CHAPTER 8 – TRANSPORTATION

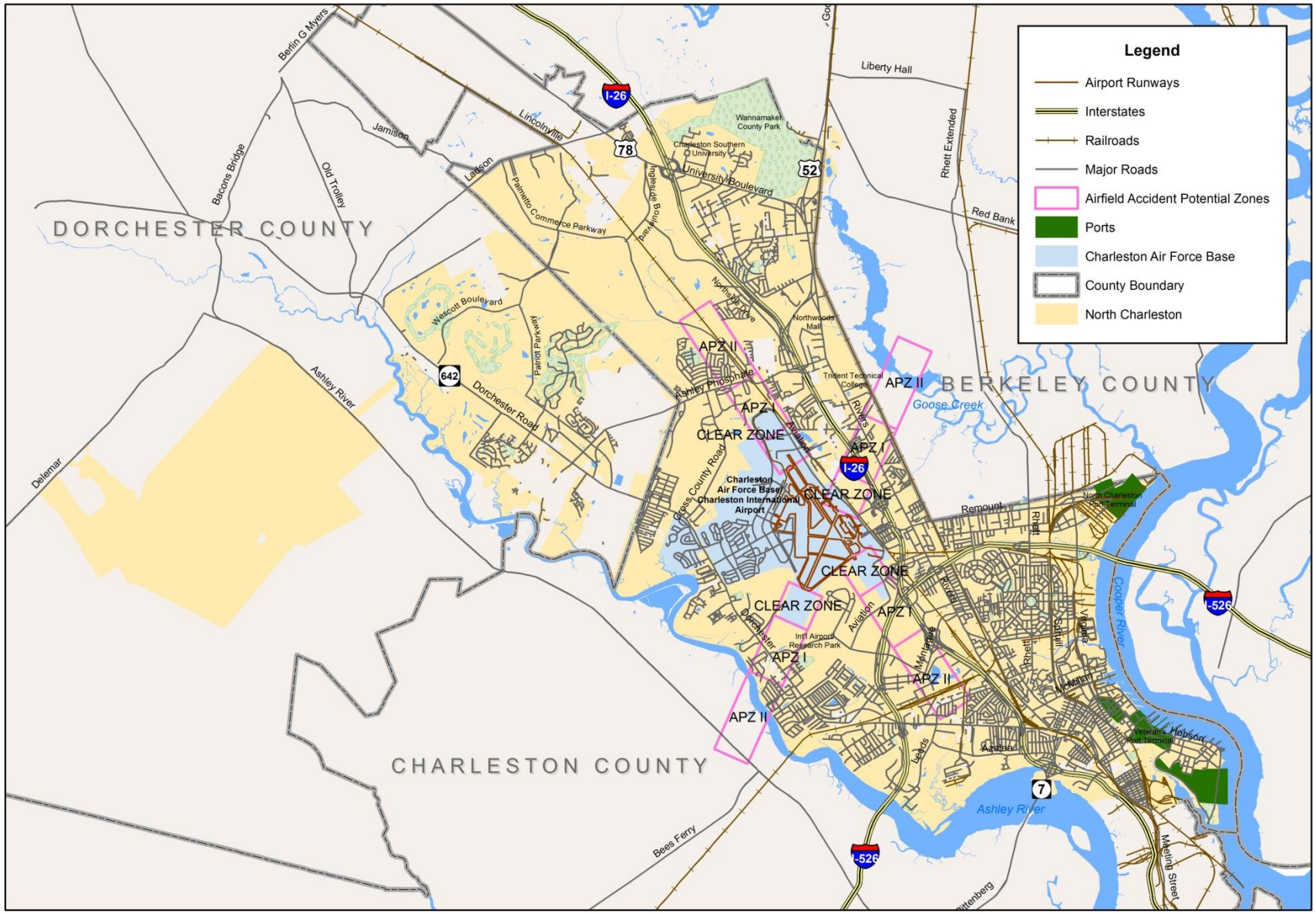
Introduction

North Charleston is the transportation hub for the Charleston Metropolitan Area, and home to two interstates, two U.S. highways, a joint Air Force Base/International Airport, multiple rail lines, two rivers, an Amtrak station, the Greyhound bus terminal (recently rebranded as Southeastern Stages), and three seaport terminals. Most cross-regional travel originates, terminates or passes through North Charleston, producing both major benefits (industry, retail, and housing demand) and major problems (traffic congestion and pollution). 'Traffic' is the most common reply when North Charleston's residents were asked to name their primary concern for the city's future. This is especially true in the northern half of the city where roadway connections have been more sparse and development has grown at a more rapid pace.

North Charleston's growth is only part of the cause for concern as many of the adjacent municipalities and unincorporated areas in Berkeley and Dorchester Counties continue to grow at an even faster pace than North Charleston. The city's traffic problems are expected to continue growing given its importance as the center of the region.

This chapter considers the conditions of the various transportation systems (roads, rail, mass transit, etc.) and proposed changes to those networks, to identify and offer suggested goals and policies for North Charleston to accommodate, mitigate and improve transportation facilities in the city in the future. A general transportation facilities map for North Charleston is provided in Figure (Map) 8.1

MAP 8.1: NORTH CHARLESTON TRANSPORTATION NETWORKS



8.1 ROAD NETWORK

The road system provides the basic means for personal transportation and the movement of small packages and goods throughout the Charleston Metropolitan Area. At the highest level, Interstate 26, which terminates in downtown Charleston and provides access north to Columbia and the upstate, is the primary roadway providing access to the region. Interstate 526, the regional beltway, runs across North Charleston providing access across the Ashley and Cooper Rivers to West Ashley to the south and west, and Mount Pleasant to the northeast. Within the City of North Charleston are nine highway exits for Interstate 26, six exits for I-526, and the large interchange between the two expressways.

The major thoroughfares in North Charleston include:

Rivers Avenue is the local name for two U.S. Highways (US 52 and US 78) that generally follow the Indian "Great Path" and provide the oldest north/south thoroughfare access through the city. US 52 originates in Charleston as Meeting Street, joins US 78 (originating as King Street in Charleston) at the south end of North Charleston, and both run along their shared north/south alignment through North Charleston to a split intersection just south of the city's northern boundary. US 52 runs northeast through Goose Creek towards Florence, and US 78 turns west, becomes University Boulevard, crosses I-26 and follows the railroad through Lincolnville, Summerville, and Saint George.

Dorchester Road has been the primary north/south thoroughfare for all traffic in Planning Areas 2 and 3 since colonial times. The road is heavily used for commutes between Summerville and newly developing areas in Dorchester County to North Charleston and Charleston.

Ashley Phosphate Road, located approximately 2.5 miles south of the Rivers and University Avenue split, has been the main route for east-west trips across the northern half of the city, although Ladson Road along portions of the city's northern boundary has increased in importance with the growth of North Charleston and adjacent cities.

International Boulevard connects Charleston International Airport to I-526, the Centre Pointe complex, and Montague Avenue.

West Montague Avenue goes through the City Center area with the North Charleston Convention Center and Coliseum and access to Tanger Outlet Mall, Boeing, and the airport.

Palmetto Commerce Parkway is an industrial road that links Ladson Road to Ashley Phosphate Road and has relieved some of the traffic pressure in Planning Area 3. Phases I and II of this industrial commerce parkway have been completed and are now home to a Boeing manufacturing facility, several aircraft parts suppliers, Daimler-Chrysler's Sprinter Van manufacturing facility, Cummins engine manufacturing plant, and several other large manufacturing facilities. Phase III of the parkway is in the planning process with hopes of providing another link from Ashley Phosphate Road to the City Center area.

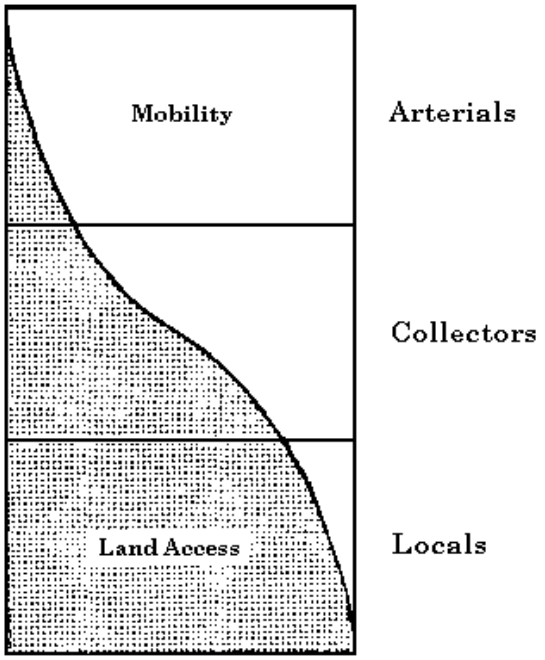
Remount Road is an east-west business highway that nearly aligns itself with the North Charleston-Hanahan boundary and provides direct access from I-26 to the south gate of the Naval Weapons Station and the North Charleston Port Terminal. It is a four-lane road that is primarily strip commercial.

8.2 FUNCTIONAL CLASSIFICATION

National and State Departments of Transportation categorize roadway systems into a hierarchy of "functional classification." This system allows for evaluation and analysis of specific road segments within the overall functioning of the road network. Functional classification systems organize roadways based on accessibility and mobility. There is an inverse relationship between accessibility and mobility in transportation planning (see Figure 8.2). At the top of the spectrum, Expressways and Arterials provide the highest level of mobility due to their high travel speeds. However, higher travel speeds require measures to restrict or control the number of access points. At the other end of the spectrum, local access roads provide the highest level of access to adjacent land, may require numerous curb cuts and driveways. In turn, local roads must necessarily limit speed and mobility as a result of increased access.

Roadway systems are also classified in terms of urban and rural networks for the purpose of design. Urban and rural areas have fundamentally different characteristics regarding density and preferred land use types, density of street and highway intersections, nature of travel patterns, and the way in which all these elements are related in the definitions of highway function. As the intensity of land uses and travel volumes in urban areas increase, it is more difficult to pinpoint specific travel origin and generation centers. The roadway network throughout North Charleston is classified as an urban network.

Figure 8.2 – Functional Classification by Mobility and Accessibility



Source: Federal Highway Administration

Interstate Highways

Interstate highways accommodate travel between states and metropolitan areas, and provide the greatest level of mobility. Access points are limited to highway interchanges to avoid cross directional conflicts. Interstate highways are the highest level of principal arterial roadway, and I-26 is the primary north-south interstate running through North Charleston and serving the City of Charleston. I-526 is an interstate bypass road that passes through the southern end of North Charleston around the city of Charleston and across the Ashley, Cooper and Wando Rivers.

Principal Arterials

An arterial is a road that has the primary function of carrying through traffic over relatively long distances accommodating travel between towns or major areas of a county. The principal arterial system serves major activity centers, the highest traffic volume corridors, and the longest trips. For principal arterials, the concept of service to abutting land is subordinate to the provision of travel service to major traffic movements. Dorchester Road and Rivers Ave/US-78/US-52 are both principal arterials running northwest to southeast through the City of North Charleston. Other principal arterials include: Remount Road, University Boulevard (US 78), and portions of Carner Avenue, Meeting Street Road and Cosgrove Avenue (SC-7), and Spruill Avenue.

Minor Arterials

The minor arterial street system interconnects with and augments the urban principal arterial system. The minor arterial system provides service trips of moderate length (generally from one end of a town or city to another end), and distributes travel to geographic areas smaller than those identified with the principal arterial system. The minor arterial system also provides more emphasis on land access with a somewhat lower level of traffic mobility. North Rhett Avenue is a minor arterial that connects North Charleston to the cities of Hanahan and Goose Creek. Other minor arterials in North Charleston include: Ashley Phosphate Road, Montague Avenue, Park Circle, Palmetto Commerce Parkway, Ladson Road, and parts of Spruill Avenue.

Urban Collectors

The collector street system provides land access service and traffic circulation within residential neighborhoods, commercial and industrial areas. It differs from the arterial system in that facilities on the collector system may penetrate residential neighborhoods, distributing trips from the arterials through the area to the ultimate destination. Conversely, the collector street also collects traffic from local streets in residential neighborhoods and channels it into the arterial system. Well-traveled urban collectors within the City of North Charleston include: Azalea Drive, Cross County Road, Eagle Drive, Hanahan Road, International Boulevard, Leeds Avenue, Mall Drive, Stall Road, and Patriot Boulevard.

Local Streets

Local streets feed the collector system from low volume residential and commercial areas.

STRUCTURALLY INSUFFICIENT BRIDGES

A bridge spanning the Mississippi River in Minneapolis, MN, collapsed in 2007, causing several deaths and injuries. This tragedy brought bridge infrastructure issues to the forefront throughout the country. Charleston's *Post & Courier* released a report by the U.S. DOT's Federal Highway Administration, documenting 104 bridges in the Berkeley-Charleston-Dorchester region with insufficient structural ratings. Of these 104 spans, nine were in North Charleston. The following is a list of these bridges, with their locations, age and sufficiency rating. The sufficiency rating (scale of 1 to 100, with 100 as the best) is based on a formula that rates the age, amount of traffic, and other factors.

Table 8.1:Structurally Insufficient Bridges

Bridge	Crossing	Built	Age	Last Inspected	Average Daily Traffic (ADT)	Sufficiency Rating
S-10-60 (S. Rhett)	NOISETTE CREEK (Replacement expected in 2017)	1952	63	01/05	2,200	**35.4**
S-10-32 (Spruill Ave.)	NOISETTE CREEK	1943	70	01/05	10,100	**48.6**
S-10-379 (O'Hear Ave.)	BRANCH OF NOISETTE CREEK (Replacement expected in 2016)	1962	53	01/05	1,300	**49.4**
S-10-379 (O'Hear Ave.)	NOISETTE CREEK	1963	52	01/05	1,300	**50.2**
I-526 RAMP	RAMP TO I-26WB FROM I-526WB	1989	26	11/03	15,961	**58.4**
S-10-894 (Azalea Dr.)	BRICKYARD CREEK	1961	54	01/05	12,000	**61.9**
I-26	S.C.642 (Dorchester Rd.)	1961	54	12/03	83,000	**70.9**

Source: Federal Highway Administration, reported by Charleston Post & Courier

8.3 ROADWAY OPERATIONAL CHARACTERISTICS

The operational characteristics of a roadway include structural characteristics such as the number of through lanes, number of turn lanes, right of way, and paving material. These structural characteristics determine the amount of traffic that a roadway can safely handle before it becomes congested. In addition to the physical infrastructure, traffic regulating devices such as signalization and posted speed limit also have a strong effect on the operation of roadways. The number of lanes, the posted speed, and the number of access points are all factored into the theoretical capacity calculated for each roadway. This theoretical capacity is compared with the actual traffic volume in assessing the roadway level of service.

Figure (Map) 8.3 illustrates the number of lanes, location of traffic signals, and posted speed limit of major roads in the City of North Charleston.

TRAFFIC COUNTS

The South Carolina Department of Transportation (SCDOT) maintains annual average daily traffic (AADT) count information for all counties throughout the state. Count stations are set up along major roadways in order to directly measure the existing volume of traffic traveling in both directions. Traffic sample data are then adjusted to reflect the average daily traffic across an entire year. Traffic counts for the City of North Charleston are displayed in Map 8.4.

Following the hierarchy of roadway functional classification, the interstates passing through North Charleston accommodate the greatest volume of traffic, with traffic counts ranging between 75,000 and 141,000 trips per day on I-26 and traffic counts between 70,000 to 84,000 trips per day on I-526.

Rivers Avenue (between University Boulevard and Northwoods Boulevard) displays the highest traffic volume among principal arterials in North Charleston, with traffic counts between 60,000 and 70,000. The two arterials merging into Rivers Ave, US52 and US78, also show high traffic counts ranging between 40,000 to 50,000 trips per day. Ashley Phosphate Road had the highest recorded minor arterial traffic count with approximately 59,000 trips per day in 2013.

