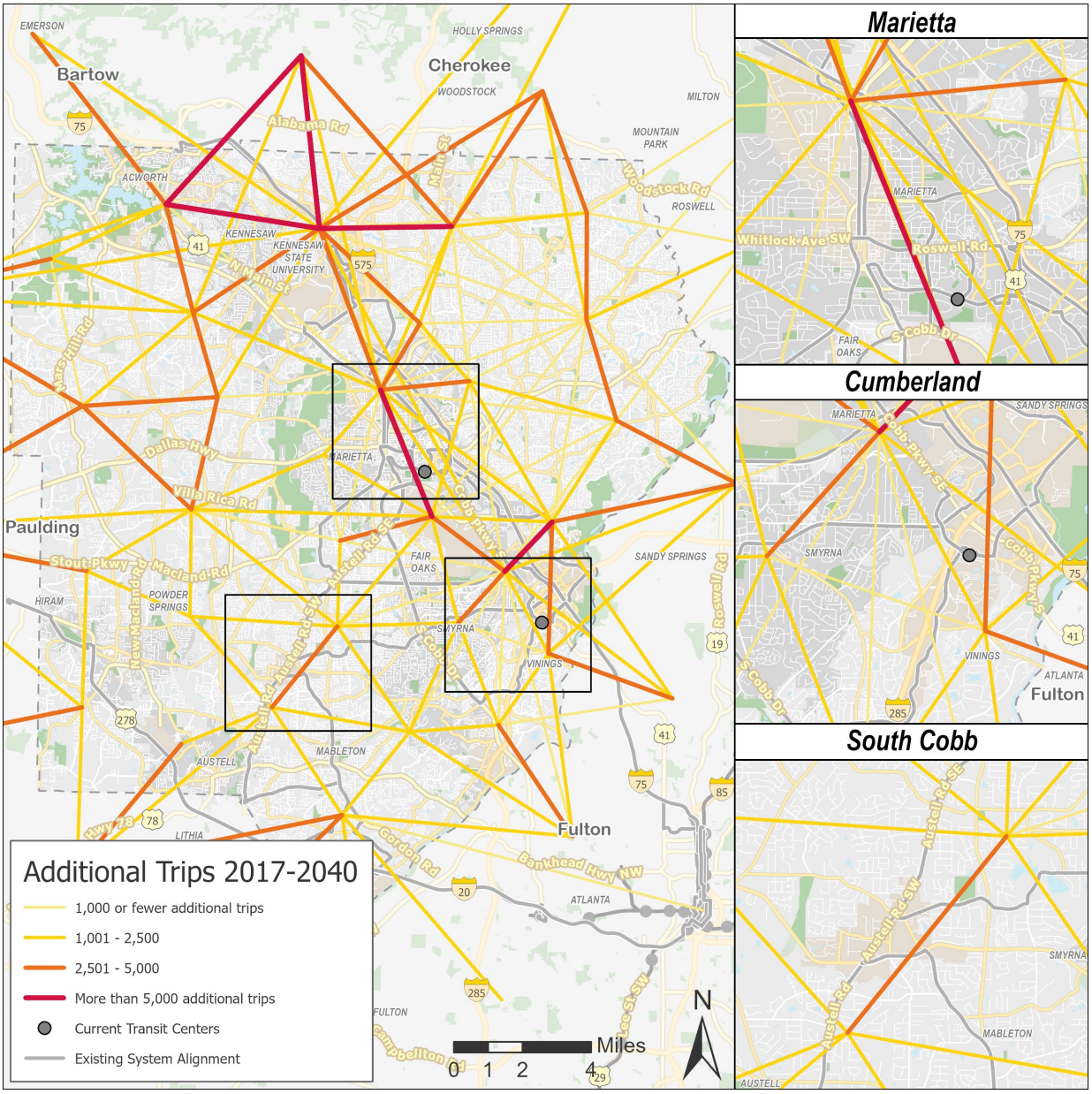


Source: Cobb Forward Comprehensive Transportation Plan

4.3 Future Additional Daily Trips

Figure 20 shows the expected additional travel in Cobb County by 2040, by visualizing the difference between the expected additional trips (**Figure 19**) and current trips (**Figure 18**). Cobb County is expected to experience continued growth in the current pattern of north-south travel between Kennesaw, Marietta, and Cumberland. The county will also experience dispersed growth in travel in south and southwest Cobb County, likely due to the employment growth depicted in **Figure 17**. Inter-county travel is also expected to increase between Cobb County and Fulton County, Paulding County, and Cherokee County. These trends speak to the need both for additional north-south service in Cobb County and for expanded service in South Cobb.

Figure 20: Predicted Additional Trips



Source: Cobb Forward Comprehensive Transportation Plan

Section 5: Existing Services

5.1 Current System

CobbLinc currently operates fixed-route transit service that spans Cobb County, providing both intra-county service and inter-county service between Cobb and Fulton counties (**Figure 21**). CobbLinc provides north-south service between Kennesaw, Marietta, Cumberland, and Midtown Atlanta on local routes 10, Rapid 10, 40, 45, and 50, as well as on express routes 100, 101, and 102. Service to west Cobb and South Cobb is provided on local routes 15, 20, 25, and 30. Riders can make transfers between local routes and some circulator and express services at the Marietta Transfer Center and Cumberland Transfer Center (**Table 7**).

CobbLinc also operates an on-demand Flex service in southwest Cobb County. This service is provided within three zones extending west from Austell Road, each with a transfer point on Route 30 near the Austell Road/East-West Connector intersection.

Additionally, MARTA operates their route 12 from Howell Mill Road in Atlanta to the Cumberland Transfer Center. Xpress provides transit service from Paulding County to Atlanta that travels through Cobb County.

