CHATS Long Range Transportation Plan
Transit Needs Assessment

Revision 3

October 31, 2017

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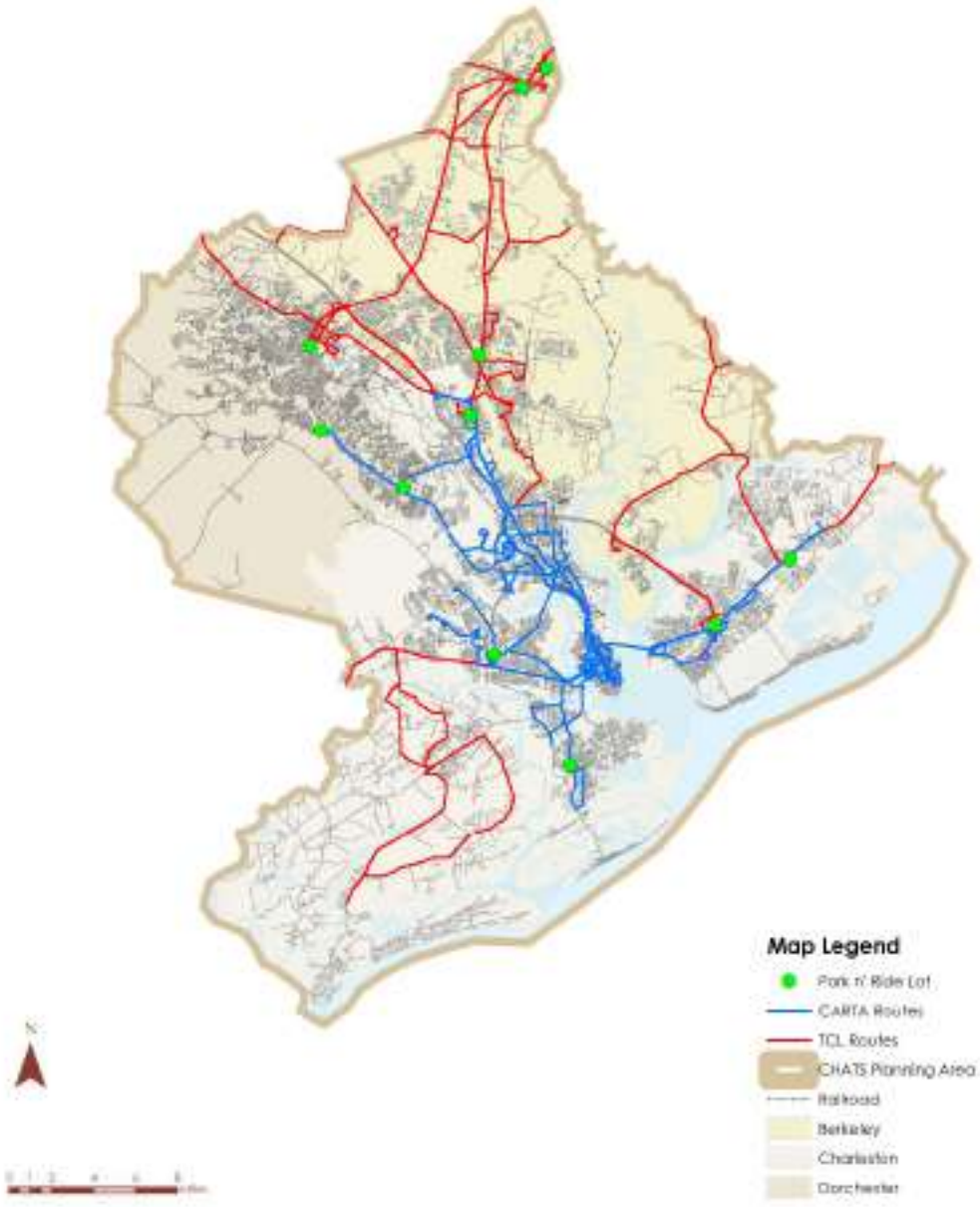
1. Introduction

This document provides an overview of the existing public transit services in the Charleston Area Transportation Study (CHATS) planning area and an assessment of long-range transit needs for the region. Public transportation services in the BCD region are primarily provided by two agencies: the Charleston Area Regional Transportation Authority (CARTA) and the Berkeley-Charleston-Dorchester Regional Transportation Management Association (RTMA, d.b.a. TriCounty Link). CARTA primarily serves the urban core of the region with fixed route, commuter bus, and paratransit services, while TriCounty Link (TCL) serves the rural areas of the region with deviated fixed route and commuter services. ***Figure 1*** illustrates the CARTA and TCL route networks within the CHATS planning area.

Figure 1: Existing CARTA and TCL Route Networks and Park-and-Ride Lots



2. Existing Transit Conditions in the Charleston Region

This section provides an overview and description of the existing transit conditions in the Charleston region. The demographic and socioeconomic factors that influence demand for transit and the funding and governance, operational, and performance characteristics of CARTA and TCL are discussed below.

2.1. Drivers of Transit Demand

There are several key determinants that predict where transit will be successful, including population and employment density and socioeconomic characteristics. Population and employment densities influence how many people are able to access transit and ultimately influence the level of service that can be supported in a given area. Socioeconomic characteristics such as household income, access to automobiles, age, physical disabilities, and minority status are also significant drivers of demand for public transportation. Areas with higher concentrations of these indicators tend to have the best success at generating transit ridership.

To assess these key determinants of transit demand, demographic data for the counties of Berkeley, Charleston, and Dorchester were collected and analyzed via cartographic visualization in GIS. Population and employment density and percent change for the years 2015 and 2040 are shown in ***Figures 2*** through ***7***. Additionally, demographic groups that tend to demonstrate high propensity for transit use were mapped, revealing locations throughout the region where transit access is especially important to the local population. These indicators are presented as percentages of total population in ***Figures 8*** through ***12***, and include households below the poverty threshold, minority population, households with no access to a vehicle, working age (20 to 64) population with a disability, and population less than 18 or greater than 64 years of age. This analysis led to several key observations, outlined below.

- In 2015, the greatest population density is in Downtown Charleston. Some additional areas with moderate population density exist just outside of downtown, in North Charleston and West Ashley. Hanahan, Goose Creek, and the Rivers Avenue corridor also show some pockets of relatively high population density.
- By 2040, nearly the entire region is expected to increase in population. The greatest percentage increases will be in downtown Charleston, North Charleston, West Ashley, Mount Pleasant/East Cooper, and the portions of the northern areas of the study area in and around Goose Creek, Ladson, and Hanahan.
- Areas of high employment density in 2015 include Downtown Charleston, The Citadel Mall area, and Mount Pleasant/Patriots Point. North of downtown, the City of North Charleston,

Charleston International Airport, and the Ashley Shores areas all have concentrated employment. The Rivers Ave corridor has long stretches of employment density as well.

- Transitioning into 2040, employment is expected in increase across the study area almost universally. The largest areas of employment increase by percent change are in downtown Charleston, West Ashley, and the I-26 corridor from North Charleston to Summerville.
- There is a clear trend of households below the poverty threshold in Downtown Charleston, extending north to North Charleston and along I-26. There is also a large section of southwestern Dorchester County that has a high percentage of households in poverty.
- There are several areas of concentrated minority populations throughout the region. Most of the northernmost section of Charleston County, north of Ashley River, has a high percentage of minority population. This trend continues towards, but does not include, the southern portion of Downtown Charleston.
- Most block groups in the three-county study area have a high percentage of households with access to vehicles. Small pockets of concentrations of zero-vehicle households exist near Patriots Point in Mount Pleasant, North Charleston, and near the Citadel Mall in West Ashley.
- The highest concentrations of persons with disabilities exist in North Charleston, with small pockets of high percentages of disabled populations near Moncks Corner, Summerville, Johns Island, and West Ashley.
- Populations with a high percentage aged less than 18 or greater than 64 are generally evenly dispersed throughout the study area. Some small areas with high percentage of this group are located in the Neck Area and along Dorchester Road in North Charleston, near Summerville, Goose Creek, Moncks Corner, and Mount Pleasant, and on Isle of Palms.

In general, most areas showing high percentages of traditionally transit-dependent populations are currently served by either CARTA or TCL, especially when density is taken into consideration. For example, while some large block groups in rural parts of the CHATS planning area show high incidences of certain transit dependent populations, the total population in those areas tends to be low and thus difficult to efficiently serve with fixed route transit.

Figure 2: 2015 Population Density (Source: BCDCOG)

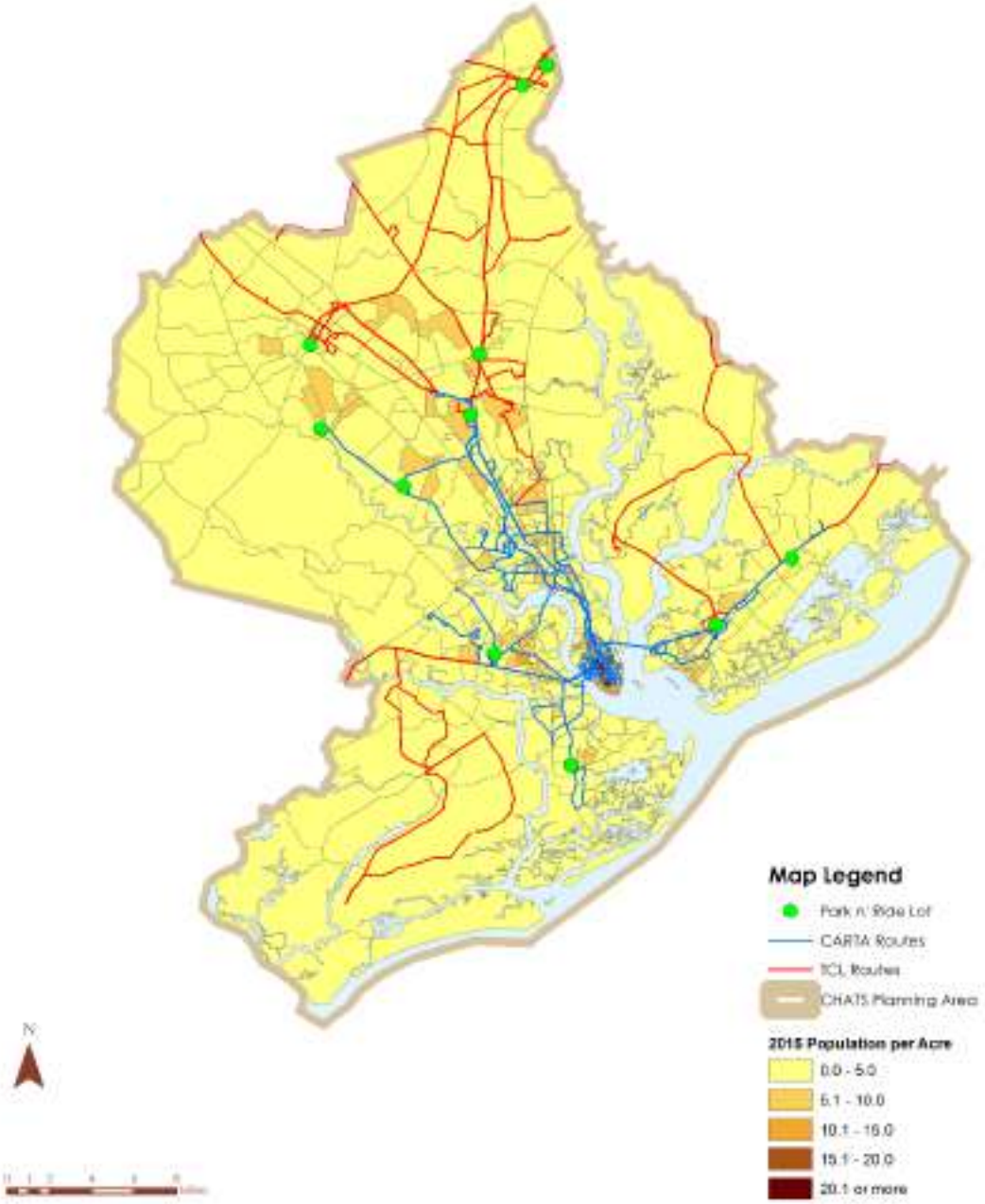


Figure 3: 2040 Population Density (Source: BCDCOG)

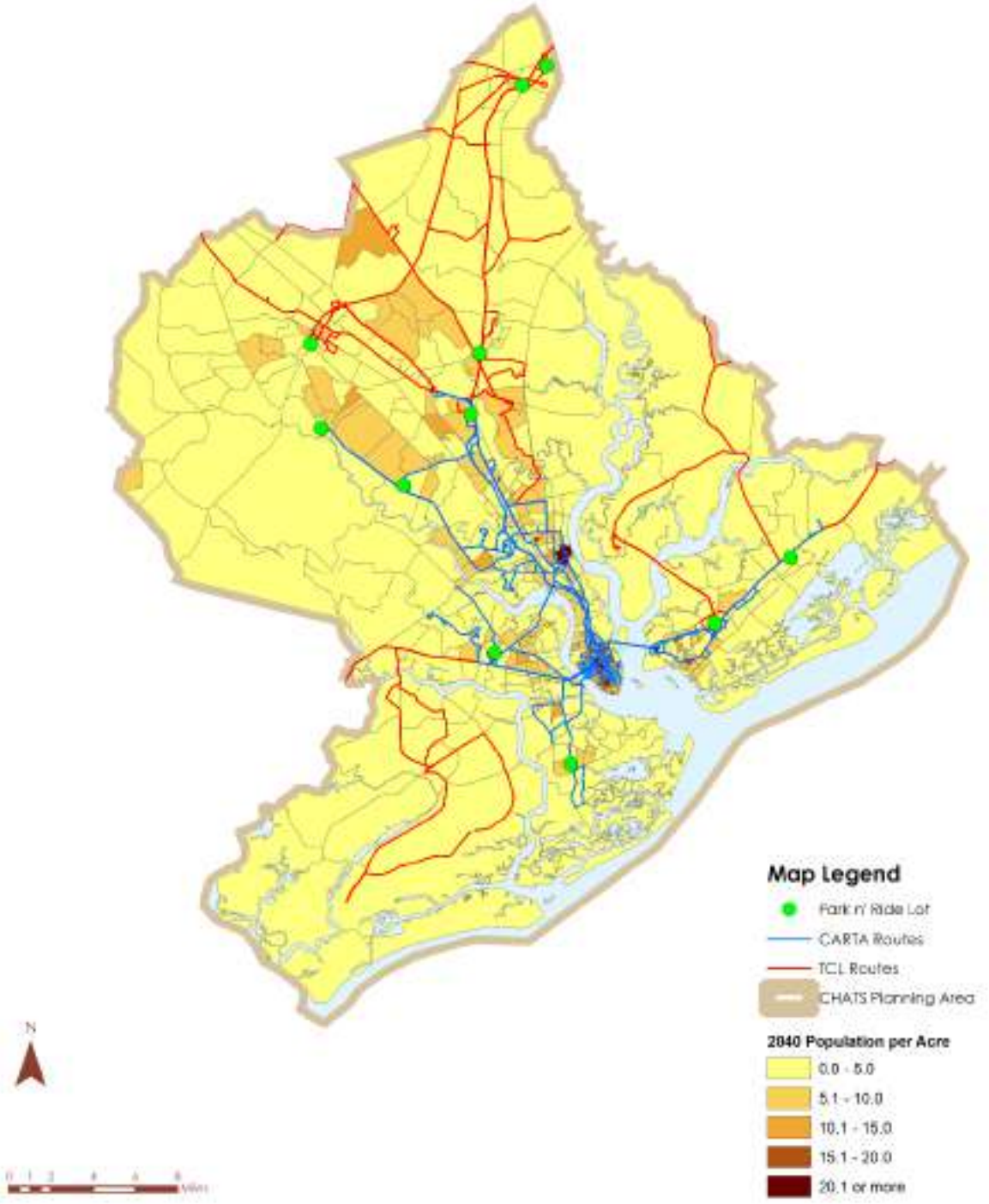


Figure 4: Estimated Percent Change in Population, 2015-2040 (Source: BCDCOG)

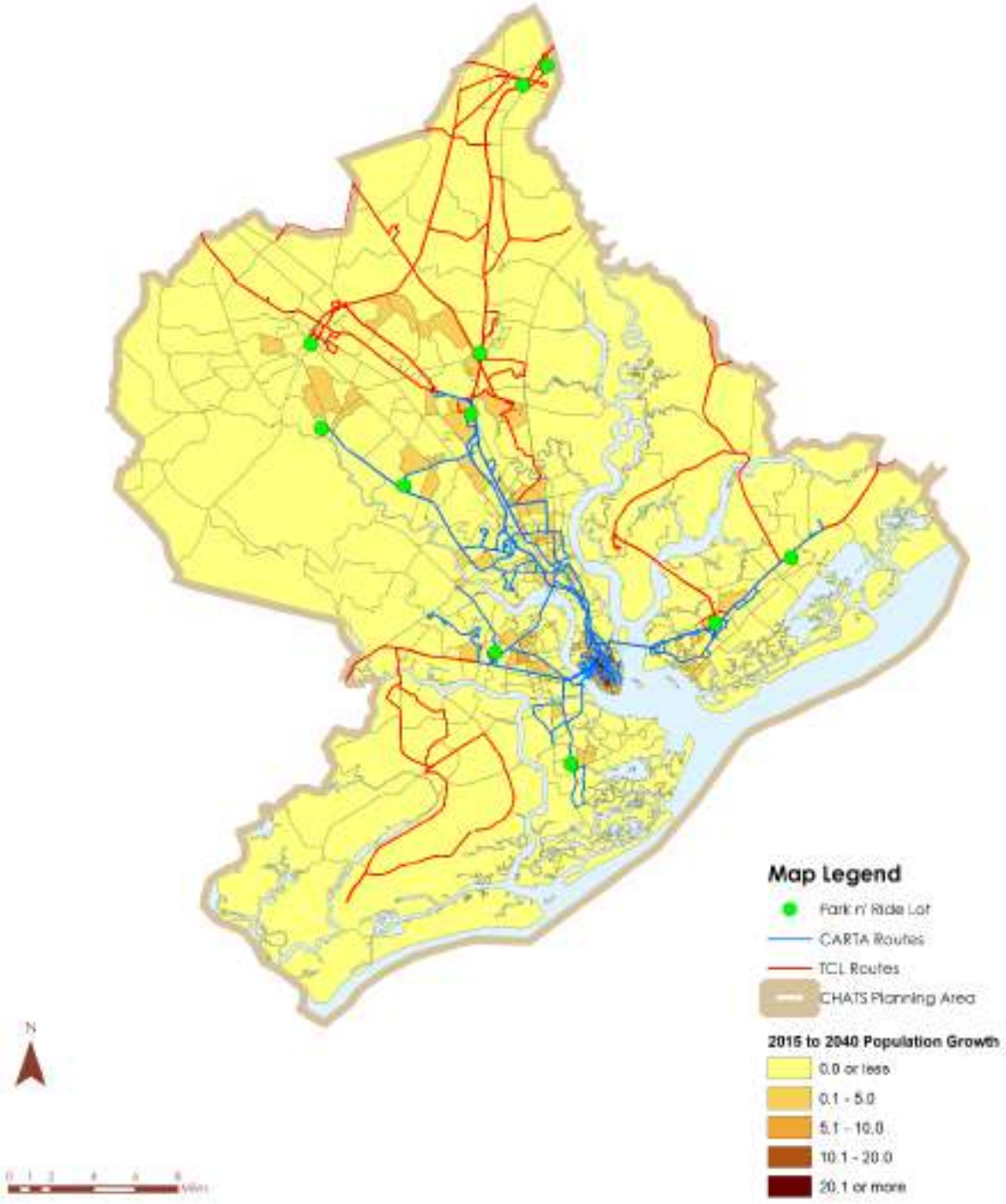


Figure 5: 2015 Employment Density (Source: BCDCOG)

