6.0 Modal Strategies

The analysis of Modal improvement strategies includes consideration of mass transit improvements and freight mobility improvements for the I-526 corridor and the intersecting roadways. The modal strategies presented herein are intended to help reduce the overall congestion along the I-526 corridor by encouraging the increased use of transit services, shifting travel away from the peak commute times, and encouraging the use of parallel routes and surface streets.

The I-526 corridor study area is served by both of the area's regional transit providers; Charleston Area Regional Transportation Authority (CARTA) and TriCounty Link. CARTA provides fixed-route, flex service, express commuter service, and paratransit service throughout the urbanized areas of Charleston, North Charleston, and the adjacent urban areas. TriCounty Link (Berkeley-Charleston-Dorchester Regional Transportation Management Association (RTMA)) provides fixed route and demand-response services to the outlying rural areas. The TriCounty Link service provides four routes within the study area and passengers are able to transfer to CARTA routes at designated bus stops which include both the K-Mart park-and-ride (in North Charleston) and Citadel Mall park and ride (in West Ashley) facilities. In addition to the public transit providers mentioned above, there are other human services agencies, private firms (taxicab, limo services, etc.), and public and private rideshare programs that provide services in the area.

The efficient movement of freight is also a critical consideration for the I-526 corridor. The Port of Charleston is one of the busiest ports along the Southeast and Gulf coasts and is recognized as one of the nation's most efficient and productive ports. In 2011, the Port handled nearly 1.4 million twenty-foot equivalent container units (TEUs) and approximately 95% of the port-related traffic utilize the I-526 corridor at some point in their journey to and from the port terminals, rail facilities, warehouses, and deliveries. In addition to the port related freight movements, there are numerous other trucking firms and businesses that deliver goods and services to commercial and retail facilities. These shipments generally include retail/wholesale deliveries, mail/parcel deliveries, food/beverage deliveries, etc.

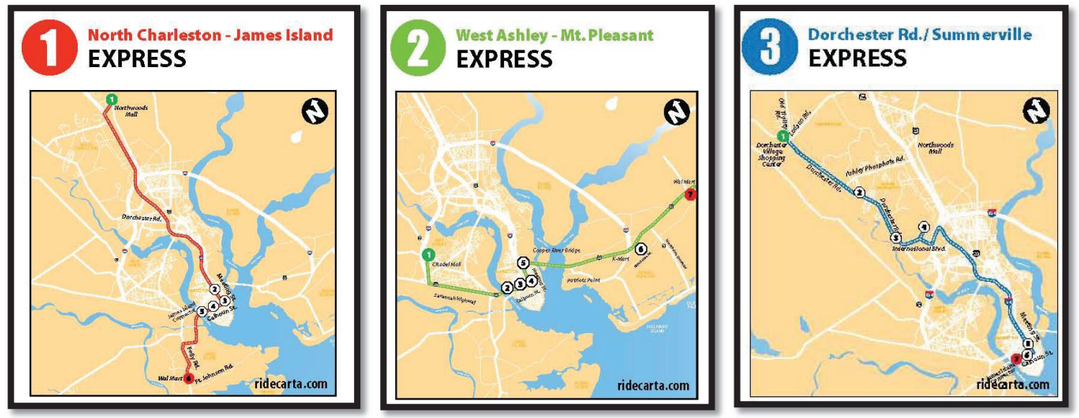
6.1 Transit Strategies

6.1.1 Existing Services

CARTA and TriCounty Link both provide services within the I-526 corridor study area. Their network of park-and-ride facilities, express routes, fixed and demand-responsive routes provide a vital link to employment, medical, transportation, and retail centers throughout the corridor for both residents and visitors alike.

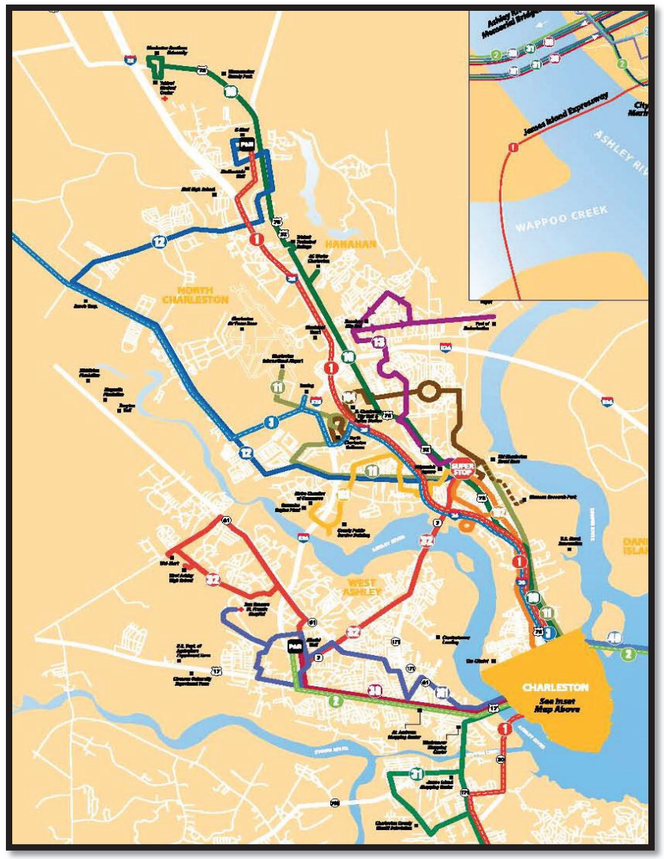
CARTA currently operates three express service routes which pass through the I-526 corridor. These routes provide limited stop service between North Charleston-Charleston-James Island (Route #1), West Ashley-Charleston-Mount Pleasant (Route #2), and Summerville-North Charleston-Charleston (Route #3). Express Route #1, which connects North Charleston to the City of Charleston via the US 52 corridor is one of CARTA's most successful routes as it serves 80,000 to 90,000 passengers per month. Due to the popularity of this route, in June 2012 CARTA added an additional bus to this route to accommodate the increasing ridership demands. Riders on the express routes are able to transfer to CARTA fixed route bus service or TriCounty Link at the K-Mart and Citadel Mall park-and-ride facilities.

Exhibit 6-1: CARTA Express Routes



In addition to the Express Routes, CARTA also provides eight fixed routes which serve the I-526 corridor study area. These fixed routes, illustrated in Exhibit 6-2, generally run along the main regional roadways which cross the I-526 corridor and complement the Express Routes by providing connectivity to the residential communities as well as major employment and retail centers in the West Ashley and North Charleston areas.

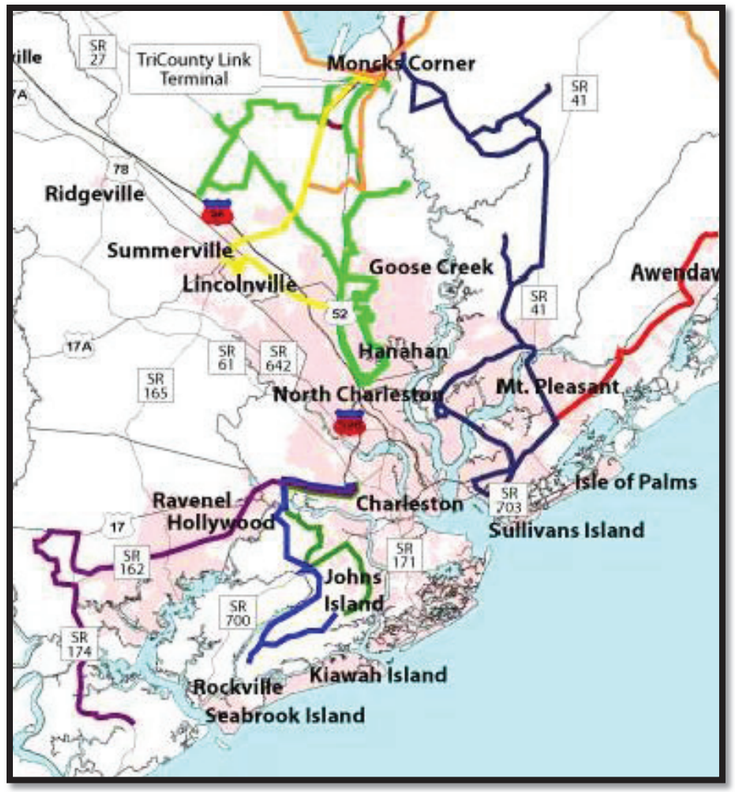
Exhibit 6-2: Current CARTA Routes



The combination of express routes and flex/demand route services throughout the area has been successful in attracting ridership and relieving roadway congestion. Since 2005, CARTA ridership has steadily increased and reached record levels of 4,170,207 passengers in 2010. The June 2012 CARTA director's report indicates that year-to-date ridership is up 13.66% from last year's ridership.

In addition to the CARTA services, TriCounty Link also plays a critical role in providing transit services in the corridor. TriCounty link provides three bus routes, illustrated in Exhibit 6-3, which provide service between the outlying areas of Johns Island, Wadmalaw Island, Hollywood, and Edisto Island and the CARTA bus service at the Citadel Mall. Once at the Citadel Mall, TriCounty Link passengers can transfer to the CARTA buses and get to their final destinations in the greater Charleston area. In addition, TriCounty Link also provides a route linking Moncks Corner, Goose Creek, and North Charleston. As indicated above, the North Charleston stop located at the K-Mart park-and-ride facility on Rivers Avenue allows riders to transfer to the CARTA bus system. The ridership on the TriCounty Link system is approximately 200,000 per year.

Exhibit 6-3: Current TriCounty Link Routes



6.1.2 Ongoing Studies & Planning Efforts

There are several local and regional planning studies being conducted which could have impacts on traffic along the I-526 corridor. These studies range from evaluations of local bus routes to regional analysis involving long range planning for area interstate corridors and are summarized in this section.