Figure 21: CobbLinc Transit Network

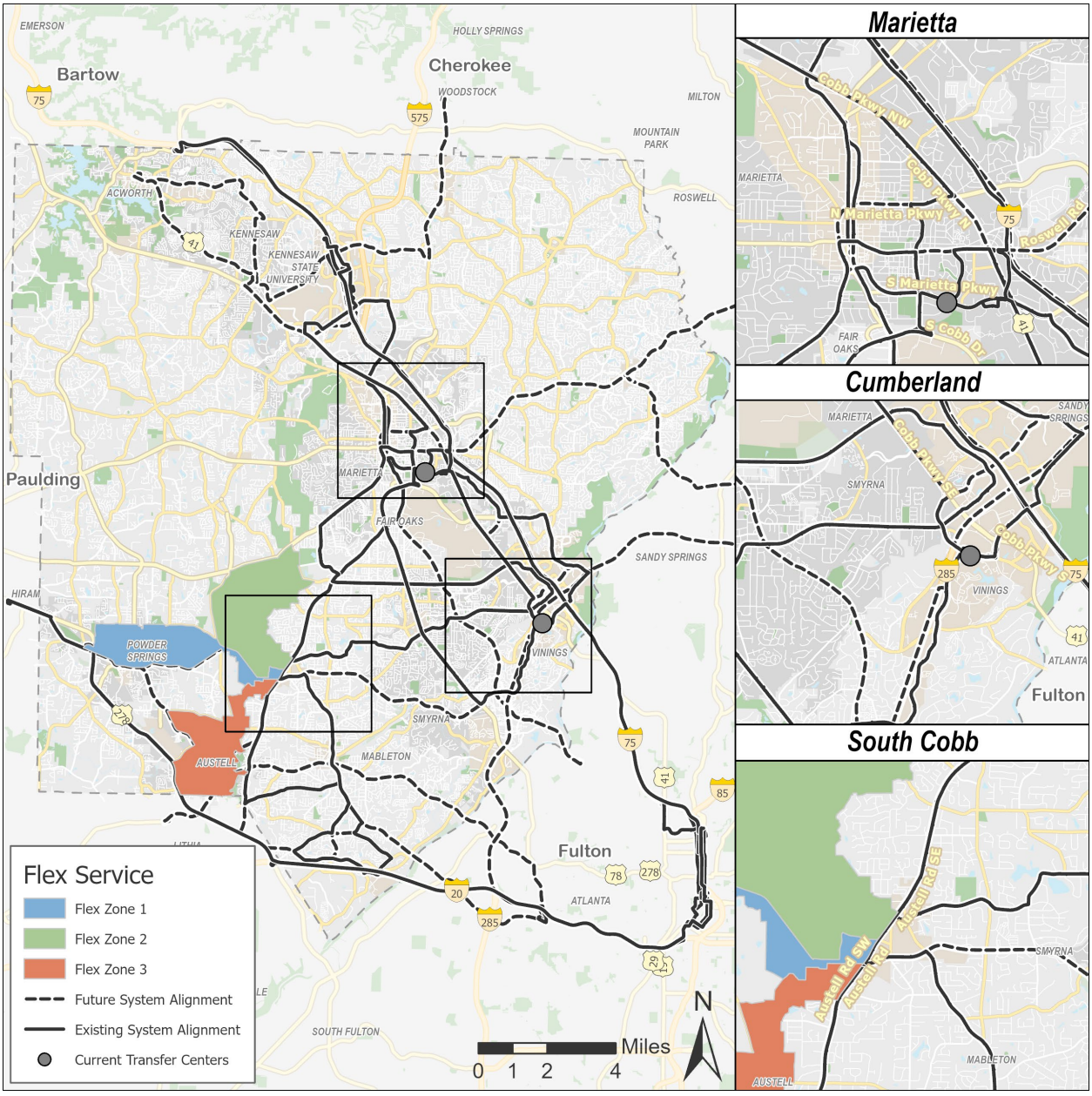
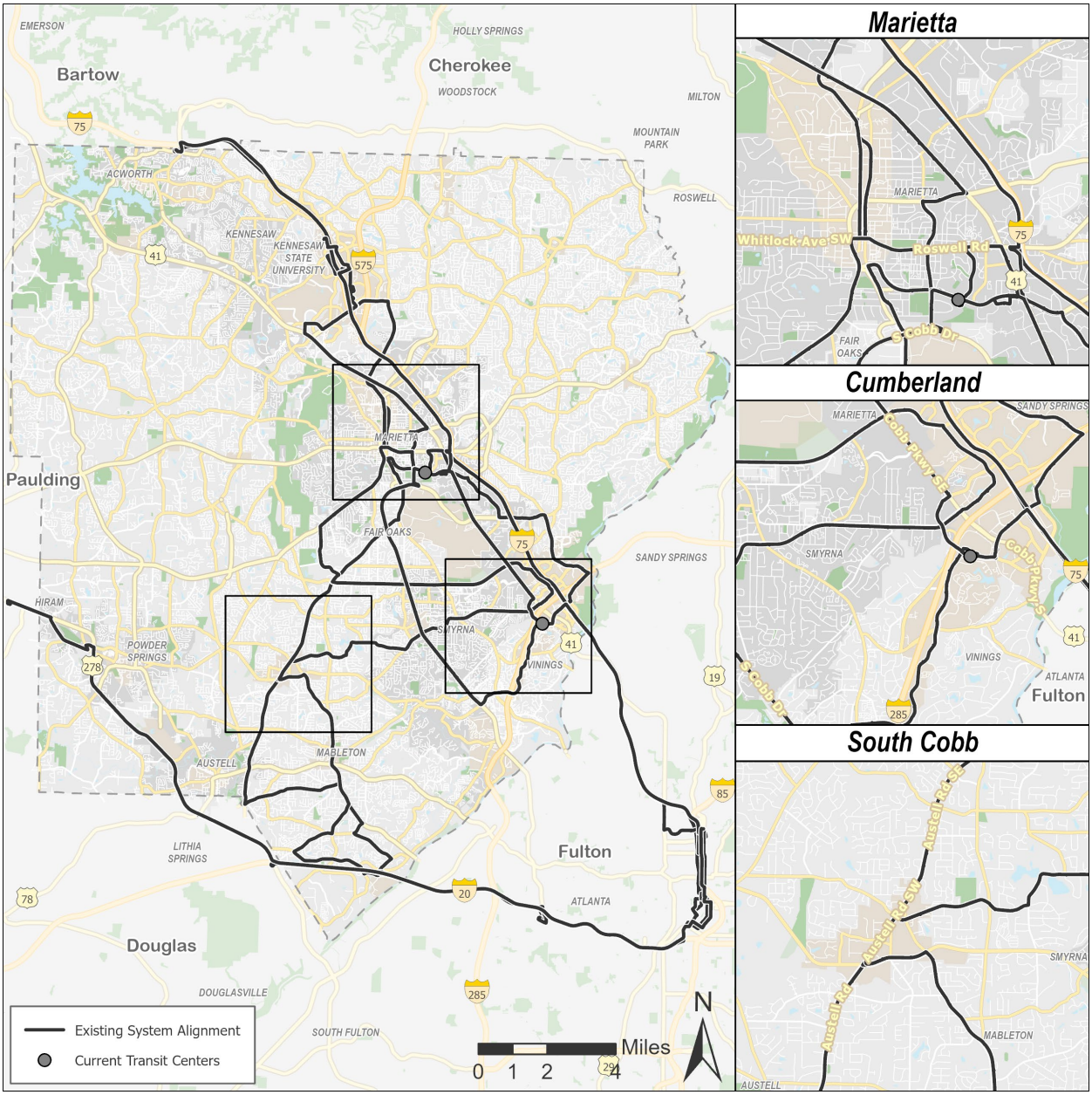


Table 7: Current CobbLinc Routes and Transfer Centers Served

Service Type	Route Name	Transfer Center(s)	
		Marietta	Cumberland
Local	10	●	●
	Rapid 10	●	●
	15	●	●
	20	●	●
	25		●
	30	●	
	40	●	
	45	●	
	50	●	●
Circulator	Circulator BLUE		●
	Circulator GREEN		
Express	100		
	101	●	
	102		

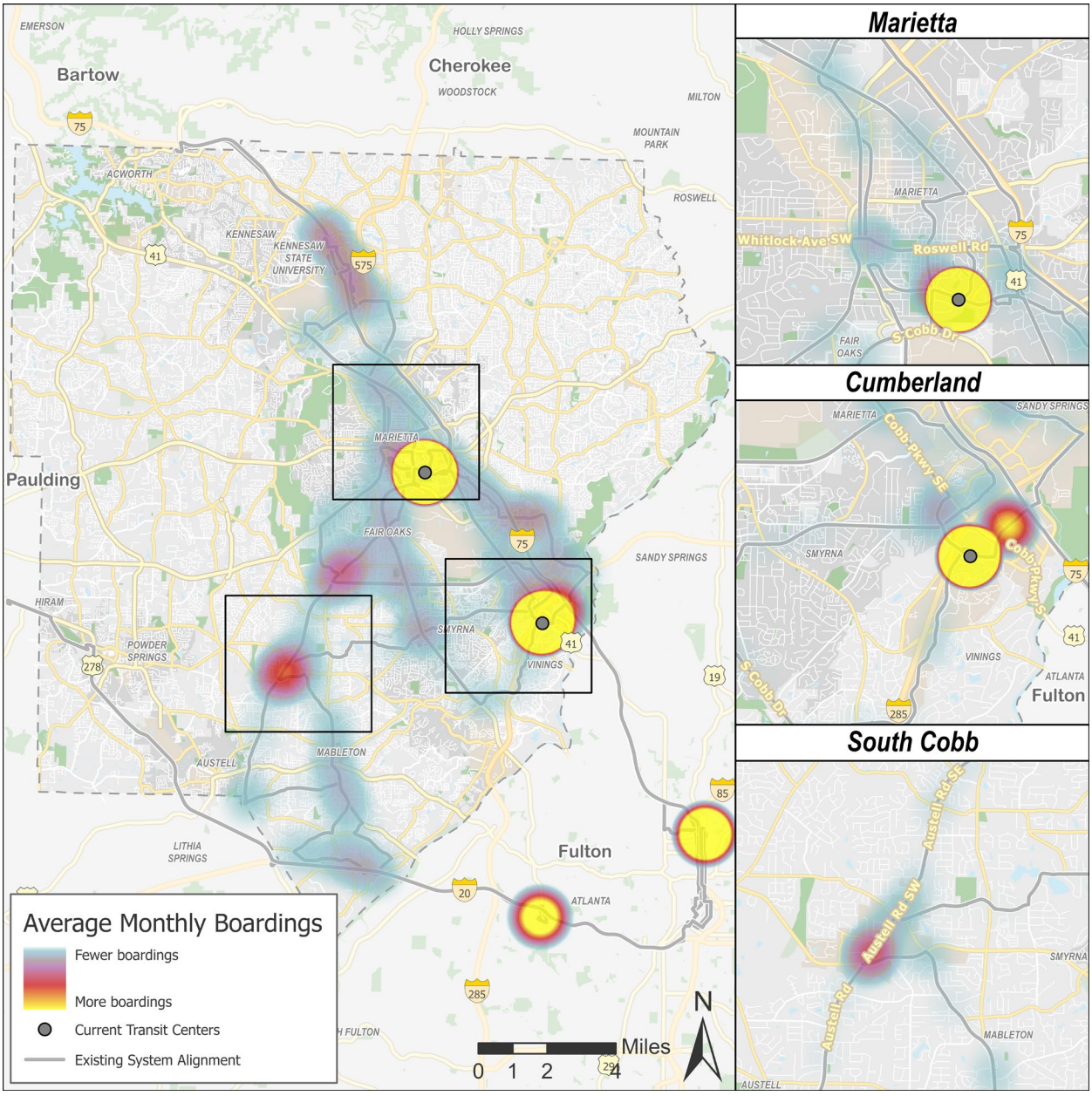
Figure 22: Existing CobbLinc Fixed-Route Transit Services



5.2 Transit Ridership

Figure 22 shows boardings on existing CobbLinc fixed route services as of 2022. In Cobb County, boardings are most common at the Marietta and Cumberland Transfer Centers, with notable secondary hot spots in South Cobb at Austell Road and Hospital South Drive (on routes 25 and 30) and Austell Road and Arkose Drive (on routes 15 and 30). Outside of Cobb County, the H.E. Holmes MARTA station (served by routes 10 and 102) and Arts Center MARTA station (served by routes 25 and 30) see large numbers of boardings; note that the boardings shown in the map are only CobbLinc boardings at these MARTA stations.

