FINAL CONCEPTUAL ALTERNATIVES ANALYSIS/ENVIRONMENTAL SCREENING REPORT

Submitted
by the
Florida Department of Transportation

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South Florida East Coast Corridor Transit Analysis
Miami-Dade, Broward, and Palm Beach Counties, Florida

Abstract: This document was initially developed as the Tier 1 Final Programmatic Environmental Impact Statement (FPEIS) to identify the current and future need to address congestion issues and to support economic as well as land development policies in the eastern area of the Tri-County region comprised of Miami-Dade, Broward, and Palm Beach Counties in southeast Florida. However, the tiered National Environmental Policy Act (NEPA)–Efficient Transportation Decision Making (ETDM) process initially undertaken, will proceed as an early scoping–ETDM multi-phased alternatives analysis. As such, this document has been renamed the Final Conceptual Alternatives Analysis/Environmental Screening Report (AA/ESR). In the spirit of environmental streamlining and the avoidance of confusion among participating agencies and interested stakeholders, only the title of the document will be changed. This document incorporates responses and revisions from the Draft Programmatic Environmental Impact Statement (DPEIS) signed by the Federal Transit Administration in September 2006. It should be noted that since we are no longer following a tiered NEPA study process we will refer to the steps in the study process as "Phases" not "Tiers". The continuation of the early scoping–ETDM process into Phase 2 will build upon the results of the Phase 1 (Tier 1) study.

Generally, the study area is centered along the existing Florida East Coast (FEC) Railway and extends approximately 85 miles from Downtown Miami in Miami-Dade County to just north of the Village of Tequesta in Palm Beach County. The project consists of a planning, engineering, and environmental study, and includes a Transit Feasibility and Alternatives Analysis. A range of conceptual Build Alternatives was evaluated in addition to the No-Build and Transportation System Management (TSM) alternatives. Build Alternatives are comprised of alignment and transit technology combinations, based on travel market segments serviced, along the FEC Railway right-of-way or nearby roadways, waterways or utility rights-of-way parallel to it and to the Atlantic Coastline. For the Build Alternatives, various rail, bus, and other technologies were considered both for existing transit and freight railway as well as for other corridors. Potential impacts associated with the alternatives on the natural and human environment were also assessed. Upon completion of Phase 1 of the study, decisions will be made regarding the alternatives on rail or roadway facilities; what projects should be studied individually in Phase 2 sections; and priority alignments for Phase 2 studies and beyond.

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APPENDICES

(PROVIDED AS A SEPARATE VOLUME)

Separate Volumes Available Upon Request or on the Project Website

Public Involvement Plan*

Public Hearing Summary Report*

Purpose and Need Technical Memorandum*

* Available online at http://www.sfeccstudy.com/documents.html

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Advance Notification

Notification that initiates the Federal Consistency Review Process as required by the President's Executive Order 12372 and the Governor's Executive Order 95-359. It is the means through which Federal, State, local agencies, and other interested parties are informed of a proposed action by FDOT. The AN process provides the initial opportunity for Federal, State, and local agencies as well as tribal representatives and local officials to become involved early in the project development phase and share information with FDOT concerning the proposed action and the geographic area potentially impacted.

Agency

Any agency, department, or other unit of Federal, State, regional, local (county, city) and/or tribal government at any level with an interest in the proposed project, per 23 USC Section 139. (a) (1).

Agency Preferred Alternative

The alternative which the agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors. The Agency Preferred Alternative is also often the Locally Preferred Alternative (LPA).

Automated Guideway Transit (AGT)

A fully automated form of semi-rapid transit using driverless vehicles operating on fixed guideways in an exclusive right-of-way. Metro-mover in Miami-Dade County is an example of AGT in South Florida.

Bus Rapid Transit (BRT)

A roadway-based form of semi-rapid transit using buses operating on exclusive or semi-exclusive rights-of-way. The South Dade Busway in Miami-Dade County is an example of BRT in South Florida.

Commuter Rail

See Regional Rail (RGR).

Cooperating Agency

Any Federal agency other than the Lead Agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment. A State or local agency of similar qualifications or, when the effects are on a reservation, an Indian tribe, may by agreement with the Lead Agency become a Cooperating Agency, per 40 CFR Section 1508.5 and 1502.6. There are specific responsibilities that are assigned to Cooperating Agencies under NEPA regulations (40 CFR 1501.6). Cooperating Agencies are considered a sub-set of the Participating Agencies: every Cooperating Agency is also a Participating Agency, but many Participating Agencies will not be Cooperating Agencies.

Coordination Plan

A document prepared by the Lead Agency that defines the process for meeting the agency coordination and public involvement requirements in the environmental review process, including both NEPA and related laws. This document is prepared early in the environmental review process. The Coordination Plan may be incorporated into a memorandum of understanding.

Cumulative Impacts

Impacts on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.

Diesel Multiple Unit (DMU)

A Multiple Unit (MU) using an on-board diesel or other alternately fueled internal combustion engine for propulsive power. DMUs are typically used for RGR and LRT operations. Tri-Rail operates FRA compliant Type 1 DMU in South Florida.

Direct Effects

Caused by the action and occur at the same time and place.

Efficient Transportation Decision Making (ETDM)

A Florida Department of Transportation procedure that links land use, transportation and environmental resource planning initiatives through early, interactive agency and public involvement.

Electric Multiple Unit (EMU)

A MU using an off-board source of electric power for propulsive power, distributed either through an energized third rail or overhead contact wire. Metrorail in Miami-Dade County operates third rail non-FRA compliant Type 2 EMU in South Florida.

Electric Bus Transit (EBT)

An electrically-propelled variation of local bus and BRT using an off-board source of electric power for propulsion power distributed through an overhead contact wire.

Environmental Impact Statement (EIS)

A document that must be filed when the Federal government takes a "major Federal action significantly affecting the quality of the human environment." An EIS is to serve as an action-forcing device to insure that the policies and goals defined in NEPA are infused into the ongoing programs and actions of the Federal Government. Agencies shall focus on significant environmental issues and alternatives and shall reduce paperwork and the accumulation of extraneous background data, per 40 CFR Section1502.1.

Environmental Review Process

The process for preparing for a project an Environmental Impact Statement (EIS), Environmental Assessment (EA), Categorical Exclusion (CE or CatEx), or other documents prepared under the National Environmental Policy Act of 1969. It includes the process for and completion of any environmental permit, approval, review, or study required for a project under any Federal law other than the National Environmental Policy Act of 1969, per 23 USC Section 139. (a) (3).

Environmental Screening Tool (EST)

A Florida Department of Transportation interactive database and mapping application available on the internet which allows the user to input and update information about transportation projects, perform standardized analyses, gather and report comments about potential project effects, and provide information to the public.

Environmental Technical Advisory Team (ETAT)

Each of FDOT's seven geographic Districts has an Environmental Technical Advisory Team (ETAT) consisting of representatives from agencies which have statutory responsibility for issuing permits or conducting consultation under NEPA, and representatives of participating Native American tribes. The District's ETAT is responsible for interacting with the FDOT and with MPOs throughout the ETDM Process.

Environmentally Preferred Alternative

The alternative that will promote the national environmental policy as expressed in NEPA Section 101. Generally, this is the alternative that causes the least damage to the biological and physical environment and which best protects, preserves, and enhances historic, cultural and natural resources.

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Federal Agency

All agencies of the Federal government of the United States. It does not mean the Congress, the Judiciary, or the president, including the performance of staff functions for the President in his Executive office, per 40 CFR Section 1508.12.

Federal Railroad Administration (FRA)

The unit of the United States Department of Transportation responsible for safety regulations pertaining to the national system of railroad transportation. Freight railroads, Amtrak, Tri-Rail and other RGR operations are governed by FRA regulation.

Fixed Guideway Transit

Any urban transport service using exclusive or controlled roadways or railways, entirely or in part. The term includes but is not limited to rapid rail, commuter rail, light rail, monorail, trolleybus, aerial tramway, inclined plane, cable car, automated guideway transit, ferry boat service, that portion of motor bus service operated on exclusive or controlled rights-of-way, and high occupancy vehicle (HOV) lanes.

Geographic Information System (GIS)

A computer technology that allows information about anything with a physical location such as an address or map coordinate to be brought together for analysis and/or display on a map. Often employs geocoding methodology wherein latitude-longitude coordinates are assigned to an address or location in order to correlate and display on a map or aerial image.

Guided Bus

A guided variation of local bus and BRT, using optical or infrastructural systems for steering.

High Speed Ferry (HSF)

A waterborne form of rapid transit utilizing navigable waters for transporting passengers at maximum speeds in excess of 25 knots.

High Speed Rail (HSR)

A form of Intercity Passenger Rail using trains capable of operating at maximum speeds of 150 miles per hour or greater.

Indirect Effects

Caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.

Intercity Bus

Buses serving long-distance travel markets with stops that are typically spaced at major city intervals in corridors of 150 or more miles in length.

Intercity Passenger Rail

Passenger trains serving long-distance travel markets operating at higher speeds than other rail services. Intercity train station stops are typically spaced at major city intervals in corridors of 150 or more miles in length.

Issue of Concern

An issue raised by a Participating Agency that "could substantially delay or prevent an agency from getting a permit or other approval that is needed for the project." The Participating Agencies are responsible for identifying issues of concern as early as practicable in the process. The scoping process is one way to identify issues of concern.

Joint Lead Agency

Any project sponsor that is a State or local governmental entity receiving funds under 23 USC Section 139 or Chapter 53 of title 49 for a project shall serve as the Joint Lead Agency with the US Department of Transportation for purposes of preparing any environmental document under NEPA and may prepare any such environmental document required in support of any action or approval by the secretary if the Federal Lead Agency furnishes guidance in such preparation and independently evaluates such document and the document is approved and adopted by the Secretary prior to the Secretary taking any subsequent action or making an approval based on such document, whether or not the Secretary's action or approval results in Federal funding, per 23 USC Section 139. (c) (3). The Florida Department of Transportation will be the Joint Lead Agency and Project Sponsor for the SFECCTA Study.

Lead Agency

The Agency or agencies preparing or having taken primary responsibility for preparing the Environmental Impact Statement. The US Department of Transportation will be the Federal Lead Agency for any highway or transit project and, if applicable, any State or local government entity can serve as a joint lead agency, per 40 CFR Section 1508.16 and 23 USC Section 139. (a) (4).

Light Rail Transit (LRT)

A railway-based form of semi-rapid transit using non-FRA compliant Type 3 EMUs or DMUs, operating in exclusive or semi-exclusive rights-of-way or in mixed traffic, typically serving corridors up to 25 miles in length.

Local Bus Transit (LBT)

A roadway-based form of street transit using buses typically operating in mixed traffic. The most ubiquitous form of urban passenger transport. Local and express bus services operated by Miami-Dade Transit, Broward County Transit and Palm Tran are examples of LBT in South Florida.

Locally Preferred Alternative (LPA)

The alternative selected by local decision-makers through a public process as the preferred solution to a corridor's identified transportation needs. It is part of the FTA's Alternatives Analysis Process, which requires an analysis of a range of alternatives as a component of the environmental review process and formal adoption into the local Metropolitan Planning Organization transportation plan. This is also the alternative which the agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors. The LPA is also often the Agency Preferred Alternative.

Low-Income

A person whose household income (or in the case of a community or group, whose median household income) is at or below the United States Department of Health and Human Services poverty guidelines.

Multiple Unit (MU)

A term describing the ability to operate one or more vehicles from a single control location. In practice applied to self-propelled passenger railcars that can be operated singularly or in trains. Distributed power and traction components give MU trainsets superior acceleration capabilities over Push-Pull trains. MUs may be fully-compliant with FRA regulations (Type 1), non-compliant (Type 2) or non-compliant and capable of operating in an urban, mixed traffic environment (Type 3).

National Environmental Policy Act (NEPA)

The National Environmental Policy Act of 1969, as amended (Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), Sept. 13, 1982). An Act to establish a national policy for the environment, to provide for the establishment of a Council on Environmental Quality (CEQ), and for other purposes. Cited as the "National Environmental Policy Act of 1969."

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No-Build Alternative

An alternative that incorporates only committed transportation improvements – typically those in the annual element of the Transportation Improvement Program or local capital programs. This alternative provides the baseline for establishing the environmental impacts of the Build Alternatives, the financial condition of the transit operator, and cost-effectiveness of the TSM Alternative.

Participating Agency

Lead Agencies are required to invite any agency that “may have an interest in the project” to be a Participating Agency. Upon being invited, a Federal Agency is automatically designated as a Participating Agency unless it declines the invitation. Non-Federal Agencies are designated as Participating Agencies only if they affirmatively accept the Lead Agencies’ invitation. There are specific responsibilities that are assigned to Participating Agencies under SAFETEA-LU regulations (23 USC Section 139 (d)). Per the FDOT ETDM process, all ETAT members are considered Participating Agencies.

Phasing (formerly referred to as Tiering)

Refers to the coverage of general matters in broader Environmental Impact Statements with subsequent narrower statements or environmental analyses incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared, per 40 CFR Section 1508.28.

Push-Pull Trainset

A traditional, FRA-compliant trainset used for RGR services consisting of a locomotive and a cab (control) car at either end with one or more coach cars in between. Tri-Rail operates Push-Pull trainsets (as well as Type 1 DMU’s) in South Florida.

Rail-with-Trail (RWT)

Trails located adjacent to active rail lines ranging from a few slow-moving short-haul freight trains weekly to high-frequency Amtrak trains traveling as fast as 225 km/h (140 mi/h).

Rapid Transit

A range of urban transport modes that operate in exclusive rights-of-way at commercial speeds higher than the speed of automobile traffic in the same corridor.

Rapid Rail Transit (RRT)

A railway-based form of rapid transit using non-FRA compliant Type 2 EMUs operating in exclusive rights-of-way, typically in serving corridors up to 30 miles in length. Metrorail in Miami-Dade County is an example of RRT in South Florida.

Regional Bus (RGB)

A longer distance, limited stop variation of street transit employing over-the-road motor coaches.

Regional Rail (RGR)

A railway-based form of rapid transit using push-pull trainsets or Type 1 or 2 MUs operating in exclusive rights-of-way, typically serving corridors 20 miles or greater in length. Most RGR operations share tracks with freight trains and Amtrak and are governed by FRA regulations. Tri-Rail is an example of RGR in South Florida (also referred to as "commuter rail”).

Rubber-Tired Rapid Transit (RTR)

A rubber-tired variation of RRT, representing the highest-form of guided BRT.

Scope

Consists of the range of actions, alternatives, and impacts to be considered in an environmental impact statement, per 40 CFR Section 1508.25.

Scoping

An early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. Scoping officially begins at the Notice of Intent publication and ends at the circulation of the draft EIS document. Any coordination activities that occur prior to the Notice of Intent are valid and are considered early scoping, per 40 CFR Section 1501.7.

Semi-Rapid Transit

A range of urban transport modes operating predominately in controlled rights-of-way at commercial speeds approximately equal to the speed of automobile traffic in the same corridor.

Sociocultural Effects (SCE)

The process of analyzing the potential sociocultural impacts or benefits of a transportation action on a community, assessing the degree of effect this action may have, and determining if mitigation and/or avoidance measures are warranted. Sociocultural includes social, economic, aesthetic and livability, relocation and displacement, civil rights and land use issues.

Southeast Regional Planning Model, Version 5 (SERPM5)

The Tri-County region travel demand forecasting model that was used to analyze the overall study area characteristics. The SERPM5 is based on information from the three respective county Metropolitan Planning Organization (MPO) with respect to socio-economic data such as land uses that produce or generate trips and those that attract trips (productions and attractions).

Strategic Intermodal System (SIS)

Florida's SIS is made up of statewide and regionally significant transportation facilities and services which contain all forms of transportation for moving both people and goods, including linkages that provide for smooth and efficient transfers between modes and major facilities.

Streetcar (SCR)

A railway-based form of street transit using non-FRA compliant Type 3 EMUs typically operating in mixed traffic.

Street Transit

A range of urban transport modes that operate predominately in a mixed traffic environment at commercial speeds less than the speed of automobile traffic in the same corridor.

Transit-Oriented Development (TOD)

A residential or commercial area designed to maximize usage of and access to public transport by incorporating high densities, a fined grained mix of land uses, and a pedestrian orientation, as well as other features to encourage transit ridership.

Transportation System Management (TSM) Alternative

FTA defines TSM as low-cost approaches or strategies to addressing identified transportation problems in a corridor. The TSM Alternative represents the "best that can be done" to improve mobility along a corridor without a major capital investment in new fixed guideway transit infrastructure. The TSM Alternative emphasizes upgrades in transit service through operational and small physical improvements plus selected highway system upgrades. The TSM Alternatives provide an appropriate baseline against which all of the major investment alternatives are evaluated. The most cost-effective TSM Alternative generally serves as the baseline against which the proposed fixed guideway alternative is compared during the New Starts rating and evaluation process.

ABBREVIATIONS AND ACRONYMS

AA/ESR	Alternatives Analysis/Environmental Screening Report
ADA	Americans with Disabilities Act
AGT	Automated Guideway Transit
AMTRAK	“American Track”, National Passenger Railroad Corporation
AN	Advance Notification
BCT	Broward County Transit
BEPD	Broward County Environmental Protection Department
BMP	Best Management Practices
BRT	Bus Rapid Transit
CBD	Central Business District
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH	Critical Habitat
CRA	Community Redevelopment Agency/Community Redevelopment Area
CSXT	CSX Transportation
DCA	Florida Department of Community Affairs
DDA	Downtown Development Authority
DERM	Miami-Dade County Department of Environmental Resources Management
DEMU	Diesel-Electric Multiple Unit
DMU	Diesel Multiple Unit
DPEIS	Draft Programmatic Environmental Impact Statement
EBT	Electric Bus Transit
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EMU	Electric Multiple Unit
ERP	Environmental Resource Permit
ESA	Endangered Species Act
ESBA	Endangered Species Biological Assessment
EST	Environmental Screening Tool
ETAT	Environmental Technical Advisory Team
ETDM	Efficient Transportation Decision Making
FAC	Florida Administrative Code

FDA	Florida Department of Agriculture & Consumer Services
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEC	Florida East Coast
FEMA	Federal Emergency Management Agency
FGDL	Florida Geographic Data Library
FLL	Ft. Lauderdale/Hollywood International Airport
FHWA	Federal Highway Administration
FMSF	Florida Master Site File
FNAI	Florida Natural Areas Inventory
FPEIS	Final Programmatic Environmental Impact Statement
FRA	Federal Railroad Administration
FS	Florida Statutes
FTA	Federal Transit Administration
FWC	Florida Fish and Wildlife Conservation Commission
GIS	Geographic Information System
HAPC	Habitat Areas of Particular Concern
HOV	High Occupancy Vehicle
HSF	High Speed Ferry
HSR	High Speed Rail
ICE	Indirect and Cumulative Effects
ICR	Intergovernmental Coordination and Review
ICWW	Intracoastal Waterway
IPR	Intercity Passenger Rail
LBT	Local Bus Transit
LOS	Level of Service
LRT	Light Rail Transit
LRTP	Long Range Transportation Plan
LPA	Locally Preferred Alternative
MDT	Miami-Dade Transit
MIA	Miami International Airport
MIC	Miami Intermodal Center
MPO	Metropolitan Planning Organization
MSA	Metropolitan Statistical Area

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MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MU	Multiple Unit
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service (NOAA Fisheries)
NOAA	National Oceanic and Atmospheric Administration
NOA	Notice of Availability
NOI	Notice of Intent
NPL	National Priority List (“Superfund”)
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
OFW	Outstanding Florida Waters
O&M	Operations and Maintenance
Palm Tran	Palm Beach County Public Transportation System
PBERM	Palm Beach County Department of Environmental Resources Management
PBIA	Palm Beach International Airport
PD&E	Project Development and Environment
PEIS	Programmatic Environmental Impact Statement
PEV	Port Everglades
PIP	Public Involvement Plan
PLEMO	Planning and Environmental Management Office (FDOT District Six)
PL&EM	Planning & Environmental Management, Office of (FDOT District Four)
POM	Port of Miami-Dade, Dante B. Fascell
PPB	Port of Palm Beach
ROD	Record of Decision
RGB	Regional Bus
RGR	Regional Rail
RRT	Rapid Rail Transit
RTR	Rubber-Tired Rapid Transit
RUS	Recreational Use Statute
RWT	Rail-with-Trail
SAFETEA-LU	Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users
SCE	Sociocultural Effects
SCR	Streetcar
SERPM5	Southeast Regional Planning Model, Version 5

SFECC	South Florida East Coast Corridor
SFECCTA	South Florida East Coast Corridor Transit Analysis
SFRC	South Florida Rail Corridor
SFRPC	South Florida Regional Planning Council
SFRTA	South Florida Regional Transportation Authority
SFWMD	South Florida Water Management District
SIS	Strategic Intermodal System
TEA-21	Transportation Equity Act for the 21st Century
TOD	Transit-Oriented Development
TSC	Technical Steering Committee
TSM	Transportation System Management
UDB	Urban Development Boundary
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
WER	Wetland Evaluation Report

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S.1 Introduction

This is a Final Conceptual Alternatives Analysis/Environmental Screening Report (AA/ESR), formerly known as the Tier 1 Final Programmatic Environmental Impact Statement (FPEIS), for the South Florida East Coast Corridor Transit Analysis (SFECCTA) in which the regional issues and transit alternatives were broadly considered and evaluated (please see footnote below). This document highlights the environmental review processes in accordance with Federal Transit Administration (FTA), Federal Highway Administration (FHWA), and Florida Department of Transportation (FDOT) guidelines. In addition, the Conceptual AA/ESR documents the information necessary to proceed into Phase 2, formerly referred to as Phase 2, of the study.

At the onset of the SFECCTA study two key decisions were made: 1.) to conduct a tiered environmental review process beginning with a Tiered Environmental Impact Statement (EIS), and; 2.) to perform the New Starts Alternatives Analysis (AA) concurrent with and merged into the environmental review process in both tiers. As a result, a first tier regional AA and Programmatic Environmental Impact Statement (PEIS) was completed.

The primary Phase 1 decision being made is to move forward into Phase 2 with 13 reasonable Build Alternatives consisting of five modal technologies (Bus Rapid Transit, Light Rail Transit, Regional Bus, Rail Rapid Transit, and Regional Rail), three sections (South, Middle and North) and primarily the FEC Railway alignment, along with the No-Build and TSM Alternatives. See Sections S.8 and 6.2.4.

In Phase 2 of the study, a single Locally Preferred Alternative (LPA) will be identified for the entire corridor and individual LPAs will be identified for each section. The individual Sectional LPAs will then be submitted to FTA for Federal assistance in the form of New Starts funding as authorized under the provisions of the new public transportation statute, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU).

The Conceptual AA/ESR documents the environmental review process that evaluates a range of transit alternatives as outlined in Chapter 2, including a planning level estimate of impacts as required under the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 et seq.). It is anticipated that separate NEPA documents will be prepared in Phase 2 for each independent project section, consistent with the conclusions established in the Conceptual AA/ESR. Phasing, formerly referred to as tiering, allows the public and other project stakeholders to participate in a more informed and conversational role while balancing a complex set of issues and possible actions, thereby making a more effective contribution to the NEPA process. Phasing will also establishes concurrence among stakeholders and participating agencies on the broader regional issues which can save time during the Phase 2 studies.

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Figure S.1: Study Area Location Map

The SFECCTA study area is centered along the Florida East Coast (FEC) Railway corridor, bounded on the south by the Central Business District (CBD) of the City of Miami in Miami-Dade County with potential connections west to the Miami Intermodal Center (MIC) located adjacent to the City of Hialeah, and on the north by the City of Tequesta in Palm Beach County (see Figure S.1 or the full size version in Chapter 1, Figure 1.2). Information on the study is also available on the project website at www.sfeccstudy.com. The portion of the FEC Railway corridor under study is approximately 85 miles long (100 miles with connections to the MIC, seaports, etc.). The overall study area spans approximately one mile on either side of the FEC Railway corridor (2-mile width overall) and covers approximately 200 square miles. A brief history of the FEC Railway in this corridor is provided in Chapter 1 describing the extension of Henry Flagler's passenger rail services south from St. Augustine to West Palm Beach by 1894, then Miami by 1896, and ultimately all the way south to Key West via the Overseas Railway, all over a short span of only 29 years.

The study area is located in the highly urbanized eastern portions of Miami-Dade, Broward, and Palm Beach Counties, which constitutes Southeast Florida and is known as the Tri-County area. The FEC Railway corridor currently traverses 28 cities along the southeast coast, mostly along their CBDs, including the current southern terminus in Downtown Miami, north through Ft. Lauderdale and up to West Palm Beach, Jupiter and Tequesta in Palm Beach County. Within each of the CBDs there are major activity and employment centers, recreational facilities, educational centers,

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hospital/medical complexes, tourist destinations, and major retail/mixed-use developments. The entire study area boundary includes a total of 47 cities which are all listed in **Table 1.1**. Three seaports connect to the FEC Railway and there is the potential to connect three international airports: Miami International Airport (MIA), Ft. Lauderdale-Hollywood International Airport (FLL), and Palm Beach International Airport (PBIA).

S.2 Purpose and Need/Proposed Action

The region's eastern cities are witnessing a surge in urban redevelopment as people and businesses continue to migrate to coastal Southeast Florida. The existing and proposed highway capacity network planned for the study area alone will not be able to accommodate the travel demand market evident and projected in this north-south corridor. Consistent and severe traffic congestion along the study corridor impedes the flow of buses and automobiles and contributes to a deterioration of air quality. Due to highway capacity constraints, travel time in the area will increase 35% with average freeway speeds of 15 to 20 MPH or less by the year 2030. Tri-Rail, a regional commuter rail service, is presently available west of the FEC Railway corridor. However, land uses surrounding Tri-Rail stations are more oriented to commercial and industrial activities, which are less conducive to transit ridership.

The proposed action would provide additional regional, premium, "fixed guideway" passenger transit service improvements to accommodate mobility for a diversity of markets and reduce travel delays between CBDs, major economic centers, transportation hubs and residential communities along the SFECC, generally defined by the alignment of the FEC Railway. The proposed fixed guideway transit facility would provide quick and convenient transit service utilizing an exclusive right-of-way, free from automobile and truck traffic interference. Alternatives developed for the SFECCTA will be complementary and integrated with Tri-Rail, so as not to duplicate or render redundant the public investments to date in Tri-Rail improvements. Implementation of service along the SFECCTA corridor must act as logical extensions of Tri-Rail service beyond its current limits – northward to Jupiter, southward to Downtown Miami and as effective links throughout the corridor connecting Tri-Rail with other key service markets.

The SFECCTA Conceptual AA/ESR identifies alternate modes of transportation focused on increasing capacity for passenger mobility and addresses the anticipated increase in travel demand along this highly urbanized, traffic congested eastern portion of Miami-Dade, Broward, and Palm Beach Counties, Florida. The highlights of the purpose and need for this proposed action are as follows:

- The most recent (2007) Texas Transportation Institute Mobility report ranked Miami as the 5th most congested city in terms of travel delay and reported that the average south Florida driver spends 50 hours and wastes 35 gallons of gas a year, at a cost of $2.7 billion, due to congestion delays.
- The highest levels of highway congestion in the Tri-County area are concentrated in the areas east of I-95 along the study corridor. I-95 and US-1 are the only two continuous north-south roadways in the

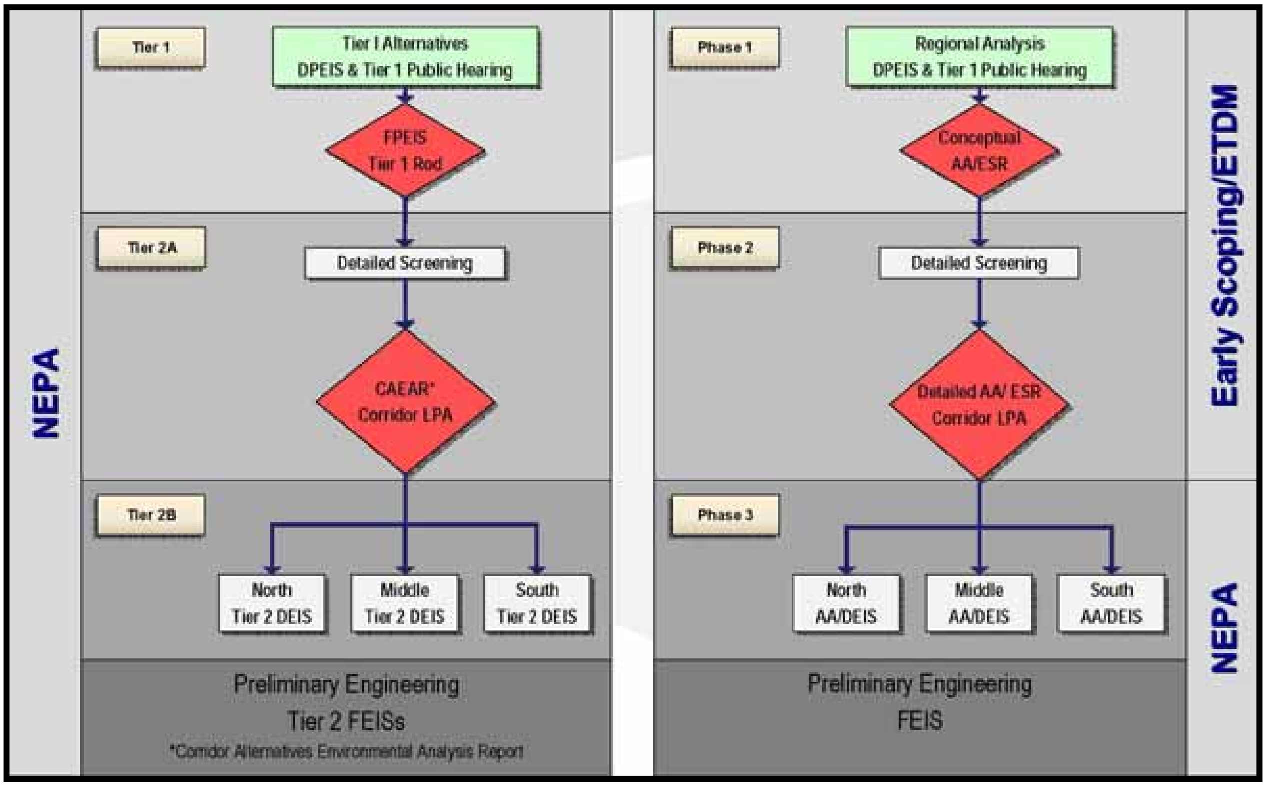
corridor and both experience severe congestion throughout the day. I-95 is currently carrying over 300,000 vehicles per day and travel delays are extensive due to congestion. A reliable transit alternative is needed in the area to relieve congestion.

- Existing roadway level of service (LOS) is poor along the major north-south highways particularly during the peak hours where 70% of the roadways in the study area are operating at LOS D, E or F and 31% are at LOS F. Construction of freeway capacity to address this demand is unlikely due to high infrastructure cost, limited right-of-way availability, community impacts, environmental concerns and other local factors. The FEC Railway corridor is the last remaining transportation corridor in the area with underutilized capacity and more likely to fulfill the transportation need in the area with less impacts to the community and environment.
- The areas of highest concentrations of transit and highway trip production and attractions are along (and frequently within walking distance of) the FEC Railway corridor. For example, an Origin/Destination (O/D) bus survey of 19 north-south routes indicated that 20% of the riders on 10 of the routes had an origin and destination within ½ mile of the FEC Railway and over 50% of the riders on 15 of the routes had an origin or destination within ½ miles of the FEC Railway. Over 33% of surveyed auto users along I-95 had an origin or destination within ½ mile of the FEC Railway.
- The highest employment and population densities in the region are currently located in the study corridor and projections are they will remain so at least until the year 2030. Almost 20% of the Tri-County area population is located in the study corridor and one in every four persons (27%) in the region is employed within the study corridor. By 2030 the population of the Tri-County study area is projected to increase by 51% and employment by 37%. Prior to the recent economic downturn and increases in fuel costs, regional highway capacity was projected to increase by only 14 percent during this same time period. Transit service in this study area is needed to serve the current population as well as the anticipated population and employment growth in the region.
- The increase in population and employment in the study area by 2030 is partly due to extensive redevelopment along the eastern cities along the corridor. The redevelopment is taking advantage of existing housing and transportation infrastructure and will help cities attain their affordable housing goals. Transit service to support and continue to encourage this desired redevelopment is needed.
- The study area, notably Miami-Dade and Broward County, has a large concentration of transit-dependent populations. The existing transportation system is limited in offering this group convenient access to employment and other activity centers due to a discontinuous transit network. Transit improvements are needed where transit-dependent populations are concentrated to facilitate access to jobs, medical, educational and other social/cultural related facilities.

S.3 Methodology of the CONCEPTUAL AA/ESR and Environmental Streamlining

It should be noted that since we are no longer following a tiered NEPA study process, all steps in the study process will be referred to as “Phases” not “Tiers”. Although some references to “tiering” have been left in place within the Conceptual AA/ESR to maintain continuity with the DPEIS, most have been changed to reflect the current study approach. Please refer to the footnote throughout the Conceptual AA/ESR which instructs to disregard all references to tiering. Tiering for an environmental study is authorized under NEPA regulations issued by the Council on Environmental Quality (CEQ), 40 Code of Federal Regulations (CFR) Part 1500 and under regulations issued jointly by FHWA and FTA, 23 CFR Part 771. In 40 CFR 1508.28 describes tiering as “the coverage of general matters in broader EISs with subsequent narrower statements or environmental analyses incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared.” In 40 CFR 1502.20 agencies are encouraged “to tier their EISs to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review.” Completing a Tiered/Phased EIS for particularly large projects can significantly reduce the amount of time needed to complete the NEPA process. As with tiering, a phased approach within this study involves preparing and circulating the Conceptual AA/ESR and the Detailed AA/ESR (see **Figure S.2**). The purpose of the Conceptual AA/ESR is to provide the basis for an informed decision on choosing a transit corridor within the Tri-County area, not to determine the exact alignment in that corridor or modal technology for the transit project. As such, this document does not contain the level of engineering or environmental detail that would be needed to make a specific alignment and modal technology decision. In addition, this Conceptual AA/ESR includes initial public comment and agency input on the location and design of the proposed alternatives that may be evaluated in Phase 2 and Phase 3 project-level NEPA analyses (see Section 7 and **Appendix J**).

Figure S.2: Environmental Tiering vs. Phasing Comparison Flowchart



S.4 Alternatives Considered

For the purposes of the Phase 1 study, various transit modal technologies, general route alignments, and service segments were considered for evaluation. The general alignment refers to a route that is exclusively or predominantly placed along a described transportation facility. A service segment refers to a logical section of transit service selected to address identified travel patterns and types centered around the three CBDs in the corridor. The Phase 1 alternatives were developed, analyzed and evaluated in a two-part process.

S.4.1 Initial Modal Technology Assessment (Part 1)

The first part of the Phase 1 AA reviewed a broad range of urban transport modal technologies to identify which modes were most applicable to providing premium transit service to the study area consistent with the project goals and objectives. Preliminary analyses were conducted eliminating those modes that were clearly inferior in terms of addressing the corridor transportation needs and/or had significant adverse environmental impacts. Nine of the 20 urban transport modes considered were determined to be viable candidate modes. The nine viable modes were grouped into five general categories: Bus Rapid Transit (BRT), Light Rail Transit (LRT), Regional Bus (RGB), Rapid Rail Transit (RRT) and Regional Rail (RGR). Regional rail can be subdivided into two types: Type 1 - Federal Railroad Administration (FRA)

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compliant and Type 2 - FRA non-compliant. Two sub-modes of BRT (Guided Rapid Bus) and RGB were considered as having limited viability as options and will be addressed further in Phase 2. The nine transport technologies eliminated from further consideration did not provide the necessary LOS for a heavily trafficked urban corridor (see **Table S.1**).

S.4.2 Alternative Alignment and Modal Technology Assessment per Service Segment (Part 2)

Definition of Alignments, Modal Technologies, and Service Segment: The second part of the Phase 1 AA reviewed three transit elements in combination:

- General Alignments – consisting of three contiguous north-south transportation corridors (the general alignments of the FEC Railway, US-1, and I-95 north of Mangonia Park only).
- Modal Technologies – consisting of the five viable modal categories from the initial phase.

Table S.1: Urban Transport Modes and Sub-modes Considered

Street Transit Modes (modes that move at less than the speed of corridor traffic)		
Regular Bus (BUS)		Notes:
Diesel/Electric Hybrid Coach	X	Potential feeder or shuttle in support of line-haul service.
Electric Coach (Trolleybus)	X	Expense not warranted by air-quality needs.
Regional Bus (RGB)	O	Applicable in North Section (approx. Service Segment 1) as Tri-Rail service extension.
Streetcar (SCR)	X	Potential as feeder or shuttle in support of line-haul service.
Semi-rapid Transit Modes (modes that move at the approximate speed of corridor traffic)		
Bus Rapid Transit (BRT)		Similar to Miami-Dade Transit South Dade Busway.
Driver Directed		
Diesel/Electric Hybrid Coach	●	
Electric Coach (Trolleybus)	X	Expense not warranted by air-quality needs.
Guideway Directed		
Diesel/Electric Hybrid Coach	O	Expense not warranted by physical constraints.
Electric Coach (Trolleybus)	X	Expense not warranted by constraints or air-quality needs.
Light Rail Transit (LRT)		
Diesel Multiple Unit (DMU-3)	●	
Electric Multiple Unit (EMU-3)	●	
Automated Guideway Transit (AGT)	X	Expense not warranted by demand.
Monorail (MRL)	X	Capacity insufficient for demand.
Rapid Transit Modes (modes that move at greater than the speed of corridor traffic)		
Rail Rapid Transit (RRT)		Similar to Miami-Dade Transit Metrorail
Electric Multiple Unit (EMU-2)	●	Limited applicability in Middle and North Sections (approx. Service Segments 3 and 1, respectively) due to expense of grade-separation; potential hybrid mode.
Rubber-Tired Rapid Transit (RTR)		
Electric Multiple Unit (EMU-2)	X	Expense not warranted.
Regional Rail (RGR)		
FRA-Compliant RGR Options		
Diesel/Electric Locomotive with Push-Pull Coaches	●	Similar to SFRTA Tri-Rail.
Diesel Multiple Unit (DMU-1)	●	
Electric Multiple Unit (EMU-1)	●	
Non-Compliant RGR Options		
Diesel Multiple Unit (DMU-2)	●	
Electric Multiple Unit (EMU-2)	●	
High Speed Ferry (HSF)	X	Operating speed restricted by environmental concerns.

Phase 1 Recommendations:
X - Not Viable. Eliminate from further consideration.
O - Limited Viability (see notes). Consider further in Phase 2.
● - Viable Corridor Mode. Consider further in Phase 2.

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- Service Segments – consisting of six overlapping segments of transit service produced by subdividing each of the three general alignments (see **Figure 2.6**). Three special analysis segments were also created to analyze the potential of alternate southern termini for the existing Tri-Rail service and a new premium transit service in the corridor.

The combination of the five viable categories of modal technologies, three general alignments, and six service segments resulted in 36 Build Alternatives (see **Table S.2** and Section 2.2.4) along with definition of the No-Build and TSM Alternatives. The focus of the second part of Phase 1 utilized these 36 Build Alternatives to perform the technical analyses, environmental review, agency and public coordination with project documentation in reports and technical memoranda.

Initial North End Connection Assessment: Service Segment 1, which is in effect a northward extension of Tri-Rail service, required a new connection in Northern Palm Beach County between the South Florida Rail Corridor (SFRC) that Tri-Rail presently operates on and the FEC Railway. A total of 13 north-end connections were considered as options (see Section 2.2.4 including **Figure 2.4**). These north-end connection options will all be considered in greater detail in Phase 2.

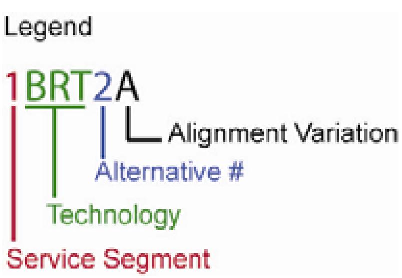
Evaluation of Alignments and Modal Technologies per Service Segment: The three alignments, six service segments, and five modal categories that were combined to produce the 36 Build Alternatives were evaluated and compared to the effects of a Transportation System Management (TSM) Alternative and a No-Build Alternative.

Preliminary cost estimates were developed at a planning level and normalized on a capital cost per mile with right-of-way and without right-of-way. Without right-of-way, the costs ranged from $700 thousand per mile for RGB on US-1 and I-95 in Service Segment 1 to $239 million per mile for RGR along I-95. In the remainder of the corridor, costs for BRT/LRT on the FEC alignment ranged from $19 million per mile to $58 million per mile, and from $62 million per mile to $140 million per mile along the US-1 alignment. RGR costs on the FEC alignment ranged from $19 million to $67 million per mile. Due to the exclusive right-of-way needs for the US-1 and I-95 alignment alternatives, the range of costs inclusive of right-of-way was significantly higher due to the built up nature of these corridors. Operations and Maintenance (O&M) costs were estimated in a general nature since a determination of a preferred technology was not recommended in Phase 1.

Those alternatives that did not meet the corridor transportation needs, had higher costs compared to anticipated benefits, and/or had significant environmental impacts (relative to others) were eliminated from further study. No clear determination was made considering the superiority of any of the five modal categories as they relate to the unmet need for a north-south premium transit service in the SFECC study area. Therefore, all five modal technology categories are proposed to be carried forward into Phase 2 for further analysis. The FEC general alignment was determined to be superior for almost all servic

Table S.2: SFECCTA Preliminary Alternatives

Service Segment	Alignment	Regional Bus	Bus Rapid Transit	Light Rail Transit	Rail Rapid Transit	Regional Rail: Tri-Rail	Regional Rail: Other RGR
1 West Palm Beach North	FEC		1BRT2A	1LRT2A		1RGR1/1A	
	US1	1RGB2	1BRT1	1LRT1			
	I-95	1RGB1				1RGR2	
2 North Palm Beach County	FEC		2BRT2	2LRT2			2RGR1
	US1		2BRT1	2LRT1			
3 West Palm Beach South	FEC		3BRT2	3LRT2			3RGR1
	US1		3BRT1	3LRT1			
4 East Broward County	FEC		4BRT2	4LRT2			4RGR1
	US1		4BRT1	4LRT1			
5 Ft Lauderdale – Miami	FEC		5BRT2	5LRT2	5RRT1		5RGR1
	US1		5BRT1	5LRT1			
6 Miami Northeast	FEC		6BRT2	6LRT2	6RRT1		6RGR1
	US1		6BRT1	6LRT1			
	Technology:	RGB	BRT	LRT	RRT	RGR	



segments and therefore will be carried forward into Phase 2 for further analysis. One or more LPAs and/or Environmentally Preferred Alternatives will be selected in Phase 2. It is anticipated that "hybrid" alternatives that combine the best features of the viable alternative alignments and/or modes will be synthesized and studied in greater detail as part of the Phase 2 analyses.

The six service segments will be subdivided and reconsolidated into three sub-corridor sections and one corridor-length section for further analysis in Phase 2 based upon the forecasted travel patterns and markets (see Section 6.2.2 and **Figure 6.1**), as follows:

- South Corridor Section: Extending north from approximately Miami-Dade Government Center to Pompano Beach Tri-Rail Station via the FEC alignment (encompassing Service Segments 4, 5, and 6).
- Middle Corridor Section: From the Pompano Beach Station to the West Palm Beach Tri-Rail Station via the FEC alignment (Service Segment 3 and southern portion of Service Segment 2).

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- North Corridor Section: Extending north from the West Palm Beach Station to Jupiter (Service Segment 1 and northern portion of Service Segment 2).
- South East Florida Corridor Section: Extending the entire length of the corridor and overlaying the South, Middle and North Corridor Sections; this "section" addresses inter-section travel issues and coordination, as well as overarching corridor issues common to all sections (e.g., Amtrak and freight operations, design standards, express and premium longer-distance travel markets).

S.4.3 Station and Maintenance Facility Area Assessments

Concurrent with the evaluation of modal technologies, general alignments, and service segments outlined above, a preliminary assessment of both station and maintenance facility areas were conducted as described below:

Transit Station Areas: Approximately 59 potential station locations were also identified and analyzed for potential ridership, land use suitability, and market potential for transit-oriented development (TOD). This assessment was for each of the 36 Build Alternatives and were generally located at strategic intersections of major east-west connections along US-1, I-95, and the FEC Railway. No final decisions have been made in Phase 1 regarding transit station areas (see Section 2.3.4). The public recommended 13 additional station location areas that will be considered and analyzed, along with the original 59 areas, in detail as part of Phase 2.

Transit Maintenance Facility Areas: All Build Alternatives will also require O&M facilities, which are heavily dependent upon the choices eventually made concerning alignment and modal technology to address a specific service need. At the Phase 1 stage of project definition, there are only general elements regarding O&M facilities that can be considered independent and in advance of making specific modal decisions. The specific decisions regarding selection of transit modal technologies will be made in Phase 2. General O&M areas were identified based on size requirements and screened for environmental fatal flaws. These areas were also generally represented on maps to the public. No final decisions have been made in Phase 1 regarding O&M facilities (see Section 2.4.2). Therefore, all potential O&M facility sites (not just those screened in Phase 1 for environmental fatal flaws) will be developed and analyzed in further detail in Phase 2.

S.5 Environmental Effects

The SFECCTA study area is large with over 200 square miles across three counties and over 100 linear miles of mainline and connecting transit corridors. The potential impacts to the many resources found within the study area were analyzed to the extent possible in Phase 1 for each of the alternatives. Environmental data gathered was based on a 2-mile wide buffer around each of the conceptual route alignments to determine any fatal flaws associated with the proposed alignments. Phase 1 was therefore a preliminary screening of potential effects that met general approval with resource agencies and public stakeholders, although some agencies requested additional information not feasible to produce in the preliminary Phase 1 screening, including the United States Environmental Protection Agency (USEPA).

Preliminary field verification of reported resources was conducted within this 2-mile buffer where possible, with additional verification using aerial photography overlaid by Geographic Information System (GIS) geo-spatial data “shapefiles”. Detailed quantifications of actual impacts, with detailed field verification (i.e., “ground truthing”) and applicable agency coordination, will not be feasible until sectional Phase 2 NEPA studies are conducted.

Positive and/or negative environmental effects will be generally limited to those areas adjacent to the proposed footprint of the transit corridor. Individual and/or cumulative effects on environmental resources, and potential mitigation measures, were evaluated and summarized in Chapter 3. **Tables 5.2 – 5.4** on the oversize pull out chart (sleeve in rear of Conceptual AA/ESR document) referenced in Chapter 5 summarize the potential impacts for the various alignments developed for the Phase 1 screening process. The screening process evaluated and ranked the alternatives relative to each other with respect to potential impacts and identified major environmental flaws (**Table 5.1**). Over 80 environmental factors were evaluated for each alternative.

Environmental impacts will also vary according to the modal technology chosen within the preferred alternative. The alternatives evaluated would generally operate along existing transportation facility alignments such as US-1, I-95 and the FEC Railway. These existing alignment alternatives evaluated also include adjacent portions of Dixie Highway in Miami-Dade and Broward Counties, SR A1A and Alternate SR A1A in Broward and Palm Beach Counties, US-1 and I-95. Therefore, environmental effects associated with the implementation of a premium transit service alternative will depend to a large extent upon the nature of the existing human and natural resources adjacent or in close proximity to these existing alignments.

A preliminary GIS assessment was conducted to determine the number of potential direct impacts to parcels along the US-1 and I-95 alignments. To quantify a range of potential impacts to parcels, the eastern side of I-95 (logical to avoid impacts to/ridership scavenging from Tri-Rail on west) and US-1 (less residential sites) were selected. A more detailed assessment of the number of potential direct impacts to parcels along the FEC Railway was conducted and is included in **Appendix J** (**Table J.3; Figures J.3 – J.6**). The results of this preliminary screening indicated the potential for displacements would be much greater along the urbanized corridors of US-1 and I-95 than along the FEC Railway. This preliminary analysis did not include potential station area impacts for any of the alignments (station areas are defined by 1/2 mile circles, 1/4 mile radius) centered on preliminary station locations (see **Figures 2.19 – 2.21**).

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S.5.1 Environmental Findings and Impacts

Community: Low-income and minority communities were identified within the SFECCTA study area in accordance Executive Order (EO) 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) utilizing GIS databases, along with many other community features (see Section 3.1).

Land Use, Economic Development: The proposed transit improvements would be expected to motivate transit oriented development particularly in the vicinity of proposed transit stations. As a result, it is anticipated that current land uses would change to support such development (see Section 3.2).

Displacements and Relocations: Displacements and relocations of commercial and residential properties from either direct or indirect impacts as a result of the proposed transit improvements are likely along potential alignments, at station areas, O&M sites and east-west connectors. The potential effects of displacement and relocations from either direct or indirect impacts are described in Section 3.3 for each proposed project alignment and will be further assessed in Phase 2 regional and sectional studies.

Cultural Resources: Consideration was given in Phase 1 to Section 4(f) and/or Section 106 resources during development and evaluation of the project alternatives. Specific use of any park, wildlife refuge, or recreational land, and/or impacts to sites listed or eligible for listing in The National Register of Historic Places (NRHP) will be determined in Phase 2. Full coordination with the State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation (ACHP), local historic representatives/boards and FTA will continue and will be documented during Phase 2 (see Sections 3.4 and 3.6).

Visual and Aesthetics: An improved transit system along the project corridor is anticipated to have long-term effects on the visual and aesthetic qualities of the area. Short-term or temporary impacts are also anticipated to occur during construction activities. However, long-term impacts may be mitigated through the design of context sensitive solutions/designs (see Section 3.5).

Air Quality: Transit systems can improve local and regional air quality; however point sources of increased emissions may also occur at transit-highway crossings and transit stations (see Section 3.7).

Noise and Vibration: The proposed alternatives all have the potential to result in noise and vibration effects along the project corridor. Phase 1 included preliminary screening of sensitive noise and vibration areas. Detailed noise and vibration assessments will be incorporated into the regional Phase 2 environ-mental screening/assessment and in the independent Phase 2 sectional NEPA studies. These will include incrementally more complex analyses in the multi-step Phase 2 study, leading up to computer modeling, to assess localized and net noise and vibration effects in sensitive parts of the study area (see Section 3.8).

Biological Resources: In accordance with EO 11990, consideration was given to avoiding and minimizing wetland impacts in developing and evaluating the project alternatives. However, mitigation for any unavoidable impacts will be developed in coordination with the appropriate regulatory agencies in accordance with 23 CFR Ch. 1 § 777. Consideration was given to threatened and/or endangered species and their habitat in developing and evaluating project alternatives. Coordination with the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS), including development of mitigation plans for wetlands or listed species (if necessary) will occur in Phase 2 (see Section 3.9).

Natural Resources: In accordance with EO11988, consideration was given to floodplain encroachment in developing and evaluating the project alternatives and, should the proposed project result in significant impacts to floodplains, a mitigation plan will be developed in Phase 2. In accordance with the Coastal Zone Management Act of 1972, 15 CFR 930, an interagency consistency review for the proposed project was done in Phase 1 and will be reviewed again in Phase 2. Any potential impacts to coastal waters and the adjacent shorelines will be identified during Phase 2 studies. The project is located in an urbanized area (not likely to involve farmlands), however additional analysis and continued coordination with the Natural Resources Conservation Service will occur in Phase 2, as necessary (see Section 3.10).

Contamination: Phase 1 included a preliminary GIS-based screening of hazardous material generators and/or potentially contaminated properties. Phase 2 studies are also anticipated to include Contamination Screening Evaluation Reports or Technical Memoranda building upon this Phase 1 screening. Any hazardous wastes encountered through ground-disturbing activities during construction for any alter-natives would be handled and disposed of in accordance with regulatory requirements (see Section 3.11).

Other: Modification of existing or construction of new bridges over canals and waterways could involve wetlands, Essential Fish Habitat (EFH), manatee Critical Habitat (CH), navigation, aquatic preserves, and water quality. Disruption to local traffic, including pedestrian and bicycle traffic, may occur with an increase in temporary roadway closures at transitway-highway grade crossings (see Section 3.12). These issues will also be more fully addressed in Phase 2 regional and sectional study analyses.

S.5.2 Long-term and Short-term Impacts, Indirect and Cumulative Effects (ICE), and Irreversible and Irretrievable Commitments of Resources

Short-term effects from the project include increased concentrations of localized emissions as a result of idling vehicles at park-and-ride facilities and in the vicinity of transitway-highway grade crossings along the corridor. However, long-term effects on regional air quality, as well as the overall quality of life for communities within the SFECCTA study area, are generally expected to be positive as a result of an improved transit service. Other short-term effects to the area (e.g., noise, air quality in form of fugitive dust, and water quality) are expected to occur during construction activities. The Indirect and Cumulative

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Effects (ICE) were evaluated based on the potential environmental impacts associated with construction of the three primary transit alignments (FEC, US-1, and I-95) proposed in this study. Indirect effects within the study area were generally assumed to be related to transit oriented development that may be encouraged by an improved transit service in particular around proposed station areas. The contribution to the cumulative social and environmental impacts from construction along each alignment was weighed against past and planned transportation projects as listed in **Tables 3.20 – 3.21**. Overall, any of the proposed alignments have the potential for negative and positive cumulative impacts to the social and natural resources within the study area (see Section 3.14).

Irreversible and irretrievable commitment of resources may not be feasibly quantified at this phase of the study. However, it is anticipated that Phase 2 assessments of irreversible and irretrievable commitment of resources may include: the acquisition of right-of-way (converting existing land uses to rail and/or roadway transit uses); permanent loss of wetlands due to filling; and the borrowing of fill material from new areas (see Section 3.15). Phase 2 studies will necessarily involve consideration of these commitments of resources as well as all measures to avoid, minimize, and develop mitigation for all unavoidable permanent loss of wetlands or other adverse impacts as required by law (e.g., NEPA requires documented “statements of finding” for EO 11988 Wetlands and EO 11988 Floodplains).

S.6 Transportation System Impacts

The transportation system impacts for the different Build Alternatives were evaluated in the alternatives evaluation process and identified in Chapter 5, Evaluation of Alternatives, of the DPEIS. A US-1 Alternative would negatively impact traffic if the transit vehicle operates in mixed traffic, and would negatively impact adjacent land uses if a dedicated lane or right-of-way would be required. The main surface transportation impact of the alternatives along the FEC Railway corridor would be to vehicles and pedestrians at the transitway-highway grade crossings since there are over 200 existing FEC Railway grade crossings within the study area. Any transit alternative along the FEC Railway would also need to be coordinated with plans from the three counties for a potential greenway adjacent to the corridor. No greenway trails are proposed along the US-1 alignment.

The Southeast Regional Planning Model, Version 5 (SERPM5) was used to determine the impact of the alternatives on the existing transportation system in the area. The leading alternatives in terms of system ridership were the alternatives operating RGR on the FEC with RRT on the FEC yielding the second largest amount of new trips. Both BRT and LRT on the FEC alignment yielded greater system ridership than comparable alternatives on the US-1 alignments. Overall, the SERPM5 indicated that in 2030, additional transit along the corridor would have a positive effect on the transit systems currently operating in the area. Ridership information from the SERPM5 model indicated that in 2030 there would be an increase of 121,000 new transit trips for RGR along the FEC Railway and increased ridership on existing

Metrorail and local bus. However, Tri-Rail's share of ridership, while greater than today's ridership levels, was diminished in the build scenarios relative to a No-Build and TSM Alternative.

To determine the impact on the freight operation along both the FEC and CSX Transportation (CSXT) Railways, a freight integration analysis was conducted to determine the viability of passenger and freight service integration between the FEC Railway corridor and the South Florida Rail Corridor (SFRC), where Tri-Rail and CSXT currently operate. Three scenarios were considered: 1.) status quo; 2.) move most freight operations to the SFRC spine; and, 3.) a new, western freight bypass. The analysis concluded the following:

- The FEC Railway corridor infrastructure would not be able to accommodate passenger service without major improvements,
- It is not possible to divert all freight trains off the FEC Railway alignment since customers are located along the alignment,
- Due to available capacity on the SFRC, it is technically and operationally feasible to divert some overhead FEC freight movements to the SFRC, and
- There are institutional and competitive issues between FEC Industries and CSXT that would have to be resolved for any integration to occur.

S.7 Evaluation of Alternatives/Reasons for Selection of Alternatives

The Phase 1 screening process included an evaluation of the various service markets and available technologies. Service markets were identified based on population and employment densities as well as travel patterns. Based on this data, several modal technologies/alignments were eliminated from consideration since they did not meet the needs established for each of the service markets. Potential general alignments were narrowed to I-95, US-1, and the FEC in the northern section of the corridor, and to US-1 and the FEC along the remainder of the corridor. The I-95 corridor south of West Palm Beach is effectively included as part of the TSM Alternative due to its proximity to Tri-Rail. Moreover, as indicated earlier, productions and attractions along the I-95 corridor south of West Palm Beach were significantly less than along other general alignments.

Screening of the various Phase 1 alternatives was based on cost, ridership estimates, transportation impacts and an environmental impacts assessment. A comprehensive evaluation matrix (**Table 5.1**) was developed for ranking and comparing each of the alternatives. The ranking for environmental impact related factors was supported by information provided in the NEPA evaluation matrix in Chapter 5. The evaluation matrix lead to the elimination of all of the US-1 Alternatives in each service market and the I-95 RGR Alternative in Service Segment 1 from further consideration and analysis in Phase 2. The

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alternatives eliminated provided very little ridership at a more significant cost than other alternatives and had greater environmental impacts including the likely potential to displace residents and businesses along the I-95 and US-1 alignments. The remaining alignments recommended for further study in Phase 2 were narrowed to the FEC Railway right-of-way along the entire corridor and RGB service on I-95 in Service Segment 1 only (see **Table S.3**).

S.8 Recommended Alternatives

No LPA will be recommended in the Conceptual AA/ESR as would result from a non-tiered EIS study. What is recommended is to conduct sectional Phase 2 NEPA studies for 13 Build Alternatives (consisting of combinations of five modal technologies, three sections, and primarily the FEC alignment) to include BRT, LRT, RGR, RRT, and RGB (see **Table S.3**). In addition, TSM improvements will also be analyzed as viable Phase 2

Table S.3: Build Alternatives Recommended For Phase 2 Analyses

Section	Alignment	Regional Bus	Bus Rapid Transit	Light Rail Transit	Rail Rapid Transit	Regional Rail: Tri-Rail	Regional Rail: E/DMU
Miami – Pompano Beach	FEC		■	■	■		■
West Palm Beach – Jupiter	FEC		■	■		■	■
	I-95	■					
West Palm Beach – Pompano Beach	FEC		■	■			■
Corridor Solutions	FEC						■
		RGB	BRT	LRT	RRT	RGR	

alternative options, along with the No-Build (No-Action) Alternative for each section and the corridor as a whole. Also recommended for further study in Phase 2 are approximately 72 proposed transit station locations and to identify O&M Facility locations. Refer to Chapter 6 Phase 1 Decisions for the complete discussion of Phase 1 recommendations.

S.9 Mitigation Measures

Because an LPA will not be identified at the end of the Phase 1 analysis, specific mitigation measures may not be developed or discussed in any substantial detail at this time. Many of the mitigation

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measures will require close agency coordination and public involvement in order to identify concerns and issues early in the Phase 2 sectional NEPA studies (see Section 3.13 and **Table 3.13**).

Mitigation measures are addressed in Section 3.13.2 after discussion exploring measures to first avoid or minimize adverse effects in Section 3.13.1. These avoidance/minimization measures address effects related to Transit Alignment/Route, as well as Station and Maintenance Facility Sites. General mitigation measures, as opposed to specific measures that cannot be developed until Phase 2, address the following issues identified in Phase 1 as potential issues of concern:

- Noise and vibration.
- Air quality and energy.
- Community cohesion and environmental justice, other land use/socio-economic considerations.
- Transitway-highway crossing safety.
- Relocations of people and business, including both direct and indirect displacement.
- Local traffic patterns.
- Visual/aesthetic.
- Contamination and hazardous materials.
- Water quality/stormwater treatment and drainage.
- Wetlands, other biological and natural resources.
- Wildlife and Endangered Species, habitat.
- Aquatic Preserves and Outstanding Florida Waters.
- Floodplains and Regulatory Floodways, Wild and Scenic Rivers.
- Historic, Archaeological and Cultural Resources, including potential linear historic resources.
- Section 4(f) protected resources (parklands and recreation areas).
- Navigation.
- Construction impacts.

Specific mitigation measures for any other adverse social, economic, and environmental impacts identified as issues of concern in Phase 2 will be identified, addressed and vetted with the public, agencies and elected officials during SFECCTA Phase 2 studies.

S.10 Coordination, Consultation, Comments with Agencies and the Public

S.10.1 Coordination and Consultation

Extensive coordination and consultation have taken place throughout the Phase 1 process with various Federal, State, and local government agencies, as well as the public (see Chapter 7). These efforts began with Agency Scoping meetings that were held in conjunction with Public Kick-Off meetings in April 2006. The FTA announced the project scoping process to agencies and the public by publishing the Notice of Intent (NOI) to prepare a PEIS in the Federal Register (Vol. 71, No. 59 / Tuesday, March 28, 2006 / Notices Page 15511-15513). In addition, project documentation has been loaded into the FDOT

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Efficient Transportation Decision Making (ETDM) website where Participating Agency members review it as part of the Environmental Technical Advisory Team (ETAT). Both the FHWA and FTA have stated that FDOT's ETDM process satisfies the Participating Agency intent outlined in the SAFETEA-LU regulations. The Federal Railroad Administration (FRA) and the USCG have been identified as individual Cooperating Agencies (see **Appendix D**) as part of Phase 1.

A public involvement plan was adopted and implemented which included a public hearing at three locations; a series of public workshops, the first with general project and process information, and the second with specific alternatives and station area information; municipal agency workshops; business one-on-one meetings; presentations at most of the 28 city commissions along the corridor; individual meetings with stakeholders; newsletter production and website development; as well as extensive community and homeowner associations coordination. A large number of visualization techniques were utilized to convey technical information to project stakeholders and decision makers (see Section 7.3.8).

The DPEIS and other SFECCTA study reports or technical memoranda have also been provided for public access on the project website (www.sfeccstudy.com/documents), as shown in **Figure J.27** in **Appendix J**. A Notice of Availability (NOA) of a Draft Programmatic Environmental Impact Statement (DPEIS) was published the in the Federal Register (Vol. 71, No. 198 / Friday, October 13, 2006 / Notices Page 60509) "Draft EIS No. 20060413, PROGRAMMATIC—South FEC Corridor Transit Analysis Study Tier 1". This NOA had an announced closing date for comments of December 8, 2006. However, any comments received at the public hearing or written comments received prior to December 11, 2006 regarding the project or the DPEIS have been included in **Table J.2** in **Appendix J**.

Phase 1 outreach and coordination activities resulted in over 90 key agency and other stakeholders, along with hundreds of members of the public, attending numerous project workshops and the public hearing, with many responding to study documents and/or providing comments at SFECCTA public involvement meetings. Section 7.4.2 provides a compilation of Phase 1 coordination activities, including statistics from a matrix titled Agency/Stakeholder Coordination and Response Summary for SFECCTA Phase 1 (**Table J.8** in **Appendix J**). For example, Phase 1 had active participation documented by 12 Federal as well as 78 tribal, State, regional and local agencies/governing bodies (90 total), including one State senator, four State representatives, ten mayors, 31 city and county commissioners and at least two city councilmen/women, and one representative of a Native American Tribe.

S.10.2 Overview of Comments Received

As a result of this extensive Phase 1 coordination, comments received ranged from general statements of support for the project, support for transit in the area in general, to substantive comments on agency areas of concern and elected officials' constituents' concerns. A variety of stakeholders provided input and voiced concern regarding many issues relevant to the SFECCTA study, ranging from quiet zones and at-grade transitway – roadway crossings, affordable housing and cumulative impacts at station areas, air quality (localized impacts and regional improvements from the project), traffic congestion (economic impacts if unchecked, localized degradation at rail crossings), listed species/wetlands/other natural environmental concerns, etc. These included stakeholders with substantial roles in the project as the United States Coast Guard (USCG), a Cooperating Agency, the USEPA, FTA, the Florida State Historic Preservation Office (SHPO)/Florida Department of State, and the FRA.

S.10.3 Agency Response to Study Programmatic Process

AN and Scoping Comments: Initially, as a result of the AN and Scoping processes, it became evident that there was a general lack of understanding from many agency participants/reviewers on Tiered, Programmatic EIS studies since: 1) agency comments were geared toward the more detailed and traditional EIS studies and 2) many agency comments were questioning the broad nature of the study. Therefore, a Tiered Programmatic EIS Methodology Technical Memorandum was prepared for circulation to the agencies and two workshops were conducted with FDOT District 4 and 6 ETAT members (each a joint ETAT session). This resulted in greater understanding by the local ETAT representatives on the study itself and on Tiered study processes in general.

Due to the extent and complexity of the study's transportation issues and the substantial number of resources existing in the 85-mile corridor, a key endeavor of the study team during Phase 1 was the development of a programmatic process for evaluating environmental resources and potential affects to them as a result of implementing the Build Alternatives. Efforts were made not to overwhelm the resource agencies but still address their concerns at each step in the tiered study. The proposed program to address each resource of concern is addressed in Chapter 3 where evaluation of individual resource issues according to a Tiered NEPA approach is documented. Furthermore, during the early stages of Phase 2 an Agency Coordination Plan, a Public Involvement Plan, and an Environmental Screening Methodology Technical Memorandum will be prepared and circulated. Specific commitments addressing the need for programs to evaluate widespread issues include Commitment 2 stipulating that the Phase 2 studies will develop a proactive strategy to reduce the number of community impacts and enhance the safety of at-grade transitway-highway crossings of the FEC Railway alignment.

Draft PEIS Comments: Agency comments to the DPEIS were received from four Federal, six State, and two local (i.e., county and municipal) agencies. Approximately six of these 12 reviewers who provided responses were ETAT members. Nine sets of comments resulted since several sets of comments were received from multiple departments or reviewers in the same agency, including two sets each from USEPA, USCG, and Florida Department of Environmental Protection (FDEP). Review of some of the agency comments indicated that non-ETAT members from ETAT agencies had reviewed the DPEIS document in many cases and thus some agency comments mirrored those from the AN and Scoping process. Some agency representatives treated the Programmatic

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EIS as a traditional EIS and questioned the broad nature of the study. However, some of the more engaged agency representatives provided positive feedback and relevant information to be included in the Phase 2 studies. Substantial (also commonly referred to as "substantive") comments were received in Phase 1 from key agency stakeholders that included the following:

- The United States Army Corps of Engineers (USACE, an ETAT member) provided input in Phase 1 through multiple venues, as a member of the ETAT participating in the ETDM Screening, as a participant at an ETAT Workshop held in the Ft. Lauderdale FDOT District 4 offices, and, lastly, during a joint FDOT-USACE meeting in the Ft. Lauderdale FDOT District 4 offices. The comments received included a request to have permitting level of detail for comment on alternatives selection (response was not available in Phase 1 but will be incorporated into Phase 2) and to keep some alternatives open from Phase 1 to Phase 2 (13 Build Alternatives as well as No-Build and TSM Alternatives will carry forward to Phase 2). Substantive comments addressed direct as well as indirect and cumulative effects (ICE) to navigation, wetlands and, in general manner, all other resource categories. There was no written or verbal indication of opposition to moving the study forward into Phase 2. The ETAT reviewer requested that while evaluating the Phase 2 corridors, the project team should include the partnering agencies in the planning. The reviewer also stated that the USACE would be available to assist in this process.
- The USCG (Cooperating Agency and ETAT member) provided input during Phase 1 on permit and bridge clearance requirements for new or replacement bridges over specific, navigable waterway crossings. Substantive comments in the first of two comment letters addressed agreement to Cooperating Agency status, listing which waterway crossings would be considered navigable vs. non-navigable and which navigable ones would qualify for USCG bridge permits or not. The second comment letter added more detail to comments in the first letter, such as likely permittable bridge heights for fixed bridges or preferable operational parameters for movable span/bascule bridges. There was no indication of opposition to moving the study forward into Phase 2. There will be a continuation in Phase 2 of the close coordination with the USCG on this project both as a Cooperating Agency and as an ETAT member.
- FRA (Cooperating Agency): Substantive comments addressed that FRA is the United States Department of Transportation (USDOT) operating administration responsible for intercity passenger rail (such as Amtrak), and requested to be kept informed regarding the progress of the study. They agreed to participate regionally when the study moves forward into Phase 2, reviewing the project out of the Washington D.C., Office of Federal Railroad Development. There was no indication of opposition to moving the study forward into Phase 2. There will be close coordination on this project in Phase 2 with the FRA as a Cooperating Agency.

- The USEPA (an ETAT member) expressed support for transit in the area from an air quality perspective since such options generally reduce the amount of additional air emissions in the transportation corridor relative to the sole reliance on highways. The USEPA also expressed support of hybrid transportation alternatives, smart growth approaches, and transit-oriented development for areas targeted for development, so that the proposed transit system not only provides regional air quality benefits, but also minimizes other environmental impacts within the corridors. Other substantive comments by the USEPA addressed accompanying concerns for resources such as:
  - Water quality and the Biscayne Aquifer (a Sole Source Aquifer) system
  - Wetlands
  - Mitigation arrangements and Best Management Practices (BMPs)
  - Construction and operational effects on surrounding communities and other “Quality of Life” issues
  - Permits and the need for a Section 401 Water Quality Certification under the Clean Water Act (CWA)
  - Noise and vibration issues
  - Communities/Environmental Justice
  - Archaeological and historic property, Sections 106, 4(f) and 6(f) effects
  - SAFETEA-LU compliance documentation
  - Aesthetics and Context Sensitive Solutions (CSS)
  - Supporting statistics for Project Purpose & Need
  - Address “Welfare to Work” Program
  - Indirect (or secondary) and Cumulative Effects (ICE)
  - Americans with Disabilities Act (ADA) and Civil Rights Act

In addition to the above substantive topics there were comments on other resource issues, many of which are not readily addressable until the Phase 2 NEPA studies. In this vein, EPA also commented that the agency disagreed with the screening of alternatives in Phase 1 without full NEPA evaluations. The level of analysis called for by EPA is inconsistent with FTA project development processes for the initial elimination of unreasonable alternatives.

To address these issues, the project team teleconferenced with the Region IV EPA staff regarding their review of the DPEIS. Also, the FTA had one-on-one discussions with EPA representatives to discuss this and any other potential outstanding issues and concerns.

Actions taken to address EPA’s concerns in the Phase 1 document include:

- Amending the Conceptual AA/ESR to include an extensive Agency and Public Comment Table (**Table J.2** in **Appendix J**) with responses such as a commitment added to Chapter 8 that the study will identify local, State and Federal permits required, including a determination for a Clean Water Act, Section 401 Water Quality Certification.

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- Adding over 14 figures and tables to **Appendix J** for wellfields and wellfield protection areas for the Conceptual AA/ESR.
- Including other commitments to address issues requiring further study or substantially more information not included in Phase 1 (such as Environmental Justice analyses) through the inclusion of additional tables to the Conceptual AA/ESR (**Tables A.18 – A.23**).

Lastly, the EPA rated the DPEIS EC-2 (insufficient information for environmental concerns). This rating of EC-2 is considered appropriate for this Conceptual AA/ESR study as there is extensive further analysis and much more information to be developed during Phase 2, where the final determination for a single Build Alternative is anticipated to be made. Based on the concerns raised by the EPA representatives, the study will proceed into Phase 2 with the understanding that further environmental, engineering and planning studies, including full NEPA and public involvement activities, will be conducted to address all agency concerns in the required detail.

- The SHPO (ETAT member) response expressed concern that freight rerouting impacts resulting from this project (if rerouting occurs) be addressed was incorporated into the Conceptual AA/ESR as Commitment 18 in Chapter 8, Commitments and Recommendations for further Phase 2 assessment. There was no indication of opposition to moving the study forward into Phase 2. There will be close coordination on this project in Phase 2 with the SHPO as an ETAT member agency.

S.10.4 Other Government Actions and Permits Required

In addition to the coordination described above, it is anticipated that other State actions will include negotiations with FEC Industries for the use of the FEC Railway corridor for transit service, and the purchase of needed right-of-way for the implementation of transit service. Local actions include changing land use regulations and plans around future proposed station locations for transit suitability. Permits anticipated include, but are not limited to:

- United States Army Corps of Engineers (USACE) – Individual Dredge and Fill Permit(s)
- USCG – Bridge Permit(s) for crossing Loxahatchee River, New River, or other waterways
- Section 401 Water Quality Certification
- South Florida Water Management District (SFWMD)
  - Environmental Resource Permit (ERP)
  - Right-of-Way Occupancy Permits
- Florida Department of Environmental Protection (FDEP)
  - National Pollutant Discharge Elimination System (NPDES) Permit(s)

S.11 Issues to be Resolved

Issues to be resolved in Phase 2 include the following:

- Sectional priorities for further study were recommended based on results of the technical analysis, financial feasibility, and local Metropolitan Planning Organization (MPO) and SFRTA support. However, priorities for ultimate construction and implementation of the different sections have yet to be resolved and agreed upon.
- Use of the FEC right-of-way for public transit passenger service through either purchase or lease of a portion or all of the right-of-way, or other use agreement.
- Acquisition of private property or public right-of-way either as advance acquisition or traditional acquisition at one or all of the following:
  - Constrained FEC right-of-way areas
  - Pre-existing railway right-of-way areas
  - Station areas
  - Maintenance facility areas
  - East-west connections
  - Other transit facility infrastructure such as drainage ponds or electrical substations
- State and local funding sources and commitments for transit system right-of-way and/or new infrastructure.

S.12 Phase 1 Decisions

The tiered environmental process supports decision-making on issues that are ripe for decision and provides a means to preserve those decisions (40 CFR 1502.20). Tiering breaks down the decision-making process into two steps with the broad regional issues and alternatives being grouped together and addressed in the first tier document, followed by more specific issues grouped and addressed in the second tier documents. The environmental tiering process allows for the early identification and clarification of potential environmental impacts, in particular, ICE and subsequent processes for addressing potential adverse impacts in Phase 2 (see Section 6.1).

S.12.1 Decisions made during the Phase 1 phase

During the Phase 1 phase, viable options/alternatives were identified for further analysis in Phase 2. The general alignment options that will be moved forward into Phase 2 are primarily along the FEC Railway for the entire corridor and that portion of the I-95 corridor in northern Palm Beach County (see Section 6.2.1). As depicted in **Table S.4**, four modal technologies (BRT, LRT, RRT, RGR) will be evaluated along the FEC Railway alignment and one additional modal technology (RGB) will be evaluated for the I-95 Alignment (in northern Palm Beach County only).

Logical study limits were identified based on the analysis of forecasted travel patterns of six service segments that were reconsolidated into study sections. Three sub-corridor sections (“South”, “Middle”

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and “North”) and one corridor-length section will be moved forward for further individual analysis in Phase 2 (see Section 6.2.1 and **Figure 6.1**).

Non-viable corridor options or alternatives that will not be considered in Phase 2 included the US-1 and I-95 (Service Segment 1 only) alignments. These were generally, significantly expensive, did not support the necessary ridership, and generated significant environmental impacts. In addition, stand-alone technologies such as High Speed Ferries (HSF), Electric Bus/Streetcar (including Trolley Bus or Trackless Trolley), Intercity Motor Coach, AGT or People Mover, Monorail, Rubber-Tired Rapid Transit (RTR), or High Speed Rail (HSR) were also eliminated (see Section 6.2.3).

S.12.2 Further studies to be conducted in Phase 2

A proactive strategy will be developed to reduce the magnitude of community impacts and enhance the safety of transitway-highway grade crossings of the FEC alignment. The proposed locations of at least 72 transit stations, (some which will have primarily park and ride functionality), and the location of O&M facilities will be further studied in Phase 2. In addition, bicycle/pedestrian trails (i.e., greenway) running north-south along the SFECC corridor will also be considered in accordance with Sections 335.065 and 260.0161 of the Florida Statutes (FS) (see Section 6.2.4). Further analyses on integrating passenger service with existing and planned rail freight service will also be performed in Phase 2.