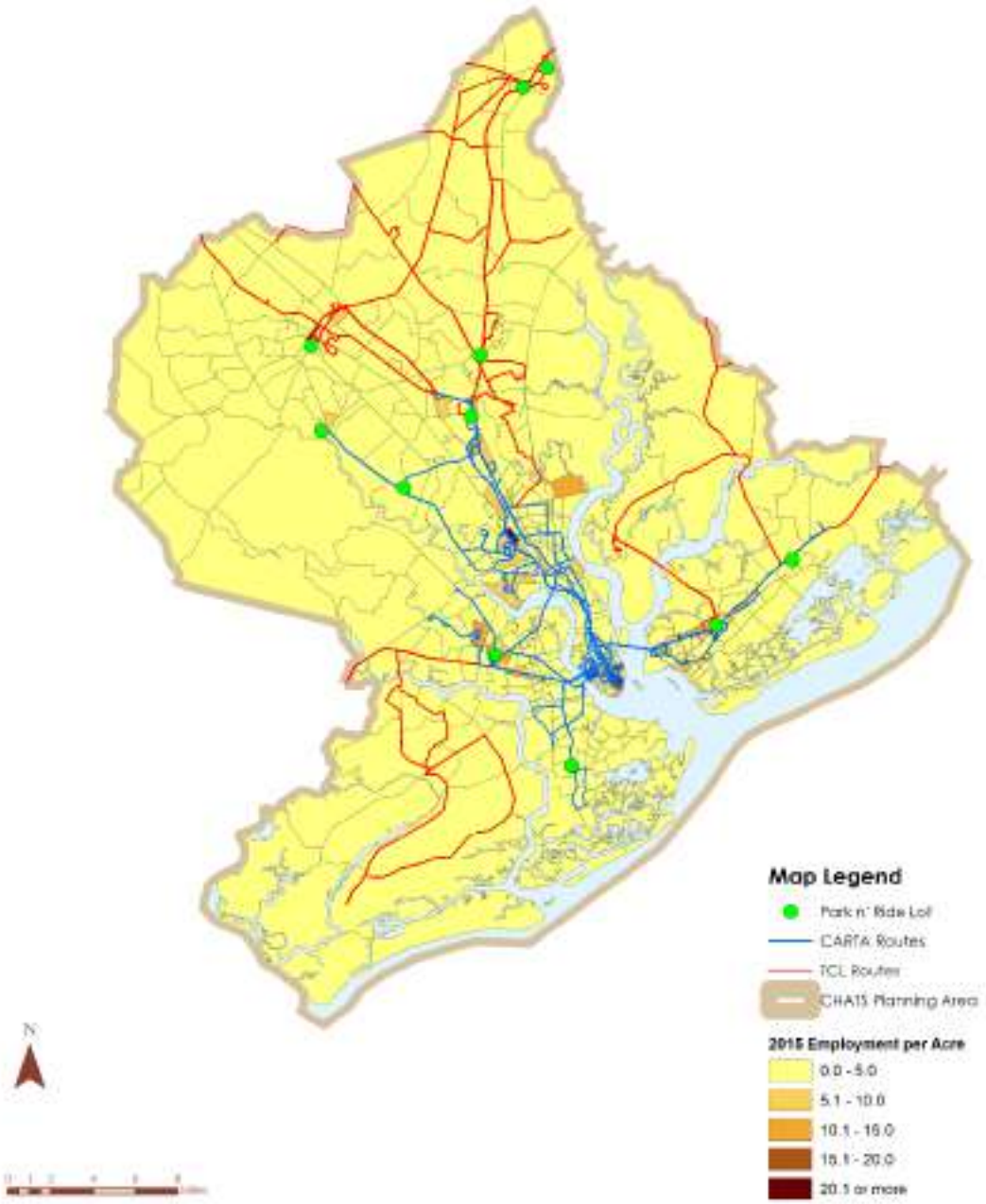


Figure 6: 2040 Employment Density (Source: BCDCOG)

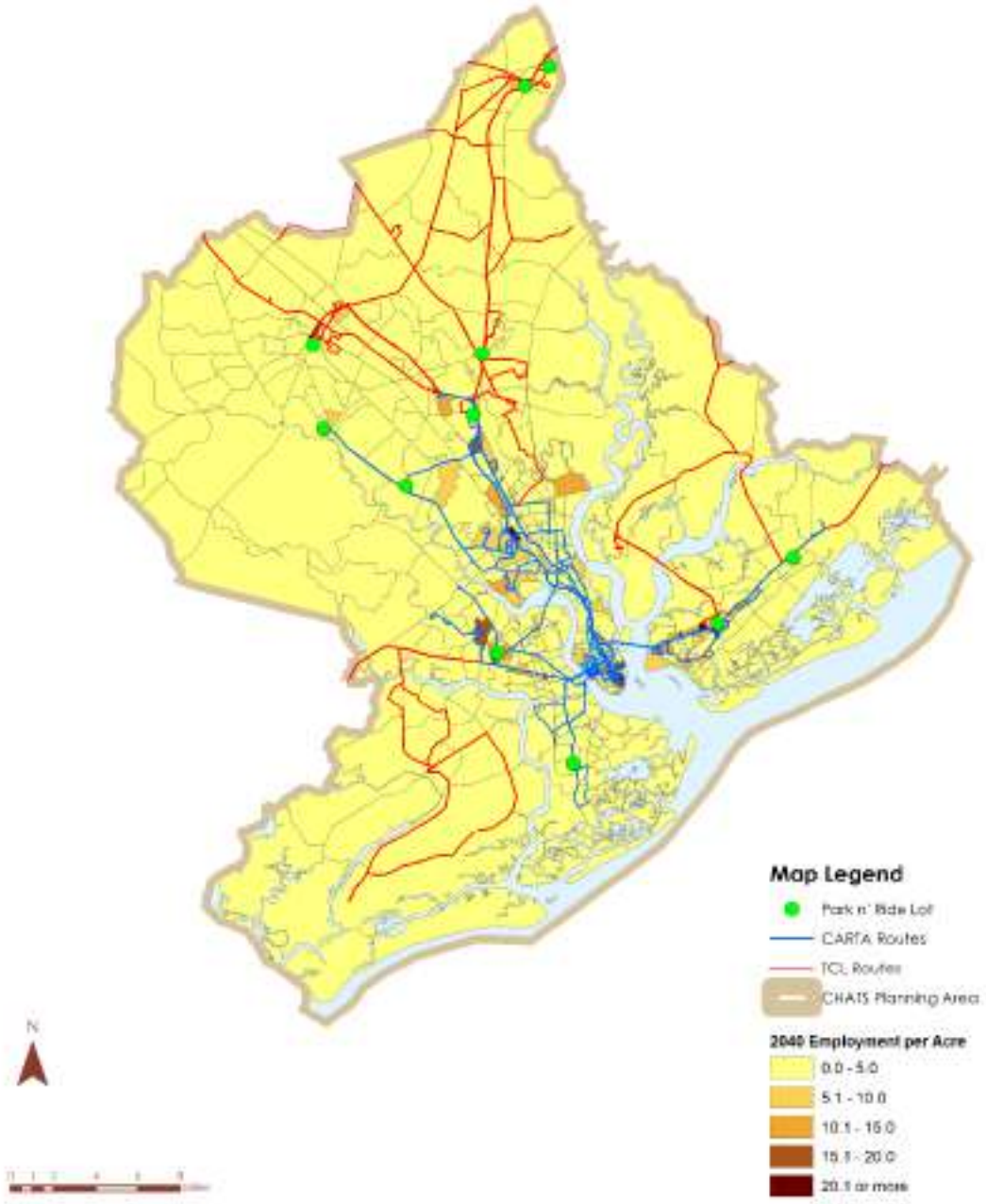


Figure 7: Estimated Percent Change in Employment, 2015-2040 (Source: BCDCOG)

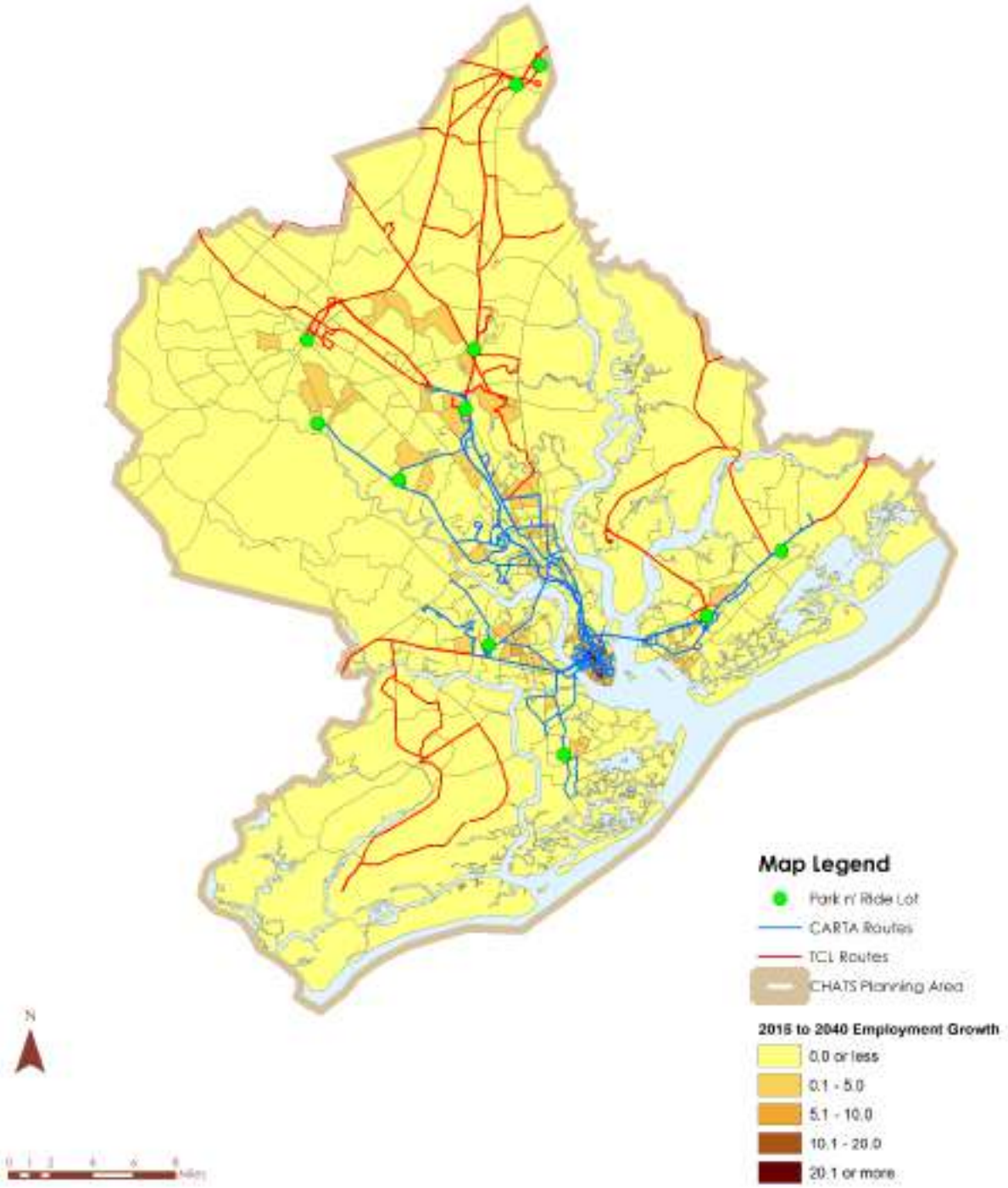


Figure 8: Minority Population as Percent of Total Population (Source: 2011-2015 ACS)

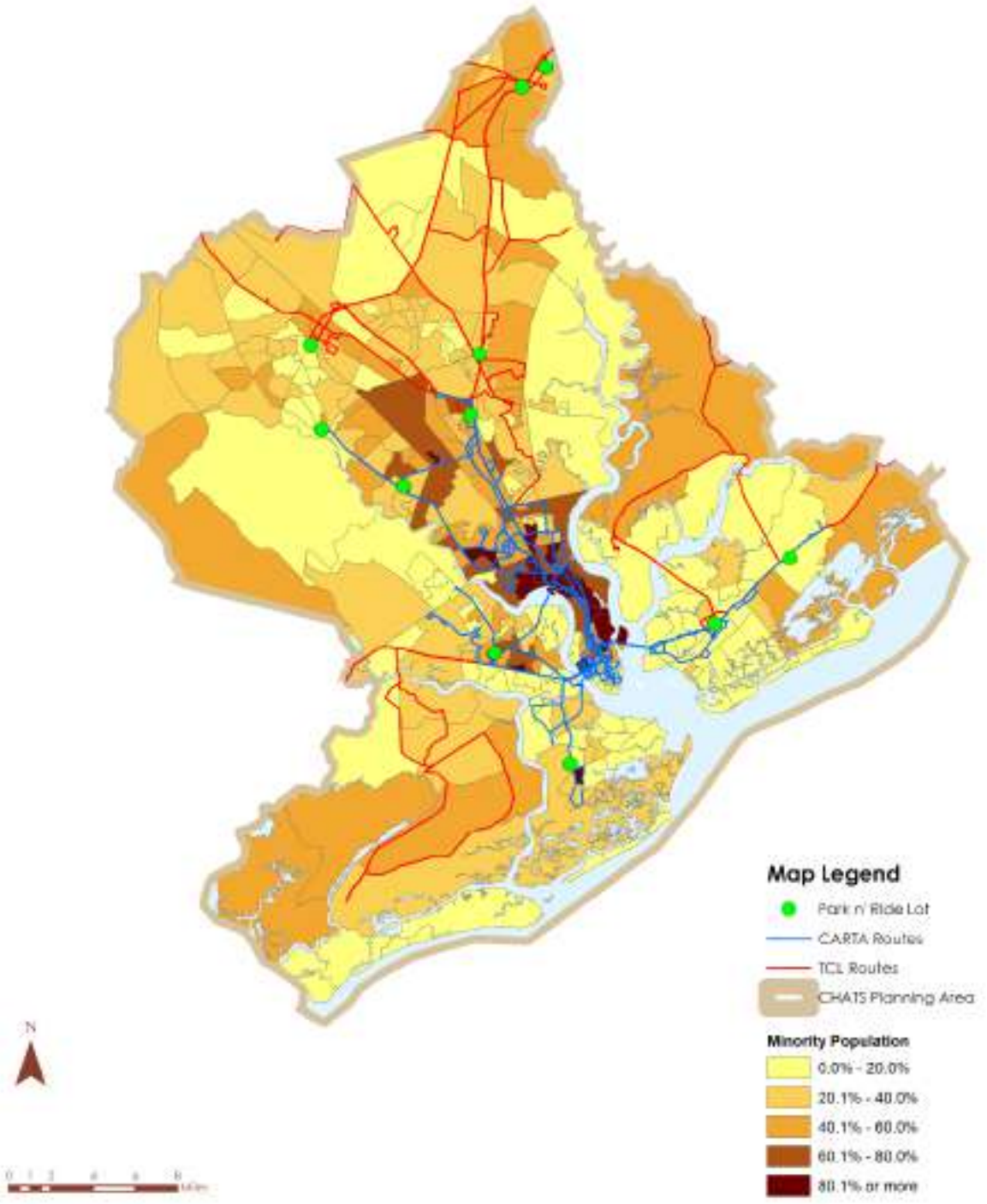


Figure 9: Households Under Poverty Threshold as Percent of Total Households (Source: 2011-2015 ACS)