Figure 23: Heatmap of Existing Transit Ridership

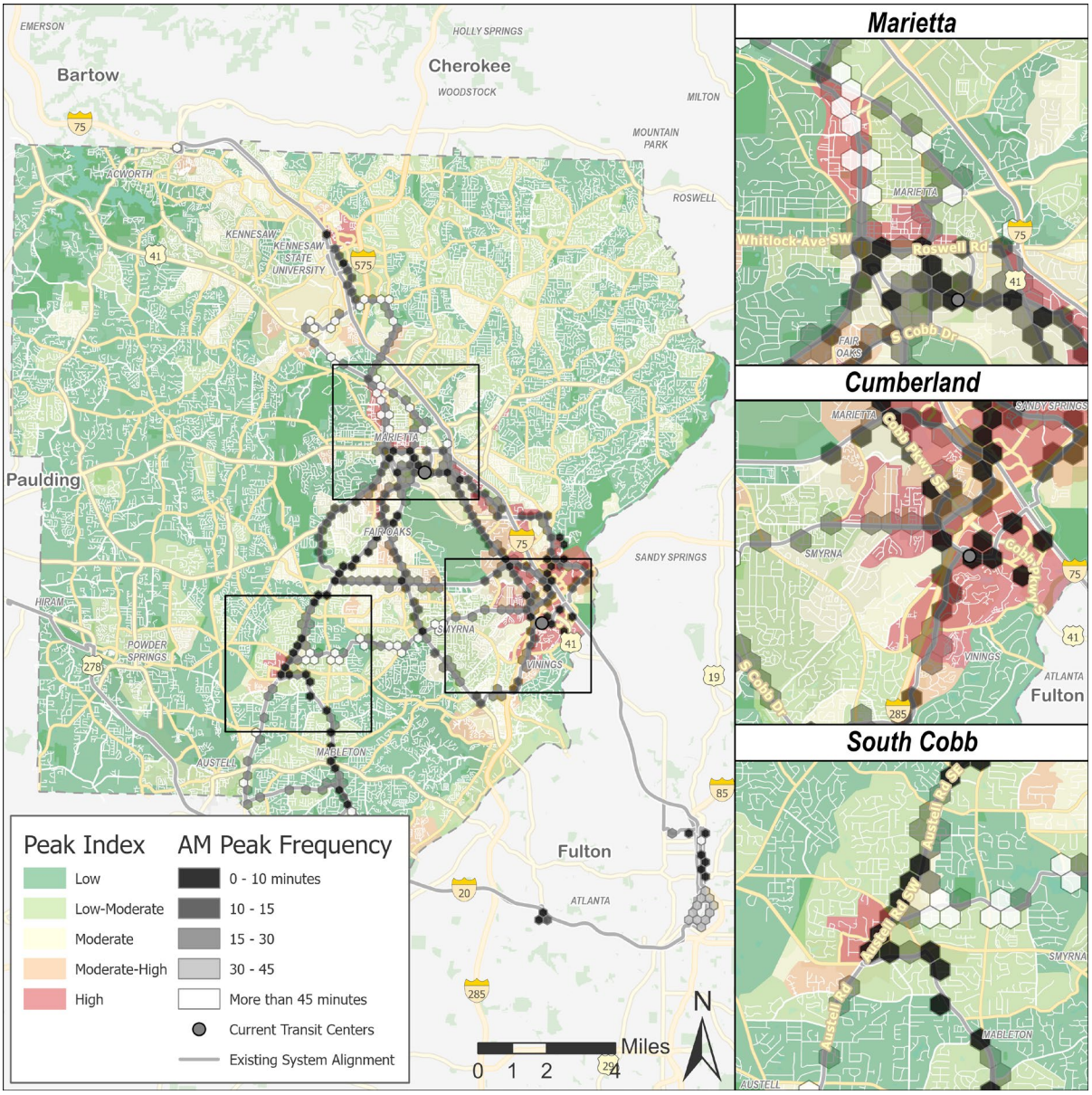


5.3 Service Frequency – AM Peak

Figure 23 shows existing morning peak frequencies mapped against a peak period transit propensity index. The Peak Index combines the Commuter Index (**Figure 12**) and the Employment Index (**Figure 13**) to identify areas that may be more suitable for peak period service linking workers to their jobs.

CobbLinc currently offers frequent peak period service that generally aligns with peak transit propensity in Cobb County. CobbLinc provides 15 minute or better morning peak frequencies on some north-south routes, with other service provided hourly or half-hourly throughout the day. Better frequencies occur where there are higher peak index values (in Marietta, Cumberland, and South Cobb), indicating that the areas with the highest suitability for peak transit service generally receive a high level of peak period service.

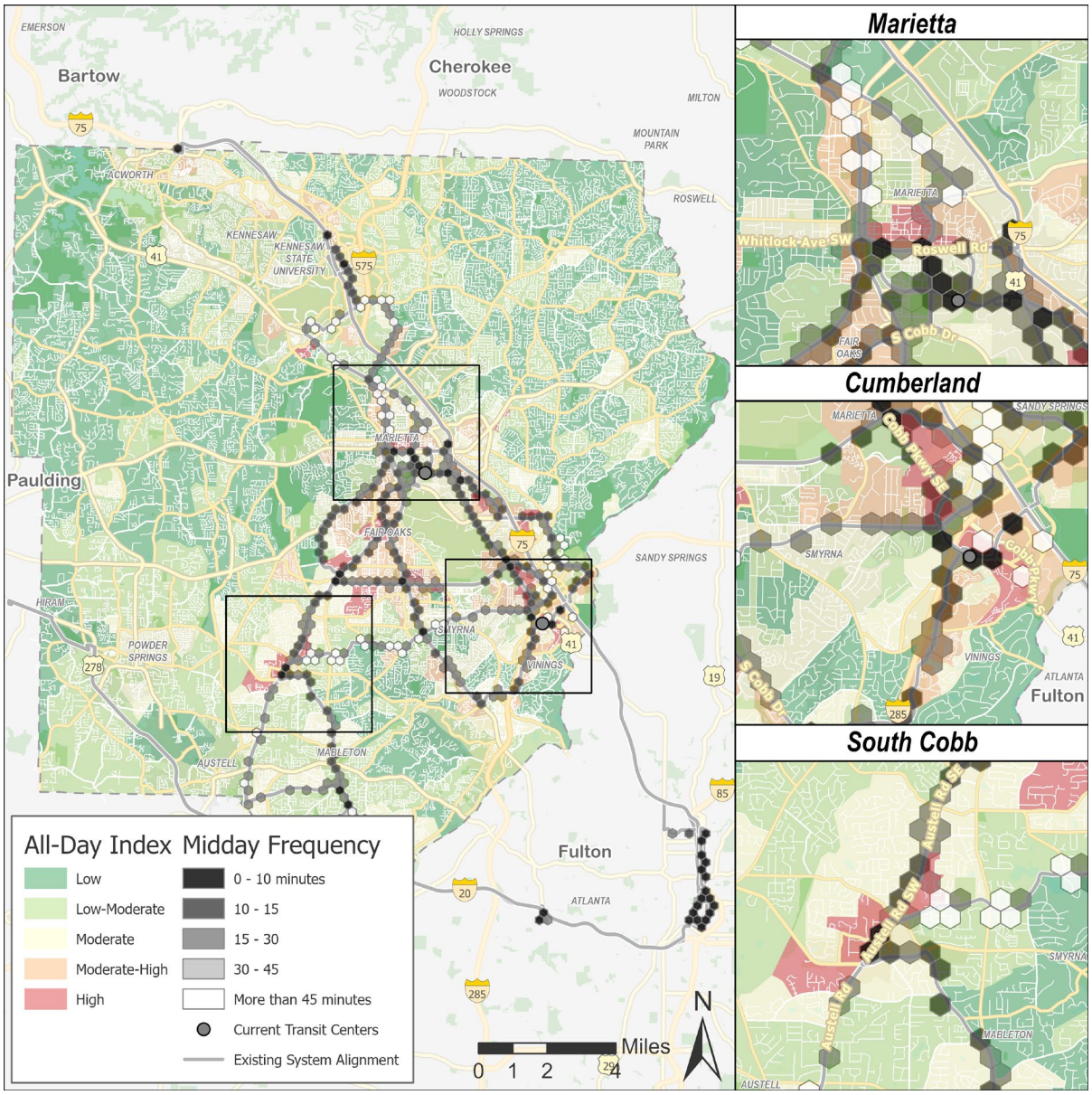
Figure 24: Morning Peak Service Frequency



5.4 Service Frequency – Midday

Figure 24 shows existing midday frequencies mapped against an all-day transit propensity index. The All-Day Index combines the Transit-Oriented Population (TOP) Index (**Figure 10**) and the Activity Index (**Figure 11**) to identify areas more suitable for all-day service that links frequent transit users to their daily needs. CobbLinc's current midday service generally provides more service to places with high All-Day Index values, including areas near the Cumberland Transfer Center, the Marietta Transfer Center, Wellstar Cobb Hospital in south Cobb County, and Kennesaw State University in north Cobb County.