S.13 Final Conceptual AA/ESR Commitments and Recommendations

Commitments and recommendations have been finalized as a result of the public hearing held in November 2006 after circulation of the DPEIS (see Chapter 6 for Phase 1 decisions and Chapter 8 for commitments and recommendations). Coordination regarding cultural resources has been undertaken with the SHPO, including the development of a tiered methodology to assess cultural resources within the SFECCTA study area resulting in a Phase 1 Cultural Resources Reconnaissance Study Report. Historic linear resources were encountered during the reconnaissance survey and will require further research and documentation during the Phase 2 phase. These include potentially significant roadways, canals, and railroad corridors such as the FEC Railway, US-1, Dixie Highway, Miami Canal, and other major canals related to the Everglades Drainage District. Based on a meeting held with Sherry Anderson, SHPO representative, a definitive approach for evaluating impacts to these historic linear resources will be determined once specific information regarding the proposed improvements is available. In addition, the FDOT Environmental Management Office, in conjunction with the FHWA, has been working on specific cultural resource issues including historic linear resources.

Comments received from the SHPO on both the Reconnaissance Report and the DPEIS included the need to assess potential effects on cultural resources that could result from freight rerouting associated with SFECCTA projects (see Appendices F and J).

Specific commitments are outlined in Chapter 8 that include further evaluation of environmental resources and cultural resources in Phase 2 once the NEPA study sections and Class of Action determinations have been made (not anticipated until the beginning of Phase 2). These evaluations will include continuing and refining Phase 1 assessments of potential permitting requirements, mitigation options, and interagency coordination. No single Phase 1 LPA recommendation is being made at this stage of the study, as would result from a non-tiered EIS study. What is being recommended is to conduct Phase 2 NEPA regional and sectional evaluations for 13 combinations of five modal technologies and three sections primarily along the FEC Railway alignment, along with the No-Build and TSM Alternatives for each section and for the corridor as a whole. In addition, at least 72 proposed station areas identified in Phase 1 will be further studied in Phase 2 and an Environmentally Preferable Alternative will also be developed in consultation with the agency/key stakeholders during the course of Phase 2. A Phase 2 Environmental Screening Methodology Memorandum should be prepared for circulation to partner agencies and project stakeholders with specific interests and/or skill sets seeking the best possible consensus on AA and NEPA compliance for SFECCTA in Phase 2. Finally, all the above considerations are anticipated to be elements of a Regional (corridor-length) LPA and separate Sectional LPAs in Phase 2.

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1 PLANNING CONTEXT AND PURPOSE AND NEED

1.1 Planning Context

1.1.1 Introduction to the Study

This Conceptual AA/ESR, formerly referred to as Phase 1 Final Programmatic Environmental Impact Statement (FPEIS), broadly describes the transportation and environmental impacts associated with the potential implementation of a regional fixed guideway transit system centered along the FEC Railway extending from the Miami-Dade County Central Business District (CBD) to the northern limits of Palm Beach County, a distance of approximately 85 miles (see Section 1.1.5 Study Area Description). The No-Build, Transportation System Management (TSM), and numerous initial Build Alternatives have been evaluated and compared across a wide range of subject areas related to both natural and man-made environments. These include the transportation system, land use, socio-economic conditions, air quality, noise, vibration, visual, eco-systems, water resources, historic resources, archaeological resources, parklands, hazardous materials, safety/security, public involvement, agency involvement, financial and cost analysis, as well as Indirect and Cumulative Effects (ICE).

The primary transportation needs along this corridor have been considered to be transportation demand, improved mobility, social demands and economic development, enhanced accessibility/ connectivity, system linkages, modal interrelationships and safety. The eastern areas of the Tri-County region continue to increase in population and employment with very limited capacity on existing freeways and arterial streets resulting in increased travel times, delays and air pollution. Even with the implementation of all the planned highway transportation projects in all three counties as well as enhanced Tri-Rail and local bus transit service, the SFECC study area would still experience significant levels of congestion throughout the day with low levels of service. Therefore, additional person-moving capacity is needed along this corridor that is centered on the FEC Railway alignment. There is also a need and desire for sustainable economic development and redevelopment within the numerous local communities as evidenced by the large number of Community Redevelopment Agencies (CRA) present.

In Phase 1 a variety of modal technologies and general route alignments were considered and evaluated in a two-part process. There were, initially, 20 urban transport modes that were screened resulting in five general modal categories (BRT, LRT , Regional Bus [RGB], RRT and RGR) that were evaluated on three general route alignments (FEC Railway, US-1 and I-95) for six overlapping service segments. The Phase 1 screening process resulted in the selection of the FEC alignment as the most viable route for most of the corridor. Seventy two transit station areas and approximately eight (O&M) sites were initially identified and will be further studied in Phase 2.

Methodology of Phase 1 Programmatic EIS, Environmental Streamlining:

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1. PLANNING CONTEXT AND PURPOSE AND NEED

A Technical Memorandum was prepared to detail the rationale for the Tiered Environmental Impact Statement (EIS) process. The Technical Memorandum is available for review upon request and from the project website at www.sfeccstudy.com/documents/html.

The use of tiering is authorized under NEPA regulations issued by the Council on Environmental Quality (CEQ), 40 Code of Federal Regulations (CFR) Part 1500 and under regulations issued jointly by FHWA and FTA, 23 CFR Part 771. Tiering is also discussed in guidance documents issued by both of these agencies, including guidance issued in 1981, 1983 and 1988 by the CEQ, as well as tiering guidance outlined in a memorandum issued by FHWA dated June 18, 2001. The CEQ refers to tiering in 40 CFR 1508.28 as "the coverage of general matters in broader EISs with subsequent narrower statements or environmental analyses incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared." In 40 CFR 1502.20, the CEQ encourages agencies "to tier their EISs to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review." The FHWA memo dated June 18, 2001 refers to tiering as "an option available to organize analysis and decision-making in complex circumstances in a way that takes into account the different geographic scope and timing for different decisions", and "because tiering is an option available to address complex situations, we [FHWA] have deliberately stayed away from prescriptive guidelines on how to apply tiering, so that each tiered process can be custom designed to the specific situation."

The tiered approach for this study was developed in consultation with resource agencies via the FDOT's Efficient Transportation Decision Making (ETDM) streamlined process and the public. From the onset, FTA and FDOT have agreed that the goal in Phase 1 is to develop sufficient information to select a corridor and general alignment for transit among the three counties. Phase 1 is not intended to identify the exact alignment, modal technology or specify specific details of mitigation measures. This approach has guided the alternative screening process and all decisions regarding the level of detail developed in Phase 1. Both Phase 1 and Phase 2 of the study include specific, tiered methodologies for evaluating environmental issues (i.e. Socio-cultural Effects (SCE), Wetlands/Essential Fish Habitat (EFH), and Noise/Vibration) through the use of Geographic Information System (GIS) technology, and includes a timeline for submitting required project documentation to the FTA for approval and federal funding eligibility.

Completing a Tiered EIS for particularly large projects can significantly reduce the amount of time needed to complete the NEPA process. Tiering in this study involves preparing and circulating a Conceptual AA/ESR (see **Figure 1.1**, Environmental Tiering Flowchart). The purpose of the Conceptual AA/ESR is to provide the basis for an informed decision on choosing a transit corridor within the Tri-County area, not to determine the exact alignment or modal technology for the transit project. As such, this document does not contain the level of engineering or environmental detail that would be needed to make a specific alignment and modal technology decision. In addition, the Conceptual AA/ESR includes initial public comment and agency input on the location and design of the proposed alternatives that may be evaluated in Phase 2 project-level NEPA analyses (see Section 7 and **Appendix J**).

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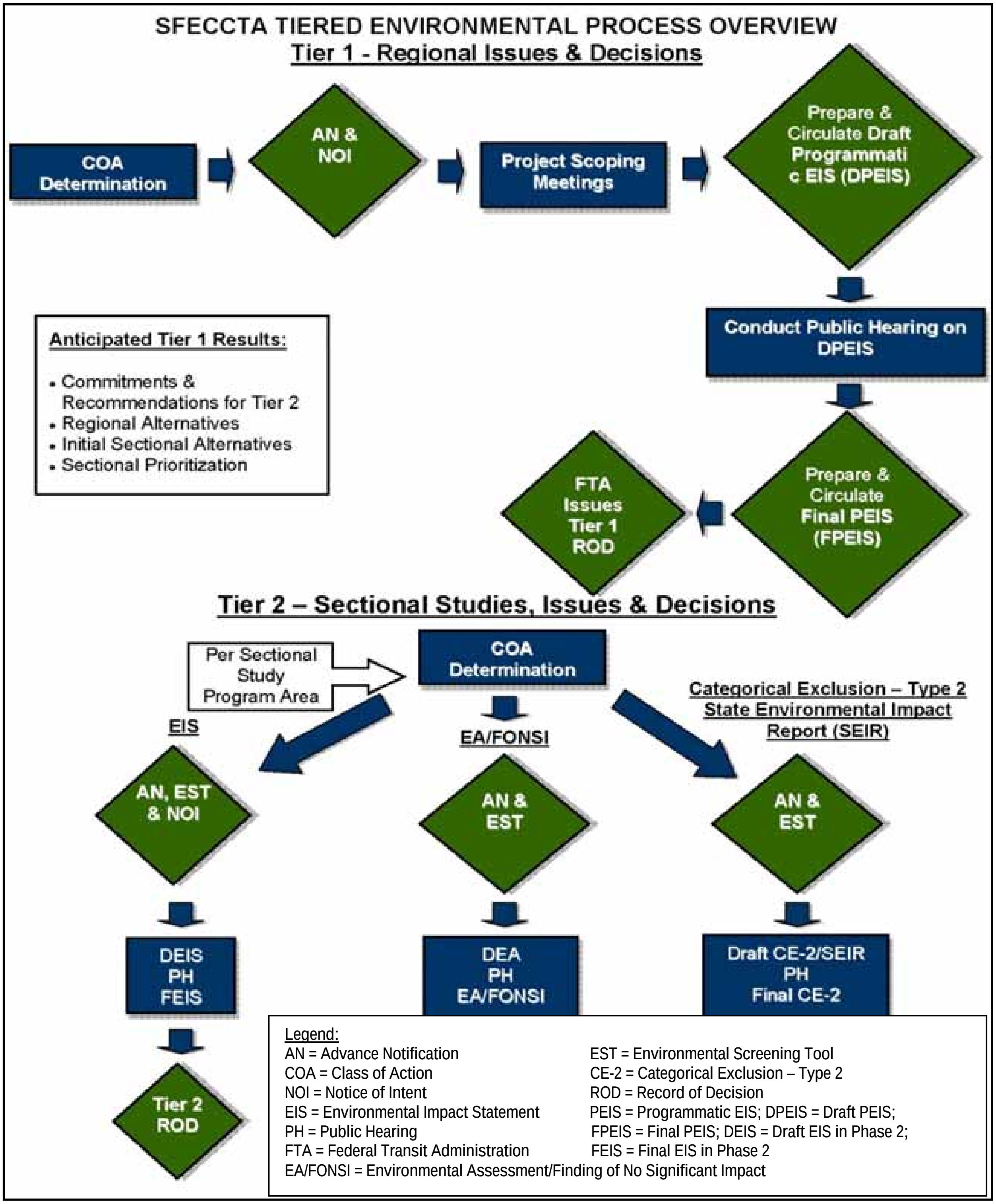
Figure 1.1: Environmental Phasing (Tiering) Flowchart



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1.1.2 Study Area Description

Based on reviews of prior studies and other relevant information, the study area developed for this Conceptual AA/ESR is centered along the FEC Railway, bounded on the north by the City of Tequesta in Palm Beach County and on the south by the CBD of the City of Miami with potential connections west to the MIC located adjacent to MIA and the City of Hialeah. The portion of the FEC Railway corridor under study is approximately 85 miles long (100 miles with the connections to the MIC, seaports, etc.) and the overall study area, which spans approximately 1 mile on either side of the corridor (2-mile width overall), covers over 200 square miles. The study area is in the highly urbanized eastern portions of Miami-Dade, Broward, and Palm Beach Counties which constitutes Southeast Florida. Based on the 2000 Census, these counties are the three most populous in the State ranging from 2,253,362 individuals in Miami-Dade County, 1,623,018 in Broward County and 1,131,184 in Palm Beach County. Palm Beach County is the largest county in land area (2,578 square miles) in the state. Moreover, four of the top 10 most populous cities in the state, Miami, Hialeah, Ft. Lauderdale and Hollywood are in the study area. The area is a diverse, dynamic, expanding coastal metropolitan area that is the largest in Florida. Due to its significant growth in population and employment, that community character is expected to continue for decades, the Census Bureau recently classified the Tri-County urbanized area as the sixth largest Metropolitan Statistical Area (MSA) in the country. A Study Area Location Map is included below (**Figure 1.2**).

The FEC Railway is an established transportation corridor, the only one east of I-95 capable of moderate to high operating speeds (above 25 mph), with potential passenger connections to:

- Miami Intermodal Center (MIC) at MIA,
- Ft. Lauderdale/Hollywood International Airport (FLL),
- Existing regional premium transit service (Tri-Rail) along SFRC,
- Existing premium transit service (Metrorail and Metromover) in Miami-Dade County,
- Three existing seaports at the Port of Palm Beach (PPB), Port Everglades (PEV) in Ft. Lauderdale and the Port of Miami (POM),
- Three major CBD/downtown areas: Miami, Ft. Lauderdale and West Palm Beach.
- Several major hospitals, colleges/universities, sports/cultural venues and other local and tourist attractions.

Due to these significant existing and potential connections, the FEC Railway corridor is considered a Strategic Intermodal System (SIS) rail corridor in Florida's SIS. Florida's SIS is made up of statewide and regionally significant facilities and services for moving both people and goods, including linkages that provide for smooth and efficient transfers between modes and major facilities. The movement of goods

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provided by the FEC Railway is for local market consumption as well as export. Their current average of daily trains (26 in both directions) is anticipated to grow in the future. Because the goods moved are mainly consumed locally, the amount of goods movement to the area is positively related to the growth in population. Additionally, with the growth in international trade common to the South Florida area, growth in goods movement related to exports will also continue.

The FEC Railway carried passengers from the late 1890's to 1968. The various communities traversed by the FEC Railway are therefore in many ways oriented towards the rail line and have a street grid system supportive of pedestrians and transit. As indicated in the study area map (**Figure 1.2**), the FEC Railway corridor currently traverses 28 cities along the coast, mostly along their CBD's. Within each of the CBD's there are major activity and employment centers, recreational facilities, educational centers, hospital/medical complexes, tourist destinations, and major retail/mixed-use developments. The entire study area boundary affects a total of 47 cities which are all listed in **Table 1.1**. **Figure 1.3** provides sample photographs (aerial and ground shots) of various areas within the SFECCTA study area.

In order to support the initial AA process, the Purpose and Need for the project was established. The remaining sections of this chapter detail the Purpose and Need for the expansion of premium transit services within the study area which is centered along the FEC Railway corridor.

Figure 1.2: Study Area Location Map

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Table 1.1: Municipalities in SFECCTA Study Area

Miami-Dade County (10)	Palm Beach County (26)
Miami*	Boca Raton*
Miami Beach	Boynton Beach*
Hialeah	Briny Breezes
El Portal*	Cloud Lake
Miami Shores*	Delray Beach*
Biscayne Park*	Glen Ridge
North Miami*	Gulf Stream
North Miami Beach*	Highland Beach
Aventura*	Hypoluxo
Miami Springs	Jupiter*
	Lake Clarke Shores
Broward County (10)	Lake Park*
Dania Beach*	Lake Worth*
Deerfield Beach*	Lantana*
Ft. Lauderdale*	Manalapan
Hallandale Beach*	Mangonia Park*
Hollywood*	North Palm Beach*
Lazy Lake	Ocean Ridge
Lighthouse Point*	Palm Beach
Oakland Park*	Palm Beach Gardens*
Pompano Beach*	Palm Beach Shores
Wilton Manors*	Riviera Beach*
	South Palm Beach
Martin County (1)	West Palm Beach*
Jupiter Island	Jupiter Inlet Colony
* = Cities traversed by FEC Railway	Tequesta

Sources:
Miami-Dade Municipalities – Miami-Dade Co., Enterprise Technology Services Department;
Broward Municipalities – Broward Co., Department of Planning and Environmental Protection, Planning Services Division (2003);
Palm Beach Municipalities – Palm Beach Co., Department of Planning Zoning and Building, GIS Information Technology Section;
Martin County Municipalities – Martin Co., Information Technology Services
Note: Martin County included in study area solely for consideration of potential staging areas or maintenance facilities along/within the FEC Railway corridor in extreme southeastern Martin County.

Figure 1.3: FEC Railway Corridor Overview

Photo 1: FEC Railway in Hallandale Beach, Florida, with mixed commercial, industrial, and residential land uses (note multiple, closely spaced roadway crossings). Broward County, October 2004.

Photo 2: FEC Railway with double tracks, roadway and waterway crossing, and mixed commercial/residential land use. Miami-Dade County, October 2004.

Photo 3: FEC Railway in West Palm Beach, (Palm Beach County Courthouse in background), Palm Beach County, October 2005.

Photo 4: FEC Railway in Ft. Lauderdale/Hollywood International Airport interchange, with Port Everglades in background, Broward County, May 2004

Photo 5: Typical section of FEC Railway with 100 foot Right-of-Way and mixed land uses (commercial/residential) in Miami-Dade County, May 2004

1.2 Purpose and Need for Transportation Improvements

The Purpose and Need statement for the project is:

"The eastern cities of Miami-Dade, Broward and Palm Beach Counties are witnessing a surge in urban redevelopment as people and businesses continue to migrate to coastal Southeast Florida. The existing and proposed highway capacity network for the SFECCTA corridor will not be able to accommodate the travel demand market evident and projected in this north-south corridor. Due to highway capacity constraints, commuting times in the region are expected to triple over the year 2000 levels by the year 2020. Therefore, regional, premium, "fixed guideway" transit system improvements are needed along the SFECCTA area, generally defined by the alignment of the FEC Railway, to improve mobility and reduce delay between the CBDs, major economic centers, transportation hubs and residential communities. The SFECCTA Conceptual AA/ESR and Transit Feasibility/AA identifies alternate modes of transportation focused on providing increased capacity for passenger mobility as well as addressing the anticipated increase in travel demand along this highly urbanized, traffic congested eastern portion of Miami-Dade, Broward, and Palm Beach Counties, Florida."

In accordance with FTA, FDOT and FHWA guidance for establishing need in an AA process, the following sections address the key areas of Transportation Demand (capacity and roadway deficiency issues); System Linkage; Federal, State or Local Government Authority (legislation); Social Demands and Economic Development; Modal interrelationships; and Safety.

1.2.1 Transportation Demand

- Problem: The areas with the highest concentrations of productions and attractions (population and employment) are currently not directly served by a continuous premium transit service.

- Problem: Future population and employment densities are located in areas where transportation infrastructure is deficient.

- Problem: Major origins and destinations along the eastern Tri-County area are not within walking distance (0.5 miles) of a continuous premium transit service.

- Problem: Roadway capacities in the study area are deficient, particularly along alternative north-south corridors. Roadway congestion contributes to the unreliability of travel (variation in travel times) and delays due to incidents and crashes, weather, and other factors that disproportionately impact personal and business travel. Moreover, increased congestion adversely impacts mobility of street transit, such as buses, and ultimately the air quality of the area.

- Problem: The system-wide congestion apparent in the study area, and more specifically along some of the parallel corridors to the FEC Railway, justifies the need for additional transportation capacity to address travel time and speeds for the movement of people. South Florida commuters are estimated to lose 1½ weeks in congested traffic annually, a 53% increase since 1990 (Texas Transportation Institute, 2007 Urban Mobility Study). Congestion costs (lost time and added fuel) are estimated at $2.7 billion a year and are a critical issue to business and government leaders who are concerned about the economic sustainability of this vital region. Miami recently ranked as the 5th most congested city in the country.

- Problem: Transit demand in the study area is high but needs better coordination for system efficiencies.

- Problem: The demand for the movement of goods via freight is increasing beyond rail capacities in the study area.

- Problem: Seaport and airport needs cannot be met by the current transportation system due to continued growth patterns in the study area.

Need: A comprehensive transportation investment is necessary in the study area to meet the demand associated with roadways, transit, rail, land uses, seaports and airports.

- Proposed Action – A transit project along the FEC Railway corridor area:
  - Would bring the transit service to concentrations of where people and jobs are currently located (productions and attractions) and projected to be located in the future.
  - Would bring premium transit service within walking distance of major origins and destinations. Multiple locations and activity centers in the Tri-County area would benefit from a direct one-seat ride.
  - Would provide an alternative to roadway congestion in the area for daily commuters.
  - Would provide quick, convenient, and reliable transit service using exclusive right-of-way free from interference with automobile and truck traffic.
  - Would allow for better transit service coordination in the region serving a diversity of markets.
  - Would provide opportunities for additional freight capacity enhancements to serve growing needs at adjacent seaports and airports.

Traffic Demand

The SERPM5, the Tri-County region travel demand forecasting model, was used to analyze the overall study area characteristics. The SERPM5 is based on information from the three respective county Metropolitan Planning Organization (MPO) with respect to socio-economic data such as land uses that produce or generate trips and those that attract trips (productions and attractions). The SFECCTA corridor study process also included two types of travel surveys to perform validity checks on the

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SERPM5 model and to provide meaningful backup of the model results with real data. The two surveys, conducted in January 2006, were a License Plate Origin-Destination (O-D) Survey on major north/south roadways in the SFECCTA corridor area and a Transit On-Board survey for certain bus routes operating in a north/south direction within 0.5 miles of the FEC Railway corridor. The validity checks provided additional information regarding the travel patterns in the area, trip lengths, trip purposes and demographic characteristics.

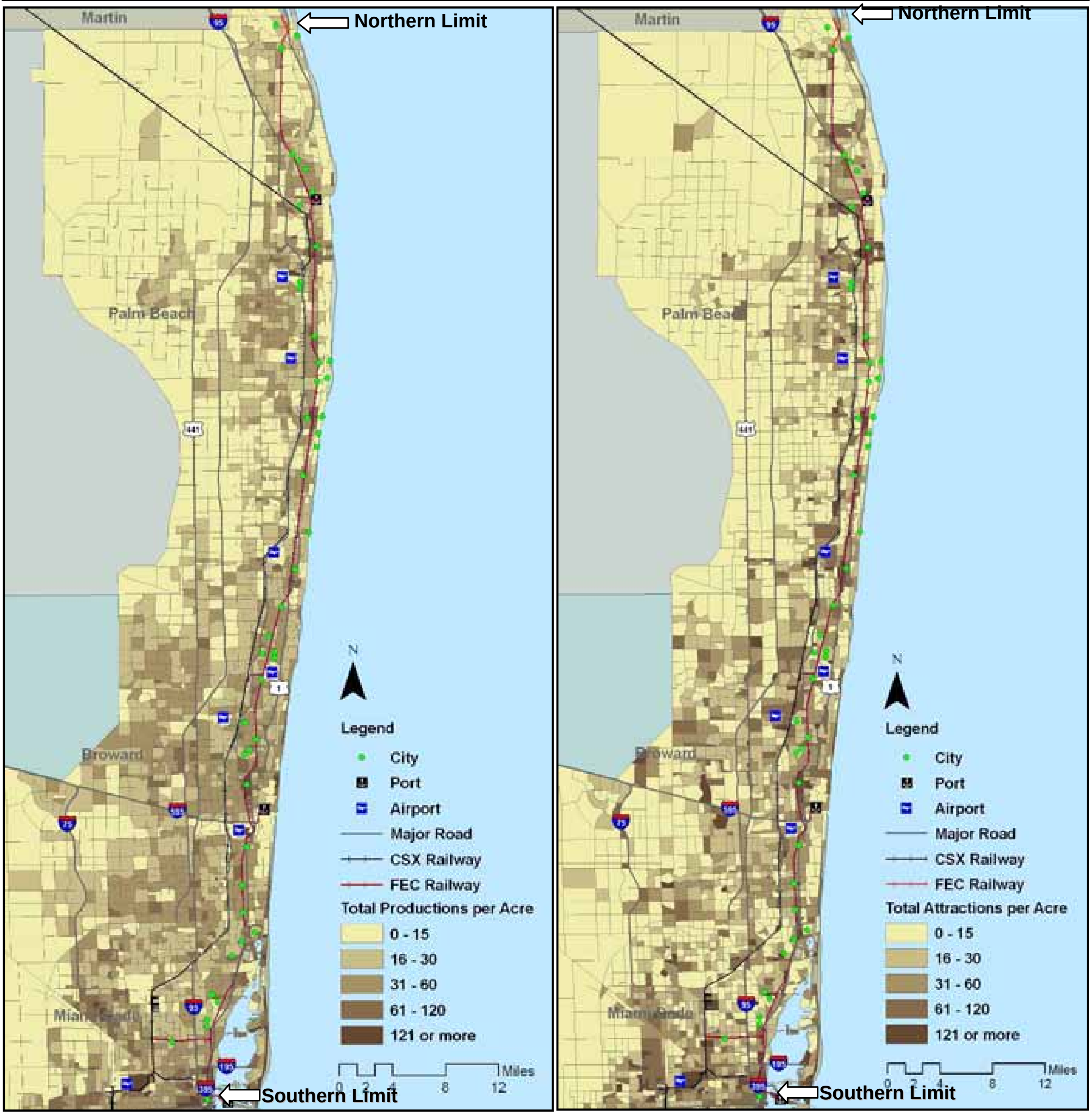
A significant amount of travel already occurs along the corridor. Based on the SERPM5, the 2030 trip productions and attractions within the Tri-County area confirms that intense attractions are located within the SFECCTA study area, along the east coast of each of the counties (**Figure 1.4** – Trip Attractions, see darker shades). These areas include the major CBD and commercial corridors of the cities along the FEC as well as adjacent key employers such as airports and seaports. A similar pattern is evident for productions (**Figure 1.4** – Trip Productions) where the eastern areas exhibit greater densities. Due to the limited availability of land in Broward County, it's density of productions are more evident throughout the entire county.

The proposed project would provide transit service within walking distance of major origins and destinations based on year 2030 projections. More specific information regarding productions and attractions was derived from the model with respect to the three main north-south corridors in the study area: I-95, US-1 and the FEC Railway. Five main peaks were identified for productions, attractions and combined productions and attractions within 0.5 mile of these corridors. As indicated in **Figures 1.4 – 1.7**, Miami, Ft. Lauderdale, Boca Raton, Boynton Beach and West Palm Beach were the five areas where productions and attractions were highest along both US-1 and the FEC Railway. The productions and attractions along the I-95 corridor, where Tri-Rail is located, were significantly lower, more consistent throughout the study area, and with no discernable peaks.

The on-board travel survey and license plate survey results validated the need for additional transit service within the SFECCTA corridor. **Figure 1.8 shows** that over 20% of the bus riders on 10 out of the 19 routes surveyed had an origin and destination within 0.5 miles of the FEC Railway corridor meaning that they could potentially walk to a transit service along the FEC corridor for both ends of their trip. **Figure 1.9** provides detailed information regarding the on-board transit survey which indicated that over

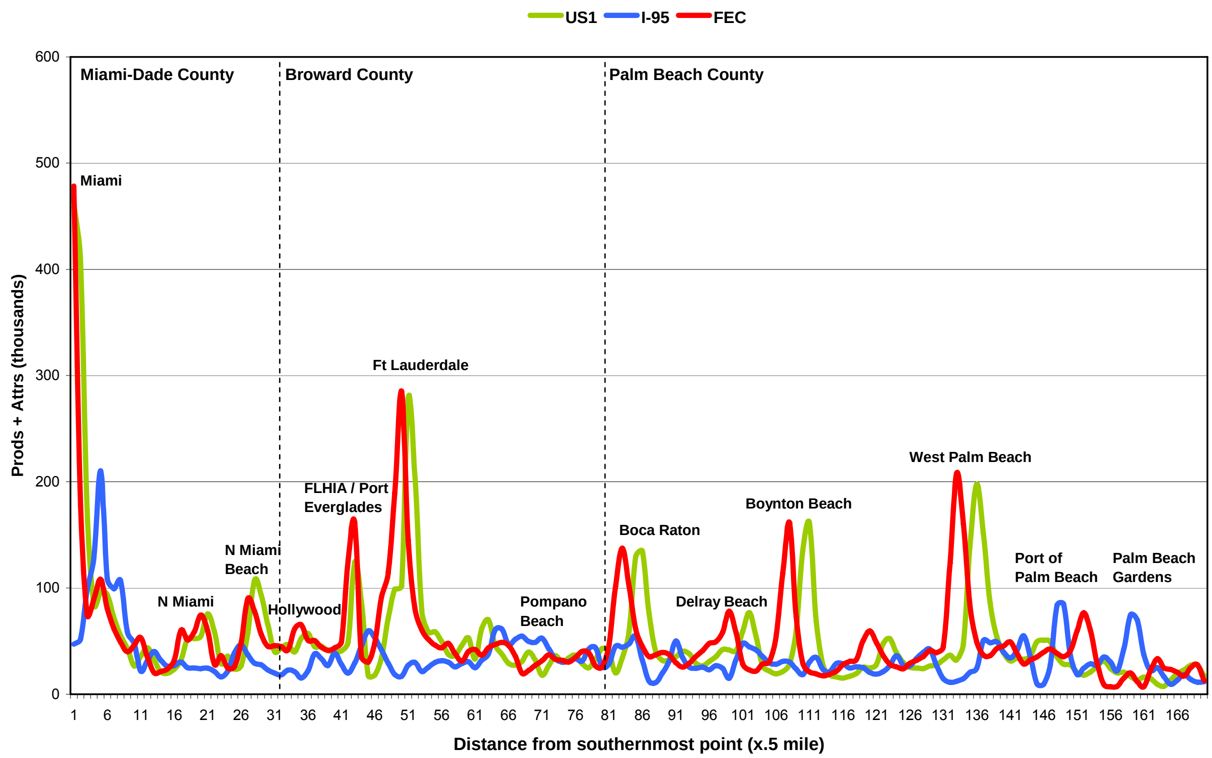
Figure 1.4: Trip Productions and Attractions (2030)

Trip Productions	Trip Attractions



NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Figure 1.5: Productions and Attractions within 0.5 mile of US-1, I-95 and FEC



50% of the bus riders on 15 out of the 19 routes surveyed had an origin <u>or</u> destination within 0.5 miles of the FEC Railway corridor. Individuals riding these bus routes could therefore potentially walk to a transit service along the FEC corridor at one end of their trip. The results of the license plate survey along the north-south corridors indicated over one third of the individuals surveyed had an origin <u>or</u> destination within 0.5 miles of the FEC Railway corridor (**Table 1.2**). Therefore, model information and survey information both confirm that there is a high demand for travel within the FEC corridor study area by existing and potential riders that could be maximized and benefited with walk-up, premium transit service.

Figure 1.6: Attractions within 0.5 mile of US-1, I-95, FEC

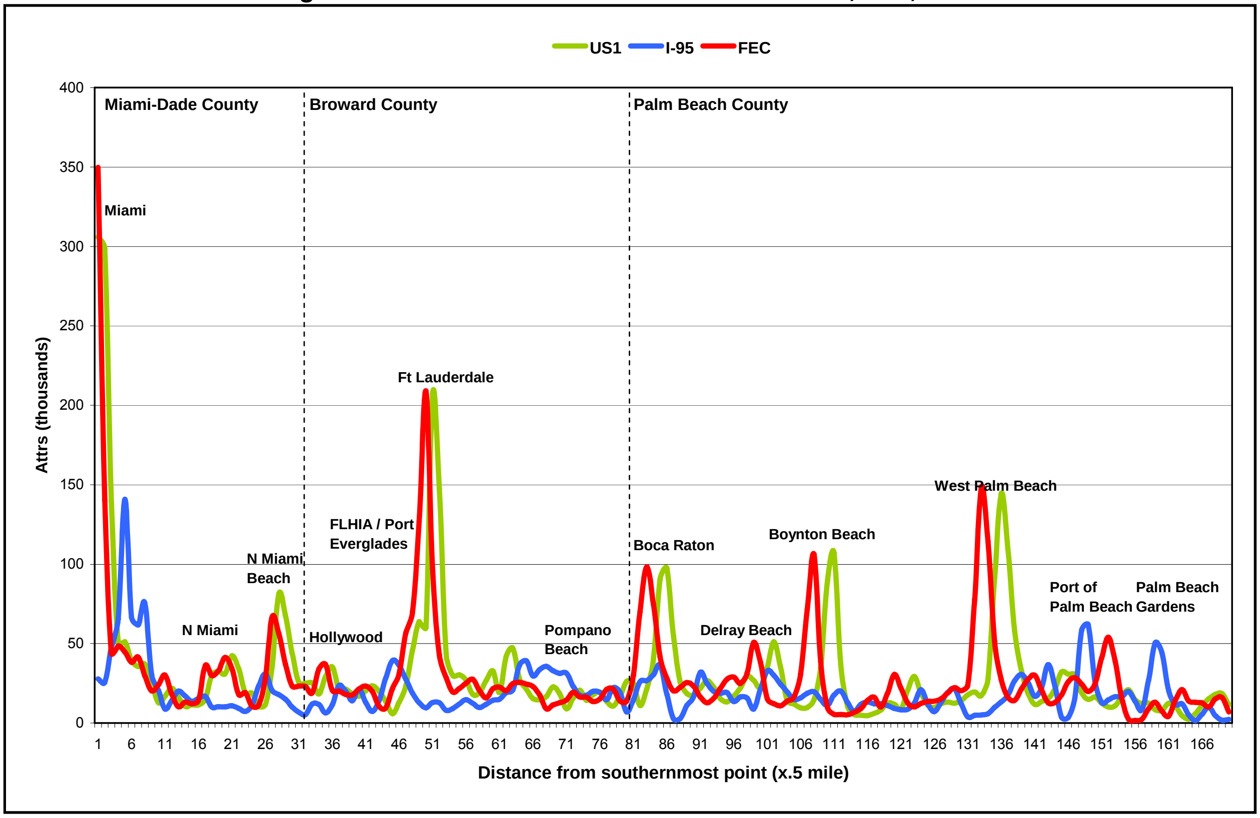
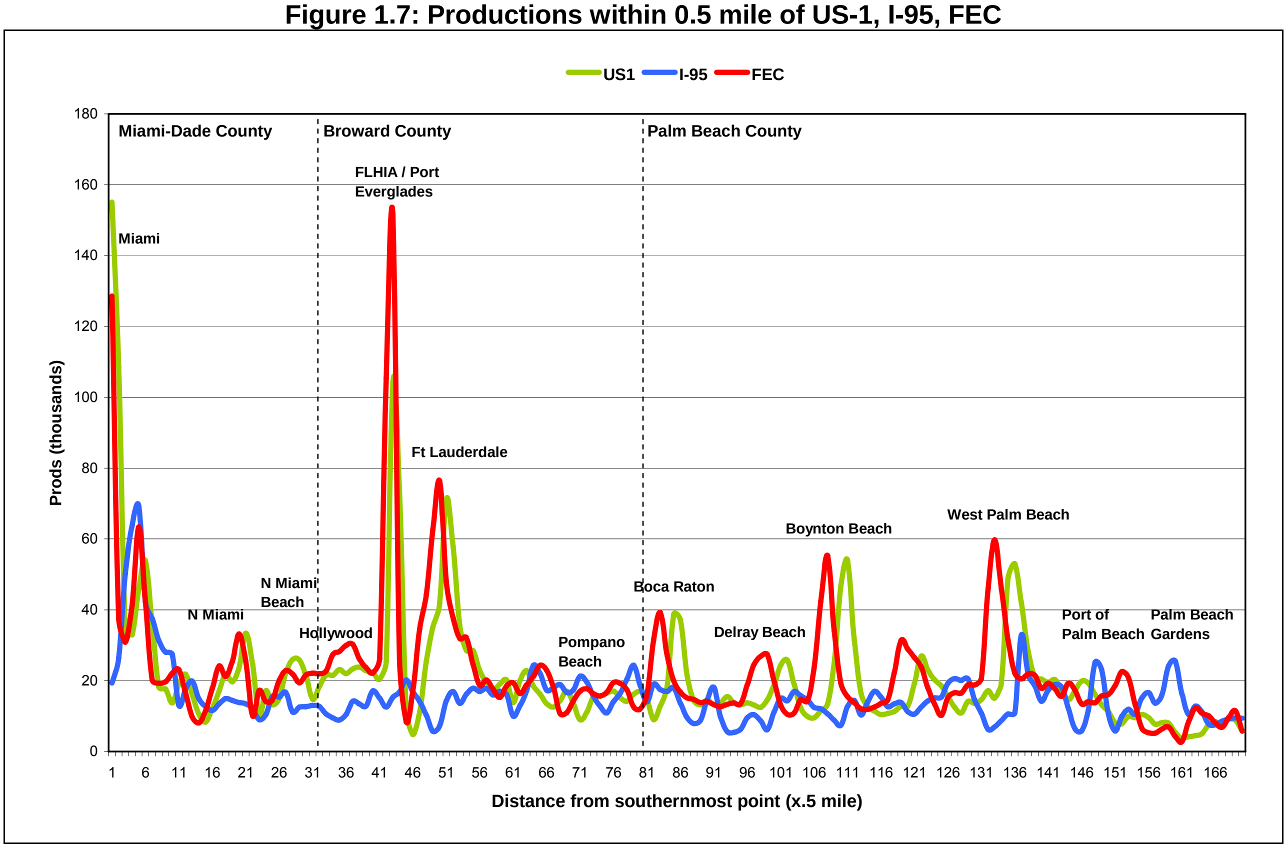


Figure 1.7: Productions within 0.5 mile of US-1, I-95, FEC



NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Figure 1.8: Percentage of Bus Riders with an Origin and Destination
(within a Half-mile of the FEC Railway)

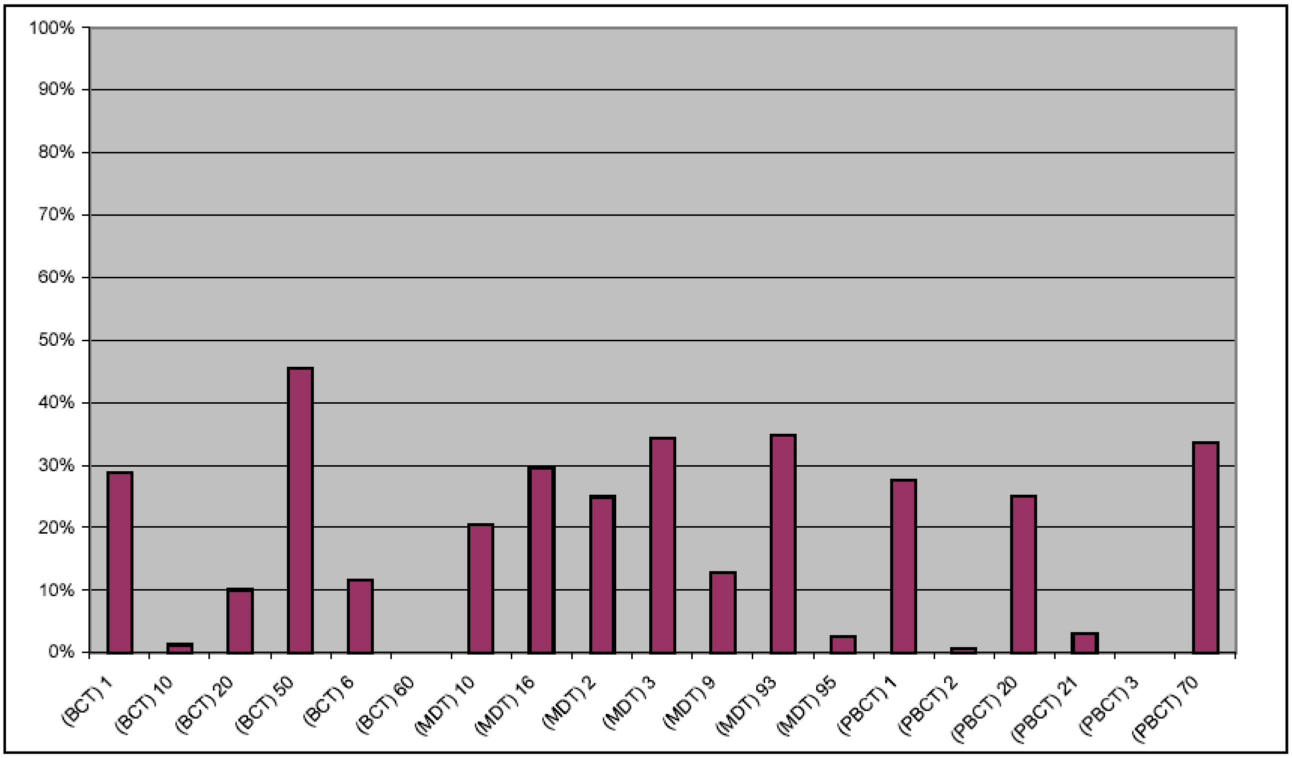
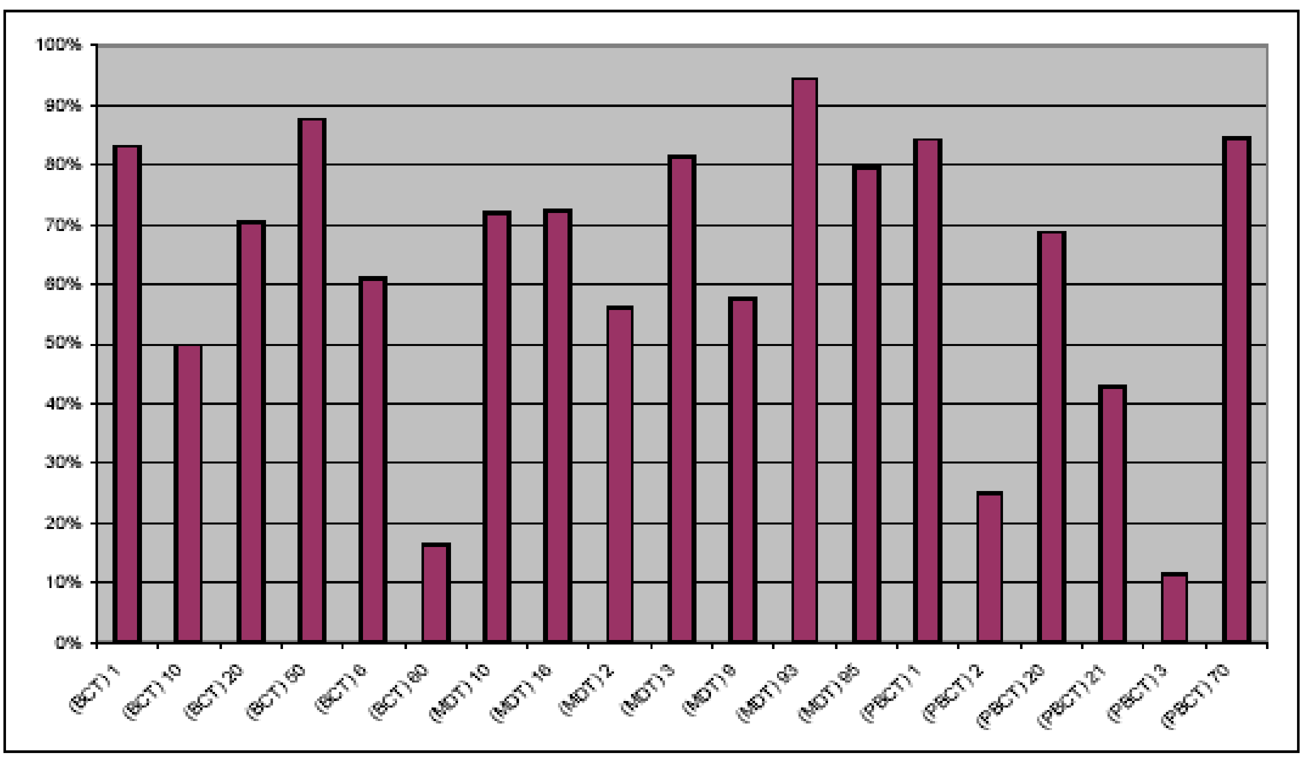


Figure 1.9: Percentage of Bus Riders with an Origin or Destination
(within a Half-mile of the FEC Railway)



The origin and destination license plate survey also served to establish the average trip lengths along the project corridor. As indicated in **Table 1.2**, 15 out of the 21 sites surveyed indicated an average trip length of 20 miles or less. In all instances and directions, the average trip length along north-south corridors closest to the FEC Railway (US-1 and Dixie Highway), was less than 15 miles. In comparison, a December 2004 travel survey for Tri-Rail along the SFRC indicated an average trip length of 30.4 miles, confirming the longer distance commuting patterns for that service. The Tri-Rail survey information, included in SFRTA's Transit Development Plan 2006-2010, also indicated that the heaviest peak travel flows were from Broward County to Miami-Dade County and Broward County to Palm Beach County. Therefore, a premium transit service along the SFECCTA corridor would complement the Tri-Rail service in that it would target and serve the shorter distances (10-15 miles) and average trip lengths found along the corridor. Moreover, a transit service along the SFECCTA corridor would serve the heavier travel experienced from each end of the corridor (Miami and West Palm Beach) which is currently not being served by Tri-Rail.

Table 1.2: Average Trip Lengths – Origin / Destination License Plate Survey

				SERPM5 Model*		Survey*	
County	Site	Facility	Crossroad	NB**	SB**	NB	SB
Palm Beach	1	I-95	Hood Rd.	18.4	18.7	11.4	14.3
	2	Old Dixie Hwy.	Donald Ross Rd.	17.1	14.6	10.4	12.1
	3	US-1	Donald Ross Rd.	10.3	9.7	9.9	12.1
	4	I-95	Okeechobee Rd.	21.3	21.3	17.6	18.1
	5	I-95	Woolbright Rd.	26.9	27.0	18.1	22.7
	6	US-1	Woolbright Rd.	11.6	11.2	7.0	8.9
PB/ Broward County Line	7	I-95	SW 18th St.	26.1	25.8	16.4	21.8
	8	Dixie Hwy.	SW 18th St.	12.0	12.8	9.2	8.4
	9	US-1	SE 18th St.	14.3	13.1	8.8	9.1
Broward	10	I-95	Andrews Ave. Overpass (SR-811A)	26.5	26.1	22.1	20.5
	11	Dixie Hwy.	Cypress Creek Rd./NW 62 St.	12.0	11.5	8.7	9.6
	12	US-1	Cypress Creek Rd./NW 62 St.	13.0	13.4	7.5	7.9
	13	I-95	Sheridan St.	23.6	24.0	18.4	20.1
	14	US-1	Sheridan St.	11.6	11.9	10.8	9.6
Broward/ M-D County Line	15	I-95	Ives Dairy Rd. (SR 584)	25.0	26.0	21.8	24.2
	16	Dixie Hwy.	NE 203 St. (SR 854)	9.7	12.0	7.6	3.1
	17	US-1	NE 196 St.	11.9	11.5	9.5	11.7
Miami-Dade (M-D)	18	I-95	NW 125 St.	23.3	23.5	22.2	19.7
	19	US-1	NE 135 St.	10.7	12.6	5.8	10.9
	20	I-95	SR 112	21.2	18.4	19.6	19.7
	21	US-1	NE 36th St.	11.5	10.1	9.4	11.1

* Trip lengths in miles **NB (northbound), SB (southbound)

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The proposed project would provide an alternative to congested roadways in the study area. Roadway operations are measured in terms of Level of Service (LOS). These are measures used to determine how well the roadways are currently operating and anticipated to operate in the future given projected future growth. LOS is a qualitative measure that describes the operational conditions of traffic flow as perceived by motorists. There are six LOS ranging from A to F based on the volume to capacity (V/C) ratios for a particular roadway segment. LOS A is the best situation, representing free flowing traffic; LOS F is the worst representing total congestion, a stop and go situation as the volume approaches and even exceeds the roadway capacity. In 2005, roadway LOS for I-95 and US-1 in Miami-Dade County and Broward County ranged from D to F. Moreover, **Figure 1.10** and **Figure 1.11** indicate that LOS is going to deteriorate significantly in 2030 on all the major north-south and east-west arterials within the SFECCTA study area in Miami-Dade and Broward Counties. **Figure 1.11** depicts Broward County's existing plus committed (E+C) roadway network.

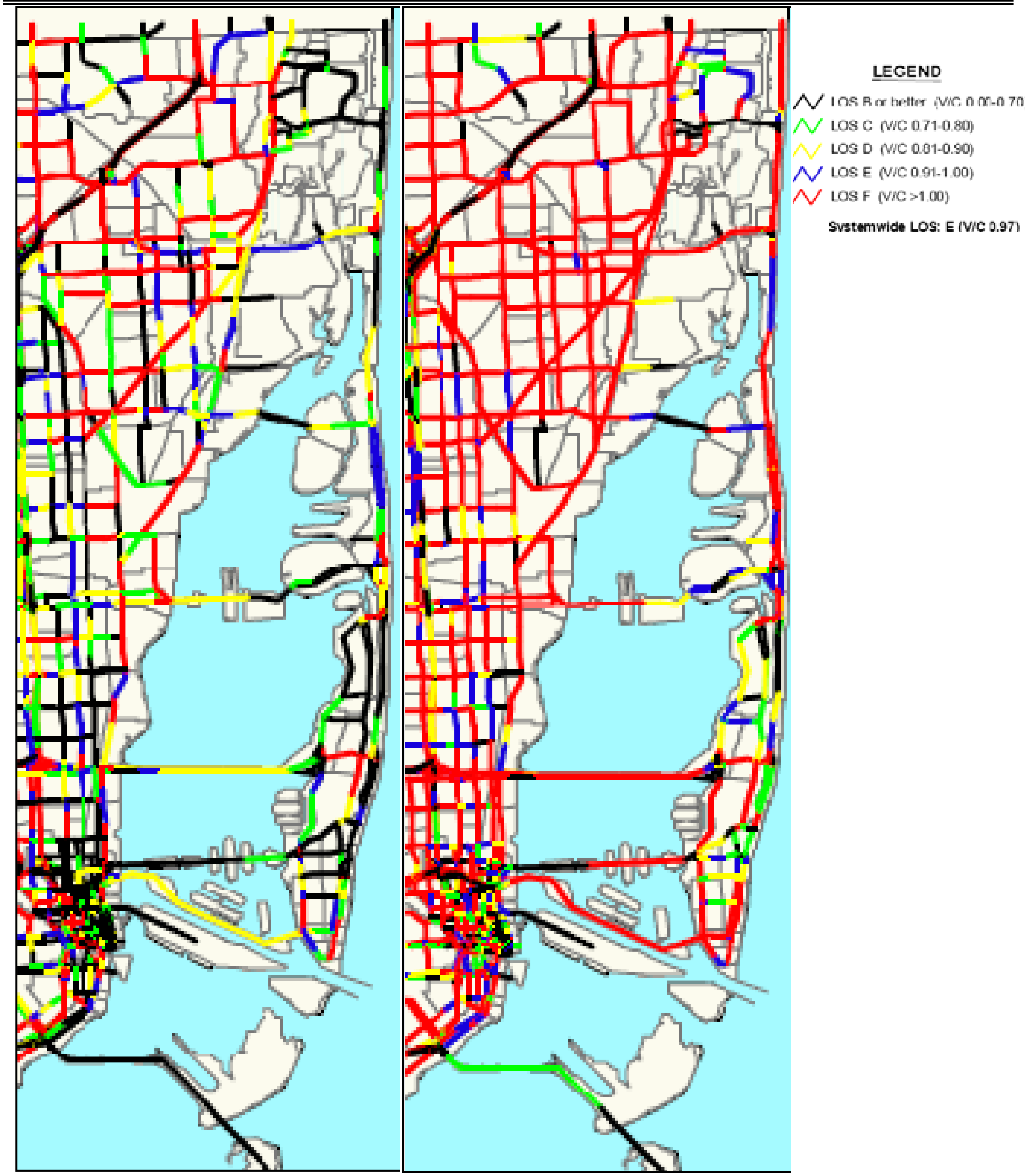
In Palm Beach County in 2002, I-95 was operating at LOS B and C, which was better than US-1 which operated at LOS C and D. However, as **Figure 1.12** indicates, LOS V/C ratios for Palm Beach County along these major north-south roadways will deteriorate in the future.

An overall assessment of the traffic conditions in the study area found that 70% of the roadways are operating at deficient levels of service in 2004 (LOS D, E or F) and 31% are at a LOS F. This congestion continues to cause significant delay and cost productivity. For example, travel time in 2030 along I-95 from Miami-Dade County to Palm Beach County is projected at 3 hours and 6 minutes for uncongested conditions, whereas congested travel times increase to 4 hours and 12 minutes. A 2005 FDOT I-95 Managed Lanes study, completed for Broward and Miami-Dade Counties, confirmed that the significant delays along the corridor were during the A.M. and P.M. peaks. The heaviest travel volume was along I-95 south of the Golden Glades interchange in Miami-Dade County where I-95 carried over 300,000 vehicles. Congested speeds from Ives Dairy Road to I-395 in downtown Miami (a 13.5 mile distance) averaged 15 to 20 mph and travel time was 40 minutes in both the southbound A.M. peak and northbound P.M. peak. The travel time studies conducted clearly depicted great fluctuations in speeds throughout the peaks indicating stop and go conditions throughout. Although the segment of I-95 from Ives Dairy Road to I-595 in Broward County did not experience the same delays as in Miami-Dade County, there was some significant P.M. peak delay in the southbound direction, mainly from south Broward County to North Miami-Dade County. Average speeds were 20 mph and travel time was 20 minutes to traverse these 8 miles of I-95.

The 2005 I-95 Managed Lanes study was used in conjunction with other study and data collection efforts to submit a 2007 request to the Federal Highway Administration (FHWA) for conversion of existing HOV lanes to managed (HOT) lanes along I-95 from I-395 in Miami-Dade County to I-595 in Broward County. After a successful application, system implementation is currently being funded by Federal, State and public-private partnership dollars. Construction is underway along a limited portion of the I-95 Corridor. Similar to other urban communities throughout the country, there is an inability to improve capacity through new highway construction in South Florida fast enough to keep up with travel demand. Moreover, the increasing costs associated with increasing highway capacity and the political and environmental controversy often associated with building new roads compound the mobility dilemma requiring different approaches to mobility. As an example, the study area MSA ranked 16th out of 17 large urban areas recently studied in "Freeway Lane Miles per 1,000 Capita" with a rating of 0.33 freeway lane miles per 1000 capita. This statistic indicates that the MSA in which the study area is located has relatively few lane miles of freeway compared to other large areas such as Dallas-Ft. Worth (0.829 rating), Atlanta (0.778 rating) or Los Angeles with a 0.426 rating. In order to maintain current levels of mobility, it is anticipated that the MSA would need to construct 2 to 4 times more lane miles of freeway than currently planned for by 2030. However, given the constraints previously mentioned: available land,

Figure 1.10: Roadway Level of Service (LOS) in Miami-Dade County

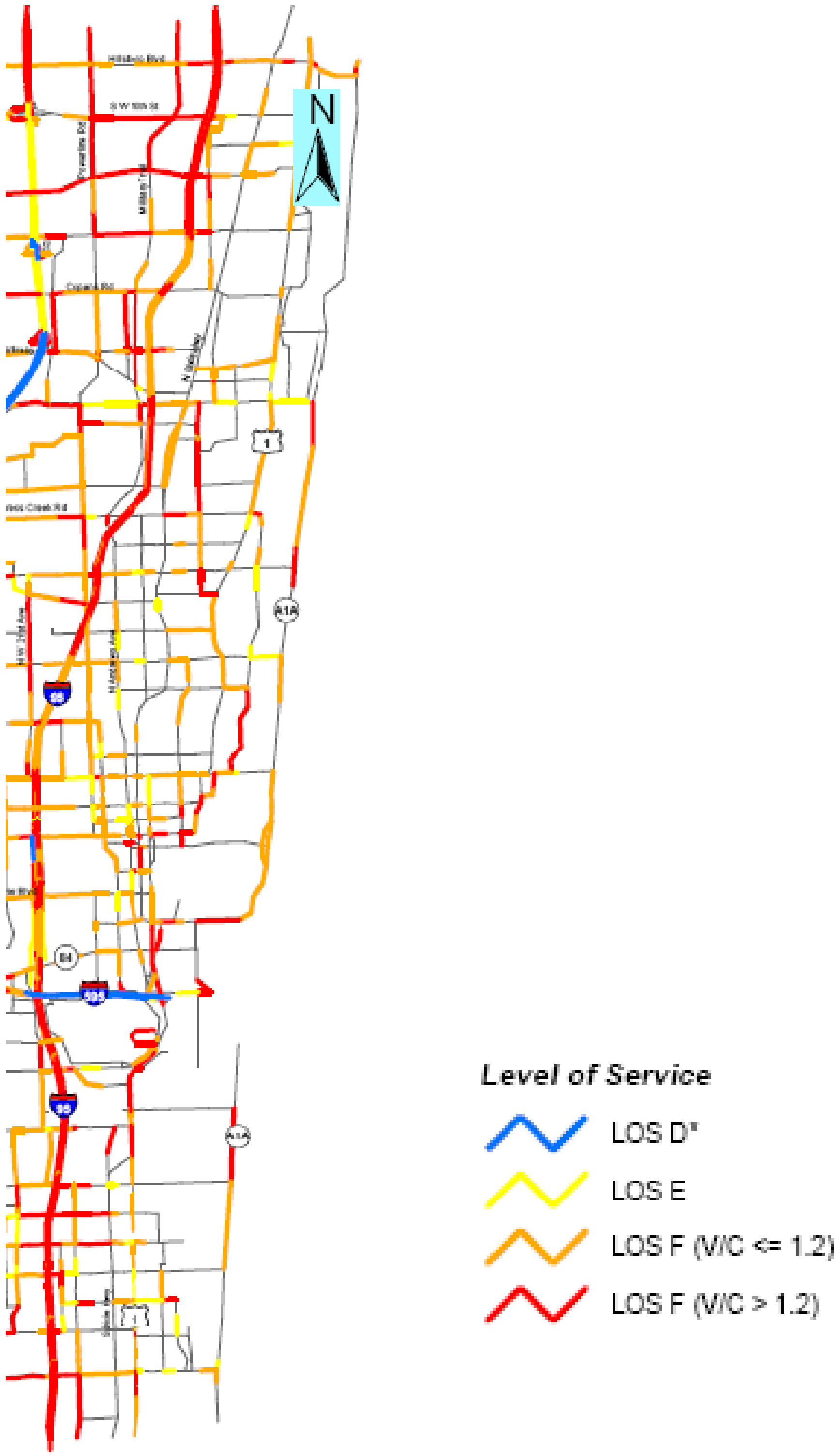
2000	2030



Source: Long Range Transportation Plan (LRTP) 2030, Miami-Dade MPO
Level of Service (LOS) = Ratings A through F are based on ratios of volume (V) to capacity (C)

Figure 1.11: Roadway Level of Service (LOS) in Broward County

2030 E+C Network*



Source: LRTP 2030, Broward County MPO
*Existing (E) plus committed (C) roadway network
Level of Service (LOS) = Ratings A through F are based on ratios of volume (V) to capacity (C)

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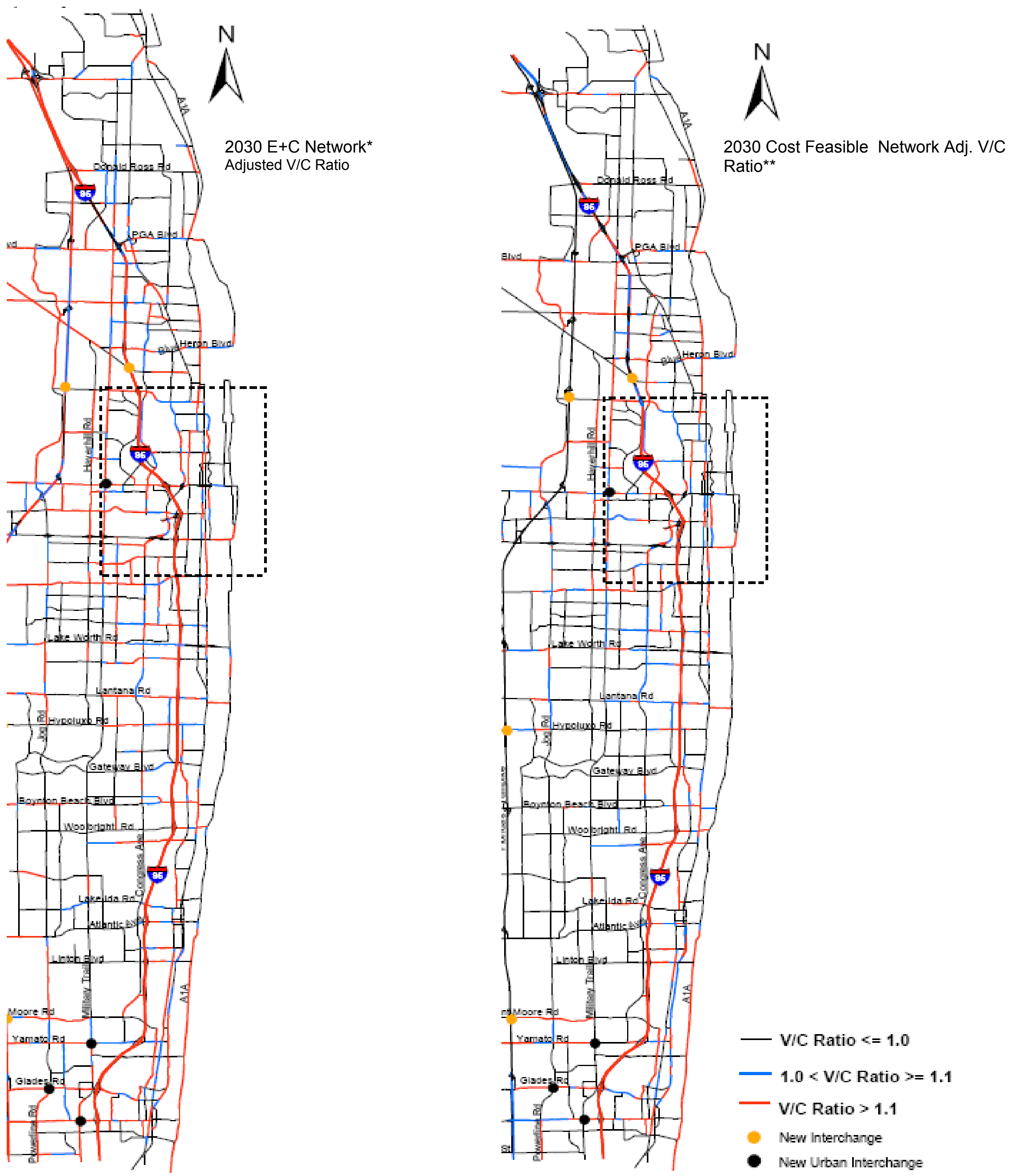
Figure 1.12: Roadway Level of Service (LOS) in Palm Beach County



Source: Palm Beach County LRTP 2030

* Existing (E) plus committed (C) roadway network; ** Volume-to-capacity (V/C) ratios – Basis for LOS

costs, and environmental impacts, these additional lane miles would be hard pressed to materialize. Therefore, the ability to potentially provide a transit service along available right-of-way in the midst of system-wide roadway congestion appears to be an attractive alternative to help serve the mobility needs of the area. Potential transit mobility options can therefore reduce the amount of delay, provide more reliable travel, reduce congestion and positively impact air quality.

Transit Demand

A transit project along the FEC Railway corridor area would provide transit service with direct connections to where people live and want to go while meeting the transit demand more efficiently. Currently, transit services are concentrated in the eastern sections of each county where development occurred earliest and where the transit-dependent neighborhoods tend to be located. However, a transit project along these areas would also provide numerous connections with existing east-west transit services as indicated in **Figure J.1** in **Appendix J**.

Existing transit demand in the Tri-County area is evidenced by ridership numbers along the existing systems. In Miami-Dade County, Metrorail (heavy rail) had average weekday boardings in 2005 of 58,616 and Metromover (a free People-mover service) had 29,072. The entire Metromover system, 6 Metrorail stations (including the most utilized at Government Center), and approximately a third of the Metrorail system is in the SFECCTA study area. Boardings for the 6 Metrorail stations located within the SFECCTA study area are exhibited in **Table 1.3**. Opportunities exist to connect a potential passenger service along the FEC Railway to both the Metromover and Metrorail system either directly or indirectly.

Miami-Dade Metrobus has 37 routes in the SFECCTA study area and they recorded about 52% of the system-wide bus boardings. Furthermore, the routes running parallel to the FEC Railway in the north-south direction (14 routes) had a 26% share of the system-wide boardings. All the routes parallel to the FEC Railway had average weekday boardings in excess of 4,000 in FY 2005, with one exception, and ran on headways of less than 15 minutes.

Table 1.3: Metrorail Boardings

Metrorail Station	Mar-06 Daily Boardings
Tri-Rail Station	1,542
Northside	1,901
Dr. Martin Luther King	1,235
Culmer	1,108
Overtown	565
Govt. Center	11,296

Source: Miami-Dade Transit

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Broward and Palm Beach Counties also provide bus transit service within the study area. According to BCT monthly ridership reports, combined daily average weekday boardings for the entire system for FY 2005 was 146,821. The 33 BCT bus routes within the SFECCTA study area contributed up to 85% to the system-wide ridership. Eleven (11) of the bus routes run in a north-south direction parallel to the FEC Railway and they had 42,610 combined daily average weekday boardings, which is about 29% of the total system-wide ridership. Average daily weekday boardings for FY 2005 for the Palm Beach County Public Transportation System (Palm Tran) were estimated to be 27,796. The Palm Tran bus routes (26) within the SFECCTA study area comprised approximately 72% of the system-wide boardings. The ten (10) bus routes running generally parallel to FEC Railway in the study area recorded about 13,058 average weekday boardings (approximately 47% of total system-wide boardings). In addition to parallel bus routes along the corridor, there are also a total of 44 east/west bus routes that cross the FEC. Nineteen (19) of these routes are in Palm Beach County, 15 are in Broward County and 10 in Miami-Dade County. These existing east/west routes will be the base feeder system into any transit project along the FEC.

The SFRTA operates Tri-Rail along the 72-mile SFRC that generally runs parallel to I-95, connecting Palm Beach, Broward and Miami-Dade Counties. Tri-Rail service begins at MIA Station in Miami-Dade County and terminates in Palm Beach County's Mangonia Park Station to the north. The system includes six stations in Palm Beach County, seven stations in Broward County and five stations in Miami-Dade County. With the completion of the double tracking project in June 2006, peak hour headways have been reduced to 20 minutes. Key connections between the SFRC and the FEC Railway can maximize transit ridership in the South Florida area. Tri-Rail service can continue to serve the longer distance commute in its respective market, while the FEC Railway can provide the shorter distance service between the destinations further east that exhibit greater peaks in productions and attractions.

Currently, there is an extensive transfer system available to Tri-County riders. For example, within Miami-Dade County there are transfer opportunities between buses and from buses to Metrorail and transfers to Broward County destinations are available at northern park and ride locations. Broward County riders have transfer opportunities at three locations in Miami-Dade County, two in Palm Beach County and all Tri-Rail stations. Palm Tran provides transfers to Tri-Rail stations. **Table 1.4** depicts the three routes with the highest averages of bus ridership along US-1 and Dixie Highway in the study area. The high bus ridership indicates a clear demand for transit along the north-south corridor and the extensive transfer system (at a cost to the rider) supports the need for a continuous seamless passenger service along the FEC corridor.

Additional local transit service is provided by a total of 15 local/municipal transit circulator programs currently operating in the SFECCTA study area. These 15 local/municipal programs include 11 community bus service programs and four trolley systems. In Broward County, community buses operate in six cities (Dania Beach, Deerfield Beach, Hallandale Beach, Lighthouse Point, Oakland Park, Pompano Beach) and in Miami-Dade County they operate in five cities/villages (Hialeah, Biscayne Park, North

Miami, North Miami Beach and Aventura). Four trolley systems are in operation in the study area: three in Palm Beach County (Boynton Beach, Lake Worth and Downtown West Palm Beach) and one in Broward County (Fort Lauderdale). Some of the existing trolley services are operated by public-private partnerships. Another example of transit service available in the study area includes private jitneys that operate in the Miami CBD (**Figure1.13**). This service consists of private vans that operate on a semi-fixed route with flexible schedules and 3 minute headways.

Table 1.4: Highest Bus Ridership in SFECCTA Study Area

County, Date of Ridership Info	Route Covers This Roadway	Weekday Bus Ridership	Saturday Bus Ridership	Sunday Bus Ridership	Monthly Bus Ridership
Miami-Dade (Sept. 2003)					
Route 3	US-1	12,587	8,671	6,322	Not available
Route 16	US-1	12,587	2,344	1,585	Not available
Biscayne Max	US-1	2,244	Not Applicable	Not Applicable	Not Applicable
Broward (Feb. 2004)					
Route 1	US-1	8,435	5,727	3,405	208,634
Route 10	US-1	3,853	2,877	1,326	95,199
Route 50	Dixie Hwy.	5,010	2,956	1,447	119,250
Palm Beach (May 2004)					
Route 1	US-1	124,247	22,695	8,770	155,712
Route 20	US-1	6,312	986	405	7,703
Route 21	US-1	6,135	6,135	398	7,163

Source: Miami-Dade Transit, Broward County Transit, Palm Tran

Other transit available in the SFECCTA study area includes the National Railroad Passenger Corporation (Amtrak) which provides intercity and long-distance services in Florida. Two routes operate within the SFECCTA study area and run along the SFRC. There are six Amtrak stations in the study area, one in Miami-Dade County, three in Broward County and two in Palm Beach County. Within Florida, Amtrak ridership increased by 3.4% from 2003 to 2004. Miami and West Palm Beach stations within the SFECCTA study area had over 50,000 passengers in 2004. Fort Lauderdale and Hollywood stations added more than 4,000 passengers from the previous year. Proposed transit connections between the FEC corridor and the SFRC can assure that intercity passenger service along the FEC would not be precluded in the future

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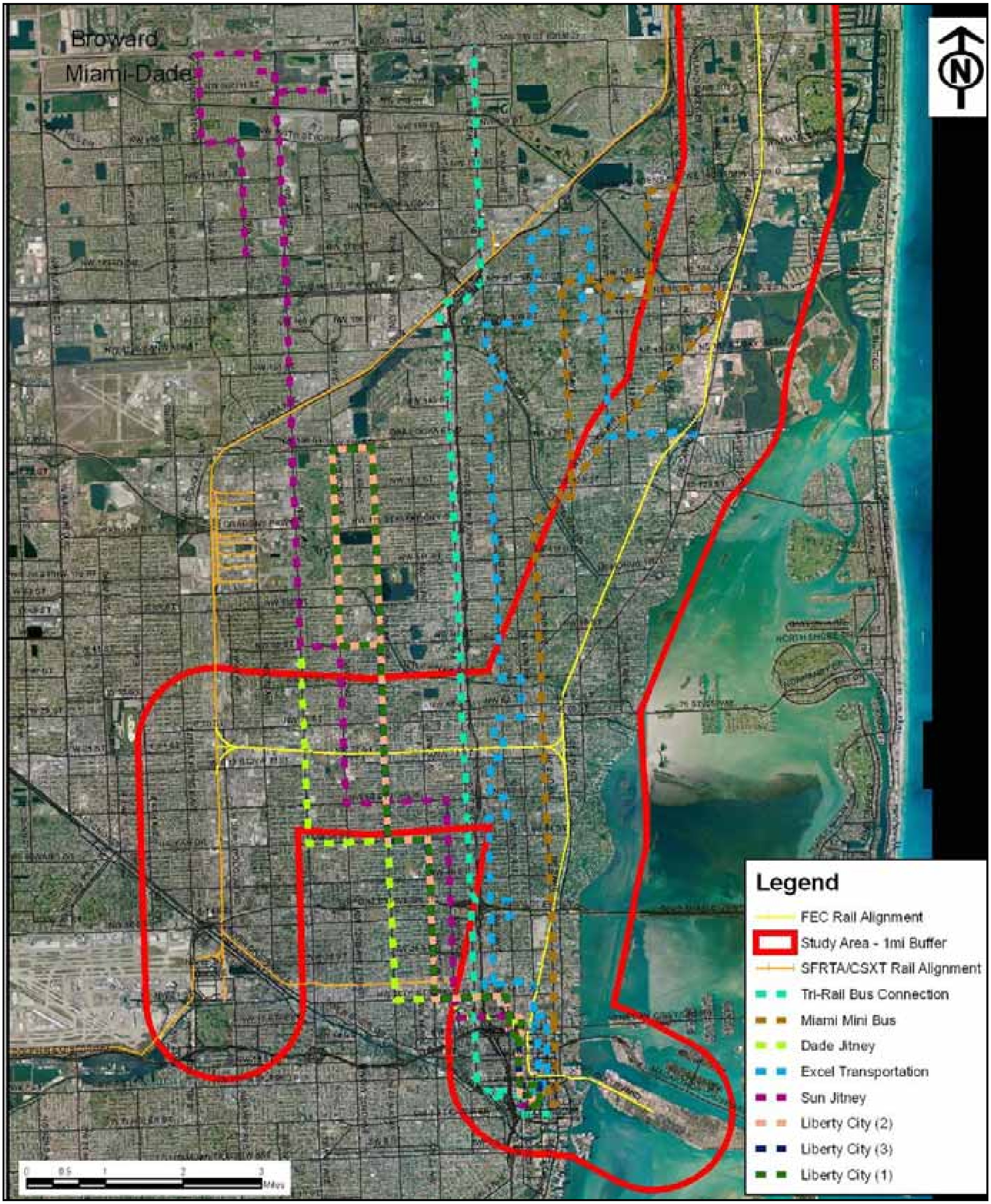
Figure 1.13: Jitney Routes in Miami-Dade County



Another indication of transit demand within the study area is the number of existing carpoolers and vanpoolers whose origins and destinations are in the study area. Information from South Florida Commuter Services noted that there are 3,386 carpoolers and 118 vanpoolers in their database who reside in zip codes encompassing the study area. Additionally, there are 7,483 registered carpoolers and 447 registered vanpoolers in their database who work in zip codes within the study area. It is also probable that there are additional vanpools operating within the study area that are not registered. A summary of the carpool and vanpool origins and destinations is included in **Figure 1.14** and **Figure 1.15**.

Although the amount of existing street transit appears to be significant in the study area, it may also indicate redundancy and overlap of existing bus routes/service which can create additional congestion and inefficiency. A proposed continuous high speed transit service along the SFECCTA corridor has the potential to eliminate overlap in bus service and create efficient transit service by providing key connections to existing local transit systems. Potential elimination of redundancy in street transit service would benefit overall air quality and reduce congestion.

Land Use Demand

The study area presents a unique combination of high population and employment densities. The proposed project will provide access to the highest population and employment densities in the region.

The study area currently has 17% of the population of the Tri-County region and one in every four persons (27%) in the region is employed in the study area (**Table 1.5**). This trend is projected to continue in the future. By 2030 the population in the study area is projected to increase by 51% and employment by 37%. As indicated in **Figure 1.16**, the population density is especially high in and around the City of Miami CBD and in Broward County. Due to limited availability of land, population densities are anticipated to significantly increase throughout the study area. The study area also encompasses major employment centers such as the airports, seaports, and major tourist destinations (**Figure 1.17**). As an example, in Miami-Dade County, six out of the top 10 largest public employers have offices or facilities located in the study area. Data from the Greater Miami Convention and Visitors Bureau (GMCVB) indicates that over 3,000 visitors come to the Miami downtown area daily as a result of the attractions in the area. These employment and activity centers are regional in nature and would be supportive of a regional transit system. **Table 1.6** highlights densities in the study area by County. Population and employment densities (and associated productions/attractions) are highest in Miami-Dade County in relation to the other counties and the average Tri-County area numbers. The Palm Beach County densities are across the board lower than the other counties and average Tri-County area. The number of trip productions and attractions associated with demographic indicators clearly indicate that the study area growth is double the Tri-County area numbers.

