



**SOUTH FLORIDA EAST COAST (FEC)  
ALTERNATIVES ANALYSIS**

**F.M. NO. 417031-1-22-01**

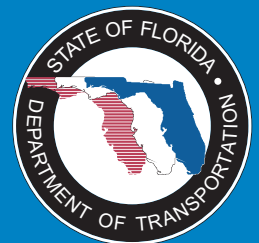
**CONTRACT: C-8F66**

***SFECC Purpose and Need***

*Prepared by:*



***Gannett Fleming***



***June 2010***

## 1. PURPOSE & NEED

### CHAPTER HIGHLIGHTS

- The SFECCTA rail corridor is 85 miles long and operates in the historic economic core of South Florida, connecting downtowns of large and small cities.
- Despite existing transit services in the tri-county area, traffic congestion is a major problem, particularly on large north-south roads like I-95 and US-1 that parallel the FEC corridor.
- Regional land use and economic development efforts have been focused on the eastern portions of South Florida, through which the FEC rail corridor travels.
- A new transit service would increase mobility, supplement transportation capacity, and increase regionally supported development opportunities.
- Goals and objectives were created to guide the transit planning process.

#### 1.1. Corridor Description

The South Florida East Coast Corridor Transit Analysis (SFECCTA) study area extends approximately 85 miles through the tri-county area of South Florida along the FEC Railway corridor (Figure 1-1). This corridor represents the historic economic core of Southeast Florida that developed along the railroad, and links highly urbanized CBDs of Miami, Ft Lauderdale, and West Palm Beach in addition to their respective seaports and airports. The corridor includes residential, employment, recreational, cultural, educational, medical, retail, and tourist uses. Due to its location and the demand for travel, the FEC Railway corridor is included as part of Florida's Strategic Intermodal System (SIS). Florida's SIS is comprised of statewide and regionally significant facilities and services for moving both people and goods, and includes linkages that provide for smooth and efficient transfers between modes and major facilities.

***The Corridor's Historical Background:*** The FEC Railway was initially built in the late 1880's to early 1900's by Henry Flagler to provide passenger and freight service along the east coast of Florida. Passenger service along the FEC Railway into southern Florida continued until 1968 when it was discontinued. Today, the FEC Railway continues to dispatch freight trains from its headquarters in St. Augustine, sending trains along virtually the same route developed by Henry Flagler over 100 years ago.

***Study Background:*** The Florida Department of Transportation (FDOT) initiated the SFECCTA study in December 2005 as a multi-phased Alternatives Analysis (AA) employing a Tiered Programmatic Environmental Impact Statement (PEIS) approach to transportation and environmental matters. At the conclusion of the first tier, a Locally Preferred Alternative (LPA) had not been identified and a broad

range of modal alternatives remained under consideration. However, the FEC Corridor was identified as the preferred corridor for a new transit service and the number of alternative modes had been refined. As a result, FDOT and Federal Transit Administration (FTA) agreed the proposed study remain in early scoping, consistent with the National Environmental Policy Act (NEPA) and discontinued the pursuit of a tiered PEIS process. From that point on, the work, now in Phase 2, has advanced following the FTA Early Scoping/Alternatives Analysis and FDOT Efficient Transportation Decision Making (ETDM) processes. A NEPA Draft Environmental Impact Statement (DEIS) will not be prepared in Phase 2. The DEIS will follow the selection of an LPA at the conclusion of Phase 2. This change in approach to project development resulted in the Tier 1 Final PEIS document becoming an interim planning report, renamed the Final Conceptual Alternatives Analysis/Environmental Screening Report (AA/ESR). An early scoping notice announcing the availability of the Final Conceptual AA/ESR and the initiation of Phase 2 (AA/Early Scoping) was published in the Federal Register on January 13, 2009 and in the Florida Administrative Weekly on January 16, 2009.

**Figure 1-1 Study Area Context**



**Figure 1-2 Existing Highway System**

As seen in Figure 1-1, the South Florida region is strongly oriented north-south, squeezed between the Everglades on the west and the Atlantic Ocean on the east. The FEC corridor extends down the heart of the coastal ridge and historically anchored the development of the region's oldest and densest towns and cities. I-95 was built on the western edge of these centers, and newer suburban development has spread further west into the Everglades.

## 1.2. Transportation Facilities and Services in the Corridor

### 1.2.1. Existing Highway System

The regional highway system includes two continuous major north-south roadways, US-1 and I-95 (Figure 1-2). Dixie Highway and A1A are also major north-south roadways but are not continuous. Other roadways further west in the tri-county region include US-441 and Florida's Turnpike. I-95 is a limited access highway with eight to twelve travel lanes. Recently FDOT has instituted High Occupancy Toll (HOT) Lanes on I-95 between Golden Glades and Miami. While these lanes reduce travel time for express buses and some users who are both willing and able to pay the tolls, they do not add capacity to the highway. I-95 currently carries some of the highest traffic volumes in the nation.

US-1 is a principle arterial with four to eight travel lanes and with closely-spaced signalized intersections at all the major east-west

arterials. Additional turn lanes for both left and right hand turns are provided at these intersections. Though there are typically sidewalks along US 1, they are narrow and immediately adjacent to speeding travel lanes. Intersections are significant barriers to walking because there are so many lanes to negotiate.

### 1.2.2. Existing Transit Services

There are several public transportation providers currently in operation in South Florida. Palm Beach County operates Palm Tran bus services, Broward County operates Broward County Transit (BCT) bus services, and Miami-Dade County operates Miami-Dade Transit (MDT) bus, Metrorail and Metromover services. South Florida Regional Transportation Authority (SFRTA) operates Tri-Rail commuter rail services. Amtrak also provides intercity passenger rail service connecting to Central Florida and beyond. Figures X.3 and X.4 show existing bus routes and fixed-guideway transit, respectively.

A brief description of the fixed-guideway transit is provided in Table 1-1. Service characteristics of the bus systems in the tri-county area are provided in Table 1-2.