- CARTA 5-Year Strategic Plan Update: In April 2012, CARTA completed its strategic plan update for fiscal years 2012-2016 as shown in Exhibit 6-4. This plan includes projections for near-term revenues and expenses in order to prioritize future expenditures. In addition, this plan is also used as a guide to develop the agency's annual budget to ensure that long-term priorities and policies are met. The main focus areas of this strategic plan update are reducing the agency's debt and minimizing the risk of future debt accumulation.

Exhibit 6-4: CARTA Strategic Plan Update

- CARTA Route Advisory Committee: The Route Advisory Committee was established by CARTA to review the performances of the current routes and make recommendations to improve the overall efficiency of the transit services. The study recommendations included modifying route times to improve on-time performance, the installation of a new express route between Summerville and Charleston, adding buses to routes with high ridership demands and consolidating/eliminating services on underperforming routes. The new express route and improvements to several other transit routes recommended by the Route Advisory Committee were implemented by CARTA on June 24, 2012.
- BCDCOG Feasibility Analysis of a Consolidated Regional Transit Provider for the Berkeley-Charleston-Dorchester Region: The BCDCOG Transit Consolidation Study evaluated the feasibility of consolidating the rural (TriCounty Link) and urban (CARTA) transit providers into a single provider that would serve the entire BCDCOG Region. Based upon an evaluation of several factors, including financial, physical assets, staff resources, and governance, the study recommends a phased approach process with the ultimate goal of consolidating TriCounty Link and CARTA into new regional transit agency. It was noted that there are virtually no areas of duplicative services between the two providers today and that the distances between the two existing operating facilities and services areas is a barrier to using either facility for consolidated operations.
- CARTA Intermodal Center: The CARTA Intermodal Center is planned as a regional transportation hub that will be located on Montague Avenue between I-526 and Dorchester Road. The first phase of this project has been completed and included site work, the construction of portions of the internal roadway network, and the construction of a park-and-ride facility with 225 parking spaces. Future phases of the project will include a new terminal which will, in addition to the CARTA bus service, host Amtrak, Southeastern Stages (regional bus service), as well as local taxi and limo services. Funding sources for the new terminal are being evaluated.

Exhibit 6-5: Rendering of the Proposed CARTA Intermodal Center

- BCDCOG Regional Fixed Guideway Transit Alternatives Analysis: The scope of services for the BCDCOG Transit Alternatives Analysis includes the evaluation of the "potential effects of transit improvements and mode share split with respect to project costs, benefits, environmental and social impacts, and financial feasibility on the I-26 corridor" on the 22-mile segment between Summerville (US 17 Alternate) and the terminus in downtown Charleston. This study will focus on fixed guideway transit options (light rail, commuter rail, bus rapid transit, etc.) and how the implementation of these alternatives could help reduce congestion along the study corridor.

6.1.3 Employer Surveys

In order to assess the business community's interest in using and or incentivizing public transit, a questionnaire was developed and distributed to the project stakeholders along the I-526 corridor. This survey was developed to complement a similar survey developed by CARTA and the Charleston County

Economic Development Office which focused on businesses along the Palmetto Commerce Parkway corridor in North Charleston. The surveys were developed to assess how each company's employees currently get to work, the employee's willingness to utilize transit services, the company's interest in providing incentives for transit use, and any impediments that may discourage transit use. 14 businesses representing over 16,300 employees provided responses to the CARTA and SCDOT surveys. These responses provided valuable information regarding the potential for transit use. Key elements of the survey responses include the following:

- 97% of employees drive alone to work,
- 3% of employees use transit, carpool, get dropped-off, or walk/bike,
- 7 companies indicated employees would be willing to use transit if it were available, and
- 3 companies indicated they would consider providing incentives for employees to use transit.

While the survey responses did indicate a strong desire from both employees and employers to utilize transit services, the responses also provided valuable information regarding the impediments and constraints to using the current transit system to commute to work. The main issues and concerns cited in the survey are as follows:

- Flexible/variable work schedules, overtime, etc.: The survey responses indicated a wide variety of company work schedules. Some companies allowed flexible/variable work schedules, others had established shift times, and several indicated that overtime hours were sometimes required. Due to these varying employee arrival and departure times, most of the employees elected to drive themselves to work rather than use public transportation.
- Limited transit service areas: Several of the companies surveyed are located outside of the existing transit service areas so transit service is not available for their employees. Even for the companies who are located along existing transit routes, the survey responses indicated that the transit service did not extend to the employee's residences and therefore was not a viable alternative.
- Proximity of bus stops to final destination: Several respondents cited the difficulty of traveling to/from the bus stops as reasons they don't use transit. The main issues included the lack of sidewalks and the overall distance from their home or business to the bus stop.
- Neighborhood conditions: One respondent indicated their business was located in a "high-crime" area and the workers were not comfortable walking to or from the bus stops.
- Before/after work activities: Several respondents indicated the need to run errands, drop-off or pick-up children, and other before/after work activities as reasons they do not use the current transit system.

6.1.4 Short-Term Transit Improvement Strategies

Increasing transit ridership is a key component to reducing the overall traffic congestion along the I-526 Corridor. However, given the current economic climate and declining revenues available to support operations, many transit agencies (including CARTA) are focused on maintaining their existing services rather than expanding services to new areas. According to the *CARTA Strategic Plan; Fiscal Years 2012-2016*, the agency's focus of the strategic plan is "reducing debt and minimizing the risk of future debt accumulation." CARTA intends to meet the goals of this plan focusing on the following system priorities:

- Pay down the line of credit,
- Maximize the cost-effectiveness of services provided,
- Respond to pressure created by record-breaking ridership,
- Prepare to replace much of the existing vehicle fleet,
- Establish an operations reserve fund, and
- Complete the North Charleston Intermodal Center.

The implementation of this plan will help to ensure CARTA is able to meet the current and future transit demands for the I-526 Corridor and greater Charleston area as a whole.

Since funding for public transportation is limited, several short-term strategies have been developed for consideration which require little investment but could generate high levels of return in terms of increasing the public awareness of transit and encouraging more use of the transit system. These strategies complement current planning efforts and action items outlined in the BCDCOG's Long Range Transportation Plan and includes the following key elements.

6.1.4.1 Improve Existing Transit Routes (M 1)

To meet the priorities outlined in the 2012-2016 Strategic Plan, the CARTA Route Advisory Committee has evaluated the existing transit operations and recommended several changes to improve the overall efficiency and effectiveness of the system. As a result of their work, several routes intersecting the I-526 Corridor area were modified and one new Express Route was added. The improvements and modifications affecting the I-526 Corridor include the following:

- Express Route #2 (West Ashley to Downtown) – Bus stop times updated to improve consistency and on-time performance,

- Express Route #3 (Dorchester Road Express) – New limited stop service connecting Summerville to downtown Charleston. Bus stops include key employment centers such as Bosch, Boeing, College of Charleston, and MUSC.
- Route #10 (Rivers Avenue) – Additional buses have been added to the Rivers Avenue corridor to meet ridership demands. In addition, the improvements include new bus service to Trident Tech.
- Route #11 (Dorchester Road/Airport) – Additional buses have been added to the Dorchester Road/Airport route to meet ridership demands. This route provides a critical connection for visitors and tourists to travel between Charleston International Airport and the downtown Charleston area.
- Route #32 (Northbridge) – This route has been combined with Route #302 to provide more efficient service between West Ashley and the CARTA Super Stop in North Charleston.
- Route #301 (St. Andrews) – This route has been updated to serve Bon Secours St. Francis Hospital in West Ashley. With these changes, this route now provides direct connection between the downtown Charleston area, the Citadel Mall park-and-ride facility, St. Francis Hospital, and key residential areas in the West Ashley area.

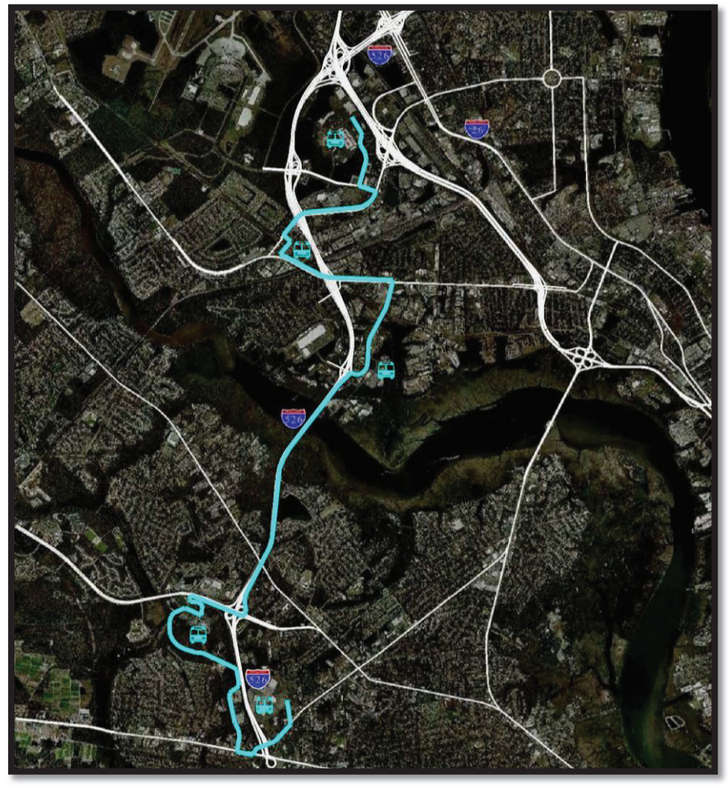
6.1.4.2 New Transit Service (M 2)

Extending transit service to areas that are not currently served is important to increasing transit ridership. The success of the new Dorchester Express Route #3 recently implemented by CARTA is perfect example of how new routes and services can have a positive benefit on ridership throughout the corridor. The success of this route could help promote the creation of additional transit routes linking West Ashley and North Charleston via the I-526 Corridor to help reduce traffic congestion.