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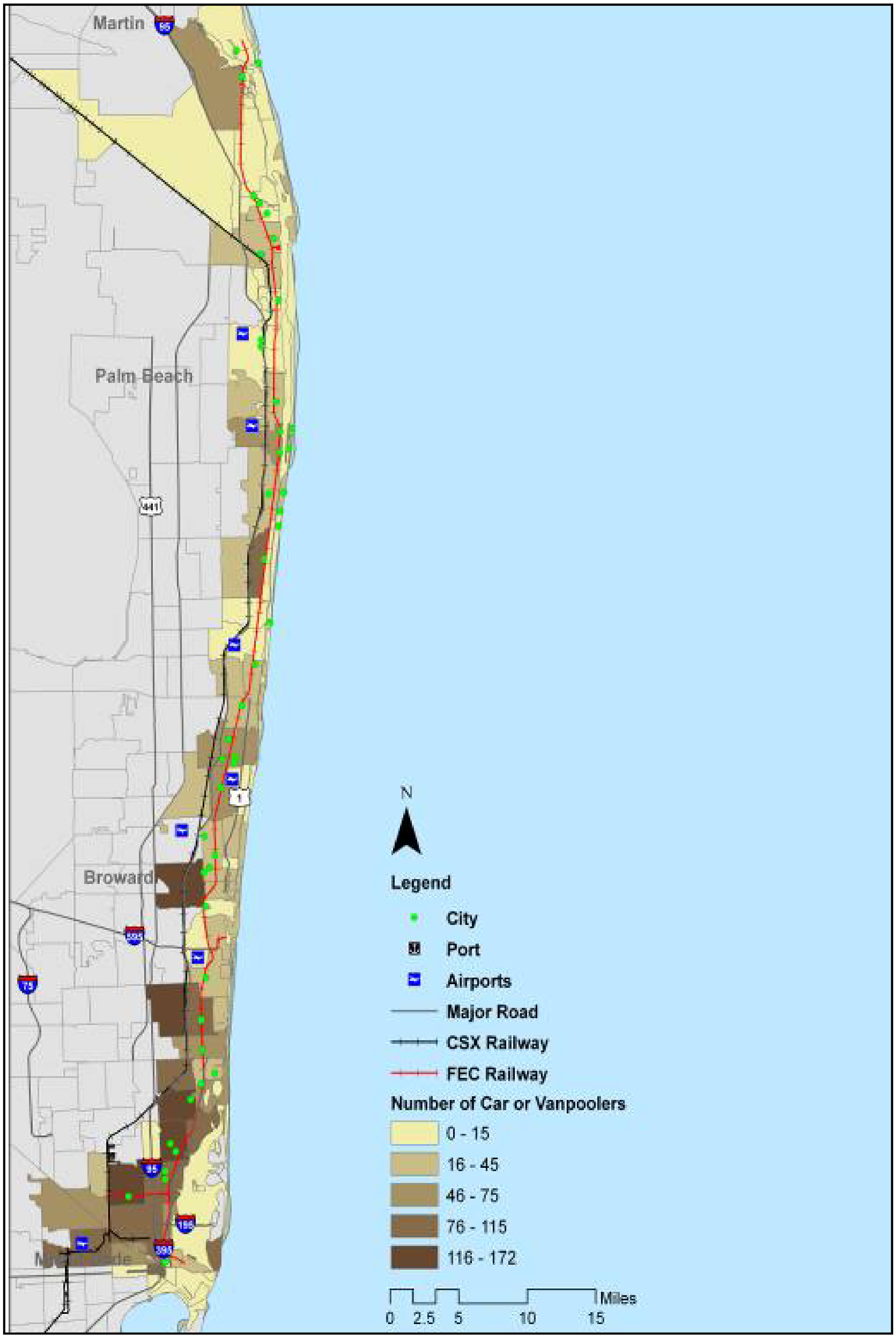
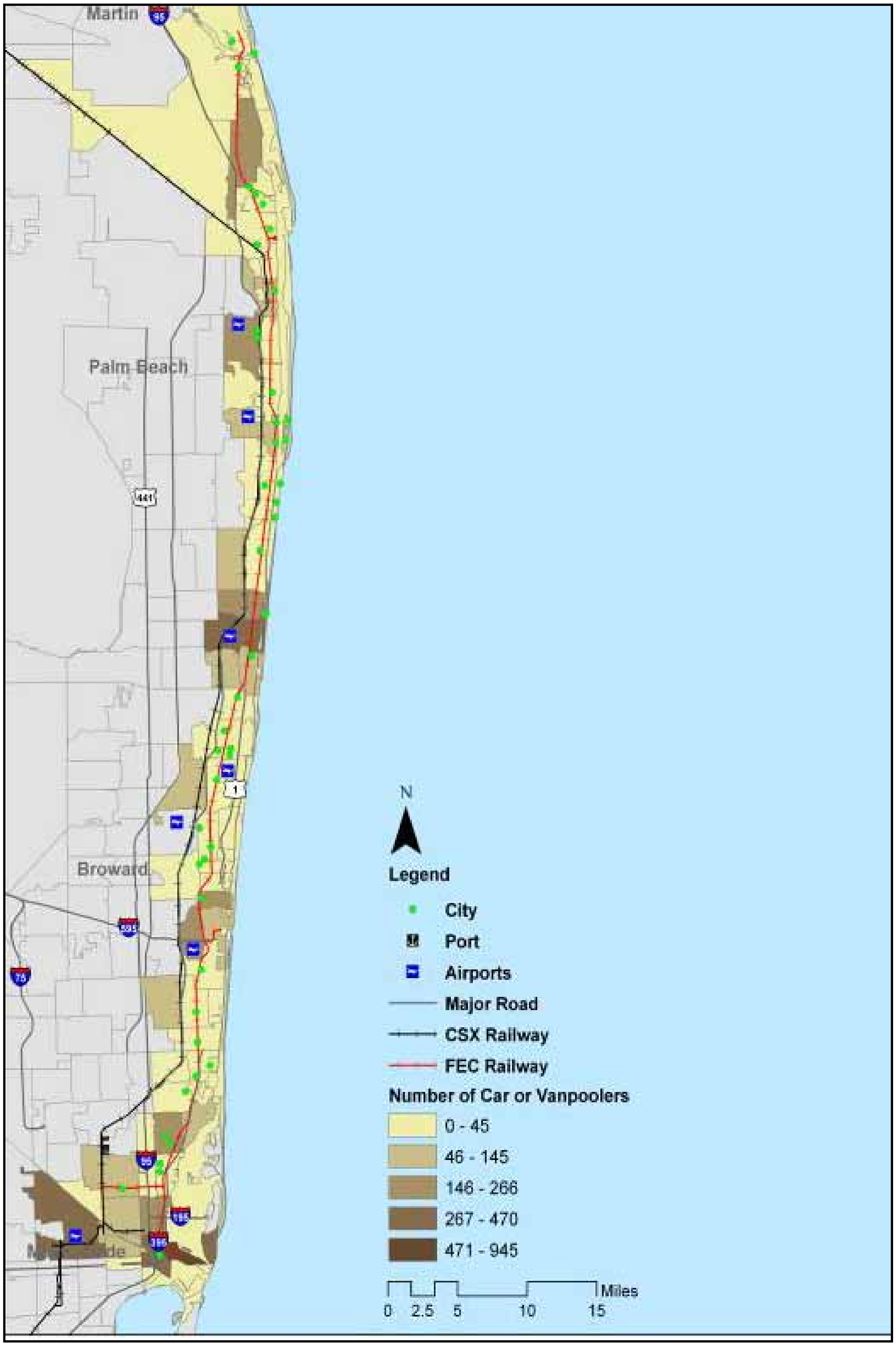
Figure 1.14: Car and Vanpool Origination



Source: South Florida Commuter Services

Figure 1.15: Car and Vanpool Destination



Source: South Florida Commuter Services

Table 1.5: Demographic Information

	2000			2030		
	Population	***Households***	***Employment***	***Population***	***Households***	***Employment***
Study Area	843,844	347,033	645,528	1,278,748	510,640	884,653
Tri-County	4,904,846	1,902,561	2,340,249	7,299,525	2,724,039	3,314,867
Study Area as % of Tri-County Area	17.2	18.2	27.6	17.5	18.7	26.7

Source: Census 2000, SERPM5 Model Data

Table 1.6: Densities (per acre) in the Study and Tri-County Area

	2000			2030				
	Pop	***HH***	***Emp***	***Pop***	***HH***	***Emp***	***Prod***	***Att***
Study Area – Miami-Dade County	11	4	9	14	5	12	43	59
Miami-Dade County	5	2	3	8	3	4	23	22
Study Area – Broward County	7	3	5	12	5	6	43	47
Broward County	6	2	2	9	3	3	27	28
Study Area – Palm Beach County	5	2	3	8	3	5	29	39
Palm Beach County	2	1	1	4	2	2	13	13
Tri-County Area	4	2	2	6	2	3	20	20

Source: Census 2000, SERPM5 Model Data
Abbreviations: Pop – Population; HH – Households; Emp – Employment, Prod – Trip Productions; Att – Trip Attractions

Rail Freight Demand

A proposed improvement along the FEC corridor area would support the safe and efficient movement of freight to and from the South Florida area which is important to the overall economic and environmental health of the region. Rail freight moves building materials, consumer goods, and other commodities into the region. Rail freight is also a key supporting link for South Florida's dominance as the maritime gateway between the United States and Caribbean/Latin American region.

Overall the FEC operates a freight only rail operation focusing on four principal markets in South Florida:

- the movement of intermodal containers and trailers to serve local markets or through movement to/from ports in South Florida,
- the movement of rock and stone used for construction from quarries in Miami-Dade County to concrete plants and construction depots along the east coast of the state,
- the delivery of automobiles for local use or export to southern destinations and the provision of carload freight service to a limited number of local customer warehousing facilities along the line.

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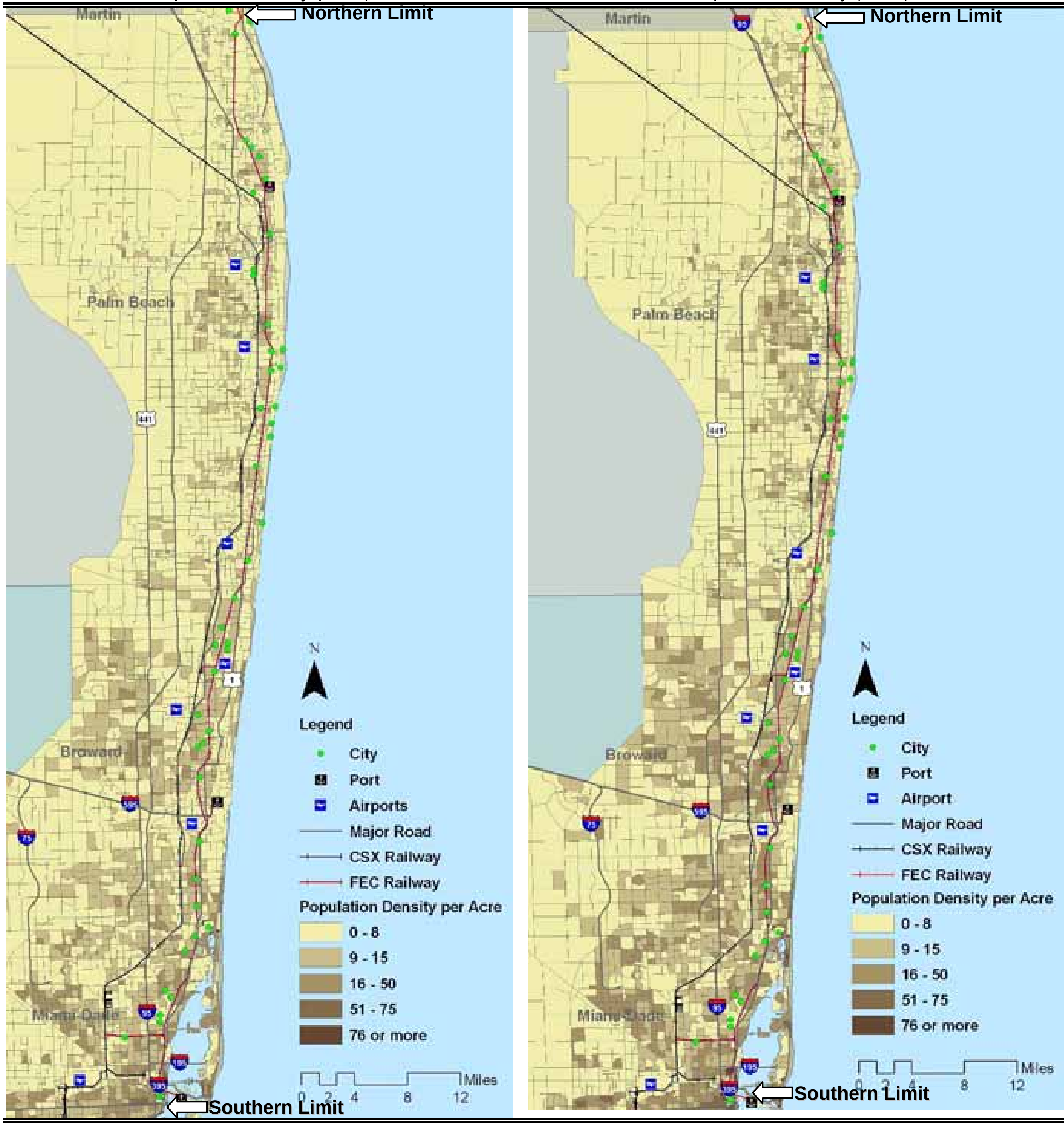
Figure 1.16: Population Density for 2000 and 2030

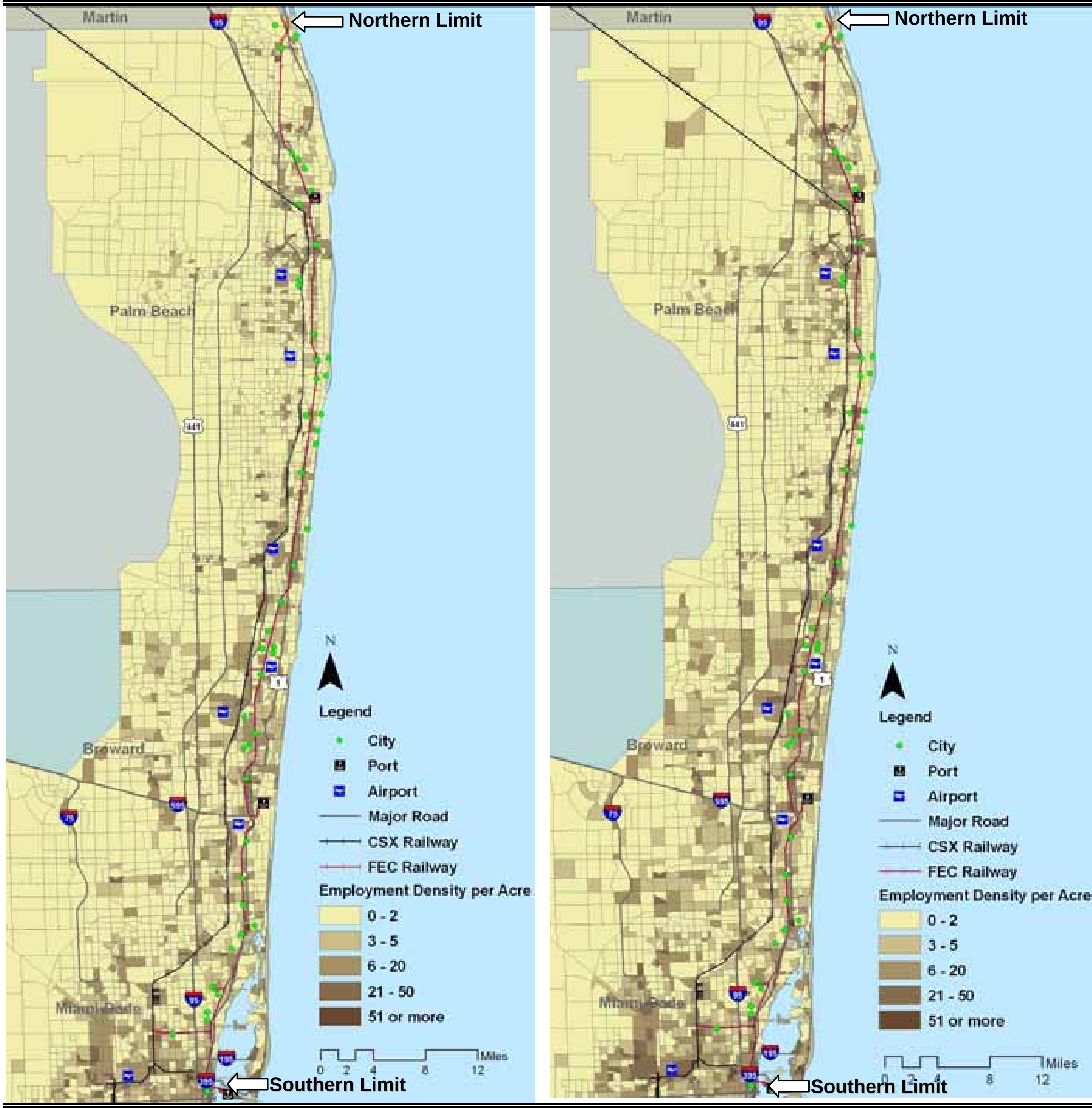
Population Density (2000)	Population Density (2030)



Source: Census 2000, SERPM5 Model Data

Figure 1.17: Employment Density for 2000 and 2030

Employment Density (2000)	Employment Density (2030)



Source: Census 2000, SERPM5 Model Data

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FEC's customer base in South Florida includes three intermodal operations, three industrial warehousing districts, 26 local online customers or team tracks and four locations for the potential interchange of traffic with CSXT operations on the SFRC. The intermodal operations include a major facility at Hialeah used for the local use and POM traffic, a ramp at Fort Lauderdale for local use and the service of Port Everglades (PEV) traffic and the Port of Palm Beach (PPB) which serves overseas traffic. The three industrial warehousing districts include the vicinity of Hialeah, the Pompano Market north of Fort Lauderdale and the Lewis Terminal district in the vicinity of West Palm Beach. The 26 local online customers and team tracks included 14 locations which were observed to be actively engaged in the shipment of building materials (10), food products (3), and paper (1). The remaining 12 sites were observed and reported to be inactive at the time of this study's train inspection. In 2005 the FEC carried 550,000 carloads of traffic. Forecasts indicate that traffic could increase by approximately 56,000 to 86,000 carloads in the next decade, representing a 10 to 16% traffic increase. With such a growth in traffic it is likely that FEC could add several trains to their current average lineup of 26 daily trains. The average train length ranges from 4,500 feet to 8,500 feet.

CSXT operates freight rail services along the SFRC focusing on three principal markets in South Florida:

- the movement of rock and stone used for construction from quarries in Miami-Dade County to concrete plants and construction depots within the state,
- the provision of carload freight service to local customer warehousing facilities along the line, and
- the movement of occasional unit trains (e.g., steel or coal) on an as-required basis.

CSXT moves virtually no containers and trailers on intermodal trains in South Florida. Most of the intermodal traffic in the region moves on the parallel FEC Railway corridor. In 2004 the CSXT carried 14.9 million gross tons of train equipment and lading on the SFRC. The observed road trains on the SFRC provides capacity for about 600 cars per day, which would suggest 20% of the cars are moving on local trains. This is consistent with the observation that many more local trains and freight cars in sidings were observed on the SFRC compared to the FEC. In total, CSXT runs 4 weekday road freight trains and 2 local trains. CSXT maintains three principal yards in the study area, Hialeah (in Miami), Dania (near Fort Lauderdale) and Pompano Beach. Each yard has local trains which serve online customers with carloads of various commodities. Over the past ten years, freight traffic increased by over 50%. With the completion of the double tracking project it is anticipated that CSXT will have sufficient capacity to meet future needs. These needs will be better coordinated with Tri-Rail operations on the SFRC due to negotiations to transfer dispatching control along the SFRC to the SFRTA (expected to occur 2007 – 2008). Any potential Tri-Rail extension north or south will also have to be coordinated with CSXT operations along the SFRC. Additionally, a freight integration analysis as part of this study highlights the potential for connections between the two freight corridors, thereby maximizing the potential for more efficient freight and passenger movements in the study area.

1. PLANNING CONTEXT AND PURPOSE AND NEED

Seaport Demand

A proposed transportation improvement along the FEC corridor area would support demand at major area seaports. The POM is the largest truck generator in Miami-Dade County (4,000 trips per day) followed by MIA (over 1,100 trips per day) and existing FEC/CSXT rail yards (1,000 trips per day to FEC Railway Hialeah yard). PEV in Ft. Lauderdale has similar truck generation values. Container movement information indicates that the POM leads the State with 1,041,483 twenty-foot equivalent units (TEU's) in fiscal year 2003, followed by PEV with 569,743 TEU's (number three in the state) and the PPB with 217,558 TEU's (number four in the state). Cruise ship activities in the same period (2003) for the POM were over 3.9 million passengers, PEV with over 3.3 million passengers and the PPB with 650,000 passengers. Traffic at the POM is constrained from growing in the future due to lack of land availability. Therefore, no more than 10% of the intermodal traffic through the POM moves by rail. However, truck access to the POM is poor due to continued growth in the City of Miami CBD. A potential rail freight solution along the FEC to the POM would alleviate truck traffic to the port and conflicts with increased vehicle congestion in the CBD.

PEV is currently served by three intermodal trains per day on the FEC. PEV anticipates building an "on dock" terminal which would facilitate the movement of freight into the port. Should this happen port traffic along the FEC Railway could grow more rapidly and potentially overtake the POM in container volume. The PPB is currently served by one intermodal train a day on the FEC Railway. The PPB is also reconfiguring its rail yard to better handle large volumes of rail traffic so future growth is also expected here.

The potential to maximize the use of the FEC right-of-way for passenger and freight service is therefore beneficial not only for the movement of people but also goods. The use of rail freight to serve seaport demand would also have the positive benefit of decreasing the number of trucks along roadways, thereby increasing the safety of traveling motorists and reducing congestion.

Airport Demand

A proposed transit project along the SFECCTA corridor area would facilitate movement of people to major airports in the area.

MIA ranks as the number one airport in the country for international freight and number three in the world for international passengers processed. In 2004, MIA ranked 15th in the country (31 million passengers) while FLL ranked 24th with over 20 million passengers processed. More significantly, FLL had one of the fastest growth rates in the country, with a 16% increase in passenger traffic from 2003 while MIA had a 3% growth. Limited information from PBIA indicated that they are processing over 7 million passengers a year. Improvements to terminals and runways are currently under construction at MIA and FLL to accommodate continued growth at these major activity centers.

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Therefore, expanded passenger and freight capacity along a major SIS facility, such as the FEC, would be beneficial to meet the continued overall demand experienced at the major airports in the study area. Moreover, potential direct connections between these three facilities would provide opportunities for increased efficiency in processing freight and passengers, particularly in the event of emergency evacuations and recovery.

1.2.2 System Linkage

- Problem: The two continuous major north-south roadways serving the eastern communities of South Florida, US-1 and I-95, are currently congested and are anticipated to be increasingly congested in 2030. Moreover, of the major State roadways examined throughout the study area, over 70% were found to be operating above their capacity. Therefore, given the constraints in terms of land values/availability and costs of roadway construction, the provision of additional roadway capacity (additional lane miles) in the study area is anticipated to continue to lag behind the area growth rates.

- Problem: The FEC corridor and the SFRC traverse the study area serving freight needs. Freight needs are anticipated to grow along both corridors.

- Problem: Continuous north-south transit ridership opportunities are limited to Tri-Rail along the SFRC which currently does not provide a direct link to the major employment and population centers of the area.

Need: An additional transit service link is needed to provide greater mobility to directly access jobs, transportation hubs, varied housing opportunities, recreation, schools and health facilities. A link is needed between the existing passenger/freight service along the SFRC and the FEC corridor area to provide increased transit and freight mobility as an alternative to moving people and goods on congested roadways.

- Proposed Action - A transit project along the FEC Railway corridor area:
  - Would re-link the eastern cities' CBD's, which have been developed along the FEC Railway.
  - Would link key major employment centers, two State universities: Florida International University (FIU) and Florida Atlantic University (FAU), and the private Palm Beach Atlantic University (PBAU), and various community colleges. It would also link various hospitals/medical complexes, sports/cultural venues and tourist attractions.
  - Would serve and expand overall transit ridership in the area with direct connections to existing and proposed transit. In Miami-Dade County these connections would be to Metrorail (a regional heavy rail system), Metromover (a People-mover system) and Metrobus. Metrorail stations in the Miami CBD would interface directly or indirectly with the FEC corridor. Bus ridership in Miami-Dade, Broward and Palm Beach Counties within the study area constituted 52%, 85% and 72% of the respective system-wide boardings for each county indicating not only a need for additional transit

but also the potential to extend the mobility options throughout the study area by providing a continuous Tri-County transit connection.

- Would link with existing and planned local systems such as trolleys in Boynton Beach, Lake Worth, downtown West Palm Beach, Miami Beach, Miami and Ft. Lauderdale; with existing and planned waterborne transit, and with planned premium (fixed) transit systems such as the Central Broward East-West and the Miami-Dade East-West corridor to the MIC.
- Would link with passenger and freight service along the SFRC (CSXT).
- Would provide opportunities to provide needed freight capacity expansion for the area. Significant opportunities exist for connections between the SFRC and the FEC corridor to not only maximize the movement of goods but also people. These potential connections would contribute to the expansion of a true multi-modal transportation network in the South Florida area by maximizing the use of two key SIS corridors that serve three airports and three seaports and move people and goods.
- Would provide an alternative travel mode for tourist destinations.

Combined freight and passenger service along the FEC corridor would provide key linkages to the existing road network and provide additional capacity to expand the transportation system coverage. This expanded transportation coverage is needed to serve the high population and employment density areas along the coast, the major seaports, airports and other significant land uses along the corridor. The proposed project would also more closely link major SIS facilities, thereby maximizing their multi-modal interaction.

1.2.3 Federal, State, or Local Government Authority

➢ Problem: State and local governments have identified a need along the eastern coast of the Tri-County area for additional mobility improvements.

Need: A proposed transit project is needed in the Tri-County area to enhance mobility and alleviate traffic congestion.

➢ Proposed Action – A transit project along the FEC Railway corridor area:

- Would be consistent with the Miami-Dade MPO 2030 LRTP, which identified the Northeast Corridor project along the FEC for premium transit service. This project is listed as a cost-feasible, Priority IV (2021-2030) project in the 2030 Plan. It is a 13.6 mile rapid transit corridor from Downtown Miami to the Broward County Line (NE 215th Street) along Biscayne Boulevard and the FEC Railway right-of-way. The purpose of this project is to serve the high densities and population concentrations along the eastern seaboard, provide a regional link to Broward County, and to provide service to multiple municipalities and neighborhoods.

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- Would be consistent with the Broward County MPO LRTP Year 2030 Update (adopted December 2004) which identified LRT and crossing improvements on the FEC corridor from Miami-Dade County to Palm Beach County as a cost feasible project.
- Would be consistent with the 2030 Palm Beach County LRTP which also includes the expansion of Tri-Rail service along the FEC tracks to the northern county border.

Overall local support for transit expansion within the study area is evident with the adoption of Miami-Dade County's People's Transportation Plan (PTP) and the half-penny transportation surtax which paved the way for a dedicated funding source exclusively for transportation improvements. Broward County's first attempt at a transportation surtax was unsuccessful in 2006 but future votes on this issue are expected to be forthcoming. Transit expansion along the FEC corridor is also consistent with each of the Counties' local government comprehensive plans. The Florida Department of Community Affairs (DCA) reviewed the Evaluation and Appraisal Reports (EAR) on the Comprehensive Plans for each County and found them in compliance with the provisions of Chapter 163, Florida Statutes (FS). Similarly, the DCA reviewed the tentative Work Programs of FDOT's Districts 4 and 6 which contain projects along the SFECCTA corridor, and found those Programs in compliance with Chapter 339.135(4) (f), FS. The FEC Railway has also been identified as part of Florida's SIS. The Florida Legislature established Florida's SIS in order to accommodate future growth in Florida. The SIS is composed of transportation facilities, such as the FEC Railway and its freight terminals, and services of statewide and interregional significance.

1.2.4 Social Demands and Economic Development

- Problem: Access to jobs and other activities for a disproportionate number of transit-dependent populations is limited due to a lack of an easily accessible continuous transit facility.
- Problem: Redevelopment opportunities along the eastern cities are in need of additional multi-modal transportation infrastructure capacity to serve the intense redevelopment.

Need: A transit improvement is needed where transit-dependent populations are located to facilitate access to jobs and other activities and to support and enhance redevelopment opportunities.

- Proposed Action – A transit project along the FEC corridor area:
  - Would provide access to jobs (the main employment centers are in the study area) and additional housing opportunities in transit-dependent areas by supporting redevelopment efforts of under-utilized areas adjacent to the FEC corridor.
  - Would support the Welfare to Work program by increasing access to north-south and east-west transit connections from affordable housing to major employment centers, and related services such as childcare, healthcare and training.

Social Demands

The SFECCTA study area has a considerable concentration of transit-dependent populations (**Figures 1.18 – 1.19** and **Figure J.10** in **Appendix J**). Transit-dependent groups are typically considered to consist of low-income, ethnic minority, no-vehicle households, disabled populations, the young and elderly. These groups typically rely on transit services for access to jobs, services and amenities. The study area has a significantly high number of households with annual incomes less than $15,000 concentrated mostly in Miami-Dade and Broward Counties. Noticeably, Miami-Dade County also has high concentrations of transit-dependent populations (**Figure 1.19** and **Figure J.10** in **Appendix J**). In Palm Beach County, especially near the PPB, there are also a high number of no-vehicle households.

Table 1.7 summarizes information on transit-dependent populations within the study area and the Tri-County area. Information represented for the Tri-County area is an average of the three counties. **Table 1.8** summarizes transit-dependent density information by county. Generally, for each respective county the number of transit-dependent populations within the study area is higher than the county as a whole. Likewise, transit-dependent densities within the study area are higher than in the Tri-County area and are highest in Miami-Dade and lowest in Palm Beach.

Figure 1.20 and **Figure 1.21** depict that along the FEC Railway and I-95 corridors, the highest peaks of low-income populations and no-vehicle households are close to the Miami and West Palm Beach CBD's. A significant amount of the no-vehicle households are more discernable along the I-95 corridor, thereby making walk up transit opportunities more important along this corridor. However, walk up opportunities along the SFRC are very limited.

Although transit-dependent populations may benefit from local transit services operated by local agencies, there is a need for continuous transit service to maximize job opportunities as well as to provide access to affordable housing. A regional premium transit service along the FEC corridor area will connect people to where the jobs, training, housing, educational opportunities, healthcare, childcare, retail/shopping and entertainment services are located thereby enhancing overall mobility options for transit-dependent groups.

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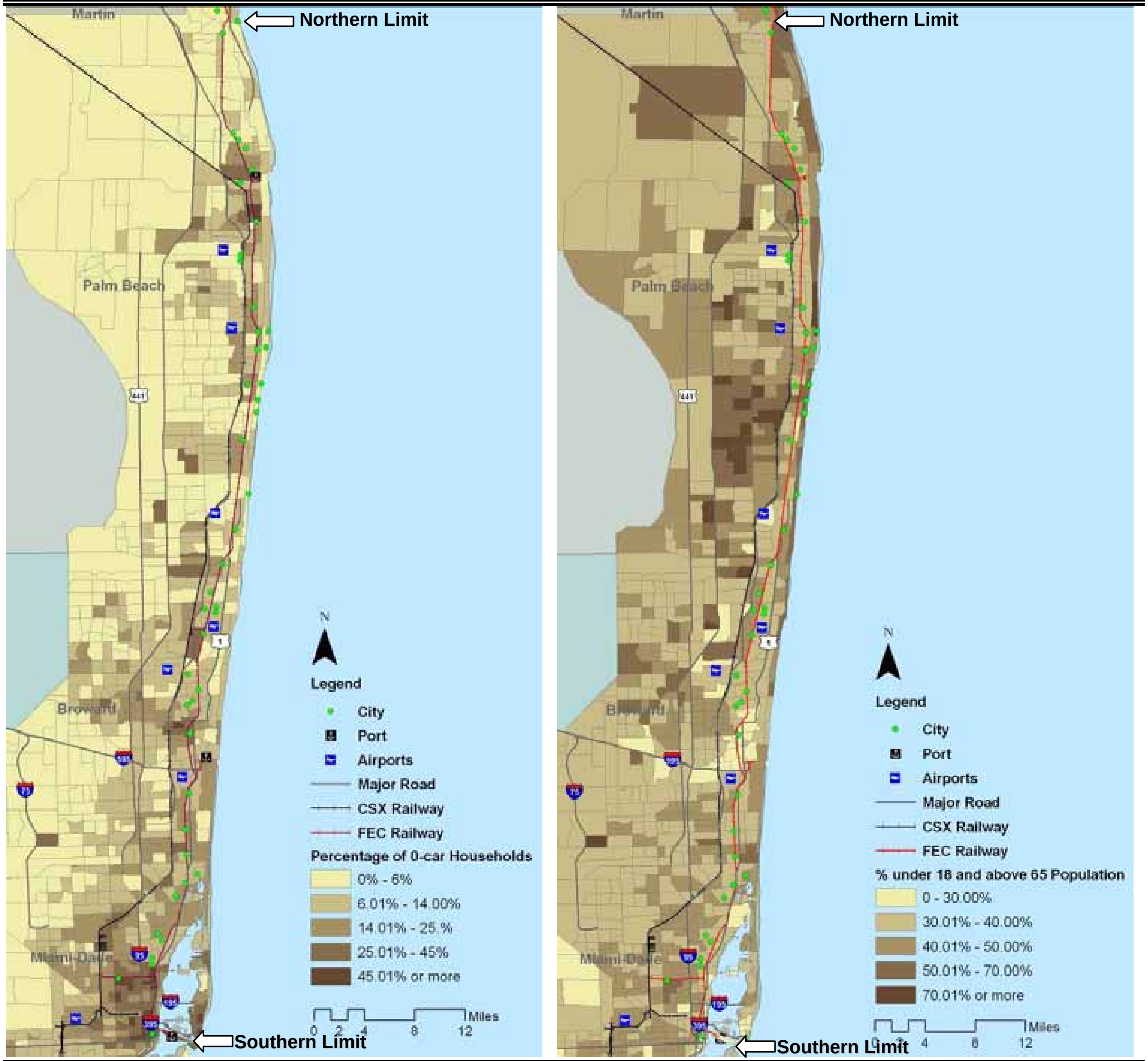
Figure 1.18: Transit-dependent Population, Part 1

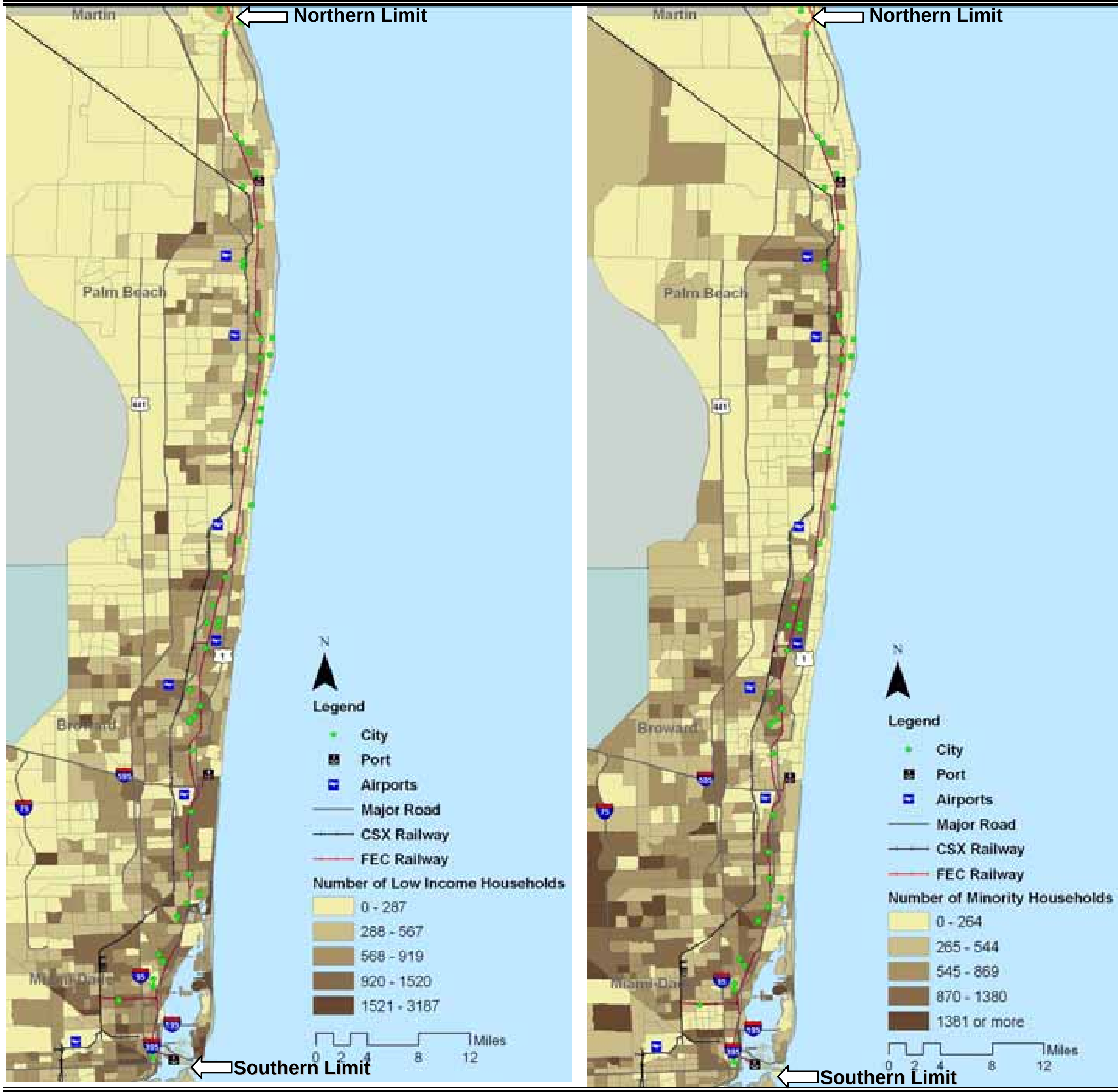
Percent no-vehicle Households	% Under 18 and above 65 pop.



Source: Census 2000

Figure 1.19: Transit-dependent Population, Part 2

Low-income Households	Minority Households



Source: Census 2000

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Table 1.7: Transit-dependent Populations

Population group	Study Area		Tri-County	
	No.	% of total	No.	% of total
Minority Household	78,188	22.5	446,532	23.3
Low-income Households*	105,240	30.3	455,461	23.9
No-vehicle Household	53,085	15.3	209,389	23.0
Elderly or Youth**	328,518	38.7	1,998,330	40.0

Source: Census 2000, SERPM5 Model
* 0-15K annual income
** < 18 and > 65 years of age

Table 1.8: Transit-dependent Densities (per acre)

Study Area Section / County	Low-Income Households*	No-Vehicle Household	Minority Households	Elderly or Youth**
Study Area - Miami-Dade County	1.6	0.9	1.1	4.2
Miami-Dade County	0.6	0.3	0.6	2.1
Study Area - Broward County	1.0	0.4	0.7	2.7
Broward County	0.5	0.2	0.5	2.4
Study Area - Palm Beach County	0.5	0.2	0.4	2.1
Palm Beach County	0.2	0.1	0.2	1.1
Study Area - Tri-County	0.9	0.2	0.6	2.7
Tri-County	0.4	0.1	0.4	1.8

Source: Census 2000, SERPM5 Model
* 0-15K annual income
** < 18 and > 65 years of age

Economic Development

A transit project along the FEC corridor area will support local redevelopment efforts thereby enhancing opportunities for jobs and mixed housing. Local governments along the corridor have included land adjacent to the FEC in Community Redevelopment Areas (CRA) to promote redevelopment activities. CRA designation provides a funding mechanism for infrastructure and other improvements within a designated area. The funding method is called 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 CRA in Broward County and nine CRAs in Palm Beach County within or in the immediate vicinity of the study area (**Figure 1.22**). In total, the land area of the CRAs in the study area comprises more than 21,000 acres.

Figure 1.20: Low-Income Population (2000)

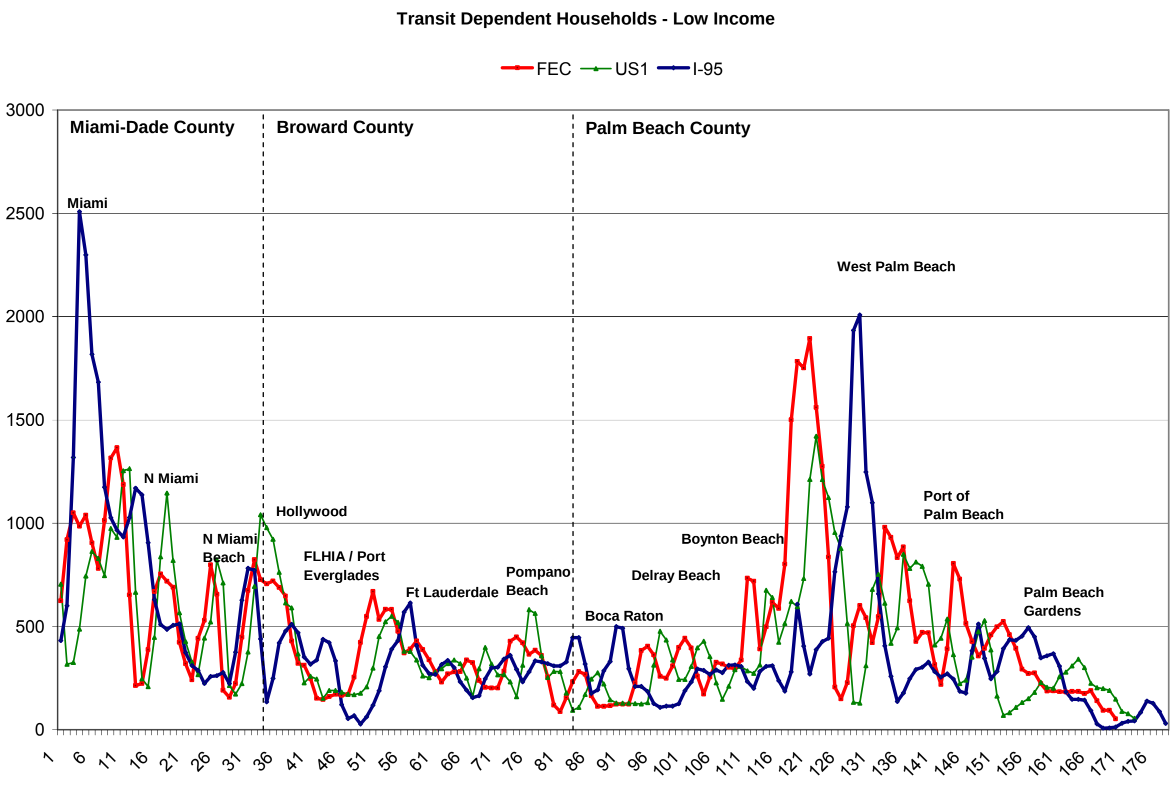
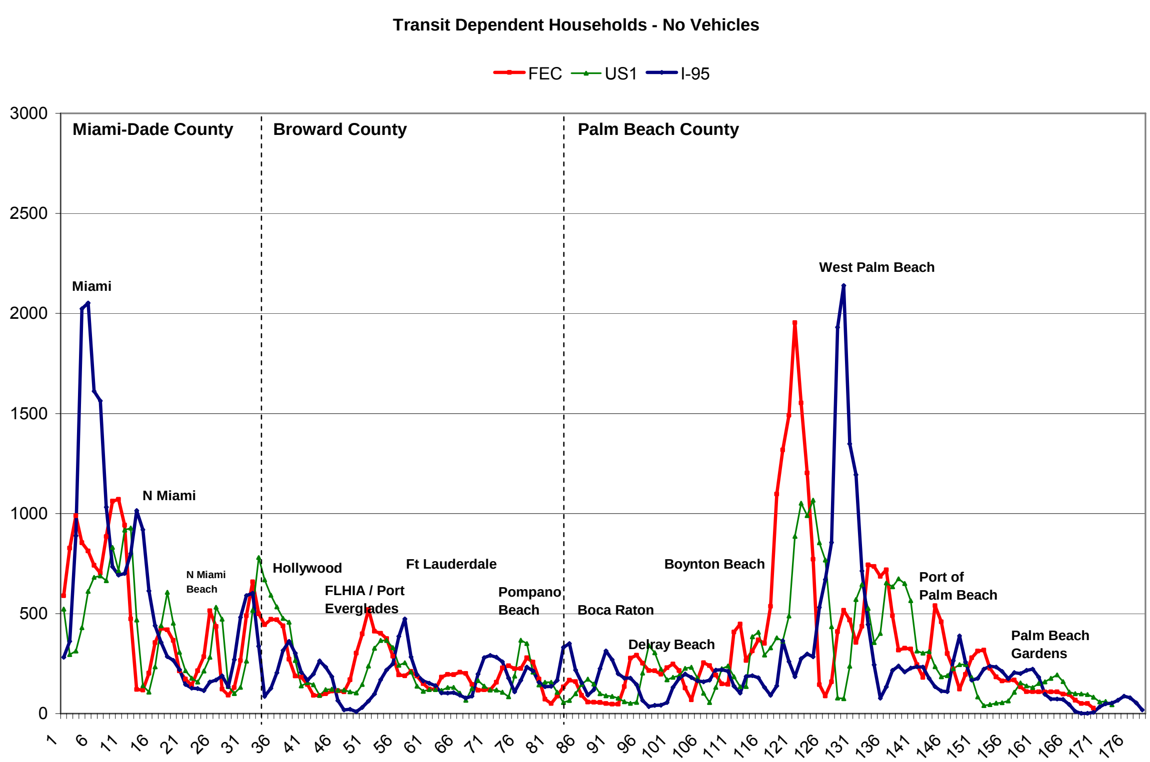
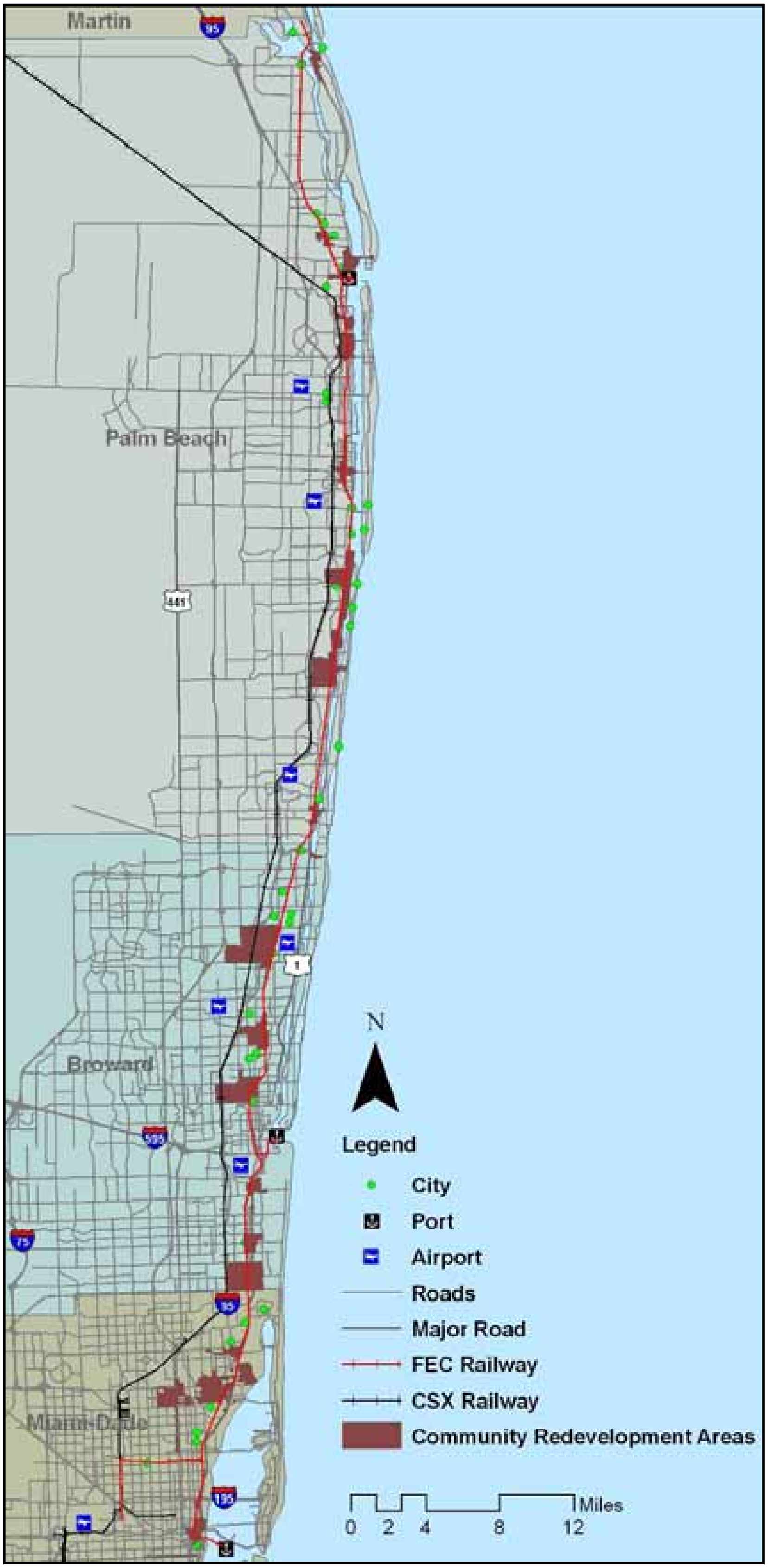


Figure 1.21: No-Vehicle Households (2000)



NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Figure 1.22: Location of Community Redevelopment Areas



A transit project along the FEC corridor area would provide further impetus to redevelopment and cleanup of existing Brownfields. Brownfields are locations where previous industrial or commercial uses produced different degrees of contamination on the associated lands. These lands have the potential to be cleaned and reclaimed for other purposes. Midtown Miami is an example of a successful Brownfield conversion in the City of Miami where a pre-existing FEC rail yard is in the process of being converted to a large mixed-use development. Not only do the City and its residents benefit from the cleanup but they also benefit from the new use. As indicated in **Figure 1.23**, most of the Brownfields along the study area are concentrated in Miami-Dade County. In Broward County, the major Brownfield site is associated with the FEC and its facilities and services in close proximity to Pompano Beach Airpark. In Palm Beach County there is one Brownfield close to an airport site.

The proposed action would encourage redevelopment efforts in existing Enterprise Zones located along the SFECCTA corridor which are State designated areas that receive tax benefits for redevelopment (see **Figure 1.24**). Federal Empowerment Zones are also created to encourage redevelopment and these designations are mostly found in Miami-Dade County along the southern boundary of the SFECCTA study area as depicted in **Figure 1.24**. These areas are typically low-income or minority areas which would benefit from further economic development spurred by a potential transit service along the FEC corridor area.

The proposed action would be consistent with community land use plan and zoning changes to provide for more pedestrian and Transit-Oriented Development (TOD) in these areas. As part of the TOD, mixed-use developments with an affordable housing component are encouraged. Local governments are encouraging public-private partnerships to facilitate mixed-used development opportunities at existing transit stations and are making possible these opportunities at anticipated locations along the FEC corridor. These joint development opportunities strive to include a certain amount of affordable housing be built at locations in close proximity to transit. Passenger service along the FEC corridor has the potential to accelerate economic development into compact, efficient transit friendly development. Examples of local redevelopment efforts are provided below:

- The City of Deerfield Beach created a Dixie Business/Residential Zoning District that encourages pedestrian-oriented mixed-use development on the west side of the FEC right-of-way.

- The City of Oakland Park has established a CRA that includes the FEC right-of-way and has developed design guidelines and an overlay zoning district to encourage pedestrian-friendly development in this area.

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Figure 1.23: Brownfields

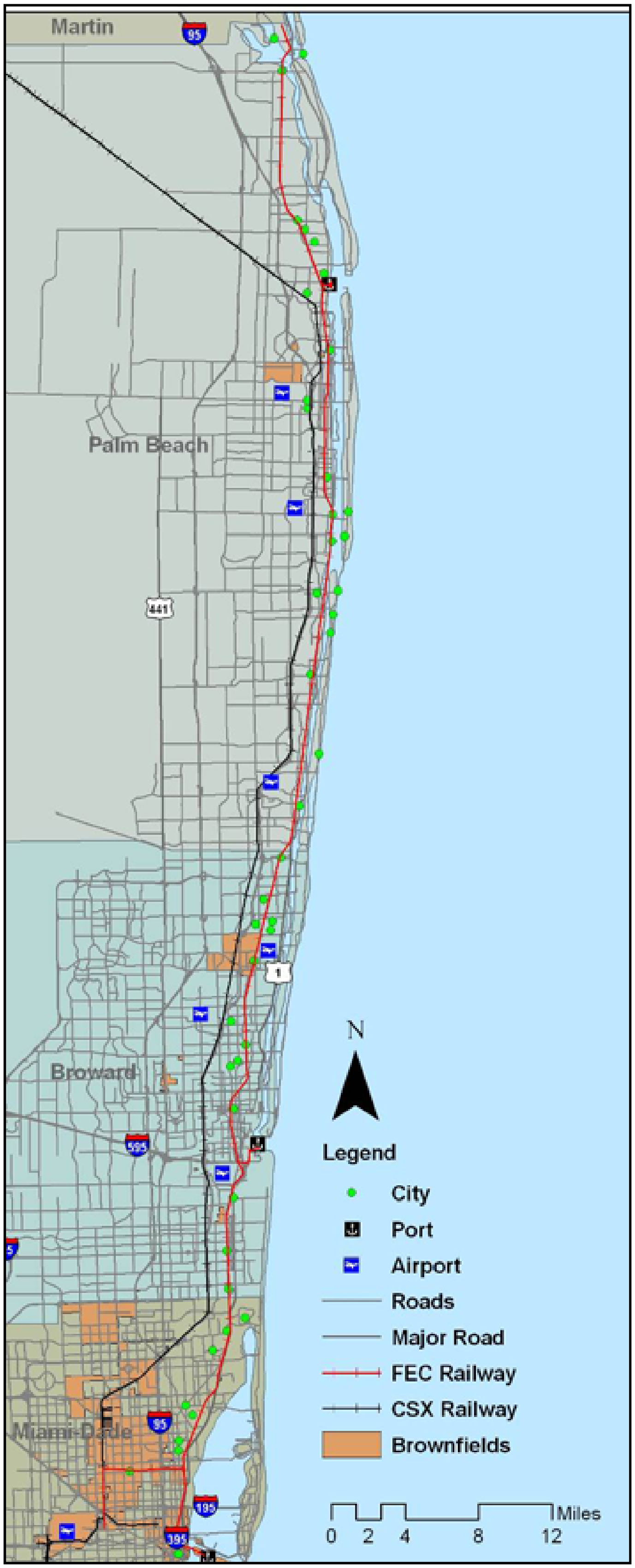
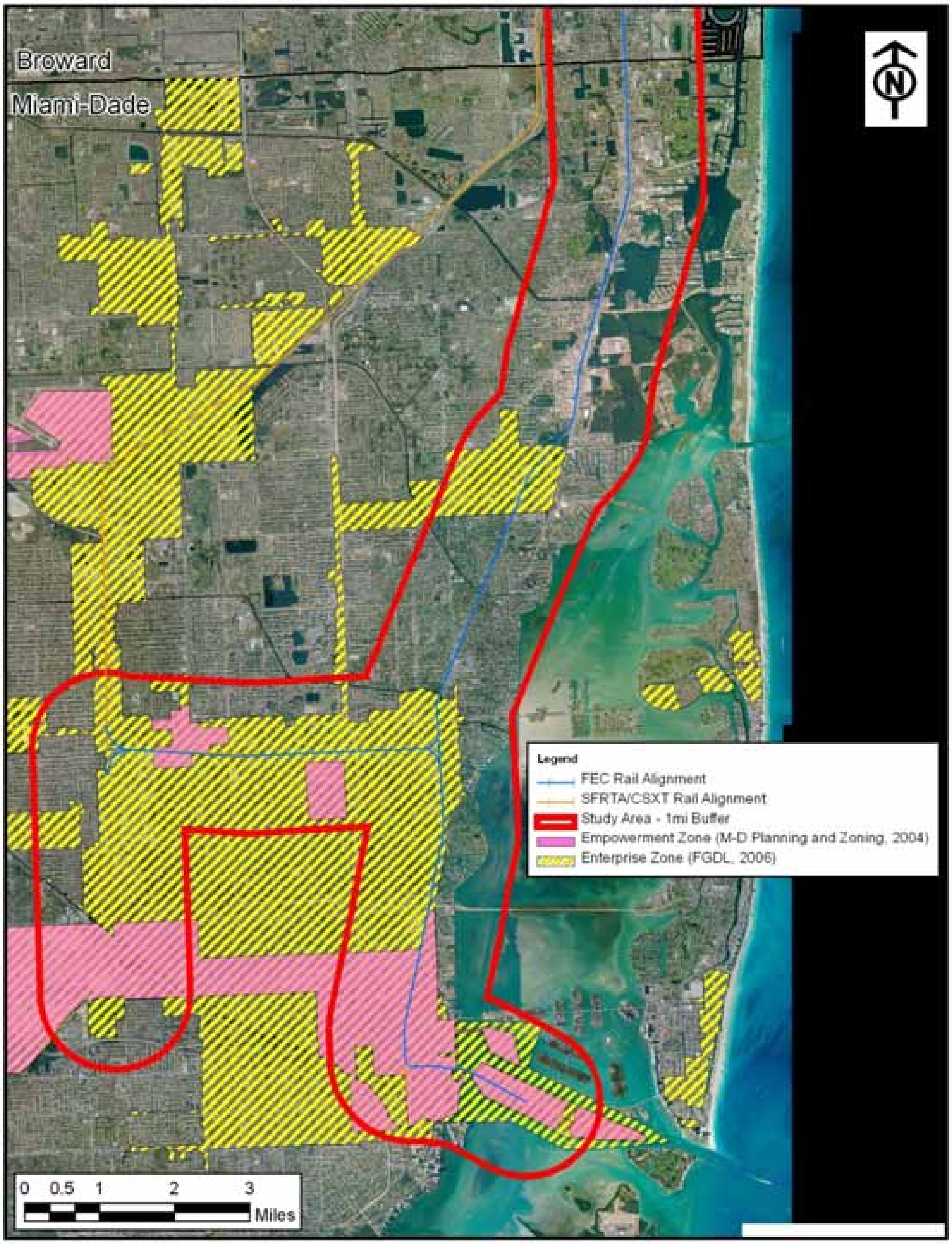


Figure 1.24: Empowerment/Enterprise Zones



- The City of Fort Lauderdale also has a CRA that encompasses the FEC right-of-way and, in conjunction with the County, is developing a Campus Master Plan to more efficiently use the publicly owned properties in Downtown Fort Lauderdale. A key component of this Master Plan is the incorporation of transportation, specifically public transit.

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- The City of Dania Beach has several land use plans, including a CRA, a Redevelopment and Infill Plan and a Master Plan that include the areas adjacent to the FEC right-of-way.

- The City of Hollywood has a CRA that is adjacent to the FEC right-of-way and has completed a City-wide Master Plan that encourages higher density, mixed-use development adjacent to the FEC right-of-way.

- The City of Hallandale Beach has a CRA bounded by I-95 to the west, NE 14th Avenue to the east, Broward/Miami-Dade County Line to the south and Pembroke Road to the north. Eleven (11) development projects within the general FEC Corridor area will add 118,000 square feet of commercial space, 147 condominium units, 265 apartment units (or town home units) and an 80 acre mixed-use development called Village at Gulfstream Park.

- An intermodal center in the City of West Palm Beach would support Tri-Rail and its two planned expansions as well as rapid bus, standard fixed route, and community shuttle services.

- The Treasure Coast Regional Planning Council has a reference publication titled "The Florida East Coast Railroad: A Catalog of Coastal Cities and Redevelopment Opportunities along the Corridor" (1997), which provides a summary of proposals and opportunities to redevelop around historic rail stations from Vero Beach to Boca Raton.

1.2.5 Modal Interrelationships

- Problem: Highway capacity east of I-95 will not be able to accommodate anticipated growth.

- Problem: Airports and seaports have poor connectivity with existing transit.

- Problem: The South Florida transit grid is not well developed.

Need: A project is needed that will complement the performance of highways and transit systems in the study area and provide direct connections to seaports, airports and other multi-modal facilities.

- Proposed Action – A transit project along the SFECC study area:
  - Would potentially interface with and compliment multiple transportation modes including pedestrian and bicycle facilities via proposed greenway trails in Miami-Dade and Broward Counties. Greenway trails are currently planned adjacent to the FEC Railway right-of-way and any plans for transit along the FEC would accommodate bicycle and pedestrian travel by assuring that required safety improvements and separations are in place at the time of service implementation. Bicycles would be allowed on the transit vehicles similar to what is allowed in existing transit services and any improvements to transitway-highway grade crossings will take into consideration the safety of bicycles, pedestrians as well as vehicles.

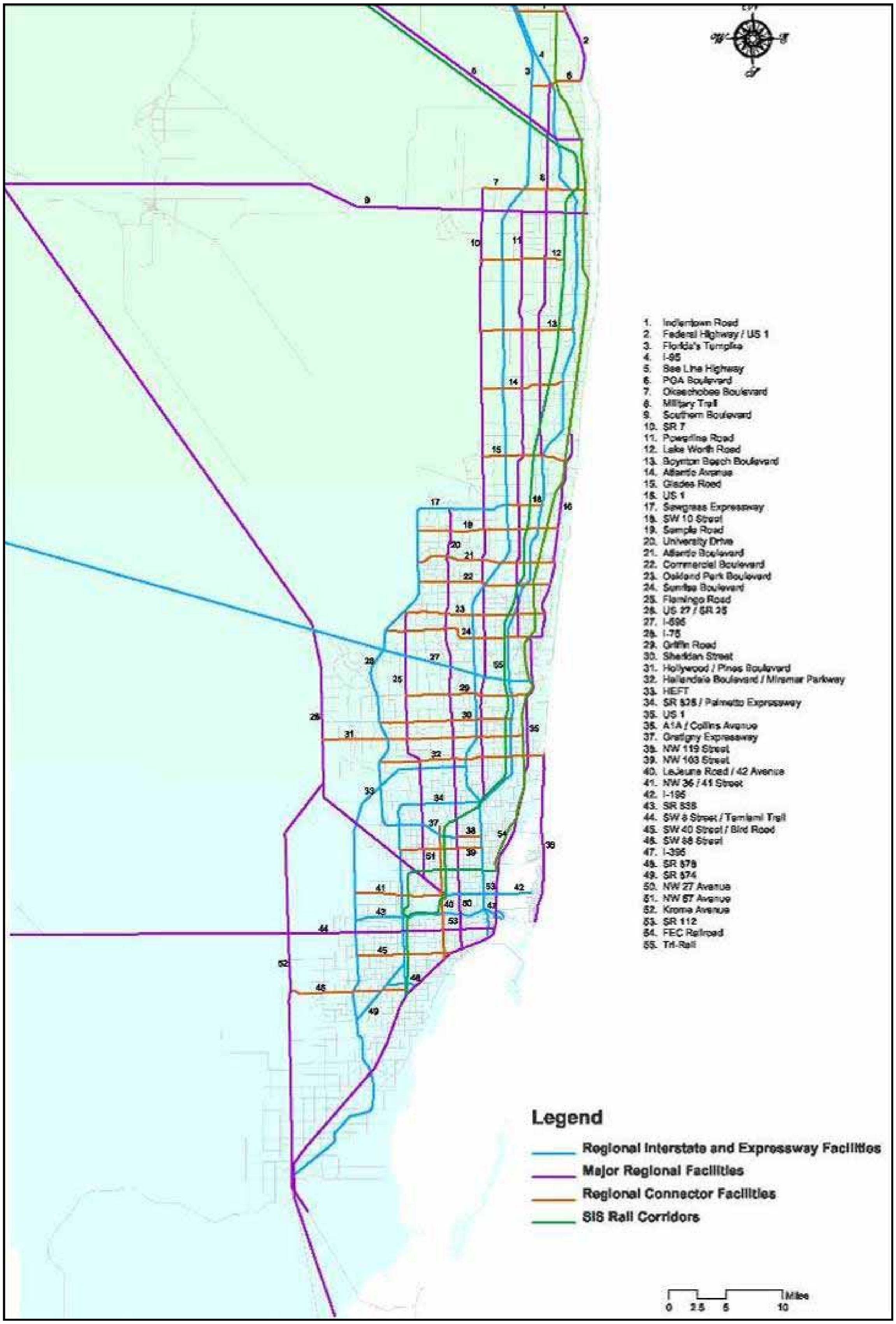
- Would interface with the existing transit system in the three counties: Miami-Dade Transit (MDT), BCT, Palm Tran, Tri-Rail, Amtrak (National Railroad Passenger Corporation), Intercity Bus Services (i.e., Greyhound), Jitneys (privately operated public transit vehicles intermediate between taxis and buses), Shuttle Bus Services, Para-transit Services, and Waterborne Transit.
- Would also link to planned transit projects in South Florida as indicated in **Table 1.9** below.
- Would complement and link to the I-95 express project which includes BRT and/or express bus in both Broward and Miami-Dade counties.
- Would link three international airports (MIA, FLL and PBIA).
- Would maximize the use of an existing direct rail link between three seaports (POM, PEV and PPB). Maximizing the use of this link for freight transport can reduce truck traffic along already congested roadways.
- Would provide a potential for interconnections between the major seaports and airports in the SFECCTA study area.

Overall, the proposed project is critical to making viable intermodal relationships at both the regional and local levels for travel within and between the counties and cities. As such, it is included in the Tri-County Regional LRTP as a key corridor (number 54 in **Figure 1.25** below), specifically as a SIS Rail Corridor. The proposed project can successfully complement the airports and seaports with mass transit connections to them and between them, and all travel modes, including other transit systems such as the pedestrian and bicycle facilities networks that are within the SFECCTA study area.

Table 1.9: Selected South Florida Premium Transit Projects

Name/ Location	Limits	Lead Agency	Funding Agency/ Status In FTA Program	Anticipated Opening Year
City of Miami Downtown Streetcar, Miami-Dade County	From: Downtown Miami (Loop) up NE 2nd Avenue, through MidTown Miami Development To: Miami Design District (Loop)	COM	No FTA funding sought.	2009-2010
MIC-Earlington Heights Metrorail Connector, Miami-Dade County	Earlington Heights Metrorail station to Miami Intermodal Center	MDT	No FTA funding sought. Draft EIS (DEIS) and Environmental Assessment (EA) approved April 2006.	2011
Metrorail North Corridor, Miami-Dade County	From: Dr. Martin Luther King Jr. Metrorail Station to Broward/Miami-Dade County line	MDT	FTA/MDT ROD issued April 2007. Recommended Rating.	2014
Miami-Dade County East – West Corridor Transit, Miami-Dade County	From: Florida International University (FIU) and SR 821/Homestead Extension of the Florida's Turnpike (HEFT) To: MIA/MIC	MDT	Supplemental DEIS underway.	2016
Transit Bridge Project on SR 7/US 441, Southern Broward/ Northern Miami-Dade Counties	From: Golden Glades Interchange (Miami-Dade County) To: I-595 (Broward County)	BCT/MPO, MDT	Funded for the PE stage only (underway), no FTA funding sought.	TBD
Central Broward East-West Transit Corridor on I-595, Broward County	From: I-75/Sawgrass Expressway interchange To: East of I-95 in the vicinity of Downtown Ft. Lauderdale and the Ft. Lauderdale/Hollywood International Airport (FLL)	FDOT District 4	FTA funding sought. Refining LPA (as an LRT) and the New Starts funding submittal.	2022
DDA Downtown 2nd Street/ Andrews /3rd Avenues Rail Link, Broward County	From: Davie Boulevard To: Sunrise Boulevard AND From: S.W. 4th Avenue To: Federal Highway	BCT	LPA 2006	2009
SR 7 RBT, Broward County	From: Golden Glades Interchange (Miami-Dade County) To: Florida Atlantic University (Palm Beach County)	BCT/FDOT District 4	Combination of local and DOT funding, 1st three years funded as a demonstration project with permanent funding in the fourth year as warranted.	TBD
Broward County Intermodal Center and People Mover (Airport/ Seaport Connector), Broward County	From: FLL To: Port Everglades	Broward County FTA Coop. Agency	FHWA PD&E underway, FDOT District 4 liaison to FHWA and FTA (MOU currently under draft)	2010-2016
Central Palm Beach County Premium Transit Study (aka Okeechobee Blvd BRT), Palm Beach County	From: Wellington Mall To: Tri-Rail West Palm Beach Station	SRFTA/ PBMPO	SFRTA/ PBMPO (50% funding split for the study only)	TBD
Tri-Rail North Extension to Jupiter, Palm Beach County	From: West Palm Beach To: Jupiter/Northeastern Palm Beach County Area	SFRTA	Now incorporated into the SFECCTA	TBD

Figure 1.25: Corridors of Regional Significance



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1.2.6 Safety

- Problem: Alternative north-south roadway corridors serving the study area have the highest incidence of crashes within their respective counties. Five year crash data from 2000 to 2004 obtained from the FDOT for State roads that cross or parallel the FEC Railway corridor within the study area, indicate that US-1 has had the most crashes within the study area in Miami-Dade County (39% of the total crashes that occurred within the study area) and in Broward County (23% of the total crashes that occurred within the study area). In Palm Beach, I-95 had the most crashes within the study area (47% of the total crashes that occurred within the study area).

Need: An alternative to roadway travel in the eastern communities is needed that is safe for the traveling public.

- Proposed Action – A transit project along the SFECC study area:
  - Is anticipated to improve safety by taking commuters off the roadways and freeways thus reducing their interactions with other vehicles, especially trucks. Trucks, particularly large tractor-trailer trucks, contribute disproportionately to highway congestion due to their size and operating characteristics and to highway crash severity due to their size and weight. Incidents and crashes involving large trucks also tend to last longer and block more lanes than those involving automobiles.
  - Would reduce the overall vehicular congestion in the area which in turn would allow for greater access and travel time benefits to emergency vehicles in and around the study area which includes several major hospitals.
  - Would provide a north-south transit alternative to vehicle travel along US-1 and I-95 in the study area and potentially reduce the number of vehicle crashes along these high crash location roadways. A north-south premium transit alternative would also reduce the potential for crashes along roadways where street transit (such as buses) operates.

A crash summary by mode analysis indicated that in the Tri-County area, from 2000 to 2004, there were a total of 22 crashes by train, 559 by bus and 63,617 by automobile. Train crash information did not include any Tri-Rail numbers. This information appears to substantiate that transit travel may be safer than motor vehicle travel. The safety of transit travel in relation to other modes may be further substantiated by fatality rates compiled by the National Safety Council (NSC) shown in **Table 1.10**.

While the NSC does not report rail transit fatalities for heavy, light and other rail, the FTA safety statistics compiled from 540 of the largest transit agencies in the country indicate that among transit modes, commuter rail accounted for the largest share of fatalities (41% of total) followed by bus (27.9% of total), heavy rail (26% of total), and light rail (4.6%) indicating that the lighter the rail vehicle the less number of fatalities are associated with it.

Table 1.10: Fatality Rates by Mode of Travel (2000-2002)

Type of Vehicle	Death Rate*
Airlines	0.02
Automobile	0.79
Vans, SUV's, pickup trucks	0.76
Heavy, light and other rail	Not reported
Intercity and commuter railroads	0.03
Intercity buses	0.02
Transit buses	0.01

* Number of deaths per 100 million passenger miles
Source: National Safety Council

With respect to this study, transitway-highway grade crossing safety is an important issue that has been discussed at the public meetings and will be further analyzed in Phase 2. There are at least 202 railroad-highway grade crossings in the SFECCTA study area, at an average of 2½ crossings per mile, which is an important consideration with a documented and controversial history. Public safety at roadway crossings of railways (especially those with at-grade, or "highway-rail grade" crossings) is a very sensitive issue for this densely populated and highly utilized corridor, just as it is for other rail/transit corridors nationally. A program to consolidate and/or elevate or depress railroad-highway grade crossings is being discussed for eventual implementation should passenger transit be added to the FEC Railway corridor.

However, a summary of crashes that have occurred at FEC railroad-highway grade crossings within the study is presented in **Table 1.11** and seem to indicate that crashes along the railway corridor during the last few years have been minimal in the Tri-County area. This information further substantiates that a potential passenger service along the FEC as an alternative to the congested and high crash north-south roadway corridors could provide a safe alternative to the traveling public in the area.

1.3 FEC Railway Corridor Background

The history of railroads in Florida dates back to the early to mid 1800's but it was not until 1883, when Henry Flagler moved to St. Augustine, that Florida's east coast passenger railway system began to take shape. In the relatively short span of 29 years, Henry Flagler successfully connected every existing city or settlement along the east coast of Florida to one another, including Miami and Key West (the latter via the Overseas Railway). Development around the Miami station began immediately. A channel in Biscayne Bay was dredged, new streets were built, the first water and power systems were instituted, and

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Table 1.11: FEC Railroad-Highway Grade Crossing Crash Summary

County	Location	MP	Railroad Crossing	Total Number of Crashes Per Year					Total
				2000	2001	2002	2003	2004	
Miami-Dade	N.E. 6th Avenue in Miami	0.249	RR 272618		1				1
Broward	Oakland Pk Blvd. in Wilton Manors	7.791	RR 272544	2					2
	Pembroke Road in Hallandale Beach	6.173	RR 272590		1				1
	Pembroke Road in Hallandale Beach	7.775	RR 272544					2	2
Palm Beach	Glades Road in Boca	7.372	RR 272910	1	1				2
	Okeechobee Road in West Palm	8.596	RR 272430		1				1
	PGA Blvd	6.521	RR 272381R			2			2
	PGA Blvd	8.596	RR 272430					1	1
Total				3	4	2	0	3	12

Miami's first newspaper, the Metropolis, was announced. Passenger service along the FEC Railway into southern Florida continued until 1968 when it was discontinued. Today the FEC Railway continues to operate from its headquarters in St. Augustine transporting freight trains along virtually the same route developed by Flagler over 100 years ago.

In 1926, the FEC railroad operated 24 weekday passenger trains between West Palm Beach and Miami. All of these trains ran the entire length of the railroad from Jacksonville to Miami. Most (20) were express or limited trains with many making connections to points further north. However, four trains were all-stop locals that ran between Jacksonville and Miami. In the study area the 16 daily express passenger trains (the Florida Special) served four stations: West Palm Beach, Fort Lauderdale, Hollywood, and Miami. Two daily "Limiteds" served Jupiter, Lake Worth, and Delray in addition to the four express stops. The local trains made 26 stops in the study area in addition to the 7 stations served by the Limiteds (see **Figure J.25** in **Appendix J**). Between 1939 and 1968 long distance passenger service streamliners served the study area.

Listed below are some highlights in the history of passenger transportation in the State of Florida as it relates to the FEC Railway and the SFECCTA study area.