**Table 1-1 Service Characteristics of Fixed-Guideway Transit Providers**

Service Characteristics	Amtrak	Tri-Rail	Metrorail	Metromover
Route Miles	65	72	22.6	4.4
County(s)	Palm Beach, Broward, Miami-Dade	Palm Beach, Broward, Miami- Dade	Miami-Dade	Miami-Dade
Technology	Intercity Rail	Commuter Rail	Rail Rapid Transit	Automated Guided Transit
Number of Stations	6	18	22	21
Service (trains/weekday)	2	52	180	Varies by route 2-5 minutes
Span of Service	Minimal service	4:44 AM – 10:25 PM	5:00 AM – 12:00 AM	5:00 AM – 12:00 AM
Average Commercial Speed (inclusive of stops in mph)	Not available	40	29	9
Weekday Peak-/Non-peak hour Headway (in minutes)	Not applicable	20/60	7-8/15	1.5/3
Average Weekday Ridership (2008)	Negligible	14,301	62,762	27,511

**Table 1-2: Service Characteristics of Bus Transit Providers in the Southeast Florida**

Service Characteristics	Palm Tran	Broward Transit	Miami-Dade Transit
Number of Routes	36	43	90+
County(s)	Palm Beach	Broward	Miami-Dade
Span of Service	5:00 AM – 11 PM	4:40 AM – 12:40 AM	5:00 AM – 1 AM
Range of Service Frequency (in minutes)	15 to 60	15 to 45	15 to 60
Average Weekday Ridership (2008)	33,057	95,782	132,784

**1.2.3.Tri-Rail**

North-south mobility by rail in the tri-county region is currently provided by Tri-Rail commuter rail service that is operated by the SFRTA. Tri-Rail operates along the South Florida Rail Corridor (SFRC), which is owned by the State of Florida and is shared with CSX freight and Amtrak service. The SFRTC operates two types of equipment on the service. The majority of their trains are push-pull train sets, with either two or three bi-level passenger cars per train. They also operate two Diesel Multiple Unit (DMU) trains which are also bi-level. Tri Rail closely parallels I-95 for much of its service route.

The Tri-Rail alignment generally runs parallel to I-95, often several miles to the west of the concentrated development of the region’s major CBDs. Service connects to Miami-Dade Transit’s Metrorail system at the Hialeah Transfer Station, the busiest Tri-Rail station. When the Miami Intermodal Center (MIC) is completed, proximate to the Miami International Airport (MIA), it will be the southern terminus for both Amtrak and Tri-Rail trains and will connect directly

to a new Metrorail route. Connecting bus services are available from all Tri-Rail Stations, which also provide parking. Tri-Rail stations typically have between 200 and 600 parking spaces. Tri-Rail has cooperative agreements on fares with transit services provided in each of the three counties in which it operates. Tri-Rail subsidizes 16 different shuttle bus routes that meet most or all weekday trains at nine stations. These routes offer free connecting service to several locations along the Tri-Rail Corridor, including the airports, downtown Fort Lauderdale, and office parks in Boca Raton, Deerfield Beach and Pompano. In the past year, Tri-Rail’s ridership has fluctuated from a high of 17, 250 to a low of 11,560 per weekday, having been influenced by the price of gasoline and the fares charged by Tri-Rail.



**Metrorail**

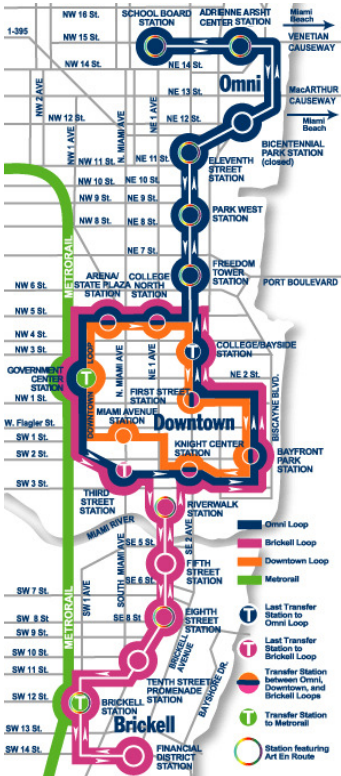
Metrorail is a 22-mile long, electrically powered, elevated rail rapid-transit system extending from Kendall in South Miami-Dade County to Medley in West Miami-Dade County. A 2.4-mile extension to the airport is currently under construction.

The southern leg of Metrorail, between Miami-Dade County Government Center and Kendall, attracts the highest ridership. In 2008, the average weekday ridership for the Metrorail Station at Government Center was 10,000, which is 16% of the system’s total ridership. Government Center serves as the southern terminus of the SFECCTA study area.



**1.2.4. Metromover**

The Metromover is an electrically powered, fully-automated guided transit (people mover) system that operates along a 4.4-mile route. Metromover is a free service, and connects with Metrorail at the Government Center and Brickell stations and with Metrobus at various locations throughout Downtown Miami. The Miami-Dade County Government Center serves as a location for one of the 21 Metromover stations. In 2008, the average weekday ridership at Metromover’s busiest station, Government Center, was 6,500, which is 23% of Metromover’s total ridership.



**1.2.5. Amtrak**

Amtrak operates two daily trains in each direction between New York Penn Station and Miami Station in Hialeah. Within the southeast Florida region, these trains use same tracks as Tri-Rail and CSX freight trains. Ridership between local AMTRAK stops in the region is negligible, meaning that while this service is important to the region’s connectedness with the rest of the state and country, it presently has only a nominal role for regional travel.

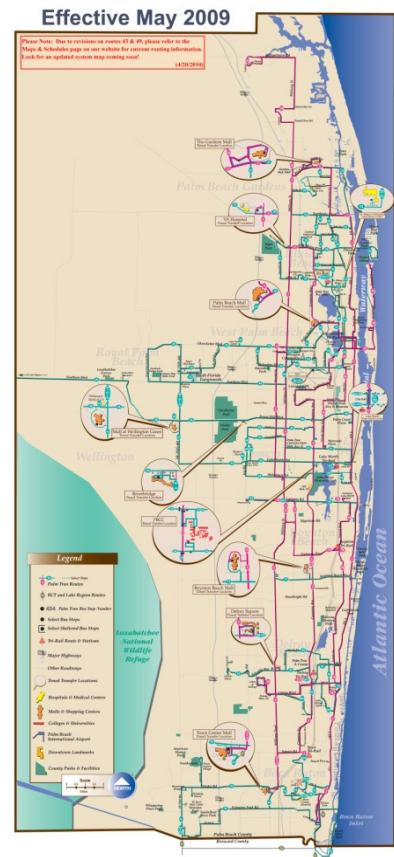
### 1.2.6. Palm Tran



The majority of Palm Tran's service is concentrated in the eastern portions of the Palm Beach County as far north as Jupiter and as far south as Boca Raton. Thirty of the 36 Palm Tran routes intersect the SFECCTA or operate partly or completely within the SFECCTA study area. Ridership on these bus routes amount to approximately 31,305, over 90% of the system-wide total. Of these 30 routes, four routes (1, 10, 21, and 70) are significant to the SFECCTA project in that they run in a general north-south direction, parallel to the FEC Railway. These four routes

recorded 9,452 in average weekday boardings, approximately 29% of the total countywide boardings. This generally shows that a significant portion of the system ridership is along the eastern part of the county. Palm Tran Route 1 in particular, operates over 38 miles between Boca Raton and Palm Beach Gardens along US 1, carries the bus system's highest ridership – 7,860, which is almost 24% of the total system-wide ridership.