The current transit network provides only one bus route between West Ashley and North Charleston. That route, Route #32 utilizes the Ashley River Road, Glenn McConnell Parkway, and Sam Rittenberg Boulevard corridors to access the CARTA Super Stop location in North Charleston. Once at the Super Stop, riders can transfer to a number of other bus routes to access various parts of North Charleston and the City of Charleston. However, the total time required traveling from West Ashley via CARTA Route #32 to locations in North Charleston such as the Charleston County Administration Building or Tanger Outlet Mall could be a deterrent for choice riders.

The traffic volumes and origin/destination information obtained during the I-526 Corridor study indicated that during the AM peak hours over 46% of traffic (1,650 vehicles) that enter the I-526 corridor from the US 17 and the Paul Cantrell Boulevard interchanges exit I-526 at either Leeds Avenue, Dorchester Road, Montague Avenue, or International Boulevard. These interchanges provide direct links to key employment centers and retail centers in North Charleston. A conceptual transit route that follows these commute patterns along the I-526 Corridor has been developed and discussed with CARTA staff. Based upon the discussions with CARTA staff, the proposed transit route could be expected to accommodate approximately 300 passengers per day. The conceptual transit route is shown graphically in Exhibit 6-6.

Exhibit 6-6: Conceptual Transit Route from West Ashley to North Charleston



The proposed route would begin at the Citadel Mall park-and-ride facility in West Ashley and utilize the I-526 corridor to key employment and commercial centers which could include the following locations:

- Citadel Mall park-and-ride facility,
- Bon Secours St. Francis Hospital,
- Charleston County Administration Building,

- Future Site for the North Charleston Intermodal Center, which could be transfer center to access other areas of North Charleston and Summerville, and
- Tanger Outlet Mall.

The estimated travel time for this route is 30 minutes for a one-way trip between the route termini in West Ashley and North Charleston.

In addition to the West Ashley/North Charleston route shown above, additional transit routes should be considered that connect North Charleston to Daniel Island and Mount Pleasant via the I-526 Corridor. This connection would not only help to serve residents east of the Cooper River but could also tie to the express bus services along the Rivers Avenue Corridor. These routes are not detailed in this report as they extend beyond the study area but could be considered as part of the region's comprehensive plan.

6.1.4.3 Improve Connectivity to Bus Stops (M 3)

Bus stop accessibility is a key factor in attracting and keeping transit riders. While bus service is available to a majority of the suburban communities and neighborhoods in the study area, access to many of the bus stops can be challenging. The distance from residences to the bus stops and the lack of sidewalks both in the neighborhoods and along the transit routes themselves were cited in the transit survey responses as some of the main reasons why the transit system is not utilized. This is especially true for residents in some of the larger subdivisions, where it can be up to two miles for homes in the rear of the developments to the transit stops at the subdivision entrances. Examples of bus stops at neighborhood entrances where connectivity improvements could be considered are shown below in Exhibit 6-7.

Exhibit 6-7: Connectivity Improvement Opportunities

For each of the locations shown in Exhibit 6-7, the bus stops are located at the entrances to large residential subdivisions. However, these stops can be difficult to access due to the lack of sidewalks on the main road and the intersecting residential streets. The installation of bicycle racks, sidewalks, and other improvements for pedestrian safety could help to mitigate these issues and encourage additional transit ridership.

For the purposes of this study, the nine bus routes (10, 11, 12, 30, 32, 103, 104, 301, and 302) that traverse through the I-526 study area were evaluated for potential new sidewalk connections. It was determined that the total cost of $10,600,000 would be necessary to provide sidewalk access for these nine bus routes in the study area. Furthermore, shuttle service was assumed to be provided by local businesses, such as hotels, shopping areas, etc.

6.1.4.4 Expand/Improve Park-and-Ride Facilities (M 3)

Park-and-Ride facilities have been established at each termini of the three CARTA express transit routes and one is planned for the future CARTA Intermodal Center on Montague Avenue. With the exception of the Intermodal Center lot and the new stop at the Dorchester Village Shopping Center, the park-and-ride facilities are located in the parking lots of large retail areas and are designated by signage and bus shelters. This configuration not only allows riders the opportunity to shop at local stores but also the opportunity to transfer to other CARTA routes or TriCounty Link routes to continue their journey.

As transit ridership numbers continue to increase and new routes are developed, additional park-and-ride facilities should be considered. Locations for these facilities should complement not only the existing ridership and transit routes but future ridership demands as well. Potential locations for park-and-ride facilities could include the following areas:

1) Rivers Avenue near I-526 – The retail centers located near the intersection of I-526 and Rivers Avenue could be a potential park-and-ride location that would not only provide service for the existing Rivers Avenue Express Route but also for a future transit route to the Daniel Island and Mount Pleasant areas;
2) North Charleston Intermodal Center – This site is planned to serve not only CARTA but also taxi and limo service, regional buses (Southeastern Stages / Greyhound) and rail based services including Amtrak and, potentially, commuter rail service. This site, located near the North Charleston Coliseum, is an ideal transfer location; and
3) Glenn McConnell Parkway – Future park-and-ride facilities could be considered at either the retail areas near the West Ashley Circle or retail areas near the Magwood Road intersection. Both of

these locations are located along existing transit routes and would be convenient locations for West Ashley residents as well as commuters from Summerville via the SC 61 corridor and Ravenel/Hollywood via US 17. These locations would also be compatible with future transit service such as the proposed route shown in Exhibit 6-6.

Based on information provided by CARTA, the average costs for park-and-ride facilities utilizing existing parking areas is approximately $25,000 per locations, which covers lease agreements, signage, lighting, and advertising. This results in a projected cost of $75,000 for the three assumed locations.

6.1.4.5 Improve Transit Facilities and Equipment (M 4)

Amenities such as bus shelters, lighting, signage, and bicycle racks can have a significant impact on the public's perception of and willingness to use the existing transit system. Bus stops that are poorly lit and lack seating or shelters to protect riders from the weather can discourage people, especially "choice" riders, from using the transit system. However, bus shelters that are properly lit and have other amenities such as shelters, electronic signs indicating the arrival time of the next bus, and other items such as newspaper stands can help encourage and promote transit ridership, especially for passengers at bus stops on routes with long headways.

Exhibit 6-8: CARTA Bus Stop Before/After Shelter Installation

The *Transit Cooperative Research Program (TCRP) Report 46* indicates that amenities at transit stops can "help to instill rider confidence…and raise optimism regarding the quality of future transit improvements and service." In addition, the installation of amenities such as lighting and security cameras can help improve the safety of passengers waiting at the bus stops especially during the early morning and late night hours. The research and surveys contained in the *TCRP Report 46* indicate the installation of amenities at transit stops could help increase ridership by 1.5% - 3.0%.

In addition to the research and findings contained in the TCRP report, many local residents share the same opinions regarding the positive impacts transit amenities can have on ridership. In a news article published on the WCBD-TV website (www.counton2.com) on July 10, 2012, Mount Pleasant residents concerned about the removal of bus stops during several road construction projects have indicated that new amenities such as "benches could entice tourists to stay in nearby…hotels" and shelters for inclement weather would make people "more willing to take the bus."

For the purposes of this study, the addition of shelters and digital signs was evaluated for stops along the nine bus routes (10, 11, 12, 30, 32, 103, 104, 301, and 302) that traverse through the I-526 study area, which results in a total cost of $10,800,000.

6.1.4.6 Public Private Partnerships (M 5)

Public private partnerships (PPP) can be an invaluable tool to improving transit facilities as well as helping to reduce upfront public costs to implement transit programs. FHWA defines PPP as a "contractual agreement formed between public and private sector partners, which allows more private sector participation than is traditional." These agreements have historically been implemented for projects with large capital costs but could also be applied on a much smaller scale. Examples of public private partnerships can include the following:

- Bus shelter programs – Transit services located in or near large employment or destination centers can have a significant benefit for the surrounding businesses. As a result, businesses are often willing to contribute to transit amenities such as the installation of bus shelters, advertising, and potentially maintenance of the area near the shelters;
- Circulator/Shuttle Services – Shuttle services between employment centers and shopping/dining/hotel districts can not only help promote sales but encourage ridership. TriCounty Link's "Link to Lunch" service provides transit service every eight minutes during the lunch time hours between employment centers such as Santee Cooper and restaurants in the Moncks Corner area.

  A similar concept is being developed that will link the Charleston International Airport Area and Tanger Outlet Mall/Centre Point. This service would provide a direct link between the airport area, area hotels, and the retail/shopping/dining centers in the Centre Point complex. Riders using this service would also be able to access and connect to the other CARTA routes in the vicinity. While the details and funding for this route are still being finalized, a significant portion of the costs are expected to be borne by the private sector. The conceptual alignment for this route is shown in Exhibit 6-9 and could easily be expanded to other areas;
- Commuter Choice Programs – The implementation of Commuter Choice programs could be a significant incentive to encourage new transit ridership. With the commuter choice program, tax incentives relating to commuter benefits are provided to employers and employees. Several options are available under this program including "employer-paid transportation benefits" and "employee-paid, pre-tax transportation benefits" packages. In both cases, tax incentives are given to employees/employers who use transit or vanpool programs to commute to work; and

Exhibit 6-9: Conceptual Shuttle Service between Charleston International Airport and Tanger Outlet Mall

- Capital Projects – Many large capital campaigns for transit agencies throughout the area have been supported by PPP programs. One potential local application for this type of partnership is the proposed North Charleston Intermodal Center. Private funding could help to assist with the design, construction, and maintenance costs for the facility in exchange for long-term leasing concessions.