- 1894 – Henry Flagler initiates intercity passenger service from Jacksonville to Palm Beach.
- 1896 – Intercity passenger service extended to downtown Miami. Stations are present at Jupiter, Kelsey City, Riviera, West Palm Beach, Lake Worth, Lantana, Hypoluxo, Boynton Beach, Delray Beach, Yamato, Boca Raton, Deerfield, Pompano, Oakland, Fort Lauderdale, Dania, Hollywood, Hallandale, Fulford, Miami Shores, Biscayne, Little River, Buena Vista, and finally Miami. Only two

stations remain standing today – the restored station in Boca Raton and the Delray station and water tower, which was moved from its original site.

- 1906 – Streetcar transit begins operating in downtown Miami. Street rail transit service is expanded to Miami Beach and Coral Gables and operates until 1940.
- 1912 – The 128 mile FEC "Overseas Extension" to Key West is completed.
- 1927 – The Seaboard Air Line Railroad (the predecessor of the Seaboard Coastline and CSXT Railroads) is extended to Miami.
- 1968 – Intercity passenger service stopped on FEC and freight becomes sole service (now converted to Metrorail and Metrobus transit lines south of the study area).
- 1988 – The State of Florida begins 5-year annual payments to acquire a 20.7-mile section of pre-existing or "abandoned" FEC Railway corridor from downtown Miami to Florida City for extension of transit service from downtown Miami southward. Purchase completed and former 100-foot right-of-way now converted to Metrorail and Metrobus exclusive right-of-way transit lines.
- 1989 – The State of Florida acquires a 72-mile section of the CSXT rail corridor from MIA to Mangonia Park (now converted to Tri-Rail transit line sharing track with CSXT freight service since CSXT retained a freight easement). This section is now called the SFRC that is jointly used by Tri-Rail, Amtrak and CSXT. The FEC Railway was considered but was not available to the FDOT from FEC Industries at that time.
- 1989 – Tri-Rail initiates passenger service along the SFRC/CSXT.
- 1990 – Miami-Dade County Year 2010 Long Range Transportation Plan (LRTP) identifies the Northeast Corridor.
- 1993 – The Miami-Dade MPO completed a Transit Corridors Transitional Analysis which analyzed, in broad terms, the feasibility of various proposed transit corridors in Miami-Dade County, including the Northeast Corridor, which extended from Downtown Miami to the Broward County line along the FEC Railway.
- 2002 – The People's Transportation Plan in Miami-Dade County includes the Northeast Corridor as one of several proposed Rapid Transit Corridors.
- 2002 – Miami-Dade County initiated a consultant selection process for the performance of an Alternatives Analysis (AA) of the Northeast Corridor in 2002. This corridor segment is 13.6 miles in length.
- 2003 – The Florida Legislature established Florida's Strategic Intermodal System (SIS), a statewide network of high priority transportation facilities making up the core of Florida's transportation system. The FEC Railway is included in the SIS.

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- 2003 – The South Florida Regional Transportation Authority (SFRTA) begins Jupiter Corridor Alternatives Analysis. This corridor is 15.7 miles in length.
- 2004 – FEC Industries, the owner of the FEC Railway Corridor, requested that the SFRTA coordinate an overarching regional study of the entire corridor combining the three (3) counties. FEC Industries indicated it would not be possible for them to consider public use of the FEC right-of-way for transit when the corridor was being planned in a piecemeal way in individual, uncoordinated segments by different sponsoring agencies with varying project implementation schedules. Meetings involving the SFRTA, three MPOs, Miami-Dade County, and the FDOT were held and all agreed that FDOT District 4 would be the lead agency for this project including contract award, and that all planning in the corridor would be discontinued and merged in with the larger study.
- 2004 – Both the SFRTA and Miami-Dade County incorporated the Jupiter Corridor Alternatives Analysis and the Northeast Corridor Study, respectively, into the forthcoming FDOT-led regional AA study of the FEC Corridor to encompass Palm Beach, Broward and Miami-Dade counties. The study limits were to extend from Downtown Miami to Jupiter, a corridor length of more than 82 miles. In July 2004, the SFRTA's Planning and Technical Advisory Committee also recommended that the Jupiter Corridor AA Study be folded into FDOT's study. The SFRTA Board of Directors had agreed to this FDOT request so that a concise study of the FEC Railway Corridor could proceed.
- 2005 – FDOT issues Notice to Proceed in September and begins the SFECCTA with Agency Kickoff Meetings held on December 12th (Miami-Dade County), December 15th (Broward County), and December 19th, 2005 (Palm Beach County) and the Advance Notification (AN) was mailed out on January 23, 2006.

1.4 Prior Studies

The purpose and need for the project is supported by a large number of studies that have focused on the FEC Railway corridor and the solutions needed to address transportation demand in the study area. More detailed information regarding the numerous studies can be found in a technical memorandum titled SFECC Summary of Prior Studies, which is available upon request and on the project website. More than 50 studies have been completed regarding the FEC Railway corridor in previous decades; about 50% of them were carried out in the past 10 years. Several of these studies are conducted on a continuous basis (every one to five years) as per Federal, State and local regulations. Other studies are comprehensive or "bigger picture" studies of the transportation system managed by agencies that have a particular interest in the study. The third type of study can be appropriately categorized as coordinated studies, which highlight the need for coordination of planning efforts on a regional basis. Although all the studies carried out in the past can be considered important for the purpose of analysis, some of them are more pertinent to the SFECCTA study. The following categorizes the prior studies by their scope:

- Continuous plans (updated every 1 – 5 years)

- Strategic Intermodal System (SIS): Needs and Cost Feasible Plans
- Long Range Transportation Plans for each of the following counties (LRTP)
    - Broward County
    - Miami-Dade County
    - Palm Beach County
- Florida Rail System Plan

➢ Comprehensive studies

- FEC Strategic Intermodal System Needs Study
- Florida Freight Network & Modal Linkages System Study Phase II
- Latin American Trade & Transportation Study
- South Florida Transit Analysis Study
- Tri-Rail Long-Range Master Plan

➢ Coordinated studies

- Joint Study to Rationalize Rail Transportation Assets in Southeast Florida
- FEC Corridor Strategic Redevelopment Plan
- Intermodal Connectivity in the Atlantic Commerce Corridor
- Various freight studies
- Seaport and Airport Master Plans
- Corridor Studies and AA's (Jupiter Extension, Northeast Dade, Central Broward)
- Various roadway, High Occupancy Vehicle (HOV), intermodal and transit studies

The generalized conclusions and/or recommendations from various studies are summarized below.

➢ CSXT Railway, FEC Railway, and the SFRC are strategic corridors in the passenger and freight network of the region.

➢ Access to/from seaports for truck traffic is an important issue that needs to be addressed and several projects have been proposed.

➢ Due to the dramatic increase in population and vehicle miles traveled (VMT) in South Florida, goods movement through South Florida's ports will increase in the future.

➢ There is a need for alternatives to the existing congested roadways (I-95 and US-1) facilitating north-south movement for both passengers and freight.

➢ More than 50% of the studies in Miami-Dade County recommended enhanced transit service (BRT, Contraflow Bus Lanes, adding more service) on Biscayne Boulevard in the SFECCTA study area. In downtown Miami, studies recommended LRT service.

➢ Most studies in Broward County do not identify a specific transit project for north-south movement in the county as it relates to SFECCTA study Area. However, several cities (Deerfield Beach, Hallandale

Beach, City of Hollywood, Dania Beach, Fort Lauderdale, City of Oakland Park and Wilton Manors) are making amendments to their land use plans along the FEC rail line. These land use changes are transit-oriented.

- In Palm Beach County, studies recognized the importance of US-1 and identified improved public transportation projects in the corridor. Furthermore, several cities and the transit agency are working on TOD station area planning projects and developing transit design guidelines.

- All freight studies stress safety issues with respect to railroad-highway grade crossings along the FEC Railway.

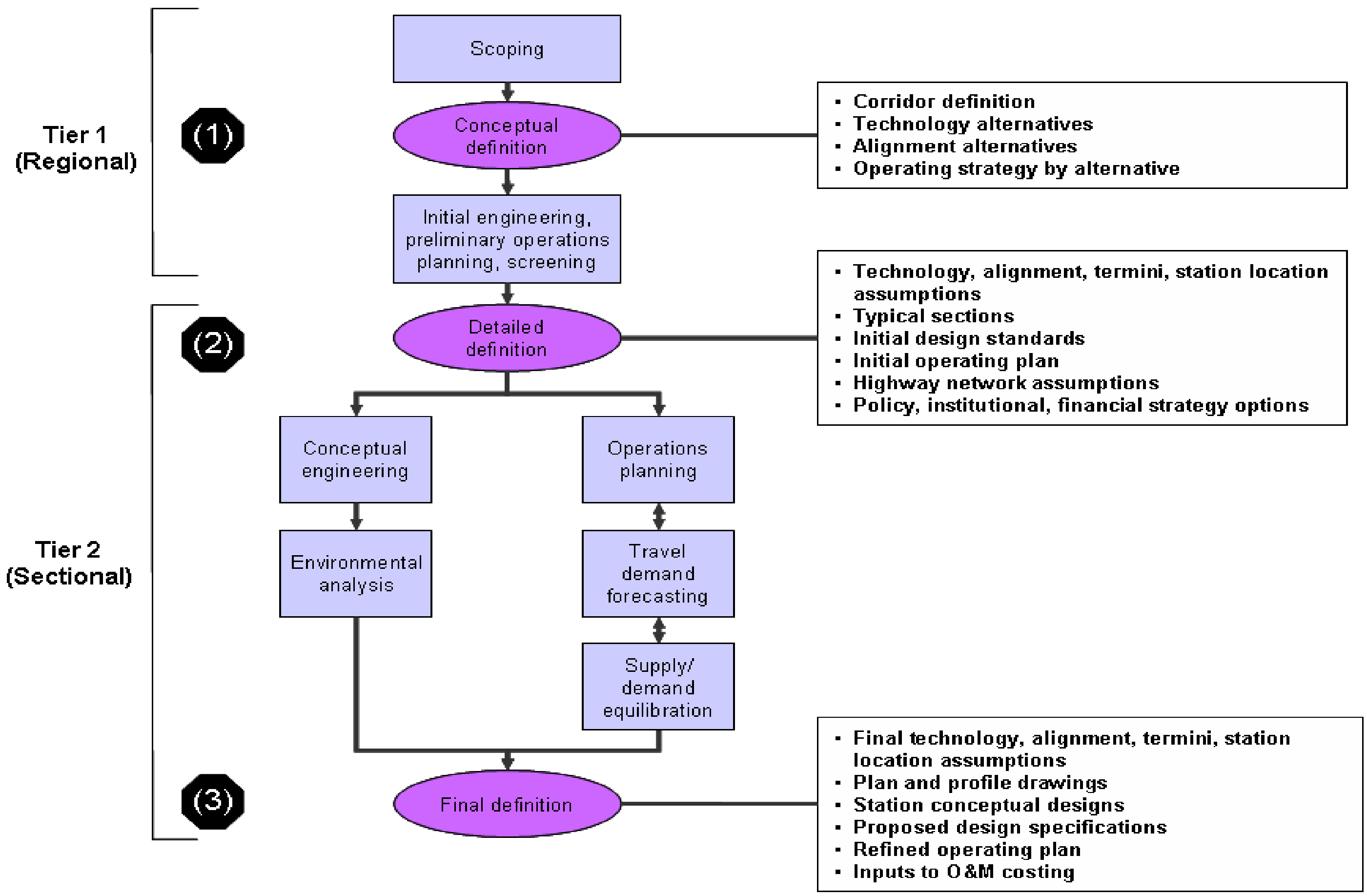
- Studies generally concurred that improvements are required for north-south movement in the three-county region for both passenger mobility and freight movement and such strategic improvement projects would involve the FEC Railway due to its strategic location.

- One significant study in support of additional north-south transit service in the southeast corridor of Florida is the October 1995 Governor's Commission report entitled Eastward Ho! Revitalizing Southeast Florida's Urban Core (http://www.sfrpc.com/eho/report.htm). The report explored ways to encourage infill and redevelopment of lands in the South Florida Tri-County area not adjacent to the Everglades. This initiative was developed to protect the environment, encourage compact, efficient development patterns and to forge public/private partnerships to promote compact urban density. The Eastward Ho! Initiative, coupled with rapid growth, traffic congestion and limits on available developable land, have spurred a large amount of redevelopment in the Tri-County area, mostly in the CBD's of the medium to large cities along the corridor. Much of this redevelopment is occurring along the FEC Railway where previously industrial uses are being converted to mixed-use higher density developments. Although the FEC currently supports only freight rail traffic, it does have a long and early history of passenger service. As indicated in the Eastward Ho! Report, the South Florida Tri-County area is where 44% of the region's population currently resides. Complimentary to this initiative and in support of the compact development envisioned, transit options along the FEC were identified in the report.

1.5 Project Study in Relation to Federal Transit Administration New Starts Process

This Conceptual AA/ESR includes an Alternatives Analysis (AA) study for potential transit service consistent with the FTA New Starts planning provisions contained in the SAFETEA-LU) Federal legislation (Public Law 109-59). Information on the SFECCTA study is also available on the project website at www.sfeccstudy.com. The AA was conducted in accordance with the environmental review process as required by NEPA through a first-tier EIS or PEIS. **Figure 1.26** depicts how this Phase 1 PEIS/AA process is consistent with the FTA's steps in the development of alternatives. The FTA's alternatives development process is a three step process and this Phase 1 PEIS/AA study completes the first step. As further described in Chapter 2, through scoping and initial screening of technology and alignment alternatives, a set of conceptual alternatives are being recommended for further detailed definition in Phase 2.

Figure 1.26: FTA Steps In the Development of Alternatives



Once in Phase 2, this study will provide the necessary documentation to satisfy FTA's New Starts criteria as depicted in **Figure 1.27**. As indicated in **Figure 1.27**, the most important FTA factors in terms of weight are cost effectiveness, land use and financial rating. However, other factors such as those supportive of economic development and environmental justice have been added in the New Starts evaluation criteria. Therefore, the ultimate project(s) identified in Phase 2 will be justified based on a comprehensive review of its mobility improvements, environmental benefits, cost effectiveness, operating efficiencies, economic development benefits and transit supportive land use. An initial assessment of transit supportive land uses and financing options available to enhance the financial rating are also detailed in Chapter 2. The ability of a project within this corridor to enhance economic development

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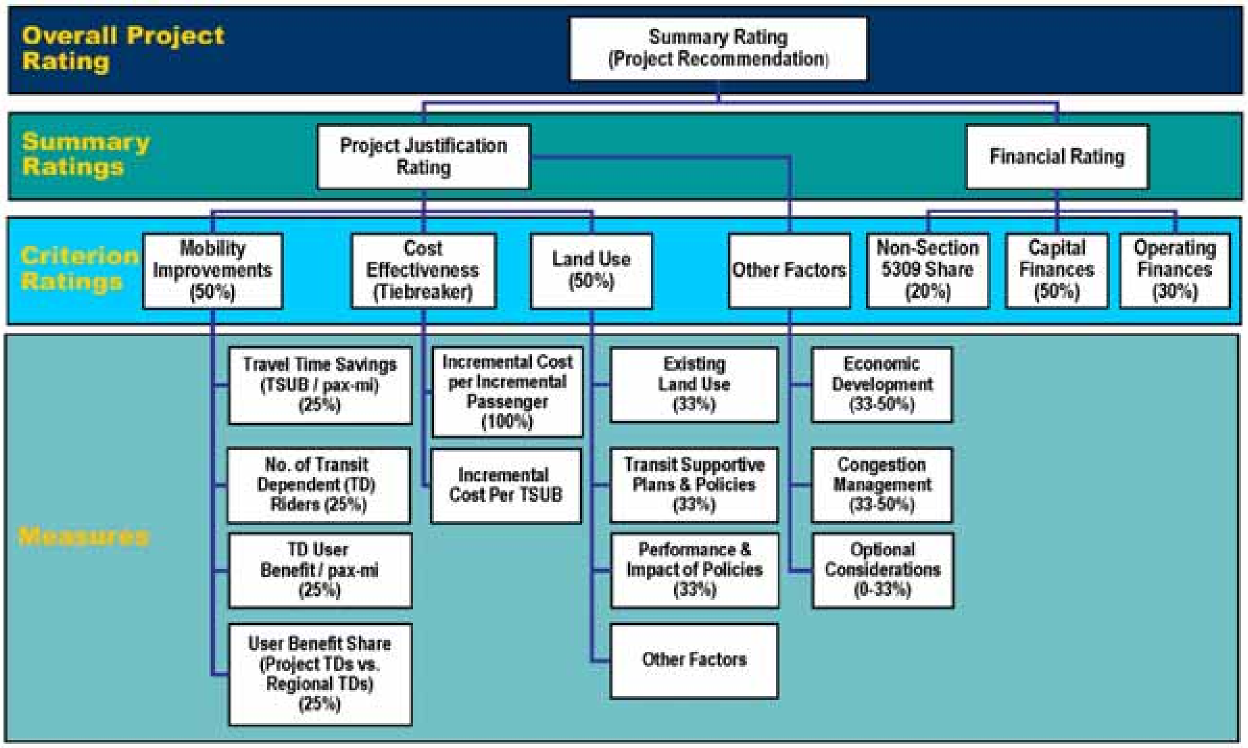
opportunities and mobility for transit-dependent populations is addressed in the purpose and need and environmental impacts sections.

Figure 1.27: FTA New Starts Evaluation and Rating Framework



The primary purpose of this Conceptual AA/ESR was to perform an initial screening of passenger transit alternatives based on modal technologies and general alignments. It was also the intent in Phase 1 to progress in the analysis of right-of-way both for corridor preservation and other right-of-way necessary to complete the transit corridor needs to implement full transit service. No pre-award authority is being requested at this phase of the SFECCTA study. At the appropriate time, separate NEPA studies and documents for additional right-of-way (e.g. corridor preservation and/or other right-of-way needs for infrastructure and services) can be completed as part of the overall study.

1.6 Goals and Objectives

As indicated earlier in this chapter, there is a long history of passenger service along the FEC Railway and many communities and the associated stations were established along this service. Moreover, because of passenger service many of these communities developed with a traditional transit supportive development pattern. The detailed project purpose and need information confirms that, in part because of this long history and development pattern:

- The highest concentrations of population and employment are located along this corridor and growth in Southeast Florida is anticipated to continue along this corridor in the future

- Major origins and destinations are located along this corridor such as downtown corridors and CBDs, universities/colleges, regional hospitals, seaports, and airports

- Transit demand is high due to heavy congestion along the north-south roadways and transit-dependent population concentrations are high along the corridor

These statistics were also confirmed during the public scoping and involvement process where many individuals asserted that a fixed guideway transit service should have originally been located along this corridor (where most people live and work) versus the SFRC where Tri-Rail currently runs. Given the history, the project purpose and need, and the public scoping and input the following Goals and Objectives were developed for the SFECCTA (see **Table 1.12**). These goals were incorporated into the evaluation of alternatives as discussed in the next chapter.

Key among the goals is to coordinate corridor transit investments with established services such as Tri-Rail to contribute to a seamless, integrated multi-modal network (Goal 2). As the data indicates, the Tri-Rail corridor land uses are less dense and more commercial and industrial (less transit friendly). However, implementation of service along an SFECCTA corridor could act as an extension of Tri-Rail from its current end point north to Jupiter and would connect with Tri-Rail at key service market locations (for example Pompano Beach and in the City of Miami). This interconnection would allow for a mix of services between the two corridors, whereby there would be more local transit service mixed with longer distance services, frequent station density, more urban type stations/stops with greater walk access, and local feeder and shuttle bus systems geared towards the specific travel markets. One key objective of Goal 2 is to avoid and minimize duplication of services within the southeastern Florida Tri-County area. Therefore, any additional premium fixed guideway transit proposed along the SFECC study area would be supportive of existing transit investments but provide greater accessibility and connectivity to serve the future growth of the area

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Table 1.12: Phase 1 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 and 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.
- Compliment 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 and 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 to 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 consistent with the availability of implementation and operating funds.

- Provide new transit service that is financially feasible with existing and new revenue sources.
- Meet FTA goals as they relate to cost effectiveness.
- Ensure that the investment strategy for the corridor will be eligible to receive federal funding.
- Optimize transportation funding resources and obtain local financial support.

1.7 Phase 1 Major Work Tasks

This document is part of a detailed and comprehensive scope of work that was developed and executed by the FDOT as the project sponsor and the Federal Transit Administration (FTA) as the lead Federal agency. All deliverable documents produced as part of this Phase 1 study effort are available and can be obtained from the project web site at http://www.SFECCStudy.com. Overall the Conceptual AA/ESR study consisted of the following major work tasks:

- An identification of specific transportation problems/needs in the corridor categorized into six broad areas. From these, six major goals and 32 specific objectives were developed. All were utilized to screen the initial set of Build Alternatives.

- Two types of travel characteristic surveys (license plate origin-destination [O-D] surveys at 21 highway locations and transit on-board [bus] survey on 19 bus routes) were utilized to support the project need and to perform validity checks on the travel demand model.

- An initial freight integration analysis study (considering 3 freight rail routing scenarios) along both the FEC and CSXT/SFRC railway corridors.

- A two-part development and screening of corridor passenger transit alternatives focused on modal technologies (20 urban transport modes), three generally contiguous north-south route alignments (FEC Railway, US-1 and I-95 north of Mangonia Park) and six initial service segments. The three alignments, six service segments and five viable modal technologies were logically combined to produce a total of 36 transit Build Alternatives (along with a No-Build and a TSM Alternative). The relative costs, benefits and impacts of a wide range of transit alternatives were determined, resulting in the narrowing of Build Alternatives and sectionalization of the corridor moving forward into Phase 2.

- Three “special analysis segments” that span the full length of the corridor were defined and evaluated. The objective was to evaluate two distinct southern termini for the SFECC (Downtown Miami and the MIC) and to evaluate extending Tri-Rail/SFRC service into Downtown Miami.

- Forecasted year 2030 travel demand values were generated (15 model runs) for the 41 alternatives (36 build, 3 special analysis segments, No-Build, and TSM Alternatives) utilizing an updated version of SERPM5.

- Alternatives were screened utilizing eight broad criteria complying with FTA guidance, including one for compliance with the NEPA of 1969 (42 U.S.C. 4321 et seq.). The NEPA criterion relied on a comprehensive GIS buffer analysis with more than 80 specific environmental factors.

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- Indirect and Cumulative Effects (ICE) were assessed for the three transit alignments (FEC, US-1, and I-95) with a focus on proposed station areas.

- An initial set of north-end extensions/connections (13 options) and various east-west connections to Tri-Rail and/or the MIC were also assessed.

- An initial identification of potential station areas for each of the general alignments (approximately 60 station areas per alignment for the corridor). Project stakeholders recommended that approximately 13 additional station areas be evaluated in Phase 2. An initial land use suitability analysis was performed considering 10 parameters (based primarily on FTA guidelines) for the 60 station areas. A preliminary economic analysis was also performed on the 28 municipalities abutting the FEC Railway within the SFECC Transit Analysis (SFECCTA) study area.

- An initial set of eight general O&M facility areas for the corridor.

- An initial inventory of existing railway-highway grade crossings (approximately 233 at-grade crossings) along the FEC Railway corridor.

- An initial inventory and functional analysis of existing railway bridges (17 waterway crossing structures, of which at least four are designated as Navigable by the United States Coast Guard [USCG]) and overpass bridges (12 roadway bridges and 1 pedestrian bridge) along the FEC Railway corridor.

- An initial listing of potential mitigation measures was developed for affected environmental resources.

- An initial identification of constricted/constrained railway right-of-way sections along the FEC Railway corridor. There were eight locations in Miami-Dade County, one in Broward County and seven in Palm Beach County identified that have less than 100 feet in width (in the range of 500+ parcels potentially being affected that may require acquisition).

- An initial assessment of rail-with-trail (RWT)/greenway issues for the FEC Railway corridor.

- Preliminary capital and O&M cost estimates developed for the 36 Build Alternatives. Potential funding/financing options were also generally defined and assessed in broad terms for the corridor.

- Development of an extensive GIS spatial database for data collection, analysis, mapping, documentation and public/agency outreach.

- Interagency coordination and review (ICR) through an Advance Notification (AN) circulated both by 1600 mailouts and e-mail transmittals, as well as through project screening through Florida's ETDM process. Project screening in the ETDM involved review of project GIS analyses via the ETDM Environmental Screening Tool (EST), the project AN uploaded via the EST and circulated to two separate Environmental Technical Advisory Teams (ETAT), one for each District of FDOT involved in this project (Districts 4 and 6). In a cooperative effort crossing FDOT District boundaries, District 4 was the lead district with District 6 Planning and Environmental Management Office (PLEMO) as well as Public Transit Office (PTO) supporting in a review capacity.

- A comprehensive public and agency coordination and outreach effort that included a public hearing with multiple venues (one per county), kick-off meetings, scoping meetings, ETDM screening, ETAT meetings, technical memorandums, multiple workshops, individual meetings, multimedia presentations, newsletters, fact sheets/FAQs, public service announcements, and a project website.

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2 ALTERNATIVES CONSIDERED

2.1 Screening and Scoping of Alternatives

The goals of this Conceptual AA/ESR are to define the general concept and scope of the best improvement strategies (alternatives) to meet the future (2030) transportation needs of the SFECCTA study area, as detailed in the Purpose and Need. The physical and operational characteristics of each strategy are defined in sufficient detail to support the decision-making process through the differentiation of the individual qualities and attributes of each competing improvement strategy. The benefits, costs and impacts of each alternative concept was sufficiently defined to inform decision-makers of the tradeoffs of each strategy and how they may best be implemented in consideration of engineering, environmental, financial, public input, land use and community development factors. Furthermore, sufficiently detailed definitions of the preferred alternatives and their characteristics were developed to allow for the defendable identification of the next steps within the tiered process and the limits and scope of the second tier studies. Therefore, this chapter of the Conceptual AA/ESR provides a description of the potential alternatives (improvement strategies) developed and evaluated, including potential station area assessments, and their potential cost. An initial assessment of funding opportunities applicable to this project is also addressed.

As a general philosophy, alternatives were developed for the SFECCTA study area that are oriented towards addressing the longer-distance, north-south travel needs in the corridor and offer viable alternatives to travel by private automobile. It will be seen that this philosophy results in the early elimination of many street-based bus and rail technologies, as stand-alone technologies for this corridor, that may have merit outside the context of this study but do not offer competitive travel times against the automobile. In the final recommendations for further study, this may result in the virtual elimination of alignments other than that of the FEC. However, it is possible that no other alternative may prove cost-effective as a Tri-County corridor service beyond that already existent in Tri-Rail (represented herein by the TSM Alternative). Should that ultimately prove to be the case, the conclusion should be interpreted as an endorsement for development of smaller, sub-regional corridor services in the SFECCTA study area.

More specifically, the alternatives in Phase 1 were developed and analyzed in a two part process. The first part reviewed a broad range of urban transport modal technologies to identify which modes were most applicable to providing premium transit service to the study area consistent with the project goals and objectives (see **Figure 2.1**). Preliminary analysis was conducted and those modes that were clearly inferior in terms of addressing the corridor transportation needs and/or had significant adverse environmental impacts were eliminated from further study. The second part of the analysis reviewed the

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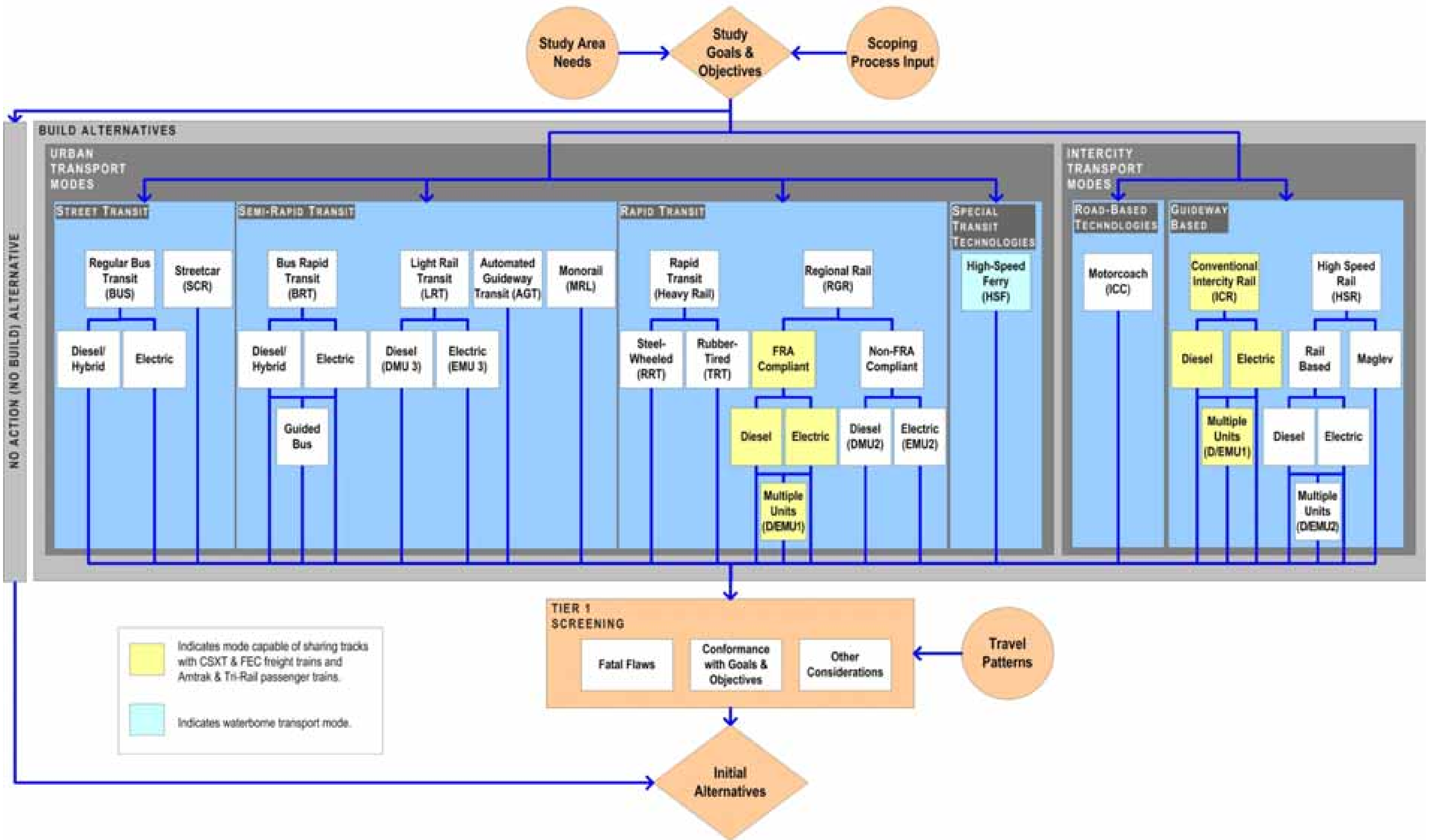
Figure 2.1: SFECCTA Part 1 Alternative Development & Evaluation Process



five reasonable modal categories' viability to support a premium transit experience along three contiguous north-south transportation corridors.

For the purposes of this Phase 1 study, an alternative is defined as a unique combination of an alignment and modal technology, designed to address a specific need for service. Potential transportation improvements, including those suggested during the scoping input process, were identified as preliminary alternatives if they appeared to have the potential of satisfying some aspect(s) of the project Purpose and Need (P&N) as well as Goals and Objectives (**e the** future growth of the area

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Table 1.12) and appeared to be both technically reasonable and feasible. Each of the action alternatives is a combination of mobility solutions packaged to work together as a system, therefore, the existence of Tri-Rail service along the SFRC, and its connection to Metrorail at the south end of the corridor, is viewed as a base part of the system from which to Build Alternatives. Moreover, because there is a potential for shared railroad right-of-way use, the Build Alternatives for passenger rail service along the FEC Railway alignment must also facilitate freight movement and other existing and proposed uses of the railway. In addition to the alternatives developed, this chapter also provides information on the No-Build and TSM Alternatives as well as alternatives considered but rejected from further consideration.

With each successive phase in the alternatives analysis process, the definitions of remaining alternatives will become more detailed and their evaluation will be progressively more quantitative, as follows:

- Qualitative screening of conceptual, single-mode alternatives to eliminate any alternative deemed to be not reasonable or feasible, identifying an initial list of alternatives—each of which addresses some aspect(s) of project Goals and Objectives—for further development and screening analysis (Part 1 of two part development and screening process performed in Phase 1);
- Comparative screening analysis of the initial list of alternatives—each of which will be further defined to a sketch level of detail for comparative screening purposes—with some alternatives paired or combined to create multimodal alternatives that may satisfy project Goals and Objectives (Part 2 of the two part development and screening process performed in Phase 1); and
- Detailed analysis of a short list of detailed alternatives selected on the basis of the comparative screening, in order to provide a sufficient technical basis for selecting a preferred alternative (to be performed in Phase 2).

Evaluation of the reasonable alternatives was coordinated with the public, government agencies and other project stakeholders (see Chapter 7). Through collaboration of the study's public and agency involvement, and the preliminary engineering and environmental impact evaluation, a general consensus in support of preferred alternatives to further study in Phase 2 was developed.

2.2 Alternatives Development

Alternative development in Phase 1 was facilitated by information found in previous studies centered along the SFECCTA study area, public scoping meetings, and an analysis of available alignments, modal technologies, and travel service needs within the study area. Various modal technologies and alignments were screened based on four major evaluation criteria: 1) their applicability to serve the needs of the study area (effectiveness), 2) their ability to meet the project Goals and Objectives, 3) their impact on adjacent uses or natural resources, and 4) their cost effectiveness.

2.2.1 Alignments

As a result of inputs received during the project scoping process, the SFECCTA study area was defined as one-mile on either side of the alignment of the FEC Railway. Reflecting the north-south orientation of this defining spine of the study corridor, a number of potential general alignments were identified for alternatives based on existing north-south transportation corridors. For purposes of the alternatives analysis, an alignment will be considered to be predominantly or exclusively located along these north-south corridors. This allows placement of alternatives for some of the alignments, US-1 or the FEC Railway, along parallel facilities such as Dixie Highway, Federal Highway and Biscayne Boulevard for short distances based on available modal technologies. The general alignments included in the analysis are:

- The FEC Railway;
- The SFRC (Tri-Rail, CSXT, and Amtrak);
- US- 1;
- I-95, north of West Palm Beach;
- The Intra-Coastal Waterway; and
- Utility rights-of-way and State canal properties where appropriate to make connections.

2.2.2 Modal Technologies

An urban transport mode is defined by a combination of three basic characteristics: right-of-way, technology and service. Urban transport modes fall into three basic groupings based on commercial (average travel) speed and functional capacity:

- Street Transit, consisting of modes operating in a mixed traffic environment at commercial speeds lower than that of surrounding traffic due to time lost at passenger stops. Street transit in the form of regular bus transit (including hybrid bus), electric trolley bus, RGB, and streetcar were analyzed for applicability to the FEC Railway corridor study area.
- Semi-Rapid Transit, consisting of modes operating mostly in exclusive or semi-exclusive rights-of-way at commercial speeds approximating the adjacent corridor traffic. BRT, Electric Rapid Bus, Guided Rapid Bus, LRT, AGT, and Monorail were analyzed for applicability to the FEC Railway corridor study area. Sub-modes within the LRT category include Electric Multiple Units (EMU), which are self propelled rail passenger cars that have internal electric motors receiving their power through a live rail or overhead wire, and Diesel Multiple Units (DMU), which are also self propelled rail passenger cars that have internal diesel engines.
- Rapid Transit, consisting of modes operating in exclusive rights-of-way and exhibiting high speed, capacity, reliability and safety. Rail Rapid Transit (RRT) (heavy rail) and RGR (commuter rail) were

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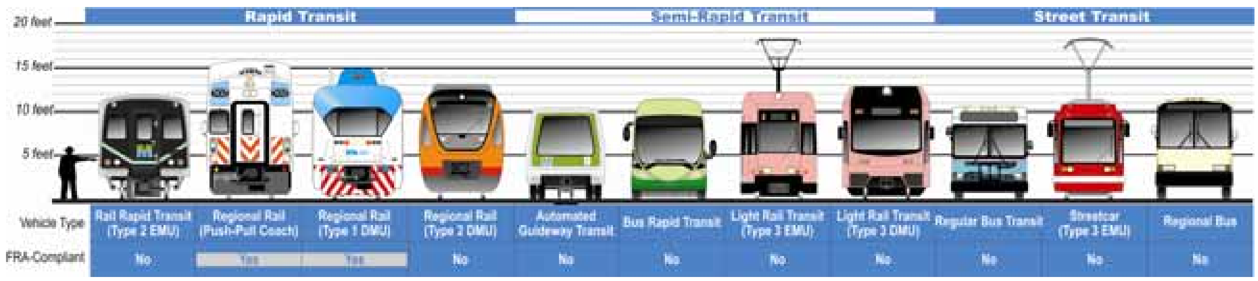
analyzed for applicability to the FEC Railway corridor study area. Both EMU's and DMU's are also sub-modes within this category of transit as are Diesel Electric Multiple Units (DEMU), which are a hybrid of diesel and electric propelled rail passenger cars.

Examples of urban transport technologies considered are illustrated in **Figure 2.2**. The full range of passenger transportation modes considered for the SFFECTA study area is described in greater detail in the Modal Technologies Technical Memorandum available on the project website.

Figure 2.2: Urban Transport Technologies



Beyond urban transport modes, two other intercity passenger transport modes operate in the SFECCTA study area:

- Conventional intercity railroad trains operated by the National Railroad Passenger Corporation (Amtrak) between Penn Station New York and the Amtrak's Miami Station in Hialeah.
- Conventional intercity motorcoach services operated by Greyhound Lines, Inc.

Intercity passenger transport services differ from urban transport modes in terms of their extent and distance between stops, oriented more towards longer-distance, inter-regional travel. As such trips extend far beyond the limits of the SFECCTA study area, no new intercity transport alternatives were considered as part of this study. Nevertheless, Amtrak and Greyhound are recognized as strategic services with which alternatives developed through this study process need to be coordinated at key intermodal facilities. Further, Amtrak in conjunction with the State of Florida and several eastern seaboard counties are considering the possibility of rerouting some Amtrak services over portions of the FEC alignment. While these plans are still under development, the potential rerouting of Amtrak train service in the corridor needs to be accommodated in the alternatives development process.

A preliminary evaluation and analysis identified which modal technologies were most applicable to providing premium transit (line-haul service to accommodate longer-distance, regional journeys) to the study area reflecting the project's Goals and Objectives as well as input received during the scoping process. These technologies, illustrated in **Figure 2.1**, encompassed a broad range of street transit, semi-rapid transit, rapid transit and special transit modes which were considered for the SFECCTA study area. During this preliminary analysis, those modes that were clearly inferior in terms of addressing the corridor transportation needs and/or had significant adverse environmental impacts were eliminated from further study. Of the 20 urban transport modes considered, nine were considered to be viable candidate modes for subsequent analysis. The nine viable modes can be grouped into five general categories (RRT, RGR, LRT, BRT, and RGB) with RGR subdivided into two types (FRA compliant – Type 1 and FRA non-compliant – Type 2) as illustrated in **Figure 2.3** and discussed in the subsequent sections.

- RRT, like MDT Metrorail, a rapid transit mode employing trains of self-propelled rail vehicles on exclusive rights-of-way. This mode was identified as being applicable only in the southern end of the corridor where it would function as an extension of the existing Metrorail system.
- RGR, also referred to as "commuter rail" similar to Tri-Rail, a rapid transit mode employing trains of railroad-compatible vehicles that may or may not be compliant with Federal Railroad Administration (FRA) regulations.
- LRT, a semi-rapid transit mode employing trains of self propelled rail vehicles on exclusive or semi-exclusive rights-of-way.
- BRT, similar to the Miami Dade Transit South Dade Busway, a semi-rapid transit mode employing high-capacity, roadway-based vehicles on exclusive or semi-exclusive rights-of-way.
- RGB, a longer distance, limited stop variation of street transit employing over-the-road motor coaches which can only be considered as a rubber-tired extension of existing Tri-Rail service.

A sub-mode of BRT (Guided Rapid Bus) and the RGB were considered as having limited viability as options and will be addressed further in Phase 2. The RGB technology can only be considered viable within this corridor for the northern extension of Tri-Rail (utilizing, primarily, I-95). The Guided Rapid Bus technology is a guided variation of local bus and BRT that uses optical or infrastructural systems for

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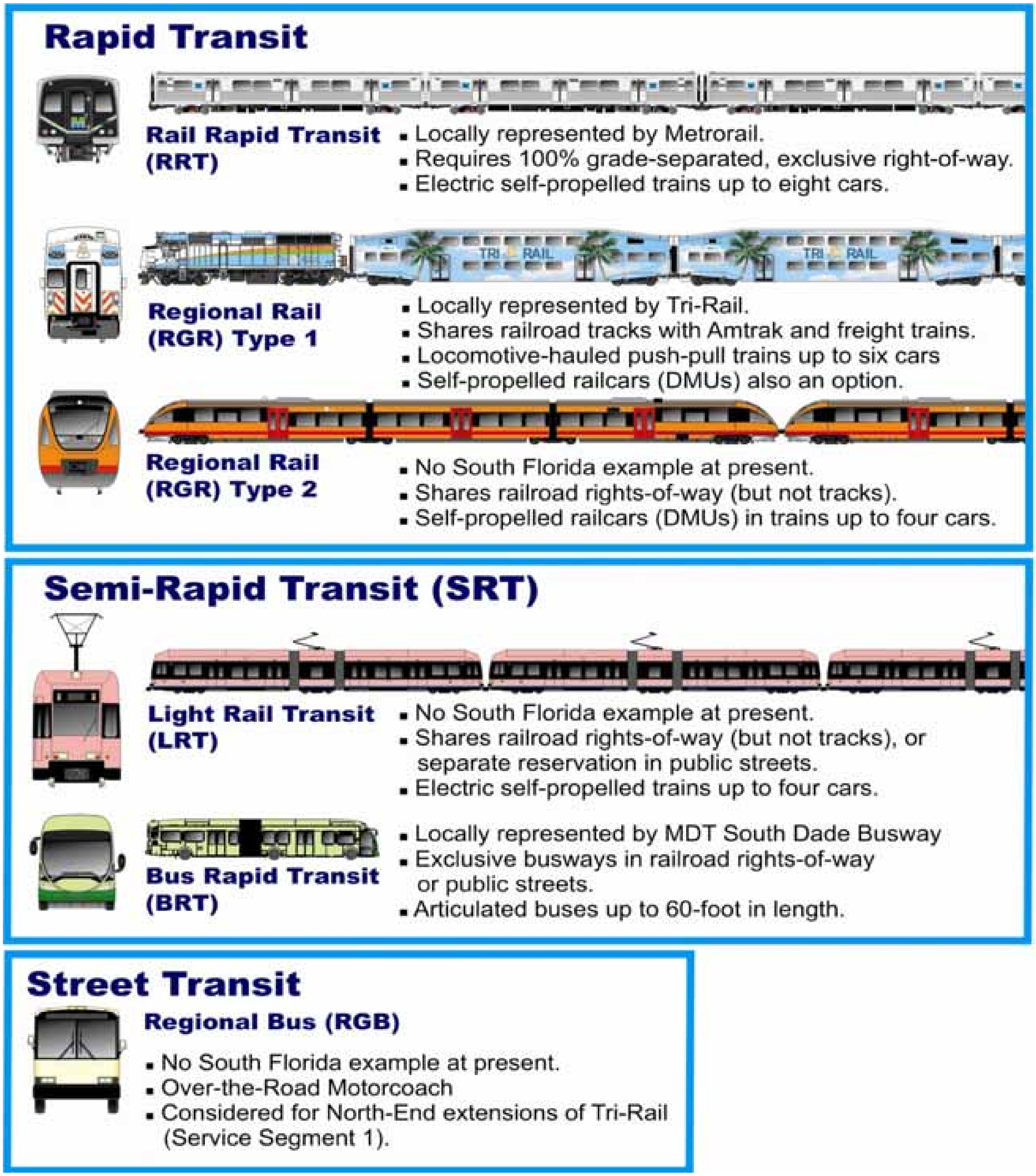
Figure 2.3: Modal Technologies at the End of Part 1



steering along exclusive or semi-exclusive rights-of-way. It is mostly experimental with one exception; Adelaide, Australia's O-Bahn. This technology has had limited success world-wide as an effective alternative to more traditional approaches to BRT using driver-guided vehicles. The numerous transitway-highway grade crossings and intersections present along the entire lengths of the SFECC and US-1 corridors would pose a particular challenge to the application of guided bus technology as vehicles using a physical guideway would lose and need to reacquire the guideway at every crossing/intersection, reducing overall commercial speeds. Guided bus technologies using physical and optical guidance systems have lower maximum operating speeds than driver-guided buses. Furthermore, physical and optical guidance systems add significant capital and maintenance costs compared to driver-guided systems. The various forms of BRT such as guided bus will be evaluated in greater detail in the early stages of Phase 2.

Nine additional transport technologies were also considered but screened out as providing an insufficient LOS for a heavily trafficked urban corridor (see

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Table 2.1). The subsequent section provides additional information on the alternatives/modal technologies not considered viable for further study in Phase 2.

2.2.3 Alternatives Considered but not Advanced in Phase 1

Below is a summary indicating reasons for the elimination of various stand-alone urban transport modal technologies from further consideration in Phase 2. More detailed information on why these technologies were not applicable to the SFECC and its potential service is outlined in the Modal Technologies Technical Memorandum which is available upon request and on the project website.

- High Speed Ferry (HSF) service along the Intracoastal Waterway (ICWW) was analyzed as an alternative for the corridor due to its availability to serve the South Florida area and information received from prior studies regarding the potential use of this technology in the area. However, the success of HSFs is heavily dependent upon the availability of an appropriate, unencumbered waterway between two activity centers and complementary land-side transportation connections. Challenges associated with applying HSF as a modal technology in the SFECCTA are:
  - Wake restrictions and protected West Indian manatee habitats in Biscayne Bay and along the Intracoastal Waterway would significantly limit HSF operating speeds.
  - Much of the waterfront in Miami, Fort Lauderdale and West Palm Beach, as well as other study area communities are increasingly devoted to residential uses often along “no wake zones”, as opposed to commercial activities that would attract commuter trips.
  - A significant proportion of the central business and commercial districts of Miami, Fort Lauderdale and West Palm Beach are not within reasonable walking distance of their waterfronts, requiring new circulator/distributor systems to transport HSF passengers to and from activity centers.

Table 2.1: Urban Transport Modes and Sub-Modes Considered

Mode		Notes
Street Transit Modes (modes that move at less than the speed of corridor traffic)		
Regular Bus (BUS)		Notes
Diesel/Electric Hybrid Coach	X	Potential feeder or shuttle in support of line-haul service.
Electric Coach (Trolleybus)	X	Expense not warranted by air-quality needs.
Regional Bus (RGB)	O	Applicable in North Section (approx. Service Segment 1) as Tri-Rail service extension.
Streetcar (SCR)	X	Potential as feeder or shuttle in support of line-haul service.
Semi-rapid Transit Modes (modes that move at the approximate speed of corridor traffic)		
Bus Rapid Transit (BRT)		Similar to Miami-Dade Transit South Dade Busway
Driver Directed		
Diesel/Electric Hybrid Coach	●	
Electric Coach (Trolleybus)	X	Expense not warranted by air-quality needs.
Guideway Directed		
Diesel/Electric Hybrid Coach	O	Expense not warranted by physical constraints.
Electric Coach (Trolleybus)	X	Expense not warranted by constraints or air-quality needs.
Light Rail Transit (LRT)		
Diesel Multiple Unit (DMU-3)	●	
Electric Multiple Unit (EMU-3)	●	
Automated Guideway Transit (AGT)	X	Expense not warranted by demand.
Monorail (MRL)	X	Capacity insufficient for demand.
Rapid Transit Modes (modes that move at greater than the speed of corridor traffic)		
Rail Rapid Transit (RRT)		Similar to Miami-Dade Transit Metrorail
Electric Multiple Unit (EMU-2)	●	Limited applicability in Middle and North Sections (approx. Service Segments 3 and 1, respectively) due to expense of grade-separation; potential hybrid mode.
Rubber-Tired Rapid Transit (RTR)		
Electric Multiple Unit (EMU-2)	X	Expense not warranted due to low cost effectiveness.
Regional Rail (RGR)		
FRA-Compliant RGR Options		
Diesel/Electric Locomotive with Push-Pull Coaches	●	Similar to SFRTA Tri-Rail
Diesel Multiple Unit (DMU-1)	●	
Electric Multiple Unit (EMU-1)	●	
Non-Compliant RGR Options		
Diesel Multiple Unit (DMU-2)	●	
Electric Multiple Unit (EMU-2)	●	
High-Speed Ferry (HSF)	X	Operating speed restricted by environmental concerns.

Phase 1 Recommendations:
x- Not Viable. Eliminate from further consideration
O- Limited Viability (see notes). Consider further in Phase 2.
●- Viable Corridor Mode. Consider further in Phase 2.

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These concerns limit HSF applicability as a new primary line-haul service for the SFECCTA as a stand-alone technology. Therefore, this technology and alignment are not being advanced for further study due to its negative impact on adjacent land uses and its non-effectiveness in meeting the needs of the area.

- Local bus service, electric bus, trolley bus or trackless trolley, streetcars and other street transit modes were eliminated from consideration as stand-alone technologies due to their low commercial speeds which would make this group of modes uncompetitive with the private automobile over the longer travel distances exhibited in the study corridor. However, street transit modes such as streetcars and local bus services have the strong potential to serve as significant complementary service in the corridor, particularly in Downtown Miami and Fort Lauderdale, providing necessary collector and distributor functions in support of primary corridor line-haul services.

- Automated Guideway Transit (AGT), or people-mover service, has relatively high capital cost that limits its applicability as a new primary line-haul service for the SFECC or as a cost-effective secondary collector/distributor service anywhere other than in Downtown Miami, where it already exists. Similarly, the MRL technology was eliminated from further study due to its low cost effectiveness and inability to meet the project goals of providing line haul service as well. Monorails overall have limited passenger-carrying capacity and low commercial speeds.

- Rubber-Tired Rapid Transit (RTR) systems exist as an alternative to steel-wheeled, rail-based RRT systems. The relative complexity and higher operating costs associated with RTR technologies also has limited applications to very few systems worldwide and therefore is not being considered for the SFECCTA area. RTR requires more wheels, more maintenance and cannot achieve as high speeds as steel wheeled transit. Therefore, due to low cost effectiveness, this technology will not be advanced for further study.

The following Intercity Transport modes were also considered in Phase 1 but will not advance to Phase 2:

- New Intercity Passenger Rail/Motor Coach and High Speed Rail (HSR) technologies are not considered applicable to the SFECCTA corridor since they are designed to serve longer distance travel (250 miles and beyond). On-going initiatives by FDOT and Amtrak to expand intercity passenger rail and HSR networks are recognized and the design of rail alternatives will be sensitive to the need not to preclude shared use of common corridors where such opportunities may exist. Motor coaches are seen more as a distributor service rather than line haul service needed for the SFECCTA corridor and were therefore also eliminated in the Phase 1 screening.

2.2.4 Service Markets and Segments

The second part of the Phase 1 alternatives analysis and development reviewed the five modal categories' viability to support premium transit along three general alignments: the FEC Railway, US-1 and I-95 (the latter only north of Mangonia Park as it is otherwise paralleled by existing Tri-Rail RGR service). The corridors were subdivided for analytic purposes into six overlapping service segments, each reflecting an identified amalgamation of travel patterns and types centered on one or more of the three CBDs in the corridor. Study area demographics and general patterns of travel forecasted for the year 2030 through the three-county SERPM5 travel demand model were used to analyze the various service segments. Outputs of the SERPM5 were consulted in this initial round of travel pattern analysis including:

- 2030 Dwelling Unit Density;
- 2030 Employment Density; and
- 2030 Productions and Attractions.

Figure 2.4 illustrates 2030 attractions within a reasonable walking distance (0.5 mile) of the FEC, US-1 and I-95 alignments (the latter serving as a proxy of the Tri-Rail alignment) in half-mile increments. Of particular note in this diagram are the number of "spikes" along the FEC and US-1 alignments corresponding to the CBDs of Miami, Fort Lauderdale, and West Palm Beach, as well as, to a lesser degree, Hollywood, Boca Raton, Boynton Beach and other corridor communities. In contrast, comparable spikes do not appear in the plot of the I-95/Tri-Rail alignment, suggesting that this alignment is not as compatible as the FEC or US-1 alignments to walk-access at the destination end of a work trip. **Figures 1.5 – 1.7** in Chapter 1 provide similar information regarding productions and combined productions and attractions. This information substantiates early removal of I-95 from consideration as an alternative south of West Palm Beach. Moreover, given the presence of Tri-Rail immediately adjacent to I-95 south of West Palm Beach, alternatives involving the I-95 alignment are effectively included in the No-Build and TSM Alternatives. Building upon these observations, 2030 "Desire Lines" maps were consulted for the key destinations identified in **Figure 2.5**. In this application, desire line maps were drawn to the key destinations from trip origins located in the north-south oriented SFECCTA study area. The results of the desire line maps for the six most significant destinations identified in **Figure 2.4** are presented in **Figure 2.5**.

As depicted on the desire line maps, the desire for travel from and to the Miami CBD was most extensive in length and number of trips. Other significant markets were from Hollywood north to Delray and Hollywood south to Miami as well as from Ft. Lauderdale north to Palm Beach Airport and south to Miami. Desire to travel from one end of the corridor to the other was minimal. Review of travel demand model data for these six activity centers suggested a series of north-south travel corridors centered on multiple nuclei, as opposed to a singular set of travel patterns oriented towards a sole CBD. Therefore,

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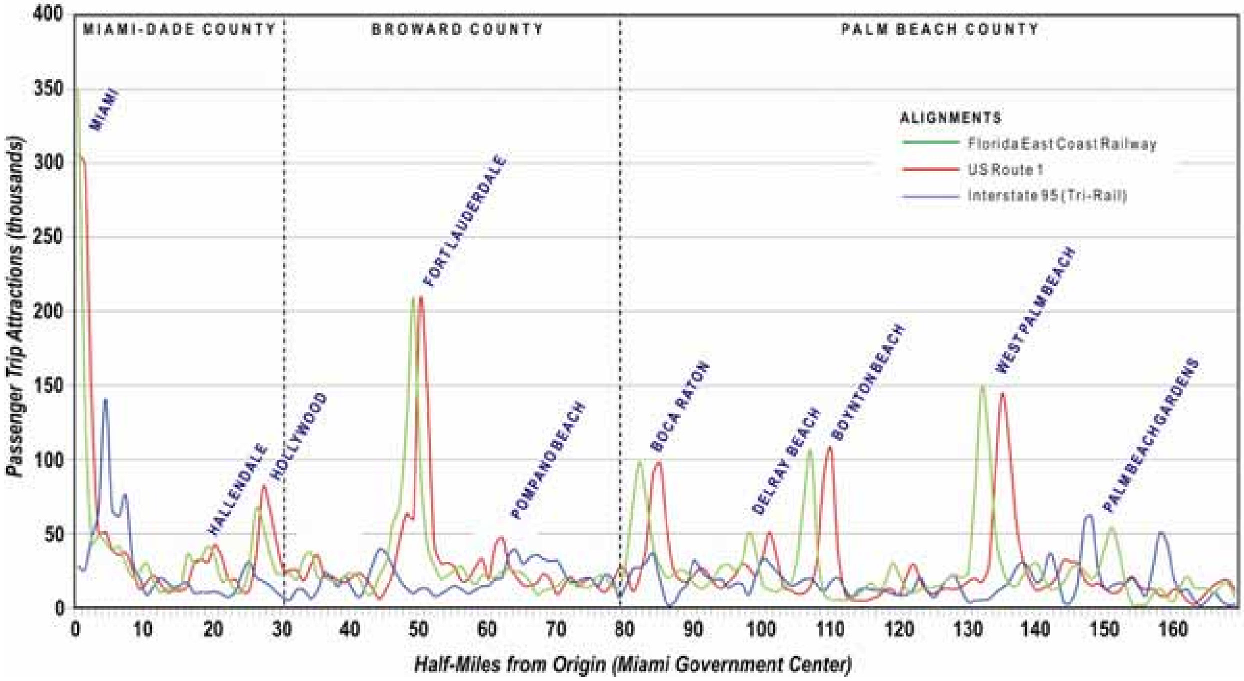
Figure 2.4: 2030 Corridor Attractions within 0.5-Mile of Candidate Alignments



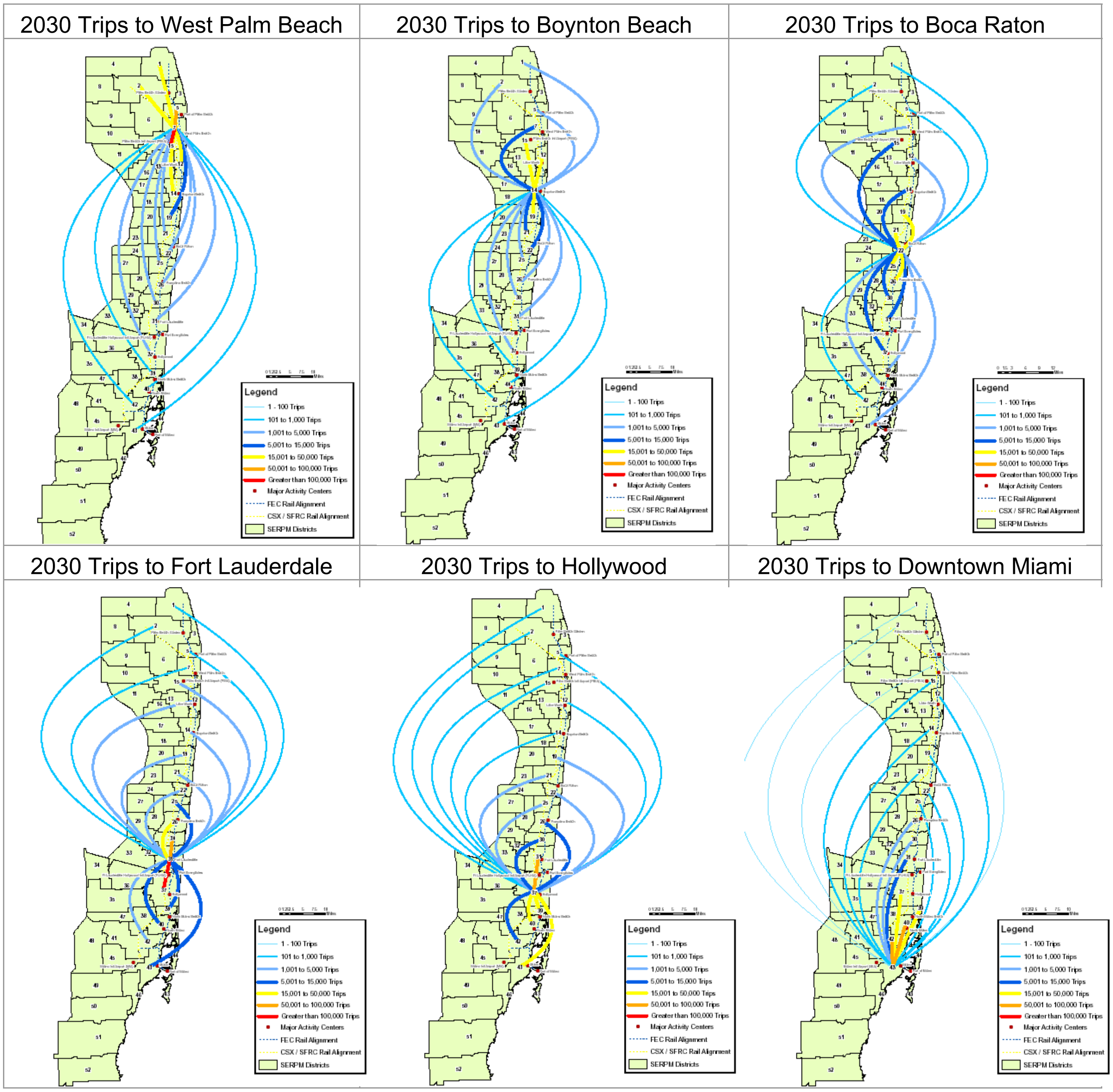
reasonable alternatives would have to provide service to a number of intra-line trips with minimal service for the relatively few end-to-end trips.

Other conclusions reached from reviewing available information included:

- There are sufficient residential densities to warrant semi-rapid and rapid transit modes in much of the SFECCTA study area. As a general "rule of thumb," semi-rapid transit modes (BRT and LRT) require residential densities greater than three dwelling units (DU) per acre with predominately park-ride access and greater than nine DU per acre for predominately pedestrian access. Rapid transit modes such as RRT and RGR generally require residential densities greater than 12 DU per acre or as little as one DU per acre, respectively.
- Analysis of the suitability of transit at the employment end of a journey of work requires a different approach as it is generally limited to a reasonable walking distance (about a ten-minute walk) unless other connecting transit services are readily available. An analysis of model attractions (destination-ends for SERPM5 home-based work trips) within a half mile of the FEC, US-1 and I-95 alignments identified six significant employment centers within walking distance of the FEC and US-1 alignments:
  - Downtown Miami
  - Downtown Hollywood
  - Downtown Ft. Lauderdale
  - Downtown Boca Raton

- Downtown Boynton Beach
- Downtown West Palm Beach

Figure 2.5: 2030 Travel Desire Line Maps for Leading Corridor Destinations



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2. ALTERNATIVES CONSIDERED

Given the presence of multiple activity centers based on the travel markets identified above and the extraordinary extent of the SFECCTA study area, Phase 1 study efforts undertook the initial approach of subdividing the corridor into a series of discreet service segments for analysis purposes (**Figure 2.6**). One service segment (Service Segment 1) was designed to address "end-on" extensions of Tri-Rail to the northern limits of the SFECCTA study area. Five other service segments were designed as a basis of new corridor services reflecting the future patterns of travel identified through the "desire line" maps centered on one or two major activity centers. A specific range of alignments and applicable modal technologies were associated with each service segment. As previously described and as illustrated in **Figure 2.6**, several of the six service segments overlap and were intentionally subdivided in this way to provide specific information at the sub-corridor level. Although analyzed as independent Build Alternatives for Phase 1, those service segments that are deemed viable will be reconsolidated into viable and logical project sections. Detailed descriptions of each of the six service segments follow in subsequent sections (in a north to south order in the following text, tables and figures).

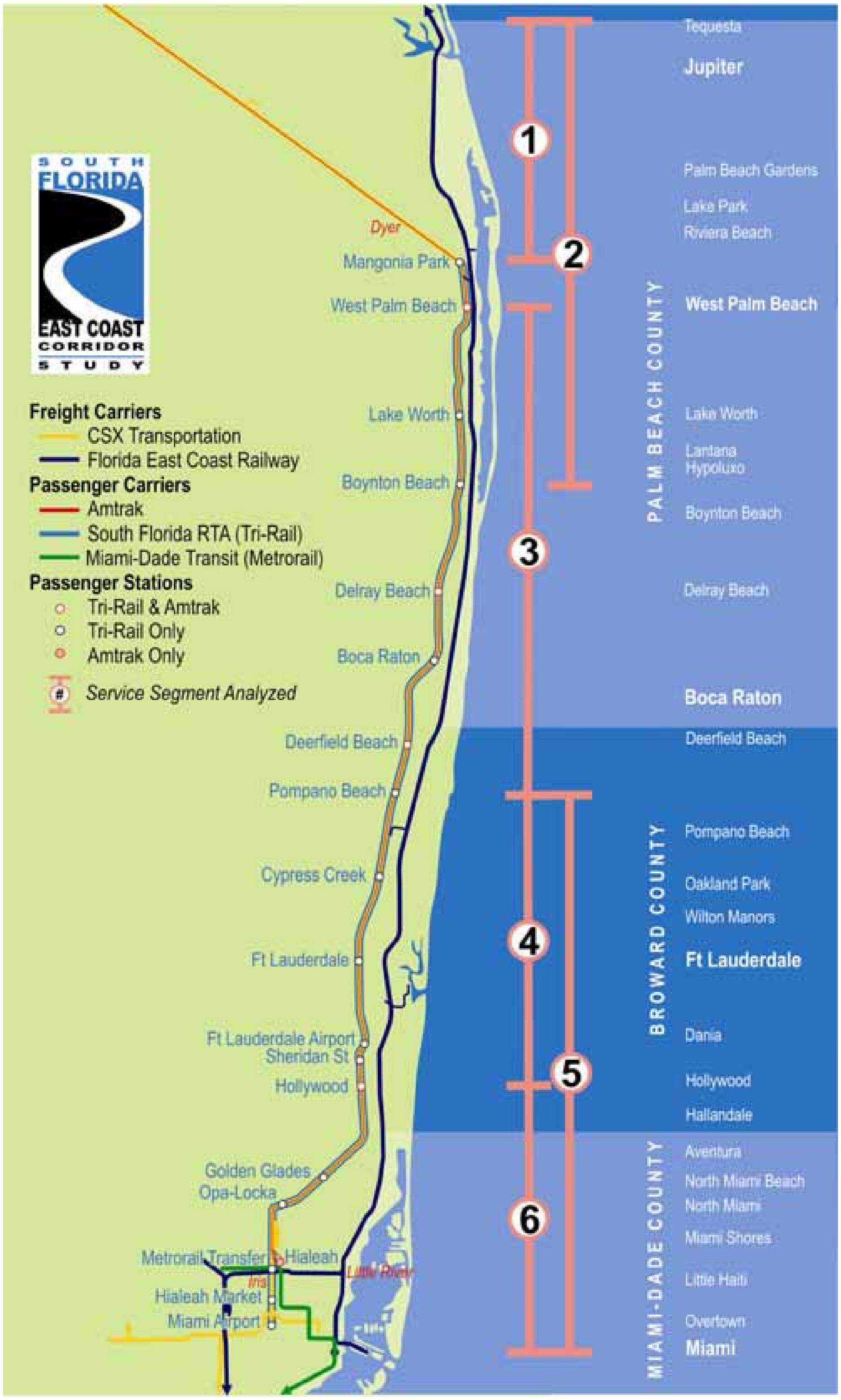
- North End Connections: Service Segment 1 and 2 options that use the FEC alignment require upgrading existing connections between the SFRC and the FEC or creating entirely new ones. Six potential connections (13 including variations) were investigated in the vicinity of the north end of the SFECCTA study area between CSXT Milepost (MP) SX 971 and SX 965 and between FEC Milepost 300 and MP 291, as illustrated in **Figure 2.7**. The possible connections are described in **Table 2.2** in a north to south order.

  As noted in **Table 2.2** more than one possible alignment was identified at four of the six connections. The northernmost connection (Option 1 via the K-Branch) diverges from the FEC Railway 39.8 miles north of Jupiter and was not considered a reasonable connection for local passenger services but could represent a viable connection for freight and Amtrak trains traveling to and from Jacksonville. Option 2 via Canal C-17 would require relocating two passenger stations (Blue Heron Road and Northlake Boulevard in Riviera Beach) from sites proposed on the FEC Railway alignment by other Service Segment 1 and 2 alternatives.

  Based on the analysis of the alignment options, including sensitivity to adjacent land uses and minimum required design criteria, three of the potential north end connections identified between the FEC and SFRC appear to warrant more detailed investigation in Phase 2:

- **Option 2C - Canal C-17 Frontage**: The alignment generally follows Canal C-17 from CSXT at Milepost SX 965.3, one mile north of Mangonia Park and west of Congress Avenue, to FEC Milepost 291.8 (near Lighthouse Drive) or Milepost 292.5 (north of Silver Beach Road and near Park Avenue), near the Lake Park. This option offers a reasonably unencumbered and direct connection between the two main lines suitable for freight, Amtrak and possible Service Segment 1 RGR trains, assuming no insurmountable environmental and community issues are identified in subsequent, more detailed analysis.

Figure 2.6: SFECCTA Service Segments



 NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Figure 2.7: North End Connections Investigated

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- **Option 3B - Florida Power & Light Alignment at Riviera Beach:** Option 3B would connect the SFRC and the FEC in the vicinity of the existing Lewis Terminals Connector (also known as "Mission Spur" or the "Riviera Beach Connection"). The FP&L Option would create a new east-west connector within a 200 feet wide FP&L right-of-way. This option offers a relatively short connection between the two main lines suitable for freight, Amtrak and possible Service Segment 1 RGR trains, albeit at the expense of operating performance through two restrictive curves. Use of the existing utility right-of-way would have minimal impacts on surrounding land uses, assuming no insurmountable environmental and community issues are identified in subsequent, more detailed analysis.

Table 2.2: Possible Locations for North End FEC Railway and CSXT (SFRC) Crossings

Option	Brief Description	Length (Approx)	Constraining Curve Radius	Potential Acquisitions
1	FEC Railway K-Branch via Marcy and Ft. Pierce	30 miles[1]	None	Minor (new connection at Marcy)
2A	New Canal C-17 Alignment via MacArthur Blvd to FEC at MP 291.8	4 miles	<6 degrees	1 recreational park 1-2 industrial facilities 1 open storage lot
2B	New Canal C-17 Alignment via Silver Beach Road to FEC at Lake Park	3 miles	6 degrees	1-2 industrial facilities
2C	New Canal C-17 Alignment via Canal Frontage to FEC at MP 291.8	4 miles	11½ degrees	1-2 industrial facilities possible minor Garden Road relocation
3A	Existing Lewis Terminals Connector	1.7 miles[2]	12 degrees	2 commercial buildings
3B	New FP&L Right-of-Way Alignment	1.2 miles	9 degrees	1 surface parking lot 1 impoundment yard
3C	New West 13th Street Frontage Alignment	1.8 miles	6½ degrees	1 realignment of plant siding Realignment of W 13th St 1 impoundment yard 1 community park
4A	Existing Northwood Connector (avoiding Cemetery)	0.4 miles	18 degrees	Vacant industrial parcels
4B	Revised Northwood Connection (major re-alignment)	0.5 miles	6 degrees	Two commercial buildings 1 plot of open space in downtown (flood memorial)
5A	Waterworks Connection at Banyan Boulevard	0.5 miles	10 degrees	1 commercial building in the right-of-way
5B	Banyan Boulevard, via Oblique Alignment	0.8 miles	4½ degrees	Red Cross building on Clematis St. Two buildings on 2nd St.
5C	Waterworks, north of Courthouse hybrid	0.6 miles	10 degrees	2 unidentified buildings
6	Okeechobee Boulevard Median	0.6 miles	9 degrees	1 temporary commercial building

[1] Actual track construction is limited to a new connection between the FEC and CSXT at Marcy.

[2] Actual new track construction is limited to an 800 foot connecting track. The length of the connection is 1.7 miles.

- **Option 5A - Waterworks Connection**: Option 5A would connect the SFRC and the FEC immediately north of West Palm Beach Station following the alignment of the former FEC Waterworks Spur on the north side of Banyan Boulevard. Option 5A (Waterworks Connection) takes advantage of the former freight siding connecting the Palm Beach Water Works to the FEC mainline at Milepost 299.2. This option offers the shortest connection (0.5 mile) with minimal impacts, albeit at low operating speed. It would be suitable for possible Service Segment 2 BRT, LRT and RGR services and possibly for Amtrak trains, but would not be suitable for regular use by freight trains, assuming no insurmountable environmental and community issues are identified in subsequent, more detailed analysis. Since this option is located south of Mangonia Park (end of the Tri-Rail line), it would not serve as a viable option for a Tri-Rail extension on the FEC Railway.

More detailed information regarding the analysis for the north end connections between the two corridors is discussed in the technical memorandum, SFECCTA Study North End Railroad Connection Alignments, which is available upon request and on the project website. A summary of the north end connections analyzed and their viability is included as **Table 2.3**. All potential north end connection possibilities will be revisited at the start of Phase 2.

Table 2.3: North End Connections between FEC Railway and CSXT (SFRC) Considered for Service Segment 1

Connections Considered	Viability	Note
Option 1: FEC Railway K-Branch	Low	Circuitous routing via FEC Railway branch line leased to others
Option 2: Canal C-17		
2A – Via MacArthur Boulevard	Low	
2B – Via Silver Beach Road	Low	
2C – Via Canal Frontage	High	Option Used for Phase 1
Option 3: Lewis Terminal		
3A – Via Lewis Terminal Connector	Low	
3B – Via FP&L Right-of-Way	High	
3C – Via West 13th Street Frontage	Low	
Option 4: Northwood Connector		
4A – Via Existing Track Alignment	Low	Impact on historic cemetery with new curve less than 18 degrees (i.e., larger curve radius)
4B – Major Track Realignment	Low	Impact on historic grave site
Option 5: Waterworks Connector		
5A – Via Waterworks Connector	High	
5B – Via Banyan Boulevard	Low	
5C – Major Track Realignment	Low	
Option 6: Okeechobee Boulevard Median	Low	

2.2.5 Service Segment 1 – West Palm Beach North

This service segment addresses potential end-on extensions of the existing Tri-Rail service northward in Palm Beach County paralleling the FEC Railway alignment. Service could be provided through a direct extension of Tri-Rail trains, or indirectly via transfer to an alternate form of RGR, LRT, BRT or RGB. Service is focused on Tequesta, Jupiter, Riviera Beach and (through existing Tri-Rail service) West Palm Beach (**Table 2.4** and **Figure 2.8**).

Table 2.5 provides demographic data regarding the service segment in comparison to the study area as a whole. This segment is lower than the SFECC average with respect to minority, low-income and no-vehicle households, but higher than average with respect to population under 15 or over 65 years old.

Table 2.4: Service Segment 1 Description

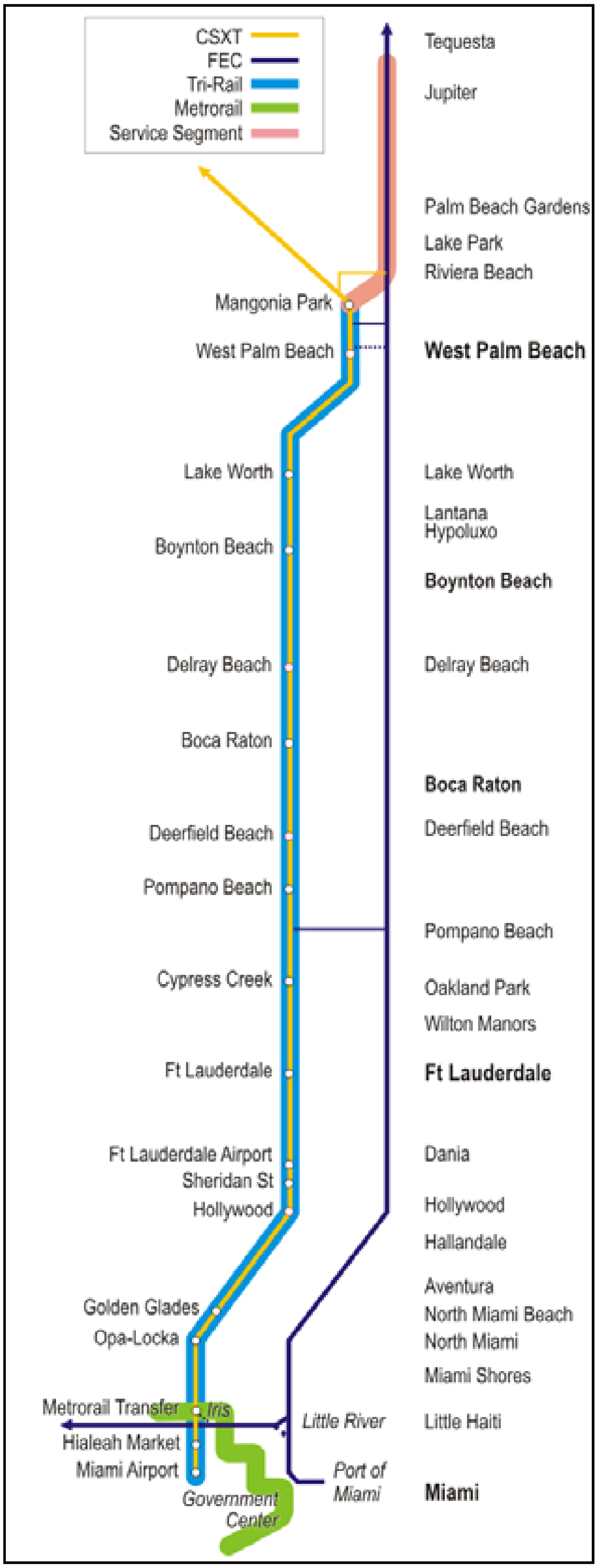
West Palm Beach North	
Focus	Mangonia Park Station
End Point(s)	Tequesta
Intermediate Markets	Jupiter, Palm Beach Gardens, Riviera Beach, North Palm Beach, Lake Park
Extent	15.8 Miles
Potential Modes	RGR, BRT, LRT, RGB
Possible Alignments	FEC, US-1, I-95

Table 2.5: Service Segment 1 Characteristics

	SFECCTA Study Area		Service Segment 1	
Length	85.3 Miles		15.8 Miles	
	Total	Per Mile	Total	Per Mile
Population	1,180,818	13,843	130,367	8,251
Under 15 or Over 65	24%		27%	
Employment	750,914	8,803	92,307	5,842
Households	474,722	5,565	51,826	3,280
Minority	15%		10%	
Low-income	19%		15%	
No-vehicle HHs	10%		6%	

 NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Figure 2.8: Service Segment 1 – West Palm Beach North



2.2.6 Service Segment 2 – North Palm Beach County

This service segment (**Table 2.6** and **Figure 2.9**) would extend north and south from a connection with Tri-Rail at West Palm Beach, providing Northern Palm Beach County communities with a local, line haul transit service. The service would parallel US-1 and complement the heavily-patronized local bus service Palm Tran operates on that arterial. It would also provide feeder service to Tri-Rail via a transfer from the north and, to a lesser degree, from the south.