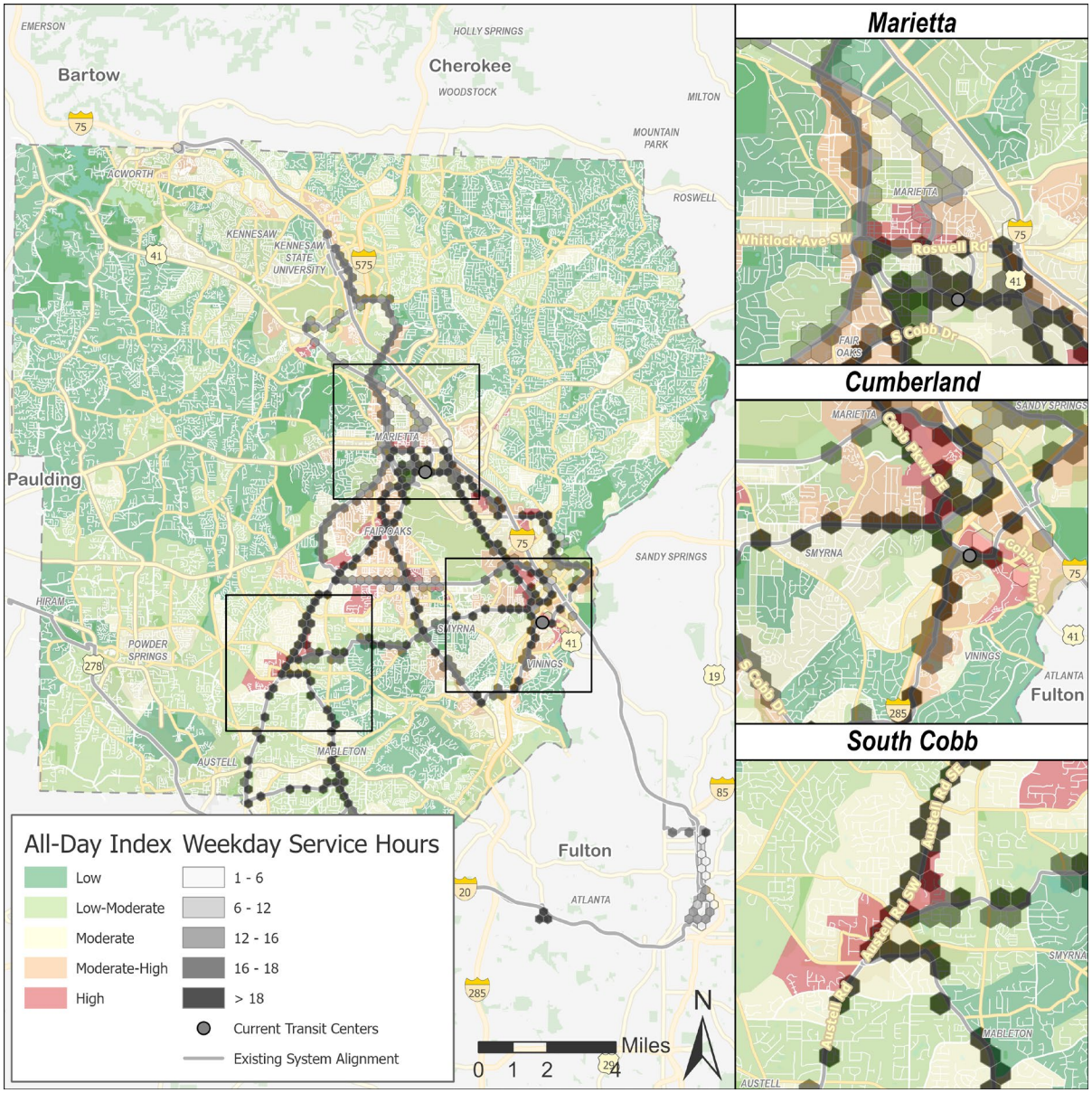
Figure 25: Midday Service Frequency



5.5 Service Spans

Figure 25 shows the span of CobbLinc service against the All-Day Index. Areas with higher All-Day Index values benefit from longer service spans, since they have residents who tend to use transit to access shopping destinations, medical services, government offices, and other services. Except for the circulators and express routes, most CobbLinc routes operate 17 to 18 hours a day, providing service from early morning to midnight to areas with high All-Day Index values. Some areas in central and north Cobb County show moderate-high All-Day Index values but receive service with a narrower span, indicating that those areas may be suited for a longer span of service than they currently receive.

Figure 26: Weekday Span



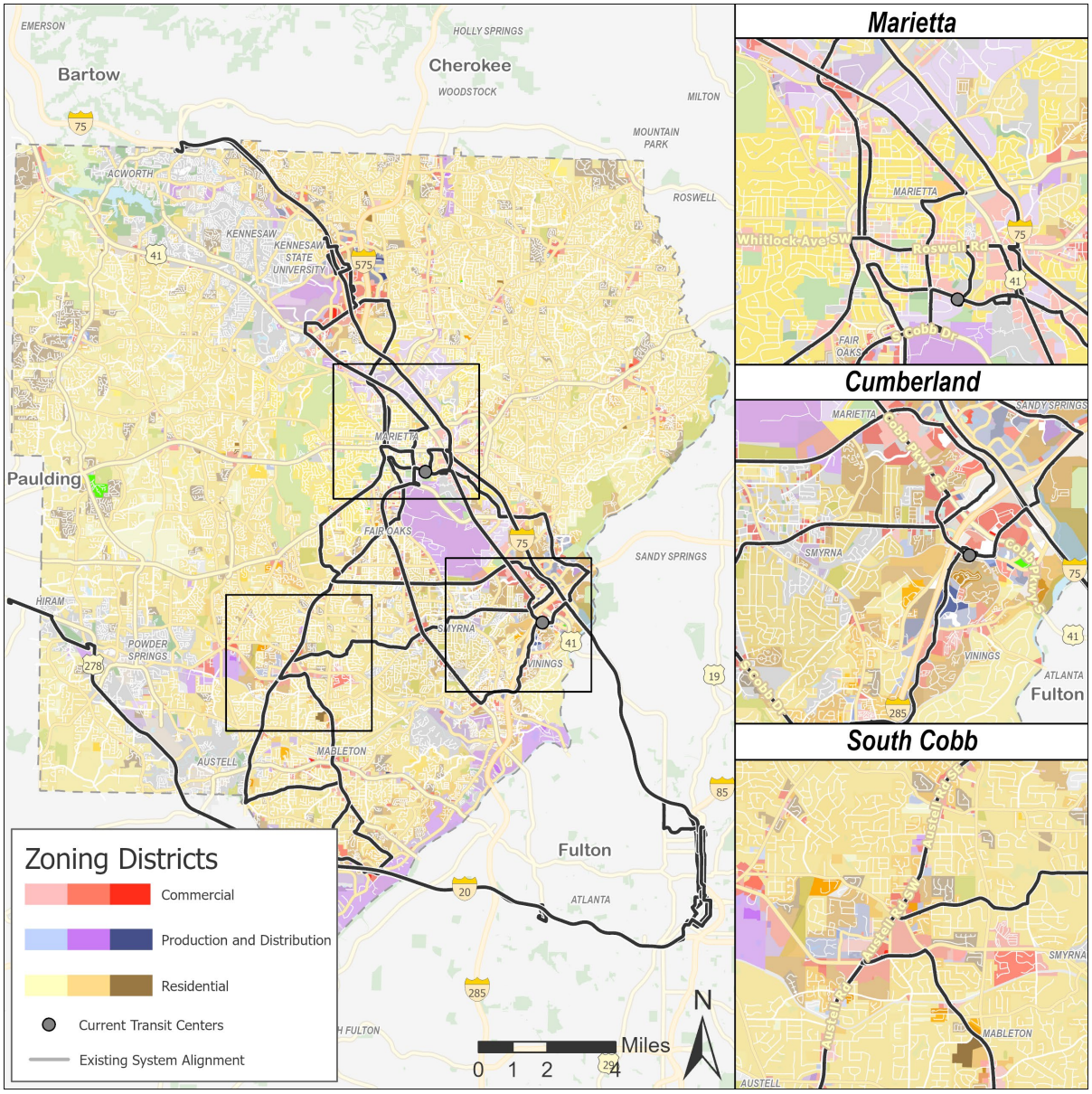
Section 6: Zoning and Land Use

Current and future land use data and zoning districts were obtained from Cobb County's website, and supplemented with more specific local data in Smyrna and Marietta. Current zoning shows what uses are "allowable" or "compatible" in a specific district, while land use shows how a specific area is currently being utilized; in many cases, land use and zoning align. Similar to analyzing population and employment data, an understanding of zoning and land use allows CobbLinc to determine where housing and job centers are, where major activity centers are, what uses are currently served by the system, and what additional need may be expected in the future. For determination of the location of new transit facilities, zoning shows areas of compatibility.