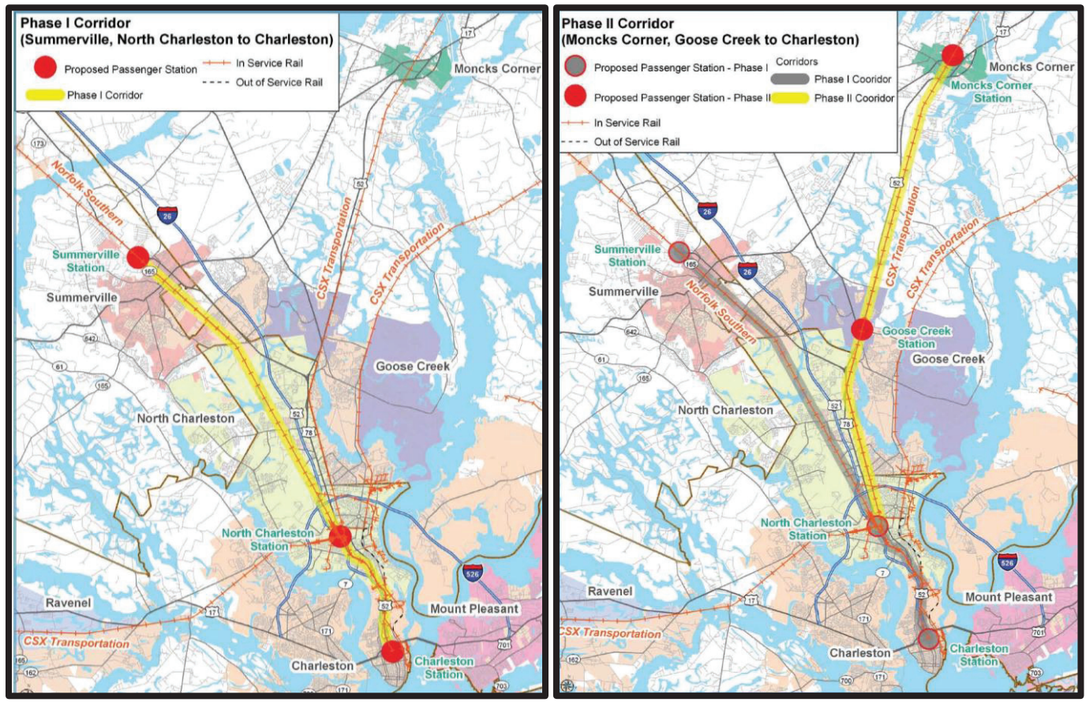
6.1.5 Long-Term Transit Strategies

Long-term transit improvement strategies for the region include the continuation of many of the short-term strategies including improvements to the existing transit services, facilities, and amenities. The long-range strategies also include evaluating the potential for fixed guideway services such as bus rapid transit and rail-based transit modes.

6.1.5.1 Commuter Rail Service (M 6)

In August 2011, the BCDCOG published the *Charleston Metropolitan Area Commuter Rail Feasibility Study – Phase 2* which evaluated the potential to install commuter rail service along the I-26 corridor between Summerville and the Charleston peninsula as well as commuter rail service between Moncks Corner and North Charleston. The proposed commuter rail corridors are shown in Exhibit 6-10.

Exhibit 6-10: Proposed Commuter Rail Corridors



The study concluded that the implementation of the two proposed commuter rail corridors would attract 2,800 riders per day and could eliminate 750 to 1,100 cars from the I-26 corridor during both the AM and PM peak traffic hours. This reduction would have a significant improvement on the operation of the I-26 & I-526 system-to-system interchange.

The study indicated that additional planning is needed to fully understand the costs and benefits of the proposed commuter rail system and the next steps in the planning process should include the following tasks:

- Land Use Planning – Transit supportive land uses and zoning requirements should be considered for all land use changes along the proposed rail corridor;
- Integrate Land Use and Transportation Planning in the Neck Area;
- Alternatives Analysis – An Alternatives Analysis (AA) study complying with FTA standards should be conducted to evaluate all potential modes of transit and the corresponding ridership forecasts; and
- Support regional participation in CARTA Express bus service.

Due to the large capital and operational/maintenance requirements of a rail based transit system, strong local support and funding sources will need to be identified.

6.1.5.2 Regional Fixed Guideway Transit Alternatives Analysis – I-26 Corridor (M 6)

As part of the recommendations of the Commuter Rail study discussed above, the BCDCOG has initiated a transit Alternatives Analysis study for the I-26 corridor between Summerville and Charleston peninsula. This study will evaluate potential effects of fixed guideway transit service improvements (bus rapid transit, light rail, heavy rail, etc.) and mode share splits along the corridor with respect to the estimated project costs, benefits, and environmental impacts.

While the Alternative Analysis study is focused along the I-26 and US 52/Rivers Avenue corridors, the implementation of fixed guideway transit improvements is expected to help reduce traffic and congestion and improve the operations of the I-26 & I-526 system-to-system interchange as well as the I-526 & Rivers Avenue interchange. A conceptual illustration of potential fixed guideway improvements is shown in Exhibit 6-11. In addition, the fixed transit routes, shuttles, and taxi/limo services needed to support the commuter rail service and stations would also help reduce vehicular travel on the surrounding roadways including I-526. The I-26 Alternatives Analysis study is expected to be completed in the spring of 2014.

Exhibit 6-11: Conceptual Fixed Guideway Improvements – US 52 Corridor

6.1.5.3 Potential Long-Term Transit Improvement Benefits

The studies to date on commuter rail indicate that future 2035 ridership levels could be at levels that would support rail based transit. However, implementation of the rail service will require significant capital investment and close coordination and cooperation between the local municipalities, state, and federal agencies. In addition, local land use requirements and zoning would need to be updated to ensure developments along the proposed rail corridor complement and support transit based ridership.

6.1.5.4 Zoning/Transit Oriented Developments (M 7)

Transit-oriented development includes modifications to current zoning ordinances to encourage dense developments around both existing and proposed transit centers. The proposed CARTA Intermodal Center on Montague Avenue could be a focal point for this type of improvement. The Intermodal Center and the associated roadways and parking areas will encompass approximately 20.65 acres of the 36.2 acre site. The remaining 15.55 acres of the property could be developed with a mix of retail, commercial, office, and residential uses. The energy and activity that would be created by the private land uses would help make this location a destination point and help encourage more riders to use the transit network.

6.2 Freight Mobility Strategies

The safe and efficient movement of freight along the I-526 Corridor is critical to sustaining economic growth not only in the Charleston area but for the state economy as well. I-526 serves as one of the primary routes for all shipments into and out of the region, including the two container terminals for the Port of Charleston. The freight movements associated with the Port of Charleston alone contribute over $45 billion to the state's economy. The three primary modes of freight movement along the I-526 corridor are port, rail, and commercial based shipments and each will be discussed in detail in the following report. Water and airport related freight movements were considered but, since the volumes were relatively small when compared to port, commercial and rail shipments and since they rely on truck traffic to deliver goods to and from the terminals, they were not considered primary modes of freight movements for this analysis.

6.2.1 Existing Freight Volumes

To assess the number of existing freight shipments, traffic volume counts were recorded at several key areas along the I-526 corridor. In addition, supplemental freight movement counts were conducted by the study team to assess the distribution of port/rail related and commercial freight shipments. The data indicated the total freight traffic along I-526 comprised 11.8% of the overall volume on the east side of the I-26 interchange near the Rivers Avenue and 7.6% of the total traffic volume along I-526 at the Ashley River. The data also indicated that the port-related freight and commercial freight movements were split approximately 59%/41% as follows:

- Average Daily Traffic (ADT) on I-526 between I-26 and Rivers Ave = 73,200 vehicles per day
    - Freight traffic (11.8% of ADT) = 8,640 trucks per day
        - Port freight shipments (~59%) = 5,100 trucks per day
        - Commercial freight shipments (~41%) = 3,540 trucks per day
- Average Daily Traffic (ADT) on I-526 at the Ashley River = 71,900 vehicles per day
    - Freight traffic (7.8% of ADT) = 5,465 trucks per day

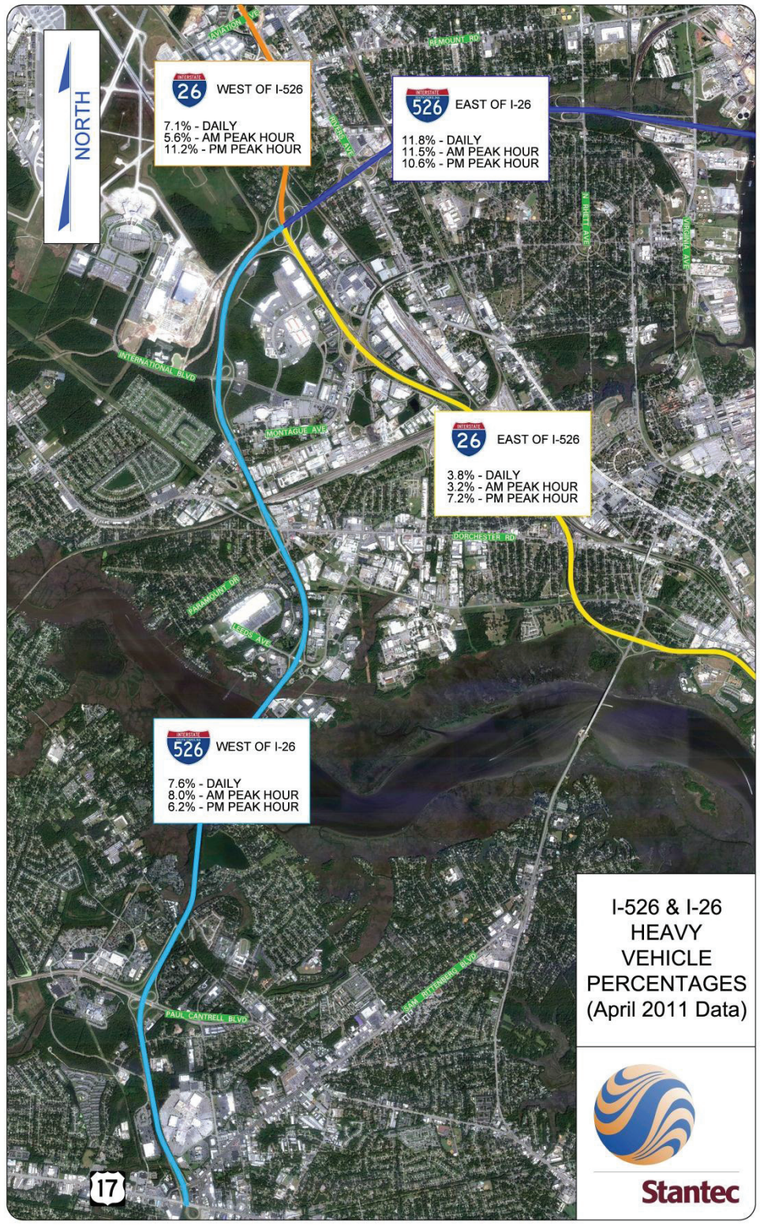
The heavy vehicle (freight) traffic distribution described above is also shown graphically in Exhibit 6-12.