Table 2.7 provides demographic data regarding the service segment in comparison to the study area as a whole. This segment is lower than the SFECC average with respect to low-income and no-vehicle households, but about on par with the average for minority households and higher than average with respect to population under 15 or over 65.

Table 2.6: Service Segment 2 Description

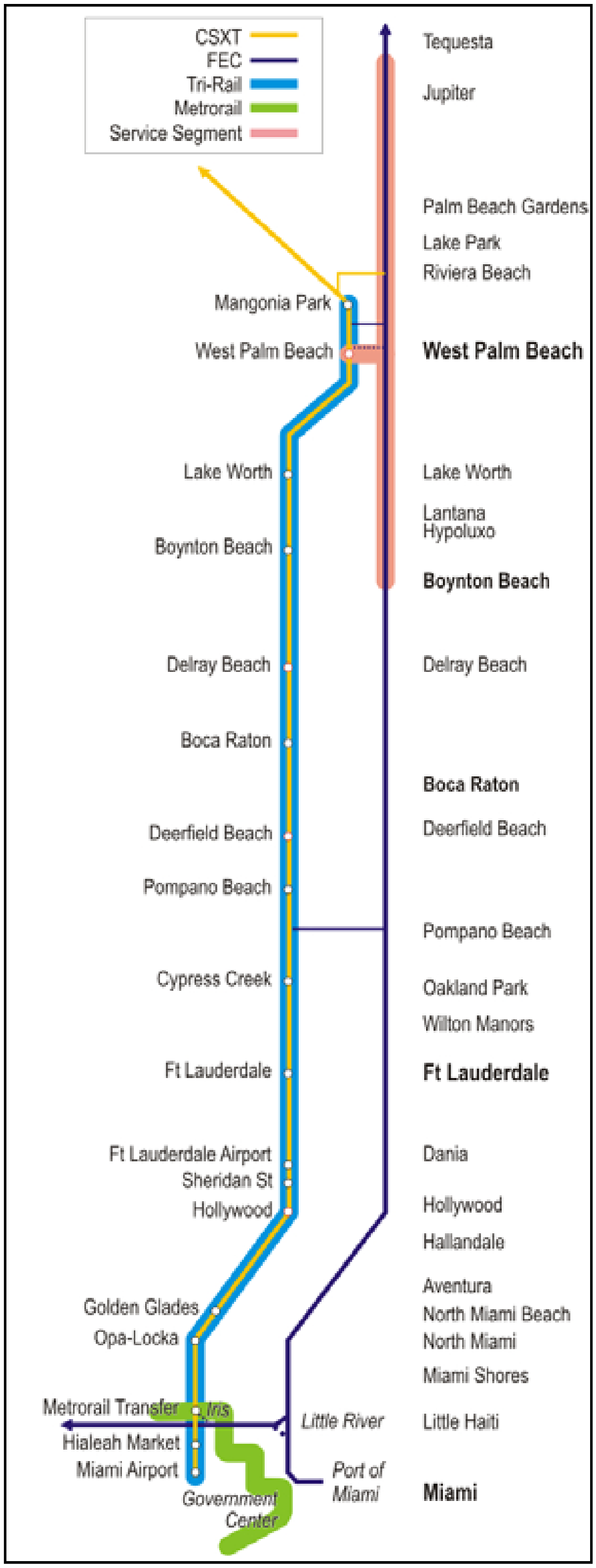
North Palm Beach County	
Focus	West Palm Beach CBD
End Point(s)	Tequesta (North) Boynton Beach (South)
Intermediate Markets	Jupiter, Palm Beach Gardens, Riviera Beach, North Palm Beach, Lake Park, Lake Worth, Lantana, Hypoluxo
Extent	35.9 Miles
Potential Modes	RGR, BRT, LRT
Possible Alignments	FEC, US-1

Table 2.7: Service Segment 2 Characteristics

	SFECCTA Study Area		Segment 2	
Length	85.3 Miles		35.9 Miles	
	Total	Per Mile	Total	Per Mile
Population	1,180,818	13,843	348,477	9,707
Under 15 or Over 65	24%		27%	
Employment	750,914	8,803	221,396	6,147
Households	474,722	5,565	140,096	3,902
Minority	15%		14%	
Low-income	19%		16%	
No-vehicle HHs	10%		8%	

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Figure 2.9: Service Segment 2 – North Palm Beach County



2.2.7 Service Segment 3 – West Palm Beach South

This service segment (**Table 2.8** and **Figure 2.10**) would extend south from a connection with Tri-Rail at West Palm Beach to another connection with Tri-Rail at or near Pompano Beach, providing South Palm Beach County and some North Broward County communities with a local, line haul transit service. The service would parallel to US-1 and complement the heavily-patronized local bus service Palm Tran operates on that arterial. It would also provide a bridge service connecting the commercial centers of these to Tri-Rail stations from the south.

Table 2.9 provides demographic data regarding the service segment in comparison to the study area as a whole. This segment is lower than the SFECC average with respect to low-income and no-vehicle households, but about on par with the average for minority households and higher than average with respect to population under 15 or over 65.

Table 2.8: Service Segment 3 Description

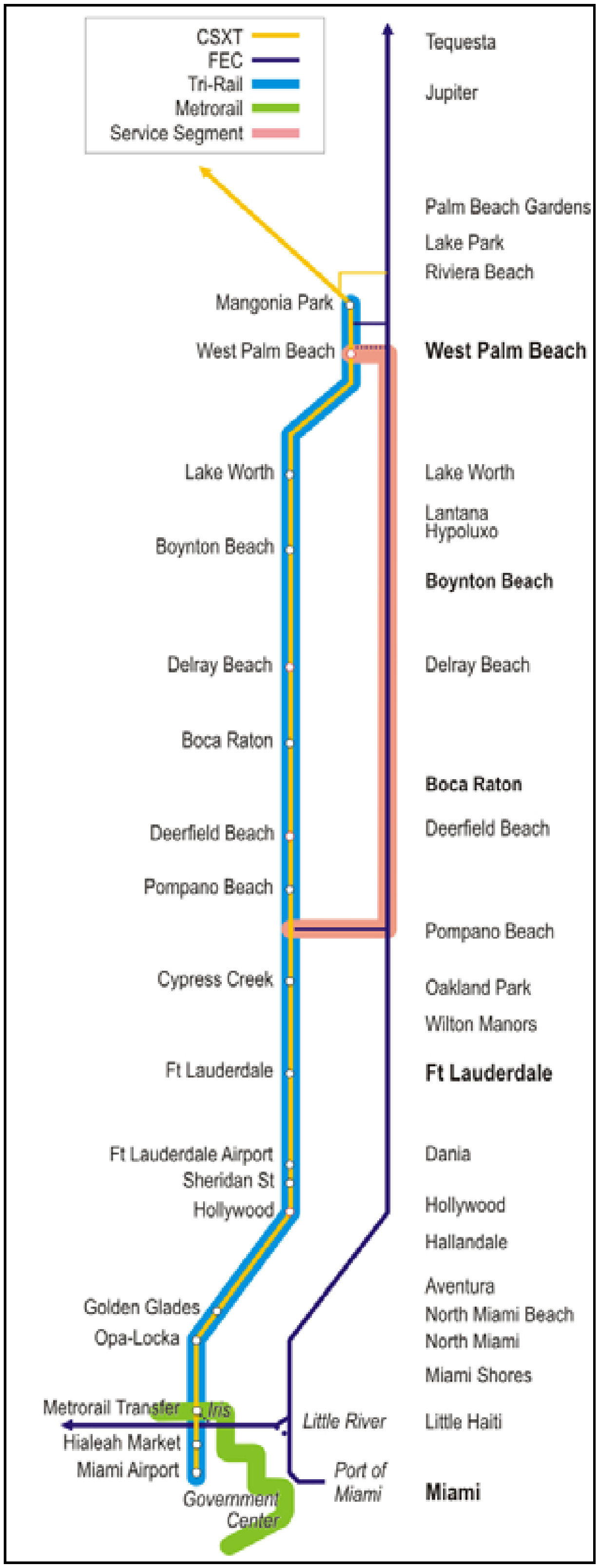
West Palm Beach South	
Focus	West Palm Beach CBD
End Point(s)	Pompano Beach
Intermediate Markets	Lake Worth, Lantana, Hypoluxo, Boynton Beach, Delray Beach, Villa Roca, Yamato, Boca Raton, Deerfield Beach
Extent	33.0 Miles
Potential Modes	RGR, BRT, LRT
Possible Alignments	FEC, US-1

Table 2.9: Service Segment 3 Characteristics

	SFECCTA Study Area		Segment 3	
Length	85.3 Miles		33.0 Miles	
	Total	Per Mile	Total	Per Mile
Population	1,180,818	13,843	378,970	11,484
Under 15 or Over 65	24%		27%	
Employment	750,914	8,803	225,445	6,832
Households	474,722	5,565	153,857	4,662
Minority	15%		16%	
Low-income	19%		17%	
No-vehicle HHs	10%		8%	

 NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Figure 2.10: Service Segment 3 – West Palm Beach South



2.2.8 Service Segment 4 – East Broward County

This service segment (**Table 2.10** and **Figure 2.11**) would extend south from a connection with Tri-Rail at or near Pompano Beach, providing Broward County communities with a local, line haul transit service. The service would parallel to US-1 and complement the heavily-patronized local bus service BCT operates on that arterial. It would also provide a feeder service connecting the commercial centers of these to Tri-Rail stations to the north.

Table 2.11 provides demographic data regarding the service segment in comparison to the study area as a whole. This segment is about on par with the SFECC average with respect to minority, low-income and no-vehicle households, but less than average with respect to population under 15 or over 65.

Table 2.10: Service Segment 4 Description

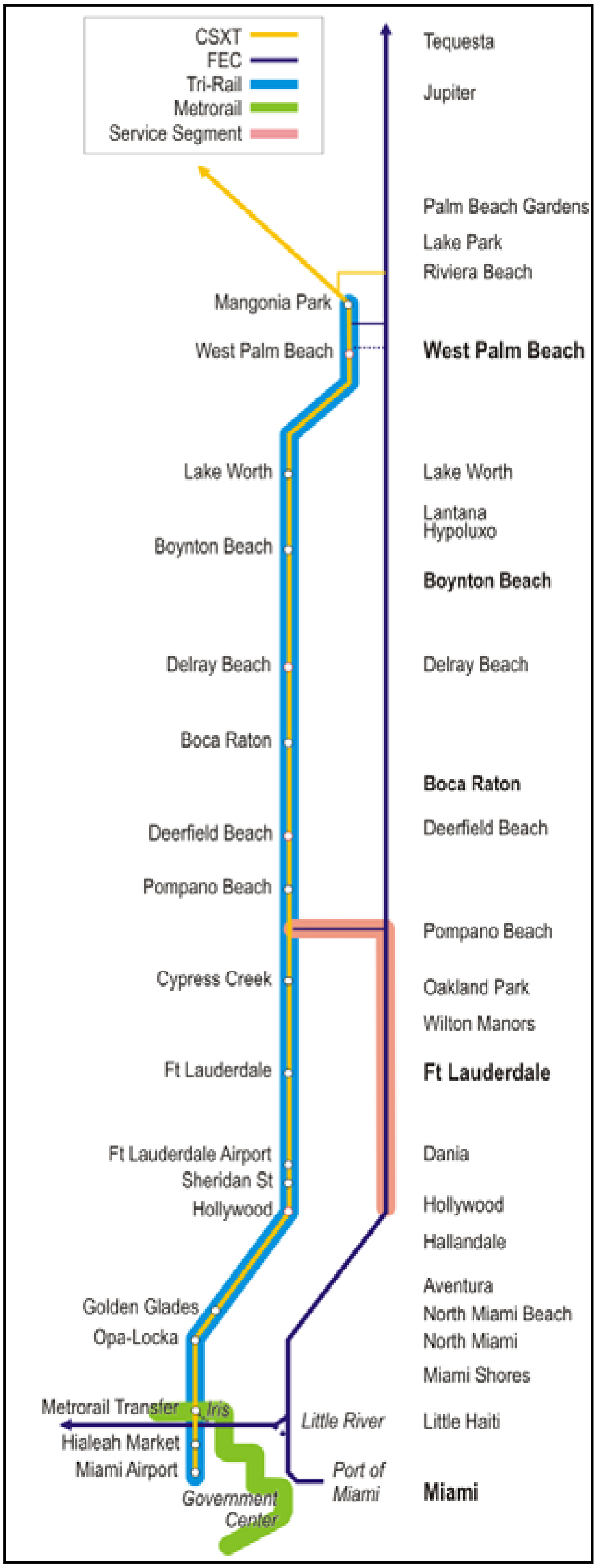
East Broward County	
Focus	Fort Lauderdale CBD
End Point(s)	Pompano Beach (North), Hollywood (South)
Intermediate Markets	Oakland Park, Colohatchee Park, Wilton Manors, FLL, Port Laudania, Dania
Extent	16.7 Miles
Potential Modes	RGR, BRT, LRT
Possible Alignments	FEC, US-1

Table 2.11: Service Segment 4 Characteristics

	SFECCTA Study Area		Segment 4	
Length	85.3 Miles		16.7 Miles	
	Total	Per Mile	Total	Per Mile
Population	1,180,818	13,843	307,309	18,402
Under 15 or Over 65	24%		22%	
Employment	750,914	8,803	164,701	9,862
Households	474,722	5,565	132,928	7,960
Minority	15%		14%	
Low-income	19%		19%	
No-vehicle HHs	10%		9%	

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Figure 2.11: Service Segment 4 – East Broward County



2.2.9 Service Segment 5 – Fort Lauderdale-Miami

This service segment (**Table 2.12** and **Figure 2.12**) would extend south from a connection with Tri-Rail at or near Pompano Beach, providing Broward County and North Miami-Dade County communities with a local, line haul transit service. The service would parallel to US-1 and complement the heavily-patronized local bus services BCT and MDT operate on that arterial. It would also provide a feeder service connecting the commercial centers of these to Tri-Rail stations to the north. There are several ways service could operate in this segment. For example, Tri-Rail trains could be rerouted to the FEC at Pompano Beach, providing a one-seat ride from stations to the north to Downtown Fort Lauderdale and Miami (a new Pompano Beach-MIA train on the SFRC would maintain existing service south of the connection).

Table 2.13 provides demographic data regarding the service segment in comparison to the study area as a whole. This segment is about on par with the SFECC average with respect to minority and no-vehicle households, but greater than average with respect to low-income households and less than average with respect to population under 15 or over 65.

Table 2.12: Service Segment 5 Description

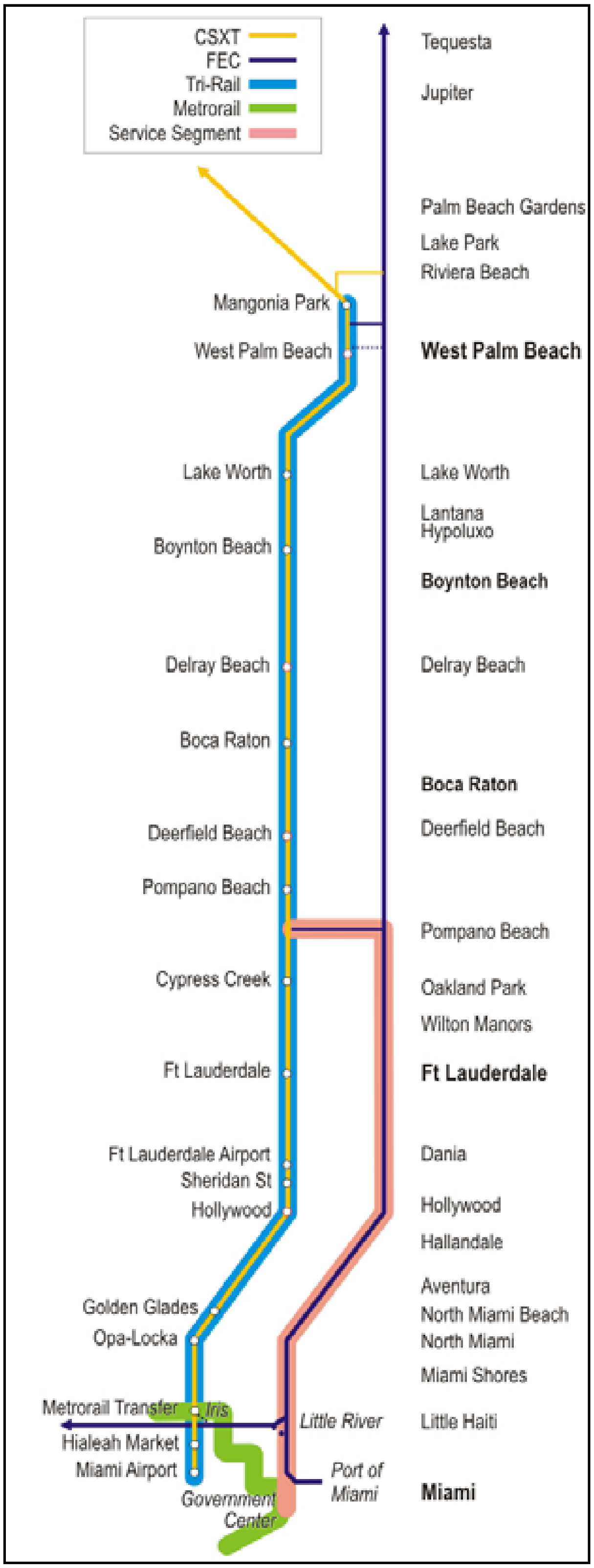
Fort Lauderdale – Miami	
Focus	Fort Lauderdale CBD, Miami CBD
End Point(s)	Pompano Beach (North), Government Center (South)
Intermediate Markets	Oakland Park, Colohatchee, Wilton Manors, FLL, Port Laudania, Dania, Hollywood, Hallandale, Ojus, North Miami Beach, North Miami, Miami Shores, Biscayne, Little River, Little Haiti, Lemon City
Extent	33.8 Miles
Potential Modes	RRT, RGR, BRT, LRT
Possible Alignments	FEC, US-1

Table 2.13: Service Segment 5 Characteristics

	SFECCTA Study Area		Segment 5	
Length	85.3 Miles		33.8 Miles	
	Total	Per Mile	Total	Per Mile
Population	1,180,818	13,843	680,026	20,119
Under 15 or Over 65	24%		22%	
Employment	750,914	8,803	436,268	12,907
Households	474,722	5,565	270,300	7,997
Minority	15%		15%	
Low-income	19%		21%	
No-vehicle HHs	10%		11%	

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Figure 2.12: Service Segment 5 – Fort Lauderdale - Miami



Service Segment 6 – Miami Northeast

This service segment (**Table 2.14** and **Figure 2.13**) would extend north from Government Center in Downtown Miami to Hallandale, providing North Miami-Dade County and Southern Broward County communities with a local, line haul transit service. This service would parallel US-1 and complement the heavily-patronized local bus service Miami-Dade Transit operates on that arterial.

Table 2.15 provides demographic data regarding the service segment in comparison to the study area as a whole. This segment is greater than the SFECC average with respect to minority, low-income and no-vehicle households but less than average with respect to population under 15 or over 65.

Table 2.14: Service Segment 6 Description

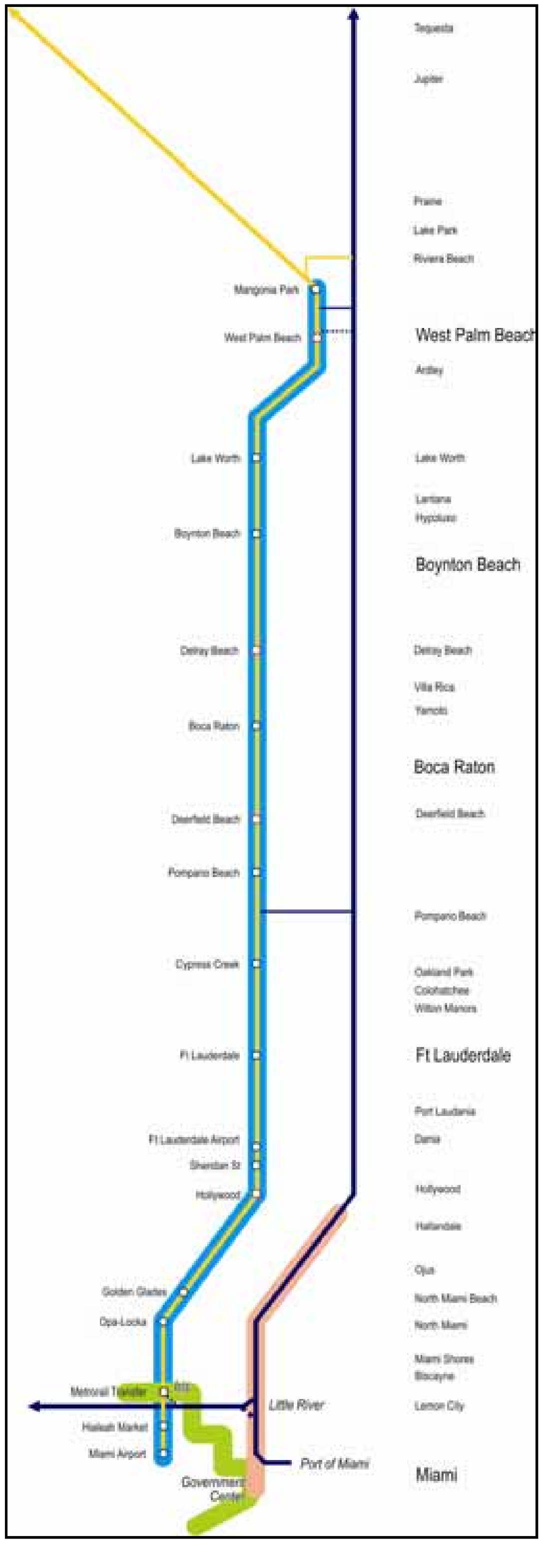
Miami Northeast	
Focus	Miami CBD
End Point(s)	Hallandale
Intermediate Markets	Ojus, North Miami Beach, North Miami, Miami Shores, Biscayne, Little River, Little Haiti, Lemon City
Extent	14.4 Miles
Potential Modes	RRT, RGR, BRT, LRT
Possible Alignments	FEC, US-1

Table 2.15: Service Segment 6 Characteristics

	SFECCTA Study Area		Segment 6	
Length	85.3 Miles		14.4 Miles	
	Total	Per Mile	Total	Per Mile
Population	1,180,818	13,843	351,665	24,421
Under 15 or Over 65	24%		22%	
Employment	750,914	8,803	264,858	18,393
Households	474,722	5,565	128,107	8,896
Minority	15%		17%	
Low-income	19%		23%	
No-vehicle HHs	10%		14%	

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Figure 2.13: Service Segment 6 – Miami Northeast



2.2.10 Service Segment 7, 8 and 9 – Mangonia - Miami

In addition to the six service segments, three Special Analysis Segments were defined to support analysis of the overall corridor phenomena (**Figure 2.14**). Special Analysis Segments 7, 8 and 9 differ from the prior six sub-regional service segments in that:

- They span the full extent of the corridor;
- They consider a single modal technology (RGR) and alignment (FEC); and
- They are not intended to represent an actual service configuration or alternative.

The purpose of Special Analysis Segments 7, 8 and 9 was to aid analysis by providing a consistent basis of comparison through which to better understand what would happen if the corridor was subdivided into different sets of sub-regional combinations, or the effect of different Miami-Dade County termini (Downtown Miami versus MIC at MIA). This was accomplished through additional analysis assuming RGR technology along the entire FEC Railway alignment. The additional analysis also included testing the effect of extending Tri-Rail service to Downtown Miami. This analysis was useful in determining the ultimate segmentation for the corridor as discussed in Chapters 4 and 6.

2.3 Definition of Alternatives

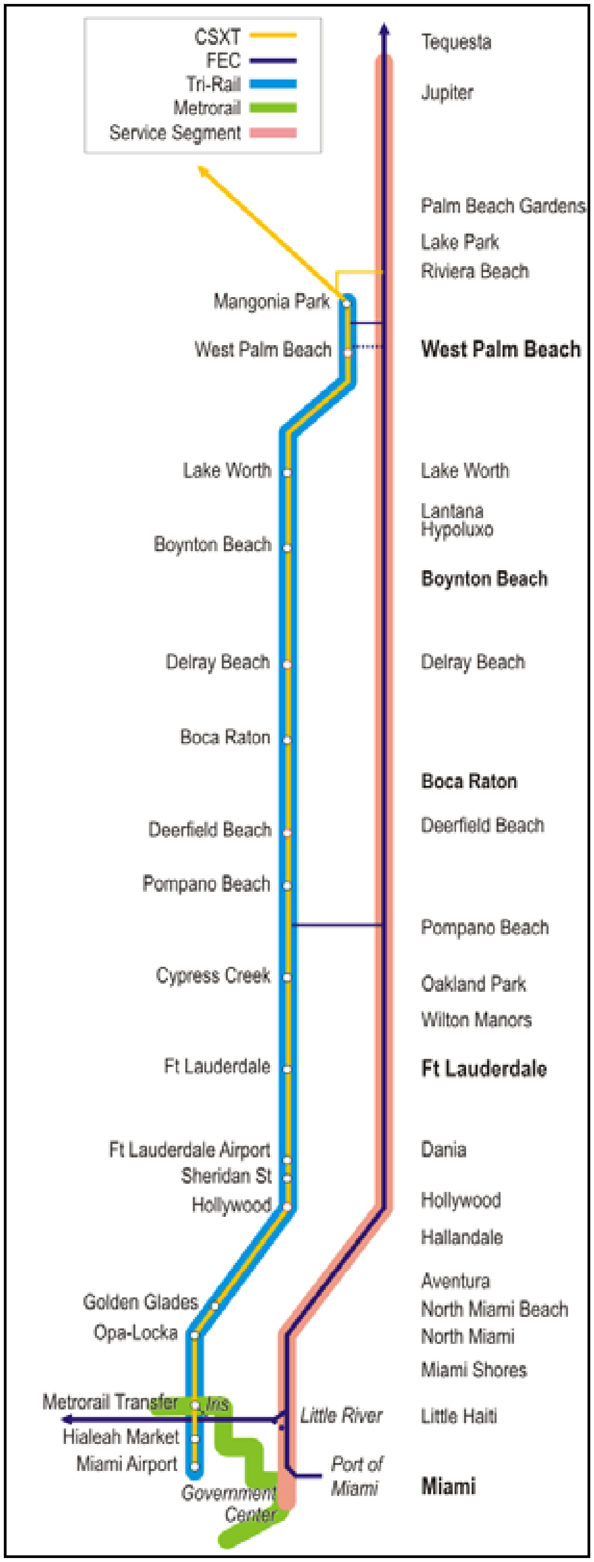
Based on the preceding analysis, a series of Build Alternatives were developed and analyzed based on the six service segments, three alignments and five modal categories. Thirty-six (36) alternatives were analyzed in comparison to the No-Build and TSM Alternatives. These alternatives are further defined below.

2.3.1 No-Build (No-Action) Alternative

A "No-Build" or "No-Action" Alternative is required for any FTA sanctioned EIS. It reflects projects included in the 2030 Long Range Cost Feasible Plans for each of the counties. The 2030 Plans include enhanced Tri-Rail service as a result of the double tracking to 48 trains per day with 20 minute headways in the peak hour and 60 minute headways in the non-peak. This service is planned to connect to the MDT Metrorail service at the MIC which is currently under construction near MIA. Tri-Rail currently generates about 10,000 daily boardings in the SFECC study area. Metrorail services accounts for about another 59,000 daily boardings (including stations south of the study area). Bus services are also an important element of the No-Build - 80 local bus routes operated by MDT, BCT and Palm Tran generate about 275,000 weekday boardings. Roadway improvements along US-1 or other parallel alignments are limited in the 2030 Plans. Only Palm Beach County has any improvements planned for the US-1 corridor (widening from 4 to 6 lanes) and Dixie Highway (widening from 2 to 4 lanes)

Figure 2.14: Service Segment 7, 8 and 9 – Mangonia – Miami

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.



CSXT
FEC
Tri-Rail
Metrorail
Service Segment
Tequesta
Jupiter
Palm Beach Gardens
Lake Park
Riviera Beach
Mangonia Park
West Palm Beach
West Palm Beach
Lake Worth
Lake Worth
Lantana
Hypoluxo
Boynton Beach
Boynton Beach
Delray Beach
Delray Beach
Boca Raton
Boca Raton
Deerfield Beach
Deerfield Beach
Pompano Beach
Pompano Beach
Cypress Creek
Oakland Park
Wilton Manors
Ft Lauderdale
Ft Lauderdale
Ft Lauderdale Airport
Sheridan St
Hollywood
Dania
Hollywood
Hallandale
Golden Glades
Opa-Locka
Aventura
North Miami Beach
North Miami
Miami Shores
Metrorail Transfer
Iris
Little River
Little Haiti
Hialeah Market
Miami Airport
Port of Miami
Miami
Government Center

2.3.2 Transportation System Management (TSM)/Baseline Alternative

FTA defines the TSM Alternative to be relatively low-cost approaches to addressing transportation problems of the corridor and in essence the “best that can be done” to improve transit service in the corridor without major capital investment in new infrastructure. The TSM Alternative for this Phase 1 analysis will be to add cost-effective transit improvements beyond the adopted long-range plan. These improvements will include the following:

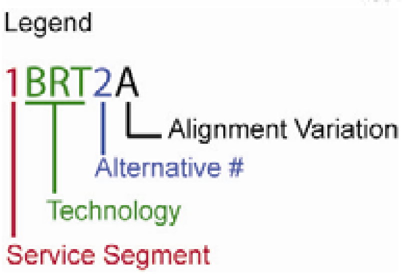
- Increasing Tri-Rail service frequencies (15 minute peak headways, 30 minute off-peak)
- Improving service frequencies on 21 bus routes that serve the three county area and were part of the on-board transit survey. The routes operate in a north-south direction and are located within five miles of the corridor surveyed. The routes are Palm Tran 1, 2, 3, 20, 21, and 70; BCT 1, 6, 10, 20, 50, 60 and MDT 2, 3, 9, 10, 16, 93, 95. Many of these routes have 30 minute headways that can be reduced and modeled at 15 minutes for the TSM Alternative.
- For the purposes of this alternatives analysis, I-95 south of West Palm Beach was assumed to be part of the TSM Alternative due to its close proximity to Tri-Rail.
- The TSM Alternative will be further refined and analyzed during Phase 2 and can include, for example, operating express bus, fast bus or RGB service along US-1 and other existing corridors.

2.3.3 Build Alternatives

The 36 Build Alternatives consist of a set of travel modes and routes within the study area’s six service segments. They are evaluated in service segments to better focus on the application of the mode and route. They consist of six distinct service segments, based on forecasted 2030 travel patterns reflecting the "desire lines" described previously. Three additional special analysis segments encompassing the overall extent of the corridor were also created to validate choices about service segment boundaries and to test the relative potential of differing southern termini (Downtown Miami vs. MIA). The Build Alternatives are summarized in **Table 2.16**. Each preliminary alternative was given a three-part designator indicating its context in terms of service segment and modal technology. The preliminary alternatives include one pair of sub-alternatives for the Tri-Rail Alternative on the FEC alignment (1RGR1 and 1RGR1A). More detailed physical descriptions for the initial and preliminary alternatives can be found in the technical memorandum, SFECCTA Study Alternatives Development, which is available upon request.

Table 2.16: SFECCTA Preliminary Alternatives

Service Segment	Alignment	Regional Bus	Bus Rapid Transit	Light Rail Transit	Rail Rapid Transit	Regional Rail	
						Tri-Rail	Other RGR
1 West Palm Beach North	FEC		1BRT2A	1LRT2A		1RGR1/1A	
	US1	1RGB2	1BRT1	1LRT1			
	I-95	1RGB1				1RGR2	
2 North Palm Beach County	FEC		2BRT2	2LRT2			2RGR1
	US1		2BRT1	2LRT1			
3 West Palm Beach South	FEC		3BRT2	3LRT2			3RGR1
	US1		3BRT1	3LRT1			
4 East Broward County	FEC		4BRT2	4LRT2			4RGR1
	US1		4BRT1	4LRT1			
5 Ft Lauderdale – Miami	FEC		5BRT2	5LRT2	5RRT1		5RGR1
	US1		5BRT1	5LRT1			
6 Miami Northeast	FEC		6BRT2	6LRT2	6RRT1		6RGR1
	US1		6BRT1	6LRT1			
	Technology:	RGB	BRT	LRT	RRT	RGR	



RGR on the FEC alignment—whether Tri-Rail or some other FRA compliant or non-compliant vehicle—was considered as a technology option for at least one alternative in every service segment. Alternatives associated with the two semi-rapid transit modes, BRT and LRT, are incorporated into the greatest number of alternatives (24), proposed for consideration on the FEC right-of-way as well as integrated into US-1. For the purposes of a comparable alternatives analysis, the BRT and LRT Alternatives assume exclusive rights-of-way along the FEC and US-1 alignments.

Two RRT Alternatives were proposed at the south end of the SFECCTA study area, where economies of scale can be achieved through integration with the existing Metrorail system. RGB was only considered as a "rubber-tired extension" of Tri-Rail service via I-95 north of the present terminal station at Mangonia Park.

Initial Station Suitability and Location Screening

Potential station locations were identified for each of the Build Alternatives utilizing ¼ mile radius location circles with center points referred to as "centroids" for travel demand modeling purposes. These station areas have been placed along north-south alignments for the six service segments. However, there are opportunities for other station areas, including the east-west and special service segments (e.g. connections to ports, seaports, Tri-Rail or other major destinations). The station area centroids selected in the model for this analysis were located at strategic intersections of major east-west transportation corridors with the FEC Railway (or US-1 and, for northern Palm Beach County, I-95). The model was configured to extend ¼ mile radius "buffers" from these centroids to create ½ mile diameter circles defining where data was to be obtained for input into the model. In addition to model results for station area suitability, the selection of passenger station locations in the SFECCTA study area are heavily dependent upon the choices that will eventually be made concerning alignment and modal technology to address a specific service need. At the Phase 1 stage of project definition, there are many functional elements regarding station area location that can be considered independent and in advance of making specific modal decisions. A number of factors that influence the specific siting of stations include:

- Passenger catchment areas ("commutersheds")
- Local street network
- Local pedestrian network
- Adjacent land uses
- Accessibility
- Visibility
- Availability and cost of real estate

The location and suitability of stations were considered as sequential steps in alternatives development. The general locations where stations would be considered desirable in Phase 1 were selected for each SFECCTA alignment based on the following:

- **East-West Arterials:** The ease of access to communities east and west of the station sites was considered an important priority in station siting. As such, many station areas were centered on or near alignment intersections with major east-west arterials.
- **Town Centers:** A priority was afforded to reinforcing the regional significance of the commercial districts and potentially historic town centers of SFECCTA communities through the siting of station areas.
- **Residential Densities:** The spacing of sequential station areas along a given alignment generally reflected the residential density of adjacent development, applying closer station spacing in areas of

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higher residential densities where pedestrian access may be more predominant, and broader station spacing in areas of lower residential density.

- **Intermodal Transfer Centers:** Connectivity with other transport modes and services were another priority in the siting of station areas. Candidate intermodal transfer centers included local transit hubs, train stations, airports and seaports.

Initially, 59 station areas were identified in this manner, as illustrated in **Figure 2.15** and itemized on **Table 2.17** with the ¼ mile radius location centroids that were modeled. Comparable Equivalent station areas were identified centered on the alignment of the FEC, US-1 and I-95. **Figures 2.19 – 2.22** at the end of this chapter provide graphical information regarding each alignment and its associated station areas (shown without centroids in the ½ mile circles for clarity).

2.3.4 Land Use Suitability

A preliminary land use suitability analysis was conducted at the 59 station areas. The following parameters and variables, based on FTA criteria, were analyzed to determine whether particular areas were suitable for transit and associated TOD. The major parameters and variables considered and the results of the station suitability analysis are represented in **Table 2.19** and **Figure 2.16**, respectively. Each potential station area was scored relative to each other based on these variables. **Table 2.19** and **Figure 2.16** are found at the end of Section 2.3.5 following a discussion of each parameter analyzed.

- **Transit Supportive Land Use:** To assess transit supportive land use within each municipality in the SFECCTA study area, existing policies and guidelines in place at the local zoning stage that would encourage more density, mixed use, and a pedestrian atmosphere were analyzed. **Table 2.18** provides a matrix outlining the strength of each local government's transit supportive policies. In addition to transit supportive policies, the "origination" variable which consists of housing density and the "destination" variable which consists of employment density were also part of the overall scoring for assessing an area's transit supportive land use.

- **Development Patterns:** Development patterns are the primary focus and criteria in TOD. These patterns cover an examination of the existing land use and development by taking a look at the mix of uses and whether the conglomerate of the patterns creates a center where ridership can either originate or terminate as a destination. Patterns of land use and development also cover economic

Figure 2.15: Alternative Alignments and Station Areas by Service Segment

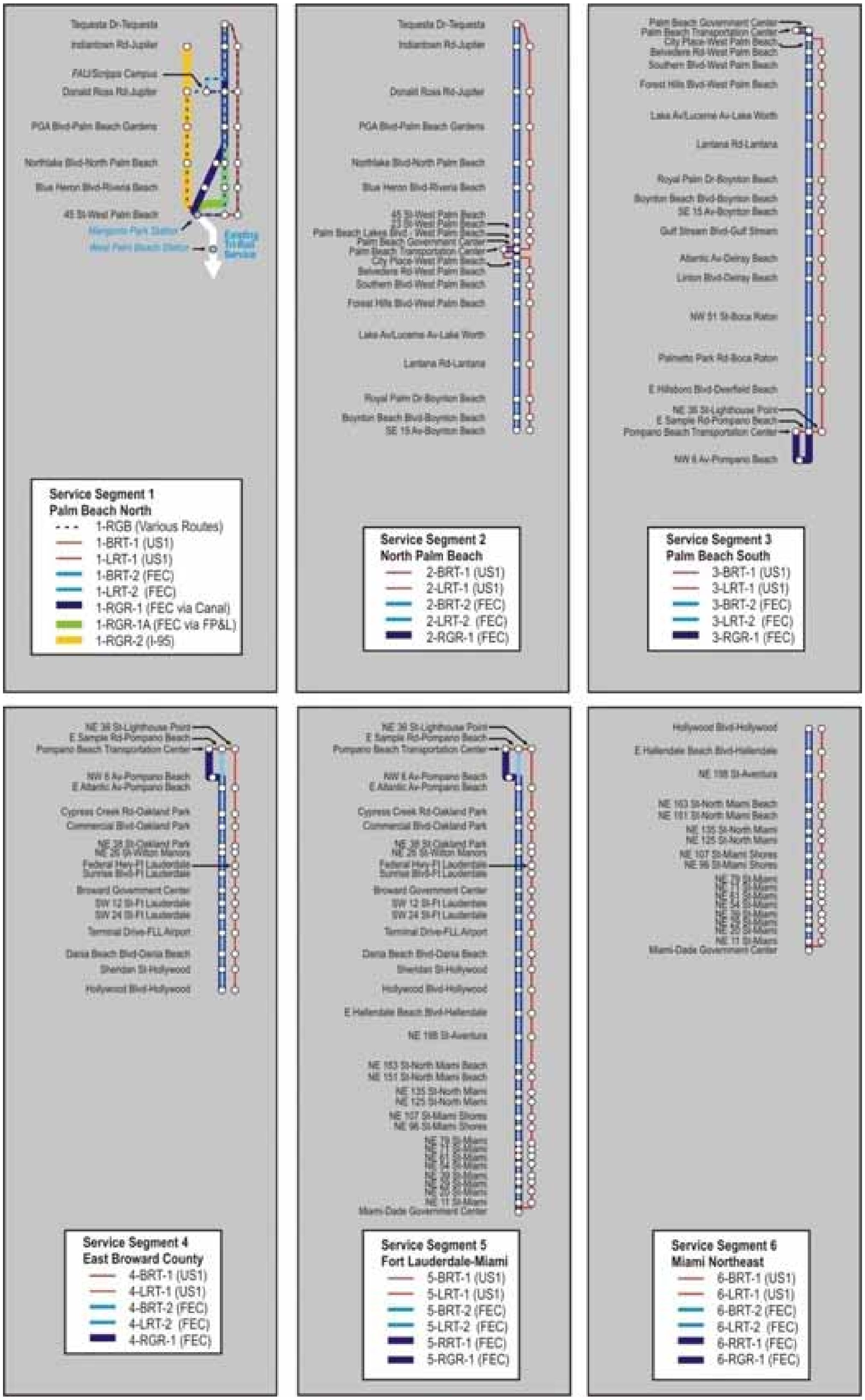

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Table 2.17: Station Area Centroids by Service Segment

	Station Area Title (N-S)	Service Segment						N-S Alignment/ Mode			
		1	2	3	4	5	6	FEC	US-1	I-95	Other
1	TEQ Tequesta Dr	■	■					□	□		
2	JUP Indiantown Rd	■	■					□	□	■	
3	JUP Donald Ross Rd	■	■					□	□	■	■
4	PBG PGA Blvd	■	■					□	□	■	
5	PBG Northlake Blvd	■	■					□	□	■	■
6	RIV Blue Heron Blvd	■	■					□	□		■
7	MNG Mangonia Park Station	■						□	□		■
	WPB 45 St		■					□	□		
8	WPB 23 St		■					□	□		
9	WPB Palm Beach Lakes Blvd		■					□	□		
10	WPB Government Center		■	■				□	□		
11	WPB Transportation Center		■	■							■
12	WPB City Place		■	■				■	■		
13	WPB Belvedere Rd		■	■				■	■		
14	WPB Southern Blvd		■	■				■	■		
15	WPB Forest Hill Blvd		■	■				■	■		
16	LKW Lake - Lucerne Avs		■	■				■	■		
17	LAN Lantana Rd		■	■				■	■		
18	BYN Royal Palm Dr		■	■				■	■		
19	BYN Boynton Beach Blvd		■	■				■	■		
20	BYN SE 15 Av		■	■				■	■		
21	GST Gulfstream Blvd			■				■	■		
22	DLR Atlantic Av			■				■	■		
23	DLR Linton Blvd			■				■	■		
24	BOC NW 51 St			■				■	■		
25	BOC Palmetto Park Rd			■				■	■		
26	DRF E Hillsboro Blvd			■				■	■		
27	PMP E Sample Rd			■	■	■		■	■		
28	PMP Transportation Center			■	■	■					■
29	PMP NW 3 Av			■	■	■		▯			
30	PMP E Atlantic Blvd				■	■		■	■		
31	OAK Cypress Creek Rd				■	■		■	■		
32	OAK Commercial Blvd				■	■		■	■		
33	OAK NE 38 St				■	■		■	■		
34	WLT NE 26 St				■	■		■	■		
35	FTL Sunrise Blvd				■	■		■	■		
	FTL Federal Hwy								■		
36	FTL Government Center				■	■		■	■		
37	FTL SW 12 St				■	■		■	■		
38	FTL SW 24 St				■	■		■	■		
39	FLL Terminal Dr				■	■		■	■		
40	DAN Dania Beach Blvd				■	■		■	■		
41	HLY Sheridan St				■	■		■	■		
42	HLY Hollywood Blvd				■	■	■	■	■		
43	HAL E Hallandale Beach Blvd					■	■	■	■		
44	AVE NE 198 St					■	■	■	■		
45	NMB NE 163 St					■	■	■	■		
46	NMB NE 151 St					■	■	■	■		
47	NMI NE 135 St					■	■	■	■		
48	NMI NE 125 St					■	■	■	■		
49	MIS NE 107 St					■	■	■	■		
50	MIS NE 96 St					■	■	■	■		
51	MIA NE 79 St					■	■	■	■		
52	MIA NE 71 St					■	■	■	■		
53	MIA NE 61 St					■	■	■	■		
54	MIA NE 54 St					■	■	■	■		
55	MIA NE 39 St					■	■	■	■		
56	MIA NE 29 St					■	■	■	■		
57	MIA NE 20 St					■	■	■	■		
58	MIA NE 11 St					■	■	■	■		
59	MIA Government Center					■	■	■			

Notes:

US-1 alignment refers to US-1, Federal Hwy, Dixie Hwy

Legend

■ - Presence of station area

■ - FEC alignment (RGR, BRT, LRT)

□ - FEC alignment (RGR, BRT, LRT and RGB)

▯ - FEC alignment (RGR)

■ - US-1 alignment (RGR, BRT, LRT)

□ - US-1 alignment (RGR, BRT, LRT and RGB)

■ - I-95 alignment (RGB)

■ - Tri-Rail/AmTrak alignment (RGR, BRT, LRT)

■ - Local road (BRT, LRT, RGB)

■ - C-17 Canal (BRT, LRT, RGR)

Station Area Municipal Codes

TEQ = Tequesta
JUP = Jupiter
PBG = Palm Beach Gardens
RIV = Riviera Beach
MNG = Mangonia Park
WPB = West Palm Beach
LKW = Lake Worth
LAN = Lantana
BYN = Boynton Beach
GST = Gulf Stream
DLR = Delray Beach
BOC = Boca Raton
DRF = Deerfield Beach
PMP = Pompano Beach
OAK = Oakland Park
WLT = Wilton Manors
FTL = Ft. Lauderdale (FLL = Ft. Lauderdel Int'l Airport Terminal)
DAN = Dania Beach
HLY = Hollywood
HAL = Hallandale Beach
AVE = Aventura
NMB = North Miami Beach
NMI = North Miami
MIS = Miami Shores
MIA = Miami

Table 2.18: Transit Suitability of the Cities in the Corridor

	Transit Supportive with Policies and/or Implementation	Transit Supportive but no Policies and/or Implementation	Not Transit-Supportive	More Information Needed
Palm Beach County	Delray Beach West Palm Beach	Boca Raton Boynton Beach Lantana Lake Worth Riviera Beach Lake Park North Palm Beach Palm Beach Gardens Jupiter		Mangonia Park Tequesta
Broward County	Hollywood Fort Lauderdale Wilton Manors Oakland Park Deerfield Beach	Hallandale Dania Beach Lighthouse Point		
Miami-Dade County	Miami North Miami	El Portal Miami Shores North Miami Beach Aventura		Biscayne Park

development initiatives within municipalities. Economic development initiatives engage a wide range of "techniques" such as the designation of CRA, local activity centers (LAC), empowerment zones, and a host of others. These initiatives often provide for focused redevelopment efforts with funding sources or mechanisms that help encourage development. The most effective areas are those that focus their economic and redevelopment efforts around or in anticipation of encouraging greater transit mobility. Areas or local governments with "financial catalysts" such as CRA and brownfields, "economic catalysts" such as LAC and overlay districts, and development trends which consist of housing growth and commercial growth scored higher for station suitability (see **Table 2.19**).

- **Connectivity:** As evidenced in the development of the Tri-Rail commuter rail system in South Florida, an essential component of a north-south transit line is its east-west connections and accessibility through other modes, be it vehicular or pedestrian. The SFECC runs in a general north-south pattern due to historic development limitations of the Florida Everglades in its original state. Therefore, a major criterion for station suitability evolves from the location and proximity to east-west connectors and other modes of transit. With the presence of I-95 as a major north-south regional connector, major east-west roadways connecting to I-95 generally will have greater carrying capacity and also provide connectivity to municipalities and neighborhoods west of I-95. Increased station suitability is also derived from the presence of and connections to other forms of transit such as local/regional bus systems, and proximity to Tri-Rail/Amtrak stations that offer long-range commuter and regional transit connectivity. Therefore, the variables analyzed for this parameter in **Table 2.19** were: a potential station area's access to auto connectivity points; and, transit connectivity points.

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- **Station Area Environment:** The final level of suitability mapping conducted was derived from a more qualitative and often elusive element, "growth capacity". Growth capacity attempts to substantiate and qualify the quality of the station area environment through four major sub-categories discussed in the paragraph below: Form, Density, the Public Realm, and finally Transit Need and Dependency.

  Form and Density work hand in hand to identify a critical mass that would validate a transit station area. A critical evaluation of the built form, its application and function, and density provides further insight into this category. Municipalities in the SFECCTA study area range from those that look at a level of maintenance and no growth to those that progressively seek evolution and improvements to the public realm by enhancing the "quality of living" for its residents. The presence and proximity of recreational, civic, institutional and cultural facilities that are built and maintained as amenities for the use and enjoyment of the public are analyzed under this category as is transit dependency. By establishing a basic need for transit through the identification of zero-vehicle ownership homes and low-income/affordable homes that would depend on and/or generally benefit from the availability of other modes of transit, an integral piece of the suitability methodology was identified. Not only do these criterions identify a critical mass of users, but also identify a group of users that would profit most from transit access. Therefore, the variables measured and scored under this parameter in **Table 2.19** included "growth capacity" based on maximum building height, major attractors such as hospitals and colleges, and the presence of low-income households.

  Potential station areas with a high number of each of these variables scored higher than others with lower number of these factors. To further substantiate information included in the land use suitability assessment for potential station areas, economic and market analysis information was reviewed regarding patterns of development, land use, and potential station area growth factors. More detailed information on how the potential station areas were scored for this project is provided in the Deriving a Methodology for Assessing Transit-Supportive Land Use and Station Area Suitability report available upon request and on the project website.

2.4 Economic and Market Analysis

The economic analysis undertaken as part of this Phase 1 study had an overall objective to identify opportunities for potential land value capture/enhancement along the SFECCTA study area that could provide potential sources of funding for the initial set of transit initiatives and particularly for potential transit station areas. The following general assessments were made:

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Table 2.19: Station Land Use Suitability

	Transit Supportive Land Use			Development Patterns		Connectivity		Station Area Growth Factors			Town & Comm Suitability (Total)
Station	Origination	Destination	Transit-support Policy	Catalysts	Dev Trends	Auto Connectivity	Tran Connectivity	Growth Capacity	Attractors	Transit Dependent	
TEQ Tequesta Dr	2.83	1.11	1.11	1.00	4.01	1.45	1.00	1.83	2.24	1.70	1.86
JUP Indiantown Rd	1.39	2.99	2.99	1.00	4.99	1.36	1.00	2.21	1.56	1.46	2.08
JUP Donald Ross Rd	2.66	2.96	4.62	1.38	4.92	2.43	1.00	1.11	1.02	1.04	2.39
FAU / Scripps Campus	1.11	2.94	3.23	1.00	4.87	1.00	1.00	1.11	1.00	1.00	1.79
PBG PGA Blvd	3.00	3.00	5.00	1.10	5.00	2.00	1.00	1.00	1.70	1.05	2.45
NPB Northlake Blvd (C17)	1.00	2.62	4.08	1.18	4.01	1.00	1.18	1.78	1.15	2.00	1.97
NPB Northlake Blvd	1.03	2.32	2.61	1.19	2.20	1.47	2.40	1.70	1.64	1.80	1.80
RIV Blue Heron Blvd (C17)	1.00	2.00	1.00	1.00	2.50	1.00	3.00	1.00	1.00	2.33	1.55
RIV Blue Heron Blvd	1.84	2.97	2.97	1.00	4.20	1.36	2.94	2.08	1.75	2.73	2.42
MNG Mangonia Park Station	1.00	5.00	1.00	2.00	1.75	1.00	4.53	1.00	2.00	1.00	1.99
WPB 45 St	1.30	5.00	5.00	1.20	4.25	3.00	1.80	2.00	2.60	2.00	2.83
WPB 23 St	1.91	4.45	4.45	1.76	3.74	2.12	1.97	2.02	1.74	2.17	2.63
WPB Transportation Center	1.00	4.04	4.04	1.48	3.35	2.28	3.32	1.24	1.48	2.40	2.55
WPB Government Center	1.00	3.74	3.74	1.95	3.07	3.32	3.00	1.00	1.37	1.84	2.53
WPB Palm Beach Lakes Blvd	1.84	5.00	5.00	1.89	4.25	2.96	1.62	1.78	1.49	2.00	2.81
WPB City Place	1.13	3.92	3.92	1.69	3.23	3.33	3.00	1.44	1.25	1.81	2.58
WPB Belvedere Rd	2.50	5.00	5.00	1.47	4.25	2.75	1.81	1.97	1.88	2.47	2.90
WPB Southern Blvd	2.59	5.00	5.00	1.31	4.25	2.22	1.98	2.24	1.93	2.54	2.89
WPB Forest Hills Blvd	1.85	5.00	5.00	1.00	4.25	2.85	2.69	2.31	1.77	2.00	2.89
LAN Lantana Rd	2.49	2.00	3.00	1.00	3.75	1.29	2.99	1.99	2.14	2.00	2.32
BYN Royal Palm Dr	2.26	2.92	2.92	1.00	3.86	1.45	1.00	2.34	1.63	2.89	2.16
BYN Boynyon Beach Blvd	2.02	2.97	2.97	1.00	3.95	1.53	3.00	2.73	1.56	2.59	2.41
BYN SE 15 Av	1.66	2.88	2.88	1.00	3.79	1.38	3.00	2.22	2.05	1.39	2.25
GST Gulfstream Blvd	1.47	2.64	3.15	1.00	3.17	1.00	1.65	1.94	1.16	1.65	1.86
DLR Atlantic Av	4.09	3.00	5.00	1.00	3.25	1.43	3.00	2.78	2.13	1.03	2.52
DLR Linton Blvd	1.29	2.96	4.93	1.00	3.20	1.87	3.00	2.82	1.67	2.29	2.48
BOC NW 51 St	2.07	3.97	2.98	1.00	2.97	2.30	2.35	2.71	1.46	1.79	2.32
BOC Palmetto Park Rd	1.10	3.86	2.90	1.00	2.88	1.55	3.00	2.04	2.42	2.44	2.35
DRF E Hillsboro Blvd	2.26	3.96	4.94	1.00	1.98	1.31	3.00	1.31	2.24	3.77	2.47
LKW Lake Av I Lucerne Av	2.37	1.99	2.98	1.00	2.72	1.19	3.00	2.31	2.48	3.01	2.27
PMP E Sample Rd	1.13	2.80	3.40	1.40	1.55	1.43	3.00	1.45	1.64	2.96	2.00
PMP NW 3 Av	1.92	3.89	4.85	2.99	2.67	1.00	2.99	2.10	2.30	2.70	2.64
PMP Transportation Center	1.00	1.00	1.00	1.00	0.50	1.00	4.83	1.00	3.00	2.00	1.67
PMP E Atlantic Blvd	2.59	4.00	5.00	2.35	2.75	1.29	3.00	3.58	2.53	3.23	2.90
OAK Cypress Creek Rd	1.29	2.28	2.40	1.03	1.33	2.05	3.00	1.71	2.55	2.46	1.99
OAK Commercial Blvd	2.68	4.96	4.96	1.00	2.02	1.40	3.00	3.23	1.64	3.59	2.77
OAK NE 38 St	2.86	4.95	4.95	2.01	1.86	1.14	2.94	1.53	2.01	3.50	2.70
WLT NE 26 St	1.62	3.95	4.94	1.00	1.49	1.00	3.00	1.84	1.79	3.01	2.18
FTL Sunrise Blvd	1.83	5.00	5.00	2.50	3.25	2.67	2.67	4.08	1.83	3.00	3.17
FTL Government Center	3.00	5.00	5.00	4.14	3.25	2.71	3.00	1.86	2.43	3.00	3.35
FTL SW 12 St	2.86	5.00	5.00	2.07	3.25	2.71	3.00	2.93	1.71	2.93	3.10
FTL SW 24 St	2.17	5.00	5.00	1.00	3.25	2.50	2.83	4.08	1.83	3.00	3.00
FLL Terminal Dr	1.00	1.41	1.82	1.00	1.07	1.12	3.00	1.18	1.00	4.00	1.64
DAN Dania Beach Blvd	1.65	3.00	5.00	2.15	3.25	2.00	3.00	2.53	2.20	4.00	2.82
HLY Sheridan St	1.90	2.78	4.56	2.51	2.53	1.55	3.00	2.18	1.78	4.00	2.62
HLY Hollywood Blvd	3.95	2.97	4.93	2.98	2.71	1.42	3.00	2.61	2.27	3.83	2.94
HAL E Hallandale Beach Blvd	2.54	3.99	4.98	1.57	2.49	1.25	3.00	2.63	2.50	3.31	2.68
AVE NE 198 St	1.79	4.79	1.42	1.00	2.71	1.21	2.89	2.37	2.53	1.95	2.17
NMB NE 163 St	1.40	4.33	3.40	1.00	2.30	3.13	3.00	1.80	1.80	2.13	2.49
NMB NE 151 St	1.23	4.23	3.77	1.00	2.00	1.31	2.69	1.31	1.69	1.62	2.11
NMI NE 135 St	1.94	4.67	4.56	1.22	1.76	3.44	2.89	1.06	2.17	3.33	2.71
NMI NE 125 St	2.22	5.00	4.56	1.89	1.83	3.00	2.89	1.06	2.22	4.00	2.85
MIS NE 107 St	1.00	2.50	2.00	1.13	1.50	1.50	2.13	1.13	2.38	3.25	1.78
MIS NE 96 St	1.00	2.00	3.00	1.00	1.50	2.18	2.88	1.00	2.76	2.53	1.97
MIA NE 79 St	3.87	4.80	4.87	1.53	4.30	3.40	3.00	2.60	2.40	3.27	3.37
MIA NE 71 St	3.00	4.77	4.85	1.00	4.27	2.54	3.00	2.77	1.77	3.15	3.09
MIA NE 61 St	3.38	5.00	5.00	1.00	4.50	2.43	3.00	2.14	2.33	2.38	3.09
MIA NE 54 St	3.48	5.00	5.00	1.26	4.50	2.65	2.91	1.83	2.74	2.04	3.12
MIA NE 39 St	2.90	4.73	4.73	1.53	4.23	3.13	2.93	1.63	3.03	2.27	3.12
MIA NE 29 St	4.25	5.00	5.00	1.75	4.50	2.50	3.00	2.75	3.00	2.33	3.35
MIA NE 20 St	3.32	5.00	5.00	2.05	4.50	2.89	3.11	2.68	3.05	1.84	3.35
MIA NE 11 St	3.26	5.00	5.00	2.39	4.50	2.13	4.91	1.43	2.00	2.78	3.40
MIA Government Center	1.73	5.00	5.00	1.82	4.50	1.00	4.82	1.00	2.36	2.55	3.05

Land Use Suitability

- Low
- Medium-Low
- Medium
- Medium-High
- High

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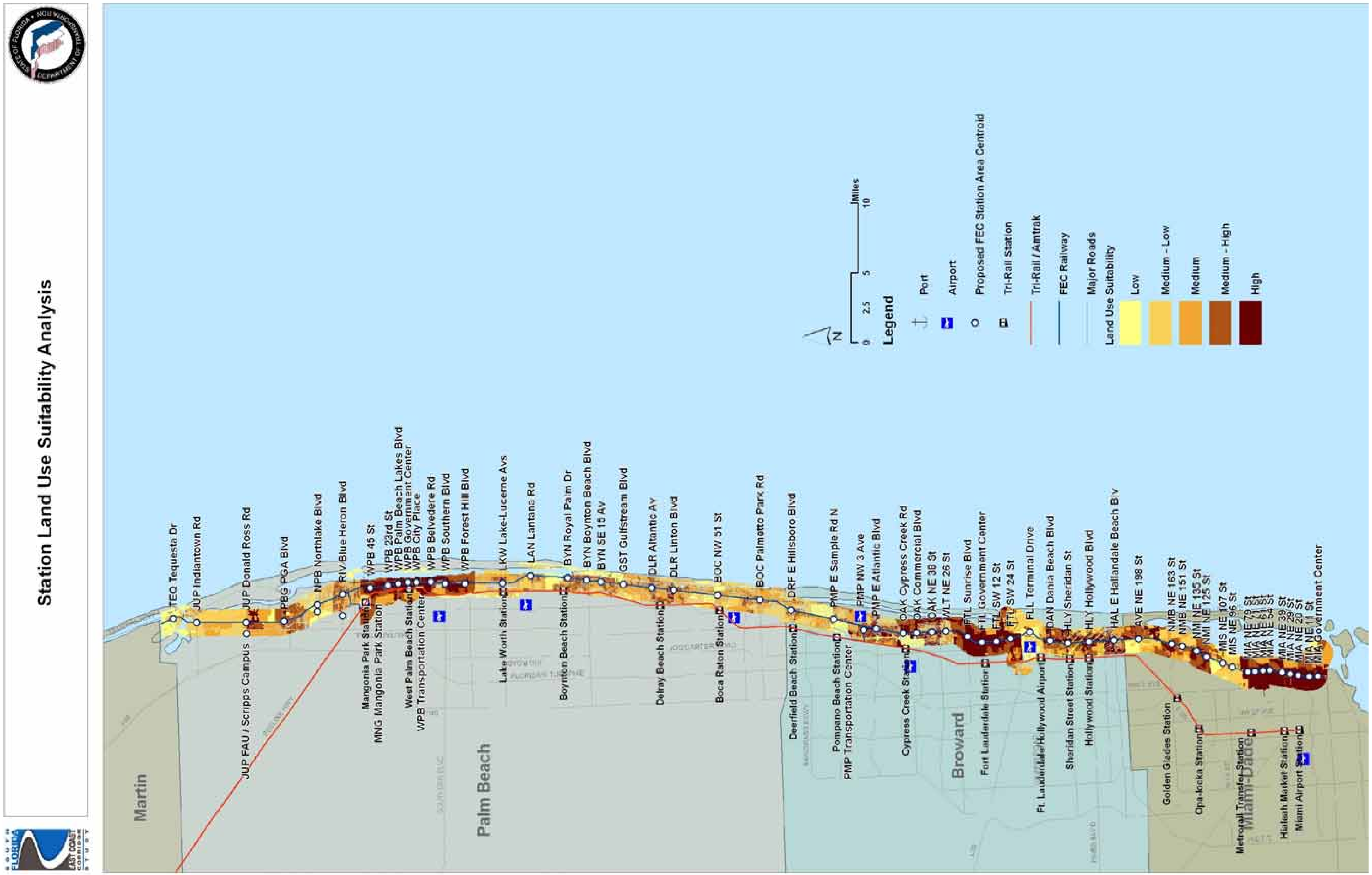
Figure 2.16: Station Land Use Suitability Analysis



NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

- Analyzed real estate market trends, development patterns, economic development initiatives, Capital Improvement Plans (CIP), and land use policies as they relate to opportunities and constraints for future development in each of the municipalities.
- Identified preliminary market demand for relevant land use typologies so as to inform conceptual development programs.
- Considered each municipality relative to the Tri-County study corridor in terms of market size, level of density, and projected growth patterns. These characteristics are generally related to specific land uses, including resident households, the industrial employment sector, the commercial employment sector, and the service employment sector. The first three characteristics represent demand drivers for specific land uses. An example would be commercial employment growth generating demand for more office space. Meanwhile, the service employment market represents the byproduct of demand from the other three markets for goods and services. For example, household growth drives increases in total consumer spending, which creates additional demand for retail establishments that in turn need to be staffed by new sales clerks.
- For the analyses presented below, Traffic Analysis Zone (TAZ) data published by the three MPOs for the years 2000 (base year) and 2030 (projected year) were analyzed. These data were used to compile a series of maps using GIS that display household and employment densities within and around the study area corridor (see Existing Demographic Conditions Report). The data were also used to divide the study corridor municipalities by size and density characteristics for the four characteristics described above. This was a useful exercise to help focus real estate market research because it provides a tool to better understand land value differentials across similar marketplaces in the three study corridor counties.
- The analysis was based on a relative comparison of the 28 municipalities to the entire study corridor. In other words, if a place is characterized as high density, it is considered high density relative to the other places in the corridor. The analysis only considers the portion of each municipality that is located within the boundaries of the study corridor, and therefore the data do not necessarily reflect market conditions for the entire municipality.

2.4.1 Key Findings

The following section discusses key findings from the market analysis exercise described above in regard to household and sector-specific employment trends.

- Household Density Patterns
  - Base Year (2000): Base year data indicates that the study corridor becomes less dense north from Downtown Miami, to Indiantown Road in Jupiter. In Miami-Dade County most of the highest density household concentrations are located in or near the downtown area. Moving northward through the

County, pockets of higher-density household concentrations alternate between locations to the east and west of US-1/Dixie Highway. Also of note is the area surrounding the Aventura Mall in the northernmost portion of the County, where there are small concentrations of households that rival Downtown Miami in terms of density. Most of the higher-density household concentrations in Broward County are located in Hollywood, immediately to the west of US-1. The areas of Wilton Manors and the north part of Fort Lauderdale within the study corridor also represent dense clusters of households, followed by sporadically dense areas northward through Pompano Beach and Deerfield Beach. While it is physically the largest of the three counties comprising the study corridor, Palm Beach County is also the least dense in terms of households per square mile. As of 2000, Boca Raton was the densest municipality in Palm Beach County. However, relative to Miami-Dade County, and even some places in Broward County, Boca Raton can only be characterized as moderately dense. The southern part of Delray Beach can also be considered relatively dense by Palm Beach County standards, as can the area immediately north of Downtown West Palm Beach. Low levels of household density define the remainder of the study corridor, as the SFECC passes through communities such as Palm Beach Gardens and Jupiter.

- Projected Year (2030): Projected year data more accurately reflect the housing boom of the early 20th century that has changed the landscape of coastal Southeast Florida. Most of Downtown Miami is projected to experience a substantial increase in household density. Areas in North Miami are also expected to add significant increases in household density. When compared with base information, it is apparent that most communities within the study corridor are expected to add household density through 2030. Significant increases are projected in Delray Beach and Fort Lauderdale, particularly downtown Fort Lauderdale. Most of Oakland Park, Pompano Beach, and Deerfield Beach are also expected to add household density through 2030. Moderate increases in household density are expected to occur between 2000 and 2030 at various points in Palm Beach County, particularly in the area from Boca Raton to West Palm Beach. Moderate changes are predicted for both the southern and northern edges of Boca Raton, as well as the central sections of Delray Beach, Boynton Beach, and Lantana. West Palm Beach is expected to experience the most significant increase in household density, particularly in the downtown area. Meanwhile, Riviera Beach, Palm Beach Gardens, and Jupiter are projected to experience moderate density increases in select locations, most of which are located in the western half of the study corridor.

➢ Implications

- **Table 2.20** divides the 28 study corridor municipalities into groups of household clusters that share relatively similar market sizes and density characteristics. The matrix reads from bottom to top, and left to right, with the lower left-hand corner representing the smallest markets with the lowest levels of density, and the largest markets with the highest densities located in the upper right-hand corner.

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Table 2.20: Household Concentration of Study Corridor Municipalities

SIZE OF HOUSEHOLD CONCENTRATION	HOUSEHOLD DENSITY: *Low*	*Low-to-Mod*	*Mod-to-High*	*High*
Large		Pompano Beach Boca Raton West Palm Beach	**Miami** Hollywood **Fort Lauderdale**	
Mid-to-Large		Delray Beach **Boynton Beach**	Deerfield Beach Lake Worth	**North Miami** Aventura Oakland Park
Small-to-Mid	Riviera Beach **Palm Beach Gardens** **Jupiter**	**Dania Beach**	Miami Shores	North Miami Beach Hallandale Beach Wilton Manors
Small	Lantana **Mangonia Park** Lake Park	El Portal North Palm Beach	Biscayne Park	Lighthouse Point

Note: Municipalities in bold & underlined projected to experience a rate of annual growth in the upper quartile relative to the study corridor.

Large, high-density market areas that are projected to experience a rapid rate of new household formation represent significant opportunity for near term value capture from development of housing and ancillary retail, particularly in downtown locations in cities such as Miami and Fort Lauderdale. However, all of the municipalities have the potential to capture a share of incremental value through local policy decisions and economic development initiatives that focus local growth on higher-density residential developments.

- Employment Density Patterns
  - Base Year (2000): Downtown Miami, south of I-395, is the county's primary employment center. The City of Miami is also home to secondary employment clusters that are concentrated along I-395 just west of I-95, and near US-1 just north of I-195. Other areas with significant employment activity in the Miami-Dade County portion of the study corridor include the area along US-1 in North Miami, as well as the area near the Aventura Mall in the northernmost part of the county. Broward County employment is more dispersed than it is in Miami-Dade County, with the only exception being Downtown Fort Lauderdale, the county's main employment center. Pompano Beach contains the second densest concentration of employment in the county after Fort Lauderdale. Notable ancillary employment clusters are also found in Hallandale Beach, Delray Beach, and Boynton Beach, respectively. The two main employment centers in Palm Beach County are located in Boca Raton and Downtown West Palm Beach. Other significant employment clusters include Delray Beach, Mangonia Park, part of West Palm Beach surrounding Mangonia Park, and Palm Beach Gardens.

- Projected Year (2030): Projections for period between 2000 and 2030 indicate that Miami-Dade County employment growth will be concentrated in existing employment centers, such as Downtown Miami and the area surrounding the Aventura Mall. Employment projections for Broward County suggest similar growth patterns to those forecasted for Miami-Dade County, with the most significant employment increases expected to occur in existing employment centers, such as Fort Lauderdale (especially downtown) and Pompano Beach. Moderate employment growth is also projected for Deerfield Beach and the section of the corridor that passes through Hollywood, especially to the west of US-1. In the southern part of Palm Beach County, it is anticipated that employment growth will be mostly confined to existing employment clusters, with moderate employment increases projected for the northern and southern edges of Boca Raton. Meanwhile, in the central part of the county, significant employment growth is expected in West Palm Beach, particularly in the core downtown area. In addition to the expansion of existing employment centers, secondary employment clusters are expected to emerge in Boynton Beach, as well as in the northern part of the county in Lake Park and Jupiter.

➢ **Implications:** The matrices presented in **Table 2.21** – **Table 2.23** provide a better understanding of the types of employment concentrations (i.e. industrial, commercial, service employment) found in the study corridor's 28 municipalities. The matrix reads from bottom to top, and left to right, with the lower left-hand corner representing the smallest markets with the lowest levels of density, and the largest markets with the highest densities located in the upper right-hand corner.

Table 2.21: Corridor Municipalities – Industrial Employment

		INDUSTRIAL EMPLOYMENT DENSITY			
		Low	*Low-to-Mod*	*Mod-to-High*	*High*
SIZE OF INDUSTRIAL EMPLOYMENT CONCENTRATION	***Large***			Miami **Hollywood** Boca Raton West Palm Beach	Fort Lauderdale Oakland Park **Pompano Beach**
	Mid-to-Large		Delreay Beach **Boynton Beach** Lake Worth		**Deerfield Beach** Mangonia Park **Riviera Beach** Lake Park
	Small-to-Mid		North Miami Aventura **Dania Beach** Jupiter	Hallandale Beach Lantana	
	Small	El Portal Miami Shores Biscayne Park North Miami Lighthouse Point North Palm Beach	**Palm Beach Gardens**	Wilton Manors	

Note: Municipalities in bold are projected to experience a rate of annual growth in the upper quartile relative to the study corridor.

Table 2.22: Corridor Municipalities – Commercial Employment

SIZE OF COMMERCIAL EMPLOYMENT CONCENTRATION	COMMERCIAL EMPLOYMENT DENSITY: *Low*	*Low-to-Mod*	*Mod-to-High*	*High*
Large		West Palm Beach	Pompano Beach Boca Raton Delray Beach	Miami Aventura Fort Lauderdale
Mid-to-Large		Deerfield Beach **Palm Beach Gardens**	Hollywood Oakland Park	North Miami North Miami Beach
Small-to-Mid	**Boynton Beach** Lake Worth Jupiter	**Lantana** **Riviera Beach** **Lake Park**	Hallandale Beach **Dania Beach**	
Small	El Portal Miami Shores Biscayne Park North Palm Beach	Wilton Manors	**Mangonia Park**	Lighthouse Point

Note: Municipalities in bold are projected to experience a rate of annual growth in the upper quartile relative to the study corridor.

Table 2.23: Corridor Municipalities – Service Employment

SIZE OF SERVICE EMPLOYMENT CONCENTRATION	SERVICE EMPLOYMENT DENSITY: *Low*	*Low-to-Mod*	*Mod-to-High*	*High*
Large		Pompano Beach	Delray Beach	Miami Aventura Fort Lauderdale Boca Raton West Palm Beach
Mid-to-Large	**Palm Beach Gardens**		North Miami Beach Hollywood Oakland Park Deerfield Beach	North Miami
Small-to-Mid	**Lantana** Lake Worth **Lake Park**	**Dania Beach** **Boynton Beach** **Riviera Beach** **Jupiter**	Hallandale Beach	
Small	El Portal Biscayne Park North Palm Beach	Miami Shores Lighthouse Point	**Mangonia Park**	Wilton Manors

Note: Municipalities in bold are projected to experience a rate of annual growth in the upper quartile relative to the study corridor.

The land use suitability analysis, economic market analysis and outputs of the patronage forecasting model will be used to guide the design of appropriately-scaled station facilities that provide a "good fit" between station purpose and the surrounding community in Phase 2. A hierarchy of station types identified in Phase 1 is anticipated to reflect the functions and context of the station environment, which include:

- **Town Center Stations**, which are simple station facilities with minimal transit-dedicated parking. These stations are designed predominately around pedestrian and "kiss-ride" auto forms of access and complement a mixed-use commercial district that adds life and vitality to the station environment.
- **Community Center Stations**, which are simple station facilities with minimal transit-dedicated parking. These stations are designed predominantly around pedestrian and "kiss-ride" forms of access and complement a residential neighborhood. **Table 2.19** column “total” provides information on which stations have more of a propensity for a town center and community center station.
- **Regional Park-Ride Stations**, which involve more extensive station facilities with significant parking capacity. "Park-ride" is the predominant form of access to this station type.
- **Transfer Stations**, which are facilities designed around the needs of passengers transferring to or from other transit services, Amtrak, and Greyhound, or at airports and seaports.

The land use and station suitability assessment process was further refined subsequent to the submittal of the DPEIS. Additional information collected with respect to each parameter analyzed was included in the GIS analysis (new CRA’s, new attractors, additional local east-west bus routes etc). This refinement resulted in slightly revised scores for each of the station areas as depicted in **Table J.4** in **Appendix J**. This analysis, in addition to public and agency input, will be the starting point for additional station suitability assessment in Phase 2. **Table J.1** in **Appendix J** provides a summary of all the public comments received regarding proposed station areas.