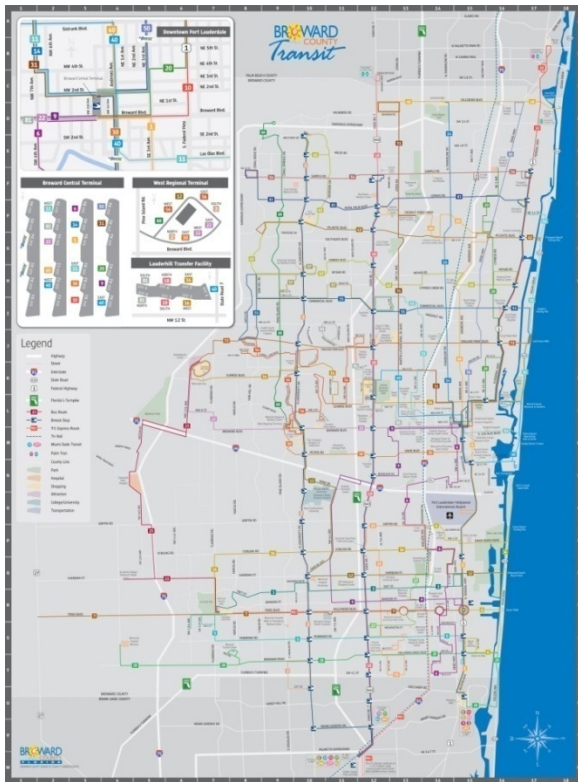
In August 2009, Palm Tran started a limited service, express commuter bus from Stuart to West Palm Beach Intermodal Center. Service changes were made in May 2010 because of poor ridership.



### 1.2.7. Broward County Transit (BCT)

Of Broward County's more than 1,200 square miles, BCT buses provide service to only 410 square miles with 43 regular weekday routes. Service is concentrated in the eastern portion of the County, with three routes extending north into Palm Beach County and six routes extending south into Miami-Dade





County to serve inter-county travel markets. BCT has local agreements with 22 cities, offering 64 community bus routes designed to increase the number of destinations within city limits that residents can access using public transit. BCT's 27 bus routes that operate in the SFECCTA study area reported an average weekday ridership of 95,782 for fiscal year 2008. Out of these 27 routes, six routes (1, 6, 10, 20, 50, and 60) run in the general north-south direction, parallel to the FEC railroad. These six routes recorded 25,649 in average weekday boardings, approximately 27% of the total system-wide boardings.

The bus route with the highest ridership is Route 1 with an average weekday ridership of 8,041. This route travels along US1 (also known as Federal Highway) between Aventura Mall in Miami-Dade

County and the BCT Central Terminal in Downtown Fort Lauderdale.

Service has started on a BCT I-95 express bus route running between Pembroke Pines, Hollywood and Downtown Miami (Government Center). The route makes five intermediate stops (including the Tri-Rail stations at Hollywood and Golden Glades) before reaching downtown Miami.

#### 1.2.8. Miami-Dade Transit (MDT)

Miami-Dade Transit (MDT) is the largest transit agency in the State of Florida, but only the 12<sup>th</sup> largest public transit system in the United States despite the County's population ranking 8<sup>th</sup> in the nation. Thirty-seven Metrobus routes either intersect the SFECCTA corridor or operate partly or completely within the SFECCTA study area. These routes have a combined average weekday ridership of 133,000. Of these 37 routes, seven routes run parallel to the SFECCTA corridor in a north-south direction. These seven routes have a combined average weekday ridership of 34,000, which is 25% of the ridership in the study area. Of these seven routes, the route that carries the most passengers is Route 3, with an average weekday ridership of 8,171. This route operates along 25 miles of US 1, between Hallandale Beach in Broward County and Downtown Miami.



### 1.3. Performance of the Transportation System

#### 1.3.1.Highways

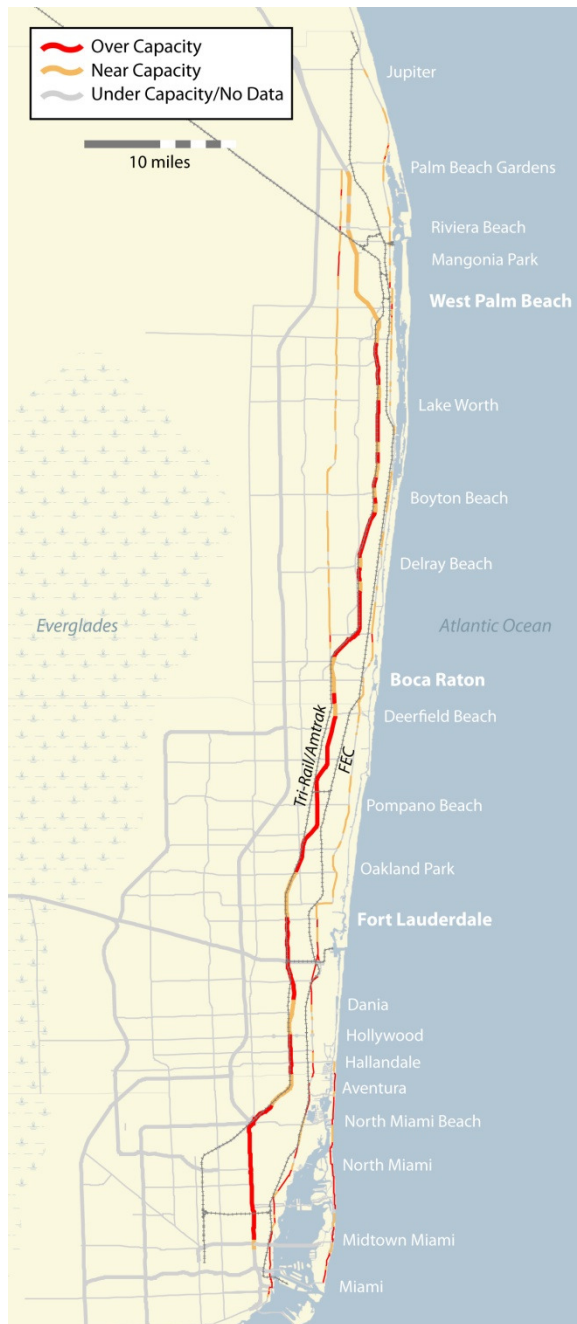
##### Traffic Congestion

The total volume of traffic on major highways within the FEC corridor at key locations in Miami-Dade, Broward and Palm Beach Counties is over 28 million vehicle miles traveled. According to the 2007 National Mobility Report, Miami is tied in second place for congested peak period travel among very large urban areas (Table 1-3). Miami ranks behind the Los Angeles-Long Beach-Santa Ana region but ahead of much larger areas such as Chicago, New York, and Dallas-Fort Worth-Arlington, TX.