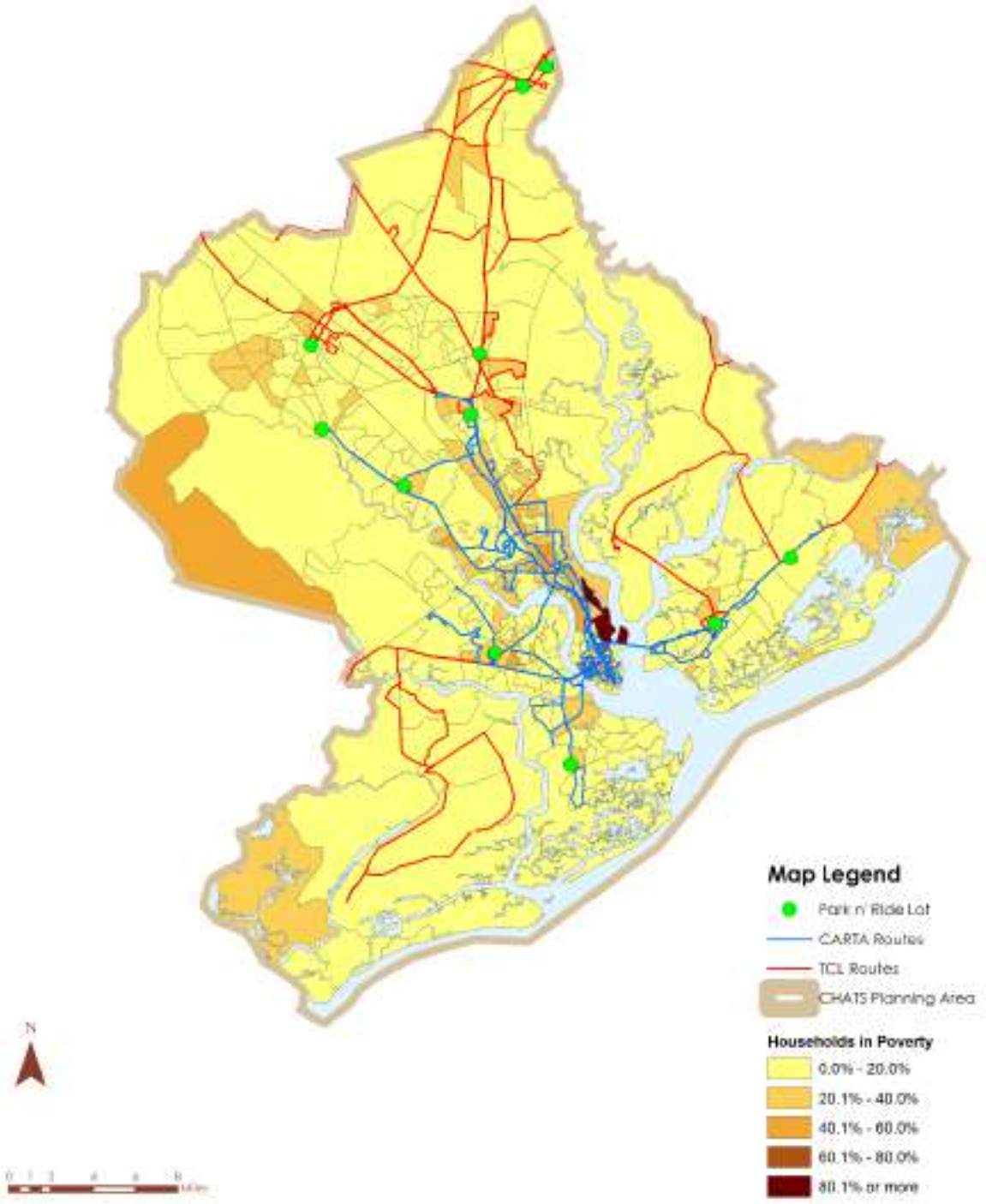


Figure 10: Zero Car Households as Percent of Total Households (Source: 2011-2015 ACS)

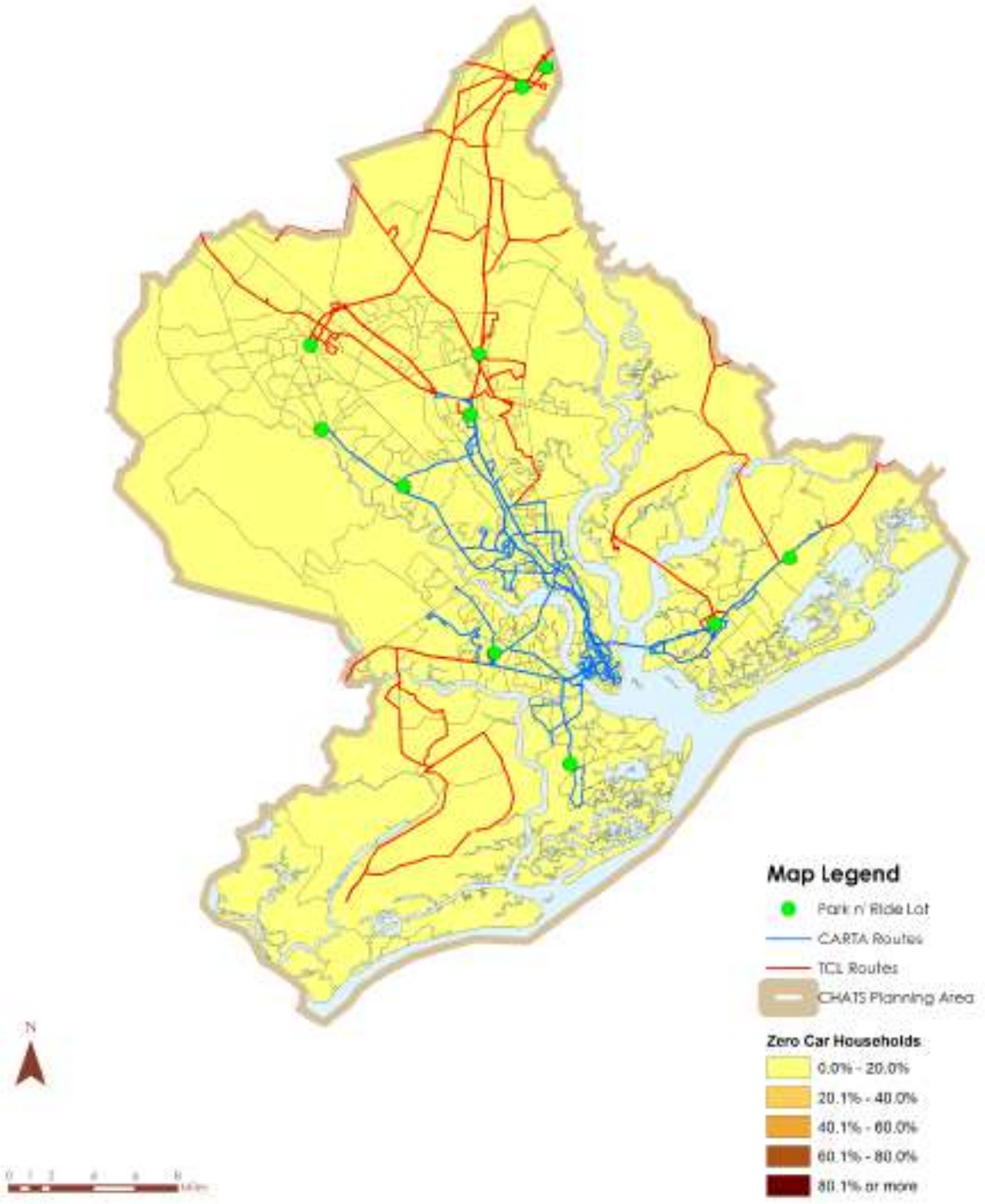


Figure 11: Disabled Population as Percent of Total Population (Source: 2011-2015 ACS)

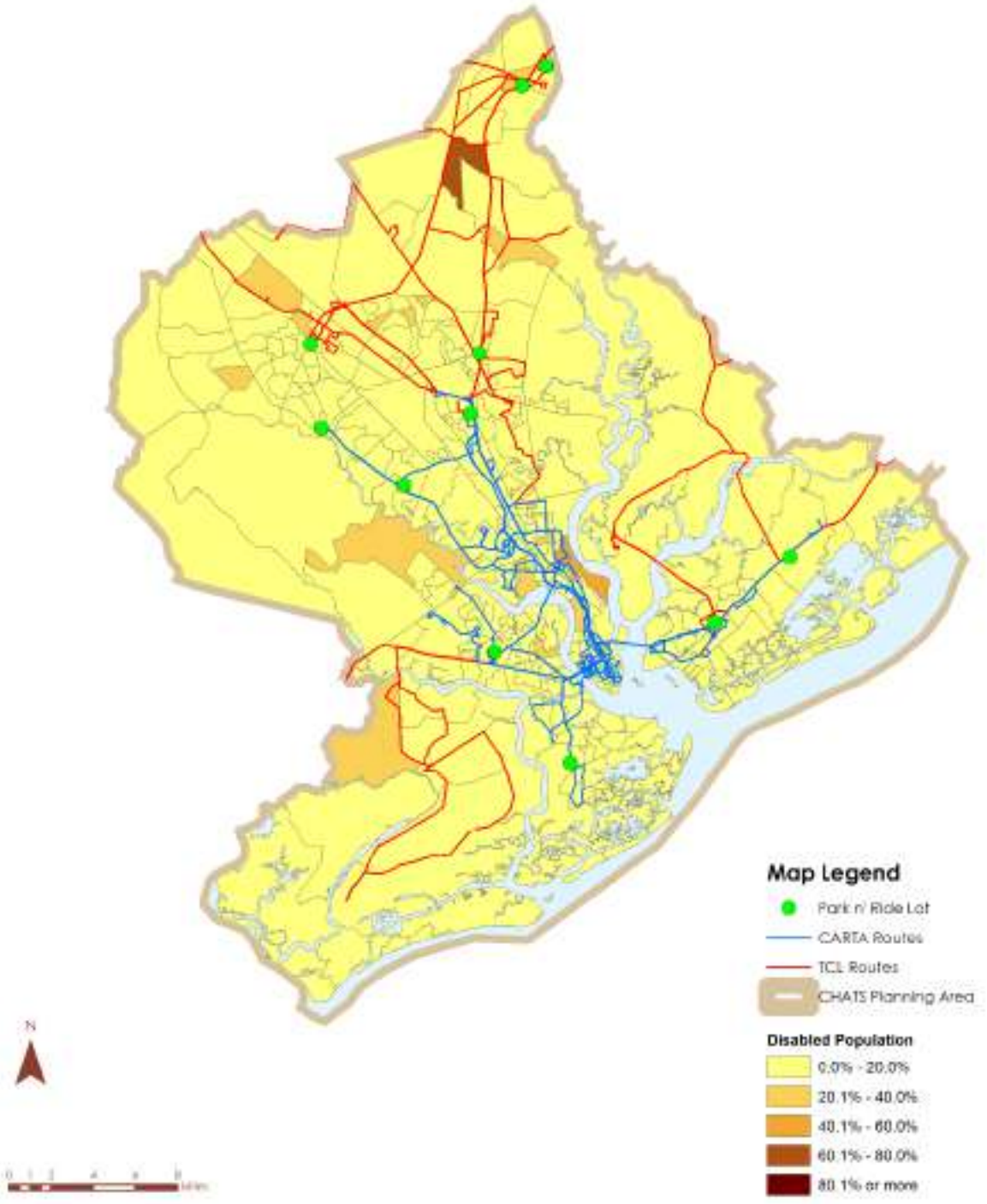


Figure 12: Elderly Population (> 65 years of age) as Percent of Total Population (Source: 2011-2015 ACS)

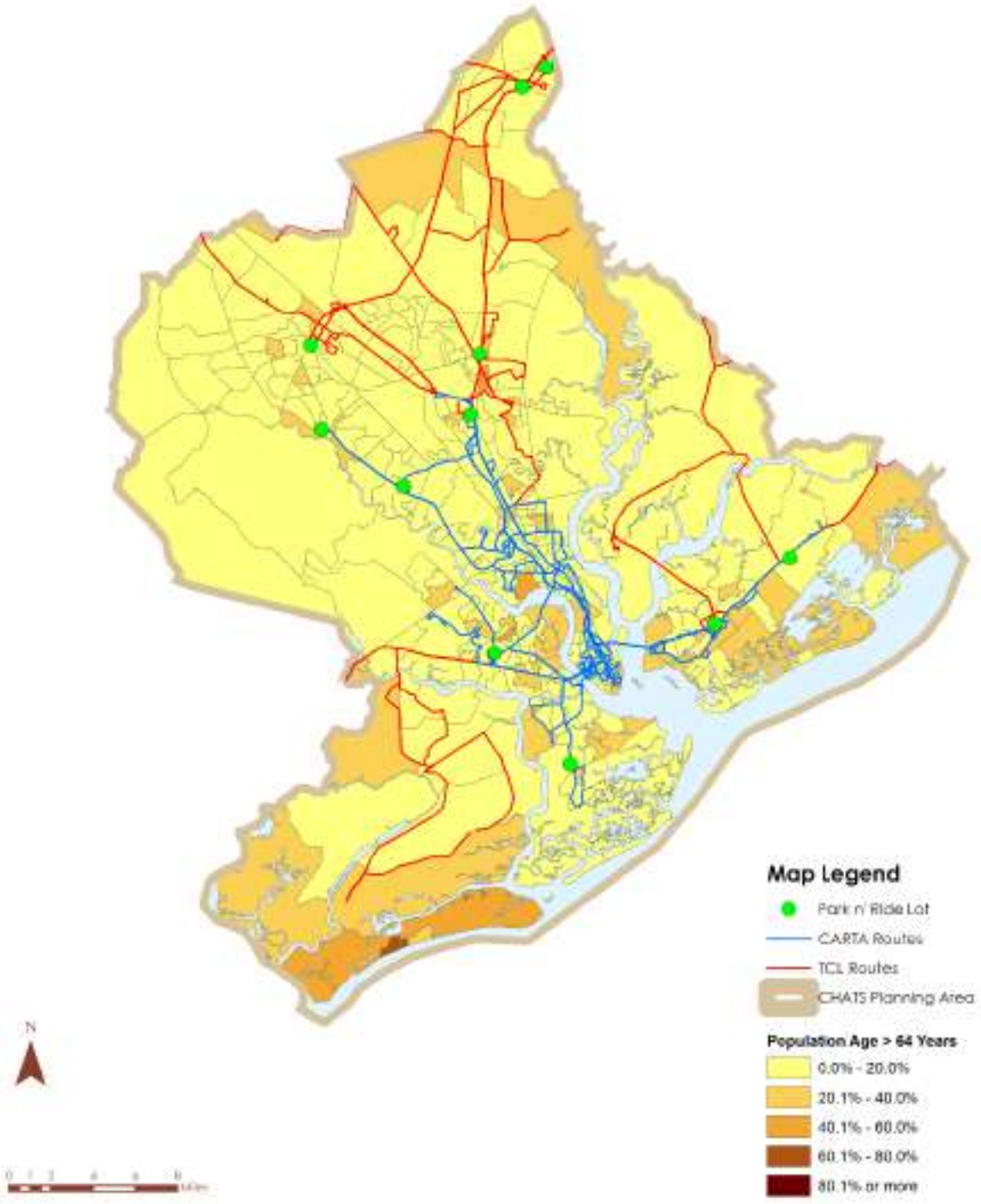
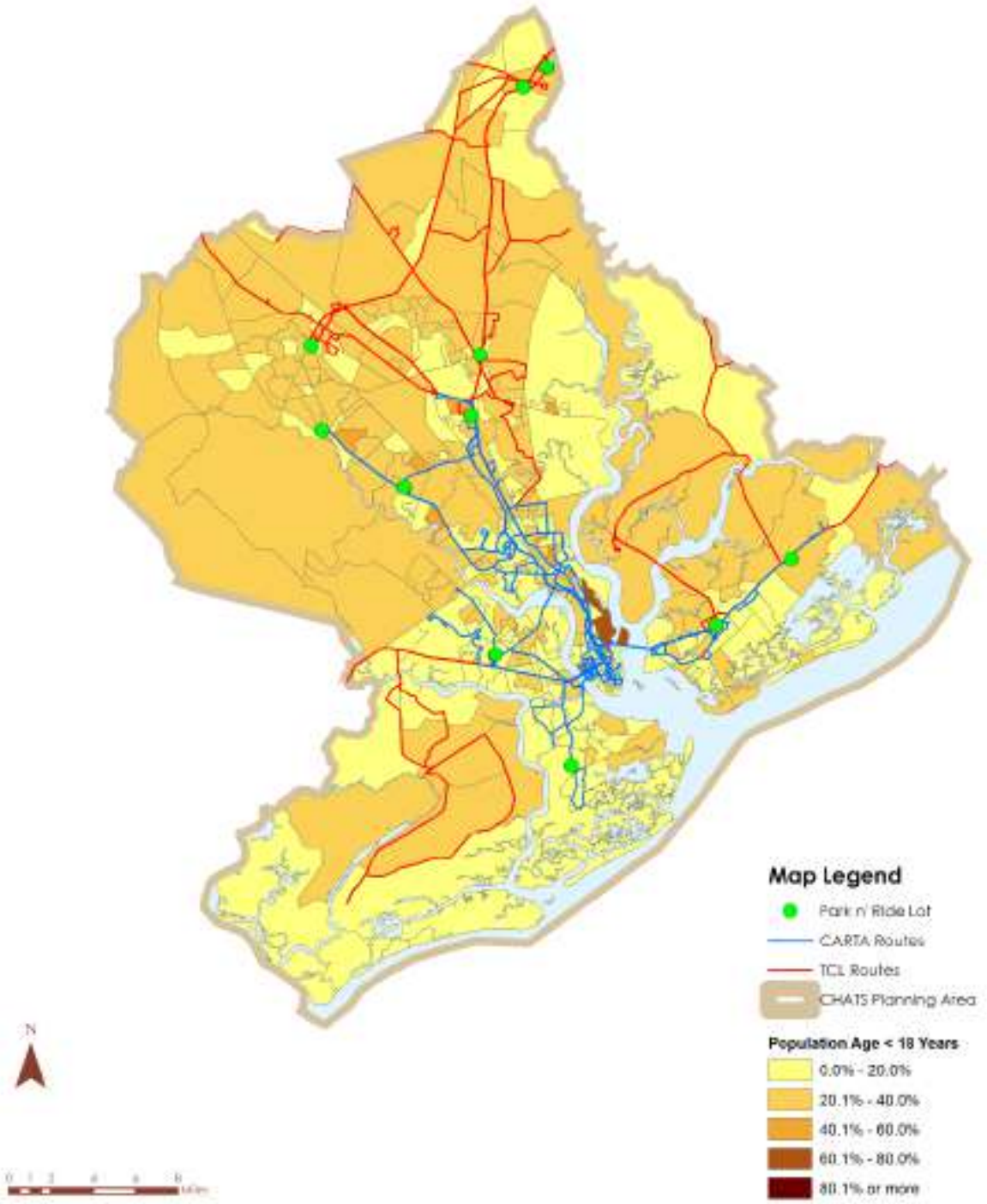


Figure 13: Youth Population (< 18 years of age) as Percent of Total Population (Source: 2011-2015 ACS)



2.2. CARTA

Like many communities throughout the United States that once had streetcar service, public transportation in the Charleston region was originally provided by the local electric company, the South Carolina Electric & Gas Company (SCE&G). SCE&G retained control of the system throughout the eventual transition from streetcars to buses, but incrementally reduced service beginning in the 1970's until operations were transitioned to the City of Charleston in 1996. CARTA was subsequently formed in 1997 as a regional governmental entity charged with providing public transportation services throughout the Charleston region. In this role, CARTA provides local bus, commuter bus, and demand response/paratransit services to a population of nearly 550,000.[1]

Governance and Organization

CARTA is governed by an 18-member Board of Directors representing the Authority's eight member jurisdictions, including: Charleston County, the City of Charleston, the City of North Charleston, the Town of Mount Pleasant, the City of Hanahan, the City of Isle of Palms, the Town of Sullivan's Island, and the Town of Kiawah Island. The CARTA board is responsible for setting policy and providing oversight of the agency. The Berkeley Charleston Dorchester Council of Governments (BCDCOG) provides administration, contract management, finance and accounting, data reporting and compliance, planning, and scheduling functions for CARTA. Operations and maintenance functions are carried out through a contract with Transdev, a private transportation company. Transdev is responsible for staffing and managing vehicle operators and maintenance technicians.