In general, the public asked that 13 new station areas be analyzed in Phase 2 along the following:

- Biscayne Boulevard and N.E. 100th Street, 209th Street, 87th Street, and 194th Street;
- McNab Road in Broward County;
- 56th Street at Cypress Creek;
- 17th Street/Andrews in Fort Lauderdale;
- 10th Street (near Broward General Hospital);
- Glades Road between N.W. 51st Street and Palmetto Park Road in Boca Raton;
- Copans Road and Dixie Highway;

- Palm Beach Airport (adjacent to it);
- N.E. 215th Street (adjacent to Aventura Mall);
- N.E. 183rd Street;
- Miami Gardens Drive;
- Federal Highway (adjacent to the Gulfstream Park); and,
- N.E. 8th Street in Miami.

In addition, two station areas were requested by local municipal representatives to be deleted from further consideration at N.E. 96th Street in the Village of Miami Shores and N.E. 198th Street in the City of Aventura. A summary matrix titled the Station Area Centroids Summary (**Table J.7**) is also included in **Appendix J** illustrating the originally proposed and additional, publicly suggested station area centroids' locations. No final decisions have been made in Phase 1 regarding transit station areas. However, at least 72 potential station areas (59 original plus 13 publically suggested locations) are anticipated to be evaluated in more detail during Phase 2.

2.4.2 Operations & Maintenance Facilities

The requirements for O&M facilities are heavily dependent upon the choices eventually made in Phase 2 concerning alignment and modal technology to address a specific service need. At the Phase 1 stage of project definition, there are only general elements regarding O&M facilities that can be considered independent and in advance of making specific modal decisions.

O&M facilities are best sited at the ends of service alignments in order to minimize unproductive non-revenue ("deadhead") movements of equipment and operating personnel. In general, the primary factors influencing the specific siting of O&M facilities include:

- Proximity to the end of service alignments.
- Availability and cost of real estate.
- Adjacent land uses.
- Ideally Vacant/Idle Industrial Property.
- Compatibility with Adjoining Land Uses and Community.

There are two general types of O&M facilities:

- **Central Facilities**. A central facility is a large industrial complex that serves a number of O&M activities, including vehicle washing and cleaning, inspections, repairs and overhauls. Overnight storage yards are often part of central facilities along with associated operational and administration support activities. A central facility consumes a minimum of 20 acres, but property requirements can vary drastically depending on the size and orientation of the property.

- **Satellite Facilities**. Satellite Facilities are simple outlying facilities that are used for overnight vehicle storage, routine vehicle servicing and crew reporting activities. These purposes are typically accommodated with a set of side tracks and a minor structure to house personnel functions and material storage.

Given the extent of the SFECCTA study area, there will likely be at least one central facility required for each modal technology ultimately selected, varying in scale and scope with the complexity of the choice. Given the current design of SFECCTA service segments and dependent upon ultimate decisions regarding the extent of service segments, satellite facilities will likely be needed in vicinity of:

- Tequesta/Jupiter
- West Palm Beach
- Pompano Beach
- Hollywood/Hallandale
- Downtown Miami

No final decisions have been made in Phase 1 regarding O&M facilities. More detailed analysis of O&M Facilities will be performed as part of Phase 2.

2.5 Cost Estimates

2.5.1 Capital Costs

The capital and operating expenses associated with each transit technology can vary drastically by application. Capital costs are combinations of infrastructural, property (right-of-way) and rolling stock expenses specific to each alternative. Planning-level, order-of-magnitude estimates of capital costs were prepared for each alternative. Capital cost estimates are expressed at this level of design as a range of costs based upon unit costs drawn from the recent construction experiences of similar bus and rail transit projects. Details on the methodology used for developing capital costs are included in the Phase 1 Capital Cost Methodology Memorandum available upon request and on the project website.

The cost of infrastructure is dependent upon a number of factors, including topography, the choice of mode and sub-modes, locally-driven preferences on such matters as grade-separation and design, and institution decisions concerns the sharing of rights-of-way and facilities (especially track). At this level of project development, infrastructure requirements were estimated in a cursory fashion—e.g.: estimates for rail rapid transit (RRT) Alternatives were developed assuming 100% elevated, when in fact an RRT

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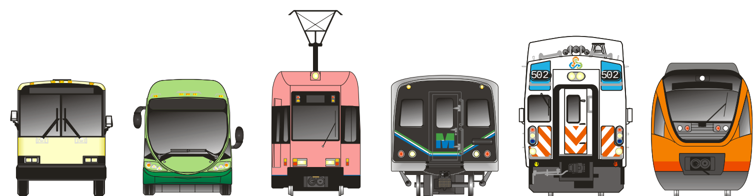
Alternative in the FEC alignment could possibly run at grade for a significant proportion of its length, especially if dual power-collection systems were employed.

Rolling stock expenses are dependent upon the requirements of the operating plan, which in turn is dependent upon the results of travel demand forecasting. A general estimate of rolling stock requirements was developed based on the length and commercial speeds of each alternative, but this value should be considered a placeholder until a more realistic assessment of fleet size can be developed based on forecasted passenger demand.

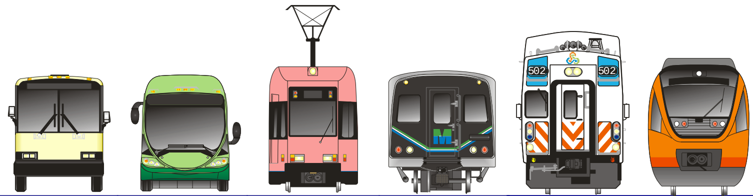
The total of all capital costs excluding right-of-way for each alternative are presented in **Table 2.24** and normalized on a per mile basis in **Table 2.25**. This information is useful for a scenario in which the FEC retains ownership of the corridor regardless of passenger service operations by a government entity.

Table 2.24: SFECCTA Alternatives Capital Costs (not including Right-of-Way)



Service Segment	Alignment	Regional Bus	Bus Rapid Transit	Light Rail Transit	Rail Rapid Transit	Regional Rail: Tri-Rail	Regional Rail: Other RGR
1 West Palm Beach North	FEC		$422 - 671 M	$672 -961 M		$649 - 906 M	
	US1	$12 M	$1.3 - 2.2 B	$1.6 - 2.5 B			
	I-95	$14 M				$2.4 - 3.3 B	
2 North Palm Beach County	FEC		$0.7 - 1.2 B	$1.2 - 1.7 B			$1.1 - 1.6 B
	US1		$2.2 - 3.9 B	$2.8 - 4.6 B			
3 West Palm Beach South	FEC		$0.6 - 1.1 B	$1.1 - 1.6 B			$1.0 - 1.5 B
	US1		$2.2 - 3.9 B	$2.8 - 4.6 B			
4 East Broward County	FEC		$521 - 796 M	$0.8 - 1.1 B			$0.8 - 1.1 B
	US1		$1.5 - 2.5 B	$1.8 - 2.9 B			
5 Ft Lauderdale – Miami	FEC		$0.9 - 1.4 B	$1.4 – 2.0 B	$6.03 - 7.19 B		$1.3 - 1.9 B
	US1		$2.5 - 4.5 B	$3.2 - 5.2 B			
6 Miami Northeast	FEC		$347 - 563 M	$535 - 770 M	$2.62 - 3.13 B		$487 - 708 M
	US1		$1.0 - 1.8 B	$1.2 - 2.1 B			
	Technology:	RGB	BRT	LRT	RRT	RGR	

Table 2.25: SFECCTA Alternatives Capital Costs per Mile (not including Right-of-Way)



Service Segment	Alignment	Regional Bus	Bus Rapid Transit	Light Rail Transit	Rail Rapid Transit	Regional Rail	
						Tri-Rail	Other RGR
1 West Palm Beach North	FEC		$23 - 37 M	$37 - 53 M		$43 - 60 M	
	US1	$0.7 M	$76 - 129 M	$92 - 146 M			
	I-95	$0.7 M				$171 - 239 M	
2 North Palm Beach County	FEC		$21 - 34 M	$34 - 50 M			$36 - 51 M
	US1		$65 - 115 M	$84 - 134 M			
3 West Palm Beach South	FEC		$19 - 33 M	$33 - 48 M			$28 - 43 M
	US1		$65 - 115 M	$81 - 134 M			
4 East Broward County	FEC		$27 - 42 M	$41 - 58 M			$49 - 67 M
	US1		$69 - 120 M	$86 - 140 M			
5 Ft Lauderdale – Miami	FEC		$23 - 37 M	$37 - 53 M	$172 -206 M		$38 - 55 M
	US1		$64 - 115 M	$81 -134 M			
6 Miami Northeast	FEC		$23 - 38 M	$36 -51 M	$175 -209 M		$33 - 47 M
	US1		$62 - 111 M	$78 - 130 M			
	Technology:	RGB	BRT	LRT	RRT	RGR	

The expense of right-of-way is directly dependent upon the availability and orientation of property in the corridor and subject to negotiations. For the purposes of this cursory analysis, generalized right-of-way costs for a 36-foot wide corridor in each alignment (20-foot wide in the case of an elevated RRT Alternative) were drawn from a per-square-foot value estimate established for the east or west side of US-1 between downtown Miami and Tequesta, with a multiplier applied to account for the anticipated cost of commercial and residential relocations, severance damages, cost-to-cures and business damages likely to be incurred for alignments along US-1. In order to maintain conformity and consistency in the Phase 1 cost estimating process, the same property values were applied to alternatives along the FEC corridor but without the multiplier, since the FEC railroad right-of way is not developed.

The estimator recognized that, in general, the value of improved commercial/industrial properties abutting the FEC corridor are not considered as valuable as those properties fronting major transportation corridors such as US 1. However, the study's steering committee was concerned that lower right-of-way costs for the SFECC alternatives alone might inappropriately skew comparisons between the FEC and US-1 Alternatives in favor of the former. Therefore, the same right-of-way unit costs were applied to both corridors on the assumption that the cost of right-of-way along the FEC corridor would be no higher than the cost of right-of-way along the US-1 corridor.

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

This process was not intended to substitute for a full and formal estimate or detailed property appraisals. For the FEC corridor in particular, no attempt was made to assess the validity of the underlying title. These capital cost estimates should not be used as a conclusion of absolute value.

The total of all capital costs including right-of-way for each alternative are presented in

Table 2.26 and normalized on a per mile basis in **Table 2.27**. **Figure 2.17** and **Figure 2.18** illustrate total and per mile capital costs for each alternative, respectively.

A review of these capital cost estimates yields the following observations:

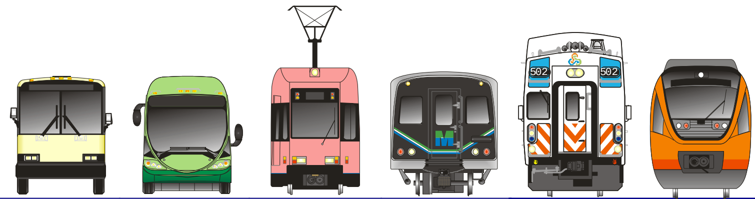
- RGB Alternatives for Service Segment 1 have the lowest capital infrastructure costs, mostly the cost of park-ride lots and bus stop shelters.
- Collectively, the relatively short Service Segment 1 alternatives have the lowest overall capital costs. The notable exception is the alternative extending RGR service along I-95 (1RGR2), which is disproportionately expensive compared to every other Service Segment 1 alternative due to extensive grade separation requirements and residential property displacement along the Interstate.
- The cost estimates for RRT Alternatives assumed elevated construction and yielded the highest infrastructure costs per mile of any alternatives (although its total cost is less than US-1 options, as discussed below).
- BRT Alternatives are consistently less costly than comparable LRT and RGR Alternatives.
- BRT and LRT Alternatives on the US-1 alignment are prohibitively more expensive than their counterparts on the FEC alignment due to the cost of assembling right-of-way and the infrastructure expense of imbedded rail compared to conventional rail construction. The number of parcels potentially impacted along the US-1 alignment is six times the number potentially impacted along the FEC alignment (approximately 500 vs. 3,000).

2.5.2 Operating & Maintenance Costs

Meaningful O&M costs are difficult to generate at this level of alternative development. They are more appropriately derived through development of a detailed operating plan that can predict levels of revenue service hours and miles provided in response to the travel demand forecast for a specific alternative. They are significantly influenced by local wage rates, labor practices and service delivery strategies (e.g., decisions concerning direct vs. contracted O&M).

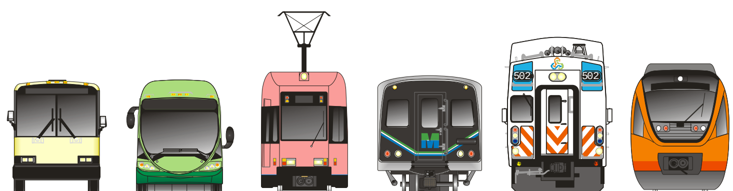
 NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Table 2.26: SFECCTA Alternatives Capital Costs (including Right-of-Way)



Service Segment	Alignment	Regional Bus	Bus Rapid Transit	Light Rail Transit	Rail Rapid Transit	Regional Rail: Tri-Rail	Regional Rail: Other RGR
1 West Palm Beach North	FEC		$1.2 - 1.5 B	$1.5 - 1.8 B		$1.4 - 1.6 B	
	US1	$14 M	$4.5 - 5.4 B	$4.8 - 5.7 B			
	I - 95	$14 M				$5.1 - 6.0 B	
2 North Palm Beach County	FEC		$2.3 - 2.8 B	$2.8 - 3.3 B			$2.7 - 3.2 B
	US1		$8.7 - 10.4 B	$9.2 - 11.0 B			
3 West Palm Beach South	FEC		$2.2 - 2.6 B	$2.7 - 3.2 B			$2.7 - 3.2 B
	US1		$8.7 - 10.4 B	$9.2 - 11.0 B			
4 East Broward County	FEC		$1.4 - 1.7 B	$1.7 - 2.0 B			$1.6 - 1.9 B
	US1		$5.4 - 6.5 B	$5.8 - 6.9 B			
5 Ft Lauderdale – Miami	FEC		$2.6 - 3.1 B	$3.1 - 3.7 B	$6.9 - 8.1 B		$3.0 - 3.6 B
	US1		$9.9 - 11.9 B	$10.5 - 12.6 B			
6 Miami Northeast	FEC		$1.1 - 1.3 B	$1.3 - 1.5 B	$3.0 - 3.5 B		$1.2 - 1.4 B
	US1		$4.0 - 4.8 B	$4.3 - 5.1 B			
	Technology:	RGB	BRT	LRT	RRT	RGR	

Table 2.27: SFECCTA Alternatives Capital Costs per Mile (including Right-of-Way)



Service Segment	Alignment	Regional Bus	Bus Rapid Transit	Light Rail Transit	Rail Rapid Transit	Regional Rail: Tri-Rail	Regional Rail: Other RGR
1 West Palm Beach North	FEC		$71 - 85 M	$85 - 101 M		$91 - 108 M	
	US1	$0.7 M	$267 - 319 M	$282 - 337 M			
	I - 95	$0.7 M				$361 - 429 M	
2 North Palm Beach County	FEC		$69 - 82 M	$82 - 98 M			$83 - 99 M
	US1		$254 - 305 M	$271 - 324 M			
3 West Palm Beach South	FEC		$67 - 80 M	$80 - 96 M			$76 - 90 M
	US1		$255 - 305 M	$271 - 324 M			
4 East Broward County	FEC		$75 - 89 M	$89 - 96 M			$97 - 115 M
	US1		$258 - 310 M	$276 - 330 M			
5 Ft Lauderdale – Miami	FEC		$71 - 85 M	$84 - 100 M	$199 - 232 M		$86 - 102 M
	US1		$254 - 305 M	$271 - 324 M			
6 Miami Northeast	FEC		$74 - 88 M	$83 - 99 M	$201 - 235 M		$80 - 95 M
	US1		$252 - 301 M	$268 - 320 M			
	Technology:	RGB	BRT	LRT	RRT	RGR	

Figure 2.17: SFECCTA Alternatives Total Capital Cost (including Right-of-Way)

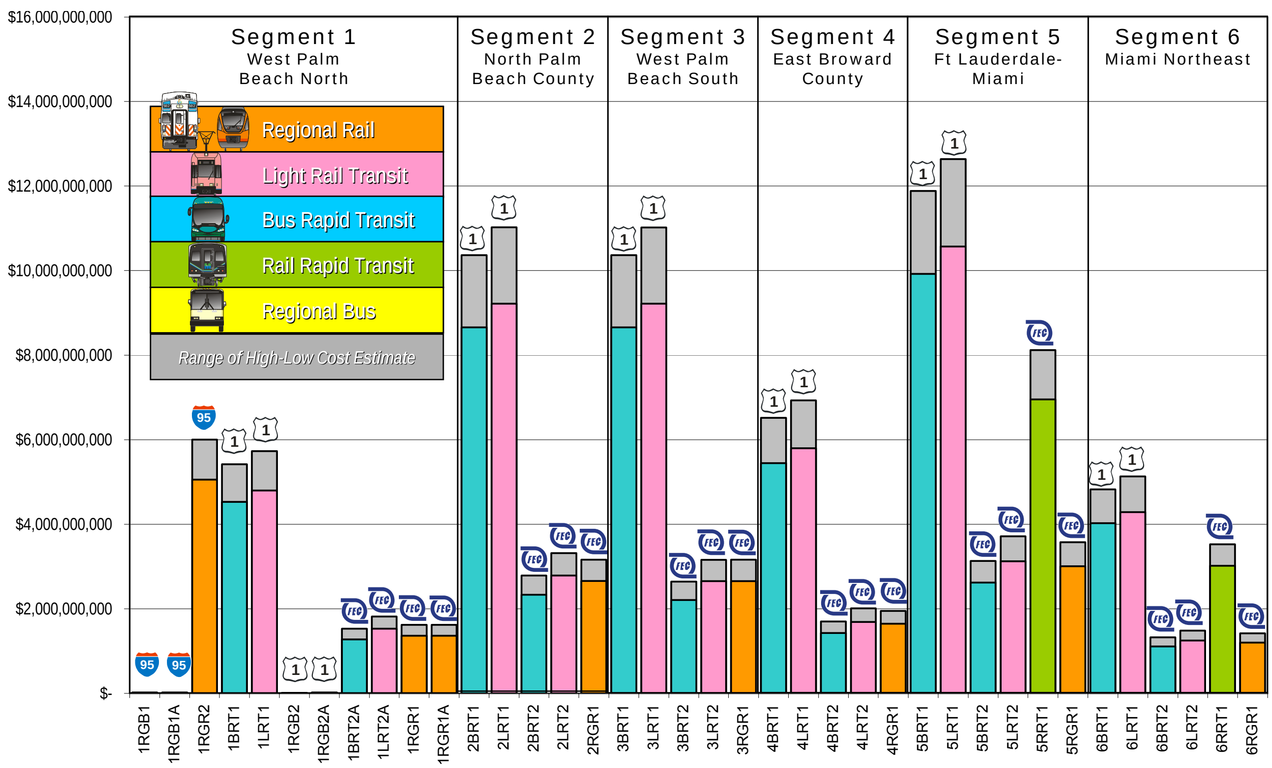
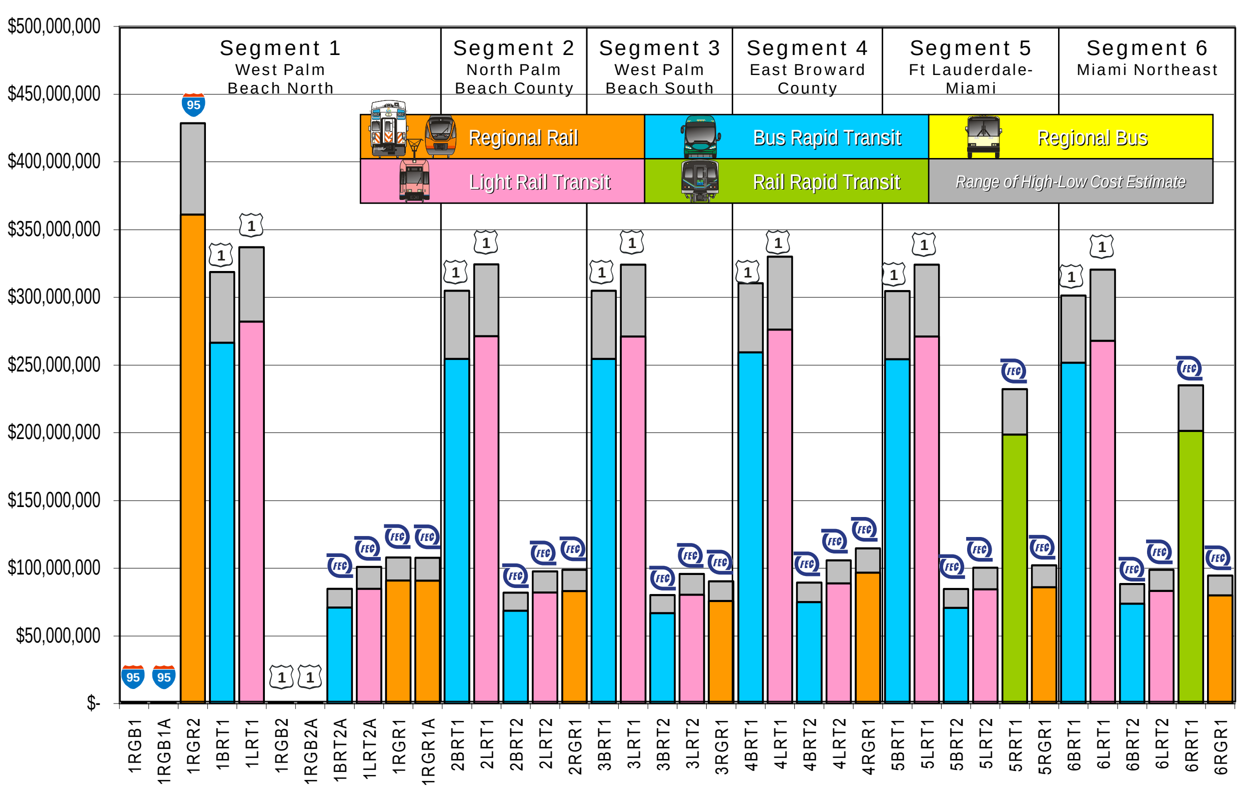


Figure 2.18: SFECCTA Alternatives Capital Costs per Mile (including Right-of-Way)



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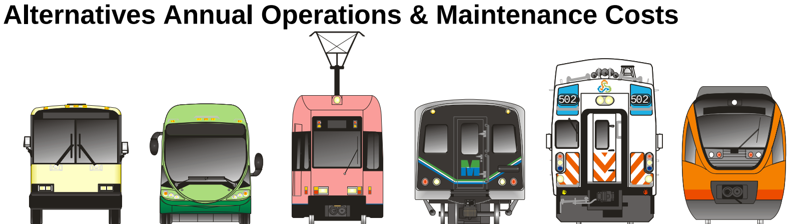
For this reason, it is difficult to draw valid cost comparisons between similar alignments using different modal technologies without developing detailed alternative descriptions and more than a minimal amount of design. Nevertheless, some generalities can be developed regarding the relative cost of each transit technology applied to the differential length of alternative that can provide a meaningful comparison between initial alternatives.

Generalized operating costs for specific transit technologies were drawn from the modal comparisons contained in the FTA's National Transit Summaries and Trends for the National Transit Database. Given the cursory nature of this exercise and the limited level of information available concerning the individual alternatives at this stage of development, a national average of O&M costs by modal technology per passenger trip was selected as a basis of estimate. The estimated annual O&M costs are presented for each alternative in **Table 2.28**.

Table 2.28: SFECCTA Alternatives Annual Operations & Maintenance Costs



Service Segment	Alignment	Regional Bus	Bus Rapid Transit	Light Rail Transit	Rail Rapid Transit	Regional Rail: Tri-Rail	Regional Rail: Other RGR
1 West Palm Beach North	FEC		$8.0 M	$8.0 M		$19.8 M	
	US1	$3.1 M	$4.5 M	$4.5 M			
	I-95	$3.1 M				$6.5 M	
2 North Palm Beach County	FEC		$33.2 M	$33.2 M			$109.0 M
	US1		$25.4 M	$25.4 M			
3 West Palm Beach South	FEC		$22.5 M	$22.5 M			$71.1 M
	US1		$16.1 M	$16.1 M			
4 East Broward County	FEC		$8.1 M	$8.1 M			$53.8 M
	US1		$3.4 M	$3.4 M			
5 Ft Lauderdale – Miami	FEC		$39.0 M	$39.0 M	$48.0 M		$179.0 M
	US1		$15.4 M	$ 15.4 M			
6 Miami Northeast	FEC		$19.9 M	$19.9 M	$21.4 M		$69.5 M
	US1		$9.4 M	$9.4 M			
	Technology:	RGB	BRT	LRT	RRT	RGR	

2.6 Preliminary Assessment of Potential Funding Sources

An initial assessment of potential funding sources for the implementation of any of the alternatives described above has been included in this section. In urban areas of the state, the MPO plays a key role in identifying needed transportation improvements and setting priorities for scarce financial resources. While certainly not all-inclusive, the following sections begin the financial planning process by identifying and describing some of the more significant funding options that ultimately may be incorporated into detailed project financial plans. The information below describes potential funding sources available through public sector grant and loan programs, areas where local governments already have existing authorities to generate additional revenues for transportation purposes, and opportunities for the private sector to financially participate in the development of new SFECCTA transit improvements.

2.6.1 Public Sector Grants and Loans

Traditional transportation funding sources include grant programs administered by Federal and State transportation agencies and, more recently, innovative financing techniques such as loan programs and public/private partnership (P3) arrangements. Funding transportation improvements within the SFECCTA will require the use of a variety of sources, including Federal and State participation in some form. Following are examples of some of the more prominent Federal and State funding programs that may have application.

2.6.2 Federal

- **Federal Transit Administration**: Federal funds typically are involved in funding major transportation improvements, including highways and transit. Under the United States Department of Transportation (USDOT), the FTA administers funding programs designed to assist State and local agencies fund major new transit projects, such as new passenger rail services ("New Starts"). Competition for these funds is intense nationally as many cities and regions around the country develop New Starts projects, assuming Federal participation as the principle funding source. The cost of a New Starts project can be significant, and the process applied by FTA to approve a project for funding can be rigorous and time consuming. Nonetheless, FTA New Starts funding has been used by many agencies throughout Florida to help fund major transit investments (e.g., Miami-Dade County; South Florida Regional Transportation Authority). New Federal transportation legislation, SAFETEA-LU, was signed into law on August 10, 2005. One of the initiatives contained in the new law was the creation of a "Small Starts" program. This new program was designed to help fund transit projects that require less than $75 million in Federal funds and have a total cost of no more than $250 million. While this program is new and is awaiting the development of program guidance, it ultimately may have application for smaller projects, such as the Jupiter extension or RGB initiatives, identified as candidate SFECCTA transit improvements.

- **Federal Highway Administration**: The FHWA also administers funding programs designed to assist State and local agencies fund transportation improvements. The FHWA's funding programs are structured around funding improvements to highways. However, local areas, through their MPO, can "flex" highway funding for use on transit improvements. The process involves a transfer of funds from the FHWA to the FTA. Depending on the nature of the proposed transit improvement, the FTA applies its relevant program requirements to the transferred funds.

- **Federal Credit Assistance**: Under the Transportation Infrastructure Finance and Innovation Act (TIFIA), project sponsors can apply for various forms of Federal credit assistance, e.g., direct loans,

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loan guarantees, etc., in lieu of Federal grants. This type of assistance can be a key component in structuring financial plans for major transportation investments. TIFIA loans, for example, are being used successfully to help finance key components of the MIC program of MIA. The use of two direct Federal loans has enabled the FDOT to accelerate the construction of the MIC program by cost effectively leveraging revenues and other funding sources that would otherwise have accrued to the program over a much longer period of time. TIFIA is administered by the FHWA. There also may be similar credit assistance opportunities available through the FRA that will be evaluated for potential SFECCTA application.

2.6.3 State

- **Florida Department of Transportation**: FDOT administers many programs to help fund transportation improvements across all modes of transportation. Recent program initiatives such as the SIS and the Transportation Regional Incentive Program (TRIP) are designed to provide funding for transportation improvements to major statewide and regional transportation corridors. TRIP was established in Florida's Growth Management reform legislation passed by the 2005 Florida Legislature. The FEC Railway has been designated as part of the SIS. The SFECCTA study effort is a regional undertaking and will produce candidate projects of a regional nature. Consequently, both SIS and TRIP funding have already been identified as candidate funding sources for SFECCTA improvements. The 2005 Growth Management reform legislation also provided significant funding for a State "New Starts" transit program. The program is intended to help fund transit capital projects in metropolitan areas. Based on available funding, candidate projects may receive up to 50% of the non-Federal share of project costs.

The State Infrastructure Bank (SIB) provides loans to eligible transportation projects at very competitive interest rates and flexible repayment terms. Since the SIB's inception, approximately $1 billion in loans have been awarded, representing approximately 12% of total project costs. Interest rates applied to these loans have generally ranged between 0% - 2% with repayment terms ranging from as little as two years to as much as 30 years. The SIB provides a financing mechanism that may be used to leverage revenues raised through either public or private sources. FDOT solicits SIB loan applications annually for candidate projects. The SIB will be evaluated during the financial planning process for its potential application as a SFECC financing mechanism.

- **Local Governments**: Local governments in Florida have several basic authorities under which revenues can be raised and funding provided for transportation improvements. These include the authorities provided under Florida's Constitution and the authority provided to local governments under State legislation. Examples include ad valorem taxes and related revenue raising mechanisms, impact fees, special assessments, and a variety of local option taxes. It is anticipated that funding transportation improvements within the SFECC will require the use of a broad array of funding mechanisms, including contributions from affected local governments.

2.6.4 Constitutional and Home Rule Authority

- **Tax Increment Financing**: Under Section 163, FS, municipalities or counties are authorized to designate CRA's and may receive contributions from affected taxing jurisdictions within the area. Generally, the contribution formula is based on new ad valorem tax revenue generated from within the CRA subsequent to its creation and adoption of a redevelopment plan. Approval is required by the local governing body and affected taxing jurisdictions. With the rapid growth in new development and significant redevelopment within the three-county region, several CRAs already have been created to take advantage of this value capture technique. As an example, the City of Miami CRA generates approximately $7m-$8m per year in new ad valorem tax revenues. This revenue stream is projected to increase dramatically once all approved new development within the CRA is built and added to the tax rolls and potentially be made available for transit improvements within the CRA.

- **Special Assessment Districts**: Under Sections 170 and 190, FS, municipalities or counties may create improvement districts and levy special assessments on the property owners within the district. Among other things, special assessments may be used for transportation purposes. The improvement or service being funded by the assessment must directly benefit the property owner paying the assessment. Approval is required by the local governing body. Depending on the type of district created, a majority of the property owners also must agree to the assessment. This mechanism has been used successfully to create and sustain business improvement districts (BID) and downtown development authorities (DDA). The City of Coral Gables in Miami-Dade County created a BID, which generates approximately $450,000 per year from its assessment. The City of Miami DDA generates approximately $3 million per year from its assessed revenue source.

- **Impact Fees**: Under Florida's Constitution, local governments have strong home rule authority, which empower them to impose and utilize a variety of revenue sources for funding the provision of services and improvements to infrastructure. Special assessments (described above), impact fees, franchise fees, and user fees or service charges are examples of home rule authority revenue sources. The courts have upheld the imposition of impact fees by local governments to fund capital improvements, including transportation improvements. Typically, impact fees are imposed on developers to help fund the cost of the new infrastructure and services needed to serve new development. To impose impact fees, approval is required by the local governing body.

2.6.5 Local Option Taxes

- **Fuel Taxes**: Under Sections 206.41, 206.87, 336.021, 336.025, FS, local governments are authorized to levy up to 12 cents of local option fuel taxes in the form of three separate levies – a one cent levy (known as the "Ninth-Cent Fuel Tax"), a six cent levy, and a five cent levy. The proceeds may be used for transportation and infrastructure development. Depending on the levy, at least a majority vote of the governing body or a voter referendum is required to impose the tax. In the three-county region, Miami-Dade County has levied 10 cents, and Broward County and Palm Beach County have each imposed the full 12 cents.

- **Charter County Transit System Surtax**: Under Section 212.055, FS, the Charter County Transit System Surtax may be levied at a rate of up to 1% in eligible counties, which include Broward, Duval, Hillsborough, Miami-Dade, Pinellas, Sarasota, and Volusia. The proceeds may be used for development, construction, operation, and maintenance of fixed guideway rapid transit systems, bus systems, and roads and bridges. Voter approval, through a county referendum, is required for the tax to be imposed. In the three-county region, Miami-Dade County has levied a one-half cent sales tax, which yields approximately $180 million per year in gross receipts. Broward County has in the past, and could again in the future, consider imposing a 1% sales tax which could yield almost $260 million annually. Palm Beach County is not defined as an eligible county under Section 212.055, FS.
- **Local Government Infrastructure Surtax**: Section 212.055, FS, also permits the imposition of the Local Government Infrastructure Surtax. This sales tax may be levied at the rate of one-half or 1%. The proceeds may be used for infrastructure development. All counties in the State are eligible to levy the tax. Voter approval is required. The tax has not been imposed by any of the three counties within the SFECC region.

2.6.6 Private Sector Participation

As candidate SFECCTA projects are identified and the financial planning process becomes more focused, there will be opportunities to explore public/private partnership arrangements as an additional means of funding SFECCTA improvements. These opportunities will possibly take on a variety of structures, some of which are summarized below.

- **Real Estate Related**: Ideally, there will be interest in facilitating TOD around passenger stations or terminal locations, creating opportunities for private sector participation. This could involve a variety of forms. For example, privately owned land donations to facilitate placement of stations enable the value of such donations to help leverage other sources of funding, particularly Federal and State grants. To the extent land in potential station areas is already in public ownership or control, there will be opportunities to explore long-term lease arrangements with the private sector in exchange for some form of development rights. A long-term lease revenue stream can be used to back-stop or repay debt incurred on behalf of the project to help fund transportation improvements.
- **Ancillary Revenues**: Ancillary revenues have been used by many local and regional transit agencies around the country to assist with financing new transit services. The private sector has demonstrated an interest in paying for advertising space, naming rights, sponsorships, concessions and other commercial ventures at transit stations or in conjunction with transit vehicles. Having a station in a prominent location carry a name “brand” has value. Likewise, “wrapping” a vehicle with tasteful advertising also has value and has been successfully used by many transit agencies, including those in

southeast Florida. Ancillary revenue mechanisms can generate either one-time or recurring financial contributions from the private sector, which can be applied to funding the cost of new transit services.

- **User Fees**: The SFECCTA study may result in a recommendation to preserve the FEC Railway right-of-way for new passenger rail/transit services, either through acquisition or other means of control. The new owner, presumably a public agency, would find itself in a position to collect fees for use of the asset. A private freight rail carrier, whether the FEC or another company, would want access to the tracks so that service could continue to the many captive shippers located on the line. Use of the tracks for that purpose typically necessitates the need for usage fees and other charges to be paid to the owner by the private company. Revenues from these sources could be applied to the maintenance of the right-of-way and infrastructure as well as investment in the corridor to develop new passenger rail/transit services.

2.6.7 Financial Analysis Process

As conceptual alternatives are shared with stakeholders and aired through the SFECCTA public involvement process in Phase 2, candidate transit improvements will be more fully developed and refined. More detailed information about each alternative is anticipated such as scope, cost, and scheduling/phasing. With this information, the financial planning process can begin in earnest. Each alternative will be evaluated against potential funding sources to arrive at the "best fit", considering the scope and cost of the improvement compared to funding source/program eligibility requirements. Regarding the scheduling and/or phasing of improvements, financing tools such as low interest loans and other forms of debt will be analyzed as a means to match project cash flow requirements with the availability and timing of funding sources. Decisions on "pay-go" versus debt financing will result from this analysis and be incorporated into corridor-wide and project pro formas. Additionally, the plans and programs of the MPOs and transit agencies operating within the SFECCTA area will be reviewed (MDT, BCT, Palm Tran, and SFRTA) to avoid creating unrealistic or multiple claims on the same external funding sources.

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Figure 2.19: Service Segment 1

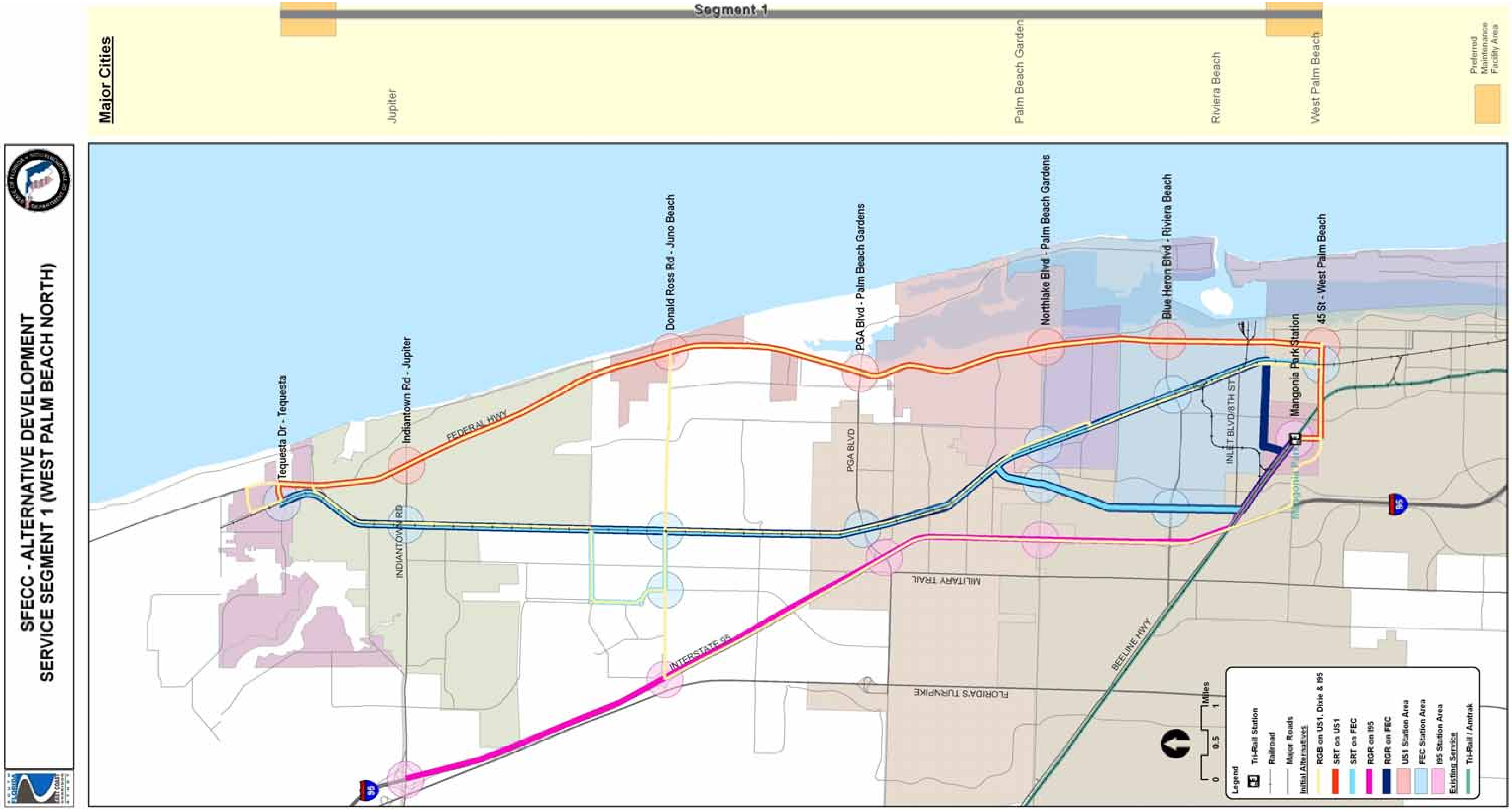

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Figure 2.20: Service Segments 2 and 3

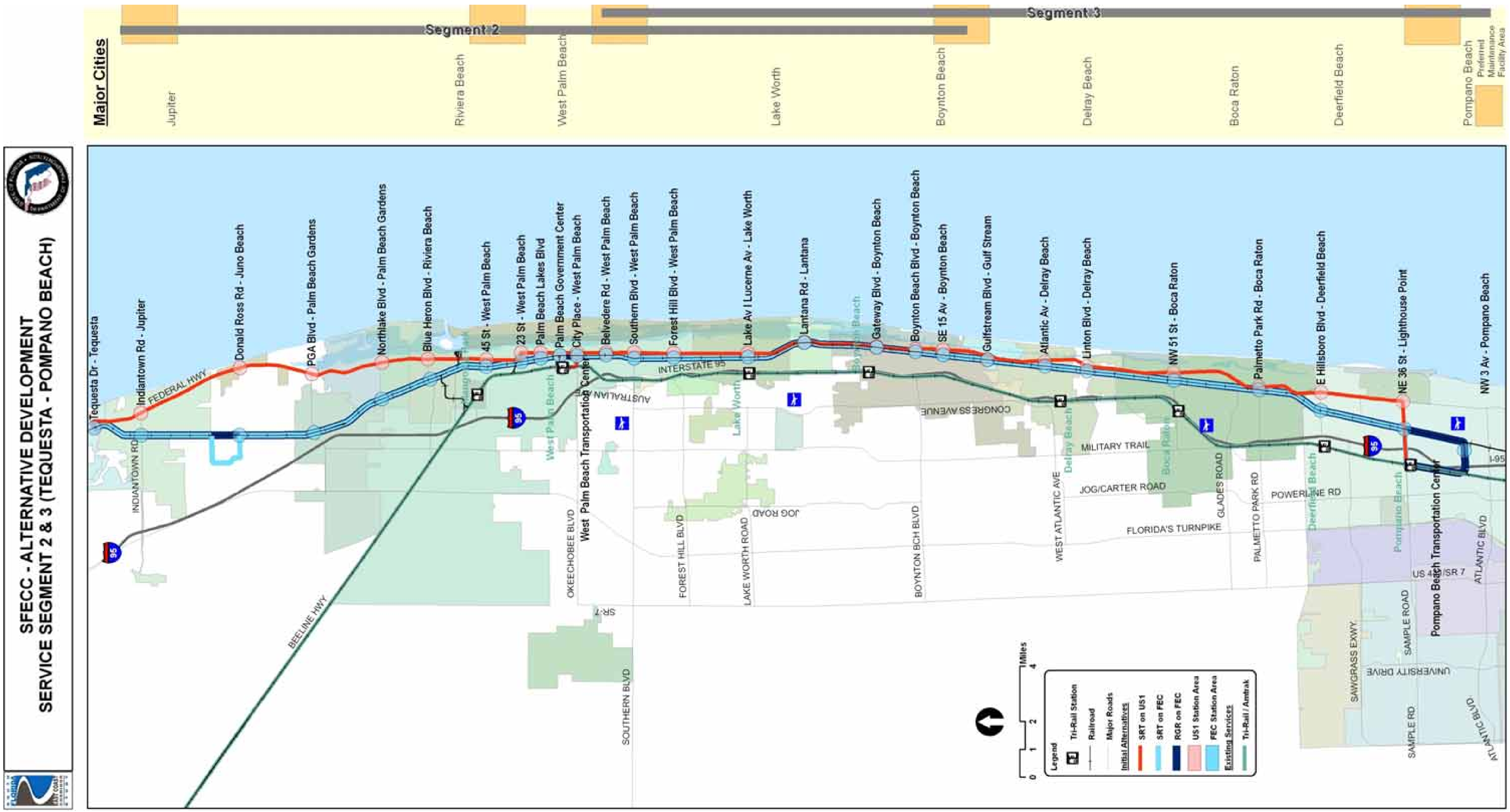

Figure 2.21: Service Segments 4, 5 and 6

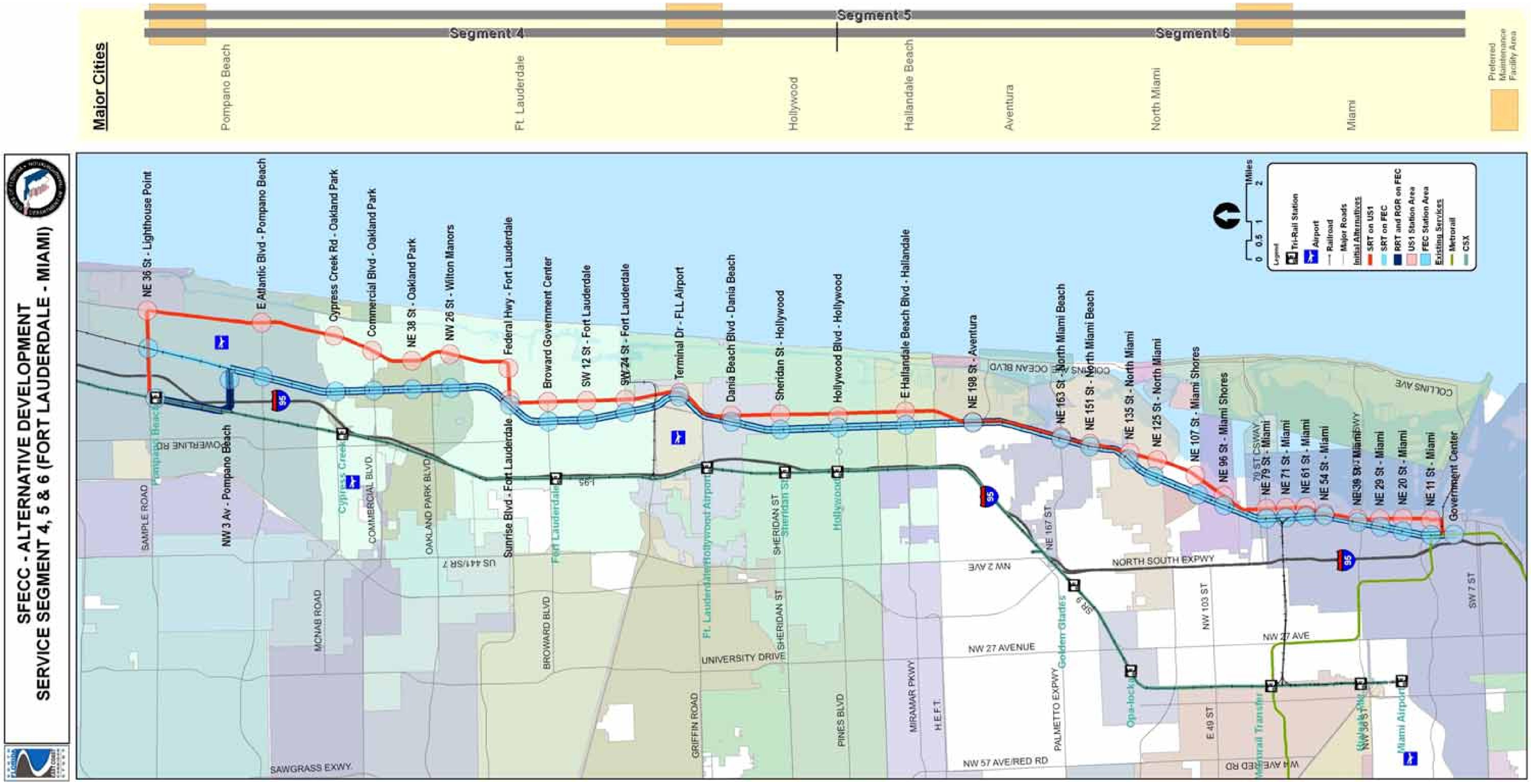

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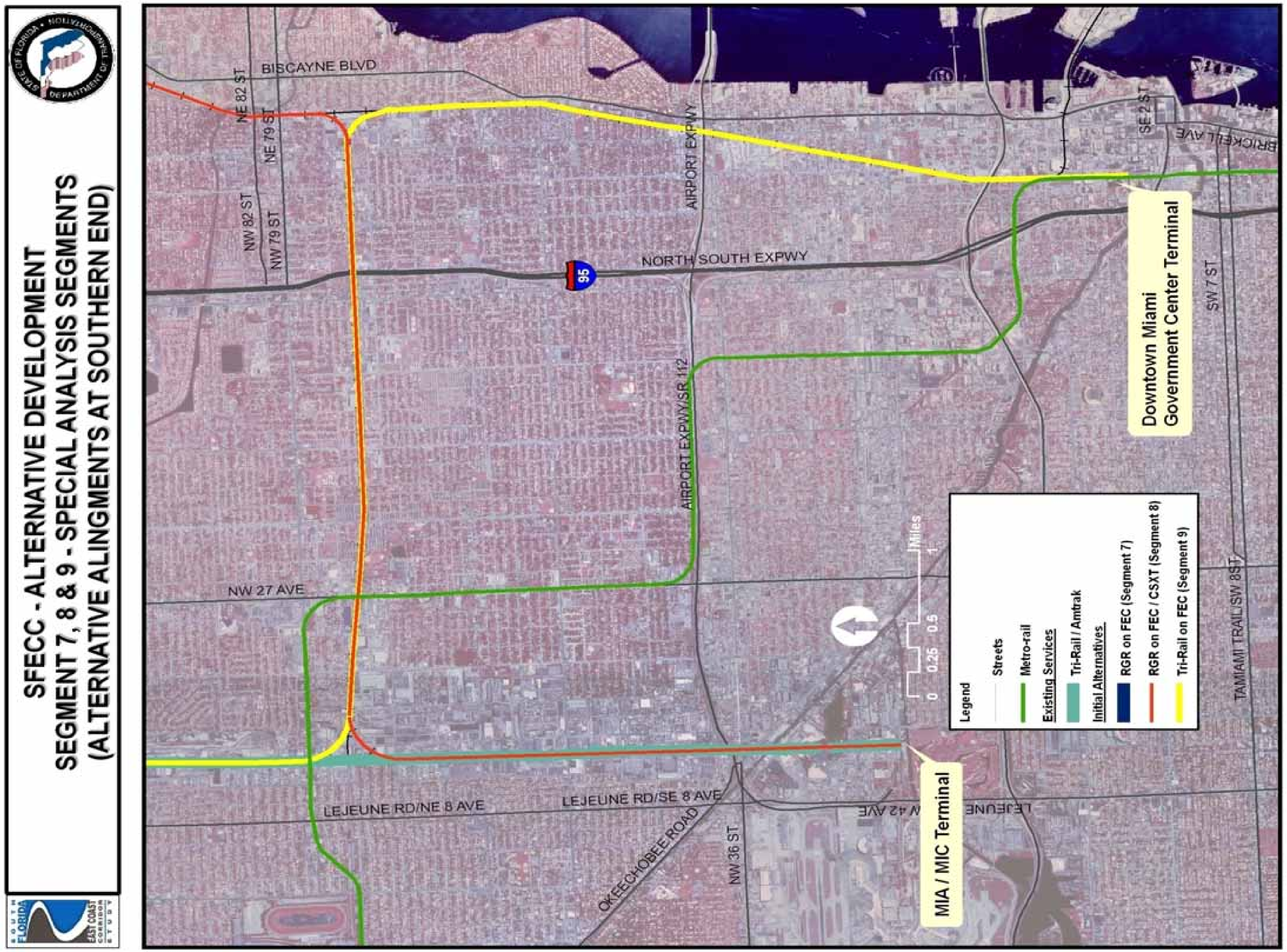
Figure 2.22: Service Segments 7, 8, and 9



3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The affected environment is described as the existing or baseline social, economic, and environmental conditions of the area affected by the proposed action(s). Several representative photographs illustrating aspects of existing conditions along the corridor are included in **Figure 3.1** below and in **Figure 1.3** in Chapter 1. The entire SFECCTA corridor was divided into four, approximately 20 mile sections (Southern, South Central, North Central, and Northern Study Areas) for environmental analysis and illustration purposes. The tables and figures, the larger of which are located in **Appendix A** of this report, generally follow the described sectional breakdown of the corridor except where GIS data were obtained by counties.

Each section identifies the affected environment and the related consequences or potential direct effects from the proposed project that may have either an adverse or beneficial impact on the environment. These are further summarized in Section 3.13. The Indirect and Cumulative Effects (ICE) are discussed in Section 3.14. The environmental evaluations were developed on a programmatic, screening level Phase 1 analysis utilizing various GIS buffer distances to select environmental resources or other features of interest (i.e., census statistics to illustrate demographics within the immediate study area versus broader communities). These buffer analyses were used for describing baseline data on the affected environment. Narrow buffer distances were used to compare between alternative alignments based solely on the number of features present along the FEC Railway, US-1, and I-95 in northern Palm Beach County (see Section 5.1 for GIS analyses methodology). In addition, this study identifies environmental consequences that will require further assessment in Phase 2 environmental reviews. The evaluations of potential impacts in the Conceptual AA/ESR are undertaken according to the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 et seq.).

The proposed project is anticipated to potentially impact neighborhoods and communities, historic and archeological resources, parkland and recreational areas, biological and natural resources. There are no Native American tribal lands in the project vicinity. Moreover, alternative alignments will have different impacts to these resources, as well as impacts to air quality, the viewshed, and noise and vibration. Each of these environmental effects are detailed and analyzed for the purposes of Phase 1 screening of alternatives. A screening approach is appropriate in Phase 1 since a large number of alternatives are still being considered for sections of the corridor, as well as the entire 85 mile corridor as a whole. Therefore, the individual and/or cumulative effects of each alternative on environmental resources cannot be precisely detailed at this point. However, summary tables of these impacts for the various alignments have been developed for use in the Phase 1 screening process and as baseline data for more detailed Phase 2 analyses (see Sections 3.13 and 3.14).

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Figure 3.1: SFECCTA Project Environmental Features

Photo 1: FEC Railway in North Miami Beach, Miami-Dade County, October 2005

Photo 2: FEC Railway double track section in Broward County, October 2005

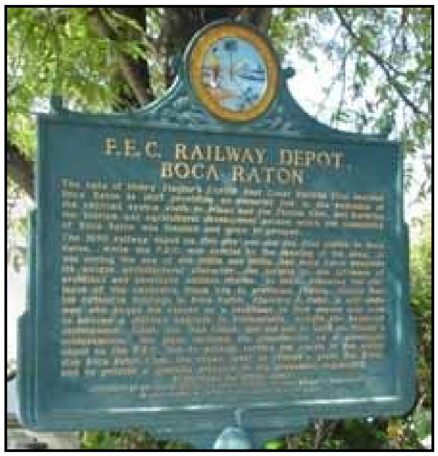

Photo 3: FEC Railway Historic Station Plaque in Boca Raton, Palm Beach County, October 2005

Photo 4: FEC Railway in Ft. Lauderdale, (note hi-rise development in background), Broward County, Oct. 2005

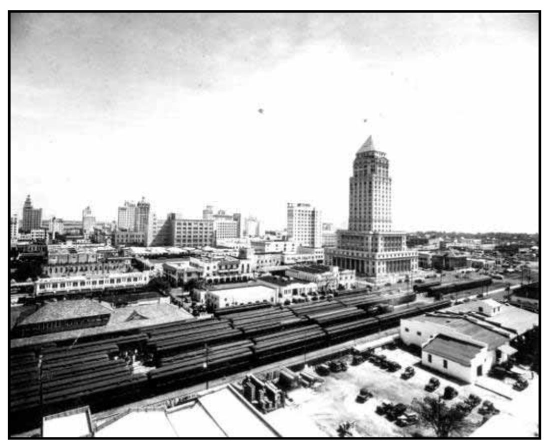

Photo 5: Historic FEC Railway in old Downtown Miami, Miami Dade County, c. 1920s

The environmental impacts associated with implementation of proposed premium transit services will depend to a large extent upon the nature of the existing human (i.e., built) and natural resources adjacent or in close proximity to the existing urbanized alignments along US-1, I-95, and the FEC Railway corridor.

It is anticipated that while the degree of impacts may ultimately be most directly associated with the modal technology chosen, alignment and service segment differences were also considered. For example, the RGR and LRT Alternatives will be analyzed in Phase 2 for specific noise and vibration issues unique to steel wheeled transit systems. All the alternatives are along existing alignments: the FEC Railway, US-1, and I-95 (in northern Palm Beach County only). Although initial environmental analysis and research for this Conceptual AA/ESR includes a 2-mile wide area along these alignments, only an approximate 50-foot wide construction "footprint" will actually be needed to implement new transit service so that the actual number of resources identified for potential impact will be significantly less in the subsequent Phase 2 analyses.

Assessment of other requirements under NEPA such as secondary (i.e., indirect) and cumulative effects, construction impacts, and mitigation for unavoidable, already minimized impacts are discussed herein and again in Chapter 8 to the level possible in Phase 1. However, most evaluation of construction impacts and mitigation will necessarily have to be deferred until Phase 2 since the intended purpose in Phase 1 is an overview of the broad areas and large datasets available for the entire Tri-County study area. The evaluation of what specific effects each combination of alignments and modal technologies (that together comprise the various alternatives) will have on the communities and surrounding natural resources is in most cases most appropriate in the Phase 2 NEPA documents.

3.1 Neighborhoods and Communities

3.1.1 Affected Environment

- **Population and Community Growth Characteristics**: According to United States Census information, between 1990 and 2000 the populations of Miami-Dade, Broward, and Palm Beach Counties increased 29%, 16%, and 31%, respectively. The Tri-County's population is expected to increase by almost 3 million people by the year 2030. A preliminary GIS analysis of United States Census data and the SERPM5 model for the years 2000 to 2030 indicates that there is a 49% projected population growth within the SFECCTA study area as compared to 43% for the rest of the Tri-County area (**Table 3.1**). As identified in **Table 1.5** and **Table 1.6** in Chapter 1, demographic trends within the SFECCTA study area are projected to attain higher overall densities in population, households, and employment than in the Tri-County area as a whole. For example, the projected population density within the study area in Miami-Dade, Broward, and Palm Beach Counties is 14, 12, and 8, respectively; whereas the Tri-County area projected density for 2030 is 6 persons per acre.

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Table 3.1: Projected Demographic Trends - SFECCTA and the South Florida Tri-County Area

Area of Consideration		Number 2000	Number 2030	Growth (%)	Area (acres)
Within 1 Mile Buffer of FEC Railway	Population	830,300	1,233,900	49%	123,800
	Households	349,200	515,400	48%	
	Employment	648,800	883,000	36%	
Outside 1 Mile Buffer of FEC Railway (Remainder of Miami-Dade, Broward, Palm Beach Counties)	Population	4,051,900	5,802,400	43%	1,017,600
	Households	1,553,400	2,208,600	42%	
	Employment	1,642,900	2,294,000	40%	

Source: United States Census 2000, Florida's Southeast Regional Planning Model (SERPM5)

Recent census estimates show that for the 12-month period ending July 2005, 15 of the nation's 100 fastest-growing counties (by percent growth) are in Florida, the most of any state. Florida had 22 of the nation's 100 counties with the largest county increases. Palm Beach County added 24,359 residents (30,835 in 2004–more than any county in Florida), while Broward County added 24,638 residents, and Miami-Dade County added 17,300 residents, respectively. Within the SFECCTA study area (the eastern spine of the Tri-County region) these population figures indicate approximately 49% growth between 2000 and 2030, but only approximately 36% growth in employment in that same time period. Therefore, the corridor will grow more in its residential sectors and be more of a transit "rider supplier" than a trip generator corridor based on employment opportunities.

High concentrations of transit-dependent populations already occupy the SFECCTA corridor area as shown in **Table 1.7** and **Table 1.8** and in **Figure 1.20** and **Figure 1.21** in Chapter 1. This trend in growing transit-dependent populations will benefit from transit improvements.

Due to the high concentration of transit-dependent populations in the study area, specific attention was focused on applying environmental justice guidance. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994) was issued to re-emphasize the intent of the Civil Rights Acts and expanded protection to low-income populations. Federal agencies are required to provide minority and low-income communities appropriate access to public information and opportunities for community input in the NEPA process. They are also required to identify potential adverse or beneficial environmental effects and mitigation measures in consultation with affected communities and improve the accessibility of meetings, crucial documents, and notices.

In addition to Executive Order (EO) 12898, DOT Order 5610.2: Department of Transportation Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (April 1997) establishes procedures for the United States Department of Transportation (USDOT) to use in complying with EO 12898. These orders include procedures directing that disproportionate adverse human health and/or environmental impacts on low-income and minority populations are to be avoided, if practicable, unless avoiding such disproportionate impacts would result in significant adverse impacts on other important social, economic, or environmental resources.

Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks (April 21, 1997) requires all Federal agencies to identify and assess environmental health risks and safety risks that may disproportionately affect children; and to ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. Approximately 26% of the population within a 0.5 mile buffer of the project corridor is under 18 years of age (see **Figure J.24** in **Appendix J**).

The proposed project has the potential to connect a large number of social and economic travel generators such as 3 of 7 airports in southeastern Florida that are within the SFECCTA area or about the FEC Railway right-of-way (with the other airports in close proximity). It is also the only rail-service provider to major employment areas at the PPB, PEV, and POM. Improvement in service to these facilities is anticipated to support the continued economic development throughout the area. For example, the POM generates almost 100,000 jobs in the Miami-Dade County area and has an estimated countywide economic impact of $12 billion annually, making it the second largest economic engine in Miami-Dade County, after MIA.

- **Community Cohesion:** Social impact categories evaluated in the SFECCTA included community cohesion which was considered in developing a community profile for neighborhoods adjacent to or within the study area and the community as a whole. The community is to be considered both on a local level (neighborhood, city, county) and regionally (the Tri-County area), due to the scale of the project study area. Issues such as the potential to bisect or divide neighborhoods and community redevelopment areas, isolating ethnic groups or neighborhoods, facilitation of new development (infill), urban renewal, joint land use/TOD, and others will be considered. It is anticipated that impacts may be beneficial, adverse, or a mixture of both.

The study area is multi-jurisdictional from several perspectives. There are three counties and 47 cities (28 directly on the FEC Railway), as well as multiple CBD and CRA, following the Atlantic Coast in the SFECCTA study area that all lack a continuous transit connection service (see **Table 1.1** in Chapter 1 or **Table A.1** and **Figures A.1 – A.5**, in **Appendix A**). Drainage is regulated by the SFWMD, local County agencies, and in some areas, Special Drainage Districts. Additionally, there are numerous political districts, school districts, and emergency service boundaries, some of which are associated with the county and municipal governments. Moreover, the SFECCTA study area traverses many of the cities downtowns which are currently experiencing rapid growth and redevelopment. Some of these cities are already planning transit friendly development in close proximity to the corridor (see

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Section 3.3.1). The results of the GIS analysis for community services are presented in **Tables A.2 – A.4** and **Figures A.6 – A.9** (see **Appendix A**), with CRA, Police and Fire Stations shown in the figures.

3.1.2 Environmental Consequences

- **Population and Community Growth Characteristics:** The SFECCTA demonstrated early compliance with EO 12898 through an extensive public involvement and scoping process which reached out to all of the affected communities, including minority and low-income communities. Environmental justice considerations of splitting neighborhoods and communities will be very important in the Phase 2 program of socio-cultural effects (SCE) evaluations. Compliance with executive orders for Environmental Justice and if applicable, the Protection of Children will be part of the ongoing series of socio-cultural evaluations as Phase 2 studies progress along the SFECCTA corridor, including the Florida's ETDM programming.

The following guidance[3] will be used to assess environmental justice concerns during the Class of Action Determination for the Phase 2 sectional studies:

- **Environmental Justice Assessment Process:** As outlined in EO 12898 and the USDOT's order, environmental justice issues must be considered during the preparation of an EIS. General principles required as part of an EIS analysis for Federally funded projects are as follows:
  - **Identification of Minority or Low-Income Populations:** Agencies should consider the composition of the affected area to determine whether minority populations, low-income populations, or Native American tribes are present, and if so, whether there may be disproportionately high and adverse human health or environmental effects on these populations. This identification should occur as early as possible during the EIS process.
  - **Public Participation:** Agencies should develop effective public participation strategies that assure meaningful community representation in the EIS process.
  - **Numeric Analysis:** Where a disproportionate and adverse environmental impact is identified, agencies should consider relevant demographic, public health and industry data concerning the potential for exposure to human health or environmental hazards in the affected population, to the extent that such information is reasonably available.
  - **Alternatives and Mitigation:** The relative impact of alternatives should be considered, and measures to avoid, minimize, and mitigate impacts should be evaluated as part of the EIS.

[3] This guidance is available at http://www.fta.dot.gov/planning_environment.html

Construction effects are generally temporary and may include an increase in noise, vibration, and dust, as well as impacts to visual and aesthetic qualities of a community. However, the FDOT has standard construction practices (Specifications for Road and Bridge Construction) which take into consideration many of these temporary impacts and provides measures to reduce or eliminate their effects. The application of these standard specifications in conjunction with Best Management Practices (BMP) may suffice to mitigate for construction impacts. In the case that the FDOT standard specifications do not completely cover particular impacts, special preventative measures may be needed to mitigate for the impacts. Phase 2 studies will identify options to reduce, avoid or eliminate impacts to resources identified within each alternative alignment. These preventative measures will become commitments made by the FDOT and will be included in the Commitments and Recommendation section of Phase 2 NEPA studies (Type 2 CE, SEIR, FONSI or FEIS). These commitments will be developed to provide assurance to businesses and residents that the FDOT intends to work with the community to make the construction of project improvement the least disruptive as possible. Mitigation will be further evaluated in Phase 2 to determine where mitigation measures are reasonable or feasible. Examples of these measures are in Section 3.13.

- **Community Cohesion:** Positive or beneficial effects on community cohesion as a result of improving transit services within the communities served by the SFECCTA include, but are not limited to, the following: opening up new inter-community, and improving intra-community, access; expanding access to employment centers, social/government services, recreation opportunities, etc.; and addressing the needs of the transit-dependent populations residing in the study area. Therefore, it is anticipated that the proposed project will have beneficial impacts on community cohesion. Many municipal governments are expressing support for this project as a benefit to their constituents, including the mayors of nine (9) municipalities that have expressed support for the project by passing resolutions in favor of passenger service along the FEC Railway (see Chapter 7, Section 7.2.5, Local Agency Resolutions). These benefits are cumulative when considering other existing and planned transit services such as Metrorail/Metromover/Metrobus and the Miami Streetcar in Miami-Dade County, the Central Broward East-West Transit Corridor and DDA Downtown Rail Link in Ft. Lauderdale, as well as the Central Palm Beach County Okeechobee Boulevard BRT (see **Table 1.9** and Section 3.14.2).

  There may be adverse effects on street traffic when transitway-highway grade crossings are closed more often to accommodate passing transit service. More frequent train service will mean more temporary gate closings, although passenger trains are shorter and faster than freight trains so their impact on traffic is less severe. The study will analyze the need to raise either the roadway or the transitway, or close transitway-highway crossings altogether wherever practical, in order to minimize delays to auto traffic. FDOT will work closely with each municipality along the FEC alignment and these issues will be studied in greater detail in Phase 2 as part of a program of transitway-highway grade crossings evaluations.

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Light sensitive receptors may be affected due to increased lighting associated with a new transit service in the SFECC. New lighting along the project corridor will be most likely and prominent along an exclusive busway if BRT is selected in Phase 2 and/or at station areas due to new parking facilities, greenway and/or bicycle/pedestrian paths, and platform areas. Lighting treatments may include surface-level or low-level bollard lights (potentially low-sodium wavelength) that can be shielded to contain the light primarily on the surface to be lighted. These features would be developed in context sensitive designs coordinated with local governments and land use plans.

Finally, safety and noise issues along the FEC Railway may result in Phase 2 recommendations for fencing to restrict or prevent pedestrian crossing of the new transit line as well as potential noise walls to mitigate or abate noise impacts. These elements can have both positive and negative effects on a community by enhancing safety and quality of life. On the other hand, these elements can physically and aesthetically divide communities to a greater extent than the existing transportation facilities currently do.

It is anticipated that the Phase 2 sectional studies may each require a Coordination Plan as part of the overall study Public Involvement Plan that complies with the SAFETEA-LU signed into law on August 10, 2005, Section 6002, as a plan for coordination (SAFETEA-LU Section 6002: Section 139(g)(1)). The Coordination Plan is intended to guide the project team through the agency and public coordination activities, unless it is determined that the FDOT Public Involvement Plan and ETDM process sufficiently comply with this provision of SAFETEA-LU.

3.2 Land Use, Zoning, and Economic Development

3.2.1 Affected Environment

- Existing Land Use: The SFECCTA study corridor traverses a mix of predominantly urban land uses, including commercial, transportation (i.e. ports, international airport, and several regional airparks), residential, institutional, and natural areas/parklands including Biscayne Bay, wetlands, coastal hardwood hammocks, xeric scrub/shrub, and open/vacant land. The study corridor also includes portions of Southeast Florida's two railroads, the FEC Railway and the CSXT, beginning in southern Miami-Dade County and traveling to north central Palm Beach County, which are vital links to the Tri-County area major seaports, airports, and downtowns (**Figures A.10 – A.13** in **Appendix A** illustrate existing land uses within the SFECCTA study area).

  As described in the Eastward Ho! Study (available for free download at ftp://www.sfrpc.com/pub/eho/ehobook1.pdf or upon request), current land uses in the study area bear witness to the extensive public investments made in response to the growth experienced by Southeast Florida throughout the twentieth century. Major economic generators such as international and local airports lie almost evenly spaced along the study area. Each county has its own active and expanding

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seaport as well as performing arts center. Utility plants, primarily wastewater treatment, and potable water treatment plants, are also located throughout the study area. In terms of parks, recreation, and open space, there is a greater concentration of open space in Palm Beach County. Throughout Southeast Florida, most open space is generally found in the central and western portions of each county. A GIS analysis of land uses is presented below as percentage of total land area within the SFECCTA study area ("study area lands"), not including open water bodies lying within 1 mile of the FEC Railway. Therefore, only mainland areas were tabulated. Residential is the primary land use within study area lands (shown in **Table 3.2** below), followed by natural, urban/commercial, transportation, surface waters, recreation, and agricultural activities.

Table 3.2: SFECCTA Percent Existing Land Use (1.0 mi Buffer)

	Residential	Urban and Commercial	Parks and Recreation	Agricultural Land	Natural Land Cover	Surface Waters	Transportation
Study Area Lands	38.72%	16.44%	5.60%	0.19%	19.26%	5.90%	13.89%

Source: SFWMD, 1999
Residential = low, medium, and high density single family and multiple dwelling units; mobile homes.
Urban/Commercial = commercial services; shopping centers; junk yards; oil and gas storage; cemeteries; industrial; institutional, military, and educational facilities.
Recreation = beaches; golf courses; race tracks; marinas; parks and zoos; stadiums; open land.
Agricultural Land = improved pastures; row and field crops; fruit orchards; tree nurseries; ornamentals.
Natural Land Cover = Australian pine, Brazilian Pepper, Mangrove swamp, Wet Prairies, disturbed undeveloped land, etc.
Surface Waters = Natural Rivers, Streams, Waterways, Channelized Waterways, Canals, Lakes, Reservoirs.
Transportation = communication and utility facilities; airports; railroads and rail-yards; roads and highways; ports.

- **Zoning:** The zoning characteristics along the FEC Railway corridor in Miami-Dade County are predominantly in the Industrial and Commercial categories. The industrial uses are concentrated in southern Miami-Dade County in close proximity to the CBD of Miami. Much of this zoning is being revisited by the County and the City of Miami due to intense redevelopment pressures, increased land values, and the current minimal use of the corridor for industrial and commercial purposes in this area.

There are some isolated areas ("pockets") in northern Miami-Dade County within the cities of North Miami and Aventura where the zoning adjacent to the FEC Railway corridor is predominantly residential. In southern Broward County, existing zoning along the FEC Railway is a mix of residential and small-scale commercial. In closer proximity to the FLL and north to Sunrise Boulevard the character of the existing zoning changes to much more intense commercial uses. Zoning is then predominantly residential adjacent to the FEC Railway corridor except at major grade crossings with east/west roadways where the zoning converts to commercial again. Along northern Broward County, specifically in the Pompano Beach area, the zoning includes more industrial uses due to the existence of FEC Railway facilities and freight services to customers in the area.

In Palm Beach County, the existing zoning along the FEC Railway consists mostly of a mix of residential and commercial uses for a significant length. However, unlike in the other two counties, the commercial zoning in Palm Beach County occurs mostly on the east side of the FEC Railway, while the residential zoning is mostly located on the west side of the corridor. North of the split between the SFRC and the FEC Railway corridor in northern Palm Beach County (i.e., north of West Palm Beach), the zoning along the FEC Railway is predominantly residential.

- **Economic Conditions and Development:** Income within the SFECCTA study area are predominantly in the lower brackets with fewer households in the upper income brackets than in the rest of the three counties (see **Table 3.3**). In comparison, the population outside the study area throughout Miami-Dade, Broward and Palm Beach Counties only yield 39% of the total households in these lower three income brackets. This indicates a prevalently transit-dependent population with more people at lower incomes living in greater density (see **Table 3.1**), warranting consideration for transit service improvements. Additional GIS analysis by individual counties showed the same trends for each county with the highest projected 2030 population and household densities of the entire SFECCTA study area in Miami-Dade County (coupled with the highest disparity of households in lower income brackets within the SFECCTA study area as compared to the remainder of that county). There is therefore a demonstrated need for economic development that benefits these communities, and especially the transit-dependent populations that reside and/or work there.

3.2.2 Environmental Consequences

- **Existing Land Use:** The alternatives being considered would positively impact the existing land uses along the corridor. As mentioned previously, many of the communities (some of the oldest in southeast Florida) along the corridor are experiencing redevelopment and the provision of a transit corridor would enhance the redevelopment opportunities. Alternatives along the FEC Railway corridor will be developed in a manner sensitive to adjacent residential uses especially considering that discussions regarding noise and noise abatement have consistently occurred during the public involvement process. Alternatives along the US-1 corridor require additional right-of-way and would impact adjacent businesses, a concern noted during the public involvement. Detailed effects on land

Table 3.3: 2000 Household Income

Area of Consideration	Income Brackets					
	<15K	15 - 25K	25 - 30K	30 - 40K	40 - 60K	>60K
Within 1 Mile Buffer of FEC Railway	30%	15%	7%	11%	19%	18%
Outside 1 Mile Buffer of FEC Railway (Remainder of Miami-Dade, Broward, Palm Beach	23%	13%	6%	11%	23%	23%

Counties)	
Source: United States Census 2000	

use within the study area will require evaluation in the Phase 2 sectional studies particularly in relation to station locations, types of stations and parking amenities, traffic patterns, and joint development opportunities, including but not limited to TOD with or without affordable/workforce housing units. The FHWA responded to the purpose and need in the ETDM coordination process. The FHWA reviewer on the ETDM Environmental Technical Advisory Team (ETAT) inquired if the project is in the LRTPs. As stated in the purpose and need, under Federal, State, and local government authority, this project is consistent with Miami-Dade, Broward and Palm Beach Counties' comprehensive plans, LRTPs, and TIPs.

- **Zoning:** Many communities are already changing their zoning designations towards a more transit-oriented use throughout the study area (see Section 3.3.1). Zoning changes are made by local governments and will be continued along the alignments where transit is being considered with or without transit improvements. These changes could positively impact the adjacent corridors and revitalize single-use neighborhoods. During Phase 2 NEPA studies, consideration will be given to how TOD associated with proposed station locations can be coordinated with local government planning entities, preserving or enhancing existing residential uses (including affordable and/or workforce housing) where possible.

- **Economic Conditions and Development:** A study of TOD efforts at various sites throughout the country was completed as part of the overall SFECCTA work effort (the study is available upon request). According to the study, TOD spurred positive economic development activity. Joint-use development opportunities will arise as a result of a transit corridor and associated station areas. Moreover, expansion of transit with any of the alternatives developed can provide mobility for greater job access in the region. Therefore, the economic conditions of the study area would benefit overall from the expansion of transit service.