6.2.2 Port-Related Freight Traffic

The Port of Charleston is an economic gateway for the local, state, and regional economy. According to the *South Carolina Ports Authority Fact Sheet (updated January 31, 2012)*, the movement of goods into and out of the Port of Charleston "facilitates 280,600 jobs across the state in the maritime, transportation, distribution, and manufacturing industries while providing an overall economic impact of $45 billion" to the state economy. In addition the state and local economic benefits, shipping companies in 24 states import and export goods through the port. In 2011, the Port of Charleston handled 1.38 million twenty-foot equivalent container units (TEU's) and 788,288 tons of break-bulk cargo items including agricultural products, consumer goods, machinery, and vehicles.

Although the container volumes and economic impacts are significant and mark a 1.2% increase from the 2010 volumes, the number of TEU's and containers handled in 2011 were 30.3% lower than the Port's peak volumes in 2006. The overall decline in TEU/container volumes since 2006 can be attributed to the economic impacts associated with the "housing bubble" and the increased utilization of the port terminals in Savannah, Georgia by freight providers.

Exhibit 6-12: I-526 Heavy Vehicle Percentages



In an effort to mitigate this decline and remain competitive with the Savannah port, studies are underway to deepen the Charleston harbor from its current depth of 45 feet to 50 feet to accommodate both Panamax and Post-Panamax container ships. Panamax ships, which are the largest ships able to travel through the Panama Canal, can carry up to 5,000 TEUs. Once the Panama Canal widening is complete in 2014, larger ships (Post-Panamax) able to carry up to 12,000 TEUs will be able to travel the canal. Container ships of up to 8,000 TEUs are expected to move between Asia and the Eastern United States.

6.2.2.1 Port Operations and Facilities

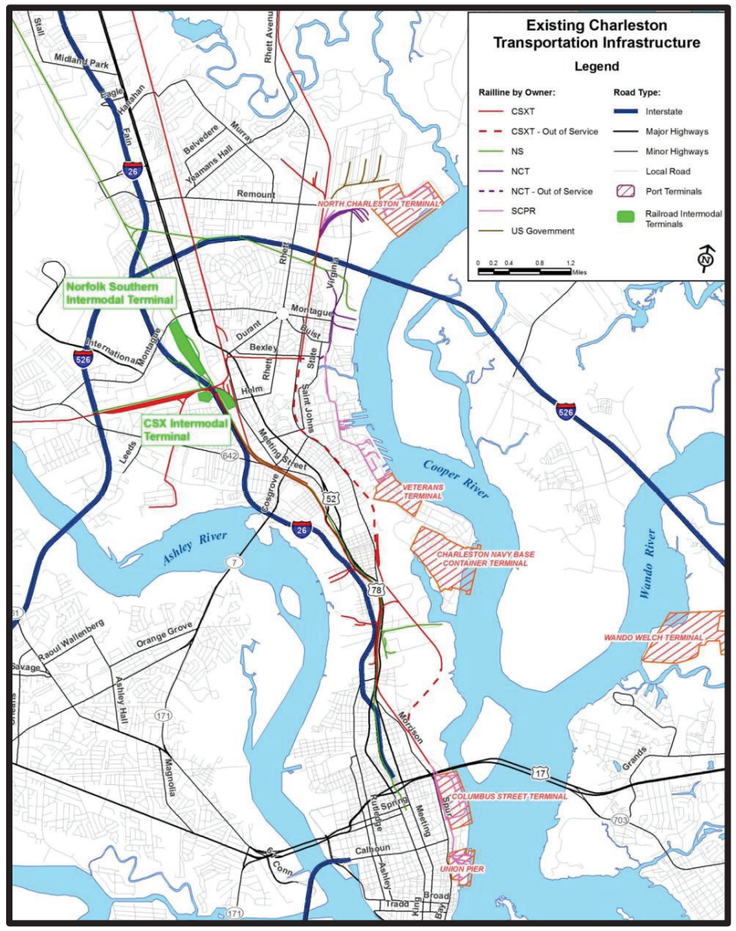
The Port of Charleston currently operates four terminals in the Charleston area of which two terminals, Wando Welch and North Charleston, are dedicated to containerized shipments. The Wando Welch terminal is the largest port terminal and includes four berths and over 240 acres of container storage. In addition, it contains on-site facilities for US Customs and US Department of Agriculture inspections. The North Charleston terminal includes three berths and has on-dock rail service provided by the SC Public Railroad (SCPR). The SCPR has connections to both CSX and Norfolk Southern (NS) railroads.

Containers shipped from the North Charleston and Wando Welch terminals are generally shipped via I-526 to local warehouses, railroad facilities, or to other local and regional destinations. The container shipments are generally distributed as follows:

- 20% stay in the Charleston area (local deliveries),
- 20% are imported/exported via rail,
- 55% enter or leave Charleston via the I-26 Corridor, used to access other interstate systems including I-95, I-20, I-77, and I-85, and
- 5% enter or leave Charleston via US 17.

It is important to note that all of the shipping containers leaving the North Charleston and Wando Welch terminals, including those destined for both the NS and CSX rail facilities are shipped via truck along the I-526 corridor to reach the destinations described above. The locations of the North Charleston and Wando Welch terminals and the NS and CSX railroad facilities are shown graphically in Exhibit 6-13.

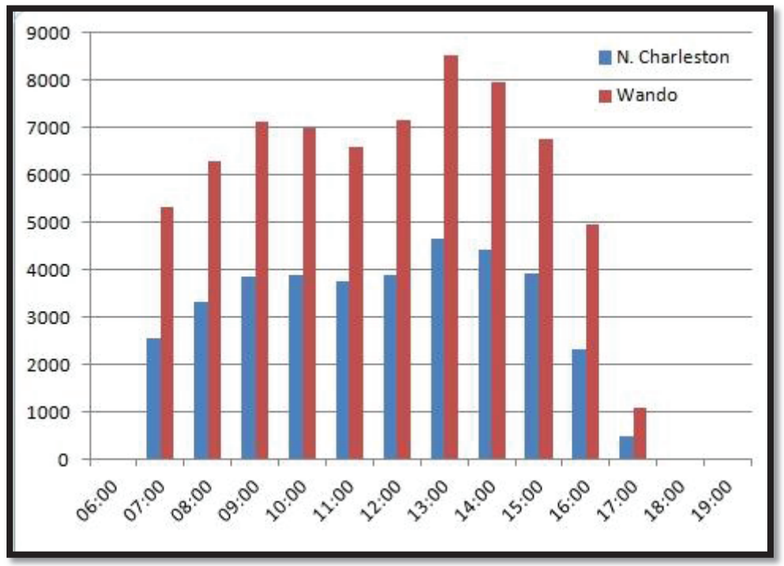
Exhibit 6-13: Existing State Ports Authority Terminals



Within the North Charleston and Wando Welch terminals, vessel operations (loading and unloading ships) are conducted 24 hours per day and seven days per week as required. However, the terminal gates are typically open only on weekdays between the hours of 7:00 AM and 6:00 PM unless specific requests or needs arise. The peak hours for freight shipments typically occur between the hours of 9:00 AM and 4:00 PM. During that time, approximately 75% of the total gate traffic, both pick-up and delivery, is accommodated. In addition, only two of the 106,064 total receipts were processed after 4:00 PM.

The traffic volumes, as measured by Equipment Interchange Receipts (EIR), for both the Wando Welch and North Charleston terminals from March 9, 2012 to April 9, 2012 are shown graphically in Exhibit 6-14. EIRs are the documents provided to truckers when full or empty containers or chassis are received or delivered to the port terminals.

Exhibit 6-14: Container Terminals Equipment Interchange Receipts Summary



6.2.2.2 Port Growth and Expansion

The State Ports Authority is planning to invest approximately $1.3 billion into its new and existing facilities over the next 10 years. Based upon information provided on the Port Authority website, this plan includes "improvements to existing facilities, technology upgrades, and a new cruise ship terminal" including a 25-acre refrigerated container yard at the Wando Welch terminal and a standard gate operating structure that was implemented in early 2011 which provided approximately 15% increase in port-wide container space.