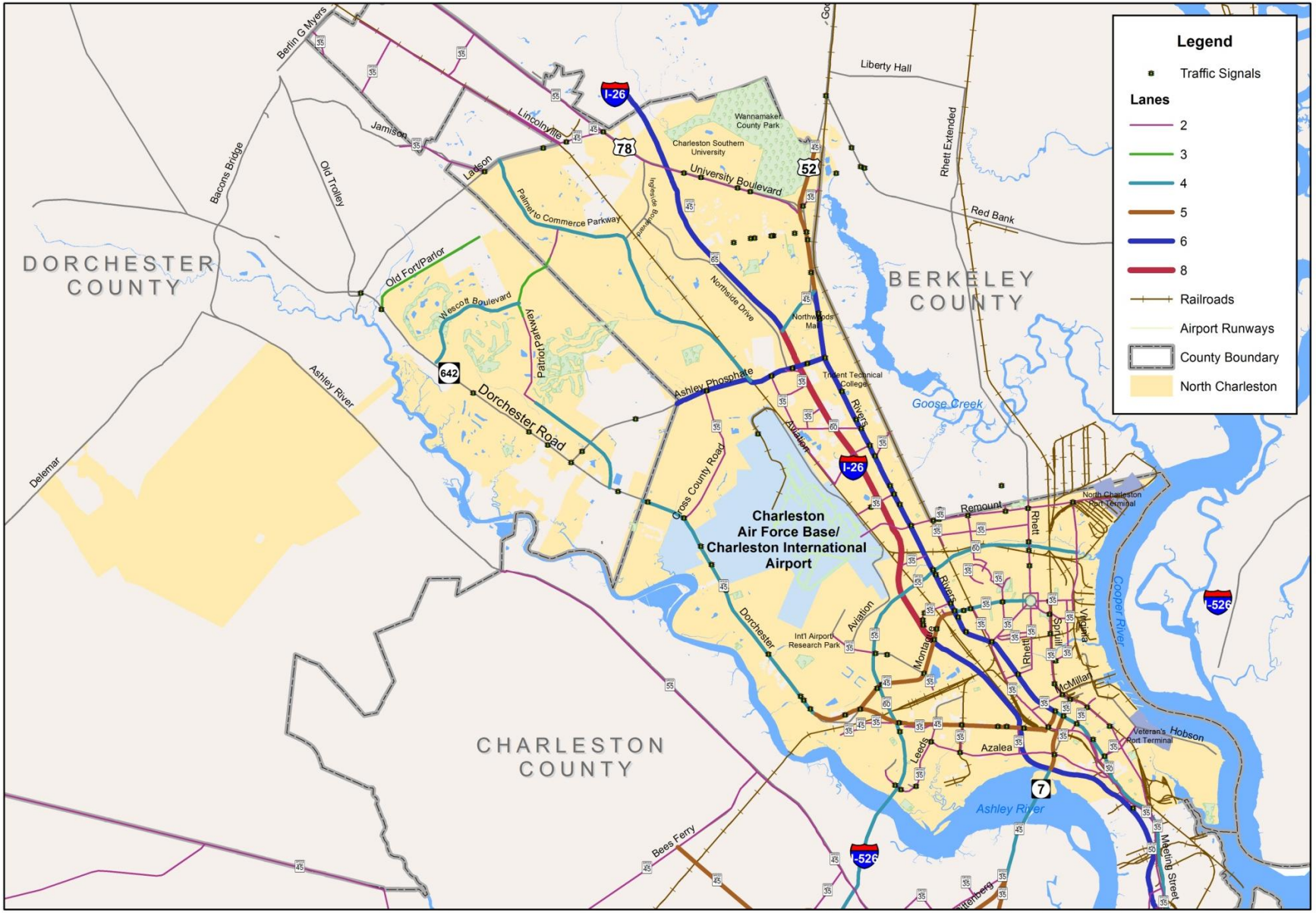
TRAFFIC INCREASE 2006-2013

Traffic count stations are deployed at regular locations each year. Annual Average Daily Traffic figures are compiled for each count station on each year. This allows for a comparison of traffic counts across time. Map 8.5 shows the percentage of increase in traffic in the years between 2006 and 2013.

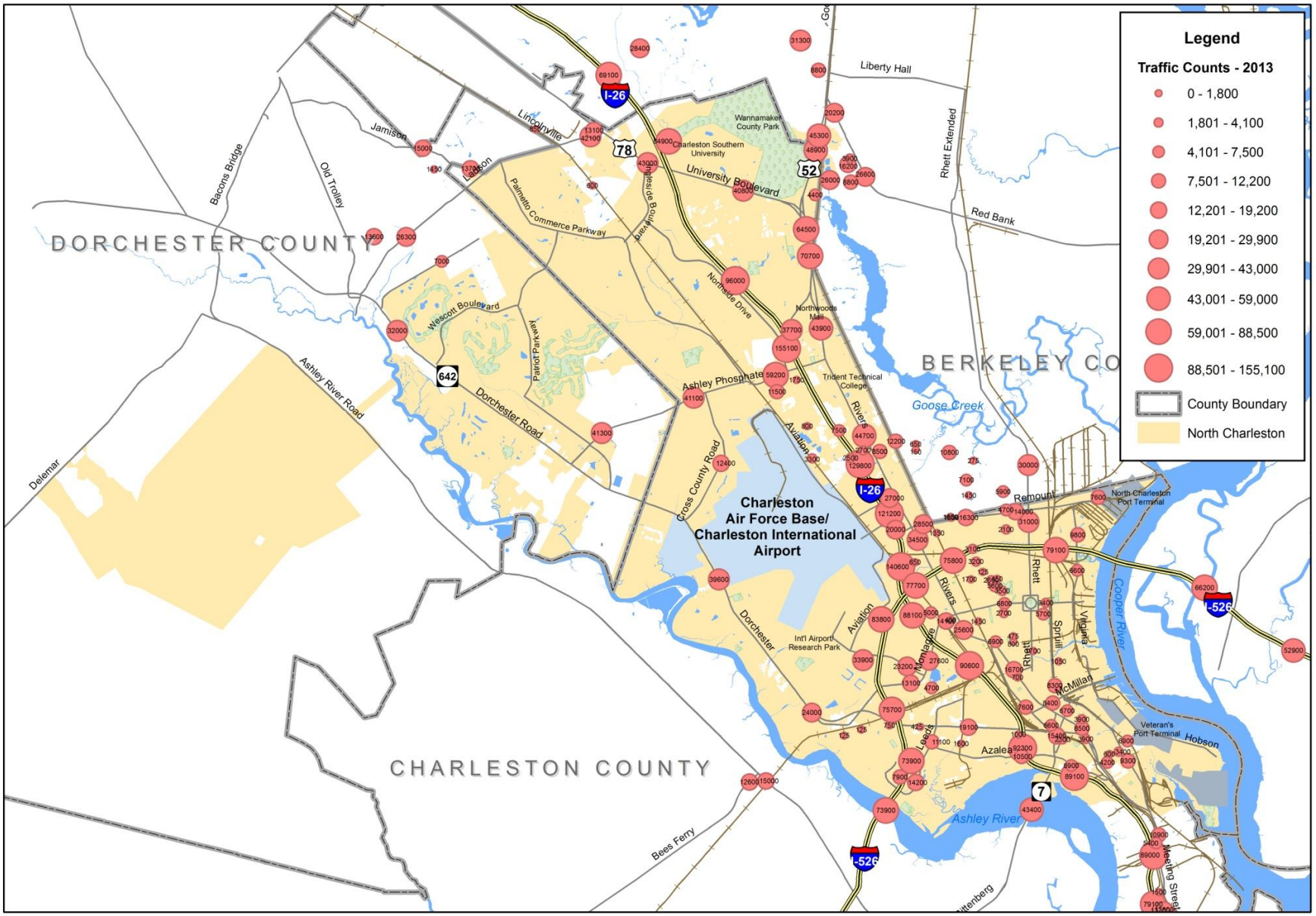
Along I-26, traffic counts increased most substantially (90%) for the segment of the interstate south of Ashley Phosphate Road and north of Interstate-526. This segment recorded some of the largest absolute increases over the time frame, given the already high traffic volume on the interstate. For the same period, traffic volumes on I-526 only increased in volume between 2 and 7 percent.

Among high-volume arterials, US-78/University in Planning Area 4 recorded the largest percentage increases in traffic (67-72%). Among minor arterials, Carner Avenue in Planning Area 1 also experienced significant growth (75%).

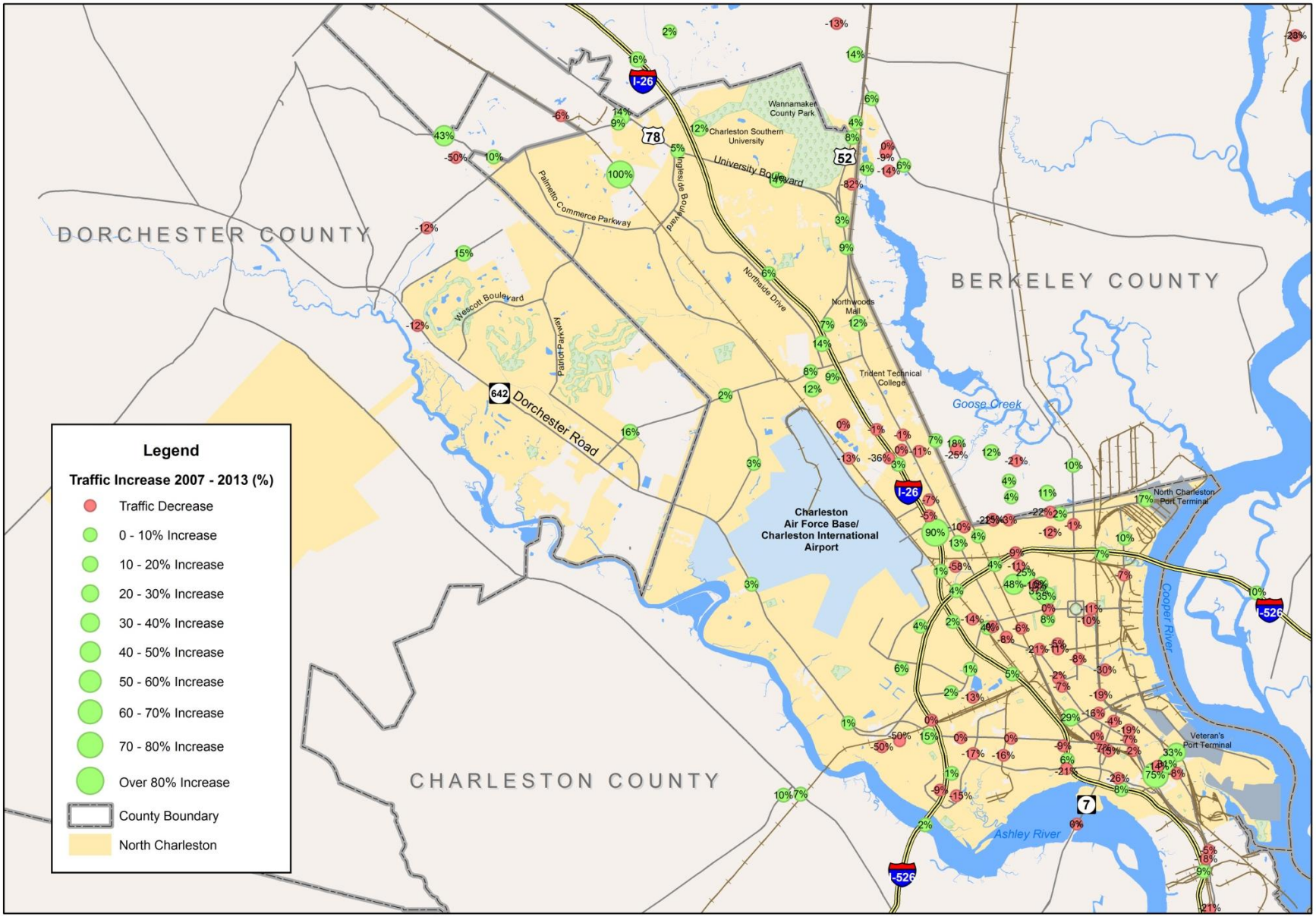
MAP 8.3: ROADWAY OPERATIONAL CHARACTERISTICS



MAP 8.4: TRAFFIC COUNTS, 2013



MAP 8.5: TRAFFIC INCREASE (%) 2007-2013



LEVEL OF SERVICE (LOS)

Level of Services (LOS) is used as a measure to identify traffic congestion levels and is usually expressed by a grade between "A" for excellent and "F" for failing. The LOS codes are based on a comparison of volume to capacity (V/C) ratios. A description of the roadway conditions under each LOS is also provided in the subsequent guidelines table.

Table 8.2: Congestion and Level of Service

LOS	Volume-to-Capacity Ratio
A,B,C	Less than 0.7
D	0.70 to 1.00
E	1.0 to 1.25
F	Over 1.25

The Berkeley-Charleston-Dorchester (BCD) Council of Governments (COG) uses a travel demand model to determine future capacity needs for the tri-county region in support of the BCD Regional Long Range Transportation Plan. The travel demand model included analysis of the existing Levels of Service (LOS) for major roads in the region, and projected future LOS expected on the roadways.

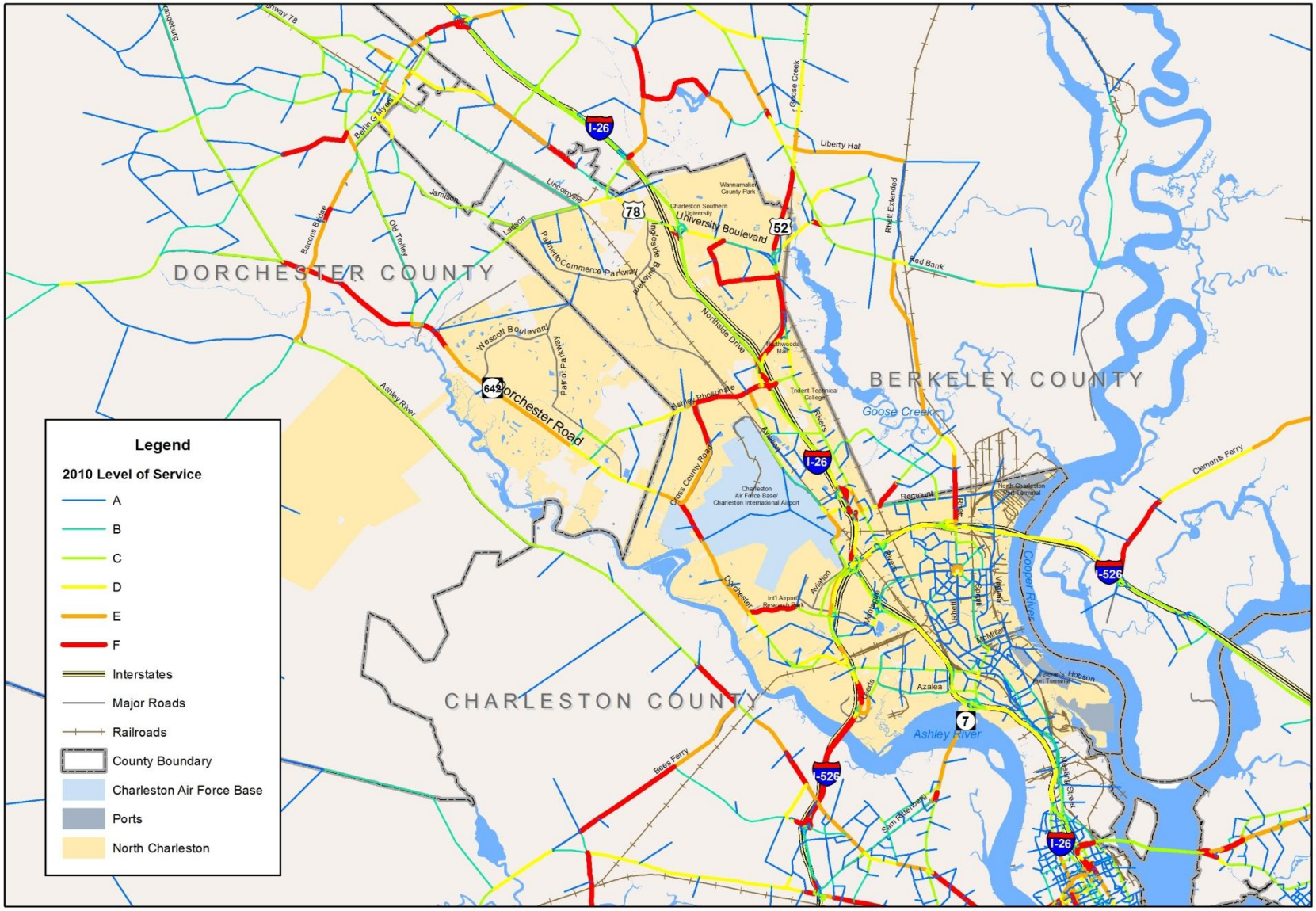
Map 8.6 depicts the Roadway LOS map for 2010 for North Charleston based on BCD Regional Long Range Transportation Plan. As shown, several roadways in North Charleston exhibit an LOS of "E" or "F" in 2010. In the northern portion of the city, the US78/US52 corridor had an LOS of "F" between University Avenue and Northwoods Mall. Ashley Phosphate Road between I-26 and Cross County Road also maintained a severe level of congestion (LOS "F"), and portions of North Rhett Avenue, Dorchester Road, and Michaux Parkway also showed as LOS "F."