3.3 Land Acquisition, Displacements and Relocation of Existing Land Uses

3.3.1 Affected Environment

- **Land Acquisition:** Many cities in the corridor have also demonstrated interest both in developing transit services along this corridor and in supporting associated redevelopment by implementing redevelopment plans including land acquisitions initiatives. These cities include: Miami, North Miami, Hollywood, Fort Lauderdale, Oakland Park, Delray Beach, Lake Worth, and West Palm Beach. For example, in their Comprehensive Development Master Plan, Miami-Dade County has depicted

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potential redevelopment areas, many of which are close to US-1. Redevelopment projects near the FEC Railway corridor include:

- In 2005, the Oakland Park City Commission approved the creation of a Mixed-Use Land Development Ordinance that encouraged a mix of uses and a maximum allowable density of 30 dwelling units per acre with a maximum Floor Area Ratio (FAR) of 2.0 for commercial uses along the major transit corridors of Federal Highway, Oakland Park Boulevard, and Commercial Boulevard.[4]
- A City of Oakland Park CRA that contains a large transit-dependent population in terms of age and income:
  - 70% of students in the two elementary schools located within the CRA participate in the free lunch program.
  - 28% of residents are without high school diplomas.
  - 74% of households are rental.
  - Median household income (MHI) is 20% below the Broward County's MHI.
  - 179 Section 8 housing units.
- Delray Beach developers are planning several residential properties along the FEC Railway in the Pineapple Grove District.
- Wilton Station in the City of Wilton Manors is a mixed-use development under construction next to the FEC Railway.
- In Fort Lauderdale alone, hundreds of high-rise apartments and condominiums are planned or are under construction within walking distance of the FEC Railway. Large scale development of office buildings, high rise residences, entertainment complexes, and restaurants is occurring in Downtown Fort Lauderdale, and was spurred on by the development of Riverwalk, the Broward Center for the Performing Arts, and upgrades to infrastructure and public areas.
- The FEC Corridor Strategic Redevelopment Plan (April 2002), developed for the City of Miami, recommends the development of a premium transit system utilizing the existing spine of the FEC Railway Corridor and its right-of-way. The transportation strategy is predicated on the vision that the FEC Railway Buena Vista site will be redeveloped into a high density, transit-oriented, urban "mid-town" center and that the larger corridor, distinguished by the Design District as well as the Arts and Entertainment Districts, along with Little Haiti, will become growing magnets for businesses, entertainment, and tourism. The redevelopment concept for the FEC Railway Buena Vista site was to extend the existing grid street system located south of 36th Street and west of North Miami Avenue through the entire site creating a pedestrian-oriented street pattern. Such redevelopment

[4] City of Oakland Park: Response Letter to AN. John Stunson, City Manager; 3/21/06.

would facilitate a vibrant, mixed-use district consisting of a combination of commercial, residential, and light manufacturing loft space with accommodations for an urban design treatment of big box retail development (City of Miami Department of Economic Development).

- FEC Railway and rebirth of Park West, overlooking Bicentennial Park in Downtown Miami (Miami CRA and City of Miami Department of Planning and Zoning).
- The City of Hollywood Downtown redevelopment is primarily adjacent to the FEC Railway and includes the Hollywood Station mixed-use development as well as other condominium developments along Young Circle within ¼ mile distance of the FEC Railway.
- Land economics, transportation improvements, and multi-modal transit centers have created opportunities for increased concentrations of development throughout Miami-Dade County. Multi-story private developments have been constructed in the vicinity of Overtown, Brickell, Douglas Road, South Miami, Dadeland North and Dadeland South Metrorail Stations.

➢ **Displacement and Relocation of Existing Land Uses:** FEC Railway freight operations are minimal south of N.E. 71st Street in Miami-Dade County. An FEC Railway yard in the City of Miami along the corridor was recently sold and is currently being constructed as a 50 acre mixed-use development (MidTown Miami) with retail, residential and other uses. Because of the FEC Railway corridor's minimal use for freight, the proximity of the area to the Miami CBD, and the increased land values, many of the existing industrial land uses are no longer viable for the area. Therefore, these land uses will probably continue to be displaced and converted to other uses.

➢ **Future Land Uses:** Future land uses are projected to change as the area around the FEC Railway has been receiving intense redevelopment pressure, particularly with land uses changing from low to high intensity residential and commercial centers. **Table 3.4** illustrates that residential land use is forecast to remain the primary land use within study area lands (compare to **Table 3.2** for existing land use), followed in the future (year 2050) by the following trends: urban/commercial supplants natural lands for second rank (as in existing condition), transportation replaces urban/commercial for third rank, surface waters are ranked fourth, natural land cover falls from second to sixth rank. Little change is anticipated in fifth ranked recreation; however seventh-ranked agricultural activities are anticipated to virtually disappear. **Figures A.10 – A.13** (**Appendix A**) illustrate the existing land use by study region.

Table 3.4: SFECCTA Future Land Use (2050)

	Residential	Urban and Commercial	Parks and Recreation	Agricultural	Natural Land Cover	Surface Waters	Transportation
Study Area Lands	45.46%	21.60%	5.39%	0.01%	1.72%	8.72%	17.12%

Source: SFWMD, 2003; Comprehensive Master Plan Future Land Use Maps for Miami-Dade, Broward, and Palm Beach Counties.
Residential = low, medium, and high density single family and multiple dwelling units; mobile homes.

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Urban/Commercial = commercial services; shopping centers; junk yards; oil and gas storage; cemeteries; industrial; institutional, governmental; tourist services; religious; medical and healthcare; military, and educational facilities.
Recreation = beaches; golf courses; race tracks; marinas; parks and zoos; stadiums; open land.
Agricultural Land = improved pastures; row and field crops; fruit orchards; tree nurseries; ornamentals.
Natural Land Cover = reservoirs; lakes; natural streams, rivers, and waterways; channelized waterways and canals; habitat types (e.g., Australian pine); disturbed undeveloped land.
Surface Waters = Natural Rivers, Streams, Waterways, Channelized Waterways, Canals, Lakes, Reservoirs.
Transportation = communication and utility facilities; airports; railroads and rail-yards; roads and highways; ports; parking facilities.

3.3.2 Environmental Consequences

- **Land Acquisition:** Local governments in the study area are currently buying property within the study area to facilitate redevelopment opportunities (see Section 3.3.1). As part of the SFECCTA, information was collected regarding public lands owned within the study area that would be targeted for any potential station area opportunities. The FDOT will work with the local governments and communities once a preferred alternative is selected as a result of the more detailed Phase 2 analyses within each section, to identify opportunities for land acquisition that minimize impacts on established residential neighborhoods.

- **Redevelopment projects near the FEC Railway corridor:** Any of the alternatives under consideration will continue to support the redevelopment efforts currently being undertaken by the local governments adjacent to the FEC Railway corridor. By supporting the Eastward Ho! Initiative, any of the alternatives may accelerate the market conditions that are already happening in the South Florida area with respect to redevelopment. This is a regional benefit in that it encourages urban infill and redevelopment in the eastern portions of the Tri-County Area.

- **Displacement and Relocation of Existing Land Uses:** Conversion of existing land uses may accelerate should transit passenger service be established along the FEC Railway (see Section 3.3.1). Residential and commercial land use displacements or relocations are most probable at potential station areas and grade separation locations than along the remainder of the FEC Railway corridor. Communities in Broward County, north of FLL, such as Wilton Manors and Oakland Park are preparing plans for redeveloping and relocating land uses along the FEC Railway corridor to accommodate more of a mixed-use character.

  In Palm Beach County land uses adjacent to the project corridor are predominantly residential therefore, changes in land use are not occurring at the same rate as it is in Broward and Miami-Dade Counties. In this respect, special attention will be given along the corridor in Palm Beach County to assure minimal displacement of the existing residential uses. It is anticipated that under the US-1 and I-95 alternative alignments more displacements and relocations are more likely compared to the FEC Railway alignment. The FEC alignment will, for the most part, be contained within the existing railway right-of-way held by FEC Industries. A preliminary analysis using GIS along I-95 and US-1 was compared to a detailed analysis of the right-of-way needs along the FEC alignment. Based on this analysis, in Service Segment 1 alone the potential impacts to parcels outside public right-of-way included the following (estimates based solely on GIS parcel property data, no appraisals or negotiations have been conducted in Phase 1):

- I-95, primarily along and adjacent to the eastern right-of-way, Phase 1 assessments estimate over 500 parcels (~450 residential, ~50 commercial/industrial and/or other non-residential) would potentially be needed to implement transit services (extension of Tri-Rail from West Palm Beach to Jupiter)
- US-1, primarily along and adjacent to the eastern right-of-way, Phase 1 assessments estimate over 300 parcels (~25 residential, ~275 commercial/industrial and/or other non-residential) would potentially be needed to implement transit services, and
- FEC Railway alignment, would primarily be contained within the existing right-of-way, therefore, there would be no potential impacts to parcels.

In the remainder of the corridor, the potential impacts along the FEC Railway is to over 500 parcels (~200 residential, ~300 commercial/industrial and/or other non-residential) and along the US-1 corridor, primarily along and adjacent to the eastern right-of-way, to over 3,000 parcels (~600 residential, ~2400 commercial/industrial and/or other non-residential).

This preliminary analysis was for the transit alignment corridors only and did not include potential station area impacts. Station area impacts are anticipated to be similar along each alignment since they were proposed at the same east/east connections with the alternative alignments.

- **Direct Displacements/Relocation:**
  - The I-95 alignment in northern Palm Beach County represents the worst case scenario for right-of-way acquisition since new rail construction would most likely occur outside of the existing I-95 right-of-way. This is anticipated due to lack of available space to accommodate heavy rail tracks at-grade neither within the I-95 interchanges nor in the medians. Ten miles of very expensive rail viaduct to accommodate Tri-Rail Transit would be necessary to minimize displacements. The resultant displacements and necessary relocation of residents would place elevated rail transit adjacent to residents that were previously buffered by I-95. An estimated 500 parcels would be impacted.
  - The US-1 alignment also represents a scenario whereby the potential for commercial and residential relocations is significant. In order to establish the dedicated right-of-way needed (36 feet) to accommodate the envisioned line haul premium transit service, properties along the roadway would have to be acquired. The cost involved along this corridor would be higher than along the FEC Railway due to the higher intensity of development. Moreover, the number of parcels and owners would also be significantly higher because of the development pattern. An estimated 3,000 parcels would be impacted, close to 300 of them in Service Segment 1 alone.

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- Constrained FEC Railway right-of-way locations (less than 100 feet width) have been identified with adjacent developed parcels that could be directly impacted by additional track construction and/or utility relocations (see **Table J.3** in **Appendix J**). Over 500 parcels were identified south of Service Segment 1. No parcels would be impacted in Service Segment 1.
- Station Locations have the potential for direct displacements or relocations if available right-of-way or land parcels in public holding are insufficient for necessary amenities such as parking, shelters, or associated TOD features. These impacts are anticipated to be greatest along the US-1 and I-95 alignments since there is insufficient right-of-way to accommodate proposed transit stations.
- O&M Facilities are another potential cause of displacements or relocations. Their exact locations will be determined during Phase 2 studies.
- East-west transit-way connections between the FEC and SFRC/CSXT alignments may also directly impact adjacent properties.
- Grade separation at transitway crossings of roadways and/or waterways could directly impact adjacent properties to accommodate an elevated or depressed roadway or transitway.
- Stormwater management facilities or electrical infrastructure for new transitway facilities may also directly impact adjacent properties.

➢ **Future Land Uses:** The primary effect that new premium transit services along the SFECCTA corridor is anticipated to have on future land use is at proposed station location areas that may encourage TOD. These impacts are anticipated to be greatest along the US-1 and I-95 alignments since there is insufficient right-of-way to avoid significant amounts of right-of-way acquisition for these facilities. There are benefits and potential adverse effects with such land use changes. For example, new opportunities will exist to improve or provide new affordable or workforce housing as partnerships form between local governments desiring new transit stations and the premium transit service providers.

3.4 Historic, Archaeological, and Cultural Resources

3.4.1 Affected Environment

According to a review of the Florida Master Site File (FMSF) database and Florida Geographic Data Library (FDGL) GIS data layer, there are approximately 140 previously recorded archaeological resources and over 15,000 previously recorded historic resources within one mile of both sides of the project corridor. Two State Historic Highways exist near to or within the study area boundaries: SR 90/Calle Ocho/SW 8th Street in Miami-Dade County (south of the Miami River just outside the study area) and SR A1A/North Ocean Boulevard in Palm Beach County (within the study area boundary). Approximately 150 potentially NRHP eligible, determined NRHP-eligible, or NRHP-listed resources have also been identified within the study area. Approximately 28 potentially historic bridges and 43 other cultural resource groups (i.e., archaeological, historical, and/or architectural) are located within the SFECCTA study area, as outlined in **Tables A.5 – A.6** (see **Appendix A**). It is important to note that these resources are within the 2-mile wide study area. Potential impacts to these resources is significantly less since only a 50 foot footprint will be required for transit service along any alignment.

3.4.2 Environmental Consequences

Due to the vast numbers of potentially historic structures, bridges and sites, historic and archaeological districts and zones, documented and undocumented archaeological sites, a Tiered approach to cultural resources is appropriate for the SFECCTA. Initially, a Phase 1 "reconnaissance level survey" was conducted and will be followed by subsequent, incrementally more detailed Cultural Resource Assessment Surveys (CRAS) in the independent Phase 2 sectional NEPA studies. Coordination with local historic preservation entities will also be incorporated in Phase 2 when there is more definitive information on alternatives and potential impacts to resources. Although there were no comments on Historic and Archaeological Sites in the ETDM review of the AN, the FDOT Summary Response to the ETAT assigned a degree of effect of "moderate" citing the extensive amounts and variety of historic and archaeological resources in the corridor. It was stated in the summary response that a corridor-level analysis of cultural resources will be conducted for this project to capture the historic significance of all identified resources and any newly designated historic properties within the project area. The reconnaissance level survey accomplishes the corridor-level analysis of cultural resources in Phase 1.

The above methodology was described in the AN that was circulated at the beginning of Phase 1 with an extensive initial records search coupled with a judgmental reconnaissance, or "windshield survey". The survey was conducted by driving along the more than 200 square miles that comprise the SFECCTA study area. The February 20, 2006 SHPO reply to the AN containing this methodology was "No Comment/Consistent" and is contained in the **Appendix F** – State Agency Correspondence. A meeting was held on June 9, 2006 in Tallahassee with the same SHPO staff that replied to the AN in order to coordinate the cultural resources methodology for the SFECCTA. As a result, a Cultural Resources Reconnaissance Study Report was prepared and reviewed by the SHPO. The SHPO indicated that this level of assessment and documentation appeared to be complete and sufficient for the Phase 1 screening of cultural resources. In addition, the SHPO stated that coordination would continue on SFECCTA studies during Phase 2 when the CRAS reports on individual project studies would be produced. The SHPO reviewed both the Reconnaissance Report and DPEIS and responded to both on November 9, 2006 commenting on the need to assess potential effects on cultural resources that could result from freight rerouting associated with SFECCTA projects (see **Appendix F**, State Agency Correspondence, and responses to comments in the new **Appendix J**, New Appended Conceptual AA/ESR Materials Since DPEIS).

Assessment of impacts from the potential freight rerouting scenarios described in Chapter 4 will be part of a program of Phase 2 freight studies and potential separate studies for creation of the new freight routes.

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These studies include assessment of potential cultural resources, and impact avoidance, minimization or mitigation measures.

The tiered methodology for cultural resource assessment in the SFECCTA is outlined below:

Phase 1 Methodology:

- Conduct extensive background research including, previous cultural resources studies, GIS data, FSMF information.
- Employ a judgmental reconnaissance or "windshield" survey methodology throughout the SFECCTA study area to visually identify NRHP listed, those determined to be NRHP-eligible, or potentially NRHP-eligible resources and districts.
- Results:
  - Cultural Ressources Reconnaissance Study Report.
  - SHPO letters (one for review of Reconnaissance Report and another for the DPEIS).

Phase 2 Methodology:

Section 106 Process:

- Early coordination with SHPO, FDOT, FHWA and FTA (possibly others) for methodology to evaluate potential effects to linear and non-linear (such as historic districts) historic resources from implementation of premium transit service, (including secondary and cumulative effects), where reasonable and feasible.
- Evaluate potential development of a project-specific Programmatic Agreement Memorandum for Cultural Resources.
- Establish Area of Potential Effect (APE) for each preferred alternative within each Phase 2 project section.
- Identify and evaluate resources-CRAS report, FMSF forms in each sectional project concurrent with AA/NEPA study.
- If resources are found NRHP-listed or eligible:
  - Prepare case study.
  - Assess effects.
  - SHPO coordination.
  - Public involvement.
  - Develop avoidance, minimization, and mitigation strategies, if needed.

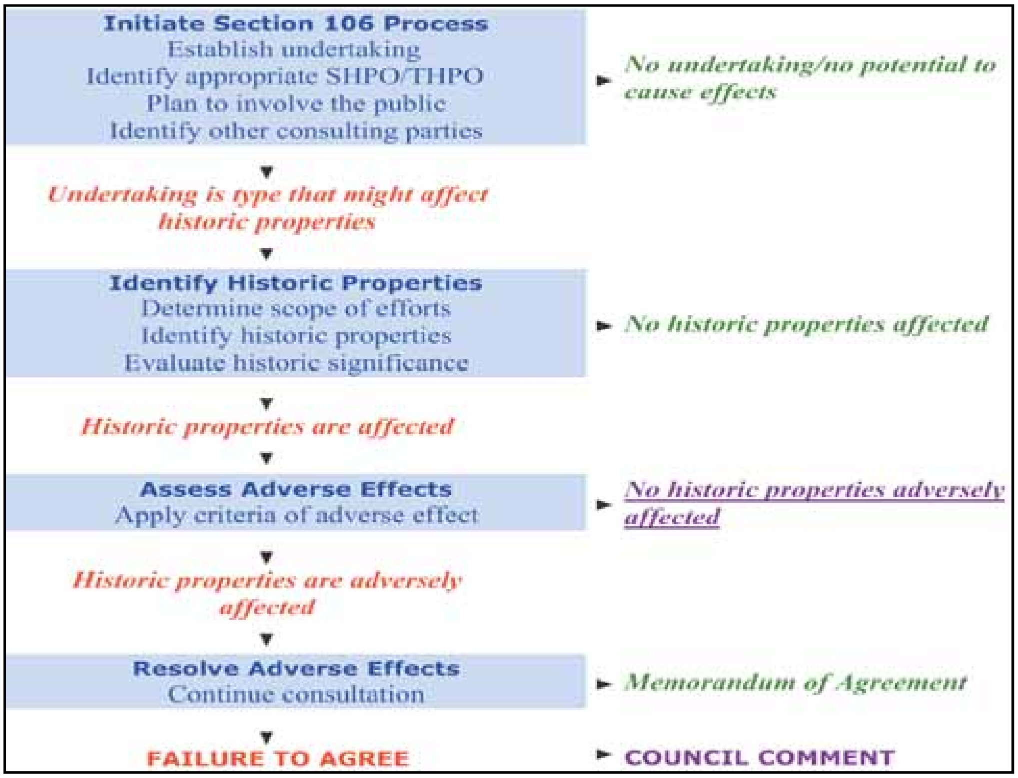
The Section 106 Process can be illustrated in **Figure 3.2**. A Cultural Resources Reconnaissance Study has been prepared for the Phase 1 Section 106 assessment of the SFECCTA and is available upon request.

The tiered survey and documentation approach was coordinated with the SHPO in Tallahassee on June 9, 2006. No involvement is anticipated under any of the proposed alternatives with the two State Historic Highways (SR 90/Calle Ocho/ SW 8th Street in Miami-Dade County and SR A1A/North Ocean Boulevard in Palm Beach County). The preliminary results of the assessments are included in **Table 5.3** as evaluation criteria in Section 5.2, Comparative Benefits and Environmental Effects with additional background data and results of alternatives analysis for cultural resources added to **Appendix A** (**Table A.21**).

The historic sites and structures, archaeological resources, and other cultural resources identified are not necessarily adjacent to the facility or documented as significant resources. Potentially historic resources may be identified solely on age and the investigative work necessary to document its integrity, setting and locale would be documented during Phase 2 sectional NEPA studies. After reviewing the CRAS, the SHPO will issue a letter of effect or letter of no effect for the proposed project. This process will be followed for those project alternatives promoted from Phase 1 and studied in Phase 2 sectional projects. Noise and vibration effects are also anticipated to be assessed with respect to potentially historic resources in Phase 2.

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Figure 3.2: Section 106 Process Flowchart



Historic linear resources that will require further research and documentation were encountered during the reconnaissance survey. These include potentially significant roadways, canals, and railroad corridors such as the FEC Railway, US-1, Dixie Highway, Miami Canal, and other major canals related to the Everglades Drainage District. On June 9, 2006 a meeting was held with Sherry Anderson, SHPO representative, in order to discuss historic linear resources related to this project. It was established that until more specific information about the types of improvements that may affect historic linear resources is determined, a definitive approach for Phase 2 cannot be developed at this time.

In addition, the FDOT Environmental Management Office, in conjunction with FHWA, is currently working on specific cultural resources issues including historic linear resources. It is possible a protocol for the identification, documentation, and evaluation of such resources will be in place for the Phase 2 cultural resources studies. However, should it be necessary, Phase 2 studies may have to address this issue independent of a broader policy as a specific SFECCTA issue. This would entail a project specific evaluation of the FEC Railway, and other linear resources related only to this study, with SHPO, FDOT, FHWA and FTA (possibly other agencies and entities to be determined during the process). This effort will be initiated early in Phase 2 if not before (i.e., during the final stages of the Phase 1 schedule). Therefore, it is anticipated that a SFECCTA Programmatic Agreement Memorandum for Cultural Resources may be developed for FDOT by the study team, with direction from and through close coordination with the interagency team. Such a Programmatic Memo is anticipated to include appropriate methodology to evaluate potential effects to linear and non-linear (such as historic districts) historic resources from implementation of premium transit service, along with evaluation of potential secondary and cumulative effects to significant historic resources.

3.5 Visual and Aesthetic Qualities

3.5.1 Affected Environment

A variety of viewsheds (areas of land, water, and other environmental elements that are visible from a fixed vantage point) exist throughout the SFECCTA study area. The majority of the landscape within the corridor could be classified as mixed use with large expanses of residential communities interspersed with front row (i.e., adjacent to the existing railway or roadway alignment) commercial and/or industrial land uses. In addition, there are portions of the corridor with open green space (e.g., golf courses, parks) adjacent to the potential project alignments (see Section 3.1 and Section 3.9).

- **Scenic/State Historic Highways**: According to the FGDL GIS data layers on Scenic and State Historic Highways (dated 2004 and 2006, respectively) there is only one proposed scenic highway within the SFECCTA corridor that is State-owned, the SR A1A Broward County Scenic Highway. This proposed scenic highway includes two portions that veer west to enter into the study area located in south Broward County: (1) SR A1A/North Ocean Drive (including the East Dania Beach Boulevard east-west SR A1A section) and (2) SR A1A/Seabreeze Boulevard located just north of PEV. There are no known existing State-owned or known locally-designated scenic highways within the project corridor. As discussed in Section 3.4, there are two designated State Historic Highways in or near the SFECCTA study area (SR 90/Calle Ocho/SW 8th Street in Miami-Dade County and SR A1A/North Ocean Boulevard in Palm Beach County).

3.5.2 Environmental Consequences

Both from a user and viewer perspective the viewshed is impacted from different perceptions. From a user point of view, the viewshed may be impacted in a positive matter. For example, elevated structures within the corridor may provide a heightened, enhanced view of the surrounding landscape, hence, a user might benefit visually from the changes made within the corridor. On the other hand, a viewer or individual with an "outside looking in-perspective" may consider these new buildings a negative impact because their viewshed has been partially or totally obstructed by elevated structures. Increased or new lighting may also have the same effect. In general, there are several aspects and key considerations regarding visual and aesthetic qualities that are yet to be assessed; however, as the project moves forward these issues will be taken into account and addressed further in the Phase 2 sectional NEPA studies. This will include, at a minimum, consideration of aesthetics and Context Sensitive Solutions (CSS) in the conceptual design of proposed alternatives according to current FDOT guidance. Alternatives will be developed with aesthetics and CSS as a means to minimize any potential negative impacts resulting from elevated structures and other structures that are erected that substantially impact the viewshed within the corridor. Visual assessment techniques will be utilized to present and document changes to the viewshed from proposed project improvements to the greatest extent practicable (see Section 7.5 for a description of visualization techniques utilized in Phase 1).

- **Scenic/State Historic Highways:** Overall, little to no impacts to the proposed scenic highway within the corridor are expected to result from the proposed improvements. No involvement is anticipated with the two existing State Historic Highways described in Section 3.5.1 (SR 90/Calle Ocho/ SW 8th Street in Miami-Dade County and SR A1A/North Ocean Boulevard in Palm Beach County) under any of the proposed alternatives.

3.6 Parklands and Recreation Areas

3.6.1 Affected Environment

- **Section 4(f) Protected Resources:** A preliminary survey of the entire SFECCTA study area (2 mile buffer) revealed approximately a total of 391 state, county, and municipal parks, memorial parks/cemeteries, golf courses/country clubs (public and private), and protected/conservation lands and/or environmental/conservation easement areas. Consideration for the potential involvement of Section 4(f) protected resources has been included in the SFECCTA, by identifying sites that are adjacent or in close proximity to the FEC Railway and/or nearby parallel streets under consideration as alternative alignments. Some of these sites are also historic or contain historic, archaeological, or other resources that are protected by Section 4(f), as well as Section 106 of the National Historic Preservation Act (NHPA) of 1966 (Public Law 89-665, as amended) and its implementing regulations (36 CFR 800), Executive Order 11593, Chapter 267 FS, and Chapter 872 FS. These resources include, but are not limited to facilities or sites in **Tables A.7 – A.12** located in **Appendix A**. **Figures A.14 – A.17** (**Appendix A**) illustrate state, county and city owned parks within the two mile wide study area. No national parks or national wildlife refuges were found within the study area.

- **Pedestrian/Bicycle Facilities:** Pedestrian and dedicated bicycle lanes are limited in much of the SFECCTA study area due to its urbanized and heavily industrialized nature. Currently, there are 14 roadway/pedestrian bridges that cross over the existing FEC Railway. In some neighborhoods such as Overtown in the Miami CBD, there is a substantial amount of pedestrian traffic across the existing tracks and railroad-highway grade crossings. Local planning organizations such as MPOs and County Transit Departments have recognized this need, recently making some provision for pedestrians and bicycles in such planned projects as the Flagler Trail Greenway in Miami-Dade County and the Dixie Highway Trail Greenway along the FEC Railway/Dixie Highway corridor throughout Broward County. If pedestrian/bicycle routes are closed or otherwise modified, these will be identified and the potential impacts on community mobility and neighborhood interaction will be addressed.

3.6.2 Environmental Consequences

- **Section 4(f) Protected Resources:** The likelihood of direct impacts to any Section 4(f) protected resource was considered in the preliminary evaluation of alternatives, station location, and O&M facility siting. A "fatal flaw" analyses catalogued such resources for comparative purposes. Direct acquisition can be avoided best through early identification in Phase 1. Indirect effects due to proximity effects of locating transit facilities adjacent to Section 4(f) resources will be assessed in Phase 2 sectional NEPA studies for constructive use issues as part of Section 4(f) Determination of Applicability or Section 4(f) Evaluations. These evaluations may be Programmatic Section 4(f) Evaluations, depending on coordination with agencies having jurisdiction over the Section 4(f) resources and the lead Federal agency on the individual Phase 2 NEPA study or studies involving the resource(s). An initial evaluation screening took into account Section 4(f) resources such as parks and recreation, greenways and trails, conservation lands and wildlife refuges located within 400 feet to either side of each proposed alternative, and is included in the Cultural Resources Evaluation Criteria in Section 5.1.2 Comparative Benefits and Environmental Effects. However, little potential exists for right-of-way acquisition of any Section 4(f) resources adjacent to SFECCTA alternative alignments.

- **Pedestrian/Bicycle Facilities:** The inclusion of pedestrian and/or bicycle facilities within the SFECCTA study area is one of the goals of the ultimate transit project. Facilities to be considered in Phase 2 may include bicycle storage areas at stations and bicycle carrying capabilities on the vehicles, as well as pedestrian/bicycle greenways. If existing pedestrian/bicycle routes are closed or otherwise modified, these will be identified and the potential impacts on community mobility and neighborhood interaction will be addressed in Phase 2 as well.

3.7 Air Quality and Energy

3.7.1 Affected Environment

Overall, mass transit can improve air quality and reduce consumption of natural resources for energy. Fewer automobiles on the roadways will result in reduced emissions into the atmosphere, thereby improving air quality not only within the corridor, but regionally as well. The South Florida Airshed includes all of Miami-Dade, Broward and Palm Beach Counties. In 1990 the area was originally designated as a moderate non-attainment area with respect to meeting the national air quality standards. In 1995 the area was re-designated to attainment status, which meant that for a 20 year period the area was to demonstrate conformity through a Maintenance Plan and approved long range transportation plans. In 2005, the entire State of Florida was found to be in full conformance with national air quality standards for ozone for both the 8-hour and 1-hour standards. Therefore, the long range transportation plans are no longer required to demonstrate air quality conformance.

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

3.7.2 Environmental Consequences

While more detailed air quality analyses will be undertaken during the Phase 2 sectional studies, it is anticipated that the proposed project would have beneficial air quality impacts both locally and regionally by increasing transit use and reducing vehicular traffic. Transit is inherently more energy efficient than travel by single occupancy vehicle (SOV). By putting more commuters on transit, less energy is wasted on automobile fuel in SOVs and, in the case of electric powered transit technologies, the energy production is primarily conducted away from the congested commuting areas (Ft. Lauderdale's PEV fossil fuel burning power plant is an exception in this study area). In general terms, grade-separated transit systems like MDT commuter rail (Metrorail) or AGT (Metromover) systems are best for local air quality while on-street systems such as bus (BRT, Intercity Motor Coach, or RGB) or even electric rail systems (such as LRT or Streetcar systems operating in mixed traffic) are less beneficial due to potential impacts to local street network congestion.

The Florida Department of Environmental Protection (FDEP) requested more air quality information upon reviewing the Advance Notification (AN) description of the air quality screening procedure which identifies sensitive receptors along the SFECCTA alternative corridors. The FDEP made this request regarding air quality through the ETDM process, specifically inquiring which air pollutants would be sampled and if computer modeling air impacts would be conducted. Computer modeling will be incorporated into the independent Phase 2 sectional NEPA studies. The FDOT Summary Response to the ETAT agreed with and confirmed the degree of effect for air quality assigned by the FDEP ETAT reviewer as "minimal" effect, stating that the project is in a United States Environmental Protection Agency (USEPA) designated airshed for the air pollutant ozone, and that the project is part of approved LRTPs and consistent with the Transportation Improvement Programs for the three counties in the SFECCTA study area.

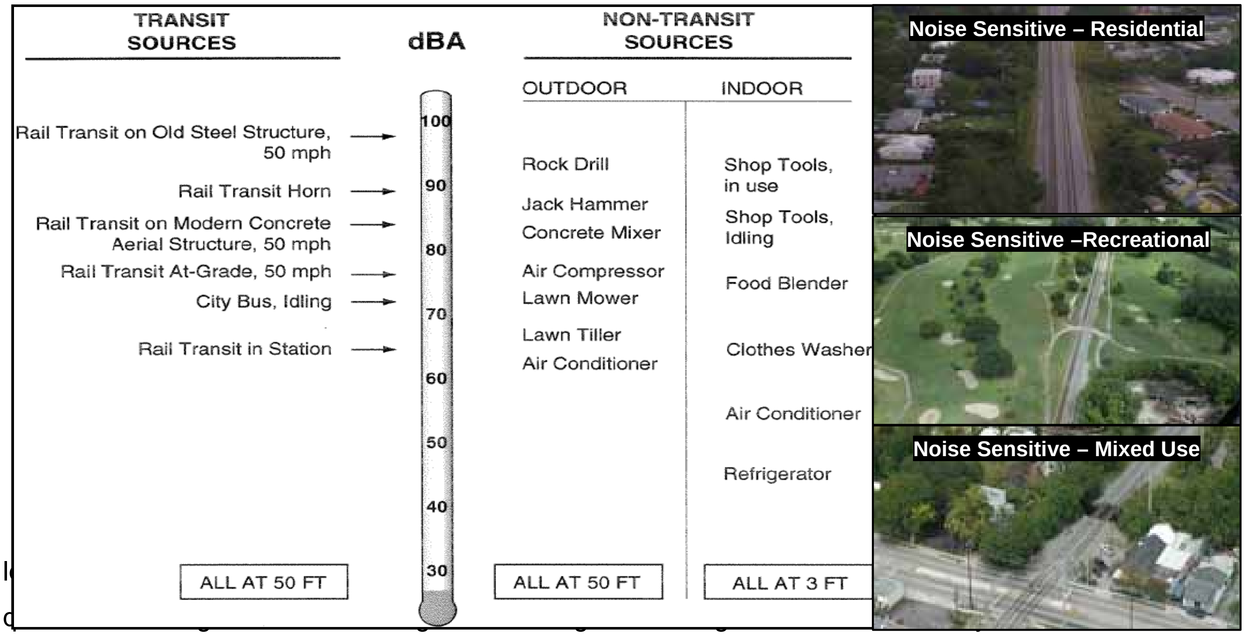
3.8 Noise and Vibration

3.8.1 Affected Environment

- **Noise:** Noise sensitive receptors found along the proposed project corridor consists of residential areas, schools, and other noise sensitive receivers. Future land use may also include high density multifamily and single-family residential development typical of that found in eastern Miami-Dade, Broward, and Palm Beach Counties, particularly around the rapidly redeveloping CBDs. The MidTown

- Miami development at the former Buena Vista FEC Railway yard is a prime example of mixed use, TOD currently under construction in the SFECCTA study area, and is anticipated to be emulated in others areas within the corridor such as in West Palm Beach. Typical noise levels associated with rail transit and freight trains and examples of noise sensitive receptors are illustrated in **Figure 3.3**, calculated in decibels (measured as dBA, or A-weighted dB, which most closely approximates noise

Figure 3.3: Comparative Noise Levels and Noise Sensitive Areas



trains but they are generally longer in duration as they pass by noise sensitive sites than the typically shorter, faster transit trains. Furthermore, the FEC Railway currently uses up to triple locomotives to pull the longer freight (see Photo 3 in **Figure 1.3**) and runs a current average of 26 trains daily. According to the freight analysis conducted for the SFECCTA, freight activity on the FEC Railway is anticipated to increase within the study area in the near future.

Train horns or whistles are another source of railroad noise that is of concern to the communities along the FEC Railway. This issue has been made evident in past studies and actions described below and throughout the public involvement and scoping process. This is closely related to public safety at roadway crossings of railways. A SFECCTA assessment of train horn noise will consider the current freight traffic, potential growth in freight train occurrences (with associated train horn blowing), potential addition of new transit rail along the FEC and/or SFRC, and past history in this corridor with restrictions on train horns.

The train horn noise restriction issue is not new. In the mid 1980s a "whistle ban" was allowed by the FRA for freight trains in Florida. Effective July 1, 1984, local jurisdictions throughout Florida were allowed to establish nighttime (10:00 P.M. to 6:00 A.M.) train whistle bans according to Florida Statute

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

No. 351.03. The whistle bans applied only to certain railroad-highway grade crossings within the FEC Railway. Pursuant to FS 351.03, in order for railroad-highway grade crossings to be eligible for train whistle bans, they had to be equipped with active warning devices such as crossing gates, flashing lights, bells, and special highway advance warning signs. Train whistles were banned at night primarily to eliminate the noise impacts they had on adjacent and nearby residential communities.

However, since safety concerns generally prevail over noise concerns in FRA policy, an investigation of the effects of the nighttime whistle ban along the FEC Railway was conducted. The FRA study revealed that FEC Railway's nighttime crash rate at affected railroad-highway grade crossings nearly tripled after the whistle bans were imposed. The daytime crashes at affected railroad-highway grade crossings remained virtually unchanged. In contrast, nighttime crashes increased 23% at 89 FEC railroad-highway grade crossings that had whistle bans. Based on the above statistics reported in Florida's Train Whistle Ban, (USDOT, FRA, Office of Safety, Final Edition, September 1995), FRA concluded that nighttime whistle bans at certain railroad-highway grade crossings caused significant increases in public railroad-highway grade crossing crashes. Following its investigation of crashes attributable to the FEC Railway whistle ban, FRA issued Emergency Order No. 15 on July 26, 1991. This decision required the FEC Railway to sound train whistles when approaching public railroad-highway grade crossings.

Specifically, FEC Railway was ordered to follow the operating rules governing horn use that were in effect before the state-permissive train whistle ban. In the study leading up to Emergency Order No. 15, the FRA recognized that nighttime train whistles can be an inconvenience to residents near the railroad right-of-way. However, it was also demonstrated that these same locomotive horns can also save lives.

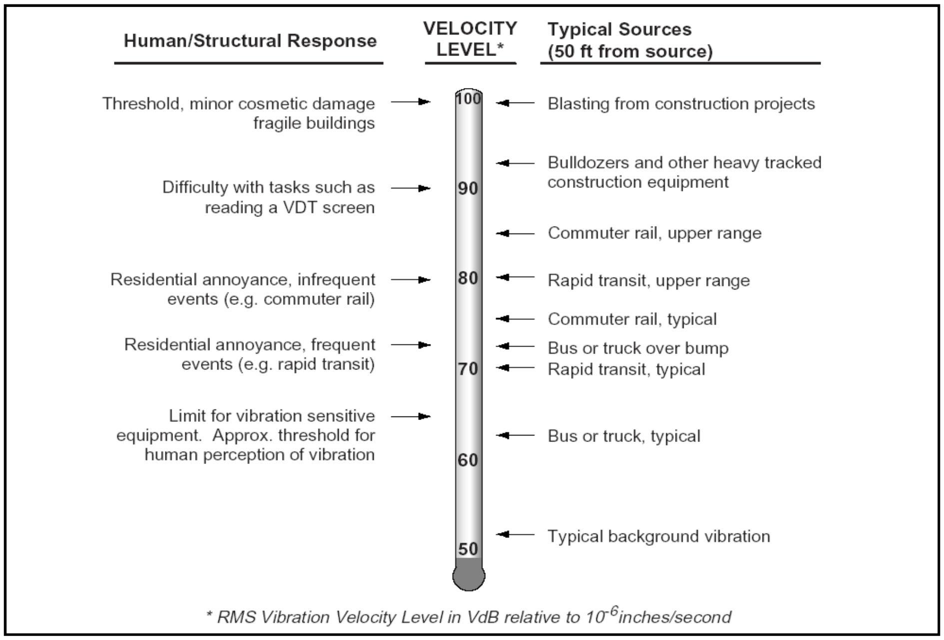
Recent policy is shifting towards allowing limited, more regulated noise control on railway corridors. Effective June 24, 2005 FRA published 49 CFR Parts 222 and 229, Use of Locomotive Horns at Highway-Rail Grade Crossings; Final Rule (Federal Register, April 27, 2005). The final rule followed an extensive public comment period after the publication of an interim final rule on December 18, 2003, in which FRA required that locomotive horns be sounded by trains approaching railroad-highway grade crossings. The interim final rule contained an exception to the above requirement in circumstances in which there is not a significant risk of loss of life or serious personal injury, use of the locomotive horn is impractical, or safety measures fully compensate for the absence of the warning provided by the locomotive horn. Communities that qualify for this exception may create ‘‘quiet zones’’ within areas wherein locomotive horns would not be routinely sounded. The final rule amends certain provisions of the interim final rule to facilitate the development of quiet zones, while balancing the needs of railroads, states, and local communities.

- **Ground-borne noise and vibration:** These potential impacts were identified in a preliminary GIS assessment of the project alternatives. Existing sensitive land uses consisting of residential areas, schools, medical, research, and other receivers were identified and listed in **Table A.22**. The Scripps Bio-Medical Research facilities is an example of medical, life science research development currently proposed in northern Palm Beach County within the SFECCTA study area. Similar facilities are also expected to be constructed in Miami-Dade County (University of Miami Bio-Medical Research Center adjacent to I-95 at the Miller School of Medicine/Jackson Memorial Hospital Center). Typical vibration levels (measured as vibration velocity level in decibels, or VdB) associated with rail transit are illustrated in **Figure 3.4**.

It is important to distinguish ground-borne noise from ground-borne vibration when analyzing the effects rail transit on the human environment. Ground-borne noise is usually perceived as the rumbling sound and/or rattling of windows or wall hangings caused by the vibration of room surfaces from ground-borne vibration. Ground-borne noise is usually characterized with the A-weighted sound level. This is a complex phenomenon that requires detailed assessments appropriate in Phase 2 following guidance provided in the FTA Transit Noise and Vibration Impact Assessment, Report FTA-VA-90-1003-06 (May 2006, Harris Miller Miller & Hanson, Inc.). This manual is available for download on the project website documents section (http://www.sfeccstudy.com/images/FTA_Noise_and_Vibration_Manual.pdf).

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Figure 3.4: Ground-Borne Noise and Vibration Levels Human/Structural Responses



3.8.2 Environmental Consequences

- **Noise:** The Palm Beach MPO suggested using shrubs, trees or other landscaping that may help absorb noise and enhance the corridor's viewshed via the ETDM. The FDOT Summary Response to the ETAT agreed with and confirmed the degree of effect for aesthetics as "substantial". The summary response agreed that consideration would be given to enhancing the corridor with shrubs, trees or other landscaping that may potentially absorb noise.

A preliminary assessment of potential noise effects on the communities in the SFECCTA study area has been undertaken as part of Phase 1. This assessment was primarily a GIS analysis of land use and residential communities adjacent to the FEC Railway (see **Table 1.1** or **Table A.1** or **Figures A.2 – A.5**, **Appendix A**). Noise increases due to the proposed project is anticipated to be greatest for new rail on the FEC Railway. Roadway transit alternatives for this corridor would likely be rubber tired bus technology that would not be as likely to increase noise as rail transit would. It is important to note that the freight rail is the predominant noise source on the FEC Railway, and freight transport is anticipated to grow. Train frequency on the FEC Railway is expected to be between 50-100 trains daily (Tri-Rail currently operates 48 trains daily). More accurate service determinations will be available in Phase 2.

The GIS methodology employed was a screening procedure that followed the FTA Transit Noise and Vibration Impact Assessment, Report No. FTA-VA-90-1003-06 (May 2006, Harris Miller Miller & Hanson, Inc.; http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf). The results are provided in **Table 3.5**. The screening procedure was based on a buffer distance of 800 feet centered on each alignment (see **Table 3.6**). The screening distance concept utilizes a "critical distance" that is defined as an offset from the noise source wherein any receivers are within a distance where impact is likely to occur. The total number of noise sensitive receptors that were found (all categories combined) for each alternative was considered as an evaluation criteria for alternatives analysis in Section 5.0. This screening procedure allowed for an assessment of each alternative relative to each other for potential noise impacts.

The train horn noise issue is closely linked to the freight trains and to the high number of railroad crossings throughout the SFECCTA corridor. More detailed noise studies following the FTA Transit Noise and Vibration guidance will be conducted as appropriate in Phase 2 sectional studies. Furthermore, a program of transitway-highway grade crossing consolidation and/or overpass studies will also be implemented in Phase 2 in order to address concerns of safety, quality of life in SFECCTA communities, and rail/transit service. The FDOT has implemented a Quiet Zone application approach for communities in "Use of Locomotive Horns at Highway-Rail Grade Crossings; Interim Final Rule. 49 CFR Parts 222 & 229", February 25, 2005. This document is available upon request.

Table 3.5: Noise Sensitive Receptor Categories

	Noise Sensitive Sites ("Receptors") in these categories
Category 1	Parks, Outdoor amphitheaters and concert pavilions, Residential areas. National Historic Landmarks (with significant outdoor use).
Category 2	Homes, hospitals and hotels/motels (buildings where people normally sleep) Historical sites currently used as residences.
Category 3	Schools, Libraries, Religious worship buildings (churches, synagogues, mosques, etc.), Auditoriums (or other institutional land uses with primarily daytime use), Medical offices, Recording studios or concert halls, Cemeteries, monuments, museums (locations for meditation or study) Historical sites, parks and recreational facilities (certain types).

Source: FTA Transit Noise Vibration Impact Assessment, 2006. HMMH, Inc.

- **Ground-borne noise and vibration:** The Palm Beach MPO suggested, via the ETDM, using shrubs, trees or other landscaping that may help absorb noise and enhance the corridor's viewshed. The FDOT Summary Response to the ETAT agreed with and confirmed the degree of effect for aesthetics as "substantial". The summary response agreed that consideration would be given to enhancing the corridor with shrubs, trees or other landscaping that may potentially absorb noise.

Table 3.6: Screening Distances for Noise Assessments

Type of Project		Screening Distance* (ft) Unobstructed	Screening Distance* (ft) Intervening Buildings
Fixed Guideway Systems:			
Commuter Rail Mainline		750	375
Commuter Rail Station		450	225
Rail transit Guideway		700	350
Rail Transit Station		200	100
Access Roads Serviing Stations		100	50
Low- and Intermediate Capacity Transit	Steel Wheel	200	100
	Rubber Tire	125	75
	Monorail	300	150
Yards and Shops		2000	1000
Parking Facilities		150	75
Access Roads Serving Parking Facilities		100	50
Ancillary Facilities:			
Ventilation Shafts		200	100
Power Substations		250	125
Bus Systems:			
Busway		500	250
Bus Facilities	Access Roads	100	250
	Transit Mall	250	125
	Transit Center	300	150
	Storage & Maintenance	1000	500
	Park & Ride Lots	300	150

* " critical distance" measured from centerline of transitway or roadway for mobile sources and from center of noise-generating activity for stationary sources
Source: FTA Transit Noise Vibration Impact Assessment, 2006. HMMH, Inc.

As with the screening for airborne transit noise effects, a preliminary assessment of potential ground-borne noise and vibration effects on the communities in the SFECCTA study area has been undertaken as part of Phase 1. The screening procedure was conducted to help identify project alternatives that have the possibility of creating significant adverse impact on communities, sites, or structures in the study area. This assessment was primarily a GIS analysis of land use and residential communities adjacent to the FEC Railway (see **Table 3.2** or **Tables A.6 – A.12** and **Figures A.10 – A.17**, **Appendix A**).

New rail transit has the potential for increasing ground-borne noise and vibration. Roadway transit alternatives with rubber tired bus technology would not increase ground-borne noise and vibration in as substantial a manner as rail transit. Freight rail is the predominant source of ground-borne noise and vibration and it is anticipated to grow. The magnitude of freight transport growth is not forecast as far in the future as roadway traffic volumes since FEC Industries, like most rail freight operators, does not do projections beyond several years in the future. However, transit train frequency on the FEC Railway would likely be approximately 50 trains daily, similar to what Tri-Rail is currently running (approximately 48 trains daily). Service determinations will most likely be available in Phase 2 studies.

The GIS methodology employed was a screening procedure that follows FTA Transit Noise and Vibration Impact Assessment, FTA Report FTA-VA-90-1003-06 (May 2006, Harris Miller Miller & Hanson, Inc.). The results are listed in **Table A.22** in **Appendix A**.

Table 3.7: Ground-Borne Noise and Vibration Sensitive Receptor Categories

	Ground-Borne Noise and Vibration Sensitive Sites (Buildings/Structures)
Category 1	Vibration sensitive research and manufacturing, including hospital operating theaters, laboratories, concert halls, etc.
Category 2	All residential buildings occupied and in use and all hotels/motels (Buildings where people normally sleep)
Category 3	Institutional buildings with sensitivity to vibration ("Special buildings")

Source: FTA Transit Noise Vibration Impact Assessment, 2006. HMMH, Inc.

The screening procedure used a buffer distance of 800 feet centered on each alignment to tabulate the number of noise sensitive sites or areas (see **Table 3.8**). The screening distance concept utilizes a "critical distance" that is defined as an offset from the ground-borne noise or vibration source wherein any receivers are within a distance where impact is likely to occur. The total number of noise sensitive receptors that were found (all categories combined) for each alternative was considered as an evaluation criteria for alternatives analysis in Section 5.0.

The train horn noise issue is closely linked to the freight trains and to the high number of railroad-highway grade crossings throughout the SFECCTA corridor. More detailed noise studies following FTA Transit Noise and Vibration guidance will be conducted as appropriate in Phase 2 sectional studies.

Table 3.8: Comparative Ground-Borne Vibration Levels

Type of Project	Critical Distance* for Land Use Categories** Distance from Right-of-Way or Property Line		
	Cat. 1	Cat. 2	Cat. 3
Conventional Commuter Railroad	600	200	120
Rail Rapid Transit	600	200	120
Light Rail Transit	450	150	100
Intermediate Capacity Transit	200	100	50
Bus Projects (if not previously screened out)	100	50	--

* "critical distance" is measured from centerline of guideway/roadway for mobile sources; from center of noise-generating activity for stationary sources within which vibration-sensitive receivers are anticipated to be impacted.
The land use categories are defined in **Table 3.7 above. Some vibration-sensitive land uses are not included in these categories. Examples are: concert halls and TV studios, which for the screening procedure, should be evaluated as Category 1; and theaters and auditoriums which should be evaluated as Category 2.
Source: FTA Transit Noise Vibration Impact Assessment, 2006. HMMH, Inc.

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

It is anticipated that an improved passenger transit service along the project corridor will result in less vehicles on the road and therefore an improvement in LOS. Typically improvements in LOS are associated with increased noise levels. However, projected increases in traffic volume may offset this effect. These detailed assessments of noise level changes on surrounding roadways will be considered during Phase 2 studies that are conducted in concert between the independent but related Phase 2 NEPA studies.

3.9 Biological Resources

3.9.1 Affected Environment

- **Wetlands:** A preliminary GIS analysis of the entire 2-mile wide SFECCTA study area, including one crossing of Biscayne Bay at the POM and numerous man-made canals, revealed approximately 14,000 acres of wetlands according to the United States Fish and Wildlife Service (USFWS), National Wetland Inventory (NWI) classification system. These NWI wetlands are provided in **Appendix A**, by county in **Table A.13** and by study region in **Figures A.18 – A.21**. Potential impacts from any of the proposed alignments are not anticipated to involve a substantial percent of the total wetland areas since only a 50-foot wide footprint will be required. According to the NWI, the five major systems of wetlands include:

  - **Marine System**, consisting of the open ocean overlying the continental shelf and its associated high-energy coastline, exposed to waves and currents of open ocean, tidally influenced, and salinities exceeding 30%. Shallow coastal inundations or bays without appreciable freshwater inflow, and coasts with exposed rocky islands that provide the mainland with little or no shelter from wind and waves, are also included.

  - **Estuarine System**, deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but having open, partly obstructed or sporadic access to the open ocean, where ocean water is at least occasionally diluted by freshwater runoff from the land. Includes areas where Red mangroves (*Rhizophora mangle*) and eastern oysters (*Crassostrea virginica*) occur. Estuarine systems include both subtidal and intertidal subsystems.

  - **Riverine System**, includes all wetlands and deepwater habitats contained within a channel (with exceptions of certain forested, shrubby, emergent vegetated wetlands or habitats with water containing ocean-derived salts in excess of 0.5%).

  - **Lacustrine System**, including permanently flooded lakes and reservoirs, intermittent lakes, and tidal lakes with ocean-derived salinities below 0.5%. Also include limnetic and littoral subsystems.

  - **Palustrine System**, includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5%. This system groups vegetated wetlands traditionally called marshes, swamps, bogs, fens, and prairie in the United States, as well as small, shallow, permanent or intermittent water bodies called ponds. No subsystems are identified for palustrine systems.

As part of the SFECCTA, more detailed wetland assessments will be conducted in Phase 2 to "ground truth" and verify the mapped data listed in **Table A.13**.

- **Endangered and Threatened Species:** The following species are listed by either the USFWS, the National Oceanic and Atmospheric Administration's (NOAA), National Marine Fisheries Service (NMFS), the Florida Fish and Wildlife Conservation Commission (FWC), or the Florida Department of Agriculture & Consumer Services (FDA) as Endangered (E), Threatened (T), Threatened Due to Similar Appearance to another species T(S/A), [Federal] Species of Concern (SC) or [Florida] Species of Special Concern (SSC), and could possibly inhabit or migrate through the subject project vicinity:

	Status USFWS/FWC
Birds	
Brown pelican (*Pelecanus occidentalis*)	[–/SSC]
Roseate spoonbill (*Ajaia ajaja*)	[–/SSC]
Little blue heron (*Egretta caerulea*)	[–/SSC]
Reddish egret (*Egretta rufescens*)	[–/SSC]
Snowy egret (*Egretta thula*)	[–/SSC]
Tricolored heron (*Egretta tricolor*)	[–/SSC]
Florida Scrub jay (*Aphelocoma coerulescens*)	[T/T]
Florida sandhill crane (*Grus canadensis pratensis*)	[–/T]
Peregrine falcon (*Falco peregrinus*)	[–/E]
Southeastern American kestrel (*Falco sparverius paulus*)	[–/T]
White ibis (*Eudocimus albus*)	[–/SSC]
Wood stork (*Mycteria americana*)	[E/E]
Burrowing owl (*Athene cunicularia floridana*)	[–/SSC]
Mammals	
West Indian manatee (*Trichechus manatus latirostris*)	[E/E]
Florida bonneted/mastiff bat (*Eumops* [*glaucinus*] *floridanus*)	[–/E]
Reptiles	
American alligator (*Alligator mississippiensis*)	[T(S/A)/SSC]
American crocodile (*Crocodylus acutus*)	[T*/E]
Atlantic loggerhead turtle (*Caretta caretta*)	[T/T**]
Atlantic green turtle (*Chelonia mydas*)	[E***/E**]
Atlantic leatherback turtle (*Dermochelys coriacea*)	[E/E**]
Atlantic hawksbill turtle (*Eretmochelys imbricata*)	[E/E**]
Kemp's Ridley turtle (*Lepidochelys kempii*)	[E/E**]
Eastern indigo snake (*Drymarchon corais couperi*)	[T/T]
Rim Rock Crowned snake (*Tantilla oolitica*)	[–/T]
Florida Pine snake (*Pituophis melanoleucus mugitus*)	[–/SSC]
Gopher tortoise (*Gopherus polyphemus*)	[–/SSC**]

* = status downgraded for the Florida Distinct Population Segment (DPS) only, per USFWS Final Rule (FR V.72, No. 53) March 20, 2007, effective April 19, 2007.

** = status applies to eggs as well as turtles or, in case of Gopher tortoise, Florida prohibits take, possession, sale, or purchase of tortoises or their parts except by permit.

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***= Atlantic green sea turtle breeding population in Florida (C. mydas) listed E by NOAA-NMFS due to presence of breeding colony populations in Florida on beaches (listed T elsewhere).

Amphibians
Gopher frog (*Rana capito* [formerly *R. areolata*]) .... [–/SSC]

Status
NOAA-NMFS/FWC

Fish
Smalltooth sawfish (*Pristis pectinata*) .... [E/–]
Goliath grouper (*Epinephelus itijara*) .... [SC/–]
Key silverside (*Menidia conchorum*) .... [SC/T]
Mangrove rivulus (*Rivulus marmoratus*) .... [SC/SSC]
Saltmarsh topminnow (*Fundulus jenkinsi*) .... [SC/SSC]

Corals
Elkhorn coral (*Acropora palmata*) .... [T/–]
Staghorn coral (*Acropora cervicornis*) .... [T/–]

Status
USFWS/FDA

Plants
Johnson's seagrass (*Halophila johnsonii*) .... [T/–]
Golden leather fern (*Acrostichum aureum*) .... [–/T]
Four-petal or Scrub pawpaw (*Asimina tetramera*) .... [E/E]
Pine pinweed (*Lechea divaricata*) .... [–/E]
Florida thatch palm (*Thrinax radiata*) .... [–/E]
Brittle or Keys thatch palm (*Thrinax morrisii*) .... [–/E]
Auricled or eared spleenwort (*Asplenium auritum*) .... [–/E]
Toothed or Slender spleenwort (*Asplenium dentatum*) .... [–/E]
American bird's nest fern/spleenwort (*Asplenium serratum*) .... [–/E]
Delicate/modest spleenwort (*Asplenium verecundum*) .... [–/E]

The Bald eagle (*Haliaeetus leucocephalus*) was previously listed as Threatened on both Federal and State lists and included on the above list in the September 2006 SFECCTA DPEIS. However, the USFWS took the American bald eagle off the Federal List of Endangered and Threatened Wildlife and Plants on June 28, 2007. It should be noted that the bald eagle will still be Federally protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Likewise, the FWC adopted a final Bald Eagle Management Plan for Florida and removed the bald eagle from the Florida imperiled species list on April 9, 2008.

- **Critical Habitat (CH):** The USFWS has designated portions of Miami-Dade, Broward, and Palm Beach Counties as CH for the Everglades Snail Kite and West Indian Manatee. There are waterways and water bodies within the SFECCTA study area listed as Manatee Protection Zones (Idle Speed/No Wake Zones), including the Miami River, Arch Creek, Biscayne Bay, Hillsboro Canal, and numerous other stretches of ICWW or canals, as outlined in **Table 3.9** below. These manatee protection zones are illustrated in **Figures A.22 – A.25** in **Appendix A**. In addition, near shore waters of Biscayne Bay included in the southern portion of the SFECCTA study area have been observed to harbor Atlantic Bottlenose dolphins (*Tursiops truncatus*) which are protected by the Marine Mammal Protection Act in United States Waters. An Endangered Species Biological Assessment (ESBA) will be conducted in Phase 2 for each sectional NEPA study that requires one in order to determine the possible presence of, and potential impacts to, the above listed species, other wildlife, and their habitat within the project vicinity.

Table 3.9: Manatee Protection Zones

Location	No. of Zones	Zone Types
Miami-Dade County	16	Idle speed
Broward County	22	50 foot slow speed buffer (Hillsborough Canal)
Palm Beach County	152	25mph in channel, slow speed outside channel
Martin County	3	Slow speed outside channel, 25mph max in channel
Total	193	-

Source: Florida Marine Research Institute (FMRI, 1998), now Fish and Wildlife Research Institute (FWRI)

In addition, over 40 natural habitats classified as managed conservation lands by the Florida Natural Areas Inventory (FNAI) exist within the SFECCTA study area. These areas are listed in **Table A.14** (see **Appendix A**). While several beach areas that could be considered light sensitive areas are included in **Table A.14** (e.g., Oleta River State Park, John U. Lloyd Beach State Park, Jupiter Beach Park, Jupiter Inlet Natural Area, Jonathan Dickinson State Park, or Blowing Rocks Preserve), none of them are close enough to the project corridor to be affected by additional lighting.

- **Essential Fish Habitat:** Essential Fish Habitat (EFH) is defined in the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The proposed project will involve EFH at certain waterway crossings such as Biscayne Bay, canals, rivers (i.e., Miami River, Little River, New River, etc.), creeks (Little Snake Creek, Arch Creek, etc.). **Table 3.10** identifies the types of EFH found in the SFECCTA study area.

One Habitat Area of Particular Concern (HAPC) has been identified within the SFECCTA study area by the NMFS. The South Atlantic Fishery Management Council (SAFMC) has specifically designated mangrove, seagrass, sand/shell bottom, sponge, algal bed, coral, and hard bottom habitats within Biscayne Bay as EFH and Biscayne Bay as a HAPC[5]. The HAPCs are described as subsets of EFH which are rare, particularly susceptible to human-induced degradation, especially ecologically

[5] Letter from Southeast Regional Office NMFS to FDOT District 4 in response to review of DPEIS, dated December 8, 2006 (see **Appendix E**).

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important, or located in an environmentally stressed area. The other nearest geographically defined HAPCs identified in the Fishery Management Plan Amendment of the Gulf of Mexico Fishery Management Council is the Florida Keys National Marine Sanctuary.

Table 3.10: Essential Fish Habitat

Estuarine Areas	Marine Areas
Estuarine emergent wetlands	Live bottoms
Mangrove wetlands	Coral reefs*
Submerged aquatic vegetation	Artificial/manmade reefs**
Algal flats*	Sargassum*
Mud, sand, shell, and rock substrates	Water column
Estuarine water column	Non-vegetated bottoms
	Vegetated bottoms

Source: Essential Fish Habitat: A Marine Fish Habitat Conservation Mandate for Federal Agencies, Gulf of Mexico Region, February 2002 (**Appendix 4**) www.nmfs.noaa.gov/habitat/habitatprotection/profile/gomEFHguide.pdf
* Low likelihood habitats to occur in study area but will be determined in Phase 2 sectional studies
** Potential for Biscayne Bay or Lake Worth Lagoon artificial sites within extreme eastern edge of study area, but no SFECCTA alignments cross the bay.

3.9.2 Environmental Consequences

- **Wetlands:** The wetlands GIS analysis was conducted for a buffer width of 800 feet (400 feet from centerline of railway or roadway alignment) to approximate the wetland area (acres) found within the buffer area. None of alternatives included waterway crossings into the POM, PEV or PPB. The resulting numbers of acres from the NWI dataset are presented in **Appendix A**, **Table A.19**. This information also served as criteria for the alternatives evaluation in **Section 5.1.2**, Comparative Benefits and Environmental Effects. Approximately 13 to 226 acres of wetlands were found within the 800 feet buffer. These values do not represent a quantification of potential impacts but rather a range of wetland acres within the buffer area. The following is a summary of wetland area found immediately adjacent to and/or within each alignment's right-of-way:
- FEC Railway right-of-way: 30 acres
- I-95 alongside the eastern right-of-way: 31 acres
- US-1: 10 acres adjacent to eastern right-of-way and 11 acres adjacent the western right-of-way

The wetlands of primary concern are those associated with waterway crossings. New bridge construction, replacement, or widening would undergo detailed analysis to ensure avoidance and minimization measures are taken into consideration during design phase(s) and where applicable mitigate any unavoidable impacts to the resource if determined to be the preferred approach by the appropriate regulatory agency. **Figures A.18 – A.21** show these and other waterway/wetland related features for each of the project alternative sections. Typically for NEPA documentation of the EIS, EA, CE-II, or SEIR level, a Wetland Evaluation Report (WER) would be generated and circulated to the regulatory agencies for review and comment. It is anticipated a WER or other appropriate assessment (e.g., a Wetlands Technical Memorandum for a CE-II project with no wetland involvement) will be circulated with each individual project section study.

Advance Notification comments from the FDEP, USFWS, and NMFS through the ETDM process regarding wetlands included the need to identify potential involvement with wetlands, the need to avoid, minimize, or mitigate wetland impacts, and the potential for involvement with EFH. The FDOT Summary Response to the ETAT reviewers from these agencies agreed with and confirmed the degree of effect for wetlands as "moderate" effect. The FDOT response included employing avoidance and minimization measures during future phases of the project study with final design of the project avoiding or minimizing wetland impacts to the greatest extent practicable and appropriate mitigation will be provided for unavoidable wetland impacts. Close coordination with ETAT agencies will continue throughout Phase 1 and Phase 2 of the project to further avoid impacts to these resources.

- **Endangered and Threatened Species:** It is anticipated that potential impacts to the above listed species may be greatest due to new bridge construction, bridge replacements, or bridge widening. For those projects that are promoted as a result of Phase 1 to be studied in the Phase 2 independent NEPA studies, detailed analysis of potential impacts to listed species or their habitat, including avoidance, minimization and mitigation considerations, will be conducted. Typically for NEPA documentation of the EIS, EA, CE-II, or SEIR level, an ESBA would be generated and circulated to the regulatory agencies for review and comment. It is anticipated that an ESBA or other appropriate assessment (e.g., an Endangered Species Technical Memorandum for a CE-II project with no substantial or significant potential for involvement with listed species) will be circulated with each individual project section study.

  No light sensitive wildlife areas have been identified in close proximity to the proposed project (i.e., sea turtle nesting sites). New lighting along the project corridor will be most prominent along an exclusive busway if BRT is selected in Phase 2 and/or at station areas due to new parking facilities, greenway and/or bicycle/pedestrian paths, and platform areas. Should light sensitive wildlife areas be discovered along the project corridor during Phase 2 studies, lighting treatments may include surface-level or low-level bollard lights (potentially low-sodium wavelength) that can be shielded to contain the light primarily on the surface to be lighted.

  Advance Notification comments received from the USFWS, NMFS, and FWC through the ETDM process regarding potential wildlife and habitat effects included, the need to identify the potential to affect valuable marine habitats such as seagrass beds and the occurrence of the endangered West

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Indian Manatee habitat. In addition, the project is located within the Core Foraging Area of the protected Wood Stork. The project would provide compensatory mitigation for any wetland impacts in Core Foraging Areas if determined to be the preferred approach by the appropriate regulatory agency. An ESBA will be prepared to address the potential impacts to endangered species including the West Indian Manatee and Wood Stork.

In response to these comments, the FDOT assigned an overall degree of effect for wildlife and habitat as “substantial”. The ETAT comments had “substantial” effect only for Palm Beach County alternative alignments due to significantly more undeveloped land and natural areas as compared to those in Miami-Dade or Broward Counties. The FDOT response includes employing avoidance and minimization measures during future phases of the project study with the final design of the project avoiding or minimizing impacts to habitats such as wetlands to the greatest extent practicable and appropriate mitigation will be provided for unavoidable impacts. Close coordination with ETAT agencies will continue throughout Phase 1 and Phase 2 of the project to further avoid impacts to these resources.

- **Critical Habitat (CH):** It is anticipated that there may be potential impacts to those USFWS designated CH portions of Miami-Dade, Broward, and Palm Beach Counties for the Everglades Snail Kite and West Indian Manatee. West Indian Manatee habitat would most likely be impacted in areas that may require new bridge construction, bridge replacements, or bridge widening. These may include those waterways and water bodies within the SFECCTA study area that are also listed as Manatee Protection Zones (Idle Speed/No Wake Zones), including the Miami River, Arch Creek, Biscayne Bay, Hillsboro Canal, and numerous other stretches of ICWW or canals. For those projects that are promoted as a result of Phase 1 to be studied in the Phase 2 independent NEPA studies, detailed analysis of potential impacts to CH will be included in the ESBAs, Endangered Species Technical Memoranda or may be summarized in the NEPA document as having no impacts (possible for small sectional studies entirely within urban areas with no waterway crossings).

- **Essential Fish Habitat:** There is the potential for EFH involvement by SFECCTA alternatives that involve waterway crossings of Biscayne Bay, canals, rivers (i.e., Miami River, Little River, New River, etc.), creeks (Little Snake Creek, Arch Creek, etc.). As with listed species and CH above, it is anticipated that potential impacts to EFH may be greatest where new bridge construction, bridge replacements, or bridge widening is required. The proposed transit improvements that would be studied in Phase 2 may be located within existing right-of-way which would not eliminate concerns but may reduce the potential impacts. Where existing railway bridges cannot be utilized, new designs may include solid decks to catch freight spillage and divert stormwater runoff to nearby drainage treatment structures or facilities (e.g., retention ponds). Coordination with the NMFS will continue on EFH throughout both Tiers of this study.

In response to the AN through the ETDM process, the NMFS indicated that the potential existed for the SFECCTA alternatives to have a “moderate” effect on valuable marine habitats such as seagrass beds and habitat of the endangered West Indian Manatee.

The NMFS ETAT review noted that proposed alternatives cross several river and canal systems that drain into EFH and into habitat used by species listed under the Endangered Species Act (ESA). Construction activities, stormwater runoff, and cumulative impacts associated with the proposed project may directly and indirectly impact these habitats by degrading water quality. CH for Johnson’s seagrass and mangroves are of particular concern because these habitats support both federally listed endangered smalltooth sawfish and Federally managed species. The NMFS reviewer also requested that complete detailed project description of the construction activities and seagrass surveys should be provided so adequate measures and analysis can be advised to prevent adverse impacts to Johnson’s seagrass.

In response to these comments, the FDOT agreed with and confirmed the degree of effect for coastal and marine to be “moderate” since parts of the proposed rail system would cross streams, canals, and riverine habitat that drain to estuarine areas. The final design for the project will avoid or minimize wetland impacts to the greatest extent practicable and appropriate mitigation will be provided for unavoidable wetland impacts. If impacts to wetlands are anticipated in the final design of any proposed transit project, a mitigation plan will be prepared for NMFS and other resource agency review, prior to project approval. In addition, since Federally listed species are present in or may migrate through the project area, and the project and related construction may impact these species and EFH; a biological assessment/evaluation (BA/BE) for the Federally listed species, and an EFH assessment will be conducted. According to NMFS recommendation in a December 8, 2006 comment letter on the DPEIS review (enclosed in **Appendix E**), FDOT will contact NMFS to obtain the BA/BE list of construction measure guidelines and provisions to minimize impacts to ESA-listed species, and an ESA initiation package template, with the possible initiation of a Programmatic EFH Consultation and formal Section 7 consultation pursuant to the ESA, as necessary and applicable.

3.10 Natural Resources

3.10.1 Affected Environment

- **Aquatic Preserves and Outstanding Florida Waters:** The Biscayne Bay Aquatic Preserve is located in the southern portion of the project study area adjacent to the eastern shore of Miami-Dade County’s mainland. There are two potential crossings of this aquatic preserve (AP) that will be considered in the SFECCTA, one at the POM and another crossing of the Oleta River. The Loxahatchee River - Lake Worth Creek Aquatic Preserve is located within the northern limits of the study area in Palm Beach County and is crossed in that portion of the study area extending north from Jupiter towards a potential

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rail yard siting in northern Palm Beach County or extreme southern Martin County (see **Figures A.22 – A.25** in **Appendix A**).

All waters of Biscayne Bay are classified as Outstanding Florida Waters (OFW). In addition, other OFW are involved at the Loxahatchee River. However, this project poses limited potential for OFW involvement because the corridor crosses Biscayne Bay OFW only at the POM and the Oleta River, and the corridor will only cross the Loxahatchee River if a rail yard is sited in Palm Beach County north of SR 706/Indiantown Road or in southern Martin County. The majority of the 85 miles of SFECCTA corridor are entirely outside of OFW (see **Figures A.22 – A.25** in **Appendix A**).

- **Water Quality:** Pursuant to Section 1424(e) of the Safe Drinking Water Act (PL 93-523), EPA has determined the Biscayne Aquifer, including its respective recharge and stream-flow source zones, are sole or principal sources of drinking water for public supply systems and individual wells in designated areas of Florida. Once an area is designated, no subsequent commitments of Federal financial assistance may be made to projects that the EPA Administrator determines may contaminate the aquifer so as to create a significant hazard to public health. Any level of contaminant which causes or may cause the aquifer to exceed any maximum contaminant level set forth in any promulgated National Primary Drinking Water Standard at any point where the water may be used for drinking purposes or which may otherwise adversely affect the health of persons, or which may require a public water system to install additional treatment to prevent such adverse effect may be determined by EPA to create a significant hazard to public health. To ensure compliance with the Safe Drinking Water Act, a Memorandum of Understanding (MOU), executed on January 25, 1999 between the EPA and FDOT[6], identifies the types of proposed projects which will be forwarded to EPA for evaluation and comment, and outlines the procedures to be followed by EPA, FHWA, and FDOT in evaluating and commenting on proposed activities.

  Miami-Dade, Broward, and the southern portion of Palm Beach Counties, are all underlain by the Biscayne Aquifer, the sole source of potable water for most of Southeast Florida. The Northwest and West Wellfields principally supply potable water for Miami-Dade County, with other smaller well fields closer to the SFECCTA study area in northeast Miami-Dade County, as well as in Broward and southeast Palm Beach Counties (see **Figures J.11 – J.23** in **Appendix J**).

- **Wild and Scenic Rivers:** The Loxahatchee River - Lake Worth Creek AP is located within the northern limits of the study area and is crossed in that portion of the study area extending north from Jupiter towards a potential rail yard in northern Palm Beach County or extreme southern Martin County (see **Figure A.25** in **Appendix A**). However, the Wild and Scenic designated portion of the Loxahatchee River is not within the project limits but lies further west of the SFECCTA study area.

[6] http://www.epa.gov/safewater/sourcewater/pubs/mou2app.pdf

- **Floodplains and Regulatory Floodways:** According to the Federal Emergency Management Agency (FEMA) GIS Floodplains layer (FEMA96), and Flood Insurance Rate Maps (FIRM), the study area falls both within and outside of special flood hazard areas (100 year, floodplain). The SFECCTA areas lying within the special flood hazard areas correspond to drainage basins of rivers, creeks, and canals (see **Figures A.26 – A.29** in **Appendix A**). There are significantly greater areas where the proposed project corridor traverses base floodplains in Broward and Palm Beach Counties than in the Miami-Dade County portion of the study area. There is no involvement with regulatory floodways in Miami-Dade, Broward or Palm Beach Counties. However, numerous waterway crossings do occur, including rivers, creeks, and 16 SFWMD canals, as shown in **Table A.15** in **Appendix A**.

- **Coastal Zone Consistency:** A Coastal Consistency Review is required (per 15 CFR 930) since the project is anticipated to use Federal funds. However, the majority of the 85 miles of SFECCTA corridor are entirely outside of coastal waters and adjacent shore lands. The FDEP, Office of Intergovernmental Programs, determined that the project is consistent with the Florida Coastal Management Program (FCMP) based upon their review of the project AN.

- **Coastal Barrier Island Resources:** Several Coastal Barrier Resources are located within the SFECCTA study area, including three identified in **Table 3.11**. The entire SFECCTA study area and potential planned alternative improvement routes are located entirely on the mainland and not likely to involve these resources (see **Figures A.22 – A.25** in **Appendix A**).

Table 3.11: Coastal Barrier Resource Units

County	Unit (s)	Unit Name
Palm Beach County	15P	Blowing Rocks; Jupiter Beach (also in Martin County)
Broward County	20P	John U. Lloyd Beach

Source: NOAA (1998), USFWS (1990)

- **Farmlands:** A small portion (<1%) of the entire corridor can be categorized as agricultural land (see **Table 3.2**). A large expanse of the corridor is primarily mixed use (urban/commercial/ residential) and most if not all of the agricultural land within the corridor consists of commercial plant. Through coordination with the Natural Resources Conservation Service, it has been determined that the project study area which is located primarily in the urbanized area of Miami-Dade, Broward, and Palm Beach Counties does not meet the definition of farmland as defined in 7 CFR 658. Therefore, the provisions of the Farmland Protection Policy Act of 1984 do not apply to this project.

3.10.2 Environmental Consequences

- **Aquatic Preserves and Outstanding Florida Waters:** Although the Biscayne Bay AP is adjacent to the southern project study area, the most likely effect would be from potential crossings of canals and waterways that discharge to this and other AP's along the corridor. There are two crossings of the Biscayne Bay AP that will be considered in the SFECCTA, one at the POM and another crossing of the Oleta River. The Loxahatchee River - Lake Worth Creek AP is outside the limits of the proposed northernmost alignments. However, it is hydrologically connected to the study area. Potential impacts to the Loxahatchee as a result of transit improvements will be assessed in Phase 2.

  In response to the AN description of potential impacts to AP (through the ETDM process) the FHWA ETAT reviewer for "Special Designations" considered the potential impacts as "substantial". The FDOT Summary Response agreed with the ETAT reviewer from FHWA. Furthermore, the summary response states that FDOT will follow the procedures as outlined in Part 2, Chapter 19 of the Project Development and Environment (PD&E) Manual regarding projects located in aquatic preserve: 1) Special notation on the Class of Action Request; a determination of involvement with a designated Aquatic Preserve; coordination with FDEP; proper documentation; 2) Section 4(f) applicability; an assessment of impacts and the proper statement stating the project will not have an impact on the Biscayne Bay AP or the Loxahatchee River – Lake Worth Creek AP. In addition, FDOT will implement BMP for erosion, turbidity, and other pollution control to prevent violation of State water quality standards.

  The majority of the study area is entirely outside of OFW. The impact of the alternatives being considered will therefore be minimal. However, if an alternative is selected that would require crossing the Loxahatchee River, an analysis of the alternative's impact on this OFW will be detailed in Phase 2.

In response to the AN description of potential OFW effects, the FHWA ETAT reviewer for "Special Designations" identified through the ETDM process the potential to affect OFW. The FDOT Summary Response to the ETAT reviewer from this agency agreed with and confirmed the degree of effect for Special Designations as "substantial". Furthermore, the summary response states that FDOT will implement BMP for erosion, turbidity, and other pollution control to prevent violation of State water quality standards.