In addition to the upgrades mentioned above, the US Army Corps of Engineers in April 2007 approved an Environmental Impact Study allowing the State Ports Authority to construct a new 280-acre container terminal on the former Charleston Naval Base property. This new terminal will contain three new berths for container ships and a new access roadway linking the terminal to I-26. At full build-out, the new terminal is expected to accommodate 1,400,000 TEUs. This will increase the overall capacity of the port of Charleston by 50%. The first phase of the new terminal is expected to be open in 2018. The estimated cost for the new terminal is $400 million.

6.2.3 Rail-based Freight Movements

Railroad-based freight movements are an important part of the overall freight movements along the I-526 Corridor and the Charleston region as a whole. Two Class I railroads, CSXT Corporation (CSX) and Norfolk Southern (NS), operate intermodal facilities in Charleston and currently accommodate nearly 20% of the total container volumes entering and exiting the Port of Charleston. However, as the current railroad terminals are not near the Port facilities, all containers from the Port must be shipped, or "drayed," via truck along the I-526 corridor. According to the *SC State Rail Plan Update 2008,* "one of the largest, if not the largest, issues in South Carolina concerns Class I service to the Port of Charleston. Concerns exist related to both container and non-container traffic. Rail service at the Port received poor ratings in availability, capacity, quality, and service levels….from shipper's perspectives." In addition, the existing intermodal facilities are near capacity and may not be able to accommodate the additional container volumes projected for the new Navy Base Container terminal.

The drayage distance between the port terminal and the rail facilities is a key issue in determining the financial viability of rail service at the Port of Charleston. Under the current conditions, a "truck dray is required between the port terminals and rail terminals plus a lift to the rail car before the container ever begins its eventual journey….Depending on the distance between the rail terminals, the two drays and rail terminal lifts may well exceed the cost of the dray [truck] delivering the container directly to its destination from the port terminal. The breakeven distance, the point at which the savings in rail line-haul costs over truck transport are enough to cover the cost of the lifts and local drays, is typically between 500 and 750 miles." This cost differential is significant especially considering that the dray distances for destinations within South Carolina are less than 500 making it generally more effective to ship goods via truck.

Due to the constraints on the existing intermodal facilities and the need to reduce truck-based freight movements, new near-dock facilities near the future Navy Base Container Terminal are being investigated. One potential location for the near-dock rail service proposed by CSX is the MacAlloy-Cooper Yard facility located just to the north of the proposed Port Access Road linking the Navy Base Container Terminal to I-26. Another site being considered is located on the former Charleston Navy Base between the new Port terminal and I-526. Conceptual drawings of these two intermodal sites are shown in Exhibits 6-15 and 6-16.

Exhibit 6-15: Potential Intermodal Facility – MacAlloy-Cooper Yard

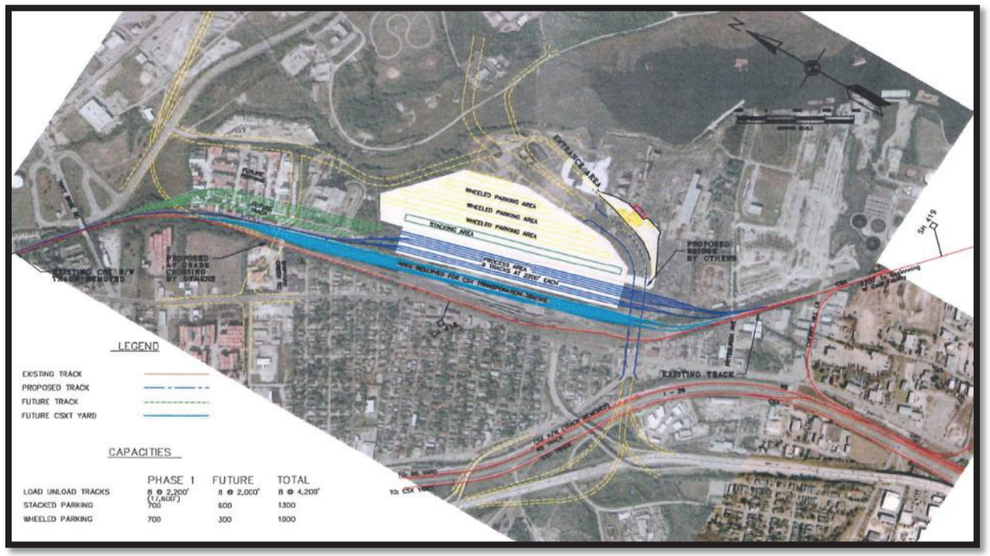
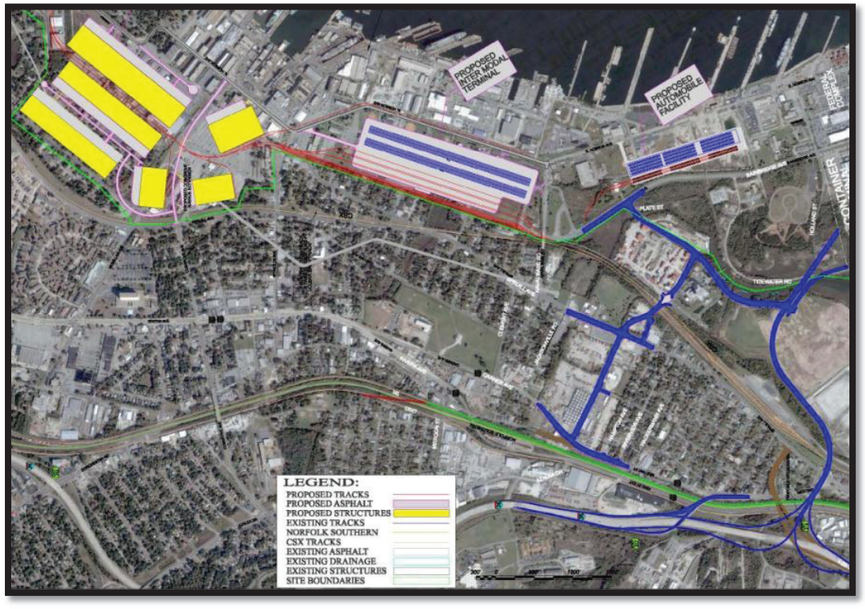


Exhibit 6-16: Potential Intermodal Facility – Charleston Naval Complex



Discussions are ongoing between the City of North Charleston and state agencies as to the best location for the new near-dock rail facility. The construction of a new near-dock rail yard could have significant benefits for traffic along the I-526 corridor. Depending on the final location, it may be closer for trucks traveling from the Wando Welch terminal to use US 17 and I-26 to access the rail yard rather than I-526.

6.2.4 Commercial-based Freight Movements

Commercial based freight movements include all non-containerized cargo and account for over 41% of the total freight traffic along the I-526 Corridor. These shipments include a variety of deliveries to areas such as retail/wholesale stores, convenience stores, mail/parcel services, petroleum deliveries, etc. While many of these truck operators use the I-526 corridor to reach their designated routes, the majority of their time is spent on the local road and street networks.

Commercial freight deliveries typically originate at an area warehouse and drivers are assigned a specific route with specific delivery destinations. While traffic congestion (commuter peaks), total mileage, and truck idle times are considered when establishing the truck routes, the deliveries must also accommodate the customer's store hours and receiving schedules. Work schedules for the commercial truck operators generally begin in the early morning hours (5-6 AM) and conclude in the mid to late afternoon hours (2-6 PM).

6.2.5 Potential Freight Improvement Strategies

Throughout the I-526 Corridor study, a number of freight improvement strategies have been developed by the study team as well as suggestions from the project Steering Committee and Stakeholders. Each of the strategies has been evaluated and the issues and opportunities associated with each strategy are presented in the following section. The strategies are listed in order of the survey polling results of the project Steering Committee and Stakeholders taken on June 20, 2012.

6.2.5.1 Increase Intermodal Split (M 8)

As discussed previously in this report, one of the current challenges regarding rail shipments to and from the Charleston port is that the drayage and lift costs are such that freight shipments within a 500 to 750 mile radius of Charleston are generally more economical to ship via truck than by rail. In addition, since the quickest and shortest route between the port terminal and the intermodal rail facilities is along the I-526 Corridor through the project study area, an increase in rail-based shipments would not help to reduce the number of truck trips along I-526. However, the completion of the new Navy Base Container Terminal, the installation of a new intermodal facility at either the MacAlloy or Navy Base site, and the installation of a

new "inland port" currently being evaluated by the SC State Ports Authority for the Greenville area, could help significantly change the truck traffic within the study area of I-526.

Truck operators transporting goods to and from the port terminal are generally paid by the load, not by the hour. Therefore, drivers are not only looking for both the quickest and shortest routes but are also typically scheduling their trips to avoid peak hours of congestion. As the new port terminal and rail facilities are developed, the truck operators are likely to use routes other than the portion of I-526 within the study area to access these terminals because of the reduced distance and travel times. The distances from port terminals to both the existing and proposed rail facilities are shown in Table 6-1 as based upon MapQuest data.

Table 6-1: Distance between the Port Terminals and Intermodal Rail Yards

Port Terminal	Existing Intermodal Rail Facilities		Proposed Intermodal Facilities	
	NS	CSX	MacAlloy Site	Navy Base
Wando Welch	14.3 miles	13.5 miles	10.9 miles	13.5 miles
North Charleston	6.8 miles	5.7 miles	5.9 miles	3.7 miles
Navy Base Container Terminal	5.7 miles	4.0 miles	0.5 miles	3.6 miles

As indicated in Table 6-1, the drayage distance between the port and rail terminals could be significantly reduced if the shortest available routes are utilized. The routes would include the use of both interstate and surface streets as follows:

- Wando Welch Terminal to MacAlloy intermodal rail facility: I-526 to US 17 (Mount Pleasant) to Morrison Drive to Pittsburgh Ave (10.9 miles).
- Wando Welsh Terminal to Navy Base intermodal rail facility: I-526 to North Rhett Avenue to Virginia Avenue to Noisette Boulevard (13.5 miles).
- North Charleston Terminal to MacAlloy intermodal facility: I-526 to I-26 to Meeting Street to Pittsburgh Avenue (9.6 miles). It should be noted that although the use of Virginia Avenue and Noisette Boulevard would provide the shortest routes, Noisette Boulevard would most likely remain a truck-prohibited route should the new intermodal facility be constructed at the MacAlloy site.
- North Charleston Terminal to Navy Base intermodal facility: Virginia Avenue to Noisette Boulevard (3.7 miles).