Level of Service A

Level of Service C

Level of Service F

MAP 8.6: ROADWAY LEVEL OF SERVICE (LOS), 2010



Congestion and Level of Service

The letter-coded system for Level of Service provides a handy reference scale. However, LOS is not like a typical education system grading scale. The "ideal" roadway Level of Service may be LOS rating "C" or "D" from a cost-benefit perspective, whereas an LOS ratings of "A" or "B" are considered to reflect a situations where the road may have excess capacity.

LOS Level "C" is assumed to provide just enough investment in transportation facilities to accommodate traffic flow. Given the cost of road improvements and the magnitude of traffic problems across the region, it is not considered financially feasible or desirable to strive for LOS "A" or "B" on every roadway. Instead, traffic engineers plan improvements to provide a target LOS "C" or "D".

Table 8.3: Level of Service Guidelines

LOS	Conditions
A,B,C	Traffic can move relatively freely.
D	Vehicle speeds beginning to decline slightly due to increasing flows. Speed and freedom of movement are severely restricted.
E	Traffic volumes are at or close to capacity, resulting in serious delays.
F	Breakdown in vehicular flow. Flow rate exceeds roadway capacity. Describes traffic downstream from the bottleneck of breakdown.

The BCD travel demand model projected estimated daily traffic volumes for roadway corridors throughout the BCD region including in North Charleston. Transportation improvement projects that have existing or committed funding for construction were included as well. The volume to capacity (V/C) ratios based on the projections provided predicted future LOS and capacity needs in the region. A V/C of less than 1 predicts that the road will remain at capacity, even with increased traffic volume in the future year. A V/C ratio of 1 indicates that the road is at capacity, and if the A V/C ratio is greater than 1, the road's volume exceeds its capacity to handle the amount of traffic, and the corridor has an unacceptable LOS.

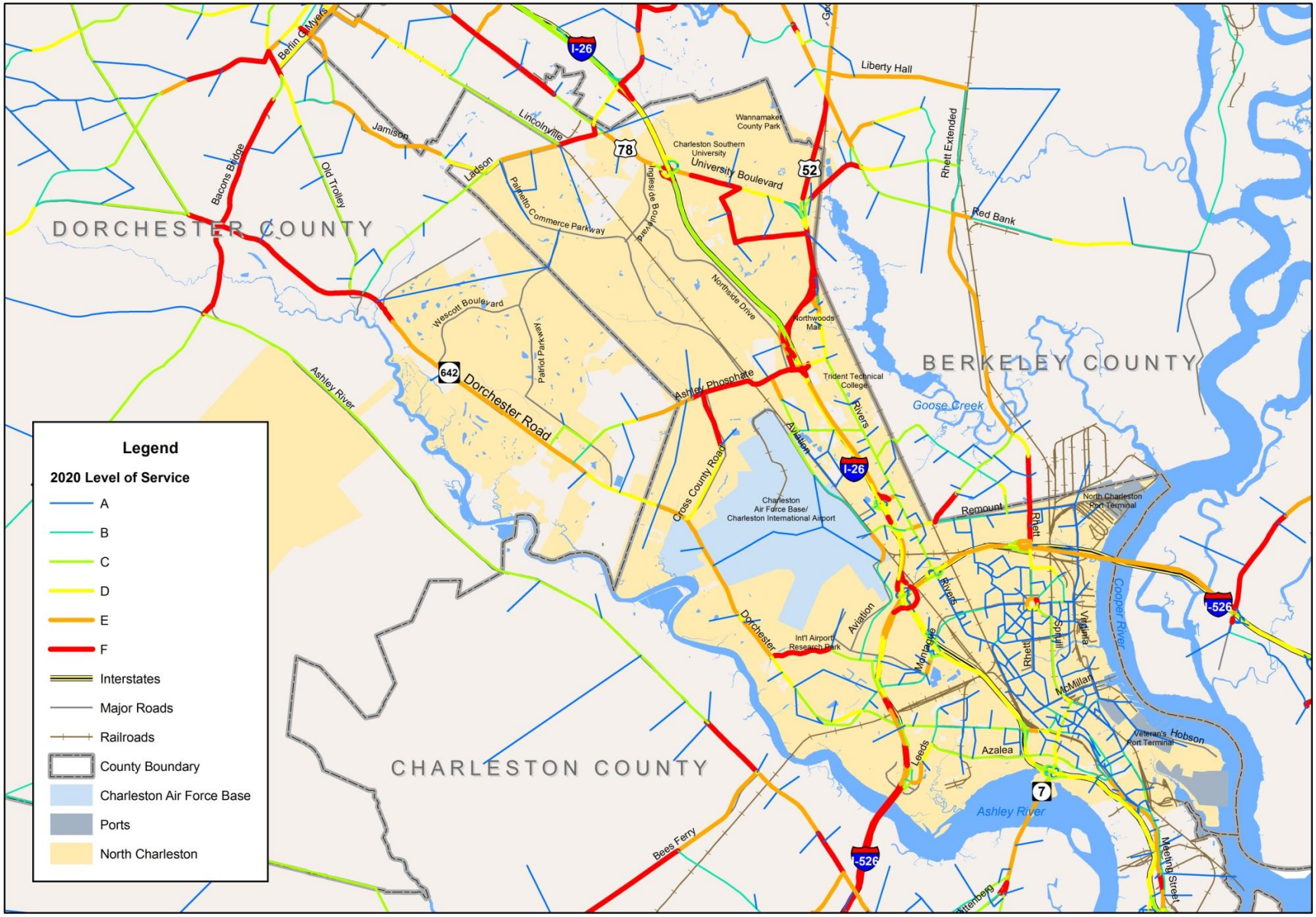
The models for projected 2020 and 2030 LOS on major roadways in the City of North Charleston are illustrated by Map 8.7 and Map 8.8. The future roadway levels of service reflect the anticipated congestion, and show that the City will have several challenges related to severely congested roadways without significant infrastructure investment.

Dorchester Road is likely to experience significant congestion as Dorchester County continues to develop. Portions of I-526 are anticipated to function at LOS "F" by 2030, although the projections did not include potential benefits created by Patriot Boulevard creating an alternate connecting Palmetto Commerce Parkway, Ashley Phosphate Road, and Wescott Boulevard.

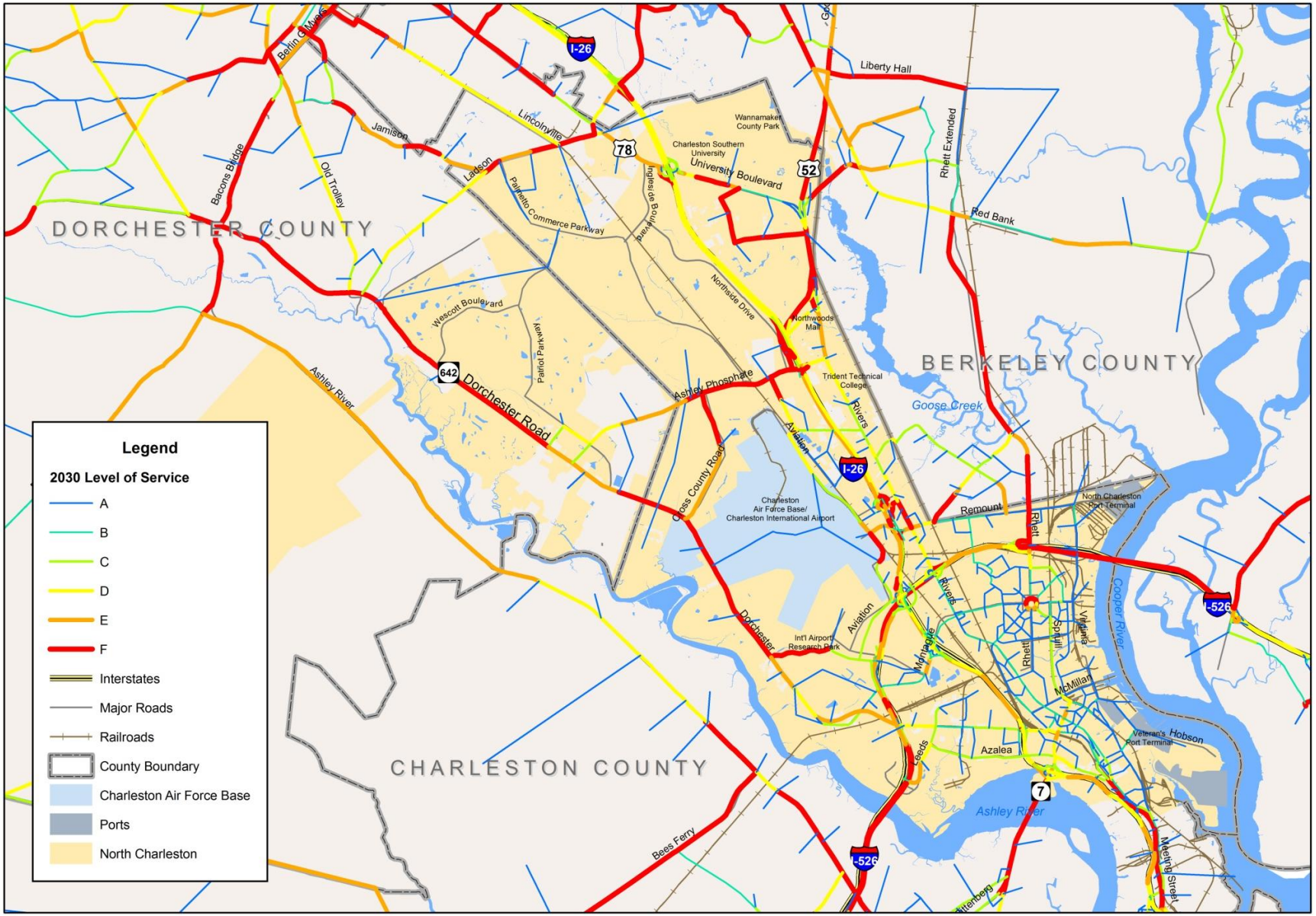
Conditions in 2030 are improved along Dorchester between Ladson Road and Ashley Phosphate as new corridors open alternative routes. Future projects such as the extension of Palmetto Commerce to International Boulevard, the construction of Ingleside Boulevard from Northside Drive to US Hwy 78 (with a connection at Palmetto Commerce Parkway), and the expansion of I-526 to 6 lanes with improved interchanges throughout the North Charleston segment are expected to improve LOS conditions.

Although additional improvements are expected to offset some of the increases in projected traffic volumes, the projects 2030 LOS in Map 8.8 reflects additional anticipated congestion. The CHATS long-range transportation study for the region includes additional transportation improvements that would improve the LOS of the road network in the city if funding can be identified.

MAP 8.7: ROADWAY LEVEL OF SERVICE (LOS), 2020



MAP 8.8: ROADWAY LEVEL OF SERVICE (LOS), 2030



8.4 PUBLIC TRANSPORTATION FACILITIES

CARTA

Public transit in North Charleston is provided by the Charleston Area Regional Transportation Authority (CARTA), which provides bus service to parts of Charleston, Berkeley, and Dorchester Counties. Established in 1997 and more recently funded by the Charleston County ½ Cent Sales Tax for Transportation and Transportation Infrastructure, CARTA offers several regular bus routes throughout most of the urbanized area of the Charleston region, including Routes 10 (Rivers Ave.), 11 (Dorchester/Airport), 12 (Upper Dorchester/AFB), and 13 (Remount Road) in North Charleston. Route 102 (North Neck), Route 103 (Leeds Ave.), Route 104 (Montague Ave.), and Route 105 (The NASH Shuttle) provide access into the southern half of the city.

CARTA also provides four express service routes (3 serving North Charleston residents). Express Route 1 originates in the Park-and-Ride Lot near Northwoods Mall and offers seven weekday morning and afternoon/evening stops with express commuter service to four stops in downtown Charleston and to the Wal-Mart Park-and-Ride Terminal on James Island. Express Route 3 originates and receives six weekday morning buses at the Dorchester Village Shopping Center in Summerville, with seven stops in the afternoon/evening; the Express Route 3 makes three stops in North Charleston: at Bosch Corporation on Dorchester Road, at the Joint Base Charleston entrance on Dorchester Road, and at the Boeing Company off International Boulevard.

CARTA Express Route 4 (NASH Express) services the Airport, the North Charleston Visitor Center, and the Tanger Outlet Mall with seven-day per week service to/from downtown Charleston. Total CARTA ridership exceeded 4 Million passengers in 2013. Map 8.9 shows the CARTA routes in 2015.

CARTA at Night demand-response services were discontinued in 2010 due to budget limitations. However, CARTA's 'Tel-a-Ride' service provides curb-to-curb transportation for persons with disabilities to eligible riders to/from a service area anywhere within ¾ miles of any CARTA bus route. 'Tel-a-ride' vehicles are wheelchair-lift equipped.

The City is currently partnering with CARTA to plan and construct the Passenger Intermodal Center at the existing Amtrak station site. This center will provide an opportunity to link passengers among various modes and providers (CARTA, Amtrak, Southeastern Stages, and taxis).

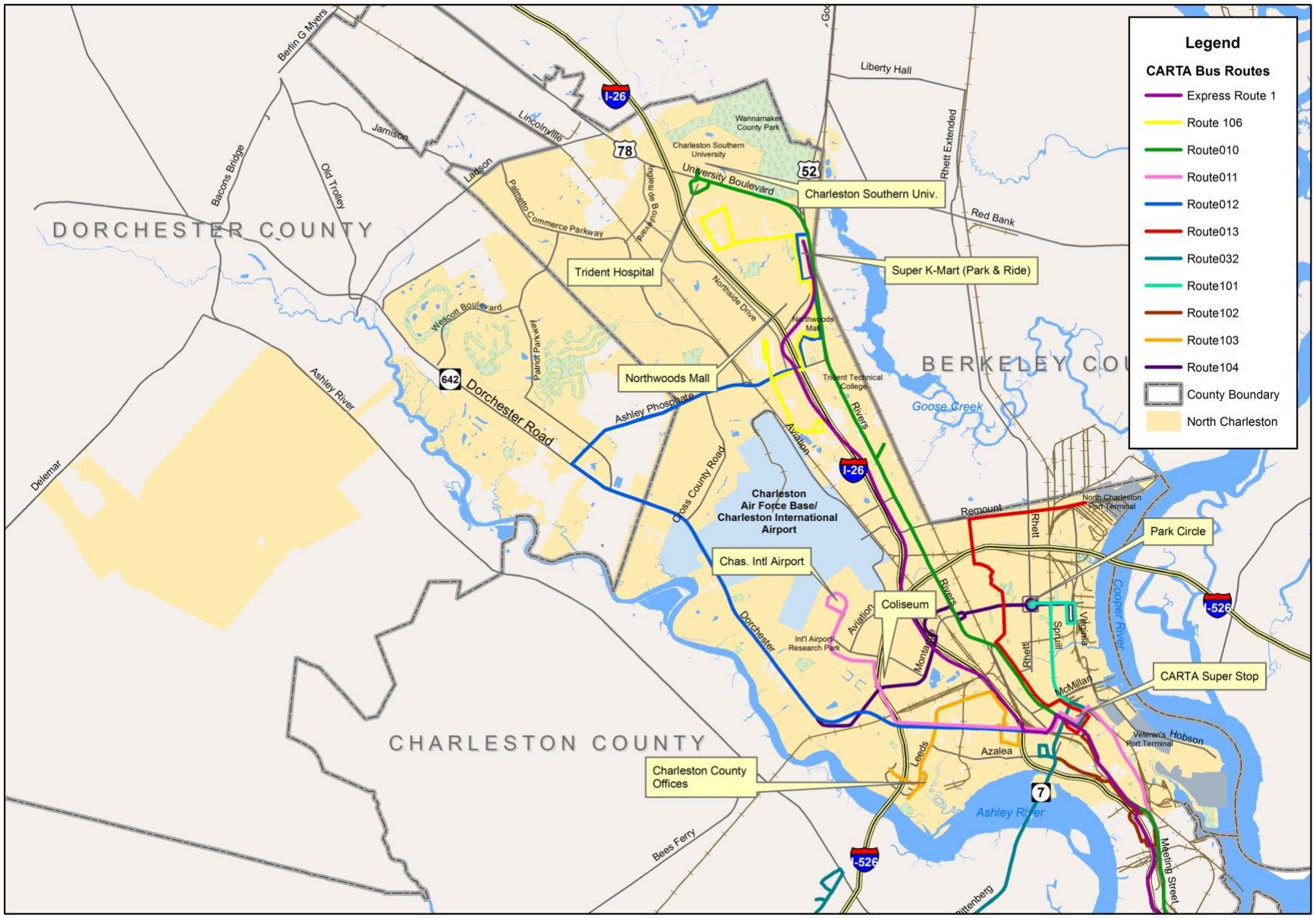
TRI-COUNTY LINK

Tri-County Link provides bus services for rural areas of Berkeley, Charleston, and Dorchester Counties. Currently, Route #1 (Berkeley) and Route #2 (Dorchester) terminate at the Rivers Avenue Park-and-Ride Lot near Northwoods Mall. The Dorchester Connector Shuttle connects the Dorchester County Park-n-Ride Lot in Summerville to the CARTA Bus Stop at the Trident Health South facilities on University Boulevard. Free transfer passes are offered for passengers transferring from Tri-County Link into the CARTA system. Tri-County Link underwent an operational and route analysis in 2014 and has made recommendations to update several of the routes in the system. Map 8.10 shows current and future Tri-County Link routes, including CARTA's express route.