**Table 1-3 Nationwide Congestion Statistics**

Urban Area	Percent of Peak Period Travel that is Congested	Percentage of Daily Travel that is Congested
LA-Long Beach-Santa Ana CA	86%	43%
<b>Miami, FL</b>	<b>82%</b>	<b>41%</b>
San Fran – Oakland CA	82%	41%
Washington DC	81%	40%
Chicago, IL-IN	79%	39%
Atlanta, GA	75%	38%
Houston, TX	73%	36%
Detroit, MI	71%	35%
New York-Newark, NY-NJ-CT	69%	34%
<b>Dallas-Fort Worth-Arlington, TX</b>	66%	33%
<b>Seattle, WA</b>	66%	33%

**Figure 1-3 Level of Service on Major North-South Roads**



Projected population and employment growth will further exacerbate existing roadway congestion over the next two decades. Increasing congestion on the limited north-south facilities will result in an increase in travel times and delays for automobile drivers as well as for bus transit and highway freight. According to this analysis, in 2030, 30 percent of total travel is projected to occur on roadways operating at level of service <sup>1</sup>(LOS) E or F as compared to only 19 percent of travel in 2005. As the highway system becomes overloaded, a loss of system reliability will have negative impacts on the economic competitiveness of the region.

Figure 1-3 indicates that congestion is particularly severe on north-south roadways as compared with east-west facilities. Major north-south State roadways parallel to the SFECCTA corridor, such as SR-7, I-95, Military Trail/Andrews Avenue, US-1, and A1A are congested and will become more heavily congested into the future.

Further widening of either of either I-95 or US 1 to increase capacity is impractical due to the enormous cost and significant community impacts that would be generated. Given constraints such as land values, land availability, and the costs of roadway construction, the provision of additional roadway capacity (additional lane miles) is projected to continue to lag behind the area's growth rate. The 2030 Cost Feasible Long Range Transportation Plans

<sup>1</sup> Level of Service is defined by the Highway Capacity Manual as a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel Level of service is given grades from A to F; a grade of A means the road is free flowing while an F means flow is constrained. Generally, roads are designed to operate at LOS D or better.

of the respective counties include a 16 percent increase in total lane miles and 19 percent increase in total capacity for the entire tri-county area between 2005 and 2030. The Region's freeways will witness a 13 percent increase in lane miles. However, during this same period, the tri-county region is projected to witness a 39 percent increase in traffic volume. Much of the additional lane miles of capacity will be added in the less densely-developed areas, away from the east coast and the SFECCTA corridor. The planned additional roadway supply will be far outstripped by the growth in demand.

According to the 2007 National Mobility Report, in order to maintain current flow of traffic, the Miami area alone needs an additional 330 lane miles every year. However, the planned growth of supply indicates that the entire tri-county area will add an average of 92 lane miles per year until 2030 thus; congestion will only worsen over time without other alternatives to address this issue. Increased congestion will lead to further travel time delays and, ultimately, a loss in productivity and economic competitiveness. The National Mobility Report indicates that in 2007, an average commuter in Miami spent 47 hours every year in congestion that resulted in a congestion cost of \$903 per peak traveler and cumulative cost of \$2.69 billion for the Miami area alone. The Miami area was ranked fourth in the nation in terms of total delay and fifth in terms of congestion cost.



**Roadway Congestion on I-95**

### 1.3.2. Transit

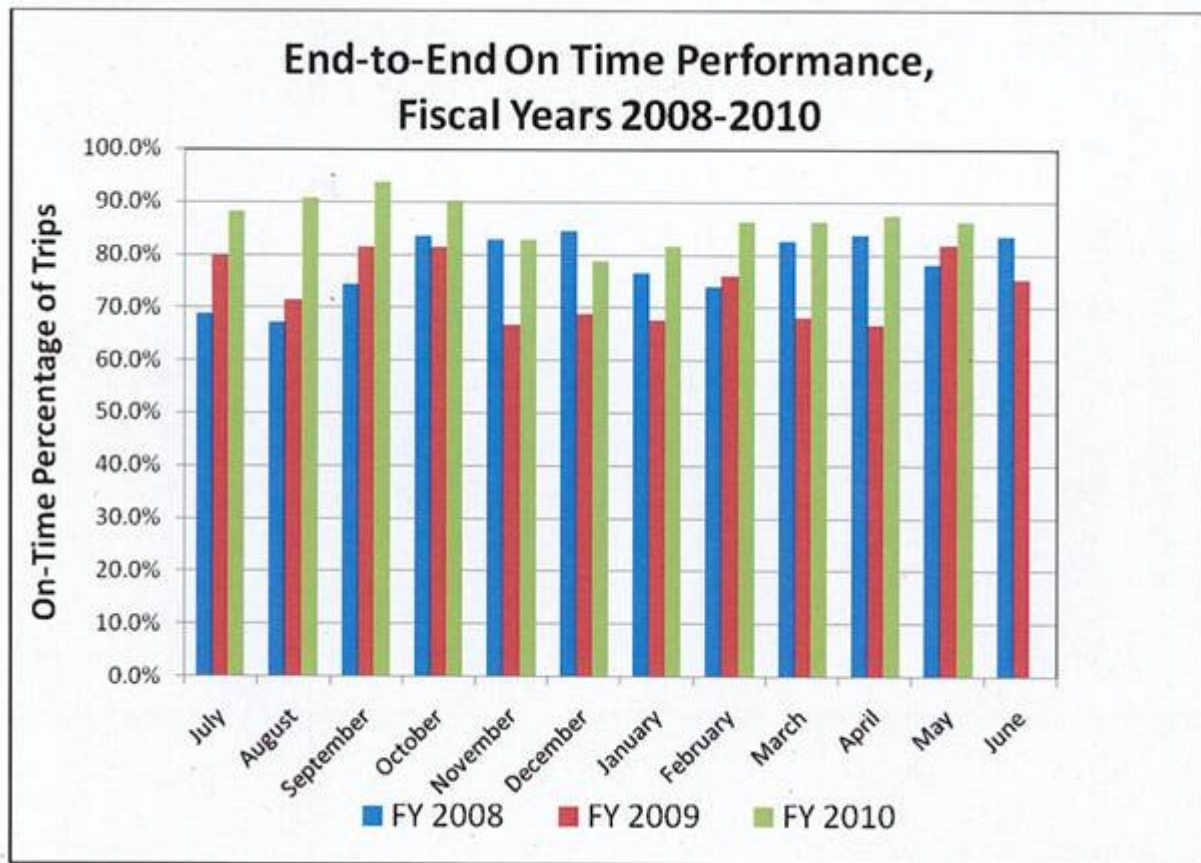
Existing transit service is offered in South Florida by county transit agencies and SFRTA, most of which accommodates north-south travel. However, local bus transit is hampered by its slow speed due to highway congestion and discontinuous service. Additionally, each county has its own transit agency and there is only limited service crossing county lines, serving transit trips between neighboring counties. These characteristics make the bus less competitive with the automobile. Tri-Rail, which mostly parallels I-95, is a relatively high-speed “commuter” oriented service serving long haul trips along the I-95 corridor.