6.1 Zoning

Ideally, relocated or new transit facilities will be constructed on or near commercially zoned areas, and/or near higher density residential zones or employment ("Production and Distribution"). Locating a transit facility in this manner helps to provide riders access to key activity centers, jobs, and housing, and will likely provide service to the greatest number of riders. **Figure 26** details the existing zoning districts across the study region. The Marietta transit center sits in an area that is primarily zoned for production and distribution uses (as evidenced by the adjacent airport), however there is also light commercial zoning to the north of Dobbins Air Reserve Base and the transit center. The Cumberland transit center is located in an area that is zoned for much heavier residential and commercial use, with residential zoning extending far south of the transit center.

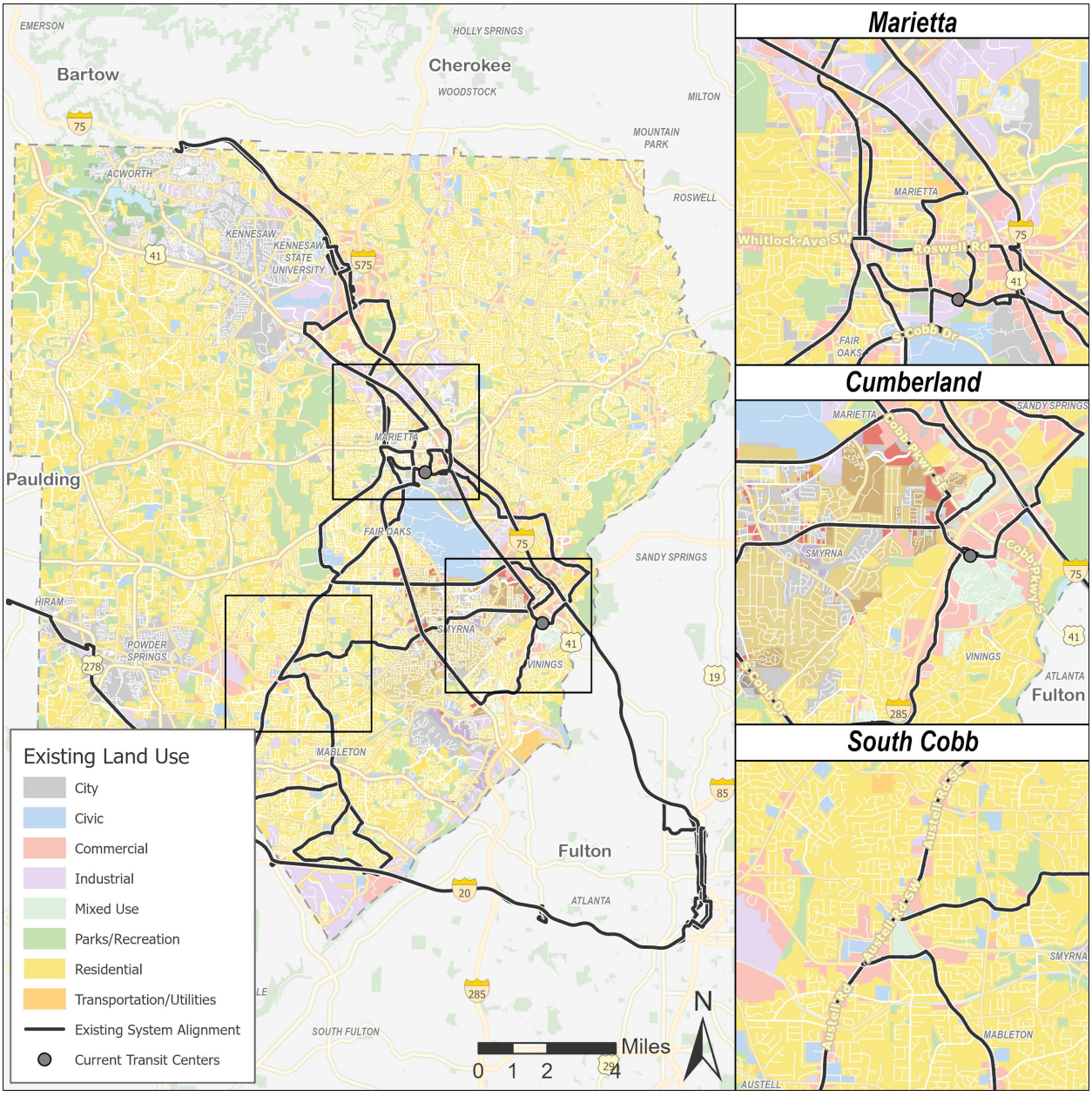
Figure 27: Zoning Districts



6.2 Current Land Use

It is often easier to build transit centers in "industrial" use areas, but "commercial" or "residential" areas are seen as more desirable from a user standpoint. In Cumberland there is a moderately high concentration of heavy commercial uses while west of South Cobb there are primarily transportation land uses. The actual area within the limits of Marietta is designated mostly as "city" and towards the northern end of the service area there is primarily a mix of land uses near Kennesaw State University. **Figure 27** shows the current land use patterns across the region. Aligned with the zoning described above, the Marietta transit center is surrounded by primarily industrial land uses, with some light commercial to the north and also civic uses to the south (Kennesaw State University - Marietta). The Cumberland transit center is surrounded primarily by mixed-uses, in addition to commercial land use, however the predominant land use near this transit center is residential.

Figure 28: Existing Land Use

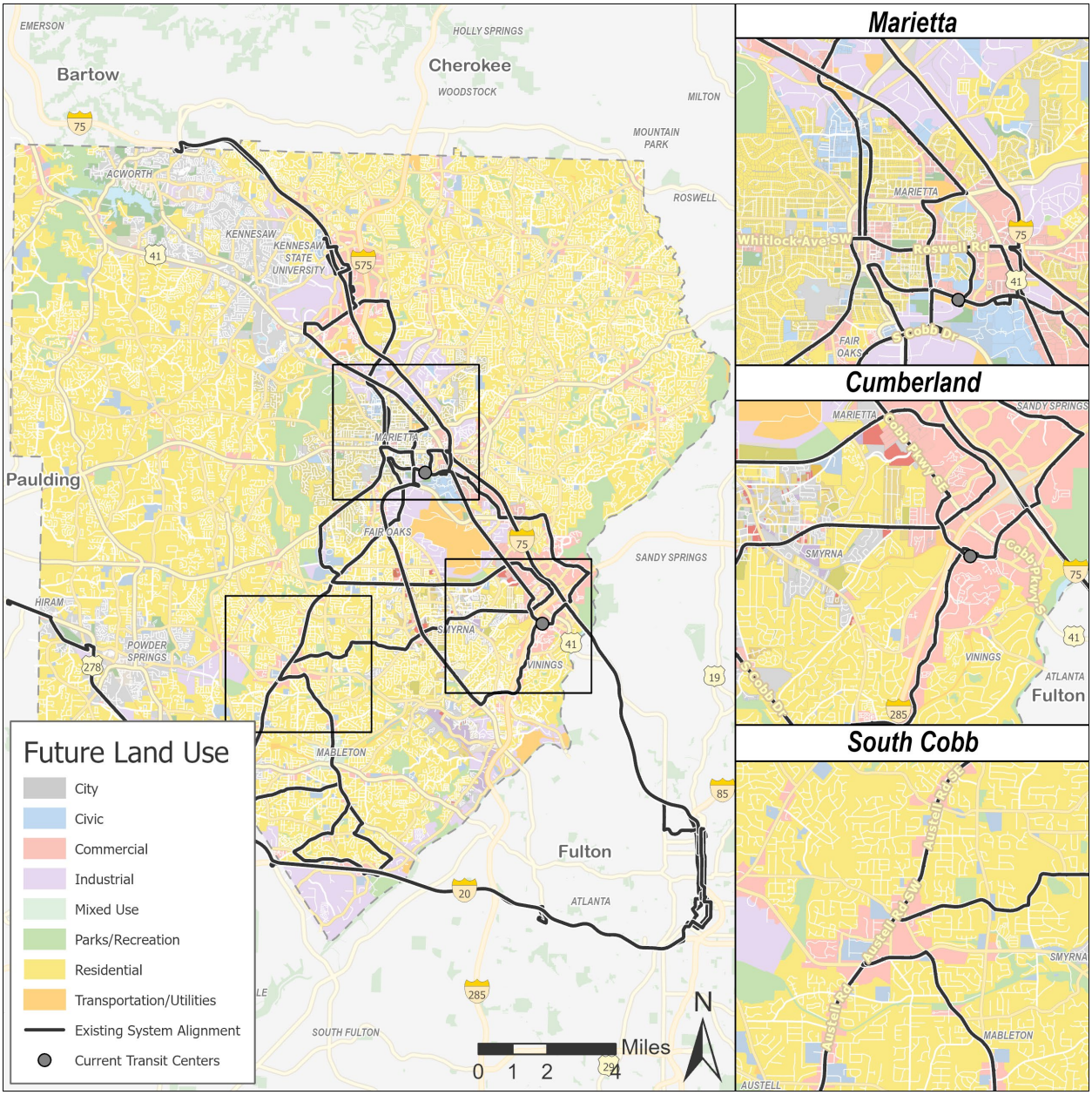


6.3 Future Land Use

Regarding future land uses, Cobb County has predicted a much greater mixture of uses compared to the current land uses. In general, there will be a greater mix of commercial uses with residential uses, most likely taking the form of mixed-use development combining retail and residential. Additionally, Cobb County forecasts far more civic designations which could represent the provision of more services for residents and more possible locations to be served by transit. **Figure 28** illustrates the future lane uses that are proposed across the study area. The future land use in Marietta presents a much greater diversity of uses near the transit center, with some park/recreation use shown in addition to commercial and residential uses. The future land use around the Marietta transit center suggests a safer and more

welcoming environment for CobbLinc riders. The projected future land use around the Cumberland transit center doesn't change as significantly as Marietta and instead expands on current land uses with a higher concentration of residential and commercial uses.