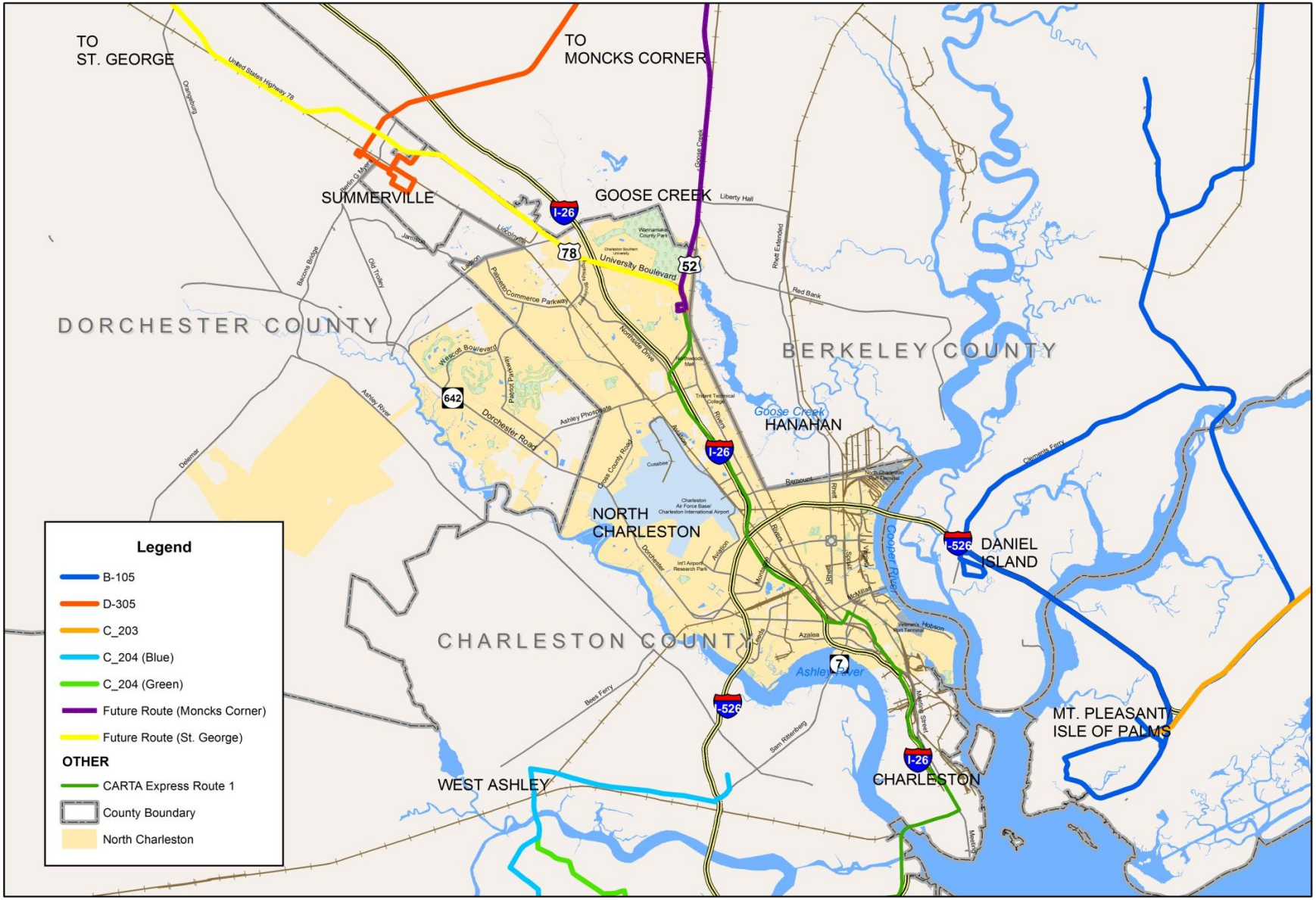
PUBLIC TRANSPORTATION PLANNING

In order to alleviate peak-hour traffic, the primary focus for public transit must be to attract commuters. Greater coordination is needed between CARTA and Tri-County Link serves commuters

MAP 8.9: CARTA BUS ROUTES



MAP 8.10: TRI-COUNTY LINK BUS ROUTES



who travel across the region. Regional bus service and park and ride facilities should be expanded as needed to support commuters from outlying areas and avoid the frequent stops of local bus routes, and express transit routes should target major employment centers. High-Occupancy Vehicle (HOV) lanes may provide another incentive to ride express transit service or carpool if the alternative is one-person-per-car in a much more congested lane.

In lower-density residential areas, smaller buses and vehicles are used to minimize the weight, vehicle size, and noise impacts on neighborhood streets. Demand-response and flexible route systems also could help provide service to areas that otherwise lack the density to support a regular fixed route. Consistent with the New CARTA Plan, additional Super Stops should be constructed in order to serve as neighborhood transit hubs. These Super Stops provide linkages between express bus systems, local routes, and flexible community-based services.

Land Use and Public Transportation

In addition to coordination of bus services, land use policies are a key component to reducing vehicular traffic. Public transit is most feasible in areas of dense development that justify enough ridership demand for break-even or profitable transit operations. Strategic land use planning helps to create patterns of high-density residential, commercial and mixed-use nodes along major transportation corridors that help support transit services. North Charleston should pursue Transit Oriented Development (TOD) regulations for locations suitable for increased density that can support transit. This would allow a desirable mix of land use and higher density development opportunities within walking distances of existing or future transit stops. TOD's also set the scene for desirable "live-work-play" urban developments with set requirements for adequate sidewalks, bus shelters, and pedestrian signalization at intersections.

Commuter Rail

A preliminary study released in 2006 for the Charleston Area Transportation Study (CHATS) determined that commuter rail between Charleston and Summerville would be feasible. Proposed commuter rail could use existing operational rail lines running from Summerville, through North Charleston and into downtown Charleston to provide a commuter rail alternative to highway travel. An updated commuter rail study confirmed the feasibility in 2011, and a new I-26 Alternatives Analysis was initiated by the Regional Metropolitan Planning Organization and CHATS in 2014 to identify and evaluate transit solutions for the I-26 Corridor. That has led to the current I-26 Regional Fixed Guideway Transit Alternatives Analysis (i26Alt) project. The public outreach element began meetings in 2014 with an expected completion date in December 2015.

If commuter rail becomes a reality for the BCD Region, North Charleston will certainly be an important player in planning transit station locations and surroundings. Transit-Oriented Development should be considered in conjunction with the location of a transit station to encourage a mix of uses and density appropriate for a successful commuter rail system.

8.5 BIKE AND PEDESTRIAN FACILITIES

Biking and walking are complementary elements of the local transportation system, providing numerous personal and societal benefits for short-distance trips and for recreation and personal health. Walking is likely to be less expensive than costs incurred by other transportation modes and would reduce vehicle miles traveled by personal automobiles, parking requirements, potential conflicts at intersections, traffic congestion, and the need to widen roads. Additionally, the reduction of vehicle miles traveled creates less pollution.

Pedestrian and bike activity also help support pedestrian-oriented mixed-use districts and neighborhood commercial establishments, leading to a more vibrant community and increased quality of life. For some residents, biking or walking are primary forms of personal transportation, whether out of desire or necessity. For others, the presence of facilities for walking, biking, or both adds a quality of life factor that may determine where a person chooses to live and work. A network of accessible and well-maintained sidewalks and biking facilities has been shown to help a city attract new residents and visitors. The public input process for the 2008 Comprehensive Plan update showed a citywide desire for more sidewalks and bicycle or multi-use trails, especially for routes that connect to parks, schools, open space, and other cultural amenities.

Safety for pedestrians and cyclists represents a key challenge, given the high volume of traffic passing through North Charleston's street network. If facilities in the form of sidewalks, trails or bike lanes are not provided, then pedestrians and cyclists are forced to try and share busy roads with automobile traffic, which can often be dangerous. It is particularly important to ensure that safe routes to schools are provided. Sidewalks, crosswalks, and dedicated bicycle lanes are the primary means of ensuring safety. In addition to providing sidewalks and bicycle lanes, dedicated multi-use paths and greenways can provide a means of separating bicycles and pedestrians from motor vehicle traffic. Multi-use paths are typically designed for 10-feet in width with a 5-foot planted strip between the path and roadway.

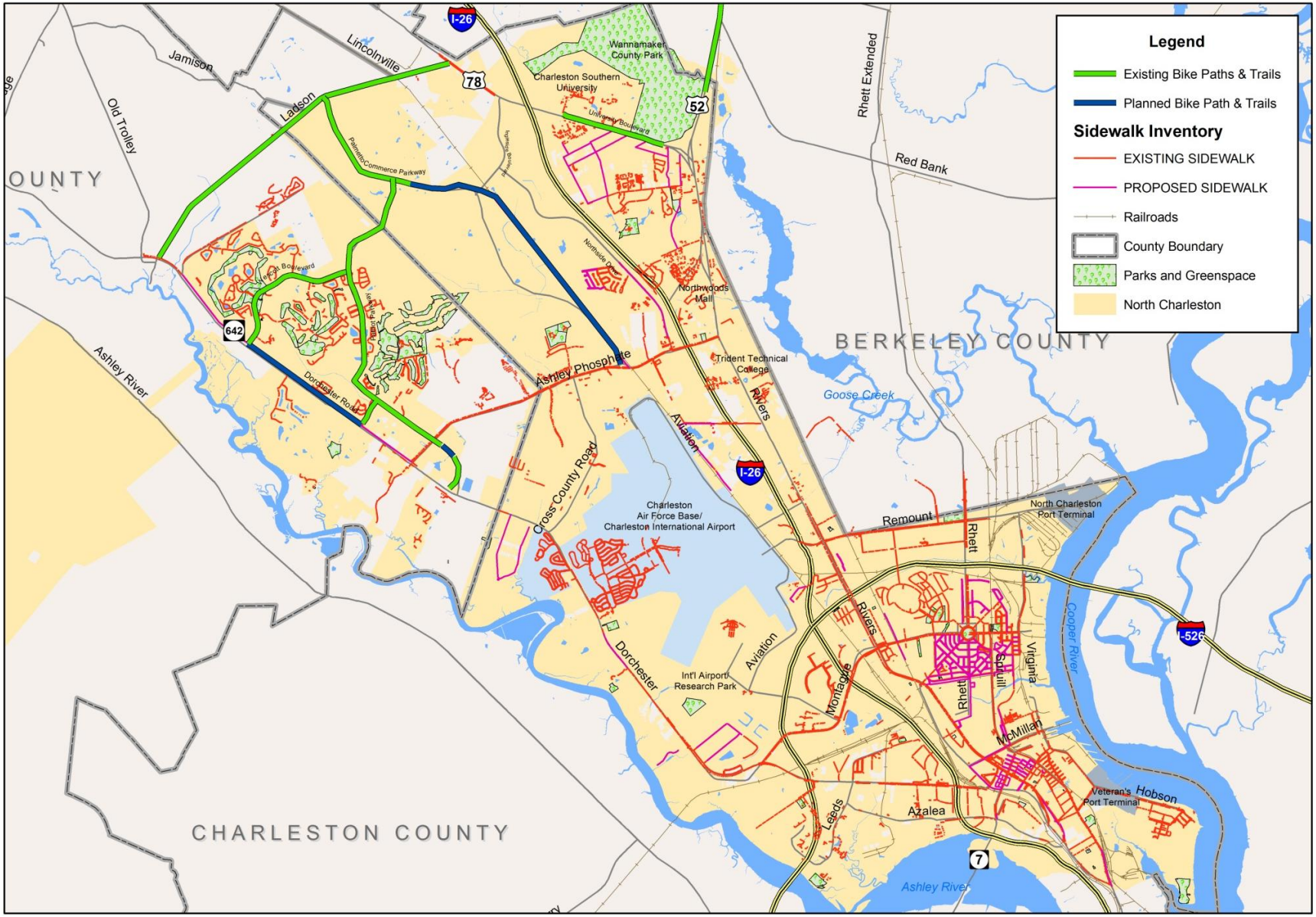
EXISTING FACILITIES

Existing and proposed sidewalks (by City Council members), and bicycle trails (existing and planned) in the North Charleston area are displayed in Map 8.11. Bicycle and pedestrian facilities serve as an alternative means of transportation that must be accommodated within the roadway environment. Cycling and walking may be the primary mode of transportation for groups such as children, tourists, the elderly, and those without access to an automobile.

CURRENT BIKE LANES OR BIKE TRAILS:

- *Ladson Road.* A bike lane is provided on Ladson Road between Dorchester Road and University Boulevard.
- *University Boulevard.* A bike trail separate from the road exists between Charleston Southern University and the U.S. 52/U.S. 78 interchange.
- *Wescott Boulevard.* A bike trail is provided along Wescott Boulevard from Dorchester Road to the intersection of Patriot Boulevard.
- *Dorchester Road.* A hiker/biker trail is provided along Dorchester Road from just south of Seven Oaks Lane to just north of Club Course Drive.
- *Patriot Boulevard.* A bike trail runs along Patriot Boulevard from Appian Way to Club Course Drive.
- *Spruill Avenue.* A bike lane is provided on Spruill Avenue between Buist Avenue and the southern City limit.

MAP 8.11: BICYCLE AND PEDESTRIAN FACILITIES



8.6 BIKE AND PEDESTRIAN PLAN

Potential Funding Sources

A variety of financing resources are potentially available for constructing sidewalks, bike paths, and multi-use trails in North Charleston. These include funding from federal, state, county and city resources. North Charleston should continue to identify, review, and pursue opportunities through these funding sources as appropriate.

SCDOT Transportation Enhancement Program

Beginning in 1992, the South Carolina Department of Transportation (SCDOT) allocated a portion of funding towards non-traditional transportation activities and projects via the Transportation Enhancement Program. These non-traditional activities and projects include: streetscapes, scenic and landscaping programs, historic preservation, environmental mitigation, and bicycle and pedestrian facilities. SCDOT allocates the funds set aside for these projects in accordance with current federal funding and authorization under continuing resolutions of the US Congress and as programmed by the US Department of Transportation. In 2015, new transportation funding and authorization is being debated by Congress.

MAP-21 (the current federal funding act as extended by continuing resolutions) reduced funding and consolidated funding for bicycle and pedestrian transportation into the "Transportation Alternatives" program including allocation of these funds to the "Safe Routes to School Program" and the "Recreational Trails Program." Funding was split with 50% to metropolitan planning organizations and 50% going to the states.

Federal transportation funds for bike and pedestrian projects are reimbursable and are eligible for Transportation Alternatives funding providing for:

- Construction of new sidewalks, separate walking trails/paths, bike paths.
- Adding and/or modifying bike lanes on existing roadways, and related striping.
- Adding and/or modifying road shoulders to accommodate bicyclists.
- Installation of items at intermodal points and vehicular parking facilities such as: bike lockers and racks and facilities for bikes on buses and trains.

The CHATS Transportation Management Area (TMA), made up of the urban areas of the Berkeley-Charleston-Dorchester region receives approximately $864,000 annually for Transportation Alternatives, including pedestrian, bicycling, and streetscape projects. CHATS prioritizes regional projects to recommend to SCDOT for funding each year. Each project can receive up to $200,000 with a local match.

Recreational Trails Program

The Recreational Trails Program (RTP) is a federal-aid assistance program administered by the Federal Highway Administration (FHWA) to build or improve trails for off-road motorcycles, ATV's, mountain bikes, bicyclists, hikers, equestrians, and water craft. Applications for funding are administered through the South Carolina Department of Parks, Recreation and Tourism. Local governments are eligible, and funds are allocated on a two-year grant cycle. A 'Letter of Intent' is required in early November in odd numbered years and requires a 20% local match.