Despite congested roadways, the 17 bus routes that parallel the SFECCTA corridor, out of a total of 169 in the tri-county area, carry approximately 26 percent of total system ridership (Table 13). Peak operating speeds are almost universally quite low. There exists a significant transit demand along the SFECCTA corridor that can be better served by providing a premium transit service that can move people more quickly and effectively than current bus service. Both the existing bus riders and those driving along congested north-south highways and major arterial roadways would benefit from faster transit service.



Tri-Rail’s ridership has been limited by two factors: historically low on-time performance; and the fact that it does not directly serve many of the major destinations in the region.

When it first started service, Tri-Rail operated together with CSX freight traffic, operating on one continuous, “mainline” track with multiple passing sidings. . CSX utilized some of these sidings as delivery tracks, with resultant delays for Tri-Rail trains. Recently, the railroad has been upgraded and a second track has been added. However, deliveries are still sometimes conducted from the second track. Tri-Rail’s on time performance has improved significantly as a result of these improvements and increased ‘slack’ in its schedule, achieving an on-time performance record in the mid-80 percent range.



Tri-Rail does not directly serve downtown Fort Lauderdale or downtown Miami, or many of the smaller destinations on the east coast such as Aventura, Hollywood, Pompano Beach, Delray Beach, Boynton Beach, etc. Typically the corridor is 2 – 6 miles to the west of these destinations. This results in passengers needing to transfer to a local bus or, in Miami, to Metrorail in order to reach their final destinations. The 2007 Tri-Rail survey of passengers found that some people actually leave a second car at their destination stations. Because many people require a three-seat ride to reach their destination, this limits patronage that has a choice in how they travel.

## 1.4. Demographics and Land Use

### 1.4.1. Population and Employment

The tri-county area witnessed a 23 percent population growth between 1990 and 2000 and a 7 percent population growth between 2000 and 2005 (Table 1-4). Between 1990 and 2000, Broward, Miami-Dade, and Palm Beach Counties were ranked 11, 18, and 20 nationally in terms of largest numerical increase in population in the country. The overall Metropolitan Statistical Area (MSA), which incorporates all three counties, was the fourth largest MSA in the nation.

**Table 1-4: Population Growth**

County / Year	Population			Population Growth	
	1990	2000	2005	(1990-2000)	(2000-2005)
<b>Miami-Dade</b>	1,937,194	2,253,779	2,356,697	16%	5%
<b>Broward</b>	1,255,531	1,623,018	1,763,706	29%	9%
<b>Palm Beach</b>	863,503	1,131,191	1,255,007	31%	11%
<b>Tri-County Area</b>	4,056,228	5,007,988	2,356,697	23%	7%

Source: University of Florida, Bureau of Economic Business Research

Population and employment are both concentrated around the FEC railway. In 2005:

- Approximately 14 percent of the tri-county area population resided within one mile of the FEC corridor
- One in every five persons (22 percent) in the tri-county region was employed within one mile of the corridor
- In Miami-Dade, one in every seven jobs (17 percent) was located within one mile of the corridor
- In Broward County, one in every five residents (21 percent) and one in every seven jobs (15 percent) were within one mile of the corridor
- In Palm Beach County, one in every four residents (25 percent) and one in every three jobs (35 percent) were within one mile of the corridor

By 2030, more than one million people will reside and 750,000 will be employed within one-mile of the FEC corridor (Table 1-5). Palm Beach County, which contains the longest segment of the FEC corridor, is projected to have more than 400,000 residents within one mile of the FEC corridor.

The rate of projected growth in the corridor is higher than the already large rate of growth projected for the region as a whole. The number of households within one mile of the FEC corridor is projected to increase by 36 percent compared to 28 percent for the overall tri-county area. Similarly, employment



along the FEC corridor is projected to witness a 29 percent increase compared to 26 percent for the rest of the tri-county area. The projected population and employment growth along the FEC corridor is a result of sustained efforts by local, county, and state agencies to concentrate development and redevelopment through the passage of Eastward Ho!, changes in zoning, and other similar efforts.

**Table 1-5 Population and Employment, 2005 - 2030**

Geography / Year	Population (in '000s)			Households (in '000s)			Employment (in '000s)		
	2005	2030	% Growth	2005	2030	% Growth	2005	2030	% Growth
<b>Tri-County</b>	5,377	7,221	34%	2,067	2,651	28%	2,660	3,355	26%
Within one mile of FEC corridor	<b>749</b>	<b>1,093</b>	<b>▲46%</b>	<b>313</b>	<b>426</b>	<b>▲36%</b>	<b>585</b>	<b>753</b>	<b>▲29%</b>
<b>Miami-Dade County</b>	2,359	3,149	33%	834	1,085	30%	1,379	1,590	15%
Within one mile of FEC corridor in Miami-Dade County	<b>194</b>	<b>293</b>	<b>▲51%</b>	<b>74</b>	<b>106</b>	<b>▲43%</b>	<b>220</b>	<b>264</b>	<b>▲20%</b>
<b>Broward County</b>	1,747	2,293	31%	694	854	23%	736	981	33%
Within one mile of FEC corridor in Broward County	<b>263</b>	<b>383</b>	<b>▲46%</b>	<b>112</b>	<b>150</b>	<b>▲34%</b>	<b>178</b>	<b>209</b>	<b>▲17%</b>
<b>Palm Beach County</b>	1,270	1,779	40%	538	712	32%	544	783	44%
Within one mile of FEC corridor in Palm Beach County	<b>292</b>	<b>417</b>	<b>▲43%</b>	<b>126</b>	<b>171</b>	<b>▲36%</b>	<b>186</b>	<b>279</b>	<b>▲50%</b>

Source: Southeast Florida Regional Planning Model 6.5

#### 1.4.2. Transit-Dependent Populations

Transit-dependent populations, defined by factors such as households with no cars, minority or low-income households, and youth and elderly populations, typically rely on transit services to access jobs, services, education and other activities. South Florida contains a significant transit-dependent population. This is particularly true along the corridor. In the tri-county area as a whole, the 2000 Census reported over 200,000 zero-car households and more than 450,000 minority or low-income households. Over 20,000 zero-car households are located within 0.25 miles of the corridor. Overall, there is a high concentration of transit-dependent people along the corridor compared to the rest of the tri-county area.