Figure 29: Future Land Uses



Section 7: Summary Findings

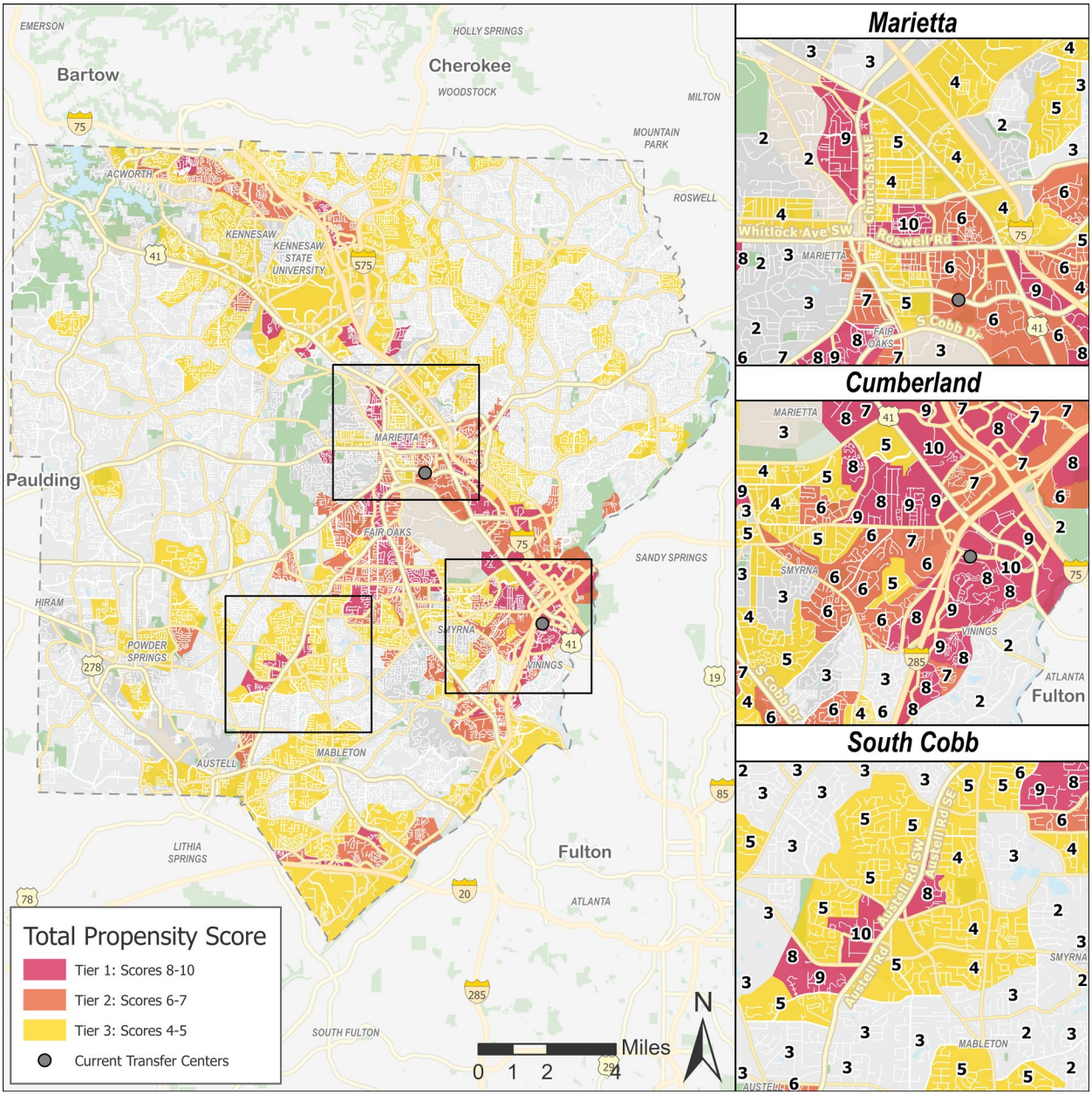
7.1 Scoring and General Findings by Area

To identify areas suitable for potential transfer center locations, the Peak Propensity Index (**Figure 23**) and All-Day Propensity Index (**Figure 24**) were combined to create a Total Propensity Score with a value between 2 and 10. Higher Total Propensity Score values indicate a block group is more suitable than other block groups for both peak period and all-day transit service. The All-Day Propensity metric, which is accounted for by combining the Transit-Oriented Population Propensity Index (Section 2.1) and the Activity Propensity Index (Section 2.2), considers the transit need of individuals who would more likely use transit throughout the day. The Peak Period Propensity metric considers the Commuter Propensity Index (Section 2.3) and the Employment Index (Section 2.4) in order to detail on where those who use transit to get to and from jobs live and work. This bivariate analysis considers both metrics at the same time in order to find locations that are significant for both transit uses.

Transfer centers located in these block groups will provide access to more jobs and services, maximizing the benefit to riders from CobbLinc's investment in new facilities.

Figure 30 shows the Total Propensity Score for all of Cobb County grouped by tier. For this needs assessment, block groups with scores between 8 and 10 are considered the top candidates (Tier 1 block groups), block groups with scores between 6 and 7 are considered the next best candidates (Tier 2 block groups), and block groups with scores between 4 and 5 are Tier 3 block groups. As potential sites are identified, locating transit centers within the areas of highest transit propensity or locations immediately adjacent to these higher scoring areas are most desirable.

Figure 30: All Day and Peak Propensity Scoring

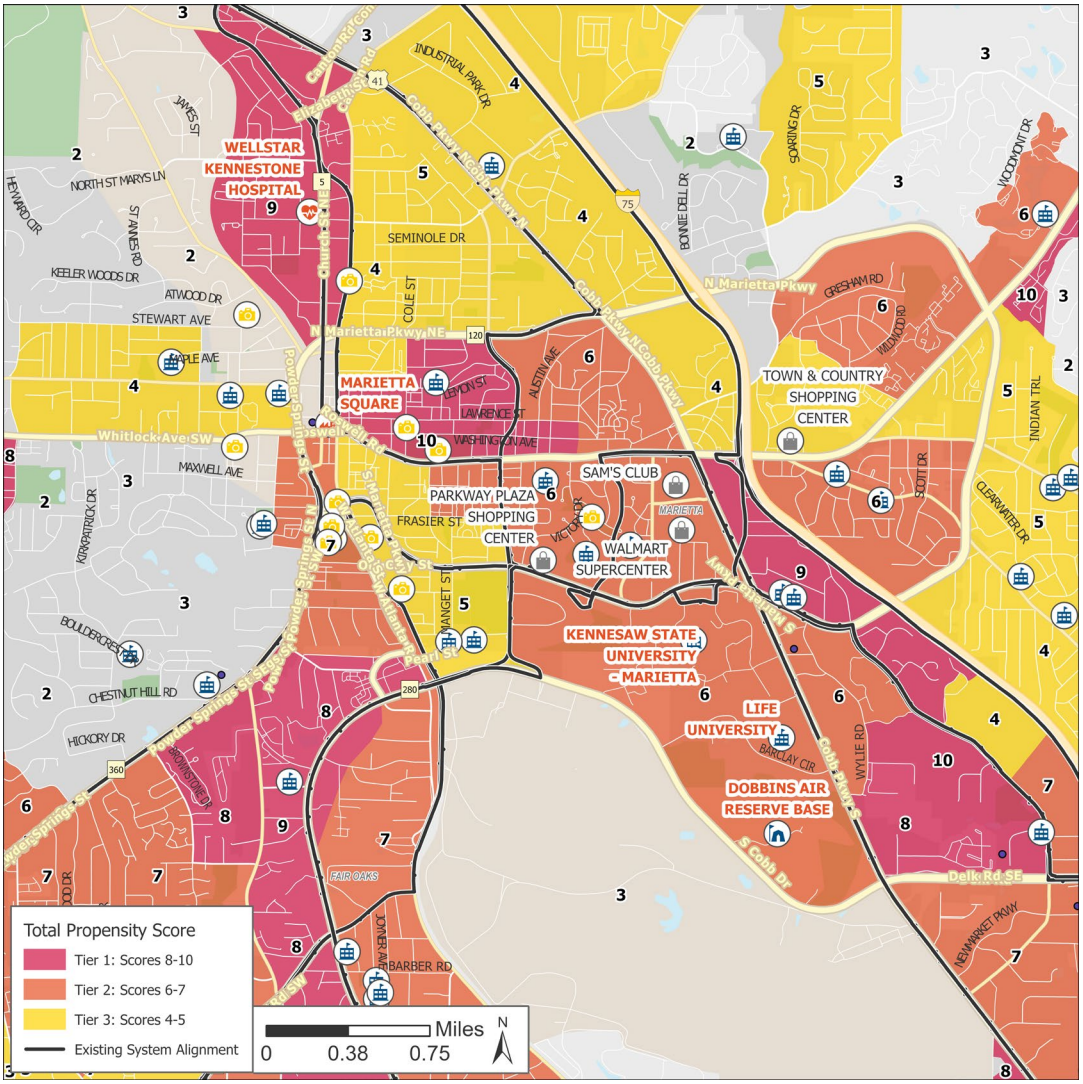


7.2.1 Marietta

Figure 31 provides a closer view of the Total Propensity Score near the existing Marietta Transfer Center on South Marietta Parkway. The block groups with the highest scores cover central Marietta between Roswell Street and North Marietta Parkway, with most other block groups within the Marietta Parkway loop falling into Tier 2. A transfer center closer to central Marietta may provide access to a larger number of destinations and potential transit users, particularly the many jobs located in downtown Marietta.