Charleston County "RoadWise"

"RoadWise" is a county transportation-funding program that draws from a half-cent local sales tax initiated in May 2005. The program is scheduled to run for 25 years or conclude after a total investment of $1.303 Billion and is separated into separate programs for funding green space acquisition (17%), mass transit (18%), and transportation projects (approximately 25%). The remaining 40% provides for debt service, program administration, and reserves. Up to $500,000 per year is available specifically for pedestrian and bicycle facilities.

Tax-Increment Financing

Tax Increment Financing districts (TIFs) are in place for four areas of the city: City Center, Noisette Community, the Former Naval Base, and Ingleside. TIF funds are limited to use only within the designated districts, so they are specific resources for local sidewalks and small neighborhood trails within the TIF districts. They cannot be used to fund citywide trails outside the districts unless identified in their authorizing plans.

Community Development Block Grants (CDBG)

Community Development Block Grants are funded through the U.S. Department of Housing and Urban Development and are primarily used to assist local governments in providing services to low to moderate income households. The CDBG program also funds community facilities and community infrastructure, including sidewalks. Several of North Charleston's recent sidewalk construction projects have been funded through the use of Block Grants.

General Funds & Taxes

Although grant programs are available, basic funding for sidewalks and other pedestrian facilities needs to come from the city's general fund, and the city should set aside a portion of its annual budget each year towards funding the design and construction of bike trails and sidewalk transportation alternative improvements. More importantly, the city should identify and designate a specific portion of this local funding towards providing the "front-end" local matches for reimbursable state and national grant programs.

The city has also established a "Sidewalk Bank" for payments from developers who cannot build a sidewalk where otherwise required.

Rails to Trails

The Rails to Trails non-profit organization is not a funding program, but is a national advocate to provide technical assistance, public information, and local activism for converting abandoned railroad lines into usable trails if the opportunity arises.

Future Sidewalk Planning

Priorities for the location of sidewalks or trails should be identified to accommodate to community needs.

Priorities for Sidewalks:

- ***Sidewalks to schools:*** Not every school-aged child rides a bus to school. Many school-age children live near their school and their parents may prefer the option for their children to walk (or bicycle) to school if they have a safe place to travel. Areas within ¼ mile of schools should be the highest priority for sidewalk improvements (¼ mile is generally estimated as a five-minute walk, a distance that people will usually choose to walk).

  The SCDOT "Transportation Alternatives" program specifically supports the "Safe Routes to School" (SRTS) program to improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools while promoting healthy

lifestyles for children and their parents. Selected schools are required to design a comprehensive SRTS Plan specific to the school that incorporates the "Five E's: **Engineering, Education, Encouragement, Enforcement, and Evaluation**."

SRTS Workshops aid in the design of a comprehensive SRTS Plan. The 2012 A.C. Corcoran Elementary School SRTS Travel Plan provides a detailed example, including recommended sidewalk improvements and is available online at: http://www.scsaferoutes.org/files/scsr/public/content/file/466/upload/151.pdf

In January 2015, the Safe Routes to Schools Action Plan was released for Oakbrook Middle School and is available at: http://www.scsaferoutes.org/files/scsr/public/content/file/1269/upload/2015-01-06-5296-oakbrookmiddletravelplan-wappendices.pdfwappendices.pdf.

- ***Transit Stations and Bus Stops:*** Although some train and bus patrons are riders by choice, many riders use public transit as their primary means of transportation, and need adequate sidewalks for mobility to and from stops. For those who do not own cars or choose to use public transportation, sidewalks leading to bus stops or transit stations may be necessary for safe pedestrian travel. In addition, retail shopping centers are primarily auto-oriented in North Charleston. As above, a ¼ mile distance is an appropriate distance for priority with ½ mile being a desirable distance for pedestrian accessibility along collectors and thoroughfares.
- ***Sidewalks to Parks:*** People are likely to walk to parks if they are located within a five-minute walk.
- ***Commercial Corridors:*** Those who do not own cars may walk to commercial areas for their service needs. Others may enjoy walking from their home to retail, entertainment venues or restaurants. However, the number of curb cuts, driveways, and intersections are likely to increase the number of pedestrian and vehicle conflicts. Commercial corridors with a lot of foot traffic and inadequate pedestrian walkways are recommended to be a high priority for sidewalk investment to mitigate conflicts and enhance safety.
- ***Residential Areas:*** Developers are required to construct sidewalks for new development projects, and many residential streets require slower speeds and may be safe enough to walk along or adjacent to the roadway without sidewalks. Residential areas are not a high priority, but the city should identify and target residential streets that pose safety issues, such as long straight-away streets and heavy volume corridors, for sidewalk improvements.

In summation, parks, schools, transit stops, retail centers, and job centers are the most likely generators of pedestrian activity. Therefore bus stops are an additional priority for schools and parks when assessing sidewalk needs. Students that live within a ¼ mile or farther from their school are more likely to walk to school than taking a bus, and safe sidewalks are needed. Parks are used for recreation and outdoor enjoyment and patrons often choose to walk or jog to a park, rather than drive there.

As stated above, a comfortable walking distance measure typically used in transportation planning is a five-minute walk for a one-way trip. For the average person, this is approximately ¼ mile, and this measure is commonly referred to as a pedestrian shed, or "pedshed." Quarter-mile "pedsheds" were generated for North Charleston's schools, parks, and bus stops using GIS. The image shown on the next page shows these radial pedsheds. Several schools are located adjacent to other schools, so their pedsheds combine into a larger continuous "pedsheds" in some cases.

In several areas, pedsheds of different categories (schools, parks, stops) intersect or overlap each other; and in some areas, all three types overlap. Areas of overlap are going to have the highest likelihood of generating high-priority pedestrian activity. The image to the left shows where two or more categories overlap, and where all three overlap. Areas where two or three types of pedsheds overlap and where there is a lack of sidewalks (especially along arterials or collector streets) should be the top priority for new sidewalk construction.

Map 8.12: Pedsheds (Pedestrian Walking Sheds),shows large concentrations of different pedestrian shed types form in the Park Circle area close to Montague Avenue; the triangle formed by Cosgrove Avenue, Rivers Avenue and McMillan Avenue; the Bridgeview and Faber Place office districts; and Northwoods Mall. Pedsheds also line Remount Road, Rivers Avenue, and Dorchester Road at various concentrations along their routes.

Future sidewalk projects along arterial and collector road corridors are recommended within and connecting to nearby pedsheds. Locations where major roads have missing or disconnected sidewalks should become targets for sidewalk improvements. Sidewalks along major roads should take priority over neighborhood streets because they are more heavily traveled by pedestrians and vehicles, and higher speed limits produce greater needs to improve pedestrian safety.

The city produced a GIS file of existing sidewalks that was used with the street file to overlay the recommended pedsheds. The status of these proposed projects is illustrated by the recommended sidewalk improvements lists below:

Map 8.12: Pedsheds (Pedestrian Walking Sheds)

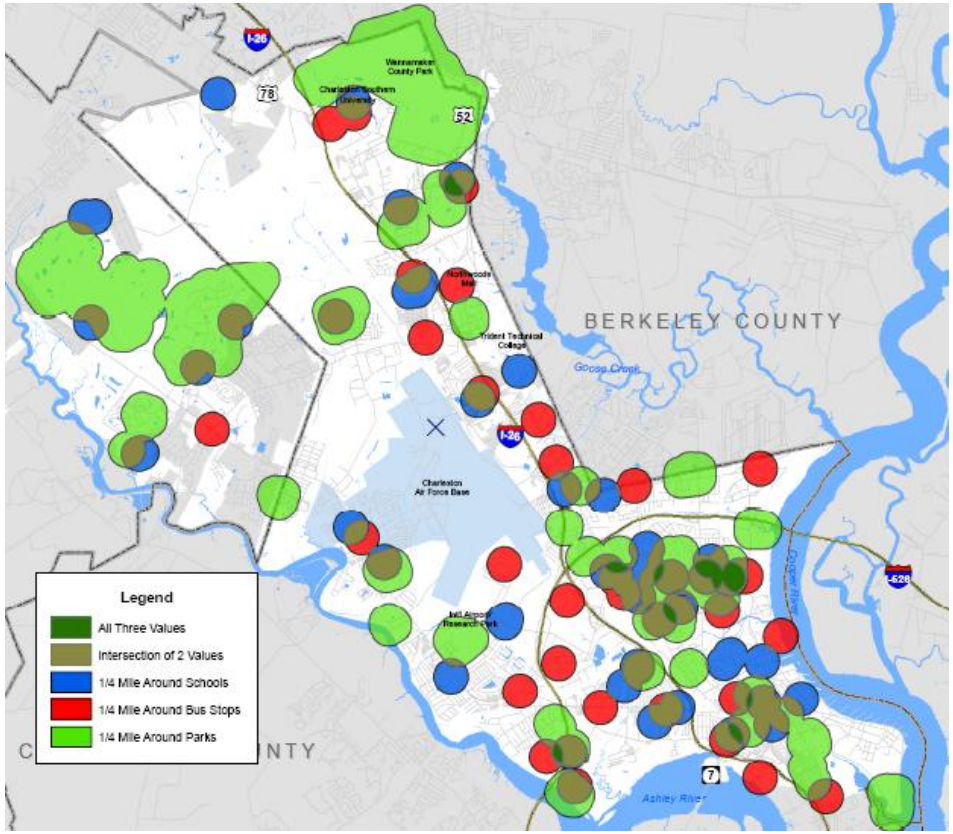


Table 8.4: Status of Sidewalk Improvements

PLANNING AREA 1	STATUS
South Rhett Avenue/Helm Street, between Bexley Street and Rivers Avenue: Rhett is an arterial; sidewalks will provide access between Park Circle and Rivers Avenue, with nearby schools and a CARTA bus stop.	South Rhett section built except for bridge, Helm Street section not built
Noisette Blvd (Avenue D) between Virginia and Turnbull Avenue: Provides a link to heavily walked East Montague district and the developing Navy Yard at Noisette.	
Everglades Drive, from Avenue D to Riverfront Park:. Links Riverfront Park to the Storehouse Row area, which is within several school pedestrian sheds.	Some small sections on north side built
North Rhett, from Sumner Street to Sherwood Street:. Closes a gap in sidewalk connection along an arterial road.	Under construction
Meeting Street, from Cosgrove Ave. to Carner Avenue: Provides a pedestrian route in an area with several schools, bus stops, and neighborhoods that lack sidewalks.	
Gaynor Avenue and Gale Avenue: Funded by Charleston County tax funds.	Gaynor Avenue: Built between East Montague Avenue and Amtrak station Gale Avenue: Built
Remount Road, from Lorraine Drive to Port of Embarkation: Provides pedestrian access between CARTA stops and to Westvaco Park.	Built between Lorraine Drive across NOCS property
Virginia Avenue, from Mark Clark to Remount Road: Completes sidewalk connectivity where partial sidewalks exist, and links Hendricks Park to a CARTA stop.	Built from Mark Clark to Mill Road
Rivers Avenue, from Aviation Ave. to Ashley Phosphate Road: Rivers is a principal arterial that provides the only continuous link from the south part of the city to the north, east of the AFB. It also is a commercial corridor with several schools and bus stops located along or near this segment of the road.	Built from Ashley Phosphate Road to Hanahan Road
Hanahan Road: Provides facilities for CARTA users and for the Trident One-Stop Career center.	
Raymond Avenue: Accommodates a combined school and bus stop pedestrian shed.	
Maybeline Road: Provides pedestrian safety for Trident Tech students, and pedestrian access to City of Hanahan.	Partially built along middle section
Stall Road, from Fassett Road to Midland Park Road: This would complete connectivity along Stall Road, which is a go between for two CARTA stops and a school.	Built

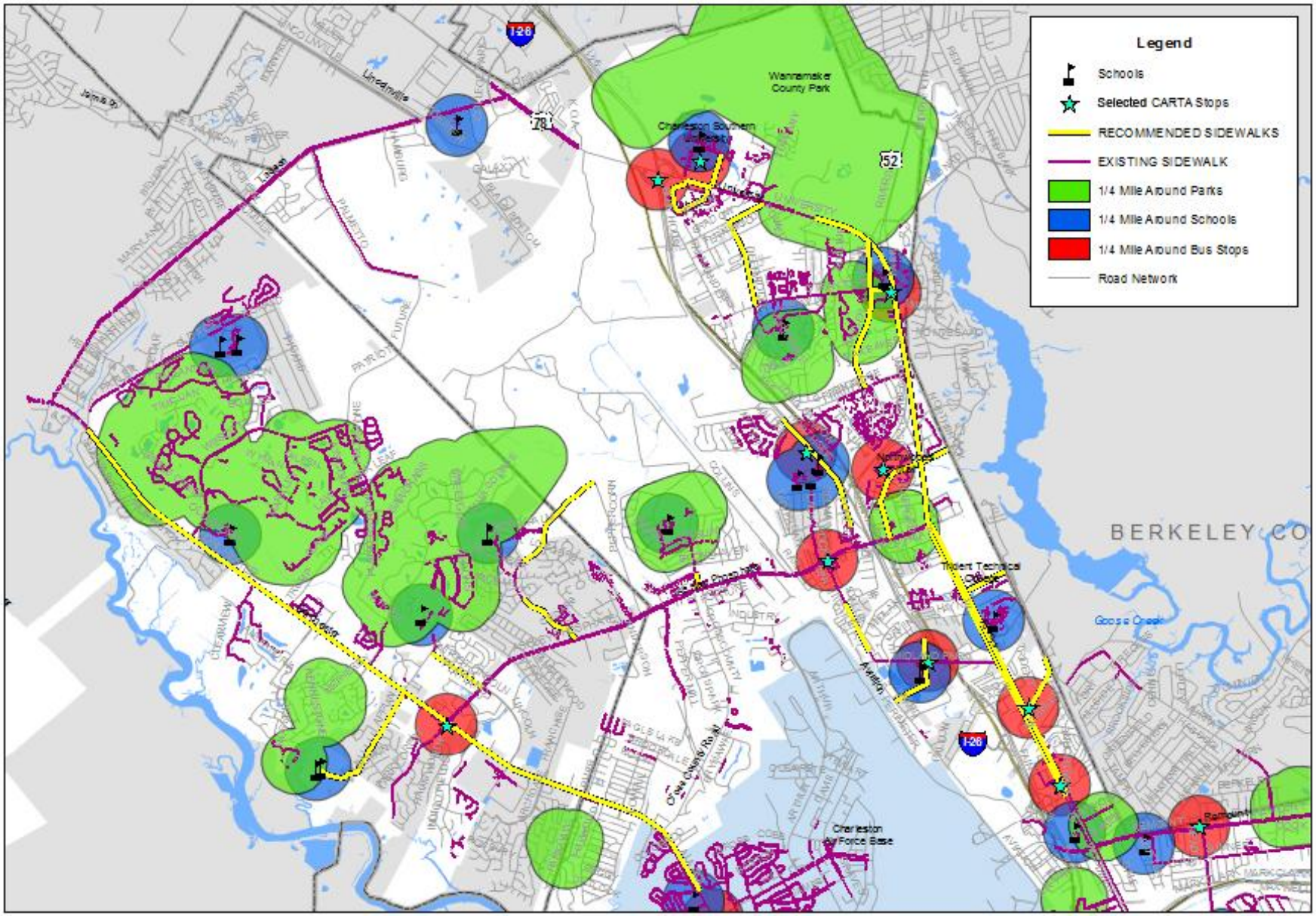
PLANNING AREA 2	STATUS
International Boulevard, from hotels at Centre Pointe to Montague Avenue: Provides pedestrian link to CARTA bus stops.	Built from Mark Clark to Montague
Leeds Ave, from Dorchester Road to Cummins Engine Plant: Provides pedestrian links for CARTA stops, Charleston County offices, Faber Place offices, and Southern Wesleyan University	Built from Dorchester Road to Bridge View
Mall Drive, City Hall to Rivers Avenue: Provides pedestrian access for City Hall, Rivers Avenue retail, and CARTA stops	Built from City Hall to Lacross Road
Bridge View Drive: Provides links to CARTA stop from the various County office buildings, and for access to the marina and park on the Ashley River.	Built
Dorchester Road, from Great Oak Drive to Lambs Road: Closes sidewalk gaps along Dorchester Road, the only principal arterial and continuous route on the west side of the city.	Built
Dorchester Road, from Paramount Drive to Veneer: This provides a continuous sidewalk along Dorchester. It also need for CARTA stop at the corner of Leeds and Dorchester Road.	Built
Baker Hospital Drive to Azalea Avenue: Provides the only potential pedestrian link between the housing and offices in this area to the rest of the city. This will increase in importance as the Ashley River Center develops.	