**Table 1-6 Percent of Transit-Dependent Populations within FEC corridor**

Population	Tri-County	Within One Mile of corridor	Percent Within One mile of corridor	Number per Mile within One Mile of FEC corridor
<b>Low-income Household</b>	455,461	88,744	19%	771
<b>Zero-car Household</b>	209,389	43,953	21%	426
<b>Population Under 18, Above 65</b>	1,998,330	281,128	14%	2,156

**1.4.3. Existing Land Use and Activity Centers in the Region**

The entire 85-mile study area from Jupiter to Miami is developed. There are three major cities – Miami, Fort Lauderdale and West Palm Beach and 25 smaller towns on the corridor. The FEC Railway passes directly through the downtown of almost all these communities. The three major cities are all major employment destinations but, in recent years, significant high-rise residential development has been built within their downtown cores. Many of the smaller communities such as Boca Raton, Boynton Beach, North Miami, Aventura, Hollywood, Lake Worth and Delray Beach also have high-to-medium density downtowns with mixed residential, commercial, and office land uses. These towns, which were established and developed prior to World War II, are organized around a grid of streets with continuous sidewalks and other essential elements of transit-oriented development. In contrast, to the west of I-95, development is lower density, organized in single-use developments and gated communities. Only north of Riviera Beach does the land use pattern change to a suburban type of development. This development took place in a time when gated communities and large blocks were the organizing principles. Palm Beach Gardens has a suburban, auto-oriented land use pattern, but has approximately 20,000 jobs within a half mile of the corridor. Jupiter has a pedestrian scale, mixed uses and a small block pattern of development to the west of the FEC tracks. Both of these communities are working towards focused growth and higher densities.

**Figure 1-4 Activity Centers**



There are numerous activity centers within the study area in addition to the town centers. These are: three international airports; major medical campuses; college and university campuses; and major shopping/entertainment centers.

#### 1.4.4. Recent and Projected Economic Trends

In recent years, smaller urban communities have once again become fashionable places to live and conduct business – partly because the architecture of the era has become fashionable again and partly because regional and local policies have encouraged, and continue to encourage, redevelopment with mixed use, mid-rise buildings.

For example, the cities of Boynton Beach, Boca Raton, Wilton Manors and Hollywood all have recently allowed the construction of five-to-eight story mixed-use buildings with retail on the ground floor and residential above within walking distance of the FEC railway. Many other projects in other communities have been designed and approved and are ready for implementation once the economy recovers. To facilitate and promote redevelopment activities within the communities on the corridor, local governments have included land adjacent to the FEC Railway in Community Redevelopment Areas (CRA). Having a CRA designation provides a funding mechanism for infrastructure and other improvements within the designated area through Tax Increment Financing (TIF) whereby total property taxes for a CRA are assessed in a base year and any increase in tax revenue in the subsequent years is directly reinvested into the CRA. There are 12 CRAs in Miami-Dade County, seven existing and one proposed in Broward County and nine in Palm Beach County within or in the immediate vicinity of the study area. In total, the land areas of the CRAs in the study area comprise more than 21,000 acres.



**Dense development along the FEC corridor  
in West Palm Beach, Wilton Manors,  
Hollywood, and Midtown Miami**

**1.4.5. Mobility Needs of High-Density Land Uses**

Because of the limited availability of developable land, the tri-county area has been experiencing a large amount of redevelopment, mostly in the CBDs of the medium to large cities along the corridor. Integrated land use and transportation is critical to the success of development and redevelopment efforts, particularly for high-density development. The combination of existing and proposed land uses along the SFECCTA study corridor will ensure that a new, premium transit service will serve a wide variety of markets (commuters, students, visitors, tourists, residents).

The majority of the 28 municipalities along the corridor have recently amended (or are in the process of amending) their Comprehensive Plans and recognize the FEC corridor as a premium transit corridor. In this process, these municipalities are adopting new policies to increase density and create transit-friendly mixed uses along the corridor and around potential station locations. Though each community has its own character and vision for the future, all but a handful have or are in the process of adopting zoning codes that benefit transit. This is being accomplished either by increasing residential densities or by designating areas for employment and mixed use. The minority of municipalities that are not planning to change their densities tend to be small, completely built-out, stable, and are comprised, primarily, of residential neighborhoods.