Funding

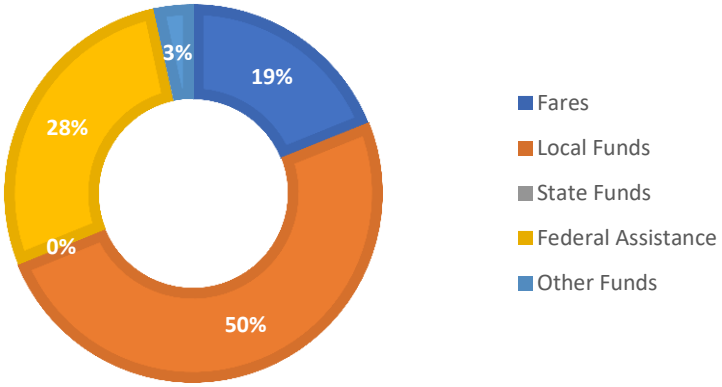
The South Carolina Department of Transportation (SCDOT) Division of Intermodal and Freight Programs, Office of Public Transit is responsible for developing, coordinating, and implementing public transit programs and policy for the state and distributing Federal Transit Administration (FTA) formula funds and state funding contributions. In addition to administering federal funding programs including Section 5311 (Non-Urbanized Area), 5310 (Elderly and Individuals with Disabilities), 5339 (Bus and Bus Facilities), and 5311 (c) and (b)(3) (Public Transportation on Indian Reservations and Rural Transit Assistance Program), the Office of Public Transit distributes proceeds from a statewide one-quarter cent per gallon tax on gasoline to public transportation recipients. The BCDCOG is the designated recipient of FTA urbanized area formula funds (5307), and CARTA is a direct recipient of those funds.

Funding for CARTA's capital program is provided through a mix of local, state, and federal sources, while its operations are funded through local, state, and federal sources, fare revenues, and various other sources. As shown in ***Figure 13***, approximately

[1] Source: 2015 National Transit Database, Service Area Population

half of CARTA's operating revenue in 2015 came from local sources. CARTA's local funding contribution primarily comes from the Charleston County half-cent transportation sales tax originally instituted in 2004, which in 2015 accounted for approximately 40% of total operating revenues.[2] A second half-cent sales tax was passed in 2016 which identified an additional $600 million in funding for transit capital programs and operations. The balance of its local funding contributions came from partners including the City of Charleston, College of Charleston, and the Medical University of South Carolina. Approximately 28% of CARTA's 2015 operating funds were derived from federal Section 5307 (Urbanized Area Formula Program) funds, 19% came from fare revenue, and the remaining 3% came from other directly generated sources such as advertising. It should be noted that while CARTA typically receives approximately $600,000 annually in State Mass Transit formula funds, it received an advance during a prior fiscal year and thus did not report state funding in 2015.[3]

Figure 14: CARTA Operating Funding Sources (Source: 2015 National Transit Database)



Service Profile

CARTA currently operates 21 fixed routes, which include 18 local routes and three Downtown Area Shuttle (DASH) routes, and four commuter express routes serving seven park and ride facilities. CARTA's Tel-a-Ride (ADA paratransit) provides demand response service to qualifying individuals within ¾-mile of a fixed route alignment. CARTA operates 365 days a year. Its local routes generally operate from approximately 6:00 am to 9:00-10:00 pm, with peak frequencies ranging from 10 minutes to 105 minutes. CARTA's express routes generally operate at 30-minute headways within the same span of service as the local routes; however, no mid-day service is provided except for Route 4, which provides hourly service to the airport throughout the day.

[2] Source: 2015 National Transit Database

[3] In SFY12-13, CARTA waived SMTF for four years in exchange for supplemental unobligated Small Urban Section 5307 finds.

Table 1: CARTA Routes (Source: CARTA)

Local Routes	Frequency (mins)	Weekday Span of Service
Route 10 Rivers Ave.	20	5:50 AM - 12:48 AM
Route 11 Dorchester/Airport	40	5:49 AM - 9:20 PM
Route 12 Upper Dorchester/AFB	60	5:40 AM - 10:22 PM
Route 13 Montague/Remount/Spruill Road	60	6:30 AM - 8:54 PM
Route 20 King St.	25	6:02 AM - 8:57 PM
Route 30 Savannah Hwy	60	6:00 AM - 9:24 PM
Route 31 Folly Road	105	6:00 AM - 9:33 PM
Route 32 North Bridge	60	6:00 AM - 8:55 PM
Route 33 St. Andrews/Ashley River Rd.	60	6:00 AM - 8:50 PM
Route 40 Mt. Pleasant	60	6:20 AM - 9:45 PM
Route 41 Coleman Blvd	90	6:00 AM - 8:50 PM
Route 42 WANDO Circulator	60	6:10 AM - 6:02 PM
Route 102 North Neck/Rutledge	80	6:00 AM - 8:34 PM
Route 103 Leeds Ave.	60	6:00 AM - 5:56 PM
Route 104 Montague Ave.	60	6:00 AM - 9:21 PM
Route 203 Medical Shuttle	10[a]	5:02 AM - 12:32 AM
Route 204 MUSC/Calhoun Circulator	40	9:00 AM - 2:56 PM
Route 301 Glenn McConnell Circulator	60	6:20 AM - 9:38 PM
DASH Shuttle 210 Aquarium/ C of C	14	6:28 AM - 10:16 PM
DASH Shuttle 211 Meeting/King	15	7:16 AM - 9:19 PM
DASH Shuttles 213 Lockwood / Calhoun	45	6:20 AM - 9:15 PM
Express Routes	**Frequency (mins)**	**Span of Service**
Route 1 North/South (North Charleston/James Island)	30[a]	5:19 AM - 8:06 PM
Route 2 East West Express (Mt. Pleasant/West Ashley)	30[a]	5:35 AM - 8:21 PM
Route 3 Dorchester Rd/Downtown	30[a]	5:15 AM - 8:33 PM
Route 4 NASH Express	60	8:00 AM - 8:58 PM

[a] Peak-periods only

According to the most recently available data reported to the National Transit Database (NTD), CARTA provided over 5 million passenger trips in 2015 across its three service modes. Local bus ridership accounted for over 4.7 million trips in 2015, while commuter bus and demand response accounted for approximately 200,000 and 79,000 trips, respectively. Total system-wide ridership increased 15% between 2011 and 2015. General service supply metrics including revenue hours, miles, and peak buses also increased since 2011, as did the operating budget and fare revenues earned, reflecting an overall growth of the system during this period. CARTA's total operating budget in 2015 was approximately $19 million and the agency earned approximately $3.6 million in fare revenues during the same year.

Table 2: CARTA Operating Statistics, 2011 – 2015 (Source: National Transit Database)

Local Bus	2011	2012	2013	2014	2015
Passenger Trips	4,300,680	4,832,138	4,793,021	4,635,086	4,748,310
Fare Revenues[4]	$2,695,600	$3,577,474	$3,985,376	$2,923,641	$2,717,380
Operating Expenses	$14,017,944	$14,330,763	$15,926,503	$15,539,804	$15,319,028
Revenue Hours	207,057	207,562	209,535	205,833	206,088
Revenue Miles	2,909,657	2,848,262	2,928,999	2,825,153	2,794,908
Peak Buses	66	81	81	74	73
Commuter Bus	**2011**	**2012**	**2013**	**2014**	**2015**
Passenger Trips	N/A	N/A	N/A	208,874	202,829
Fare Revenues	N/A	N/A	N/A	$26,670	$217,389
Operating Expenses	N/A	N/A	N/A	$1,005,380	$987,650
Revenue Hours	N/A	N/A	N/A	10,881	10,956
Revenue Miles	N/A	N/A	N/A	190,406	192,240
Peak Buses	N/A	N/A	N/A	7	7
Total Fixed Route (Local + Commuter)	**2011**	**2012**	**2013**	**2014**	**2015**
Passenger Trips	4,300,680	4,832,138	4,793,021	4,843,960	4,951,139
Fare Revenues	$2,695,600	$3,577,474	$3,985,376	$2,950,311	$2,934,769
Operating Expenses	$14,017,944	$14,330,763	$15,926,503	$16,545,184	$16,306,678
Revenue Hours	207,057	207,562	209,535	216,714	217,044
Revenue Miles	2,909,657	2,848,262	2,928,999	3,015,559	2,987,148
Peak Buses	66	81	81	81	80
Demand Response	**2011**	**2012**	**2013**	**2014**	**2015**
Passenger Trips	69,283	72,342	73,277	75,607	78,921
Fare Revenues[5]	$242,491	$250,292	$256,470	$264,624	$688,402
Operating Expenses	$2,419,867	$2,530,417	$2,916,382	$2,980,676	$2,851,378
Revenue Hours	41,570	39,371	40,671	42,111	42,064
Revenue Miles	613,501	591,482	641,996	641,134	589,009
Peak Buses	18	23	23	21	20
SYSTEM TOTAL	**2011**	**2012**	**2013**	**2014**	**2015**
Passenger Trips	4,369,963	4,904,480	4,866,298	4,919,567	5,030,060
Fare Revenues	$2,938,091	$3,827,766	$4,241,846	$3,214,935	$3,623,171
Operating Expenses	$16,437,811	$16,861,180	$18,842,885	$19,525,860	$19,158,056
Revenue Hours	248,627	246,933	250,206	258,825	259,108
Revenue Miles	3,523,158	3,439,744	3,570,995	3,656,693	3,576,157
Peak Buses	84	104	104	102	100

Note: Commuter bus statistics not reported separately to NTD until 2014. Prior to 2014, commuter bus statistics were included in local bus reports.

[4] Prior to 2014, CARTA reported revenue earned through local partnerships as fare revenue. This was corrected for the 2014 reporting year.

[5] Demand response fare revenues for 2015 are atypical and a result of changes to NTD data reporting methodology.

Figure 15: CARTA Fixed Route (Local + Commuter Bus) Monthly Ridership, Jan 2011 – Dec 2015 (Source: 2015 National Transit Database)

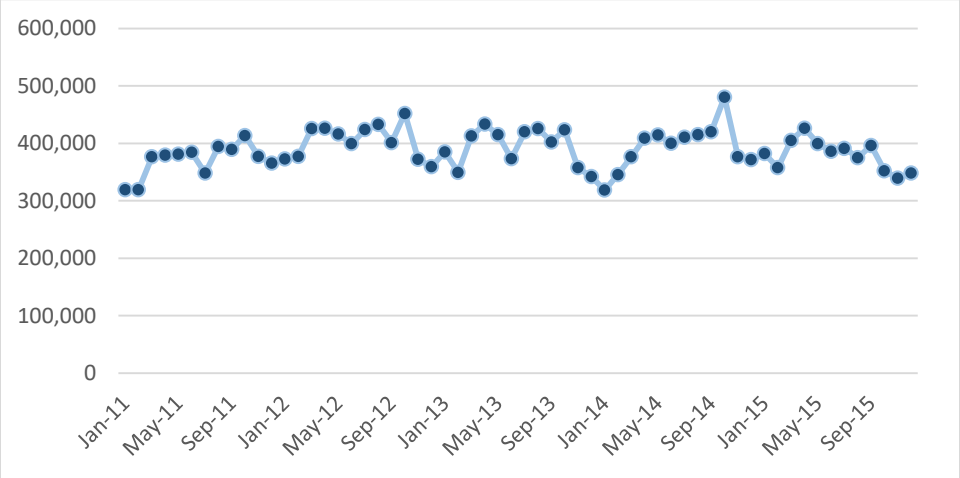
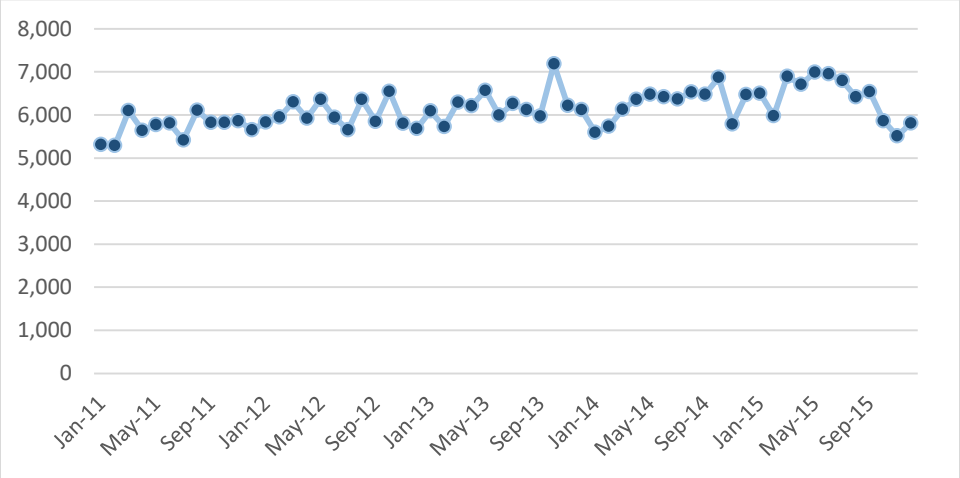


Figure 16: CARTA Demand Response Monthly Ridership, Jan 2011 – Dec 2015 (Source: 2015 National Transit Database)



Performance Summary

Several key performance measures were reviewed to determine CARTA's service productivity and cost efficiency and effectiveness between 2011 and 2015. CARTA's fixed route bus service productivity (local bus and commuter bus) increased during the five-year period, with passenger trips per revenue hour up 10% and passenger trips per revenue mile up 12%. Despite steady gains in productivity, overall cost efficiency decreased due to increasing operating costs, with cost per revenue hour and mile increasing by 11% and 13%, respectively. Cost effectiveness also declined slightly, with operating cost per passenger trip up 1% and farebox recovery down 1%.

CARTA's demand response performance followed similar trends between 2011 and 2015 as its fixed route services. Productivity increased, with passenger trips per revenue mile and hour up 13% and 19%, respectively, while cost efficiency and effectiveness declined. Operating cost per revenue hour increased 16%, cost per revenue mile increased 23%, and cost per passenger trip increased 3%. The large improvement in cost recovery is likely due to a change in revenue reporting methodology beginning in 2015.

According to the SCDOT Public Transit Data Report for SFY2015-16, CARTA's service productivity was above the statewide average for large urban transit systems in terms of both passenger trips per revenue mile and revenue hour. Compared to its statewide peers, CARTA is also more cost efficient and effective in terms of operating expenses per passenger trip, revenue hour, revenue mile, and farebox recovery.

Table 3: CARTA Performance Measures, 2011-2015 (Source: National Transit Database)

Local Bus	**2011**	**2012**	**2013**	**2014**	**2015**
Passenger Trips per Revenue Hour	20.8	23.3	22.9	22.5	23.0
Passenger Trips per Revenue Mile	1.48	1.70	1.64	1.64	1.70
Operating Expense per Revenue Hour	$67.70	$69.04	$76.01	$75.50	$74.33
Operating Expense per Revenue Mile	$4.82	$5.03	$5.44	$5.50	$5.48
Operating Expense per Passenger Trip	$3.26	$2.97	$3.32	$3.35	$3.23
Farebox Recovery Ratio	19%	25%	25%	19%	18%
Commuter Bus	**2011**	**2012**	**2013**	**2014**	**2015**
Passenger Trips per Revenue Hour	N/A	N/A	N/A	19.2	18.5
Passenger Trips per Revenue Mile	N/A	N/A	N/A	1.10	1.06
Operating Expense per Revenue Hour	N/A	N/A	N/A	$92.40	$90.15
Operating Expense per Revenue Mile	N/A	N/A	N/A	$5.28	$5.14
Operating Expense per Passenger Trip	N/A	N/A	N/A	$4.81	$4.87
Farebox Recovery Ratio	N/A	N/A	N/A	3%	22%
Total Fixed Route (Local + Commuter)	**2011**	**2012**	**2013**	**2014**	**2015**
Passenger Trips per Revenue Hour	20.8	23.3	22.9	22.4	22.8
Passenger Trips per Revenue Mile	1.48	1.70	1.64	1.61	1.66
Operating Expense per Revenue Hour	$67.70	$69.04	$76.01	$76.35	$75.13
Operating Expense per Revenue Mile	$4.82	$5.03	$5.44	$5.49	$5.46
Operating Expense per Passenger Trip	$3.26	$2.97	$3.32	$3.42	$3.29
Farebox Recovery Ratio	19%	25%	25%	18%	18%
Demand Response	**2011**	**2012**	**2013**	**2014**	**2015**
Passenger Trips per Revenue Hour	1.67	1.84	1.80	1.80	1.88
Passenger Trips per Revenue Mile	0.11	0.12	0.11	0.12	0.13
Operating Expense per Revenue Hour	$58.21	$64.27	$71.71	$70.78	$67.79
Operating Expense per Revenue Mile	$3.94	$4.28	$4.54	$4.65	$4.84
Operating Expense per Passenger Trip	$34.93	$34.98	$39.80	$39.42	$36.13
Farebox Recovery Ratio	10%	10%	9%	9%	24%

Summary of Capital Assets

CARTA operates an active fleet of 136 revenue vehicles, as summarized in ***Table 4***. The fixed route diesel fleet consists of a mix of seven (7) 30-foot buses, twenty-nine (29) 40-foot buses, forty (40) 35-foot buses, seven (7) 22-foot cutaway buses, and 12 trolleys. The paratransit service operates an active fleet of twenty-one (21) 22-foot cutaway buses and 20 vans, all of which are ADA-accessible. CARTA's non-revenue fleet includes 12 support vehicles and maintenance trucks. In 2015, CARTA's commuter bus fleet had an average vehicle age of 21 years and its local bus fleet an average age of 15 years, both of which are well above industry average and beyond the typical useful life benchmarks for transit vehicles. In light of this, CARTA is in the process of phasing out its older vehicles and replacing them with newer models. Rrecently, CARTA purchased seven new 30' MIDI buses to replace its fleet of trolleys assigned to the DASH routes.