PLANNING AREA 3	STATUS
Dorchester Road, from Ashley Phosphate Road to Old Fort Road: Provides arterial route along Dorchester Road.	Hiker/bikeway has been trail built and provides partial connection
Dorchester Road, from Maryland Avenue to Ashley Phosphate Road: Closes existing sidewalk gaps along Dorchester Road.	Not built, but in design (being managed by COG)
Appian Way, from Dorchester Road to Ft. Dorchester High School: Provides safe pedestrian travel to and from the high school.	Segments built
Appian Way, from Dorchester Road to schools (Eagle's Nest/River Oaks): Provides safe pedestrian access to and from the two new schools.	Partially built except section from Athens Way to Landing Parkway
Patriot Blvd, from Appian Way to Ashley Phosphate: Helps provide access to Ft. Dorchester High School, shopping areas, and a CARTA bus stop.	Built
Windsor Hill Plantation Boulevard: Provides safe pedestrian travel to and from Windsor Hill Elementary.	Built between Royal Palms Lane and Loggers Run and between Beckton Court and Lavender Lane. Additional segments will be added by development of Windsor Hill Apartments and Indigo Palms, Phase 5

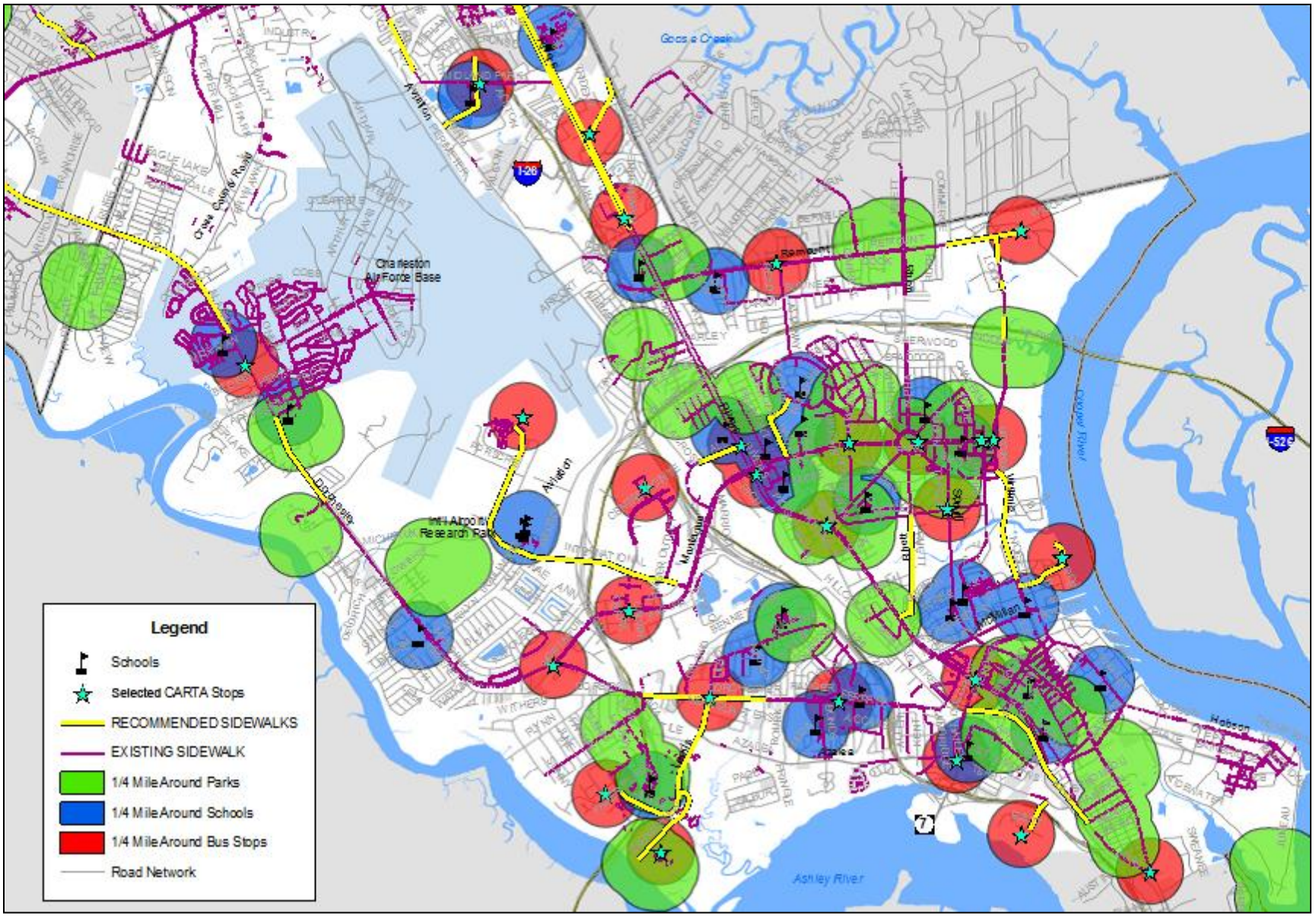
PLANNING AREA 4	STATUS
Medical Plaza Drive: Provides pedestrian facilities for patients and employees of Trident hospital and associated doctors' offices, as well as the nearby CARTA stop.	Some disconnected sections are constructed
University Boulevard, between Charleston Southern Univ. and Trident Medical Center: Provides pedestrian access around Charleston Southern University and the local CARTA stop.	Built
Otranto Road, from Antler Drive to Rivers Avenue: Completes Otranto sidewalks to Rivers Avenue, providing pedestrian links for CARTA riders, Northwoods Academy, and local neighborhoods and parks.	
Greenridge Road, from Crossroads Drive to Deerwood Drive: Sidewalks are planned and funded for Greenridge Drive	Built from Crosswoods to Sandwood
Antler Drive: Provides facilities for CARTA users, use of local parks, and Northwoods Academy.	Built from Greenridge to Otranto
University Boulevard from Gable Street to 52/78: Provides pedestrian access to Wannamaker Park and along Rivers Ave. towards Northwoods Mall.	
Rivers Avenue, from 52/78 to Ashley Phosphate Road: Provides access between shopping areas and CARTA stops. It also links Northwoods to Wannamaker Park and towards the City of Goose Creek.	
Northwoods Boulevard: Provides access between shopping areas and CARTA stops.	
Eagle Landing Boulevard: Provides access between shopping areas and CARTA stops.	
Brandywine Road, from Stonehaven Drive to Ashley Phosphate Road: Provides a safe pedestrian route to Pepperhill Elementary.	Built from Stonehaven to Mountainbrook
Northside Drive, from Colony North Subdivision to Ashley Phosphate Road: Provides facilities for CARTA stops and nearby public schools and Northside Christian Academy.	
Shadow Lane & Deerwood Drive. These two roads have a Level of Service of F, and they provide needed access from several neighborhoods to Charleston Southern Univ., Trident Hospital and Wannamaker County Park**.**	

The maps on the next two pages (Map 8.13 and Map 8.14) show the locations of existing sidewalks, the sidewalk projects, and "pedsheds" for selected CARTA stops, schools, and parks.

MAP 8.13: SIDEWALK PLAN MAP (NORTH)



MAP 8.14: SIDEWALK PLAN MAP (SOUTH)



TRAILS AND BICYCLE FACILITY PLANNING

PRIORITIES FOR BIKE OR MULTI USE (HIKER-BIKER) TRAILS

- ***Project Tie-ins:*** Adding a trail to existing infrastructure projects in most cases will be easier and less expensive than constructing a new, stand-alone trail. Trails that can be built in conjunction with planned transportation projects, such as new roads or streetscape project should be given the highest priority.
- ***Connective Network:*** A trail that leads to another trail (rather than a dead end) will be used more frequently. High priority should be given to trails that extend or connect to existing trails within the city, and especially to regional networks or trails in other municipalities.
- ***Connect to destinations:*** Trails should carry people to and from places that they want to go – this includes parks, community centers, scenic vistas, schools, libraries, and concentrated retail or restaurants. People who choose to be active and use parks or recreation areas enjoy the ability to walk or bike to these facilities, and scenic areas add to the walking or biking experience, increasing the likelihood of a trail's use. North Charleston's wetland and tidal stream areas provide an excellent opportunity for trail usage. Opportunities exist to link greenway trails to potential Blueways Trails (one is already planned for the Ashley River).
- ***Abandoned railroad tracks:*** Unused railroad lines provide established linear rights-of-way that could be acquired for conversion into trails rather than sitting vacant.
- ***Readily available funding:*** Areas where funding mechanisms are in place or areas that are likely to receive improvement or infrastructure grants are good candidates for trail construction. This could include TIF districts or CDBG-funded areas.
- ***Part of the Urban Fabric:*** Trails should utilize the natural beauty of parks and open space, but they should also be part of the urban fabric. Highly populated areas will create a higher demand for trails and ensure that they are being used. Additionally, trails that are highly visible from the public eye make potential users feel safer. This safety aspect can be especially important for generating more use.

Based on the above criteria, the following is a list of proposed bike path or multi-use (hiker-biker) trail segments for the southern half of North Charleston:

1. **East Montague** – A trail from Park Circle to Liberty Hill on East Montague is planned – this should extend to I-26 to give access to the Mall Drive area, and eventually connect across to trails in City Center.

2. **West Montague** – A West Montague trail would connect the City Center area to Rivers Avenue. Trails could be accommodated as part of the eventual streetscape projects for Montague Avenue.

PROPOSED PATHS AND TRAILS – SOUTH END

3. **Horizon Village** – A trail running from Horizon Village through the Noisette Creek Preserve would create a recreational opportunity for the community's new residents.

4. **Michaux Promenade** – This trail and greenway was proposed by the Noisette Master Plan to convert an abandoned rail line along the north edge of the Noisette Creek Preserve if the route remains available for acquisition.

5. **Danny Jones & Quarterman Park** – A path through Danny Jones recreational complex could link Park Circle to Danny Jones, Oak Terrace Preserve, and beyond to Filbin Creek. A trail through

Quarterman Park could link Park Circle to Spruill Avenue and the Noisette Navy Yard District.

6. **Cosgrove** – A path along Cosgrove Avenue would provide a link between North Charleston and West Ashley via the North Bridge, and could connect to trails within the Noisette Community.

7. **Spruill Ave.** – Bike lanes were added to Spruill Avenue in 2012 connecting to Meeting Street and providing a link to Charleston, although bicyclists must share lanes with vehicles on Meeting Street. A spur off this trail to Stromboli Rd. could help promote trail use in this redevelopment area.

8. **Noisette Blvd.** – A trail linking the Noisette Navy Yard to Virginia Avenue and Park Circle could run through the Noisette Creek Preserve.

9. **Filbin Creek** – A trail along Filbin Creek would provide a scenic route and could connect to the Cooper River Park off Virginia Avenue.

10. **Spruill Rail** – A multi-user trail could be built along Spruill Avenue was proposed as part of the Noisette Master Plan.

11. **South Aviation** – A trail around South Aviation Avenue could provide an alternate access route to the north end of the city, particularly when Palmetto Commerce Parkway is extended south from Ashley Phosphate Road to Aviation.

12. **Dorchester Road** - Construct a bike path along Dorchester Road from the county line to Rivers Avenue. This path will provide 'bike-ability' along the west side of the city, connecting the south end and north ends of North Charleston.

13. **Michaux Parkway** – A trail along Michaux Parkway and International Boulevard to the City Center area was proposed to connect Dorchester Road to South Aviation and West Montague, but may not be viable due to safety, operational concerns and conflicts with FAA safety regulations. A portion could be used to connect Dorchester Road to the proposed Airport Connector Road which is planned to include a trail along its frontage with the Glynn Terrace and Northpointe neighborhoods.

Map 8.15 shows proposed trail routes in the southern half of the city:

MAP 8.15: PROPOSED BIKE TRAIL AND PATH SEGMENTS (SOUTH)

PROPOSED PATHS AND TRAILS – NORTH END

1. **Dorchester Rd. (Appian Way to Wescott)** – Complete the planned Dorchester Rd. hiker-bikeway trail.

2. **Dorchester Rd. (Wescott to Ladson**) - Extend the planned Dorchester Road hiker-biker trail to link up with the existing bike lanes along Ladson Road.

3. **Palmetto Commerce Parkway** – The trail along the Palmetto Commerce Parkway extension was completed.

4. **Patriot Boulevard & Appian** – Continue trails up Patriot Boulevard to Palmetto Commerce Parkway. This would link existing trails on Wescott Boulevard, Palmetto Commerce Parkway, and Patriot Boulevard. Tie this into Dorchester Road via a spur trail on or near Appian Way.

5. **Ladson to University** – Connects the existing path on University Boulevard to Ladson Road to link up with the existing bike lane.

6. **Goose Creek** – Recently completed, this trail provides a continuous trail from University Boulevard up Highway 52 to provide a link to Goose Creek.

7. **Ingleside Boulevard (Northside Extension)** and **Weber Boulevard** – Provides an opportunity to link Northside with Palmetto Commerce Parkway and University Boulevard, providing recreational opportunities for Ingleside Plantation.

8. **Patriot to Wescott** – Use a trail to connect Patriot Boulevard to Wescott Boulevard, running through Wescott Park.

9. **Wannamaker Park Loop** – the trail through Wannamaker County Park could connect through Charleston Southern University to link to the existing bike trail along University Boulevard. A loop through Deer Park and The Lakes would connect the existing parks. The Wannamaker North Trail, constructed in 2012 and expanded to 15 miles in 2014, provides access within the Park with a separate entrance and parking on Westview Boulevard in Goose Creek. The trail was designed for mountain bikes and is open to hikers, walkers and runners as well.

10. **Midland Park** – A trail along Midland Park Road, connecting through the edge of Trident Tech's campus could link the City of Hanahan with South Aviation Avenue.

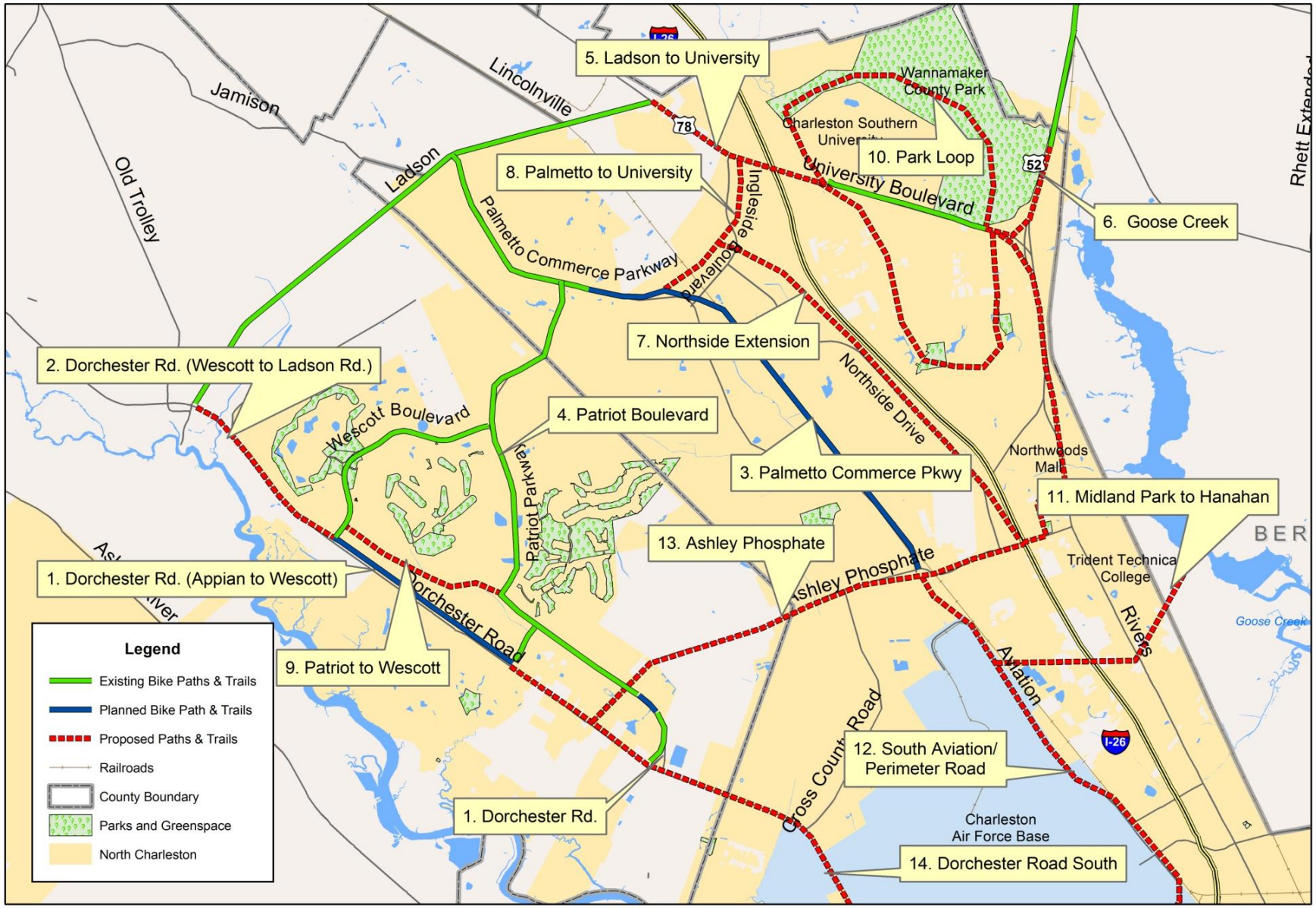
11. **South Aviation/Perimeter Road** - The trail proposed along South Aviation should be extended to Ashley Phosphate Road to connect with the Palmetto Commerce Parkway.