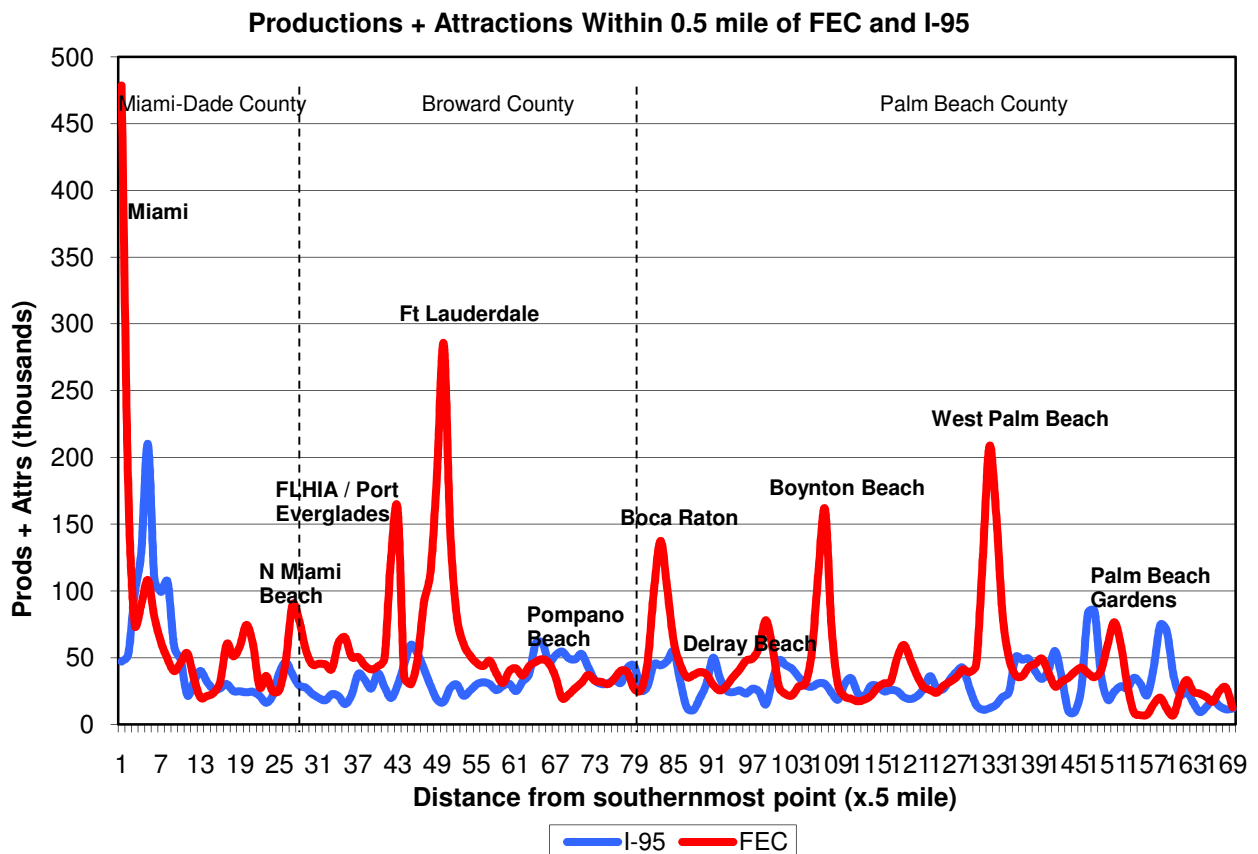
**1.5. Travel Markets**

An analysis of the 2005 and 2030 trip productions and attractions within the tri-county area indicates a significantly high concentration of activity along the FEC corridor. By 2030, a high trip production density is projected throughout the eastern communities along the FEC corridor. Seventeen percent of all trip productions in the tri-county area are forecast to be within one mile of the FEC corridor, which would directly serve the CBDs of Miami, Ft Lauderdale and West Palm Beach (Table 1-7). Similarly, one in every five trips (21 percent) will have destinations within one mile of the FEC corridor.

**Table 1-7 Daily Productions and Attractions along the FEC corridor**

	Year	Number of Trip Productions or Attractions		Percent of Tri-County within One-Mile of FEC corridor	Number per Acre within One-Mile of FEC corridor
		Within One-mile of FEC corridor	Tri-County		
Productions	2005	3,058,864	18,633,079	16%	53
	2030	4,277,540	25,162,437	17%	85
Attractions	2005	3,781,423	18,639,069	20%	100
	2030	5,168,900	25,167,419	21%	151

Productions and attractions within ½-mile of I-95 and the FEC corridor were derived from the travel demand model and are displayed in Figure X below. This figure shows six main peaks identified for productions and attractions along the FEC corridor. Conversely, the productions and attractions along the I-95/Tri-Rail corridor were significantly lower and more uniform throughout the study area, with no discernable peaks. This indicates that there are major origin/destinations such as downtown Miami, Fort Lauderdale Airport, downtown Fort Lauderdale Boca Raton, Boynton Beach and West Palm Beach and lesser, but still significant origin/destinations in North Miami Beach, Delray Beach and Palm Beach Gardens, all that are directly on or within ½ mile of the FEC Corridor.



Additional analysis utilizing the SERPM Model looked at travel between six-mile radius production zones and one mile radius attraction zones centered on 33 potential station locations on the FEC Corridor and all 19 stations on the Tri-Rail Corridor. Total travel between the zones on the Tri-Rail Corridor, including all modes, was 750,000 daily trips. Whereas travel between zones surrounding the 33 station locations on the FEC corridor was over two million trips.

Figure 1-5 Travel Markets



Figure 1-5 indicates the twenty-five pairs of stations along the FEC with the greatest potential travel between them. Even if only a small percentage of these trips will be captured by transit, the numbers indicate the potential for substantial transit ridership.

The major travel markets which exist within the FEC corridor that can be served by new premium transit service include work and non-work trips. Ridership forecasts from the regional travel demand model indicate that for the build alternatives, work trips are bi-directional with commuters traveling both north and south to the major employment centers on the corridor. For example people travel from the Boca Raton area both north to West Palm Beach and south to Fort Lauderdale in approximately equal numbers. Boca Raton itself is also an employment destination. Similarly, further south, Hollywood commuters go both north to Fort Lauderdale and south to Miami.

Many middle and long distance commuters can be expected to drive to the corridor and will park-and-ride to their destinations. However, the pedestrian-friendly nature of the surrounding land use and demographics of the population on the FEC Corridor suggest that there is a significant market for shorter trips by people who live close to the corridor and may walk to local stations. This market includes residents of new, mid-rise developments that have already been constructed in anticipation of future

premium, transit service, future residents of additional planned development, as well as transit-dependent people in the surrounding communities. This market includes travel for off peak trips for shopping, entertainment and medical appointments.

### **1.6. Transportation Problems and Needs**

The fundamental need for the project results from the following key issues:

- **Increased Population and Employment:** Southeast Florida has been growing rapidly due to immigration and high birth rates and is expected to continue to grow in the foreseeable future. By 2030, the number of households in the study area is projected to increase by 36% compared to 28% for the overall tri-county region. Population will increase even more with a 34% growth in the region and 46% in the study area, bringing total population within one mile of the FEC Corridor to over one million by 2030. Employment is also expected to grow faster in the study area than in the region as a whole, with a 29% increase in the study area compared to 26% for the region. Automobile ownership and vehicle miles traveled (VMT) are expected to increase even more dramatically than population.
- **Highway Capacity and Traffic Congestion:** Existing north-south highways in southeastern Florida, such as I-95 and US 1, are severely congested today and as growth takes place, this congestion is expected to get more severe. While the population is expected to increase by 28% by 2030, and highway traffic volume is projected to grow by 35%, the planned increase in highway capacity is only 19%. The entire region is built-out, making the addition of capacity on existing highways extremely impactful and costly. The volume of traffic and the number of lanes on these facilities results in an elevated number of traffic accidents. These incidences lead to delay and decreased safety and make travel time unpredictable for roadway users.
- **Sustainable Economic Development and Land Use:** The region's "*Eastward Ho!*" initiative emphasizes redevelopment and promotes greater density of development in coastal, southeast Florida rather than continued sprawl in less developed areas in the west. All three counties also have policies in place to focus future development within the study area. This initiative will help protect the environment by keeping growth away from the Everglades and reducing green house gas production by reducing trip lengths. The communities within the study area already have a walkable pattern of development, but many of the buildings are reaching the end of their useful lifespan. Land values are increasing as vacant land further west has become scarcer leading to the potential for higher and better uses than the current buildings serve. Investment in premium transit, along with new land use and zoning regulations for increased density and mixed use could be expected to help attract redevelopment to these areas. Without additional premium transit

service, however, these higher densities may not be realized because the road network is already congested and cannot accommodate the increased travel demand created by denser development.