Table 4: CARTA Revenue Vehicle Inventory and Estimated Replacement Needs through 2030 (Source: CARTA)

Year	Make	Model	Count	Total Vehicles	Daily Service Need	Spares (spare ratio)	Estimated Replacement Need through 2030
DASH							
2016	NEW FLYER	MIDI (30')	7	7	7	0 (0%)	9
Commuter							
1994	FLXIBLE	METRO (40')	19	27	19	8 (40%)	27
2003	NABI	416 40SDF (40')	5				
2015	NEW FLYER	D40LF (40')	3				
Local Fixed Route							
1996	NEW FLYER	D35HF (35')	24	49	32	10 (30%)	46
2010	NEW FLYER	D35LFR (35')	11				
2012	NEW FLYER	D35LFR (35')	5				
2014	NEW FLYER	XDE40 (40')	2				
2016	GOSHEN	E450 (22')	7				
Paratransit							
2007	FORD	CUTAWAYS (22')	7	41	20	4 (20%)	n/a
2009	CHEVROLET	CUTAWAYS (22')	7				
2010	CHEVROLET	CUTAWAYS (22')	7				
2016	VPG	MV-1 (van)	10				
2016	AMERIVANS	(ORDERED)	10				
Non-Revenue Support & Maintenance							
2006	CHEVROLET	COLBOLT	6	12	11	1 (9%)	n/a
2009	FORD	FOCUS	1				
2006	FORD	CROWN VIC	1				
2013	TOYOTA	PRIUS	2				
2013	DODGE	RAM2500	1				
1986	CHEVROLET	3500	1				

CARTA's facility assets include administrative and maintenance facilities, a superstop, bus stops and shelters, and park-and-ride lots. While CARTA owns its maintenance facility and North Charleston superstop, it leases many of its park-and-ride lots from private owners and operates out of the Mary Street Transfer Center through an agreement with the City of Charleston. CARTA's facility inventory described below:

- **CARTA Administrative Offices:** Co-located with BCDCOG administrative offices at 1362 McMillan Avenue, Suite 100, North Charleston.
- **Leeds Avenue Maintenance Facility:** Located in North Charleston at 3664 Leeds Avenue and houses the operations and maintenance departments, a fueling area, and vehicle storage. This facility is at capacity for any additional parking, and CARTA currently leases an adjacent area for vehicle parking.
- **Mary Street Transfer Center:** Located one block north of the Downtown Transit Mall / Charleston Visitor Reception and Transportation Center on Mary Street between King Street and Meeting Street in downtown Charleston and serves as a connection point for six bus routes.

- **North Charleston SuperStop:** Located at the intersection of Rivers Avenue and Cosgrove Avenue and serves as a connection point for eight bus routes.
- **Park-and-Ride Lots:** CARTA provides express service to and from several park-and-ride locations throughout its service area, including:
    - **North Charleston:** Former Super K-Mart parking lot on Rivers Ave and Ontranto Road; Festival Centre at Dorchester Road and Ashley Phosphate
    - **Mount Pleasant:** Walmart parking lot at Wando Crossing; Walmart at Oakland Plantation
    - **West Ashley:** Citadel Mall
    - **James Island:** Walmart on Folly Road
    - **Summerville:** Dorchester Village Shopping Center
- **Bus Stops and Shelters:** There are approximately 1,371 bus stops within the CARTA service area, around 80 of which have passenger shelters.

2.3. TriCounty Link

TriCounty Link (TCL) was established in 1996 to connect citizens residing in the rural areas of Berkeley, Charleston, and Dorchester Counties with services and employment opportunities throughout the region. Today, TCL provides deviated fixed route and commuter express bus service throughout the BCD region, serving both the general public through scheduled service and human services agencies and employers through contracted operations.

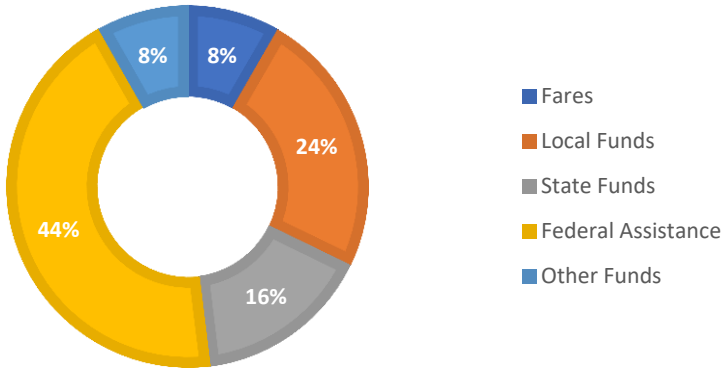
Governance and Organization

TriCounty Link is governed by a nine-member Board of Directors, with three members from each county appointed by the respective county councils. TCL is a non-profit organization and is guided through By-Laws approved in 2010. TCL directly employs a staff of public employees who perform all operations and maintenance functions for the system. Like CARTA, BCDCOG provides administrative, finance, and planning support for TCL and is also responsible for maintaining its regional human services transportation plan in coordination with SCDOT.

Funding

TriCounty Link is primarily funded through local, state, and federal contributions, with the remainder of its operating revenues coming from fares and other sources. As illustrated in ***Figure 16***, in 2015 approximately 44% of TCL's operating revenue came from FTA formula funding programs, including Section 5311 (Formula Grants for Other Than Urbanized Areas) and Section 5310 (Transportation for Elderly and Persons with Disabilities). TriCounty Link's second-largest source of operating revenue comes from local sources (24%), which includes a contribution from Charleston County's half-cent transportation sales tax proceeds and local partnership agreements. The balance of TCL's operating revenue comes from state funding (16%), fare revenue (8%), and contract revenue (8%).

Figure 17: TriCounty Link Operating Funding Sources (Source: 2015 National Transit Database)



Service Profile

The TriCounty Link system is comprised of nine deviated fixed routes and nine commuter routes. The deviated fixed routes follow a published schedule and operate as a "flag-stop" service, picking up customers between the scheduled stops along the fixed routes. Each route also offers a route deviation option that allows the driver to go off the route up to ¾-mile to pick up customers that cannot meet the bus at designated stop locations. This is primarily a pre-scheduled curb-to-curb service, which allows TCL to meet Americans with Disabilities Act (ADA) requirements. Tri-County Link's commuter express routes operate between a network of park-and-ride lots and other key points throughout the service area and interface with CARTA services at coordinated transfer locations. TriCounty Link has a transfer agreement with CARTA, allowing passengers to pay one fare each way when transferring between agencies.

Table 5: TriCounty Link Routes (Source: TriCounty Link)

Deviated Fixed Routes	Frequency (mins)	Weekday Span of Service
B101 Moncks Corner	2 total trips[a]	5:30 AM - 5:20 PM
B102 Moncks Corner-North Charleston-Hanahan	2 total trips[a]	5:45 AM - 5:45 PM
B104 St. Stephen – Bonneau – Moncks Corner	2 total trips[a]	6:00 AM - 6:25 PM
B105 Moncks Corner – Mt. Pleasant	2 total trips[a]	5:45 AM - 6:30 PM
C201 Edisto Island – Charleston	2 total trips[a]	6:00 AM - 6:35 PM
C203 McClellanville – Awendaw – Mt. Pleasant	4 total trips	5:15 AM - 7:42 PM
C204 Blue John's Island Blue Route	4 total trips	6:15 AM - 6:15 PM
C204 Green John's Island Green Route	5 total trips	5:45 AM - 6:30 PM
D305 Moncks Corner – Summerville – Lincolnville	2 total trips	6:25 AM - 7:15 PM

Table 6: TriCounty Link Commuter Routes (Source: TriCounty Link)

Commuter Route	Frequency (mins)	Weekday Span of Service
#1 Berkeley	30[a]	5:30 AM - 7:25 PM
#2 Dorchester	30[a]	5:15 AM - 7:35 PM
#3 Dorchester Santee Cooper	80[a]	6:05 AM - 6:20 PM
#4 Berkeley Santee Cooper	4 total trips[a]	5:00 AM - 7:10 PM
#5 Berkeley Santee Cooper	4 total trips[a]	5:55 AM - 6:55 PM
#6 Dorchester Connector	60	6:00 AM - 6:55 PM
Link to Lunch	15	10:14 AM - 1:15 PM
Dorchester Connector Shuttle	60	9:00 AM - 2:55 PM
Weekend Express	60	4:00 PM - 11:00 PM

[a] Peak periods only

[b] Weekday service on Fridays only

BCDCOG began oversight of TCL in 2012 and implemented more rigorous data collection and reporting procedures than had previously been in place. As such, ridership and operating statistics prior to TCL's first annual report to NTD in 2013 are unreliable and not reviewed as part of this analysis. According to 2015 NTD data, TCL has shown an overall decrease in ridership since 2013 subsequent to the discontinuation of Medicaid service in 2012. However, TCL posted a slight gain in ridership in 2015 over 2014 figures for both its deviated fixed route and commuter bus services. Other service statistics including operating expenses, fare revenue, and revenue miles and hours reflect a similar pattern.

Table 7: TriCounty Link Operating Statistics, 2013 – 2015 (Source: National Transit Database)

Deviated Fixed Route Bus	2013	2014	2015
Passenger Trips	5,201	5,975	8,299
Fare Revenues	$0	$0	$0
Operating Expenses	$43,540	$16,486	$18,883
Revenue Hours	1,560	1,126	1,183
Revenue Miles	18,200	12,746	16,637
Peak Buses	2	2	2
Commuter Bus	**2013**	**2014**	**2015**
Passenger Trips	134,837	97,947	105,272
Fare Revenues	$188,639	$181,532	$188,774
Operating Expenses	$2,578,274	$1,965,282	$2,253,254
Revenue Hours	92,276	39,986	42,769
Revenue Miles	1,280,412	1,006,556	1,032,095
Peak Buses	27	22	22
TOTAL	**2013**	**2014**	**2015**
Passenger Trips	140,038	103,922	113,571
Fare Revenues	$188,639	$181,532	$188,774
Operating Expenses	$2,621,814	$1,981,768	$2,272,137
Revenue Hours	93,836	41,112	43,952
Revenue Miles	1,298,612	1,019,302	1,048,732
Peak Buses	29	24	24

Performance Summary

Based on the three years of available data, TCL's deviated fixed route and commuter bus service productivity measures increased significantly due to reductions in the amount of service provided. Deviated fixed route productivity per revenue hour and revenue mile increased 110% and 75%, respectively, and commuter bus productivity per revenue hour increased 68%. Commuter bus productivity per revenue mile decreased slightly. The service reductions and corresponding budget cuts resulted in positive gains in cost efficiency and effectiveness for the deviated fixed route services. Cost per revenue hour decreased 43%, cost per revenue mile decreased 53%, and cost per passenger trip decreased 73%. The opposite trend was observed on the commuter bus side, with cost per revenue hour increasing 89%, cost per mile increasing 8%, and cost per passenger trip increasing 15%.

Because TCL is a recipient of both small urbanized area and rural funds, its service productivity and cost performance metrics are broken out in SCDOT's annual Public Transit Data Report. In SFY2015-16, TCL's service productivity ratios were below the statewide average for both small urbanized and rural reporters. Its cost performance, on the other hand, was mixed compared to the state peers, with cost per passenger trip above average and cost per revenue hour and mile below average.

Table 8: TCL Performance Measures, 2013-2015 (Source: National Transit Database)

Deviated Fixed Route	**2013**	**2014**	**2015**
Passenger Trips per Revenue Hour	3.33	5.31	7.02
Passenger Trips per Revenue Mile	0.29	0.47	0.50
Operating Expense per Revenue Hour	$27.91	$14.64	$15.96
Operating Expense per Revenue Mile	$2.39	$1.29	$1.14
Operating Expense per Passenger Trip	$8.37	$2.76	$2.28
Farebox Recovery Ratio	0%	0%	0%
Commuter Bus	**2013**	**2014**	**2015**
Passenger Trips per Revenue Hour	1.46	2.45	2.46
Passenger Trips per Revenue Mile	0.11	0.10	0.10
Operating Expense per Revenue Hour	$27.94	$49.15	$52.68
Operating Expense per Revenue Mile	$2.01	$1.95	$2.18
Operating Expense per Passenger Trip	$19.12	$20.06	$21.40
Farebox Recovery Ratio	7%	9%	8%

Summary of Capital Assets

According to data provided by TCL, TCL operates an active fleet of 34 vehicles, all of which are ADA-equipped cutaway buses or vans. As with CARTA, TCL owns a fleet of 12 support vehicles including sedans and maintenance trucks.

Table 9: Tri-County Link Revenue Vehicle Inventory (Source: TriCounty Link)

Year	Model	Count	Spares
Revenue Fleet			
2008	5500	6	7
2009	5500	3	
2010	STAR	8	
2013	E450	3	
2016	E450 SD	7	
Support Vehicles			
1995	PICKUP	1	2
1996	THOMAS	1	
1999	BLAZER	1	
1999	JEEP CHEROKEE	1	
2005	K3500	1	
2006	IMPALA	1	
2006	TRAIL BLAZER	1	
2007	IMPALA	1	
2017	ESCAPE	2	

TCL's facility assets include a maintenance facility, which houses its operations and maintenance department. TCL also provides service to approximately 130 bus stops and eight park-and-ride lots, four of which are shared with CARTA.

2.4. Other Public Transportation Providers

Human Services Transportation

In accordance with federal and state guidelines, BCDCOG maintains a Coordinated Public Transit-Human Services Transportation Plan that establishes goals, objectives, and strategies for addressing the transportation needs of low-income, elderly, and disabled populations in the Charleston region. In addition to the paratransit services provided by CARTA and TCL, a number of public and private entities, including non-profit human service agencies, hospitals, senior centers, school districts, and universities, provide mobility services to their clients throughout the region. Examples of such providers and partnerships include:

- Berkeley Citizens operates vehicles and contracts with TCL for services in Berkeley County
- The Dorchester Senior Center operates vehicles between meal sites in St. George and Summerville
- The SC Department of Health and Human Services contracts out Emergency Medical Transportation in the Charleston region, including Medicaid transportation

- Sea Island Comprehensive Health Care Corporation provides transportation on Johns Island
- The Independent Transportation Network (ITN) provides transportation for the elderly and disabled using volunteer drivers and private automobiles.
- Head Start operates vehicles on Edisto and Kiawah Islands for children of migrant families
- The Trident AAA operates transportation for elderly individuals throughout the region
- The Disabilities and Special Needs Boards for Berkeley, Dorchester, and Charleston Counties operate transportation services to and from care facilities and provide vehicles to respite homes throughout the region
- The Trident Area Agency on Aging provides transportation coordination services for seniors.

The Coordinated Public Transit-Human Services Transportation Plan estimates that the demand for mobility services in 2010 was approximately 5.7 million one-way trips. By 2040, the demand is forecast to increase to 6.9 million one-way trips. Approximately 80% of the demand was met in 2010 through existing services. The Plan set a target of meeting 90% of estimated demand, which would require an additional 1.7 million trips be provided by 2040 over the 2010 baseline across the region.

Intercity Bus and Rail

Intercity rail service is provided by Amtrak (Silver Meteor and Palmetto lines) and intercity bus service is provided by Southeastern Stages. Southeastern Stages' regional bus terminal is located on Dorchester Road in North Charleston. The region's Amtrak station is also located in North Charleston at Gaynor Street and Rivers Avenue. A new passenger intermodal facility, the North Charleston Intermodal Transportation Center, located adjacent to the current Amtrak station on Gaynor Street is currently under construction and is scheduled to open in 2018. The new facility will serve as a hub for Southeastern Stages, Amtrak, and CARTA.

3. Summary of Previous and Ongoing Planning Activities

Several planning initiatives pertaining to transit have been undertaken in recent years by BCDCOG and other entities throughout the Charleston region. The transit needs and opportunities identified as a result of these efforts provide the foundation for the regional long-range transit needs assessment. A summary of relevant transit planning activities since the last LRTP update is provided in the remainder of this section.

3.1. CARTA Comprehensive Operations Analysis (2016)

In 2016, BCDCOG completed a Comprehensive Operations Analysis (COA) of the existing CARTA transit system. The COA provides an in-depth review of the CARTA network and includes a detailed market, service, and operational analysis to develop short-range and mid-range transit recommendations. The objectives of the COA were to enhance reliability, increase efficiency, respond to changing travel patterns, and provide the foundation for future investment in upgraded equipment, facilities, and system expansions.

The short-range recommendations involved route realignments, schedule adjustments, and route elimination, resulting in a proposed systemwide reduction of service hours by 8.6% and a net reduction in operating costs of $1.4 million. The purpose of restructuring service in the near team was to build capital reserves for state-of-good-repair investments and future system upgrades.

The mid-range recommendations are proposed for a five to ten-year implementation horizon in conjunction with the proposed Lowcountry Rapid Transit (Bus Rapid Transit) project along US78/Rivers Avenue. The mid-range recommendations are focused on improving frequencies and connections across the system, and include five new feeder routes, one express route, and two seasonal trolleys.

3.2. Lowcountry Rapid Transit

The I-26 Corridor between Summerville and Charleston is a key thoroughfare in the Charleston region linking major employment and retail centers, military installations, and transportation hubs including the Charleston International Airport and the Port of Charleston. Multiple plans and studies over the years identified transit alternatives in the I-26 corridor as a key regional transportation need. The I-26 Alternatives Analysis (i-26 ALT) was conducted over 15 months beginning in 2014 to consider the effects of alternative transit investments in the corridor. Multiple alignments and mode technologies were considered, with a locally preferred alternative (LPA) of Bus Rapid Transit (BRT) along Rivers Avenue/US 78 connecting downtown Charleston, North Charleston, and Summerville selected as the final outcome of the study. The CHATS/BCDCOG Board approved the LPA. Referred to as Lowcounty Rapid Transit, the proposed BRT project isis moving forward to start project development and environmental review under FTA's Capital Investment Grant program in 2018. Service is anticipated to beginby 2025.