12. **Ashley Phosphate Road** – Providing bike facilities along Ashley Phosphate would provide a valuable east-west trail route, and would connect with several of the other proposed trails.

13. **Dorchester Road South** – Continue the planned Dorchester hiker-biker trail south towards Montague to the south end of the city.

Map 8.16, on the following page, shows proposed trail routes in the northern half of the city:

MAP 8.16: PROPOSED BIKE TRAIL AND PATH SEGMENTS (NORTH)



The following priorities for implementing trails in the 10-year planning period (2008-2018) were identified to help complete a citywide network of connected trails. The status of these proposed trails is illustrated in the following table:

Table 8.5: Trail Implementation (2008-2015)

Trail	**Approximate Length (feet)**	**Estimated Cost** (low)*	**Estimated Cost** (high)*	**Potential Funding Source(s)**	**Status**
Dorchester Road (Appian Way to Wescott) planned and funded	9,250′	$370,000	$925,000	City Funds/Grants	Built from Wescott Boulevard to just north of Club Course Drive
Dorchester Road (Wescott to Ladson) provides connectivity to Ladson Road	8,350′	$334,000	$835,000	City Funds/Grants	Built from Wescott Boulevard to just south of Seven Oaks Lane
Palmetto Commerce Extension includes trail as part of project	20,500′	$820,000	$2,050,000	County Roadwise tax	Built
Patriot Blvd (Palmetto Commerce Parkway to Wescott) planned trail	7,700′	$308,000	$770,000	City Funds/Grants	Built from Wescott Boulevard to 9775 Patriot Boulevard
Patriot Boulevard (Wescott to Appian Way) planned trail	7,700′	$308,000	$770,000	City Funds/Grants	Built
Patriot/Lincoln Patriot Blvd. (Appian Way to Lincoln Blvd.) planned trail	6,700′	$268,000	$670,000	City Funds/Grants	
University Blvd extends existing trail to link with other facilities	12,900′	$516,000	$1,290,000	City Funds/Grants	Built
East Montague Ave. (I-26 to Park Circle) as part of planned streetscape	8,900′	$356,000	$890,000	City Funds/Grants	
Northside Drive planned trail	18,800′	$752,000	$1,880,000	County Roadwise tax	
Northside/Palmetto/University Connector planned trail	6,500′	$260,000	$650,000	County Roadwise Tax	
TOTAL	**107,300′**	**$4,292,000**	**$10,730,000**		
Annual Average	21,460′	$858,400	$2,146,000		

Note *: Estimate costs were presented in FY 2008 dollars.

8.6 OTHER TRANSPORTATION NETWORKS (RAIL, WATERWAYS, AIRPORTS)

There are two existing port terminals located in North Charleston – Veteran's Terminal and North Charleston Terminal, and a third – the Navy Base Terminal - is being developed at the south end of the city on the former Charleston Naval Base. An Environmental Impact Statement was prepared to assess the environmental impacts of the new terminal. A new port terminal road is also proposed to give container trucks direct access between the port and Interstate 26.

The South Carolina State Ports Authority owns and controls all port terminals in the state, including the three North Charleston Ports and three other ports in the Charleston area: Union Pier and Columbus Street Terminals on the Cooper River in Charleston, and Wando Welch Terminal on the Wando River in Mt. Pleasant.

There are two public boat landings in North Charleston operated by Charleston County Parks and Recreation. The Cooper River Marina is located at the tip of the former Navy Base peninsula where Shipyard Creek flows into the Cooper River. W. O. Thomas, Jr. Boat Landing is located on the Ashley River at the end of Bridge View Drive near the Charleston County offices. The city also operates a small boat landing at Hendrick Park on the Cooper River near I-526.

Passenger Intermodal Center

The North Charleston Intermodal Transportation Center is intended to serve as a regional center for CARTA bus service, Amtrak rail services, Southeastern Stages (formerly Greyhound) interstate passenger bus service, and a hub for taxi services and shuttles to and from Charleston International Airport. Initially planned at a new strategic location west of I-26, problems at the partially completed site required the relocation of the new Center to the site of the existing North Charleston Amtrak station on Gaynor Avenue. CARTA is partnering with North Charleston on the construction of the new $14 million Center to provide a 20,000 SF transportation hub to replace the current Amtrak station.

Southeastern Stages Bus Service

Formerly known as Greyhound Bus Lines, Southeastern Stages provide national inter-city bus transportation at two regional bus terminals, one in Summerville and one in North Charleston. North Charleston's terminal is located on Dorchester Road, just east of the I-26 interchange. Terminal facilities for Southeastern Stages are also expected to be relocated to the new Intermodal Transportation Center on Gaynor Street. Both locations are shown on Map 8.17.

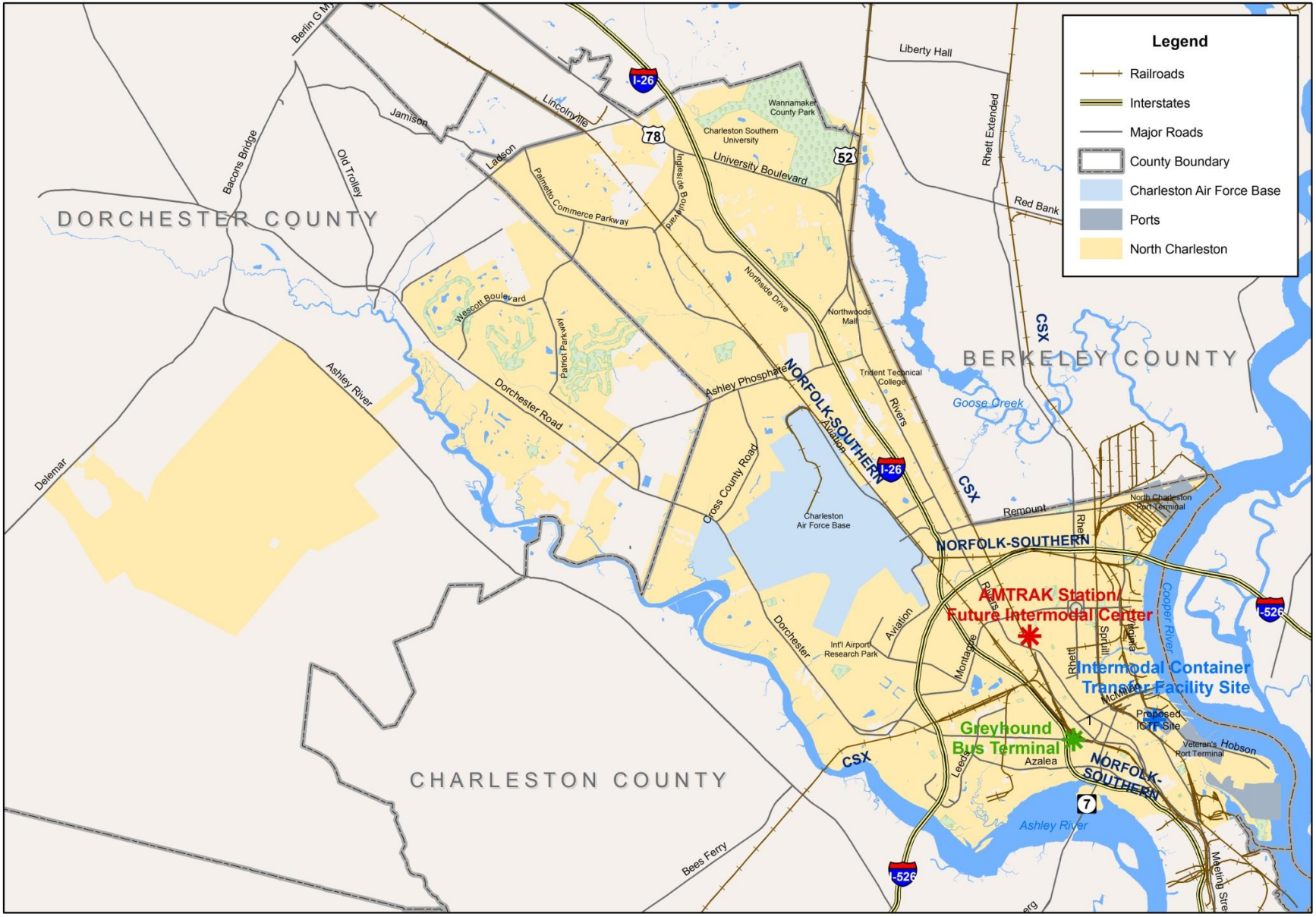
AMTRAK

AMTRAK inter-city passenger rail offers a connection in North Charleston along the CSX rail line. Two routes, the Silver Service/Palmetto (The Charleston) runs from New York to Miami, and the Auto Train Route carries automobiles and passengers from Lorton, Virginia to Sanford, Florida. The current AMTRAK station is located on Gaynor Avenue just south of the intersection of Rivers Avenue and Montague Ave. The Amtrak station will be replaced by the new North Charleston Regional Intermodal Center at the Gaynor Street site. Both locations are shown on map 8.17.

Railroads

Freight railway systems running through the City of North Charleston are depicted on Map 8.17. CSX operates two north-south railways parallel to Rivers Avenue and North Rhett Avenue as well as an east-west railway south of Montague Avenue. Norfolk Southern operates a major north-south railway parallel to I-26. Palmetto Railways (formerly the SC Department of Commerce's Division of Public Railways) is currently planning an Intermodal Container Transfer Facility on the former Navy Base. This facility will serve both rail carriers.

MAP 8.17: RAILROADS



Airports/ Air Force Base

There is one airfield located in North Charleston. The Joint Base Charleston/Charleston International Airport provides air carrier services to the metropolitan area. The airport is owned and operated by the Charleston County Aviation Authority. The public airport operates under a Joint Use Agreement with the US Air Force which owns, maintains, and operates the shared runways, taxiways, and navigational facilities. The Air Force operates as Charleston Field or Charleston Air Force Base (AFB), under the jurisdiction of the 628th Air Base Wing of the Air Mobility Command, a component of Joint Base Charleston.

The combined 2,060-acre Charleston International Airport/Charleston AFB provided 105,782 aircraft operations and served 3,131,072 total passengers in 2014. Major air carriers include Delta, Southwest, United Express, American Eagle, JetBlue Airways, and US Airways Express. In addition to commercial passenger service, the airport also provides air cargo and general aviation facilities. The Air Force operates C-17 and other airlift aircraft and intermittent assigned alert interceptor fighter aircraft on the military side of the airfield.

In 2010, Runway 03/21reopened after being closed for one year, for a $30 million project to rebuild the deteriorated runway and add asphalt overruns, paved 25' wide asphalt shoulders, and new edge lights, distance remaining markers and runway end indicator lights. In 2012, the main Runway 15/33 was closed to replace the concrete and extend the runway width from 150' to 200'. Runway 15/33 reopened in 2013. The improvements allow the runways to serve larger commercial jets, such as the Boeing 747 and Airbus A380.

The current airline terminal was built in 1987 and a new $189 million Terminal Redevelopment and Improvement Program (TRIP) was approved by the Charleston County Aviation Authority in 2013 to upgrade amenities and facilities in phases over a three-year period.

Flights from the terminal depart from two concourses (A and B), each with its own Transportation Security Administration (TSA) security checkpoint. However, a single security zone will be implemented upon completion of the current terminal renovation. Charleston International Airport is classified as a security-level Category I airport by the TSA. The airport is equipped to handle international flights.

General aviation services are located on the east side of the airport and are operated by the Charleston County Aviation Authority. Boeing South Carolina has constructed a major manufacturing, assembly and delivery site for the Boeing 787 Dreamliner on 265 acres on the south side of the airport and added additional facilities since opening in 2011. Several more facilities are under construction and planned.

Joint Base Charleston Joint Land Use Study

A Joint Land Use Study (JLUS) was commissioned by Charleston Air Force Base in 1993 to address cooperative planning between the airfield and surrounding communities. Updated in 2008, the study focused on land use compatibility with airfield operations, coordination of Air Force housing, and identified several recommendations for local communities, including Air Installation Compatible Use Zoning (AICUZ) overlays, a land acquisition plan, and a possible Transfer of Development Rights (TDR) program. In 2013, the B-C-D Council of Governments began an update to the JLUS II; outcomes from that study have not been released.

Waterway Transportation

North Charleston's eastern and western borders front on two navigable rivers. The Ashley and the Cooper waterways provide yet another mode of transportation. North Charleston has public

marinas on both rivers that could accommodate boat docking and loading.

The Cooper River is a deepwater river that provides the necessary means for cargo shipping and other shipyard functions, as well as some recreational boating.

The Ashley River is not used for major commercial shipping, but is used for recreational boating with marinas located in Charleston and North Charleston south of the Westmoreland Bridge (I-526). The Ashley is a state designated Scenic River, and is protected above the Westmoreland Bridge north to Summerville. As part of this protection, construction of new private docks is tightly regulated in this area, limiting access to this section of the river.

The use of these waterways for local transportation has been limited. Other than tourist boating (such as harbor cruises and tours to Fort Sumter) and recreation, waterways in the region have not been used to a great extent for human transportation.

With increasing regional traffic congestion on land, some local or regional water transit (such as a ferry or water taxi services) may present a potential alternative mode that could be considered for local access. A feasibility study could determine if there is a demand for this type of river-borne transportation in the region and if a marine-based transit system between riverside activity centers could be economically viable and cost-effective. This should include coordination with SCDHEC's Office of Coastal Resource Management to assess the environmental impacts any river-based type of transit would create.

8.7 COMMUTING PATTERNS

Berkeley-Charleston-Dorchester Council of Governments (BCD COG) produced a study of commuting patterns in the BCD region in 2005 using the 2000 Census' CTPP (Census Transportation Planning Package). Although the update for 2010 is not complete, BCDCOG's work illustrates journey-to-work data for three planning areas within North Charleston:

- The North Charleston planning subarea included all portions of the city south of Ashley Phosphate Road where 45% of residents living within the subarea also worked in the same area, but only 20.8% of those working in the subarea also lived there, indicating that the subarea had a much larger daytime population, contributing to rush hour traffic in the morning and evening peak hours.
- The Ashley Phosphate North planning subarea comprising the rest of Charleston County north of Ashley Phosphate Road, identified only 13.2% of the area workers lived in the subarea, and 15.7% of the subarea residents stayed in the area to work.
- The Dorchester Road Corridor planning subarea included the Dorchester County portions of North Charleston, and the study noted that the subarea lost large populations during the day as residents traveled elsewhere to work, including 26% that worked ion the North Charleston subarea.

A CTPP update prepared with 2006-2010 data from the American Community Survey confirmed that these patterns continued through the decade.

8.8 FUTURE PROJECTS (PROPOSED AND FUNDED)

The Level of Service (LOS) figures provided above predict greater delays as traffic volumes increase to exceed available roadway capacity. The traffic projection models are based on funded and programmed transportation improvements and include currently programmed federal, state and local sales tax funded projects. Although the BCDCOG updated traffic analysis model predicts severe traffic delays on major arterials in North Charleston, several additional long-range transportation projects have been proposed for the city. Sales taxes from both Charleston and Dorchester Counties are anticipated to fund several of these improvements.

CHATS/Long Range Transportation Plan

The Berkeley Charleston Dorchester Council of Governments (BCDCOG) is the federally-recognized Metropolitan Planning Organization (MPO) for the Charleston region and serves as the regional planning entity in support of allocating federal transportation funds to local projects. As part of their charge, BCDCOG prepares the Charleston Area Transportation Study (CHATS) Long Range Transportation Plan (LRTP) to provide evaluation and prioritization of alternative transportation improvements for the Charleston Metropolitan Region.