Marietta's existing transfer center is the source of many boardings on CobbLinc services. Existing transit service in the area has 10-to-15-minute headways and a long span of service. Marietta has higher densities in employment and population relative to the rest of the county; Marietta's location as the geographic center of the county as well as its walkable downtown area are also strong considerations for a transit center near the downtown.

Figure 31: All Day and Peak Propensity Scoring near Marietta Transfer Center



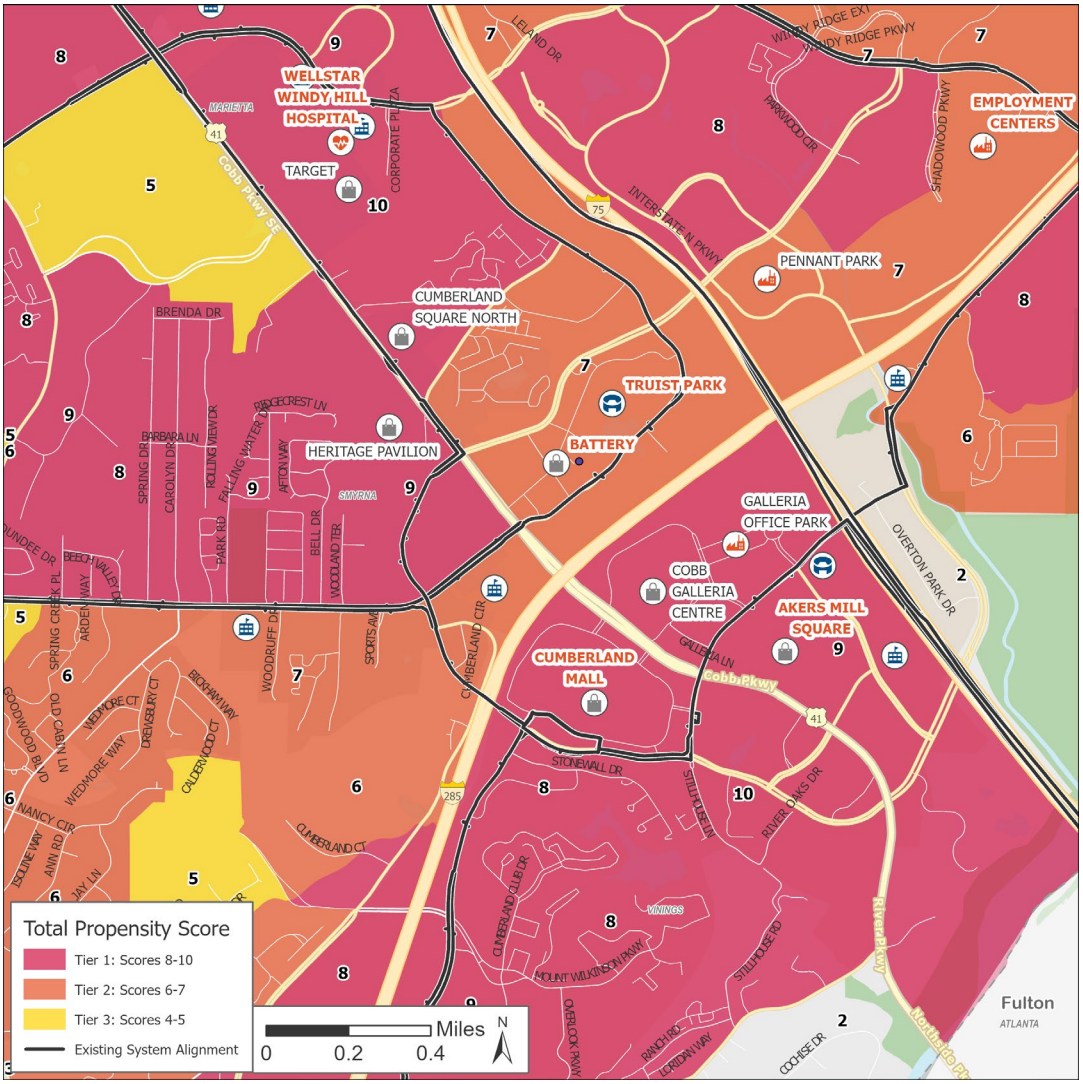
7.2.2 Cumberland

Cumberland is the retail and employment center of the county and an anchor for the region. **Figure 32** shows the Total Propensity Scores for block groups near the existing Cumberland Transfer Center on Cumberland Boulevard. Almost all block groups near the existing transfer center fall into either Tier 1 or Tier 2, indicating the presence of large numbers of jobs, service providers, and potential transit users. Cumberland along US Highway 41 features many employment destinations and service providers, including major destinations like the Truist Park. The Cumberland area is well developed with transit and transportation needs that expand beyond typical peak/non-peak periods, including activity generators such as:

- Truist Park, with demand driven by the attendance at the Atlanta Braves home games as they play their Major League Baseball opponents (81 games per year, typically played later in the day or on weekends; average attendance for 2022 games: 38,641) and major concerts (five concerts held between June and August 2022; attendance range: 36,140-38,207).
- Coca Cola Roxy Theater, a smaller concert venue which hosts approximately 40 events per year and has a capacity of 4,000.
- Cobb Energy Performing Arts Centre, a major venue for theater, plays, and other live performances and has a capacity of 2,750.
- Galleria Convention Center, which hosts major trade shows, conventions, and conferences, which has nearly 150,000 square feet of exhibition space, 20,000 square feet of meeting space, and a 25,000 square foot ballroom which can host 4,000 people.

The area also features multifamily and dense single family residential development. Based on travel patterns and major employment centers nearby, Cumberland is well-suited for a regional transit hub.

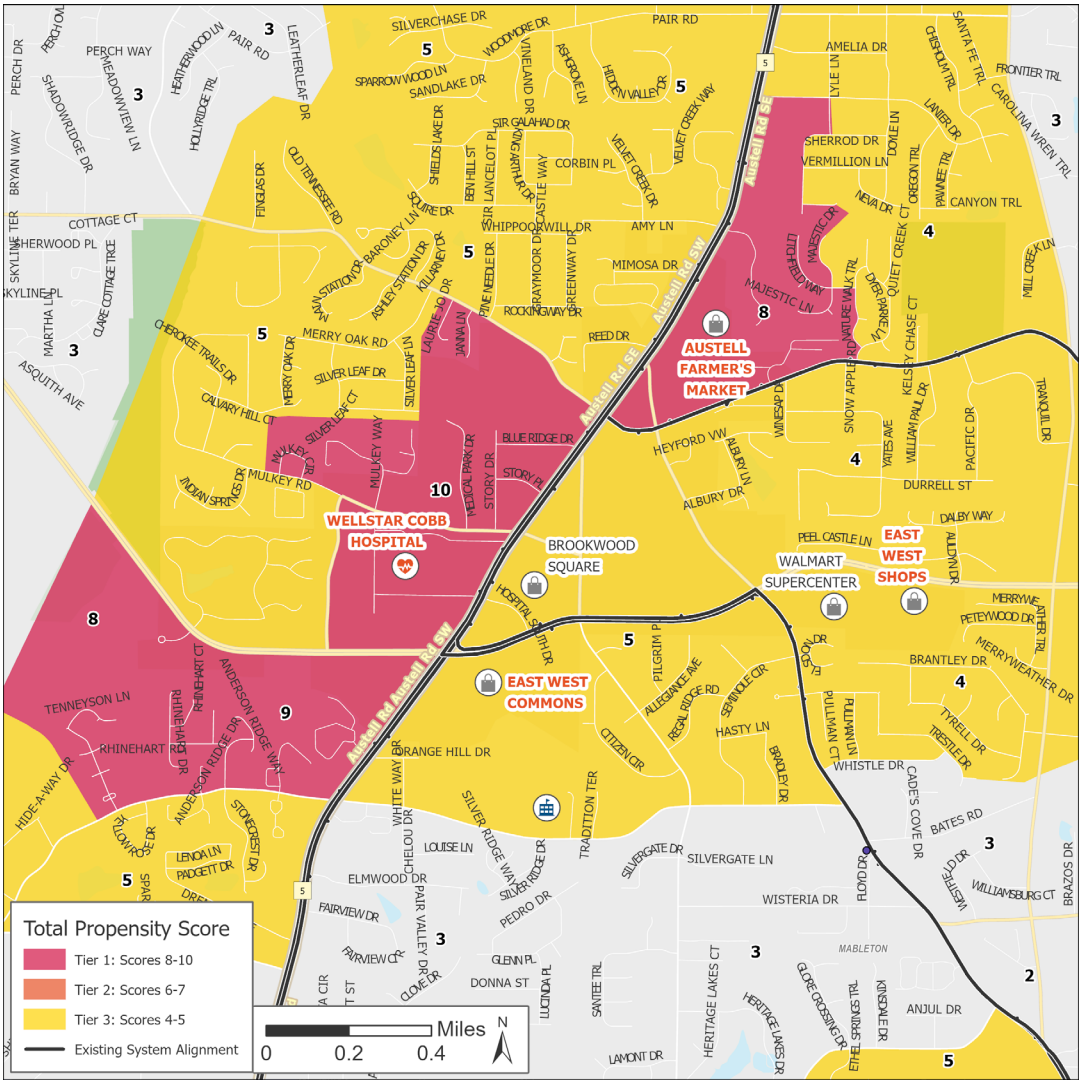
Figure 32: All Day and Peak Propensity Scoring near Cumberland Transfer Center