3.3. Regional Park-and-Ride Study (ongoing)

BCDCOG is sponsoring a regional park-and-ride study to develop a plan that will identify current and future needs for park-and-ride facilities, develop site section criteria to identify sites that meet those needs, and apply those criteria to specific sites to develop an implementation strategy for the agency to invest in park-and-ride facilities. The park-and-ride study is planned to begin in late 2017.

3.4. TCL Route Study (2014)

BCDCOG sponsored a Route Study for TCL in 2014 to review the existing TCL route network to and provide recommendations for optimizing service to better serve the needs of the communities it serves. The study offered near-term and long-term recommendations for modifying existing service and adding new routes, along with policy recommendations concerning planning, capital, and organizational issues. The key recommendations involved adding four new routes, eliminating three routes, modifying alignments and/or schedules of six routes, and making capital investments in bus stop signage and amenities.

3.5. Transit Consolidation Feasibility Analysis (2013)

In 2013, BCDCOG initiated a study to evaluate the potential of consolidating CARTA and TCL into a unified system to more effectively serve the BCD region. The Transit Consolidation Feasibility Analysis was a collaborative effort between CARTA, TCL, and BCDCOG and identified and evaluated options regarding consolidation. The four options considered, ranging from lowest to highest level of commitment were: Connection, Coordination, Collaboration, and Consolidation. The study identified the main financial, operational, and governance barriers and benefits of consolidation. The findings of the study pointed towards full consolidation as a viable and potentially beneficial long-term goal from a service coordination and delivery standpoint. However, it was determined that consolidation would not result in any significant cost reductions given that there are relatively few areas of duplicative service between the two agencies. The final recommendation was to keep the agencies legally separated in the near time, but to work towards consolidation over time through a phased approach.

3.6. Our Region Our Plan and the Regional Transit Framework (2012 & ongoing)

As part of the Our Region Our Plan (OROP) process, the 2040 Transit Vision Plan set a policy objective to establish a comprehensive transit system that attracts new riders, connects major centers, reduces congestion on major arterials, enhances affordability, protects the natural environment, provides for sustainability of the region, and provides a viable alternative to personal automobile travel. OROP proposed a set of rapid transit corridors linking key activity nodes throughout the Charleston region.

To advance this vision, OROP proposed the development of a Regional Transit Framework (RTF) plan to study the viability of the various high capacity corridor alternatives and help guide long range transit decisions in the future. BCDCOG is sponsoring the RTF, which is planned to begin in fall 2017 and will be completed in 2018. The RTF will serve as a companion piece to the transit component of this Long Range Transportation Plan update.

3.7. Partnership for Prosperity: A Master Plan for the Neck Area of Charleston and North Charleston (2014)

The Partnership for Prosperity: A Master Plan for the Neck Area of Charleston and North Charleston is a transportation and development framework developed in 2014 to guide public and private investments in the Neck Area of Charleston and North Charleston. The plan includes a multimodal transportation element that proposes a phased approach to enhancing transit in the Neck Area. The first phase involves improving coverage and frequency of existing services, followed by implementation of BRT along Rivers Avenue to form a high capacity spine between downtown Charleston, through the Neck Area, and to points northward. Local feeder bus service is planned to connect neighborhoods and activity centers to BRT stations to form an integrated network along with express routes connecting to other regional

destinations. The third phase envisions development of transit-oriented-development nodes along the BRT spine. The final phase, if development warrants, contemplates replacing the BRT with light rail transit (LRT).

3.8. Waterway Transit Initiative (ongoing)

Prior to the construction of highways and bridges in the 20th century, water shuttles and ferries were a common mode of passenger transportation providing access throughout the Charleston region. Construction of the Grace Memorial Bridge between Charleston and Mount Pleasant led to the discontinuation of ferry service in the late 1930's, after which no waterborne passenger transportation services existed in the region until the mid-1990's when a private operator began service between Market Street and Patriots Point. Several private operators initiated service for brief periods in the late 1990's and 2000's, but all ultimately went out of business.

Today, limited waterway service is provided by two private water taxi / ferry operators, Charleston Water Taxi and Fort Sumter Tours (operated under contract to the National Park Service). These operators are geared towards the tourist market and provide service between select attractions around Charleston Harbor, including the Aquarium Wharf/Maritime Center, Liberty Square, Charleston Waterfront Park, Patriots Point, Charleston Harbor Resort, and Fort Sumter. During the peak season, Charleston Water Taxi provides hourly service at each of its departure points and Fort Sumter Tours provides seven daily trips between downtown and Fort Sumter. There are also several tourism-focused private operators providing harbor tours and sailing tours.

Summary of Waterway Transit Planning Activities To-Date

In recent years, movement towards expanding the region's waterway transit services has gained traction, with interest expressed in waterway transportation between Charleston, North Charleston, Mount Pleasant, Daniel Island, and West Ashley that could serve as a public transportation option for commuters and tourists alike. The National Park Service (NPS) conducted a study in 2004 to explore the viability of an expanded waterborne transportation network in Charleston Harbor, ferry and water taxi services were identified as part of the region's vision for a multimodal transportation system as part of OROP in 2012, and a working group was recently initiated to assess the feasibility of a regional ferry service oriented towards the commuter market. These initiatives are described in the following sections

Fort Sumter National Monument Alternative Transportation Study (2004)

This study was completed by the NPS to assess water shuttle systems that would facilitate visitation to Fort Sumter. The water shuttle service evaluated was intended to complement the visit to Fort Sumter by providing alternative public transportation to reach the departure sites at Liberty Square and East of the Cooper River.

While the emphasis of this study was on tourism-based water shuttle service, it laid the groundwork for current commuter ferry efforts. Of particular relevance is its examination of operational characteristics and recommendations -- such as the vessel operating environment in Charleston Harbor, potential landing sites, docking and landside facility upgrades, and vessel requirements – as well as potential costs.

Our Region Our Plan (2012)

The 2040 Regional Transit Vision established in OROP calls for the development of a more robust multimodal transportation system serving the BCD region, and outlined five strategies. The fifth strategy is the establishment of additional ferry and water taxi services that take advantage of the region's waterways and provide transportation options for commuters and visitors. More specifically, the Cooper and Ashley Rivers were identified as corridors for waterway transit service connecting the Peninsula with Hanahan and the Charleston International Airport and its employment centers.

Current Commuter Ferry Initiative

In early 2017, the City of Charleston created a Commuter Ferry Working Group to review the feasibility of a regional commuter ferry system. Private water taxis and tour boats are currently operating between various points around the bay. The water taxi industry is interested in seeing a commuter ferry system established, providing an alternative to driving by using larger and faster vessels than a traditional water taxi. This type of service would complement water taxi services, but serve a different purpose and market. The goal of such a service would be to reduce auto traffic flow into downtown and the lower peninsula area for commuters, as well as provide a convenient form of transportation to day trippers via a high speed, convenient ferry service with several origination points.

Early action elements of the group's work program include:

- identifying funding sources for planning, capital, and operating expenses,
- identifying priority sites that are good candidates for establishing service and
- advancing a feasibility study of commuter ferry service.

With regards to potential ferry dock sites, the group has examined approximately 20 locations. While there are several potential dock options along the Ashley River, there are vessel size restrictions on this river due to bridge heights. Many of the dock sites being examined are in close proximity to existing CARTA routes, which would facilitate intermodal connections.

Peer Analysis

To gain an understanding of commuter ferry services operating in cities similar to Charleston, a peer analysis was completed using information for ferryboat operations available from the National Transit Database (NTD). The NTD is the only comprehensive source of validated operating and financial information reported by transit systems nationwide, and is updated annually. A total of 20 agencies reported operating ferryboat service in 2015, the most recent year for which data is available. Of these, three were selected as peers to examine. Each peer operates limited commuter oriented Passenger Only Ferry (POF) services in a city with significant port and/or naval military operations. The peer agencies, their ferryboat service, and locations are:

- Kitsap Transit (KT), Fast Ferry and Foot Ferry, Bremerton, WA
- King County Ferry District, King County Water Taxi, Seattle, WA
- Hampton Roads Transit (HRT), Elizabeth River Ferry, Norfolk, VA

Table 10 compares the peers' Urbanized Area (UZA) population, area size, and population density with the Charleston UZA. While Charleston is small compared to the peer average in terms of population and size, its population density is relatively comparable to these peer cities.

Table 10: Urbanized Area Comparisons of Commuter Ferry Peers, 2015 (Source: National Transit Database)

Urbanized Area (UZA)	Bremerton (WA)	Seattle (WA)	Virginia Beach (VA)	Peer Average	Charleston (SC)
Population	198,979	3,059,393	1,439,666	1,566,013	548,404
Size in Square Miles	136	1,010	515	554	293
Population Density	1,463	3,029	2,795	2,429	1,872

Overviews of the selected peer ferryboat systems as operated today are provided below. Most of this information was gathered from the agencies' websites.

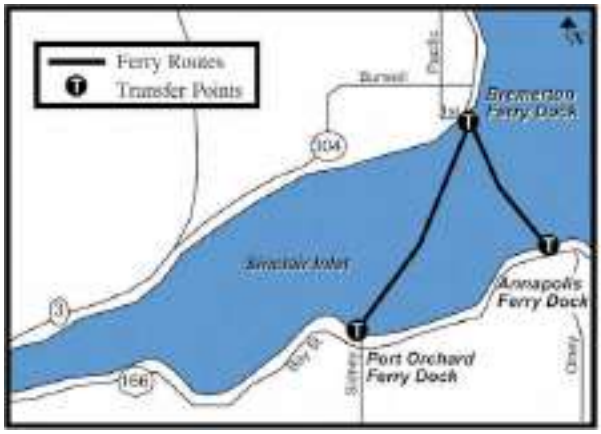
Kitsap Transit Foot Ferry and Fast Ferry

Kitsap Transit (KT) serves Kitsap County, WA, located on the Kitsap Peninsula across the Puget Sound from Seattle. Port Orchard is the county seat, but Bremerton, across the Sinclair Inlet from Port Orchard, is its largest city. Bremerton is home to the Puget Sound Naval Shipyard (PSNS) and the Bremerton Annex of Naval Base Kitsap. In addition to local and commuter fixed-route bus, demand response bus and taxi, and vanpool services, KT also operates Passenger Only Ferry (POF) services.

KT has been involved in POF service since the agency's inception in 1982, initially only to ensure that the foot ferry across the Sinclair Inlet between Bremerton and Port Orchard continued to run. In the early 1990's, KT initiated a fare subsidy program with the private operator integrating the foot ferry with bus service. In 2008, KT purchased the Port Orchard-Annapolis-Bremerton Foot Ferry service from Horluck Transportation. Operated for KT by Kitsap Harbor Tours, the Foot Ferry has been in continuous, successful operation since 2008.

The Foot Ferry serves the Port Orchard Ferry Dock, Bremerton Ferry Dock, and Annapolis Ferry Dock and Park & Ride, and charges the same fare as KT bus service (one-way cash fare is $2). KT owns two vessels, the historic Carlisle II (143 passengers) and the Admiral Pete (120 passengers). The Foot Ferry routes and vessels are shown in ***Figure 17***. Ferry service between Bremerton and Port Orchard operates every 30 minutes all-day on weekdays and Saturdays, with 15-minute service from Bremerton to Port Orchard on weekdays between 5:15 a.m. and 6:15 p.m. Ferry service between Bremerton and Annapolis operates every 15 minutes during weekday peak periods only.

Figure 18: Kitsap Transit Foot Ferry Routes



In 2015, the Foot Ferry carried over 490,000 passengers with a farebox recovery rate of 45%. The farebox recovery rate is somewhat inflated because of the PSNS Transportation Incentive Program (TIP),

Figure 19: Kitsap Transit Foot Ferry Vessels

which increases revenue for the foot ferry because there are so many shipyard riders going primarily to Annapolis from Bremerton. ***Table 11*** provides key operating and performance characteristics for the Foot Ferry over the last three available years.

Table 11: Kitsap Transit Foot Ferry Operating and Performance Characteristics, 2013-2015 (Source: National Transit Database)

Kitsap Transit Foot Ferry	2013	2014	2015
Operating Characteristics			
Passenger Trips	450,732	458,604	492,857
Fare Revenues	$780,087	$762,084	$834,621
Operating Expenses	$2,176,747	$2,193,816	$1,872,411
Revenue Hours	6,189	6,235	5,907
Revenue Miles	47,174	46,834	44,634
Peak Vessels	3	3	3
Performance Characteristics			
Passenger Trips per Revenue Hour	72.83	73.55	83.44
Passenger Trips per Revenue Mile	9.55	9.79	11.04
Operating Expense per Revenue Hour	$351.71	$351.86	$316.98
Operating Expense per Revenue Mile	$46.14	$47.84	$41.95
Operating Expense per Passenger Trip	$4.83	$4.78	$3.80
Farebox Recovery Ratio	36%	35%	45%

In July 2017, KT began operating its first Fast Ferry passenger-only route across Puget Sound to downtown Seattle. This ferry route, as well as two additional routes to downtown Seattle proposed for implementation in the near future, was made possible by a referendum passed in November 2016 adding three tenths of one percent to the Kitsap County sales tax. ***Figure 19*** shows the three fast ferry routes and the anticipated crossing times for each. Fast Ferry service is slated to begin in summer 2018 between Kingston and Seattle and summer 2020 between Southworth and Seattle.

Fast ferry service POF service between Bremerton and Seattle was operated from 1986-2003 by WSF, but was discontinued after wake damage to the shoreline and bulkheads in the Rich Passage connecting Bremerton to Puget Sound resulted in a class-action lawsuit to slow the ferries down, as well as major cuts to state ferry funding.

KT then turned its attention to establishing a Kitsap-based cross-sound POF service. After a decade of work to develop stable funding for service, wake and marine life research, designing, testing, and optimizing a highspeed low-wake vessel for POF service through Rich Passage, and development of a solid business plan, the sales tax referendum was approved by Kitsap County voters in 2016.

Figure 20: Kitsap Transit Fast Ferry Routes Proposed for November 2016 Referendum

The sales tax increase is dedicated to KT's ferry operations (fast and foot), and also frees up $1.5 million annually for bus service improvements. With those resources, KT has implemented improvements to existing routes and added new express routes to better serve the ferry docks.

The initial Fast Ferry route between Bremerton and Seattle and its vessel are shown in ***Figures 20 and 21***. The Fast Ferry trip time is 28 minutes compared to the Washington State Ferries (WSF) car ferry service, which takes 60 minutes. Ridership figures are not yet available.

Figure 21: Kitsap Transit Fast Ferry Route

Figure 22: Kitsap Transit Fast Ferry Vessel: Rich Passage I

The Rich Passage I is a catamaran designed to create a very low wake while operating at high speeds, and seats 118 passengers. KT is exploring options to add a back-up vessel, as there have been issues with the vessel's reliability. The agency's future routes call for the purchase of a 150-passenger catamaran for delivery in 2018, two 250-passenger bow loading catamarans for delivery in 2020 and 2021, and an additional 118-passenger high-speed, low wake catamaran to be delivered in 2022.

Fast Ferry service is currently operated during weekday peak periods (three a.m. trips and three p.m. trips) and all-day on Saturdays. The schedule was developed to balance public input, dock availability in Seattle, and crossing conflicts in Rich Passage. Starting in 2018, additional service on weekdays and Friday and Saturday evenings is anticipated to be operated from May to September. Up to three-quarters of the seats during peak periods can be reserved in advance.

A single-ride fare is $2 eastbound (to Seattle) and $10 westbound (from Seattle). The price of a monthly fast-ferry pass is $168, while a monthly combined bus/fast-ferry pass is $196. Seniors, disabled, youth and low-income who show a current reduced-fare permit pay half price. Transfers credits when ORCA e-purse is used for payment can be used to transfer from KT buses or foot ferries.

On the Seattle side, the Fast Ferry serves the Pier 52 Ferry Dock (also known as Colman Dock). Easy connections to King County Metro Transit, Sound Transit, and Link Light Rail can be made within a quarter-mile walk. Aerial walkways, including the Marion Street Ferry Walkway, provide pedestrian connections from the ferry terminal. The Fast Ferry service will move to Pier 50 in late 2018 and share a new terminal with King County Water Taxi, as discussed further below.

For all of KT's ferry services, paid parking is available at the Annapolis Ferry Dock Park & Ride. This lot has 81 parking spaces, and a parking fee of $5.00 is payable daily, Monday through Friday. Passengers may also purchase monthly parking permits for $80.00. Parking is free for registered carpools with two people in the vehicle at the time they park. Parking is not available at either the Port Orchard or Bremerton Ferry Docks, although paid parking is available in the downtown areas.

Connecting bus service is provided at each ferry dock in Kitsap County. The Bremerton Transportation Center (BTS) at the Ferry Dock provides connections to ten KT routes, including two new "fast ferry express" routes implemented in July 2017 with resources freed up by the sales tax for ferry service, as well as one Mason County route. It is also served by several worker/driver routes, which are commuter routes operating like large carpools between various points in Kitsap County and either PSNS or Naval Submarine Base Bangor. BTS is located at the Ferry Dock and has 15 bus bays.

A transfer center at the Port Orchard Ferry Dock provides connections to five fixed-route and one deviation service route operated by KT, while the Annapolis Ferry Dock only serves one KT commuter route. One of the routes connecting to the Port Orchard Ferry Dock was also improved with resources freed up by the ferry sales tax.

King County Water Taxi

The King County Water Taxi is a passenger-only fast ferry service owned and operated by King County, Washington. While called water taxi service, it uses larger and faster vessels than is typically associated with water taxi service. Currently, there are two water taxi routes. Both originate in Downtown Seattle, with one route serving Vashon Island and the other serving West Seattle.

King County Water Taxi has been in operation since 2008, about a year after the County created the King County Ferry District (KCFD), a special-purpose district funded through a property tax levied on all property in the county. The KCFD took over the operations of two existing POF routes and rebranded them the King County Water Taxi in 2008 (from West Seattle) and 2009 (from Vashon Island). In 2014, the King County Council voted to consolidate the ferry district into county government. As of 2015, the King County Water Taxi became a service of the Marine Division of the King County Department of Transportation.