The current CHATS LRTP was prepared in 2010 to run through 2035. The LRTP will be updated again later in 2015. Therefore, BCDCOG may be considering some significant new regional transportation projects shortly after this planning update is completed. However, the city will be expected to participate in the regional planning process to ensure that local concerns are addressed in the BCDCOG Vision Plans.

Map 8.18 shows the location of proposed long-range transportation improvements included in the CHATS LRTP. These projects were evaluated on several cost/benefit factors such as potential mobility improvement, environmental impacts, and social equity and appear below in the rank order from the LRTP:

- *#2/ I-526 at I-26 Interchange improvement*
- *#3/ Region wide ITS Signal Systems*
- *#6/ Ashley Phosphate Road from Cross County Road to Northwood Blvd. – capacity improvement*
- *#9/ Aviation Connector from South Aviation Ave. to Ashley Phosphate Road*
- *#12/ Michaux Parkway from Dorchester Road to International Blvd. – capacity improvements*
- *#16/ Commuter Rail from Summerville to Downtown Charleston*
- *#17/ Bus Rapid Transit along Rivers Ave, from Otranto to Downtown Charleston*
- *#19/ South Aviation Avenue from East Spartan Blvd. to International Blvd.*
- *#21/ Bus Rapid Transit from Goose Creek to Downtown Charleston*
- *#22/ Combined Aviation Connector/South Aviation Ave. from Ashley Phosphate Road to International Blvd.*
- *#30/ I-26 Widening from Port Access Road to I-526*
- *#33/ Cross Country Road from Ashley Phosphate Road to Hill Park Road – capacity improvements*
- *#34/ Commuter Rail from Goose Creek area to Downtown Charleston*
- *#35/ International Blvd. from Michaux Pkwy to I-526 – capacity improvements*
- *#36/ Montague Avenue from International Blvd. to I-26 – capacity improvements*
- *#42/ Dorchester Road Connector from Michaux Parkway to West Montague Ave.*

- *#43/ Dorchester Road from Trolley Road to Ashley Phosphate Road*
- *#44/ Bus Rapid Transit from Power easement to Original Planned Intermodal Center location*
- *#45/ Miles Jamison from Trolley Road to Ladson Road*
- *#46 Light Rail Transit Service from Summerville to Downtown Charleston*
- *#49/ Waterborne Transit Service from North Charleston to Downtown Charleston (Cooper River)*
- *#51/ I-526 Interchange Improvement s at International Boulevard*
- *#53/ Future Drive Interchange at I-26*
- *#57/ Light Rail Transit service along Rivers Avenue in Charleston Neck Area*
- *#61 Northside Drive from Ingleside Plantation Road to Ashley Phosphate Road – capacity improvements*
- *#67/ Light Rail Transit Service from Charleston International Airport to Downtown Charleston*

The financially constrained review of these candidate projects eliminated #49 because the travel demand would be accommodated by other projects. The State Infrastructure Bank was identified as an innovative source to fund #30, the Port Access Road.

Two additional projects, the CARTA Intermodal Center and the Railroad Avenue Extension from Maybeline Road to Eagle Landing Boulevard, were eligible and had commitments for receiving additional funds and were also included in the LRTP.

CHATS/Transportation Improvements Program

The short range transportation plans for the BCD Region are identified in the CHATS Transportation Improvements Program (TIP). Although the current printed version is dated 2010-2015, the TIP is amended by BCDCOG yearly (or more frequently) as needed to meet federal requirements for a "constrained" plan of transportation improvements that satisfy guidelines for budgeted resources and equitable metropolitan area consideration in transportation decision-making. After the TIP is approved by the MPO, it is submitted to SCDOT for inclusion in the Statewide Transportation Improvements Program (STIP) and then forwarded to USDOT for federal approval.

TIP Projects in North Charleston

Projects located within the boundaries of North Charleston and approved in the CHATS TIP are listed here:

- *#3/ Region wide ITS Signal Systems*
- *#9/ Aviation Connector from South Aviation Ave. to Ashley Phosphate Road along Spartan Blvd.*
- *#12/ Michaux Parkway from Dorchester Road to International Blvd. – capacity improvements*
- *#19/ South Aviation Avenue from East Spartan Blvd. to International Blvd.*
- *#16/ Commuter Rail from Summerville to Downtown Charleston*
- *#36/ Montague Avenue from International Blvd. to I-26 – capacity improvements*
- *#45/ Miles Jamison from Trolley Road to Ladson Road*
- *#17/ Bus Rapid Transit along Rivers Ave, from Otranto to Downtown Charleston – capital property acquisition*
- *Railroad Avenue Extension from Maybeline Road to Eagle Landing Boulevard – two lanes on new acquisition*
- *CARTA Intermodal Center – Location changed to Old North Charleston Railroad Station*

One additional project that is not within the boundaries of the city, but may have significant impact is the Glenn McConnnell Parkway Extension from Bees Ferry Road to US 17 Alt. along a new location. This road is expected to be built as a multi-lane highway with medians and provides a parallel to Dorchester Road as well as the scenic Ashley River Road to the south of the Ashley River. This project is expected to provide access to developing areas of Dorchester County and may reduce some of the traffic volumes on Dorchester Road.

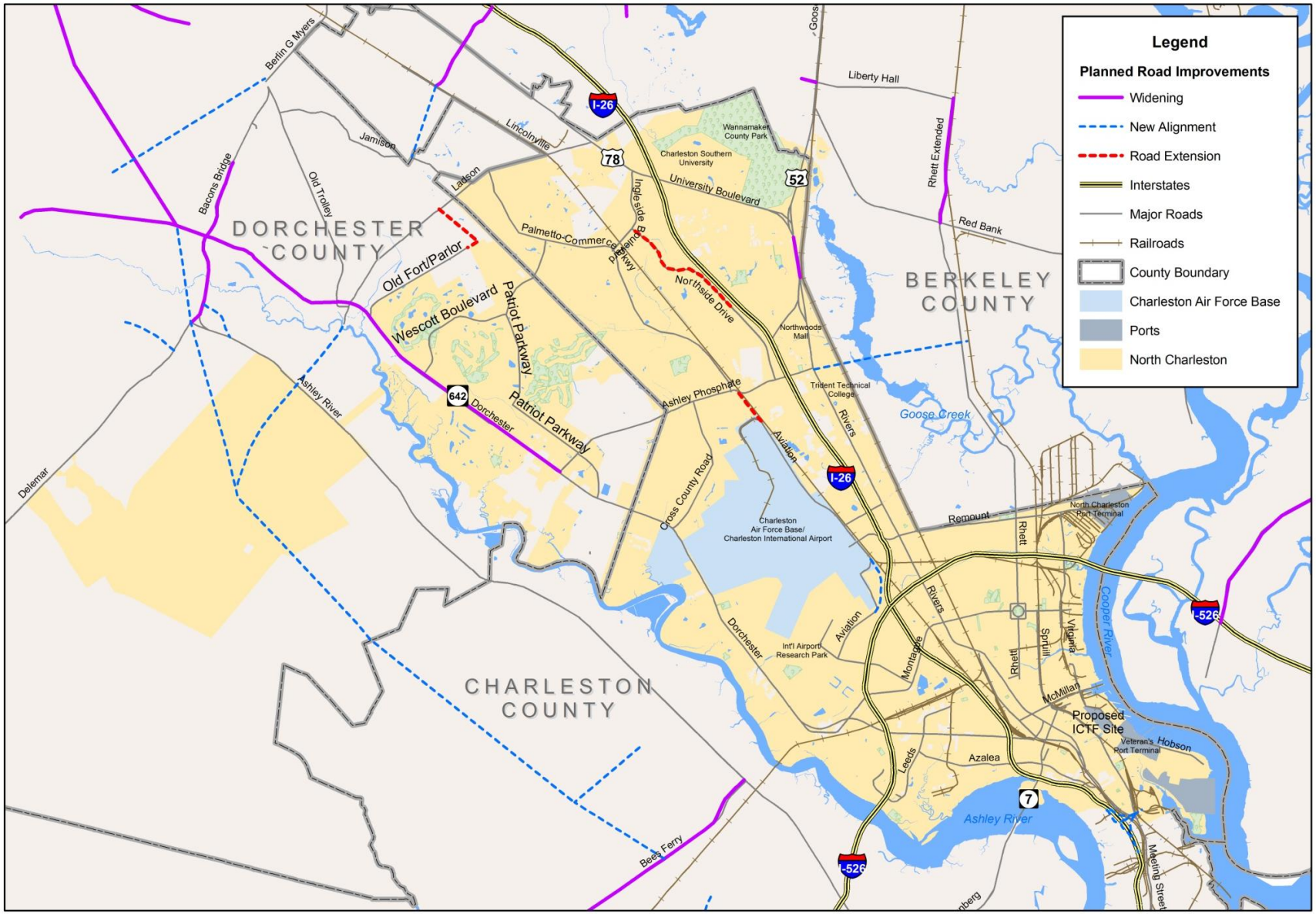
The LRTP update in 2015 will also allow the region to consider other new regional transportation projects, albeit shortly after this planning update is completed.

Potential Projects in North Charleston to be Added to the 2015-2020 TIP

As stated above, the 2015-2020 LRTP update will also allow the Region to consider other new transportation projects that may be significant to North Charleston, albeit shortly after this planning update is completed. However, the city is expected to participate in the regional planning process to ensure that local concerns are addressed in the plans prepared at the BCDCOG. The following projects are potential candidates for the next iteration of the LRTP:

- *#2/ I-526 at I-26 Interchange improvement*
- *#6/ Ashley Phosphate Road from Cross County Road to Northwoods Blvd. – capacity improvement*
- *#21/ Bus Rapid Transit from Goose Creek to Downtown Charleston*
- *#22/ Combined Aviation Connector/South Aviation Ave. from Ashley Phosphate Road to International Blvd.*
- *#30/ I-26 Widening from Port Access Road to I-526*
- *#33/ Cross Country Road from Ashley Phosphate Road to Hill Park Road – capacity improvements*
- *#34/ Commuter Rail from Goose Creek area to Downtown Charleston*
- *#35/ International Blvd. from Michaux Pkwy to I-526 – capacity improvements*
- *#42/ Dorchester Road Connector from Michaux Parkway to West Montague Ave.*
- *#43/ Dorchester Road from Trolley Road to Ashley Phosphate Road*
- *#44/ Bus Rapid Transit from Power easement to Original Planned Intermodal Center location*
- *#46/ Light Rail Transit Service from Summerville to Downtown Charleston*
- *#51/ I-526 Interchange Improvement s at International Boulevard*
- *#53/ Future Drive Interchange at I-26*
- *#57/ Light Rail Transit service along Rivers Avenue in Charleston Neck Area*
- *#61/ Northside Drive from Ingleside Plantation Road to Ashley Phosphate Road – capacity improvements*
- *#67/ Light Rail Transit Service from Charleston International Airport to Downtown Charleston*

MAP 8.18: PLANNED AND PROPOSED LONG RANGE TRANSPORTATION PROJECTS



8.9 TRANSPORTATION GOALS AND POLICIES

GOAL	POLICY	ACTION	STATUS
Goal 8.1: Continue coordinating transportation and land use planning	Policy 8.1.1: Ensure that new development does not decrease the level of service (LOS) of roadways without a commitment for improvements		The City requires traffic impact analyses for developments over five acres and requires implementation of any recommended improvements.
	Policy 8.1.2: Provide for flexible, negotiated traffic mitigation measures for large new developments that facilitate pedestrian and transit access		
	Policy 8.1.3: Support context-sensitive roadway design in order to ensure that transportation facilities are compatible with surrounding neighborhoods and activity centers	Apply the Berkeley-Charleston-Dorchester Council of Government (BCDCOG) "Complete Streets" planning criteria to major transportation improvements in order to ensure that roadways accommodate all modes of travel and support surrounding business districts and neighborhoods.	
	Policy 8.1.4: Coordinate regional transportation planning with local corridor improvement studies		
Goal 8.2: Provide a safe environment for pedestrian and bicycle use	Policy 8.2.1: Expand the city's system of multi-use trails, bicycle routes, and bike lanes	Link trails within North Charleston and to other cities or regional systems to form a connective network	
		Provide annual budgeting to go towards trail development and local matches for regional, state and federal trail grants	
		Use the Bike & Pedestrian Plan to guide the prioritization of trails	

GOAL	POLICY	ACTION	STATUS
	Policy 8.2.2: Provide sidewalks throughout the city, especially in areas with high foot traffic	Prioritize sidewalk construction projects in priority areas, as outlined in the Bike & Pedestrian Plan	The City continues to use a portion of its CDBG to provide sidewalks. Additional bond funding is being allocated to sidewalks; however, the exact locations are not known as of this update.
		Provide additional sidewalks using city funds and local, state and federal transportation grants	The City is working with the COG on sidewalk grants to provide sidewalks on sections of Dorchester Road and Rivers Avenue.
	Policy 8.2.3: Actively pursue Charleston County greenbelt funds through the half-cent sales tax program	Planning and Parks and Recreation departments should work together to pursue identify possible parks and greenbelts and apply for funding	The City has a standing allocation of Greenbelt funds and has been using the funding to purchase both recreational and conservation areas throughout the Charleston County portion of the City. The City has approximately $1.5 million remaining in dedicated Greenbelt funds.
Goal 8.3: Create an efficient network of roads	Policy 8.3.1: Encourage street connectivity to create a more grid-like street pattern	Continue connecting streets in Planning Areas 3 & 4, as outlined in the city's Transportation plan	Ingleside and Weber Boulevard are currently under construction, and Zeppelin Drive is planned. Charleston County is currently designing phase 3 of Palmetto Commerce Parkway.
	Policy 8.3.2: Discourage cul-de-sac and dead-end roads in new developments where natural features do not prevent street connections	Require large new residential subdivisions to provide multiple entrances and exit points	
	Policy 8.3.3: Improve intersections and traffic light timing/signalization	Implement Intelligent Traffic Systems that utilize new technology to improve the flow of traffic	

GOAL	POLICY	ACTION	STATUS
	Policy 8.3.4: Improve traffic safety and flow through access management on major roads that are controlled by the City	Limit the number of curb cuts and driveways allowed for development along major roadways and at congested intersections	As most streets in North Charleston are maintained by the SCDOT, the City has little opportunity to limit curb cuts, although some limiting language has been included in the Dorchester Road Corridor I overlay district with regard to curb cuts on Dorchester Road.
		Encourage inter-parcel connectivity in order to allow internal circulation and compensate for reduced access points.	
	Policy 8.3.5:Prevent conflicts between freight and vehicular traffic	Enforce freight routes, and prohibit freight traffic on neighborhood roads that are controlled by the city	A truck routing study was recently completed for the City. Based on its recommendation, the City will designate additional City streets to be truck-restricted and work with SCDOT to do the same on certain state roads.
Goal 8.4: Reduce traffic problems along congested major corridors such as Dorchester Road	Policy 8.4.1: Work with Joint Base Charleston to reduce or limit traffic congestion at the Charleston Air Force Base main gate on Dorchester Road		
	Policy 8.4.2: Work with railroad companies (CSX, Norfolk-Southern) to manage train schedules for at-grade road crossings, in order to prevent additional problems during rush hours		In both the development of the CARTA Passenger Intermodal Center and the Intermodal Container Transfer Facility, the City is working with the railroad companies, including Palmetto Railways, to optimize interactions.

GOAL	POLICY	ACTION	STATUS
Goal 8.5: Develop a multi-modal transportation system in North Charleston	Policy 8.5.1: Continue supporting regional efforts that would provide commuter rail, bus rapid transit (BRT), or other forms of regional mass transit		In addition to partnering with CARTA on the development of the Passenger Intermodal Center, the City is participating in the development of the I-26 alternatives study to determine which mode(s) of transportation have the greatest feasibility in this area.
	Policy 8.5.2: Use Transfer of Development Rights to increase densities for transit corridors		
Goal 8.6: Develop Travel Demand Management (TDM) programs to reduce traffic	Policy 8.6.1: Coordinate with regional planning agencies to develop and implement TDM programs		
	Policy 8.6.2: Support flex-time and telecommuting programs in order to shift travel demand into off-peak hour travel times		
	Policy 8.6.3: Encourage carpooling and high-occupancy vehicles to reduce vehicular traffic	Establish a city vanpool/rideshare program.	The BCDCOG manages the Trident Ride Share service which can be used to identify potential carpoolers
		Create High-Occupancy Vehicle (HOV) lanes on interstate highways for carpools, busses, and motorcycles	In 2010, the DOT studied HOV lanes on I-26 and determined that, despite anticipated traffic flow benefits, they would be too expensive to implement.