Assuming that truck operators would take the shortest and quickest route, the potential freight trip reductions are summarized in Table 6-2.

Table 6-2: Potential Freight Reduction due to new Intermodal Facilities in the I-526 Study Area

Port Terminal	Terminal TEU	20% Intermodal Split (TEU)[1]	# Daily Truck Trips[2]	Daily Trip Reduction on I-526 within the Study Area	
				MacAlloy Site	Navy Base Site
Wando Welch	1,800,000	360,000	1,771	1,771	1,771
North Charleston	600,000	120,000	590	0	590
Navy Base Container Terminal	1,400,000	280,000	1,378	(827)[3]	(827)[3]
Estimated Reduction in Daily Truck Trips				**944**	**1,534**

1- Based upon current port intermodal split of 20%
2- Calculated using Port's regression equation published in the FEIS for the Navy Base Container Terminal (492 trips per 100,000 TEU)
3- New terminal is expected to add additional truck trips to the I-26 and I-526 corridors

In addition to the new intermodal facilities being discussed in Charleston, the State Ports Authority is investigating the potential for a new "inland port" facility near Greenville, South Carolina. With this concept, cargo containers would be shipped to the upstate region via rail to a transfer facility where they will be processed, inspected by US Customs, and then distributed to their final destination. Preliminary estimates from the Port indicate this facility could "take about 25,000 trucks off interstate highways in South Carolina." The costs for the new facility are estimated at $23.5 million and the site could be operational within a year.

6.2.5.2 Extend the Terminal Gate Operating Hours (M 9)

Extending the gate operating hours of the port terminals is a strategy that could be considered to reduce the number of freight-related trips during the daytime hours, especially the morning and afternoon commuter peak hours. The primary objective of this strategy is to distribute the traffic to and from the port terminals over a longer period of time to minimize the peaks and reduce conflicts with the commuter traffic, especially during the morning and afternoon commutes. This idea has been discussed previously and, in 1998, the State Ports Authority modified the gate hours from their previous schedule of 8:00 AM-12:00 PM and 1:00 PM-5:00 PM to the current gate schedule of 7:00 AM -6:00 PM. This change extended the gate operating times by 3 hours each day.

Despite the increased gate operating hours, subsequent studies and traffic counts indicate that the majority of the container shipments to and from the Wando Welch and North Charleston terminals do not occur during the typical morning and afternoon commuter peak hours.

The container shipment distribution is as follows:

- 16.5% occurs between 7:00 AM and 9:00 AM
- 75.1% occurs between 9:00 AM and 4:00 PM
- 8.4% occurs between 4:00 PM and 6:00 PM

Additional modifications to the gate hours at the port terminals, as a standalone measure, would likely have a marginal impact on the distribution of freight traffic for a variety of reasons. The pick-up and delivery of containers to and from the port is but one step in the shipping process. Modifications to each step in the delivery process would be required to make this strategy successful. These changes include, but are not limited, the following elements:

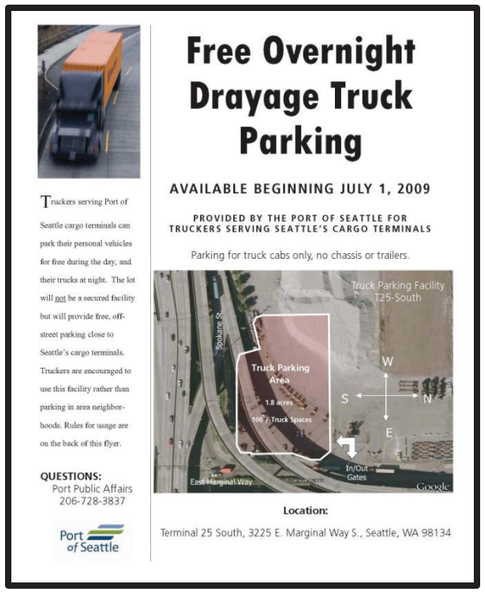
- Increased operating hours for regulatory and enforcement agencies: The operating hours for both the US Customs and US Department of Agriculture inspection stations would need to be increased to accommodate the longer terminal gate hours. This extension would increase the operating costs and potentially require additional funding to support the additional working hours;
- Increased operating hours for private warehouse facilities: Many of the containers shipped from the port are delivered to area warehouses where they are unloaded and repacked for deliveries to specific vendors or destinations. To accommodate the longer terminal gate hours, longer operating hours for the warehouses would be required. The additional costs for the longer operating hours would likely increase the costs to process the containers;
- Increased operating hours for the railroad terminals: Similar to the warehouse operation described above, the operating hours of the intermodal rail-yards operated by NS and CSX would need to be extended to accommodate the longer terminal gate hours. As discussed previously, the increased costs associated with the additional hours, combined with the dray and lift costs associated with rail shipments would further put the railroads at a competitive disadvantage to trucking companies, especially for shipments within 500 to 750 miles of the port.
- Support of labor unions: The additional gate operating hours at the port terminal could affect contracts the port-related labor unions used to load and unload cargo. The additional hours, and additional costs associated with longer working hours, would need to be approved by the affected unions; and
- Restrictions on working hours for truck drivers: Federal laws are currently in place regulating the number of hours truck drivers may operate their vehicles. Truck drivers may drive a maximum of 11 hours after 10 consecutive hours off duty. Since the port gates are currently open for 11 hours, the maximum time truck drivers are able to operate, longer operating hours may not be beneficial.

In addition to the financial and regulatory constraints described above, the current container volumes at the Port of Charleston are approximately 30% below the peak volumes experienced in 2006. While the volumes have been recovering, they are not at levels to support longer terminal operating hours at this time. However, with the opening of the new Navy Base Container Terminal scheduled for 2018 and the potential for new near-dock intermodal facilities, extending the gate operating hours should be re-evaluated as these new facilities become operational.

6.2.5.3 Near Terminal Staging Areas (M 10)

Near terminal staging/parking areas around the port terminals could be provided to allow truck operators designated areas for overnight parking. These types of facilities could be used to help reduce the number of trucks parking at the rest area on I-26 near College Park Road by providing regional truck operators, as well as local operators, designated parking areas near the port terminal and away from residential areas. Truck parking areas have been implemented at other ports across the country including the Port of Seattle; a near-terminal parking flyer is shown in Exhibit 6-17. It is important to note that the truck parking area in Seattle is intended as an area that allows truck operators to park their personal vehicles during the day and their trucks at night in order to avoid conflicts with residential areas. The lot is not secured and drivers are not permitted to sleep in the lot overnight.

Exhibit 6-17: Near-Terminal Parking Flyer



One of the key constraints to this type of facility is the limited availability of suitable land near the two container terminals. The majority of the property near the Wando Welch terminal a mix of residential and commercial land uses while the North Charleston terminals is surrounded by the Naval Weapons Station property. These areas are generally not suitable for increased truck traffic, especially during the overnight hours when noise associated with large engines and truck operations could affect the adjacent residential areas.

6.2.5.4 Peak-Hour Incentives/Disincentives (M 11)

Peak hour incentives and disincentives have been implemented successfully in large port terminals such as the Port of Los Angeles and Port of Long Beach (the San Pedro Bay ports). Under their program, the PierPASS OffPeak Program, shippers/consignees are assessed a Traffic Mitigation Fee (TMF) of $61.50/TEU entering the port from 3:00 AM to 6:00 PM Monday through Friday "to help pay for the night and Saturday marine terminal shifts….to relieve daytime congestion in and around the ports." While this program has been "highly successful in its primary goal of easing congestion in and around the ports", the "shortfall between TMF revenues and OffPeak gate costs was $55 million in 2011 and $52.3 million in 2010." It is important to note that the San Pedro Bay ports processed 13.9M TEU's in 2011, which are over ten times the volumes of the Port of Charleston during the same time period.

Due to the proximity of and competition with the Port of Savannah, the cost increases associated with the implementation of a peak-hour pricing program could place the Port of Charleston at a competitive disadvantage. While this type of program could be successful in relieving traffic congestion, careful consideration should be given to the overall impacts to the Port of Charleston and its competitiveness with other port terminals along the east coast.