The Vashon Island-Seattle Water Taxi route serves the Heights Dock on the north end of Vashon Island, while the West Seattle Water Taxi route serves the Seacrest Dock in the Alki neighborhood of West Seattle. Both routes currently dock at Pier 52 on the downtown Seattle waterfront, but this is only temporary while the passenger facility at Pier 50 is being renovated. Once complete in the fall of 2018, riders will be able to enjoy a covered, 8,000-square-foot terminal that will serve both King County Water Taxi and Kitsap Fast Ferry service. It will also eventually offer access to an elevated pedestrian walkway that will connect riders to WSF's Colman Dock terminal.

Vessels operated include two new water taxis built with FTA grant money in 2014-2015, the Sally Fox and the Doc Maynard. Both of these new vessels are 104-foot long, high speed, low wake catamarans carrying up to 278 passengers and traveling at a service speed of 28 knots. Cost to build these vessels was $6.25 million for each. The Spirit of Kingston serves as the back-up vessel, and is a smaller catamaran that holds 147 passengers. One of the new vessels at the temporary King County Water Taxi terminal at Pier 52 is shown in ***Figure 22***.

Figure 23: King County Water Taxi Vessel at Seattle Pier 52

The Vashon Island-Seattle Water Taxi route operates during the weekday peak periods in both directions, with three sailings for the morning commute and three for the evening commute. Each crossing takes approximately 22 minutes. At the Vashon Island Ferry Terminal, connecting services include King County Metro bus routes 118 and 119 and Washington State Ferries with routes to both the city of Southworth in Kitsap County and the Fauntleroy terminal in West Seattle.

The West Seattle–Seattle Water Taxi route operates on weekdays during peak periods year-round every 35 minutes. From April to October, the route operates seven days a week, with weekday midday and weekend service every 60 minutes. Evening service every 60 minutes is provided on Friday and Saturday nights, as well as weeknights and Sunday nights when there is a Mariners, Sounders, or Seahawks game. Its crossing time is approximately 10 minutes during weekday commute hours and approximately 15 minutes at all other times.

King County Metro operates two shuttle bus routes that take passengers to and from the dock at Seacrest Park. Route 773 connects to the West Seattle Junction and route 775 connects to the Admiral District and Alki Beach.

The one-way fares for King County Water Taxi are shown in ***Table 12***. The King County Water Taxi does not accept reservations.

Table 12: King County Water Taxi Fares

Fare Type	Vashon Island	West Seattle
Adult		
Cash or TVM Ticket	$6.25	$5.25
ORCA Card	$5.25	$4.50
Youth (6-18)		
Cash or TVM Ticket	$6.25	$5.25
ORCA Youth Fare Card	$4.00	$3.50
Other		
Low Income (ORCA LIFT card)	$4.00	$3.50
Senior/Disabled	$2.75	$2.25
Children (5 and under)	Free	Free

In 2015, the Water Taxis carried over 515,000 passengers with a total operating cost of nearly $5.5 million and a farebox recovery rate of 36%. ***Table 13*** provides key operating and performance characteristics for the Water Taxi over the last three available years.

Table 13: King County Water Taxi Operating and Performance Characteristics, 2013-2015 (Source: National Transit Database)

King County Water Taxi	2013	2014	2015
Operating Characteristics			
Passenger Trips	445,110	467,119	515,207
Fare Revenues	$1,625,208	$1,764,299	$1,982,612
Operating Expenses	$5,193,701	$5,099,325	$5,478,705
Revenue Hours	5,010	4,992	5,003
Revenue Miles	50,060	49,724	50,868
Peak Vessels	2	2	2
Performance Characteristics			
Passenger Trips per Revenue Hour	88.84	93.57	102.98
Passenger Trips per Revenue Mile	8.89	9.39	10.13
Operating Expense per Revenue Hour	$1,036.67	$1,021.50	$1,095.08
Operating Expense per Revenue Mile	$103.75	$102.55	$107.70
Operating Expense per Passenger Trip	$11.67	$10.92	$10.63
Farebox Recovery Ratio	31%	35%	36%

Hampton Roads Transit (HRT) Elizabeth River Ferry

Hampton Roads Transit (HRT) serves the Hampton Roads area of southeastern Virginia. Hampton Roads is known for its large military presence, shipyards, coal piers, and miles of waterfront property and beaches. The body of water known as Hampton Roads is one of the world's largest natural harbors, and incorporates the mouths of the Elizabeth River, Nansemond River, and James River with several smaller rivers that empty into the Chesapeake Bay near its mouth leading to the Atlantic Ocean. The land area

includes a collection of cities, counties and towns on the Virginia Peninsula and in South Hampton Roads.

HRT contracts with each of the six cities in Hampton Roads that it currently serves: Norfolk, Virginia Beach, Chesapeake and Portsmouth in South Hampton Roads and Newport News and Hampton on the Virginia Peninsula. Current services include bus service (local, express routes, seasonal Virginia Beach, and commuter work routes), paratransit service, the Elizabeth River Ferry, and ride-matching services.

HRT contracts the operation of three 150-passenger paddle wheel ferries on the Elizabeth River between Norfolk and Portsmouth, providing an alternative to crossing in a vehicle via either the I-264 bridge or the US 58 tunnel. The paddlewheel does not provide propulsion and only serves as a nostalgic addition to the vessel. They travel between the North Landing Ferry Dock and the High Street Landing Ferry Dock in Portsmouth and downtown Norfolk at the Waterside Ferry Dock and the Harbor Park Ferry Dock. Boarding and de-boarding occurs via floating docks at each of the dock locations. Harbor Park is only serviced during Norfolk "Tides" baseball home games. The Elizabeth River Ferry routes and one of its vessels are shown in ***Figures 23 and 24***.

Figure 24: HRT Elizabeth River Ferry Routes

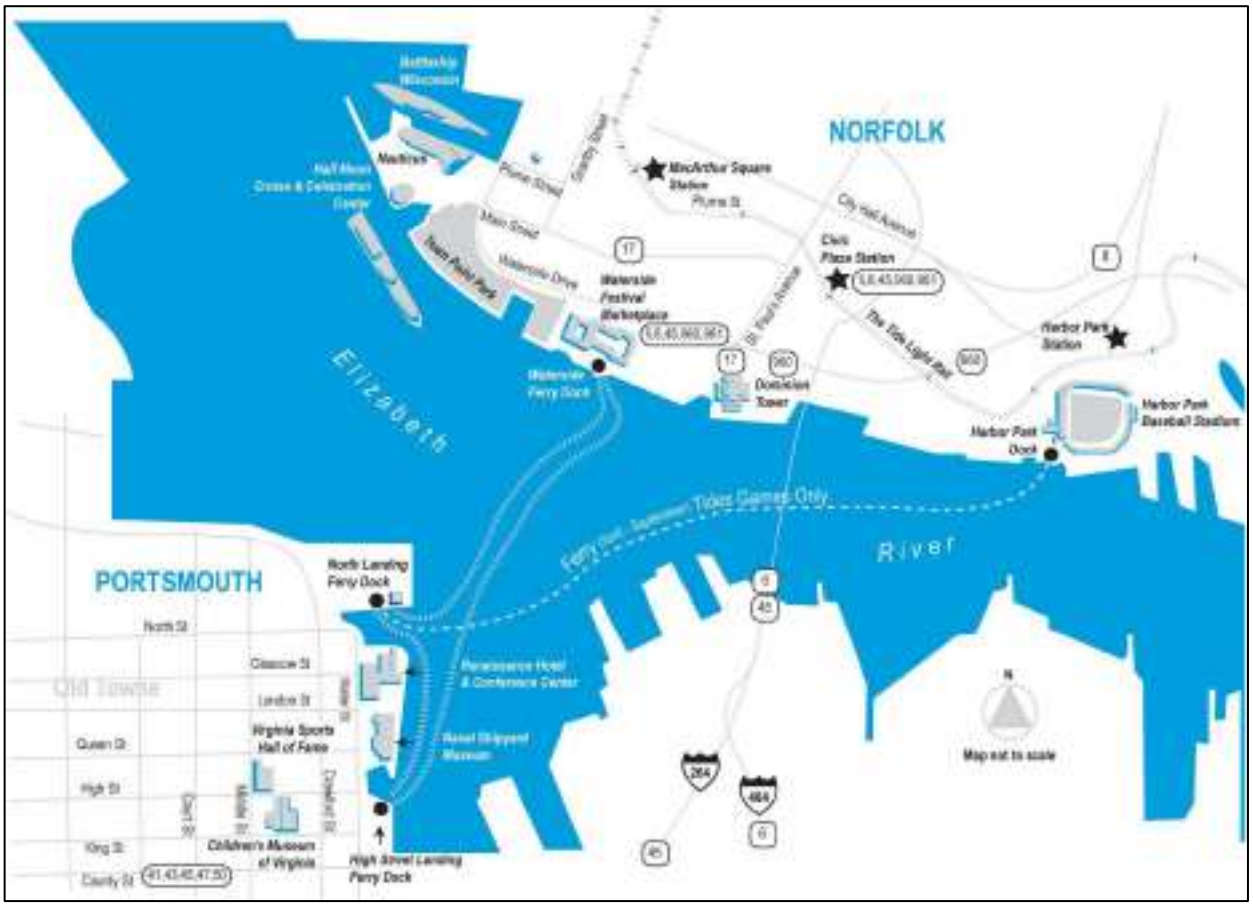


Figure 25: HRT Elizabeth River Ferry Vessel (Elizabeth River III)

Each of the three ferry routes (connecting North Landing and High Street, North Landing and Waterside, and High Street and Waterside) operates every 30 minutes year-round, seven days a week. From Memorial Day to Labor Day, they operate with 15-minute service at peak times on weekends (Friday evenings, Saturday afternoons and evenings, and Sundays afternoons). It takes approximately 10 minutes to cross the river between Portsmouth and Norfolk. Service between North Landing in Portsmouth and Harbor Park in Norfolk from April to September during "Tides" home baseball games runs every 30 minutes beginning one hour before game time and continues just after the game ends.

The Ferry is wheelchair accessible and allows boarding passengers to board with their bicycles. As of October 2014, the cost to board the ferry is $1.75 for adults, and $0.75 with eligibility ID for youth (age 17 and under), seniors (age 65 and older), and disabled patrons. Children age 17 and under may ride for free with a Student Freedom Pass or if accompanied by an adult fare-paying passenger. HRT GoPass options are also available, including one-day ferry passes at $4.00 for adults and $2.00 for youth, seniors, and disabled patrons with eligible ID.

The current operation uses three vessels, one during normal weekday operations, two on weekends, and three on weekends with special events. During the off season, a single vessel is stored at Portsmouth High Street overnight; at peak times, a spare or ready vessel is also kept at Portsmouth. A total of five docking locations are available: two at Waterside, two at North Landing, and one at High Street. There is no landside activity or equipment associated with the ferry service other than docks and signage. Docks are maintained by the cities.

In Portsmouth, connections to two local bus routes can be made at a stop one block from the High Street dock, and to three additional routes at downtown Portsmouth's bus transfer area at County Street and Court Street about a quarter of a mile away. The North Landing dock is located a little over a half of a mile away from the bus transfer area.

In Norfolk, the Waterside ferry dock is located approximately a half mile from the heart of downtown Norfolk and the nearest two Tide Light Rail Transit Stations, MacArthur Square and Civic Plaza. A bus stop on Waterside Drive is just a short walk from the ferry dock, providing connections to three local

routes and two express routes which, combined, provide service that loops through downtown approximately every 5 minutes in the peak periods.

A Park & Sail program is available to those who work in Norfolk and take the ferry from Portsmouth at least three days a week. Under this program, riders may park free of charge in their own designated parking spaces at the Park & Sail lot located at the intersection of Bart Street and Court Street in Portsmouth. The Park & Sail Lot is located about a half of a mile from the High Street dock and about three-quarters of a mile from the North Landing dock. In downtown Norfolk, ample parking is available at market rate along Waterside Drive, both in parking structures and on-street.

In August 2015, HRT approved the acquisition of one additional ferry vessel and the option to buy three additional ones. These vessels will replace those in HRT's aging ferry boat fleet, which have required continuous structural and mechanical repairs. The first of these, the Elizabeth River Ferry IV, was put into service on July 12, 2017. The new vessel is similar in design and carries 150 passengers like its predecessors, but has two hatches on each side to allow for faster boarding and de-boarding.

In 2015, the Elizabeth River Ferries carried nearly 295,000 passengers with a total operating cost of approximately $1.7 million and a farebox recovery rate of 21%. ***Table 14*** provides key operating and performance characteristics for the Elizabeth River Ferry over the last three available years.

Table 14: HRT Elizabeth River Ferry Operating and Performance Characteristics, 2013-2015 (Source: National Transit Database)

Elizabeth River Ferry	2013	2014	2015
Operating Characteristics			
Passenger Trips	336,838	332,028	294,625
Fare Revenues	$313,314	$567,744	$355,408
Operating Expenses	$1,705,130	$1,300,350	$1,701,947
Revenue Hours	6,161	6,341	6,606
Revenue Miles	14,048	18,264	18,978
Peak Vessels	3	3	3
Performance Characteristics			
Passenger Trips per Revenue Hour	54.67	52.36	44.60
Passenger Trips per Revenue Mile	23.98	18.18	15.52
Operating Expense per Revenue Hour	$276.76	$205.07	$257.64
Operating Expense per Revenue Mile	$121.38	$71.20	$89.68
Operating Expense per Passenger Trip	$5.06	$3.92	$5.78
Farebox Recovery Ratio	18%	44%	21%

Historically, Hampton Roads had more robust ferry services. The Chesapeake Ferry Company provided service between Norfolk and Newport News on the Virginia Peninsula from 1912 until 1957. Service was discontinued shortly after the Hampton Roads Bridge Tunnel was completed.

From 1999 to 2002, a ferry service called Harbor Link operated between the Nauticus Museum in downtown Norfolk and the public pier in downtown Hampton. Operated privately, the system relied on farebox revenue, HRT operating assistance, and a Congestion Mitigation and Air Quality (CMAQ) Improvement Program grant awarded on the basis of a ridership estimate of 450 riders a day. Ridership

was far lower than expected, averaging 110 riders per weekday, with very high seasonal peaks in July and August. Harbor Link fares for the trip from Hampton to Norfolk were $5.

While Harbor Link service was originally intended to be operated with a higher-speed passenger ferry at speeds of 25-30 knots, the actual Harbor Link equipment was capable of only 20 knots. The impact of vessel's own speed restrictions was further complicated by the speed restrictions of the Elizabeth River no-wake zone, with speed being cited as a major reason for the service's end of operations.

Fast ferry service connecting multiple points in the area (e.g., downtown Norfolk, downtown Newport News, Naval Station Norfolk and Ft. Eustis) has been examined several times since the Harbor Link service ended, but has never been implemented.

Commuter Ferry Market Analysis Recommendations

As discussed above, there is a growing interest in passenger ferry transit service in the Charleston region. With increasing congestion, passenger-only ferry service may be a feasible option to provide a convenient and competitive alternative to driving or CARTA and TCL bus services. Two types of ferry service are under consideration:

- point-to-point service (e.g., Patriots Point to downtown Charleston) and
- linear multiple-stop services (e.g., Daniel Island to Remley's Point to downtown Charleston).

A number of potential landing sites and ferry routes have been identified in past plans and studies, including the 2035 CHATS LRTP, OROP and the Fort Sumter National Monument Alternative Transportation Study. The Commuter Ferry Working Group organized by the City of Charleston is now actively examining the feasibility of various landing sites.

Like any other form of transit, commuter ferry service must link areas of significant travel demand. An analysis of travel demand between districts is needed to identify significant travel markets that cross the region's bodies of water. This analysis will help inform the identification of routes.

For commuter ferry service to be successful, it would need to offer travel times that are competitive with other modes of travel. For this reason, a second piece of the market analysis should be travel time comparisons of ferry service, bus transit service and driving.

One component of travel time is the time spent on the water, which is a function of the vessel used, as well as any speed restrictions on the waterway itself, including no-wake zones and busy shipping lanes. Passenger boarding and de-boarding times must also be considered.

Because ferries can only take passengers to the water's edge, the other component of travel time is the time required on both ends of the ferry trip, that is, between the passenger's origin and the boarding ferry dock on one end and between the de-boarding ferry dock and the passenger's final destination on the other end. Intermodal transfers are required at one and often, both ends of the ferry trip. Options for providing this transfer include park-and-ride lots and feeder bus service.

4. Summary of Stakeholder and Public Input

Public and stakeholder input was collected throughout the course of the LRTP update process through a variety of methods, including a series of public symposiums, stakeholder interviews, and an online survey. The results of these outreach activities relevant to transit needs and priorities in the region are summarized in the following sections.

4.1. Summary of Stakeholder Input

A set of key transit stakeholders were identified and interviewed in July 2017 to gain insight into the needs and opportunities regarding transit in the Charleston region. The following stakeholders were interviewed:

- Town of Summerville – Mayor, Town Administrator, Public Works Director, Director of Administration and Economic Development, Planning Director and key staff
- City of North Charleston – Assistant Director of Public Works, Deputy Director of Planning and Zoning, Project Manager, Office of the Mayor, and key staff
- City of Charleston –Transportation Director, Planning Director, Director of Civic Design, and key staff
- City of Goose Creek – Mayor and City Administrator
- Town of Mount Pleasant – Transportation Director, Planning Director, and key staff
- CARTA and TCL - Executive Director
- Commuter Ferry Working Group

The stakeholders were asked a series of open ended questions regarding their opinions on existing service in the region, existing and future unmet needs, and suggestions for improving the regional transit network. The feedback received during these interviews is summarized below according to reoccurring topics and categories of transit needs that were brought forward in multiple interviews. A full summary of the stakeholder interviews in provided in Appendix A.