7.2.3 South Cobb

Figure 33 shows the Total Propensity Score in South Cobb at the intersection of the East-West Connector and Austell Road, where CobbLinc's routes 25 and 30 run together along Austell Road between the East-West Connector and Hurt Road. Most block groups along Austell Road fall into either Tier 1 or Tier 2, with notably strong candidates in the block groups to the west of Austell Road that contain the Wellstar Cobb Hospital, other medical service providers, multiple commercial plazas, and some residential developments. A transfer center near the East-West Connector and Austell Road intersection would be well placed to serve these high-propensity block groups. The South Cobb area is a gateway to expected future growth in the south and west of Cobb County; there is potential here for a neighborhood hub that could facilitate future expansion of fixed-route service to build on CobbLinc's Flex Service in South Cobb.

Figure 33: All Day and Peak Propensity Scoring in South Cobb



Section 8: Assessment of Operational Changes with Transit Center Implementation

By combining the Total Propensity Score analysis with qualitative information gleaned from fields visits and discussions with stakeholders, the study team selected generalized locations at key intersection/interchanges (i.e., one for each study area) in order to evaluate potential additional impact assessments from the relocation of Cumberland and Marietta transit centers and the addition of a South Cobb facility. These locations were determined based on the tiered information and scoring analysis of the most ideal transit center areas. The specific locations used for the analyses are not at this time proposed as study recommendations but are merely being used so that estimates could be made regarding potential operating impacts.

To estimate possible demographic and operational impacts, route alignments for CobbLinc's existing service were adjusted to serve each of the key intersections.[1] To estimate demographic impacts, a ¼-mile buffer was created around the existing and modified alignments, and the buffers were intersected with demographic data from the 2016-2020 Five-Year American Community Survey. To estimate operational impacts, the route lengths for each existing and modified route were calculated and compared.

8.1 Demographic and Alignment Impacts

Table 8 shows the total population in block groups within ¼-mile of CobbLinc routes and in all of Cobb County. The service area block groups and Cobb County as a whole have a similar minority population proportion, and they have a higher low-income population proportion by about five percentage points. Adjusting route alignments to serve key intersection locations caused no change in the block groups within ¼-mile of CobbLinc routes. In other words, roughly the same population will live within the CobbLinc service area under both the existing and modified alignments.

Table 9 shows the routes serving each transfer center, as well as the anticipated changes in route lengths as a result of serving the key intersection locations. Alignment changes to serve the key intersection locations result in a 4.3 mile increase in total route length. Route length changes vary by route, as summarized by area in the following sections.

Table 8: Service Area Demographics

		Minority Population	Low-Income Population	Total Population
CobbLinc Service Area (1/4-mile)	Count	160,814	70,448	337,032
	Percent	48%	21%	100%

[1] Existing alignments are current as of December, 2022.

Cobb County	Count	370,545	115,702	756,653
	Percent	49%	15%	100%

Table 9: Route Length Change to Serve Key Intersection Locations

Service Type	Route Name	Transfer Center(s)			Route Length (Round Trip Miles)		
		Marietta	Cumberland	South Cobb	Existing	Modified	Change
Local	10	●	●		34.1	38.3	+ 4.2
	Rapid 10	●	●		54.6	59.8	+ 5.1
	15	●	●		32.6	26.9	- 5.7
	20	●	●		26.6	30.4	+ 3.7
	25		●	●	52.0	51.7	- 0.2
	30	●		●	51.9	50.3	- 1.6
	40	●			21.9	17.4	- 4.5
	45	●			24.5	24.7	+ 0.2
	50	●	●		21.4	23.1	+ 1.8
Express	100				53.1	53.1	-
	101	●			41.2	42.5	+ 1.3
	102				56.3	56.3	-
TOTAL	-	-	-	-	470.2	474.5	+ 4.3

8.2 Area Summary

Marietta

Routes serving the current Marietta Transfer Center were realigned to a key intersection downtown, resulting in decreased route lengths for routes like the 15 and 40 and increased route lengths for the 10 (and Rapid 10), 20, 50, and 101 (**Table 10**). If those routes' service along South Marietta Parkway is retained, the route length savings will be smaller, and the increases will be larger.

Table 10: Route Length Change in Routes Serving Marietta Transfer Center

Service Type	Route Name	Transfer Center(s)			Route Length (Round Trip Miles)		
		Marietta	Cumberland	South Cobb	Existing	Modified	Change
Local	10	●	●		34.1	38.3	+ 4.2
	Rapid 10	●	●		54.6	59.8	+ 5.1
	15	●	●		32.6	26.9	- 5.7
	20	●	●		26.6	30.4	+ 3.7
	30	●		●	51.9	50.3	- 1.6
	40	●			21.9	17.4	- 4.5
	45	●			24.5	24.7	+ 0.2
	50	●	●		21.4	23.1	+ 1.8

Express	101	●			41.2	42.5	+ 1.3
TOTAL	-	-	-	-	308.8	313.4	+ 4.6

Cumberland

The Cumberland Transfer Center routes were realigned to an intersection near Truist Park this hypothetical location requires less significant alignment changes. Except for the 10 and Rapid 10, routes serving the existing Cumberland Transfer Center on Cumberland Boulevard are assumed to be realigned to terminate or originate on Circle 75 Parkway. The 10, Rapid 10, and 20 increase in length to run along Circle 75 Parkway, which they do not currently serve. The 15 shortens, because it no longer continues to Cumberland Boulevard along Spring Road. Route lengths for all routes serving the Cumberland Transfer Center are shown in **Table 11**.

Table 11: Route Length Change in Routes Serving Cumberland Transfer Center

Service Type	Route Name	Transfer Center(s)			Route Length (Round Trip Miles)		
		Marietta	Cumberland	South Cobb	Existing	Modified	Change
Local	10	●	●		34.1	38.3	+ 4.2
	Rapid 10	●	●		54.6	59.8	+ 5.1
	15	●	●		32.6	26.9	- 5.7
	20	●	●		26.6	30.4	+ 3.7
	25		●	●	52.0	51.7	- 0.2
	50	●	●		21.4	23.1	+ 1.8
TOTAL	-	-	-	-	221.3	230.2	8.9

South Cobb

The South Cobb Transfer Center scenario routed through the intersection of East-West Connector and Austell Road, near the Wellstar Cobb Hospital (**Figure 37**). This scenario would cause no change in route length for either the 25 or 30, which currently serve this intersection. However, both routes would see route length decreases due to realignments at the other realigned transfer center scenarios. The 30 would see route lengths savings due to a more direct route into and out of the Marietta Transfer Center, and the 25 would decrease slightly as a result of serving the potential Cumberland Transfer Center on Circle 75 Parkway.

Table 12: Route Length Change in Routes Serving South Cobb Transfer Center

Service Type	Route Name	Transfer Center(s)			Route Length (Round Trip Miles)		
		Marietta	Cumberland	South Cobb	Existing	Modified	Change
	25		●	●	52.0	51.7	- 0.2
	30	●		●	51.9	50.3	- 1.6
TOTAL	-	-	-	-	103.9	102	- 1.9

Section 9: Next Steps

This technical memorandum, as a key element of the Phase 1 transit centers study, will help to further identify the potential transit center locations for each of the three Site Selection (Phase 2) studies for Marietta, Cumberland, and South Cobb. Additional land use, economic, and environmental justice assessments will have to be prepared, and funding considerations, availability, and terms will need to be further examined.

A second technical memorandum for the Phase 1 study will cover facility recommendations and the necessary supporting elements for each of the transit centers. This will also inform the evaluation criteria for screening and evaluating candidate sites for each facility, which will be formed in Phase 1, and refined in Phase 2.