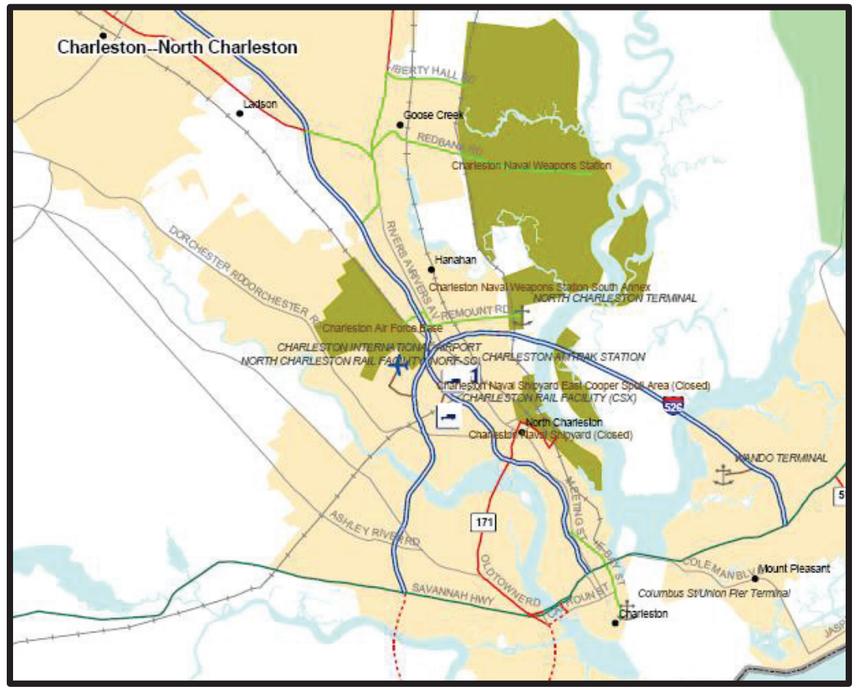
6.2.5.5 Designated Truck Routes on Surface Streets (M 12)

The use of alternate routes and surface streets is a strategy to help alleviate congestion along I-526, especially during peak travel periods. A similar strategy has been successfully implemented by the Town of Summerville where a designated truck route was implemented around the town to reduce the number of truck trips traveling along US 17 Alternate through the downtown areas.

Several surface routes within the I-526 study area are included in the National Highway System and Strategic Highway Network and are identified by the City of North Charleston as Key Freight/Transportation corridors. These streets include I-526, I-26, US 52, International Boulevard, and Leeds Avenue and are shown graphically in Exhibit 6-18.

In addition to the designated truck routes currently in place, the City of North Charleston has also restricted truck traffic on several routes within the study area. These restrictions include Noisette Boulevard, portions of Spruill Avenue, portions of Montague Avenue, and Durant Avenue. These restrictions have been implemented to alleviate issues with truck traffic within the neighborhoods surrounding the Park Circle area as well as the proposed re-development of the Navy Yard at Noisette. These existing truck restrictions, combined with the limited water crossings over the Cooper River, eliminate the potential for viable alternate routes between the Wando Welch terminal and I-26 and the existing intermodal rail facilities. However, as the new port terminal is constructed and new intermodal facilities are developed, the land use surrounding some of the existing truck restricted routes could change and new truck routes along the surface streets could be considered.

Exhibit 6-18: National Highway System Map



6.2.5.6 Increase Truck Weight Limits

In November 2010, SCDOT announced that all international shipping containers with a gross vehicle weight of up to 100,000 pounds are eligible to be transported by truck provided the necessary permit was obtained. This change was designed to "increase the state's competitiveness, enhance transportation efficiency and serve a number of key South Carolina industries." Since this improvement has been in place for nearly 20 months, it is likely that the port-related freight trip reductions have been realized and are included in the current truck trip data.

While this weight limit change was very important for port-related industries who export heavy items, commercial freight shipments will not likely be affected. Representatives from the commercial freight operators interviewed indicated that most of their commercial shipments are restricted by the volume capacity of the trailers rather than the total vehicle weight limit. For example, the gross vehicle weight for a fully-loaded interstate tractor trailer (18-wheeler) carrying beverages is typically 50,000 to 60,000 pounds or 63% to 75% of the maximum allowable vehicle weight.

6.2.5.7 Improve I-526 Geometry to Minimize Car/Truck Speed Differentials

One of the recurring comments received during this study was the difficulty of trucks and other freight delivery vehicles to negotiate the interchanges along the I-526 corridor. Many of the interchanges, including the I-26 & I-526 system-to-system interchange, have clover-leaf style ramps with minimal room for merging, deceleration, and acceleration. This geometry, combined with the grades of the ramps, can create a significant speed differential between the passenger vehicles and truck traffic.

Geometric improvements to the study area interchanges will help reduce the merging and weaving conflicts and improve the overall flow of traffic. Specific improvement recommendations for the study are interchanges and presented in Chapter 8 of this report.

6.3 Environmental Review

Modal strategies have long been considered as a means to improve the movement of people and goods. While trucks and automobiles remain the dominate mode of service preferred by many individuals and businesses, studies continue to support the need for the further integration of rail, bus, and other mass transit options to meet travel demands of area residents and workers.

Under these modal strategies, traffic volumes along the I-526 corridor could be reduced through the improvement and expansion of existing transit services and implementation of light rail, bus rapid transit, street cars and commuter rail. Each strategy has the goal of improving the area's current travel conditions by moving more people more efficiently.

The environmental effects of improving and expanding existing transit routes and services through the use of buses are expected to be minimal as these strategies would primarily operate on the existing roadway network. Some minor construction may be required for transfer stations, kiosks, and pull-off areas; however, these will generally be within the footprint of the existing highway or street.

Consideration of commuter rail and light rail will require extensive investment in the current infrastructure with funding likely to be provided through private/public partnerships. This undertaking extends beyond the scope of the document, and the environmental effects of this option would require more detailed study. It is anticipated that construction and likely impacts may be significant and federal funding in this effort would require an Environmental Impact Statement.

Freight-related strategies generally are based on the use of existing highway, rail, and port facilities and would have minimal effect on the natural environment. However, changes in operating hours and the creation of truck routes on existing highways could potentially have concerns for increased truck traffic and potential noise impacts. Strategies of constructing truck staging areas would need to be examined and would likely require a Categorical Exclusion document and may require wetland permits depending on the particular locations. Improvements in the geometry for I-526 to minimize the car/truck speed differential would likely occur within the existing right of way and have minimal impacts.

These modal strategies offer a strong potential for assisting motorists traveling within and through the study area while reducing the potential environmental consequences of future traffic growth. Likely environmental benefits are general improvement of air quality and reductions in noise impacts.

6.4 Measures of Effectiveness – Modal Strategies

The measure of effectiveness for the proposed Modal strategies was the potential reduction in traffic along the I-526 study corridor, and Charleston area in general. Based upon analysis of the information gathered from the variety of sources discussed in this chapter, Table 6-3 details the expected traffic reduction results for 12 Modal strategies considered for this analysis. Table 6-3 also further details the potential timing of the improvement strategies, approximate implementation costs, and potential coordinating agencies.

A total reduction of 7.4% of total overall traffic can be expected with the implementation of short-term transit (2.6% reduction) and freight improvement (4.8% reduction) Modal strategies, most of which can be implemented in the short term with proper funding. The long-term transit strategies can be expected to reduce overall traffic by an additional 3.4%; however, further consideration was not included in this analysis due to the large scale of investment required to implement, providing for a conservative analysis. The impacts of this traffic reduction due to the Modal strategies programs are discussed further in this study.

Table 6-3: Modal Strategy Summary

LABEL	STRATEGY	DESCRIPTION	TIMING	COSTS	POTENTIAL COORDINATING AGENCIES	ASSOCIATED STRATEGIES	TRAFFIC REDUCTION POTENTIAL
M 1	Improve Existing Transit Routes	Modify existing routes to better serve ridership and increase public awareness	2015	$450,000/year	CARTA	TDM 3, TDM 4, TDM 10	0.30%
M 2	New Transit Routes	Add new route between West Ashley (Citadel Mall) and North Charleston (Tanger Outlet Mall)	2014	$600,000 capital $550,000/year	CARTA		1.10%
		Add new express service from Summerville to Charleston	just started	$480,000/year	CARTA		
		Add new Airport/Tanger Outlet Mall shuttle.	2014	$900,000/year	CARTA		
M 3	Improved Connectivity to/from Transit Stops	Add shuttle service and sidewalks	2018	$10,600,000 capital	CARTA, Counties, Cities		0.30%
		Construct Park-and-Ride facilities	2015	$75,000 capital	CARTA, PPP	TDM 1, M 6	
M 4	Improve Transit Facilities and Equipment	Add shelters, digital signs, and benches	2020	$10,800,000 capital	CARTA, BCDCOG, Counties, Cities, PPP		0.30%
M 5	Public/Private Partnerships	Develop Adopt-a-Shelter programs, private shuttles, commuter choice, capital projects	2020	$10,000,000	CARTA, PPP		0.60%
M 6	*BRT, Commuter Rail, Light Rail*	*Construct Bus Rapid Transit or rail-based transit modes*	*2035*	*$205,700,000 capital $14,000,000/year*	*CARTA, BCDCOG, Counties, Cities, PPP*		*3.40%*
M 7	*Zoning/Transit Oriented Developments*	*Encourage dense developments centered along transit routes and stops*	*2025*	*Varies by Development*	*Counties, Cities, Private Development*		*0.00%*
M 8	Increase Intermodal Split to Rail	Ship additional shipments via train versus truck	---	--	Norfolk Southern, CSX, Shippers		0.00%
		Inland Port construction	2018	$26,000,000 capital	SCSPA, Norfolk Southern		0.00%
		Construct new intermodal facilities (at the MacAlloy site or Navy Yard site)	2020	$100,000,000 capital	SCSPA, Norfolk Southern, CSX, SCPR		3.50%
M 9	Expand Port Operating Hours	Longer hours would shift truck traffic away from commuter peaks	---	--	SCSPA, US Customs, Truck & Rail Companies, Private Warehouses		0.00%
M 10	Construct Near-Terminal Staging Areas	Trucks arriving overnight could park near the port terminals	---	--	SCSPA, Private Sector		0.20%
M 11	Peak-Hour Incentives/Disincentives	Implement fee for truck traffic during peak hours	2020	$5,000,000/year	SCDOT, Counties, Cities		0.20%
M 12	Truck Routes away from I-526	Harbor drayage, or direct heavy vehicles to utilize surface streets rather than I-526 and I-26	2018	$500,000 capital	SCDOT, Counties, Cities		0.90%
Total Modal Traffic Reduction Potential (not including the BRT, Commuter Rail, Light Rail, or Zoning/Transit-Oriented Developments Strategies):							**7.4%**