- **Access to Eastern Travel Destinations:** Existing rail transit on Tri-Rail does not conveniently serve the travel destinations in the cities and towns east of I-95. There are a number of medical facilities such as the Jupiter Medical Center, St. Mary's and Good Samaritan Hospital in West Palm Beach, Broward General Medical Center and Aventura Hospital all of which are directly on the FEC Corridor. The major government centers in West Palm Beach, Fort Lauderdale and Miami are also adjacent to the corridor and several college campuses are within walking distance or short shuttle rides from the FEC. The Scripps Campus at Florida Atlantic University in Jupiter is also an easy shuttle bus ride distance from the Corridor. The existing Tri-Rail corridor is two to six miles to the west of these and other destinations, with stations that are not within walking distance of most destinations. This means that almost all of Tri-Rail riders need to transfer to local buses, circulators or, in Miami, Metrorail to reach their final destinations. Since the Tri-Rail corridor is immediately to the west of I-95, I-95 acts as a barrier between the Tri-Rail stations and the coastal communities and their transit-friendly neighborhoods.
- **Transit Service Deficiencies:** The local buses that run throughout the study area are slow due to traffic congestion and frequent stopping patterns. The average travel speed of local buses is 11 to 16 mph, which is not competitive with the automobile. This limits local bus ridership to transit-dependent customers and short trips. The study area includes three major CBDs and other, smaller downtowns that serve as regional and local destinations and attract large numbers of trips. Today, these communities are connected in a limited fashion by slow, local bus routes and most travel is carried out by automobile. By 2030, 17% of all trip productions and 20% of trip attractions in the tri-county area will be in the study area, with clear peaks in productions and attractions in the multiple downtowns that bisect the FEC corridor and yet no current transit provider optimizes the links between these major travel markets.
- **Large Transit-Dependent Populations:** Large transit-dependent populations in each of the three counties are located within the study area. Increased mobility options are needed to improve the ability of this population to travel to jobs, education, healthcare and leisure activities and improve their opportunities for economic advancement and their quality of life. A large portion of the existing Tri-Rail's riders are the transit-dependent and providing direct access to destinations to the east would serve this population directly. Stations would be within walking distance of many origins and destinations.



## 1.7. Project Purpose

The purpose of the South Florida East Coast Corridor Transit Analysis (SFECCCTA) is to provide reliable transportation options for South Floridians, and to support the region's *Eastward Ho!* initiative by improving north-south mobility in the study corridor. This project will create an integrated system of premium transit through the redeveloping coastal cities in Palm Beach, Broward and Miami-Dade Counties, to supplement the existing highway network including I-95, and to enhance the utilization of existing transit services. The resulting improved accessibility to and within the study corridor will serve as a catalyst for revitalization and increased economic development within the adjacent communities.

The project would supplement highway capacity, improve north/south connectivity and improve the quality of transit services especially for those who are dependent on transit. This project would also accommodate robust future growth in population and employment consistent with regional land use objectives. The project would improve mobility for shorter trips and provide direct access to existing and planned development along the economic spine of South Florida.

Proposals to use existing and new east-west track connections between SFECCCTA and Tri-Rail would permit Tri-Rail trains to operate over portions of the SFECCCTA corridor and vice versa. An integrated system, offering "one-seat, no transfer rides", could attract more riders than two parallel rail services with connecting buses. More origins and destinations would be directly served by such an integrated system.

Regional environmental goals are being achieved by concentrating development to the east, rather than between I-95 and the Everglades. A new premium transit service along the FEC Railway corridor would support such development activities in Community Redevelopment Areas (CRA).

The goals and objectives reflect the project purpose, and are as follows:

## 1.8. Goals and Objectives

### Goal 1: Improve mobility and access for personal travel and goods movement.

- Expand transit options to accommodate future travel demand in the corridor and serve major transportation hubs, employment, medical, retail, educational, and entertainment centers, and residents in the region.
- Provide regional transit options that improve travel time reliability for people and goods and results in travel time savings.
- Integrate the proposed transit options with existing and planned transit in the region.
- Integrate the proposed transit options with existing and planned freight transport and potentially intercity passenger transport located within or traversing the study area.
- Provide for seamless connections to all modes of transportation including bicycle and pedestrian facilities.
- Provide regional access and mobility improvements for minority, transportation disadvantaged and low-income groups.
- Support goods movement in the corridor with higher capacity and connectivity.

### Goal 2: Coordinate corridor transportation investments to contribute to a seamless, integrated regional multi-modal transportation network.

- Invest in infrastructure, facilities and services that improve connectivity, transfer and circulation in the region.
- Coordinate and integrate with other regional rail, mass transit, and roadway projects.
- Maintain working relationships with transportation partners, including the FTA, FDOT, Regional Transportation Authority, MPOs, Counties, Cities, Regional Planning Councils, Business Groups, Florida East Coast Industries, and other stakeholders.
- Avoid or minimize duplication of premium transportation services.
- Coordinate with other transportation and land use planning efforts that are supportive of transit options.
- Accommodate a proposed greenway along the corridor.

### Goal 3: Encourage the implementation of transit supportive development.

- Locate transit stations where higher density development exists or can readily be accommodated and near activity centers.
- Complement and support economic development/redevelopment and potential joint development activities that include a mix of uses and affordable housing, within the study area.
- Establish a transit improvement that will contribute, guide and support the urban, transit-oriented scale envisioned for the various downtowns, commercial corridors and abutting residential areas.
- Facilitate creation of transit-supportive and context sensitive development guidelines, zoning and policies.
- Provide transit that complements the scale and character of neighborhoods, housing, and business developments.

### Goal 4: Minimize adverse impacts to the community and local businesses.

- Minimize or mitigate adverse local traffic, parking and safety impacts.
- Minimize or mitigate adverse noise and vibration impacts.
- Avoid or minimize adverse impacts to minority and low income communities.
- Minimize adverse right-of-way and physical impacts to established communities and businesses.
- Optimize the use of existing infrastructure and transportation corridors for expansion of transit.

### Goal 5: Preserve and enhance the environment.

- Minimize or mitigate adverse impacts to existing environmental resources.
- Preserve historical and cultural resources.
- Provide transit options that reduce traffic congestion and energy consumption.
- Protect environmentally sensitive areas.
- Improve regional air quality by promoting alternative transportation modes and reducing auto emissions.

### Goal 6: Provide a cost-effective transportation solution to meet identified travel needs.

- Ensure that the investment strategy for the corridor will be eligible to receive federal funding.
- Optimize transportation funding resources and obtain local financial support.
- Explore lower technology cost solutions, where applicable, than can be upgraded over time to a higher transit technology solution based on changing needs.