- **Passenger Amenities:** The quality of bus stops was noted as a deficiency throughout the region, for both CARTA and TCL services. In particular, more bus shelters were noted by several interviewees as a key need given the region's climate.
- **Regional Connections and Access to Employment Centers:** Regional connections to major activity and employment centers were noted as a key need. Specific corridors that were mentioned as candidates for transit service investments included:
    - Dorchester Road
    - Central Avenue
    - Orangeburg Road
    - Old Trolley Road
    - Miles Road
    - Highway 17A
    - Rivers Avenue
    - Highway 61/Ashley River Road
    - Glenn McConnell Parkway
    - US17/Savannah Highway
    - Highway 176 (Goose Creek)

    - Coleman Boulevard
    - Interstate 526, US17, and Interstate 26 corridors (for regional connections)
- **Expanded Park-and-Ride / Commuter Service:** Expanded commuter service from more park-and-ride lots was mentioned during several interviews as a need to connect the region's relatively low density residential areas with employment centers. This could also help alleviate parking challenges downtown.
- **Technology/ITS Improvements:** Long transit travel times and poor on-time performance were noted as a deficiency. Several interviewees proposed technology improvements such as signal priority/preemption and timing enhancements to help alleviate these issues.
- **Activity Center Circulators:** Circulator service, similar to the existing DASH service, was suggested to help address mobility needs within/between core urban areas and activity centers. Areas suggested as candidates for circulator service include:
    - Summerville, connecting areas including Nexton, Downtown Summerville, and Oakbrook
    - Upper Peninsula
    - Downtown Charleston
    - West Ashley – MUSC – Avondale
    - Downtown Mount Pleasant
- **Capital Facilities:** Depending on expansion plans, CARTA will likely need another maintenance facility in the future and/or layover/storage yard(s) to reduce deadhead.
- **Regional Waterway Transit:** There is an interest in establishing ferry service geared towards the commuter market. Feasibility of regional waterway transit is currently being assessed and potential departure points are being identified.
- **Policy:** Several recommendations were made concerning policy and regional coordination issues, including:
    - Zoning regulations should be revised to encourage density/TOD around planned transit nodes, especially along Rivers Avenue corridor in advance of BRT. Development regulations should also compel developers to provide set-asides for transit amenities such as bus stops.
    - Land use and transit planning should be more closely linked. Future transit investments should be oriented around future areas of density.
    - Public outreach and communications strategies to educate both the general public and elected officials regarding the benefits of transit and available services should be developed and implemented.
    - Strategies to incentivize transit use should be explored, including subsidized transit passes, increased parking pricing.
    - Opportunities for a full or partial consolidation of CARTA and TCL should continue to be explored, especially in areas where services overlap or are redundant.
    - The municipalities throughout the region could benefit from better coordination, especially with regard to maintenance of bus stops and property acquisition for stops/shelters.

4.2. Summary of Public Input

Input from the public pertaining to long range transit needs in the region was gathered through a series of symposiums held throughout the CHATS planning area in June 2017. The project symposium provided an opportunity for the public to participate in collaborative activities and share input on how the region's transit services can be improved for the future. Participants were asked questions to solicit feedback regarding issues identification and priorities for transportation investment. At each of the three symposiums, enhanced mobility, congestion relief, increased transit alternatives including Bus Rapid Transit, and infrastructure condition were identified by participants as key priorities.

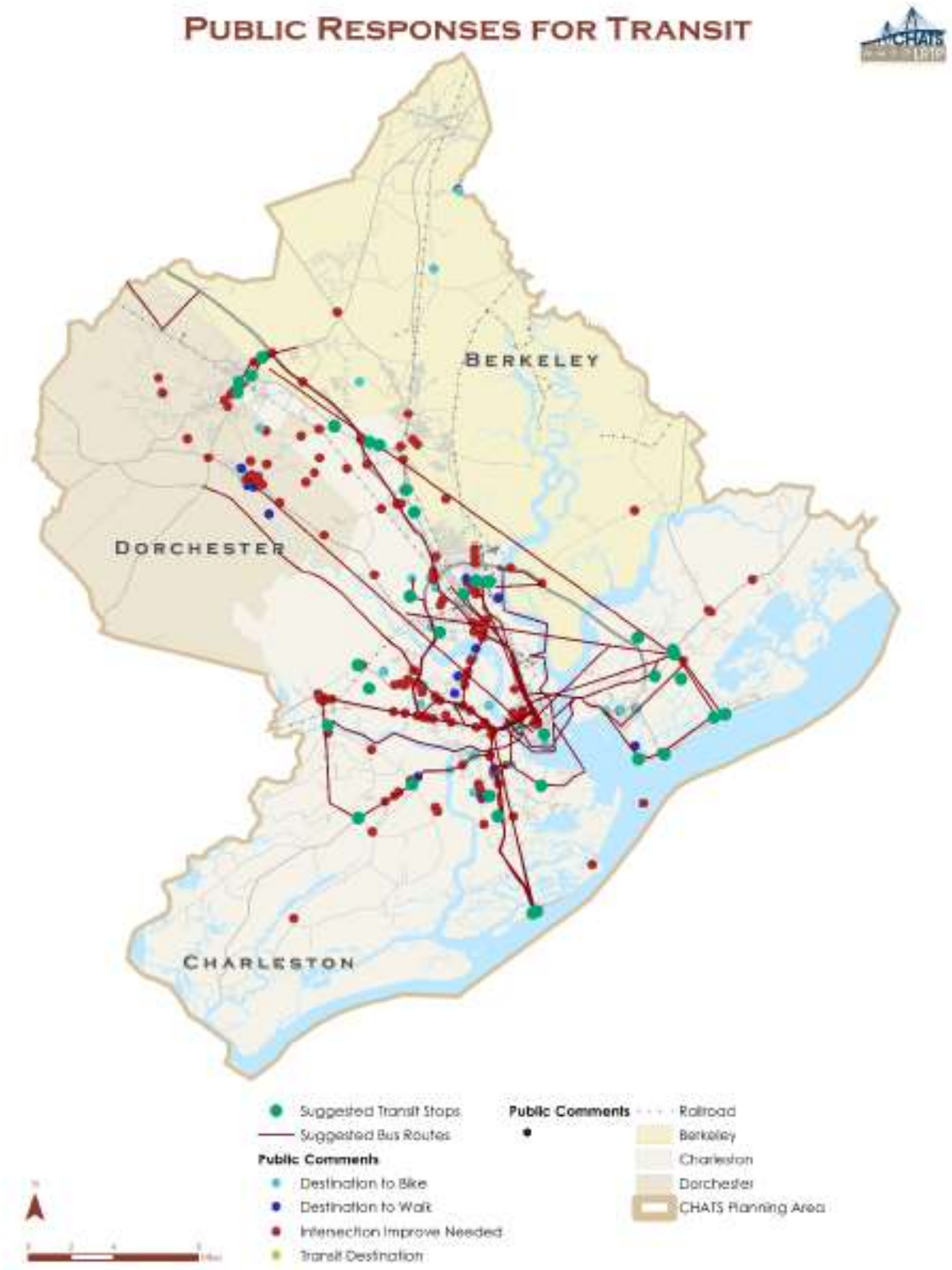
In addition to the public symposiums, a public survey utilizing WikiMaps was made available online to allow participants to identify specific transit needs, including new bus routes and corridors that should be served, bus stop locations, park-and-ride locations, and other service improvements such as expanded service hours. A summary of survey results is presented in ***Table 15*** and illustrated in ***Figure 25***.

Table 15: Summary of Public Comments Received for Transit Services

Bus Routes / Corridors
Downtown to Folly Beach
Limited stop service from Windermere to Folly Beach on Folly Road
Downtown to West Ashley with later service
Harbor View Road corridor to Folly Beach
Carolina Bay to Downtown
Boeing to Carolina Bay
Express bus on Harbor View to downtown
Johns Island to downtown - local and commuter service
Service from Hwy 17 to Isle of Palms beach
Hwy 61 from Summers Corner to Downtown
Summerville to Downtown
Local service from downtown Summerville to Berkeley County via Main St.
West Ashley to North Charleston
DASH service on West Ashley loop (St. Andrews/Ashley River Rd to Sam Rittenburg and then back down Savannah Hwy)
Limited stop service from Park Circle area in North Charleston to Downtown
Express service on 526 corridor from North Charleston to Daniel Island and Mount Pleasant
More frequent service on Hwy 17 and 61 in West Ashley
Routes from Johns Island/West Ashley to the airport
Bus Stop Locations
Fort Moultrie
Sullivans Island
East Copper Hub
Summerville Hub
Isle of Palms
Stono River Ferry area
Trident Medical Center

Maybank and Main Rd in Johns Island
Seaside Farms
Harbor View area
Park and Ride Lots
Summerville PnR lots - downtown and at fairgrounds on US78
Trident Medical Center
Glenn McConnel/Bees Ferry
Johns Island at Maybank Hwy and River Road
Other Comments
Add more evening service
Add more mid-day service to the James Island Express
Commuter ferry
Add more service hours on Express Route 3

Figure 25: WikiMaps Public Responses for Transit



5. Transit Needs Assessment

An assessment of transit needs for the Charleston region was developed based on the analysis of existing transit conditions, a review of previous and ongoing transit planning initiatives, and public and stakeholder input. Transit needs were identified using the following methodology and sources:

- Projected population and employment growth and other demographic trends identified in Section 2.1
- Performance data of existing transit services in the region as summarized in Sections 2.2 and 2.3
- Transit projects identified through the prior LRTP update and other previous and ongoing studies and internal agency plans as summarized in Section 3
- Public and stakeholder input as summarized in Section 4

Based on this analysis, general strategies were developed regarding improvements to existing service, implementation of new modes and corridor expansion projects, and transit supportive policies, as discussed below. From these strategies, specific long-range transit needs for the region were identified, as defined in ***Table 16***.

- **Service Improvements**
    - **Improve transit access to major employment centers:** The Charleston region is home to many major employers in the defense, health care, manufacturing, and tourism sectors. Connecting workers to employment centers is critical to sustaining economic growth into the future. Improved transit access to employment is a key need that can be addressed through enhanced local and express service, including the development of new park-and-ride lots throughout the region.
    - **Enhance local service to provide improved frequency and travel times:** Travel time competitiveness is a key component that influences one's decision to use public transportation versus other modes, especially in the case of "choice" riders who have access to a personal automobile. For choice and transit dependent riders alike, however, transit trip times that are competitive with other modes enhance customer satisfaction and ultimately serve as a catalyst to attracting ridership to the system. Improvements in local service frequency should be prioritized along with technology enhancements to the roadway network to reduce delay such as signal timing modifications and transit signal priority on key routes.
    - **Build upon success of DASH circulator service to expand activity center circulators into new markets:** CARTA's DASH service has proven to be a successful model for providing mobility in Charleston's urban core. As neighborhoods in the Upper Peninsula, Neck Area, and West Ashley continue to develop and add density, similar service models should be explored as viable transportation alternatives. Other activity centers such as major retail and employment centers, colleges and universities, and tourist destinations such as the beaches could benefit from activity center circulators or trolley service that tie into the core network.
    - **Continue investment in fleet modernization and state-of-good-repair needs:** CARTA is actively working towards modernizing its aging local and express bus fleet. As the CARTA and TCL systems expand in the future, emphasis should be placed on maintaining an

asset management and fleet replacement program in accordance with FTA regulations and industry standards to ensure system safety and reliability.

- **Enhance bus stop amenities and pedestrian access to transit network:** A relatively small percentage of bus stops throughout the region are equipped with shelters and many are lacking in adequate pedestrian access facilities. Such amenities enhance safety, system usability, and customer satisfaction, and should be prioritized to the extent possible, especially at high-volume stops.

- **New Modes & Technologies / Corridor Expansion Projects**
  - **Implement the Lowcountry Rapid Transit BRT and explore new corridors for rapid transit implementation:** The region's first rapid transit corridor, the Lowcountry Rapid Transit BRT (formerly i26 Alt), is an important first step in developing a network of high capacity public transportation lines in the Charleston region. The project is moving forward into project development. As a next step, BCDCOG is currently studying the viability of additional corridors through its Regional Transit Framework plan. The outcome of this effort should inform the identification and programming of new rapid transit corridors to support current and projected areas of transit supportive land use.
  - **Explore commuter ferry as a viable transportation mode:** The Charleston region's waterways present an opportunity to add commuter ferry as an alternative transportation mode within the overall transportation network. An initiative is currently underway to study the viability of commuter ferry between various points throughout the region, including downtown Charleston, North Charleston, West Ashley, Mount Pleasant, James Island, and Daniel Island. The outcome of this effort should inform the identification and programming of new commuter ferry routes, as well as the supporting local service improvements necessary to ensure its success.

- **Policy Strategies**
  - **Public outreach and marketing:** As evidenced in data and comments received through public and stakeholder input, the commuting habits of residents in the Charleston region is overwhelmingly auto-centric, with many transit riders relying on the service out of need rather than choice. A general lack of awareness of available transit services, coupled with a lack of incentives to explore alternative forms of travel, perpetuates this trend. CARTA and TCL and other regional stakeholders should explore opportunities to expand marketing and public outreach efforts to promote the various benefits of public transportation, especially to niche markets such as commuters, universities, and visitors. Further engagement with local elected officials and major employers to explore opportunities to develop programs that incentivize transit use, such as subsidized transit passes, is another key strategy to encourage ridership among choice riders.
  - **Continue to strengthen coordination between CARTA and TCL:** The 2013 Transit Consolidation Feasibility Analysis identified opportunities for closer coordination between the CARTA and TCL. While full consolidation is potentially a viable long-term outcome, the study recommended an incremental approach with increased levels of coordination phased in over time. In the near-term, CARTA and TCL should seek to identify further opportunities for service coordination to enhance mobility throughout the region.

- **Coordinate land use and transportation policy at the regional and local levels:** As the Charleston region moves forward towards implementing its first BRT corridor, it is imperative that supportive land use policies are in place at the local level to fully capitalize on this transportation investment. Effective Transit Oriented Development (TOD) land use policies that encourage higher density, mixed use development around planned BRT stations and intermodal hubs will serve as a catalyst for attracting and retaining ridership. To achieve this goal, local zoning regulations should be reviewed and updated as necessary to incorporate TOD design principles around station-area nodes to the extent possible within the local planning context. While emphasizing TOD is a key objective along rapid transit corridors, an opportunity also exists to further incorporate transit-supportive amenities such as set-asides for bus stops or shelters, park-and-ride lots, and pedestrian access facilities into site plan review processes in jurisdictions throughout the entire service area. At the regional level, land use and transit planning initiatives should be closely coordinated to ensure that future development patterns are served by appropriate levels of transit investment.

Table 16: Summary of Regional Long-Range Transit Needs

Need Type	Need Description	Source
Service Improvements - Operating		
Express Bus Service Improvements - CARTA	Improvements to existing express service and one new express route along I-526 from West Ashley to Mount Pleasant via Charleston International Airport.	-2016 COA Mid-Range Service Recommendations -Public & stakeholder input
Local Bus Service Improvements – CARTA	Improvements to existing local service and new routes to support implementation of Lowcountry Rapid Transit BRT as proposed in 2016 COA Mid-Range recommendations. Provides frequency improvements on select existing routes and new routes along the following corridors: 1) DASH service from MUSC to Meeting/Line via Calhoun & King; 2) BRT feeder service from Rivers/Otranto to Rivers/Remount; 3) BRT feeder service from US-17A and I-26 to Rivers/Otranto; 4) BRT feeder service along US-17A & Old Trolley between US-176 and Dorchester Road PnR; 5) BRT feeder service from Trident Health/Rivers to Dorchester Road/Cross County Road; 6) Folly Beach trolley from Walmart PnR on Folly Road to Folly Beach; 7) Isle of Palms trolley from Walmart PnR (Wando Crossing) to Charleston County Park on IOP	-2016 COA Mid-Range Service Recommendations -Supports implementation of Lowcountry Rapid Transit BRT -Public & stakeholder input
Service Improvements – TCL	Improvements to expand TCL service footprint and improve mobility in non-urbanized areas of region.	-2014 TCL Routes Study -Public & stakeholder input
Service Improvements - Capital		
Bus Stop Upgrades	Upgrades to existing bus stops throughout CARTA and TCL systems to provide amenities including signage, benches, and/or shelters as warranted by demand.	-Public & stakeholder input
Park-and-Ride Lots	Park-and-ride (PnR) network expansion.	-2016 COA Mid-Range Service Recommendations -Public & stakeholder input
Fleet Replacement - State of Good Repair / Modernization	Planned fleet replacement needs to achieve state-of-good-repair targets.	-CARTA Fleet Replacement Plan

Need Type	Need Description	Source
Fleet Expansion - New Service and Corridor Capital Expansion Projects	Fleet expansion needs to accommodate service improvements and new corridor expansion projects.	-2016 COA Mid-Range Service Recommendations -Supports implementation of Lowcountry Rapid Transit BRT and other corridor expansion projects
CARTA Maintenance and Storage Facility Expansion	Expansion of the CARTA maintenance and storage facility to accommodate future system expansion and/or consolidation of services with TCL.	-2013 CARTA/TCL Consolidation Study -Public & stakeholder input
New Modes and Corridor Expansion Projects		
Rapid Transit Corridor	Peninsula/Summerville - Rivers Ave/US-78 Corridor (Lowcountry Rapid Transit)	- i26ALT Study - Our Region Our Plan Vision Corridor - Public & stakeholder input
Rapid Transit Corridor	Summerville/Ridgeville - US-78 Corridor	- Our Region Our Plan Vision Corridor - Public & stakeholder input
Rapid Transit Corridor	Peninsula/West Ashley/Folly Beach - Folly Road Corridor	- Our Region Our Plan Vision Corridor -Folly Road Corridor Study - Public & stakeholder input
Rapid Transit Corridor	Peninsula/Moncks Corner - US-52 Corridor	- Our Region Our Plan Vision Corridor - Public & stakeholder input
Rapid Transit Corridor	Peninsula/Daniel Island/East Cooper/West Ashley - I-526/US-17 Loop	- Our Region Our Plan Vision Corridor - Public & stakeholder input
Rapid Transit Corridor	Peninsula/Mount Pleasant/East Cooper - US-17 Corridor	- Our Region Our Plan Vision Corridor - Public & stakeholder input
Rapid Transit Corridor	Moncks Corner/Summerville/East Edisto - US-17 Alt Corridor	- Our Region Our Plan Vision Corridor

Need Type	Need Description	Source
		- Public & stakeholder input
Commuter Ferry	Feasibility and implementation planning.	- Our Region Our Plan - Public & stakeholder input
Commuter Ferry	Commuter ferry service – North Charleston to downtown Charleston; Daniel Island to downtown Charleston; James Island to downtown Charleston, Patriots Point to downtown Charleston *(routes to be modified or expanded pending commuter ferry analysis)*	- Our Region Our Plan - Public & stakeholder input