- **Water Quality:** The proposed stormwater facility designs will include, at a minimum, the water quantity requirements for the water quality impacts as required by local codes such as Chapter 24, Section 24-58 of the Miami-Dade County code and State codes such as 40E-4, Florida Administrative Code (FAC). The Miami-Dade County requirements meet or exceed the State of Florida water quality and water quantity requirements (applicable for portions of the SFECCTA in Miami-Dade County). For areas of the SFECCTA outside of Miami-Dade County, coordination with the SFWMD will take place in accordance with the FAC and the Environmental Resource Permit (ERP) Basis of Review Manual as well as the Broward County Environmental Protection Department (BEPD), Palm Beach County Department of Environmental Resources Management (PBERM), and Martin County Office of Water Quality (OWC). Coordination with other local entities such as water control districts will also be considered. Where local, State or Federal permits will be required, the need for a Clean Water Act, Section 401 Water Quality Certification will be considered (during Phase 2 NEPA sectional studies). Therefore, it is anticipated that water quality within the project area will improve due to the proposed stormwater treatment measures.

Comments received, as a result of the ETDM GIS analysis, from the FHWA and FDEP ETAT reviewers indicate that Jonathan Dickinson State Park and the Loxahatchee River are within one mile of the proposed rail project. The Loxahatchee River is designated as the Loxahatchee National Wild and Scenic River. Aquatic preserves, State parks, and wild and scenic rivers are listed as OFW under Section 62-302.700(9) FAC. and therefore, the FDOT confirmed the degree of effect assigned to water quality and quantity to be "substantial". The proposed stormwater system would meet the design and performance criteria established for the treatment and attenuation of discharges to OFW under Rule 40E-4, FAC. and the SFWMD Basis of Review for ERP applications. In addition, FDOT will implement BMP for erosion, turbidity, and other pollution control to prevent violation of State water quality standards. Construction impacts and operational (stormwater drainage management) effects on water quality will be managed through FDOT design and construction standards. Water quality impacts resulting from erosion and sedimentation will be controlled in accordance with FDOT Standard Specifications for Road and Bridge Construction and through the use of BMP. The EPA commented to the AN for the project that since the project area lies within the boundaries of the Biscayne Aquifer system, they found "no significant impact" to this surficial sole-source aquifer on the expectation that the project will adhere to all Federal, State and local government rules and regulations and will follow BMP.

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The primary core alignments (I-95, US-1, FEC Railway) all encroach on several wellfield protection zones throughout the project study area (see **Table J.6** and **Figures J.11 – J.23** in **Appendix J**, with **Figure J.13** providing a key sheet for Palm Beach County wellfields). Wellfield zones are delineated by computer models and depict the time it takes a theoretical contaminant to travel from the point it enters the ground to a supply well. These zones are illustrated on the maps and described in the legend.

- **Wild and Scenic Rivers:** The section of the Loxahatchee River designated as a wild and scenic river (WSR) is found west of the study area therefore, none of the alternatives will impact WSR. In response to the AN description of potential WSR effects (through the ETDM process), the FHWA ETAT reviewer for “Special Designations” identified the potential for the project to affect WSR. The FDOT Summary Response to the FHWA ETAT reviewer agreed with and confirmed the degree of effect for Special Designations as “substantial”. Furthermore, the summary response stated that FDOT will implement BMP for erosion, turbidity, and other pollution control to prevent violation of State water quality standards.

- **Floodplains and Regulatory Floodways:** All the alternatives will be analyzed for their individual impact to existing floodplains and regulatory floodways during the Phase 2 analysis. Due to the presence of existing canals, rivers, creeks and drainage basins throughout the study area, it is probable that all alternatives will cross or impact these resources. However, most of the alternatives are along existing alignments such as I-95 and US-1 where urban development currently exists. Therefore, these alternatives have the potential to impact existing floodplains and floodways less than those alternatives along the FEC Railway corridor. Executive Order (EO) 11988 requires Federal agencies to avoid the direct or indirect support of floodplain development whenever there is a practicable alternative; therefore the SFECCTA has coordinated with FEMA and will incorporate the objectives of EO 11988 in the study.

- **Coastal Zone Consistency:** Since the study area is outside of the coastal waters and adjacent shore lands, none of the proposed alternatives will impact coastal areas.

- **Coastal Barrier Island Resources:** None of the improvement alternatives will negatively impact coastal barrier island resources.

- **Farmlands:** The study area has little or no farmlands as officially designated under the Farmland Protection Policy Act, only minimal land use designations for agriculture, consisting primarily of commercial plant nurseries. Therefore, the alternatives will not negatively impact designated farmland resources.

3.11 Contamination and Hazardous Materials

3.11.1 Affected Environment

A preliminary GIS-based survey for hazardous material generators and/or potentially contaminated properties was conducted for the project. Phase 2 studies are also anticipated to include Contamination Screening Evaluation Reports or Technical Memoranda, building upon this Phase 1 screening. Based on a review of the National Priority List (NPL)/Superfund Site, Solid Waste/Dump Site, Brownfield, EPA Toxic Release Inventory Site, and Petroleum UST GIS data layers publicly available from the FGDL, approximately 3,348 potential contamination sites (including 9 Superfund, 3,035 underground storage tanks (UST), 10 Brownfield sites/areas, 80 solid waste sites, 160 hazardous materials sites, 54 toxic release inventory sites) are potentially present throughout the entire SFECCTA study area (2 mile wide). As indicated previously, these numbers will be significantly less in Phase 2 studies since only a 50 foot footprint will be required for any transit alignment.

Environmental features such as faults, karst, sinkholes, aquifer recharge areas, soils, and subsidence zones that may affect water quality through groundwater contamination will be addressed in greater detail in Phase 2 sectional NEPA studies. A preliminary search of a Florida Sinkhole Research Institute database (2006) produced two, temporary man-made sinkholes within the study area along NW/NE 38th Street in Oakland Park, FL (Broward County). These man-made sinkholes were caused by inundation from a broken water main and a dislodged fire hydrant.

The results of the GIS screening for potential contamination concerns within the study area are found in **Figures A.30 – A.33** (**Appendix A**) and **Tables A.16 – A.17**. Superfund Sites are listed in **Table 3.12**. Note that for the survey of potential contamination and hazardous materials sites, the study area was based on a buffer distance of 1.25 miles on either side of the FEC Railway centerline for NPL/Superfund and Solid Waste/Dump data layers.

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Table 3.12: Superfund Sites (1.25 mi Buffer)

Name	Address	County	NPL Status
Varsol Spill	Miami INTL Airport	Miami-Dade	Deleted
Airco Plating Co.	3636 NW 46th Street	Miami-Dade	Final
Anaconda Aluminum CO./Milgo Electronics Corp.	3630 NW 76th Street	Miami-Dade	Deleted
Munisport Landfill	NE 152nd St. & Biscayne Blvd.	Miami-Dade	Deleted
Chemform. Inc.	1410 SW 8th St.	Broward	Deleted
Hollingsworth Solderless Terminal	700 NW 57th Pl.	Broward	Final
Wilson Concepts of Florida, Inc.	1408 SW 8th St.	Broward	Deleted
BMI-Textron	1121 Silver Beach Rd.	Palm Beach	Final
Trans Circuits, Inc.	210 Newman Rd.	Palm Beach	Final

Source: Florida Geographic Data Library 2002

3.11.2 Environmental Consequences

A GIS alternatives analysis for potential hazardous materials/contamination sites was conducted utilizing an 800 feet buffer width (400 feet from either side of the centerline of the railway or roadway alignment).

The results are shown in **Table A.18**. An additional alternatives analysis was conducted for Superfund and solid waste sites with an overall buffer width of 1 mile (0.5 mile from either side of the centerline of the railway or road alignment). The results are shown in **Table A.23**. These data results were utilized as a criterion for the alternatives evaluation in Chapter 5, Evaluation of Alternatives (see **Table 5.3** in the Oversize Matrix pullout chart).

Furthermore, an independent report from Environmental Data Resources, Inc. (EDR) was obtained for a buffer width of 2.0 miles and 2.5 miles for Superfund and Solid Waste/Landfill Sites (1.0 and 1.25 miles on either side of the FEC Railway, respectively). The EDR report is on file at the FDOT Office of Planning and Environmental Management (PL&EM) and is also available upon request. A portion of this report listing the databases utilized by EDR has been included as **Table J.5** in **Appendix J**.

As a result of the ETDM GIS analysis, and comments received from the FHWA and the FDEP ETAT reviewers, potential contamination and hazardous materials sites have been identified throughout the entire SFECCTA project study area. The FDOT Summary Response to the ETAT reviewers was that the potential effect of contaminated sites was determined to be “moderate“. Based on this information, potentially contaminated sites may exist within the FEC Railway corridor itself. Furthermore, the FDOT responded that per FDOT procedures, a level one contamination screening as part of Phase 2 NEPA studies will be conducted (this will build upon the Phase 1 contamination screening documented herein). The Phase 2 studies are anticipated to include Contamination Screening Evaluation Reports or Technical Memoranda to identify any potential contamination that may exist and rank the sites based on a rating of No, Low, Medium or High. Sites identified as High or Medium will be avoided to the greatest extent possible. In the event contamination is detected during construction, the FDEP, Miami-Dade County

Department of Environmental Resources Management (DERM), PBERM, Palm Beach County Health Department and BEPD will be notified.

3.12 Other Impact Areas Identified in Scoping (Navigation, Railroad-Highway Grade Crossing Safety, Construction Impacts, etc.)

3.12.1 Affected Environment

A scoping process was initiated in Phase 1 of the SFECCTA, and will continue in Phase 2 (see Section 2.1 Screening and Scoping of Alternatives and Section 7.1 Scoping Comments and Results). Many of topics discussed and questions posed by members of the general public, elected officials or representatives, and agency staff, are discussed in other sections of this document (e.g., noise and vibration). Other key issues that are not covered in other sections are outlined below:

- **Navigation:** A total of seven navigable waterways are crossed by the FEC Railway within the SFECCTA study area. Some alternatives include the potential to cross the ICWW at the POM, as well as the potential to cross navigable portions of the Miami River/Canal, Little River, Oleta River, the New River, the Lake Worth Lagoon and, the Loxahatchee River. However, many of these waterways' navigable extents are downstream of the likely crossing locations for SFECCTA alternatives. The Loxahatchee River crossing was brought up as a particular concern during the Palm Beach County Scoping due to the heavy navigational use by the community. The decision on crossing the Loxahatchee River will not be known with certainty until Phase 2, in particular decisions related to O&M facility siting and modal technologies. Other waterway crossings included numerous non-navigable canals as shown in **Table A.15** in **Appendix A**.

- **Transitway-Highway Grade Crossing Safety:** The FEC Railway has at least 202 transitway-highway grade crossings (see **Figure J.2** in **Appendix J**) within the project study area and possibly more if connections to other rail lines, airports and seaports are selected. Issues discussed by the public at the scoping meetings included noise from train horns, safety, consolidation (i.e., closing) of transitway-highway grade crossings, and the possibility of elevating or depressing the passenger and freight facilities at crossing or the roads themselves. In addition, the needs to have a program of transitway-highway grade crossings consolidation was identified so that local communities could be involved in the process while the study proceeds into Phase 2 where these decisions can be effectively pursued.

3.12.2 Environmental Consequences

- **Navigation:** There is little likelihood of directly utilizing navigable waterways for transit purposes (i.e., via water bus, high speed or conventional ferry boats, other alternative water-borne transit modes). The exact number and type of waterway crossings to be utilized by the LPAs selected will be determined and evaluated individually in Phase 2 sectional NEPA studies. There is potential for new

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bridge crossings and widening and/or reconstruction of existing bridges over navigable (and non-navigable) waterways that will be further analyzed in Phase 2. Existing bridge facilities may feasibly be utilized, but the exact locations, suitability, and adequacy of structural integrity will be assessed as part of individual sectional engineering studies during Phase 2. There was no ETAT comment for navigation in the EST in response to the AN. However, the FDOT Summary Response to the ETAT for navigation assigned a “minimal” degree of effect, noting that although there are navigable water crossings in the project area, the project will avoid or minimize impacts to navigation to the greatest extent practicable.

One preliminary assessment has determined that should a FEC Railway crossing of the New River in Downtown Ft. Lauderdale be necessary, various crossing methods (i.e., mid-level bascule, high-level fixed bridge, and tunnel) will be considered as options in the immediate vicinity of the existing low-level bascule bridge over the river. These crossing options will be studied to reduce the number of new openings and improve navigation on that navigable waterway. Similar evaluations may be necessary for crossing the Loxahatchee River with a high-level fixed bridge and/or new low-level bridges for other locations as a program of navigable crossing studies are implemented in Phase 2 during individual NEPA sectional studies. It should be noted that crossing the Loxahatchee River was primarily studied to determine the potential for locating a rail yard north of it. Initial findings indicate that crossing this river may not be necessary for the alternatives being considered. No alternative crossing the existing FEC Railway Bridge over the ICWW to the POM has been included in Phase 1. These Phase 2 studies will necessarily include determinations under 23 CFR 650, Subpart H, Section 650.805, regarding whether or not USCG permits are required.

Figures A.22 – A.25 in **Appendix A** show natural resources including navigable waterways (defined as navigable for interstate commerce) for the initial alternatives evaluated for the SFECCTA. There are likely to be fewer FEC Railway crossings of navigable waterways than for transit alternatives considered along US-1. This is due to the fact that the low-level bridges along US-1 (such as for Biscayne Boulevard in Miami-Dade County and Dixie/Federal Highway in Broward County) are the points at which navigable access up river or upstream is blocked on those waterways. Low-level bridges carrying roadway traffic will not likely require to be replaced with high-level bridges solely to accommodate transit services along these roadway arterials. However, new transit service along the FEC Railway over navigable waterways would likely require new high-level fixed bridges (typically with bridge “underdeck” elevations of at least 55 feet above Mean High Water level of the navigable waterway) for new transit service tracks crossing those navigable waters. Less likely crossing scenarios that will be assessed include new mid- or low-level bascule bridges or tunnels to carry transit services across these waterways.

In some instances such as the New River or Loxahatchee River, no impacts to navigation would occur from premium transit services utilizing high-level fixed span bridges at these FEC Railway crossing locations. The existing FEC Railway crossings currently produce relatively infrequent (compared to transit service schedules) impacts to navigation as a result of freight train crossings of low-level bascule bridges that must be lowered for each train. These existing rail bascule bridges are generally kept in the upright position until freight trains approach thus presenting no obstruction to navigation except during freight runs or maintenance operations. New high-level fixed span bridges are not anticipated to be built for FEC Railway freight tracks. However, studies of existing and proposed FEC bridges (see Existing Structures Characteristics Report) will become integral parts of Phase 2 analyses and will be considered for each independent NEPA assessment of the sectional transit studies in the SFECCTA corridor that will include navigable waterway crossing(s).

The following discussion is provided to further clarify the potential Loxahatchee River and New River crossings:

- Loxahatchee River crossing for rail yards/passenger service maintenance facility site – While no decisions on maintenance facility locations have been made in Phase 1, a maintenance facility north of the Loxahatchee River remains one of the possibilities that will be studied in greater detail in Phase 2. However, it is one of several location opportunities that will be available for study, some of which would not involve crossing the Loxahatchee River or creation of other such "non-revenue trackage" (i.e., apart from or outside the projected transit service alignment).

- New River crossing by SFECC Transit – A new, fixed span high-level transit bridge or tunnel crossing is anticipated across the New River in downtown Ft. Lauderdale due to the frequency and scheduling of passenger service compared to freight trains. However, this decision will require detailed analysis of freight and transit service needs and the structural integrity of the existing FEC Railway bascule bridge which will be conducted in Phase 2. Freight trains could also benefit from a new high-level fixed bridge or tunnel if transit and freight share infrastructure.

➢ **Transitway-highway Crossing Safety:** The FEC Railway would benefit from fewer numbers of transitway-highway grade crossings that may result from a grade crossing consolidation program from a freight movement perspective. However, public safety would also improve. The effect would likely be beneficial from a noise perspective as well. Adverse effects would primarily and foremost be to the local communities by interfering with local traffic patterns, creating perceived or actual delays in access to emergency facilities/first responders, schools, religious facilities and other community facilities. Environmental Justice issues regarding direct or ICE that may result from further splitting of neighborhoods and communities in the vicinity of the proposed transit corridor(s) will be an important issue to consider if transitway-highway grade crossings will potentially be consolidated as a result of

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providing new premium transit services. These concerns will be part of the socio-cultural effects evaluations in Phase 2.

3.12.3 Construction Impacts

Construction activities along any of the proposed transit alignments and station areas will have temporary air, noise, vibration, water quality, traffic flow, and visual impacts (including lighting) for those residents and travelers within the immediate vicinity of the project.

The air quality impacts will primarily be in the form of emissions from diesel-powered construction equipment and dust from embankment and haul road areas. Air pollution associated with the creation of airborne particles will be effectively controlled through the use of watering or the application of other controlled materials in accordance with the latest edition of the FDOT's *Standard Specifications for Road and Bridge Construction* and BMP as directed by the FDOT Project Engineer.

Noise and vibrations impacts will be from the heavy equipment movement and construction activities such as pile driving and vibratory compaction of embankments. Noise control measures will include those contained in the latest edition of the FDOT's *Standard Specifications for Road and Bridge Construction* in addition to any recommendations made in the noise and vibration impacts section of Phase 2 SFECCTA documents. Adherence to local construction noise and/or construction vibration ordinances by the contractor will also be required where applicable.

The existing roadway drainage will likely be disrupted during construction. Temporary erosion control measures may consist of grassing, hay bales, mulching, silt fences, turbidity curtains, sandbagging and other measures to control run-off and erosion.

Water quality impacts resulting from erosion and sedimentation will be controlled in accordance with the latest edition of the FDOT's *Standard Specifications for Road and Bridge Construction* and through the use of BMP.

Maintenance of traffic and sequence of construction will be planned and scheduled so as to minimize traffic delays throughout the project. This generally requires working at night. Residents living along the project corridor will experience temporary impacts from increased noise levels and additional lighting from night worksites. Signs will be used as appropriate to provide notice of road closures and other pertinent information to the traveling public. The local news media will be notified in advance of road closings and other construction-related activities which could excessively inconvenience the community so that motorists, residents, and business persons can plan travel routes in advance.

Access to all businesses and residences will be maintained to the extent practical through controlled construction scheduling. Residences and businesses will also be affected by increased traffic congestion during stages of construction where narrow lanes may be necessary. Traffic delays will be mitigated to the extent possible through the use of BMP.

Construction of the transit/railway alignments may require excavation of unsuitable material (muck), placement of embankments, and use of materials, such as limerock, asphalt, ballast rock with rail ties, and cement concrete. Disposal of muck material may be on-site in detention areas or offsite. For the residents living along the alignment right-of-way, some of the materials stored for the project may be aesthetically displeasing; however, this is a temporary condition and should pose no substantial problem in the short term. The removal of structures and debris, where necessary, will be in accordance with local and State regulation agencies permitting these operations.

3.13 Summary of Measures for Avoidance, Minimization and Mitigation of Adverse Direct Effects

Direct effects have been identified for the proposed alternatives with respect to transit way alignments and, to the extent possible, for potential station areas. A more cursory analysis was conducted for O&M facility locations. Potential avoidance and minimization measures were developed as part of Phase 1 and have been utilized in the development and initial screening of alternatives. Some of these measures are highly detailed engineering elements and will be further refined and implemented in separate Phase 2 NEPA studies. **Table 3.13** summarizes the ranges of potential impacts to the social and natural environment as well as potential mitigation strategies. These strategies will serve as the basis for developing mitigation plans in Phase 2 NEPA studies.

3.13.1 Avoidance and Minimization of Adverse Direct Effects

The avoidance and minimization measures have been and will continue to be developed for both the transit alignment/route as well as for O&M facility sites, as outlined on the following pages.

<u>Transit Alignment/Route:</u> The transit alignment consists of a linear facility that could be placed either 1) at-grade on embankment, 2) above grade on structure and/or on embankment, or 3) below grade via an open cut section or enclosed tunnel. The physical “footprint” of these transit alignments, for impact assessment, is assumed to be approximately 50 feet in width in terms of a “typical” section. The buffer width for GIS analysis of resources present extended further than just areas necessary to allow for considerations of ICE/secondary impacts, including those of moving the existing freight rail to accommodate the transit rail, with potential for resulting air, noise, vibration and visual/aesthetic impacts, etc. As part of the Phase 1 analyses, the alignment segments with the fewest resources present, and therefore the highest probability of avoidance, were selected for further study. The avoidance and minimization measures for the transit alignment include, but will not be limited to, the following:

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- Utilize as much as possible any pre-existing, available and contiguous right-of-way such as the existing FEC Railway freight corridor, public street corridors, utility corridors or canal/waterway corridors. This was the focus of the Phase 1 alternatives analysis.

- Utilize as much as possible any previously disturbed/developed, low value or non-resource properties/land areas. This will primarily be a Phase 2 activity based on the areas identified in Phase 1 and verified in Phase 2.

- Shift the horizontal alignment east-west (or north-south) or re-route the alignment around or away from any particular environmentally sensitive site(s). This will primarily be a Phase 2 activity.

- Modify the vertical alignment up or down to pass over or under any particular environmentally sensitive site(s). Waterways can be spanned or column supports on elevated sections can be placed to avoid or minimize direct impacts to wetlands and other resources to the maximum extent practicable. This will be a Phase 2 activity.

- Provide grade-separated transitway-highway crossings at qualifying cross streets that are aligned and/or supported to avoid or minimize direct impacts. This will be a Phase 2 activity.

- Narrow the footprint/width of the passenger transit facility at any particularly sensitive environmental site(s). This will be a Phase 2 activity and will include, for example, assessing corresponding shifts in the FEC Railway freight rail facilities to avoid or minimize potential impacts to sensitive environmental sites on the freight side of the FEC Railway corridor.

- Utilize a transit technology that has no or less adverse impacts to any particularly sensitive site(s) and discounting others with environmental fatal flaws. For example, for this corridor HSFs had a fatal flaw due to wake restrictions and protected habitat for the West Indian manatee in Biscayne Bay and along the Intracoastal Waterway where ferries would need to operate. This process of selecting technologies with less environmental impacts was done to the extent possible as part of the Phase 1 screening and scoping of alternatives portion of the alternatives analysis and will continue in Phase 2 (see Section 2.2.3 Alternatives Considered but not Advanced in Phase 1).

- Provide a stormwater management system that avoids and minimizes impacts. This will be done by developing the most appropriate use of right-of-way with the least environmental impact while being cost-effective. More specifically this will include:
    - Utilizing as much as possible deep drainage wells, exfiltration trenches, and/or swale systems that have minimal footprints outside of the transportation corridor right-of-way
    - Following the FDOT Pond Siting Process if stormwater pond systems are required
    - Utilizing pre-existing, available and contiguous right-of-way areas whenever possible

- Utilizing as much as possible previously disturbed/developed, low value or non-resource properties/areas
- Utilizing vacant land/property
- Avoiding placing the stormwater system on or adjacent to contaminated sites
- Avoiding floodplain impacts
- Utilizing publicly available land/property that is compatible with a stormwater management system. For highly urbanized areas compensatory treatment systems will be considered to include both over-treatment (higher level of treatment provided at certain locations along the corridor to offset or compensate for lower levels of treatment at constrained or sensitive locations) and off-site compensation (treatment provided for an existing untreated transportation facility to compensate for untreated portions of the proposed project corridor at constrained or sensitive locations) methods. This will be a Phase 2 activity.

➢ For an electrified transit system, place new infrastructure to avoid and minimize impacts. This will be a Phase 2 activity and will likely include:

- Utilizing pre-existing, available and contiguous right-of-way areas whenever possible
- Utilizing as much as possible previously disturbed/developed, low value or non-resource properties/areas
- Utilizing vacant land/property
- Avoiding placing the electrical system on or adjacent to contaminated sites
- Utilizing publicly available land/property that is compatible with electrical infrastructure

Station and Maintenance Facility Sites: The transit stations and O&M facility locations will require an area of land that will contain all the necessary components of a transit station and/or O&M facility. This includes platform areas, buildings, parking and drop-off areas, stormwater management schemes, etc. The physical footprint of a typical station area will vary from approximately 2 acres to approximately 5 acres depending on several factors (e.g., functionality – larger commuter park-and-ride station vs. small neighborhood stations). The physical footprint of a typical O&M facility area will vary from approximately ½ acre to approximately 2 acres also depending on several factors (e.g., functionality – larger central maintenance facility vs. smaller "end-of-line" overnight siding/minor maintenance facilities). The footprint of the station or O&M facility could include a portion of the alignment right-of-way to minimize impacts outside of the right-of-way. The avoidance and minimization measures for the station and maintenance facility sites both have and will include, but not be limited to, the following:

➢ Place transit stations in transit-orientated development areas with the most intense levels of development; typically commercial and/or mixed use (with some residential components); where major activities are present; where major east-west transportation connections exist; and/or where intermodal connections are present or planned. These locations tend to result in less adverse impacts to the natural environment and result in both positive and negative impacts on the socio-economic and physical environment. This was the focus of Phase 1 station area placement assessment (via a land use suitability analysis) that consisted of ¼ mile radius circles identifying key areas to consider stations within (see Section 2.3.4 Initial Station Suitability and Location Screening). This will be studied in much greater detail during separate Phase 2 NEPA studies.

- Utilize as much as possible pre-existing, available and contiguous right-of-way such as the existing FEC Railway freight corridor, public street corridors, utility corridors or canal/waterway corridors. This will primarily be a Phase 2 activity based on the areas identified in Phase 1 and verified in Phase 2.

- Utilize as much as possible previously disturbed/developed, low value or non-resource properties/areas. This will primarily be a Phase 2 activity based on the areas identified in Phase 1 and verified in Phase 2.

- Utilize publicly available land/property or vacant land that is compatible with a station or O&M facility use. This will be a Phase 2 activity based on the areas identified in Phase 1 and verified in Phase 2.

- Locate the site upstream or downstream from any particularly environmentally sensitive site(s) as applicable to avoid impacts, such as contaminated properties or at waterway crossings. This will be a Phase 2 activity.

- Configure the facility elements such that they are located away from or shielded from any particularly sensitive site(s). This will be a Phase 2 activity.

- Allocate space or size the facility such that it has a minimal footprint and/or is located further away from any particularly sensitive site(s). This will be a Phase 2 activity.

This initial list of avoidance and minimization measures is not intended to be all inclusive. It is a menu of measures available to help refine and further detail viable project alternatives in Phase 2. Detailed evaluation of avoidance and minimization of adverse impacts to environmental features will be conducted on a project-by-project and site-by-site basis during Phase 2 when more detailed alignment and technology-specific alternatives are developed. Unavoidable adverse impacts to resources resulting from the preferred alternative developed during the Phase 2 studies may require the development of specific mitigation measures of regional or local scale in consultation with the applicable regulatory agencies and other project stakeholders.

3.13.2 Mitigation of Adverse Direct Effects

Every effort will be made to avoid and minimize adverse impacts to all environmental resources prior to considering mitigation. Potential mitigation options developed as part of Phase 1 will be further studied, refined and coordinated with the applicable regulatory agencies and the public in Phase 2. Furthermore, mitigation measures will be tailored to each environmental impact category and classified in terms of a specific design feature, or a mitigation activity. Mitigation measures may include but will not be limited to the measures summarized in **Table 3.13**.

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Table 3.13: Potential Direct Effects on Social, Natural and Physical Environmental Resources and Mitigation Strategies

Resource	Potential Direct Effects[7] of Implementing SFECC Transit Services	Potential Mitigation of Adverse Effects[8]
Land Use/ Socio-economic	Land Acquisition: Many cities in the corridor have interests in developing transit services along the SFECC and supporting the associated redevelopment by implementing redevelopment plans including land acquisition initiatives. Displacement and Relocation of Existing Land Uses: FEC Railway freight operations are minimal south of NE 71st Street. The FEC Railway corridor is not heavily used for freight in proximity to the Miami CBD. Land values have increased, outpacing many of the existing industrial land uses in the SFECCTA area. Land uses in the southern Miami-Dade County portion of the SFECCTA may continue to change from industrial, and low density residential, to high density residential and commercial uses. Similar trends can be expected in other localized areas of the corridor. The implementation of a passenger service along the SFECCTA corridor may accelerate displacement and relocation of existing land uses. Many more displacements and relocations are anticipated along the US-1 and I-95 alternative alignments than for the FEC Railway alignments due to the railway right-of-way held by FEC Industries that is considered available for transit service implementation. Community Cohesion: Positive benefits include opening up new inter-community and improved intra-community access from transit stations and transit service along the SFECC. Improved access to jobs, social/government services, recreational opportunities, etc. Adverse effects may include impacts to on-street traffic due to more frequent railway crossings. However, passenger trains are shorter and faster than freight trains so their individual impacts on traffic are less severe. Environmental Justice: Issues include direct or induced displacements/relocations of low-income, minority populations in neighborhoods near or adjacent to station areas that are developed in association with this project. Future land uses: The trends in land use conversion already observed throughout the SFECCTA area are projected to continue, including around the FEC Railway. The area has experienced intense redevelopment pressure, with land uses changing from low to high density residential and commercial centers.	Land Acquisition: Place transit stations in areas most likely to encourage TOD, for example: ➢ Commercial and/or mixed use (typically with some residential components); where major activities are present; where major east-west transportation connections exist; and/or where intermodal connections are present or planned. These locations are typically in urban settings and tend to result in less adverse impacts to the natural environment. However, improvements in these locations may have both positive and negative impacts on the socio-economic environment. ➢ For transitways utilize as much as possible pre-existing, available and contiguous right-of-way such as the existing FEC Railway freight corridor, public street corridors, utility corridors or canal/waterway corridors. ➢ For ancillary facilities such as transit stations or O&M facilities, utilize publicly available land/property compatible with a station or maintenance facility use. Displacements, Relocations and Community Cohesion: Provide equivalent replacement housing and/or financial compensation, utilize barriers or screening (e.g., landscape vegetation), and provide improvements in local access and connections to transportation facilities. Investigate providing at-grade or elevated pedestrian and/or bicycle crossings and greenways in compliance with Americans with Disabilities Act (ADA) requirements wherever possible. Provide special attention along the corridor in Palm Beach County to assure minimal displacement of the existing residential uses since current redevelopment is less prevalent than in the rest of SFECCTA study area. Analyze the need in Phase 2 studies to grade separate (raise either the roadways crossing the transitway or the transitway itself), or close crossings altogether wherever practical, in order to minimize delays to local street traffic in the street networks adjacent to or crossing the SFECC. Each municipality along the SFECC alignment will be coordinated with and these issues studied in greater detail in Phase 2 as part of a program of RR crossings evaluations along the SFECC. Environmental Justice: Provide affordable or workforce housing with support facilities (e.g., childcare or after school care centers) in the vicinity of new station areas. Where applicable and desired by the communities, provide other amenities like community based small businesses or public-private social services (i.e., community libraries, entertainment venues or parks, etc.). Coordinate with community leaders and members to develop noise, aesthetic or traffic mitigation strategies that meet local area needs of low-income minority neighborhoods. Provide employment and training opportunities for construction, maintenance, and operations of the transit system through coordination with local community leaders and/or organizations. Provide financial and technical support for local transit circulator or shuttle systems, either funding directly and/or through joint agreements between local government agencies. Future land uses: Include conservation and preservation elements in transit supportive land use plans that are coordinated with local governments. High and medium density, TOD around planned station areas will be developed in a context sensitive design with vital stakeholder input from the project public involvement process.
Air Quality and Energy	Positive benefits of new mass transit service in the SFECC area include improved regional air quality and a reduction in consumption of natural resources for energy. Fewer automobiles on the roadways will result in reduced emissions not only within the corridor, but regionally as well. Adverse effects may include impacts to sensitive receptors identified through the air quality screening procedure conducted in Phase 1. These impacts may be concentrated at or in the immediate vicinity of proposed transit stations, RR crossings due to increased automotive, bus and truck queuing times, and to a lesser degree at O&M Facility Sites.	More detailed air quality analyses during Phase 2 sectional studies can be undertaken if necessary. The proposed transit improvements are anticipated to have beneficial air quality impacts both locally and regionally by increasing transit use and reducing vehicular traffic. Transit is inherently more energy efficient than travel by Single Occupancy Vehicle (SOV). In the case of electric powered transit technologies, the energy production is primarily conducted away from the congested commuting areas. Regardless of regional benefits of transit on regional air quality, mitigation of the (primarily localized) adverse impacts to air quality will be considered, such as the following: ➢ Mitigation measures in Phase 2 studies and carried on into design phases can potentially include consideration of less

[7] Effects can be positive (i.e., benefits) or negative/adverse (i.e., impacts)
[8] Mitigation measures typically provided for adverse effects (i.e., negative impacts)

Table 3.13: Potential Direct Effects on Social, Natural and Physical Environmental Resources and Mitigation Strategies

Resource	Potential Direct Effects[7] of Implementing SFECC Transit Services	Potential Mitigation of Adverse Effects[8]
	A preliminary assessment of potential air quality sensitive receptors within a ½ mile by 1000 foot-wide rectangular buffer centered on the 130 potential station areas (7 of which are shared between the alternative alignments) include the following: ➢ FEC Railway (63 station areas): 7,000 residential units (111/station average), 1,200 other units (commercial, industrial, institutional, etc.) ➢ US-1 (62 station areas): 10,000 residential units (161/station average), 2,600 other units (commercial, institutional, etc.) ➢ I-95 (5 station areas): 1,000 residential units (200/station average), 40 other units (commercial and industrial)	emissive technologies (such as electric or hybrid electric/diesel locomotion), shifting horizontal alignments or narrowing the footprint and width of the transit corridor away from sensitive receivers. ➢ The use of public transit, and the practice and promotion of sustainable green design building practices are specific actions that can be taken as a result of Florida Governor Charlie Crist's recently (July 2007) signed three executive orders (07-128, 07,127, and 07-126) on energy efficiency and greenhouse gas reduction. ➢ Implement elements of "Green Infrastructure" into transit systems design, such as ones that the USEPA highlighted in a March 5, 2007 memo circulated by Assistant Administrator Grumbles to EPA Regional Administrators and the January 17, 2008 Action Strategy (http://cfpub.epa.gov/npdes/home.cfm?program_id=298), elements of which can have benefits including cleaner air (i.e., trees and vegetation improve air quality by filtering many airborne pollutants and can help reduce the amount of respiratory illness). Green infrastructure approaches commonly used include: ▪ Green roofs ▪ Landscape with trees and tree boxes, rain gardens, reforestation, protection and enhancement of riparian buffers and floodplains (see also wetlands potential mitigation options below) ▪ Construct and maintain drainage systems with vegetated swales, pocket wetlands, infiltration planters, vegetated median strips ➢ Transit stations can be placed in areas most likely to encourage TOD with the most intense existing levels of development; typically commercial and/or mixed use (with some residential components). They can also be placed where major activities are already present and where major east-west transportation connections exist as well as where intermodal connections are already present or planned. ➢ O&M facilities can be located in existing industrial, commercial, or other areas non-sensitive for air quality.
Noise and Vibration	<u>Transit vehicle noise and vibration</u>: The results of a preliminary assessment of potential "air-borne noise" and "ground-borne noise and vibration" land uses along the 85-mile long corridor (100 miles with potential connections) are listed below. The assessment was primarily a GIS analysis within a 1600 foot wide buffer; 800 feet offset to either side of the transitways analyzed. ➢ Numerous residential communities, a total of 47 cities (28 directly on the FEC Railway). ➢ Noise and vibration increases due to the introduction of a new transit system within the SFECCTA corridor may be greatest for new rail on the FEC Railway ➢ Roadway transit alternatives, such as producing rubber tired bus technology, would likely produce less noise and vibration than rail transit. Currently, freight rail is the predominant noise and vibration source on the FEC Railway and freight transport is anticipated to increase. ➢ Noise sensitive receptors found (all categories combined) for each alternative analyzed ranged from 360 to 5,124 sites. ➢ Vibration sensitive sites which include noise sensitive sites, historic structures and bridges, and certain research facilities ranged from 373 to 8,398 sites. <u>Transit horn noise</u>: ➢ Train horns or whistles may significantly increase noise for communities along or near the FEC Railway. Currently, there are more than 200 railroad crossings along the FEC Railway corridor in the SFECC study.	<u>Transit vehicle (Bus or Rail), freight rail, or associated roadway noise</u>: Based upon incrementally more detailed noise analyses in Phase 2 NEPA studies, the following measures may be found reasonable/ feasible: ➢ Construct sound barrier walls (path mitigation) ➢ Acquire buffer zones (path mitigation) ➢ Ballast on at-grade or guideways (path mitigation) ➢ Equipment modifications (source mitigation) ▪ resilient or damped wheels ▪ vehicle skirts ▪ undercar absorption treatment ▪ turn radii greater than 1000 feet (rail) ▪ engine compartment treatments (buses) <u>Transit horn noise</u>: Implement a program of transitway-highway grade crossing closure/consolidation and/or overpass studies that may also be implemented beginning with Phase 1 and continued if not accelerated in Phase 2 in order to address concerns of safety, quality of life in SFECCTA communities, as well as passenger and freight rail service. This program will incorporate USDOT (i.e., FTA, FHWA and FRA) guidelines and/or promote local governments to implement the FDOT Quiet Zone application approach for communities. <u>Transit vehicle (Bus or Rail), freight rail, or associated roadway ground-borne noise/vibration</u>: ➢ Increase mass of support/foundations (source mitigation) ➢ Enhance design of ballast pads/mats (source mitigation)

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Table 3.13: Potential Direct Effects on Social, Natural and Physical Environmental Resources and Mitigation Strategies

Resource	Potential Direct Effects[7] of Implementing SFECC Transit Services	Potential Mitigation of Adverse Effects[8]
		➢Construct deep trenches (open or filled) parallel to tracks (source mitigation) ➢Locate turnouts and crossovers at non-sensitive areas ➢Acquire buffer zones (path mitigation)
Biological and Natural Resources	A preliminary GIS based assessment of biological and natural resources potentially present within an 800 foot buffer and along the 85 mile long corridor (100 miles with potential connections) revealed the following results that vary with each alignment alternative (i.e., FEC Railway corridor, US-1 and I-95 in northern Palm Beach County): ➢Aquatic Preserves, 0 – 3 AP resources ➢Conservation and Recreation Areas, 0 – 15 areas ➢Environmentally Sensitive Shorelines, 1 – 53 shoreline area intersects ➢Existing Recreational Trails, 0 – 3 trails ➢FDEP Restoration Inventory, 0 – 1 site ➢FNAI - Managed Areas, 0 – 12 ➢Flood Zones, 0 – 5 categories involved ➢Forest Inventory Analysis, 0 – 5 sites ➢Major Rivers, 0 – 12 crossings (3 major rivers potentially crossed; Oleta River, New River, Loxahatchee River; Miami River just to south of southern terminus in downtown Miami) ➢Manatee Protection Zones, 0 – 20 polygons ➢Mangrove Habitat, 0 – 4 areas ➢National Wetland Inventory, 13 - 226 Acres ➢Outstanding Florida Waters, 0 – 1 OFWs ➢Seagrass Beds, 0 – 8 resources ➢South Florida Water Management District canals, 1 – 23 potential crossings of the 16 SFWMD canals in the study area ➢Sinkholes, 0 – 1 (a man-made occurrence) ➢Special Drainage Districts (Broward County), 0 – 14 areas ➢Strategic Habitat and Conservation Areas, 0 – 5 areas	Avoidance, minimization and mitigation measures to be developed on a case-by-case basis for the various biological and natural resources that may be impacted as indicated in separate Phase 2 NEPA studies. Some potential strategies may include the following: Water Quality/Conservation: Implement elements of "Green Infrastructure" into transit systems design, such as USEPA highlighted in a March 5, 2007 memo circulated by Assistant Administrator Grumbles, "Using Green Infrastructure to Protect Water Quality in Stormwater, CSO, Nonpoint Source and other Water Programs". Green infrastructure approaches, including those considered Low Impact Development (LID) techniques (post-construction stormwater management in new development and redevelopment), commonly include: ➢Green roofs ➢Landscape with trees and tree boxes, rain gardens, reforestation, protection and enhancement of riparian buffers and floodplains (see also wetlands potential mitigation options below) ➢Construct /maintain drainage systems with vegetated swales, pocket wetlands, infiltration planters, vegetated median strips ➢Supplemental decentralized stormwater runoff storage and infiltration approaches such as the use of permeable pavement as well as the use of rain barrels and cisterns to capture and re-use rainfall for watering plants or flushing toilets In addition, design guidelines developed for SFECCTA Transit Stations and Intra-nodal (corridor between stations) aesthetics can follow the Leadership in Energy and Environmental Design (LEED) Green Building and Neighborhood Development Rating System™ (aka Green Transit/Green Design, Sustainable Design, Sustainable Public Transportation, or Design for the Environment), potentially in the following areas: ➢Transit stations ➢Transit station areas (1/2 mile radius area around station areas) ➢Transit vehicle operations and maintenance facilities ➢Transit modal technology, and/or ➢The transit guideway Wetlands: ➢Create, preserve or enhance localized wetlands at the impacted site (onsite) or at a similar site (offsite) ➢Contribute financially to existing or planned wetland mitigation banks within the region ➢Potential Wetland Mitigation Types, Typical Ratios: ▪ Creation: Establishment of wetlands in upland area. Ratios 1.5 : 1 to 5 : 1 (acres created: acres impacted) ▪ Restoration: Reestablishment of wetlands in a historic wetland area. Ratios: 1.5 : 1 to 5 : 1 (acres created: acres impacted) ▪ Enhancements: Improvement of existing wetland systems (i.e., exotic removal) Ratios: 4 : 1 to 20 : 1 (acres created: acres impacted) ▪ Preservation: Acquisition and placement of conservation easement over existing wetlands, Ratios: 20 : 1 to 100 : 1 (acres created : acres impacted)

Table 3.13: Potential Direct Effects on Social, Natural and Physical Environmental Resources and Mitigation Strategies

Resource	Potential Direct Effects[7] of Implementing SFECC Transit Services	Potential Mitigation of Adverse Effects[8]
		Wildlife and Endangered Species: ➢ Provide location specific design features that avoid, reduce or minimize impacts to habitat by loss and/or fragmentation (example mitigative design feature – alignment shifts) or to animal movement through or between habitats (example mitigative design feature – wildlife crossings or greenways between habitats, as appropriate) ➢ Restore or enhance wildlife habitat (in addition to wetland mitigation above, can include native plant landscaping in natural designs for wetland, upland and/or transitional ecotonal communities)
Historic, Archaeological, and Cultural Resources	Resources identified within the 2-mile wide SFECCTA study area (1 mile on either side of the FEC Railway) include the following: ➢ 140 previously recorded archaeological resources ➢ Over 15,000 previously recorded historic resources, including potential linear historic resources such as FEC Railway itself or local roadways ➢ State Historic Highways exist within the study area boundaries: ▪ Calle Ocho/SR 90/SW 8th Street in Miami-Dade County ▪ North Ocean Boulevard/SR A1A in Broward County ➢ Approximately 150 potentially NRHP eligible, determined NRHP-eligible, or NRHP-listed resources have also been identified within the study area ➢ Approximately 28 potentially historic bridges ➢ 43 other cultural resource groups (i.e., archaeological, historical, and/or architectural) Resources identified within an 800 foot buffer of SFECCTA study area (400 feet on either side of the FEC Railway) include the following: ➢ City Parks, 0 – 50 ➢ County Parks, 0 – 15 ➢ Culture Centers, 2 – 59 ➢ Existing Recreational Trails, 0 – 3 ➢ Florida State Parks, 0 – 1 ➢ Greenways (Cultural and Historic Features), 0 – 1 ➢ Historic Cemeteries, 0 – 3 ➢ Historic Field Survey Boundaries, 10 – 93 ➢ Historic Resource Groups, 0 – 14 ➢ Historic Structures, 0 – 1,174 ➢ Proposed Recreational Trails, 0 – 20	Historic Resources: ➢ Resource rehabilitation, recordation, relocation ➢ Vegetative or natural screening of resource ➢ Artificial barriers such as fences, barriers, walls ➢ Implement historic streetscape enhancements Linear Historic Resources: Continue coordination with SHPO and FDOT Central Environmental Management Office (CEMO) regarding procedure for preserving, recordation, responsible utilization of potential linear historic resources in the SFECC study area, including the FEC Railway and associated facilities or State Historic Highways All other Archaeological and Historical Cultural Resources: ➢ Phase 2 CRAS for each Phase 2 sectional NEPA studies ➢ Continue SHPO coordination established in Phase 1, building upon the first tier's "reconnaissance level survey" ➢ Coordination with local historic preservation entities in Phase 2, providing more definitive information on alternatives and potential impacts to resources

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Table 3.13: Potential Direct Effects on Social, Natural and Physical Environmental Resources and Mitigation Strategies

Resource	Potential Direct Effects[7] of Implementing SFECC Transit Services	Potential Mitigation of Adverse Effects[8]
Parklands and Recreation Areas	Resources identified within the 2-mile wide SFECCTA study area (1 mile on either side of the FEC Railway) include the following: ➢ Approximately 391 state, municipal, county parks, memorial parks/cemeteries, golf courses/country clubs (public and private), and protected/conservation lands and/or environmental/conservation easement areas that occur in proximity to the project corridor ➢ Some of the identified sites are also historic or contain historic, archaeological, or other resources that are protected by Section 4(f), as well as Section 106 of the National Historic Preservation Act (NHPA) of 1966 ➢ No National Parks or National Wildlife Refuges are within the study area Resources identified within an 800 foot buffer of SFECCTA study area (400 feet on either side of the FEC Railway) include the following: ➢ Municipal parks, 0 – 7 (Miami-Dade County), 0 – 19 (Broward County), 0 – 24 (Palm Beach County); 0 – 50 Total ➢ County parks, 0 – 14 (Miami-Dade County), 0 – 14 (Broward County), 0 – 7 (Palm Beach County); 0 – 15 Total ➢ Existing recreational trails, 0 – 3 ➢ Greenways (Cultural and Historic features), 0 – 1 ➢ Florida State parks, 0 – 1 ➢ Proposed recreational trails, 0 – 20	<u>Similar to mitigation measures for historic resources (see above) and visual/aesthetic qualities</u>: ➢ Coordination with FTA, State and local entities for Section 4(f) resource identification, avoidance, minimization, preservation, and, should it be necessary, mitigation measures implemented on case by case or regional basis ➢ Determinations of Applicability of Section 4(f) to parks or recreation areas (no National Wildlife Refuges are located within the study area) will be completed as required, and ➢ Programmatic or Full Section 4(f) Evaluations will be conducted, as applicable
Contamination and Hazardous Materials	The results of a GIS review of 15 datasets compiled for the SFECCTA geodatabase are listed below. The GIS evaluation was conducted for an 800 foot wide buffer (400 feet offset to either side of the transitways analyzed). Relatively few major contamination concerns were found such as Superfund or Solid Waste sites. Numerous urban sources of past, present, and future sources of hazardous materials include: fuel tanks/utility lines (above and below ground), permitted industrial, medical, institutional and other commercial facilities using or generating potential hazardous materials: ➢ Brownfields/Brownfield Site Boundaries, 0 – 9 ➢ Water Treatment Plants, 0 – 8 ➢ Underground Petroleum Tanks, 18 – 435 ➢ EPA Toxic Release Inventory, 0 – 12 ➢ Hazardous Materials (HAZMAT) Sites, 0 – 29 ➢ Solid Waste Facilities, 0 – 10 ➢ Superfund Sites, 0 – 3 ➢ Groundwater Contamination Areas, 0 – 5	For pre-existing contaminated conditions, Phase 2 NEPA Study and Design Phase assessment, redesign or remediation to avoid, minimize or mitigate involvement with hazardous materials. Conversely, station and O&M facility siting analyses would place greater weight on development at Brownfield sites thus promoting positive redevelopment of these blighted sites/areas while remediation of the problems can occur. For future, ongoing contamination sources external to the transit corridor (e.g., solid waste sites with leachate plumes in groundwater), assess need for specialized stormwater treatment/drainage design. For stormwater runoff, provide specialized stormwater treatment/drainage design to improve water quality from new SFECC transit facilities or ancillary services (parking lots, drainage ponds, etc.).

Table 3.13: Potential Direct Effects on Social, Natural and Physical Environmental Resources and Mitigation Strategies

Resource	Potential Direct Effects[7] of Implementing SFECC Transit Services	Potential Mitigation of Adverse Effects[8]
Visual and Aesthetic Qualities	Impacts to the viewshed within the project study area can be positive and negative. For transit users, the slightly elevated vantage point allows passengers a clear view of the surrounding landscape and thus may be considered as a positive impact. However, for those looking at or towards the transit way and related facilities may perceive negative impacts because their viewshed has been partially or totally obscured by these structures. In addition, a new transitway and related stations will introduce new lighting adjacent to some residential areas.	Consideration of aesthetics and Context Sensitive Solutions in the conceptual design of proposed alternatives according to current FDOT guidance. Utilize vegetative screening and other natural barriers to obstruct views; incorporate more decorative barriers such as fences, walls, and architectural enclosures than currently exist; bury or conceal existing ground level or overhead utilities; incorporate urban design and architectural features into infrastructure elements that are context sensitive; consider site orientation, massing and scale; and, preserve local architectural resources. All avoidance, minimization and mitigation measures will strive to incorporate local agency and community input during subsequent, Phase 2 NEPA studies.
Other: Navigation, RR Crossing Safety	<u>Navigation issues identified in Phase 1</u>: ➢ A total of seven navigable waterways have been identified that cross under the FEC and or CSXT/SFRC Railways within the SFECCTA study area: ▪ Intracoastal Waterway at the POM ▪ Miami River/Canal C-6 (SFRC only) ▪ Little River ▪ Oleta River ▪ New River ▪ Lake Worth Lagoon ▪ Loxahatchee River ➢ USCG permits may be needed for crossings of the New River, Loxahatchee River, ICWW, and others identified by USCG in Phase 1, including several canals (Hillsboro Canal, Cypress Creek Canal and Dania Cut-Off Canal) ➢ Miami River and ICWW crossings were not promoted out of Phase 1. However, crossing of the Miami River to access the MIC at MIA and the ICWW in Biscayne Bay to access the POM are potential Phase 2 study elements that may be incorporated for special services to these facilities only. ➢ Concerns over impacts to recreational navigation on the New and Loxahatchee Rivers should existing low-level FEC Railway bascule bridge be utilized for passenger service. <u>Railroad Crossing Safety</u>: The FEC Railway has at least 202 at-grade railroad-highway grade crossings within the project study area and possibly more if connections to other rail lines, airports and seaports are selected.	<u>Navigation issues for Phase 2</u>: Continue coordination with the USCG as a Cooperating Agency on the SFECCTA in Phase 1 on issues such as bridge permits and potential early permit application in Phase 2 NEPA studies. As encouraged by the USCG District 7 during Phase 1 consultation, conduct early coordination with navigation interests regarding the five waterway crossings requiring USCG bridge permits. New transit service along the FEC Railway over navigable waterways would likely require new high-level fixed bridges specifically for the New River. According to the USCG, a new bridge over the New River should have a vertical clearance of at least 55 feet above Mean High Water level. New mid- or low-level bascule bridges or tunnels to carry transit services across other waterways will also be considered in Phase 2. These bridges may have a vertical clearance of 40 feet above Mean High Water level in particular for crossings of the Miami River/Canal (SFWMD C-6 designation). <u>Railroad Crossing Safety</u>: Phase 2 may include studies for transitway-highway grade crossing closures/consolidation and/or grade separations of roadway-transitway crossings. These studies will involve local communities as the studies proceeds.

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3.14 Indirect and Cumulative Effects (ICE) Assessment

This section examines the ICE, both beneficial and negative, of the proposed project on the natural and social environment. The project technical team, including FTA and member agencies of the ETAT (i.e., FHWA and USCG), have determined that a screening approach is appropriate in Phase 1 since a large number of alternatives are still being considered for sections of the corridor as well as the entire 85 mile corridor as a whole. Furthermore, the screening approach is consistent with other approved transportation NEPA studies. As a result, the potential ICE were broadly considered for this Phase 1study. Although the proposed alignments and station areas can both have ICE with respect to transit service along the project corridor, it is anticipated that the majority of indirect effects would occur at station areas and the majority of cumulative effects would occur along the alignments.

The potential indirect effects of an improved transit service within the project corridor were evaluated along the three primary alignments (i.e., FEC, US-1 and I-95) and at proposed transit station areas for each alignment. This approach assumes that new TOD will most likely be encouraged around new transit stations. Development that may be encouraged by the proposed project may also be referred to as induced development. **Figures 2.16 – 2.17** display the proposed locations for transit stations along the FEC, I-95 and US-1 alignments. One mile (0.5 mile radius) circles were drawn around an assumed center point for each proposed transit station to serve as an evaluation area for potential indirect effects/impacts.

The cumulative effects of the proposed project, when combined with past and planned transit improvement projects, were evaluated based on the construction of the individual primary alignments and the assumption of a single modal technology for each alignment. The I-95 alignment considered for ICE evaluations consists of a 14 mile extension of Tri-Rail from the Mangonia Park Tri-Rail station north to Indiantown Road in northern Palm Beach County. This alignment runs parallel to and east of I-95 and would operate RGR technology. The other potential alignment for I-95 includes the use of RGB within existing lanes/right-of-way and therefore will not be discussed in this section as its contribution to ICE is not expected to be significant. The US-1 alignment was assumed to be a 50 foot, dedicated right-of-way running parallel on either the west or east side and outside of the existing US-1 right-of-way. The FEC alignment would, for the most part, be placed within the existing and contiguous FEC Railway right-of-way (100 feet) for the 85 mile project corridor. The FEC transit alignment is expected to have a 50-foot wide footprint within the FEC Railway right-of-way. However, existing tracks may have to be relocated to accommodate the proposed passenger transit service. The terms “alignment” and “alternative” may be used interchangeably throughout this section. This over simplification was necessary given the myriad of potential alternatives evaluated in this Phase 1 study (see Section 2.3.3). The potential ICE associated with alternatives that are advanced into Phase 2 will be evaluated in greater detail during Phase 2 NEPA studies, commensurate with more information on specific alignment(s) and/or modal technology.

3.14.1 Indirect Effects

This section summarizes the potential indirect or secondary effects on the environment that may result from the implementation of transit service along the project corridor. 40 CFR 1508.8 defines indirect impacts as impacts that “are caused by the action and are later in time or farther removed in distance/but are still reasonably foreseeable. Indirect impacts may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems”.

Land Use/Socioeconomics

Some amount of residential, commercial, and industrial development is expected to be associated with multi-modal improvements along the project corridor, in particular TOD in the immediate vicinity of proposed passenger transit stations. This form of development may be referred to as induced development which may occur as a result of improvements to the transit system as well as development that could be encouraged as a result of improved infrastructure (i.e., water and sewer lines, drainage, and utilities) associated with the proposed project. Regional policies and agreements are being developed to concentrate development at transit supportive densities within established activity centers and around regional transit. These policies are consistent with the South Florida Regional Planning Council’s Eastward Ho! initiative which encourages the revitalization of existing communities along the eastern spine of the Tri-County area. This type of infill development, in particular transit-oriented/mixed-use developments, can potentially increase opportunities for home ownership of affordable and workforce type housing, employment, and encourage reinvestment in low-income and minority communities. Local comprehensive plans, zoning, and capital improvement programs throughout the region are also being revised to achieve this objective.

Such development or redevelopment, particularly in low-income communities, may lead to indirect or induced displacement of residences and/or businesses. Induced displacement may be described as the limiting of housing and rental affordability due to increasing property values associated with increased development. The proposed project, along with initiatives such as Eastward Ho!, encourage TOD particularly in the immediate vicinity of station locations. TOD is typically mixed-use (residential, commercial and retail uses), compact/high density walkable communities centered or adjacent to high quality transit systems and may include affordable and/or workforce units. Approximately 36 (57%) of the proposed FEC Railway station areas are within a CRA. Nine are in Miami-Dade County, 11 in Broward County and 16 in Palm Beach County. These CRA’s may enter into public/private partnerships or offer potential developers incentives, such as TIF, to ensure affordable and workforce housing are included in new, mixed-use TOD constructed within the CRA. In addition, city and/or county inclusionary zoning ordinances require that a given share of new construction be affordable to people or families with low to moderate incomes. **Table 3.14** below summarizes the approximate number of residential and other types

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of land use found within a 0.5 mile radius of proposed transit stations (see **Figures 2.16 – 2.17**) that may be indirectly impacted by an the proposed transit stations. Residential appears to be the dominant land use within a 0.5 mile radius of proposed stations. New development encouraged by transit stations/service, will most likely be concentrated around the stations and taper off towards the perimeter of the one mile (0.5 mile radius) circle. As a result, induced development will most likely have a direct impact on commercial/industrial land uses typically found near proposed transit stations and indirectly affect residences toward the outer reaches of the one mile circle.

Table 3.14: Approximate number of residential/other units within a 0.5 mile radius of proposed transit stations by alignment

Land Use Classification	Alignment		
	FEC	US-1	I-95
Residential	88,000	87,000	5,300
Other (Commercial, Government, Industrial, Vacant, Institutional)	14,000	15,000	0
Note: Values represent estimates of units within 0.5 mile radius for 63 stations on the FEC alignment, 62 stations along US-1 & 4 stations along the I-95 alignment.			

Source: South Florida Regional Planning Council

Due to the significant amount of residential uses within the proposed station areas, indirect/induced displacement issues will necessarily be an important component of future socioeconomic assessments. Phase 2 analyses will identify potential opportunities at station areas for workforce and affordable housing, and mixed income communities. Federal guidance on Environmental Justice (EO 12898 and DOT Order 5610.2) will be followed closely in order to comply with regulations extended to protect minority and low-income populations from disproportionate impacts, whether direct or indirect, from environmental risks or hazards. Disproportionate impacts on low-income and minority populations will be avoided, if practicable, unless avoiding such disproportionate impacts would result in significant adverse impacts on other important social, economic, or environmental resources.

Another potential indirect effect may be to vehicular, bicycle and pedestrian traffic by frequent closings at transitway-highway grade crossings to accommodate passenger transit. However, when compared to freight trains, passenger trains are shorter and faster thus the cumulative traffic delays are expected to be incrementally minimal. **Table 3.15** below summarizes approximate, daily closing block times at a single railway crossing for FEC freight trains, passenger trains on the CSXT (Tri-Rail), and potential passenger trains on the FEC. Daily closures are expected to be longest for FEC passenger trains because of the greater number of trains. However, closures for a single passenger train on the FEC and/or the Tri-Rail are approximately 2 to 3 minutes shorter than for freight trains. These estimates assume the trains, both freight and passenger, are not approaching or departing a station which may lead to longer closures. Incrementally, delays at transitway-highway grade crossings are not expected to be significant for additional passenger transit service in the FEC. Most of the transitway-highway grade crossings within the project corridor are in urban/developed areas and any foreseeable delays can be mitigated through synchronization with corresponding traffic control signals. Phase 2 will also analyze the need to raise either the roadway or the transitway, or eliminate certain crossings altogether where practical.

Table 3.15 Daily estimates of crossing block time

Modal Technology	Number of Trains Daily	Daily Crossing Block Times at a Single Crossing (minutes)
FEC Freight Train	19	53
Tri-Rail Passenger Train (CSX)	50	54
FEC Alternative (RGR)	50 - 100	54 - 108

The construction of rail and busway stations along the FEC and US-1 respectively, as well as O & M facilities may also lead to the loss of on-street parking. Depending on the location, size, and configuration of each station and/or O & M facility, on-street parking may be adversely impacted. Furthermore, a dedicated busway along the US-1 alignment may also have adverse impacts to on-street parking as well as parking lots with their access/driveway fronting on US-1. Induced development in the vicinity of proposed stations may also contribute indirectly to the loss of parking. New transit user parking facilities as well as passenger drop-off areas are anticipated at all proposed transit stations. These new facilities will off-set some of the lost parking.

An improved regional passenger transit service can also have positive or beneficial indirect effects on the socioeconomics of the area. Short-term economic benefits from construction activities include employment opportunities and increased spending in the region. Benefits to community cohesion as a result of improving transit services include, but are not limited to, creating new inter-community and intra-community access with the provision of new station locations as well as affordable and reliable premium transit services. In addition, the proposed transportation improvements will further enhance community cohesion by improving mobility and providing better links to economic and employment centers within the Tri-County area as well as facilitating access to social, health and government services, recreational activities etc., especially to the substantial number of transit-dependent populations residing in the study area. Mobility may be further improved by a greenway in connection with the proposed project. A greenway would provide a bikeway/pedestrian path connecting neighborhoods to parks and recreation facilities, cultural and historic sites, schools and business areas, and connections to transit stations (see Section 4.4).

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Historic, Archaeological, and Cultural Resources

Some historic properties adjacent to proposed alignments within this study area may be determined to be noise-sensitive receptors. Potential indirect impacts to historic properties may occur as a result of increased noise levels associated with any of the proposed transit alternatives. The noise generated by any of the alternatives could potentially affect activities, features or attributes of some historic properties that qualify them for protection under Section 4(f) and Section 106 of the National Historic Preservation Act (NHPA) of 1966 (Public Law 89-665, as amended). Additionally, the increase in passenger transit systems could alter the character of historic properties' setting when that character contributes to the property's significance.

Induced development in the vicinity of the proposed transit stations may also have indirect impacts to historic properties in the vicinity of proposed transit stations. New construction of high density TOD in the vicinity of transit stations will invariably change the aesthetic character and qualities surrounding each station. These changes in the viewshed may also indirectly impact the character of historic properties within station areas. **Table 3.16** below summarizes the approximate number of historic and cultural resources within a 0.5 radius of proposed transit stations by alignment.

Table 3.16 Summary of historic structures within a 0.5 mile radius of proposed transit stations along each of the alignments

Alignment	Number of Proposed Stations	Historic Structures
FEC	63	516
I-95	5	0
US-1	62	552

Source: Bureau of Archaeological Research (2007)

Parklands and Recreation Areas

Publicly owned parks and recreational areas along the project corridor may also be indirectly impacted as a result of induced development. In addition to potential direct impacts from TOD within station areas, parks may be impacted from increased levels of traffic, noise (permanent and temporary from construction activity), as well as aesthetically (viewshed). **Table 3.17** below summarizes the approximate number of publicly owned parks and recreational areas that may be indirectly impacted from TOD.

Table 3.17: Summary of publicly owned parks within a 0.5 mile radius of proposed transit stations along each of the alignments

Alignment	Number of Proposed Stations	Publicly Owned Parks
FEC	63	74
I-95	5	2
US-1	62	124

Source: Miami-Dade Parks & Rec., Broward Planning Services, Palm Beach Parks & Rec.

Air Quality

The proposed project has the potential to have both adverse and beneficial indirect impacts on local and regional air quality. Local air quality may be indirectly affected from traffic congestion during crossing block times. A new passenger transit system along the project corridor will invariably lead to more frequent temporary street closings thus the potential exists for greater concentration of emissions in the immediate vicinity of these crossings. The majority of the railroad-highway grade crossings along the proposed FEC (>200) and US-1 (>2000) alignments are found in urban/developed areas along the project corridor. The I-95 alignment only contains approximately 10 transitway-highway grade crossings. Crossing block times along the I-95 alignment would be expected to be similar to those on Tri-Rail. However, air quality impacts are not anticipated to be significant for such few crossings. As indicated in **Table 3.15** above, crossing block time for a single passenger train on the FEC and/or the Tri-Rail are, on average, just over a minute (64 seconds). Closures for freight trains are approximately 2 to 3 minutes longer. These potential localized effects to air quality along both alignments as a result of traffic congestion may be mitigated through synchronization of traffic control signals. Signals on arterials parallel to the proposed transit alignment (FEC or US-1) could be timed to maximize north/southbound traffic flow and minimize congestion.

Localized, elevated levels of emissions may also occur at transit stations from idling trains and buses (where connector bus service is available), queuing to pick up passengers as well as vehicular traffic entering/existing the parking area. In addition, transit-oriented, induced development may further impact local air quality in the vicinity of transit stations.

Regional air quality would be expected to benefit from a high quality passenger transportation system. According to the 2030 travel demand forecast model (SERPM5) there is a potential reduction in VMT for the street transit alternatives (i.e. US-1) and the RGB Alternative along I-95 and FEC Alternatives of 1% and 2% respectively compared to the No-Build Alternative. Passengers in the Tri-County area using either of these alternatives would otherwise drive their vehicles on the highway system (No-Build Alternative). These predicted results could translate into a regional reduction in emissions. These air quality benefits could increase if ridership exceeds the levels projected by the SERPM5. In the case of

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electrically powered modal technologies, the emissions produced by the power plant(s) supplying the train's power would indirectly impact air quality at a remote location.

Detailed air quality analysis will be conducted during Phase 2 studies once specific modal technologies and alignment(s) have been identified to determine the net change in emissions (increase or decrease) throughout the Tri-County area as a result of the proposed project.

Natural Resources

Induced development as a result of a new passenger transit service along any of the proposed alignments has the potential to indirectly affect natural resources. TOD encouraged by transit system improvements could potentially contribute to indirect impacts on water quality, loss of wetlands and sensitive habitats. However, most of this development is expected to be infill by nature, consisting of redevelopment of existing built-up areas, including brownfields rather than disturbance of natural areas. As discussed in the Land Use/Socioeconomics section, TOD is most likely to occur in close proximity to proposed stations along any of the improved transit alignments. **Table 3.18** below summarizes wetland and sensitive habitat areas (acres) within a 0.5 mile radius centered on the proposed location of each station area along the proposed alignments. These values were calculated from a GIS layer produced by the USFWS and FWC. The exact locations of the proposed stations have not been determined in Phase 1. These proposed stations may move 0.25 mile north or south along the alignment from their centers thus shifting the potential impact area accordingly.

Table 3.18: Summary of strategic habitat and wetland area within a 0.5 mile radius from proposed transit stations along each alignment

Alignment	Number of Proposed Stations	Strategic Habitat Conservation Areas (acres)	Total Wetland Area (acres)
FEC	63	156	975
I-95	5	0	189
US-1	62	77	1,053

Source: FWC (2000), USFWS (2006)

Any induced development occurring within the areas described would be expected to incorporate BMP, avoid and minimize direct impacts, and mitigate any unavoidable impacts to existing natural resources according to Federal, State, and/or local policies and regulations. In addition, revisions to local comprehensive plans, zoning, and capital improvement programs will be made through a coordinated effort between local government, the general public, and other stakeholders. These revisions will follow guidelines in the FTA, Office of Planning "Guidelines and Standards for Assessing Transit-Supportive Land Use" which contains provisions for land conservation and management. Revised zoning ordinances would identify areas in which development should be limited and consider the preservation of open space, sensitive habitat, farmland, and/or areas of rural character. As a result, induced development associated with transit improvements at station areas is not expected to occur as inadvertent, uncontrolled sprawl, but as carefully planned development consistent with local and regional planning and policies. Therefore, indirect impacts to the natural resources from secondary development, particularly around transit stations, are not expected to be significant.

Floodplains and Water Quality Resources

Induced development as a result of a new passenger transit service along any of the proposed alignments also has the potential to indirectly impact floodplains and water quality. **Table 3.19** below summarizes the approximate area of floodplains that could be indirectly impacted by induced TOD at proposed transit station areas.

Table 3.19: Summary of floodplain area within a 0.5 mile radius from proposed transit stations along each alignment

Alignment	Number of Proposed Stations	Floodplains (acres)
FEC	63	9,759
I-95	5	135
US-1	62	11,136

Source: FEMA (1990)

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3.14.2 Cumulative Effects

Cumulative impacts are defined as "the impact on the environment, which results from the incremental impact of the action when added to other past, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

The purpose of the cumulative impact analysis will be to determine whether any of the transit improvement alternatives, considered with previous and foreseeable impacts, would degrade a resource and biological diversity, or produce social or economic effects that would not occur if the improvement concepts were considered in isolation. **Table 3.20** presents a list of major past passenger transportation projects and **Table 3.21** provides a list of planned transportation projects for southeast Florida. For this Phase 1 study, the comparison was qualitative; that is, impacts of past and future projects were not quantified. However, it is fair to assume that the past transit projects listed in **Table 3.20** have resulted in

Table 3.20: Past Transportation and Highway Projects in South Florida

Name	Project Description	Date Opened in South Florida
	Railway	
Florida East Coast Railway	Freight Transport	1896
Seaboard Air Line Railroad	Rail, Intermodal, & Rail-to-Truck Transload Services	1927
AmTrak	Intercity Passenger Train and Auto Train	1970
CSX Transportation	Rail, Intermodal, & Rail-to-Truck Transload Services	1980
Miami Metrorail	Elevated Rapid Transit/Passenger Transport	1984 – 1985
Miami Metromover	Automated People Mover System	1986 & 1994
Tri-Rail	Passenger Transport	1989
	Highway	
US-1 / Dixie Highway	United States Highway	1926
US-441	United States Highway	1950
Florida's Turnpike	Intercity Highway	1957
I-95	Interstate Highway	1961

some form of adverse impacts to natural resources (i.e., wetlands, uplands, water quality) as well as social and cultural resources along their respective alignments.

These adverse effects started with Henry Flagler who was responsible for the extension of a passenger and freight railway from St. Augustine to Key West through pristine habitats along the eastern coast of Florida (see Section 1.1.1 for a brief history on the FEC Railway). Once completed, the Miami station became the nucleus for TOD, including the area's first newspaper. Likewise, the highway projects listed were developed during the early to mid 1900's in a region that was much less developed than it currently is thus impacts would have been primarily to the natural environment. However, as communities grew and flourished around transportation networks, some of these past transportation projects have accounted for the isolation of neighborhoods and increased levels of noise and a degradation of air quality within the region. For example, the construction of I-95 bisected the once thriving community of Overtown in Miami, displacing many of its residents. These early projects, for the most part, were constructed during a period where environmental regulations were virtually nonexistent. As a result, it is likely that any of the proposed alternatives when combined with past transportation projects will contribute to cumulative impacts on natural, social and cultural resources within the project corridor. However, the planned projects listed in **Table 3.21** will be guided by strict environment regulations and policies as will

Table 3.21: Planned Premium Transportation Projects in South Florida

Name/ Location	Limits	Anticipated. Opening Year
City of Miami Downtown Streetcar, Miami-Dade County	From: Downtown Miami (Loop) up NE 2nd Avenue, through MidTown Miami Development To: Miami Design District (Loop)	2009-2010
MIC-Earlington Heights Metrorail Connector, Miami-Dade County	From: Earlington Heights Metrorail station To: Miami Intermodal Center	2011
Metrorail North Corridor, Miami-Dade County	From: Dr. Martin Luther King Jr. Metrorail Station To: Broward/Miami-Dade County line	2014
Miami-Dade County East – West Corridor Transit, Miami-Dade County	From: Florida International University (FIU) and SR 821/Homestead Extension of the Florida's Turnpike (HEFT) To: MIA/MIC	2016
Transit Bridge Project on SR 7/US 441, Southern Broward/ Northern Miami-Dade Counties	From: Golden Glades Interchange (Miami-Dade County) To: I-595 (Broward County)	TBD
Central Broward East-West Transit Corridor on I-595, Broward County	From: I-75/Sawgrass Expressway interchange To: East of I-95 in the vicinity of Downtown Ft. Lauderdale and the Ft. Lauderdale/Hollywood International Airport (FLL)	2022
DDA Downtown 2nd Street/ Andrews /3rd Avenues Rail Link, Broward County	From: Davie Boulevard To: Sunrise Boulevard and From: S.W. 4th Avenue To: Federal Highway	2009
SR 7 RBT, Broward County	From: Golden Glades Interchange (Miami-Dade County) To: Florida Atlantic University (Palm Beach County)	TBD
Broward County Intermodal Center and People Mover (Airport/ Seaport Connector), Broward County	From: FLL To: Port Everglades	2010-2016
Central Palm Beach County Premium Transit Study (aka Okeechobee Blvd BRT), Palm Beach County	From: Wellington Mall To: Tri-Rail West Palm Beach Station	TBD
Tri-Rail North Extension to Jupiter, Palm Beach County	From: West Palm Beach To: Jupiter/Northeastern Palm Beach County Area	TBD

any project improvements proposed as a result of SFECCTA studies. Thus impacts associated with these (planned) projects would not be expected to have the same widespread environmental consequences as earlier transportation projects.

The following sections broadly quantify the potential impacts associated with the construction of each alignment as described in Section 3.14. The values shown in the following tables represent the approximate number of units, sites or area (i.e. acres) that may be found immediately adjacent to each alignment's right-of-way. Values for the FEC and US-1 alignments refer to land uses immediately adjacent to both sides (east and west) of the alignment's right-of-way. Values for the I-95 alignment refer to land uses adjacent to the eastern boundary of the alignment's right-of-way. Impacts associated with the construction of the proposed transit stations have not been included. Their exact locations have yet to be determined. As a result, each station may be located and configured in a manner that would avoid or minimize impacts on the existing resources. A more detailed and quantitative cumulative impact analysis will be performed in Phase 2 as station areas, modal technologies, and other relevant components of the system (i.e., signal systems, transit crossings, O&M facilities) are developed.

Land Use/Socioeconomics

Under the No-Build Alternative, development may continue the historic trend of impacts from land use/urban sprawl related to population growth and impacts on land made accessible by automobile. The No-Build Alternative would not support local and regional planning objectives that promote transit-oriented, higher-density development around transit stations as the key to planned in-fill development for more efficient use of land and resources.

An improved transit service along any of the proposed transit alignments could contribute to potential cumulative impacts associated with community cohesion, traffic congestion and property loss (see **Table 3.22**). Although most alignment options of the FEC Railway Alternative would be within existing railroad right-of-way, some areas of the FEC right-of-way are constrained to less than 100 feet (see **Table J.3** and **Figures J.3 – J.6** in **Appendix J**). Transit improvements in these constrained areas could potentially result in localized negative impacts on community cohesion and property loss. A dedicated transit-way adjacent to the US-1 alignment would likely result in many more impacts on community cohesion and property loss than the FEC Railway Alternative. Likewise, an extension of the Tri-Rail system along the I-95 alignment would entail new construction outside of the existing I-95 right-of-way for the length of the alignment (14 miles).

As discussed in the Land Use/Socioeconomics section, regional passenger transit service will have beneficial impacts to the area by facilitating mobility and improving access to social, health and govern-

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Table 3.22: Summary of residential and other units adjacent to or within the right-of-way of proposed transit alignments

Land Use Classification	Alignment		
	FEC	US-1	I-95 (East)
Residential	133	5,600 / 2,150	190
Other (Commercial, Government, Industrial, Vacant, Institutional)	257	2,300 / 3,550	10

Note: Values represent the number of living/building units adjacent to the eastern and western boundaries of the FEC and US-1 alignments right-of-way.

Source: South Florida Regional Planning Council

ment services as well as employment centers. When combined with past and planned transit improvement projects any of the proposed alternatives would be expected to have positive cumulative impacts with regards to social mobility and access to socioeconomic services.

Increased development in the vicinity of proposed stations as well as the station itself would be expected to contribute to localized traffic congestion. However, regional traffic conditions along major highways and arterials would be expected to improve from the availability of premium transit services. The FEC Railway Alternative is estimated to reduce approximately 610,000 miles traveled daily in the Tri-County area based on SERPM5 results. When combined with past and planned transit improvement projects considered for this cumulative impacts analysis, the proposed project would be expected to result in beneficial cumulative impacts with regards to regional traffic levels.

Overall when combined with past and planned transit projects as listed in **Tables 3.20** and **3.21**, localized cumulative impacts may have both positive and adverse effects on socioeconomics. Regional cumulative impacts as a result of the proposed project combined with past and planned transit projects are expected to have positive impacts on the socioeconomics of the area.

Historic, Archaeological, and Cultural Resources

It is not realistically feasible to identify or quantify the impacts to cultural and historic resources at a program level analysis. However, it is expected that as a result of past, and reasonably foreseeable future, projects there would be a cumulative impact related to cultural and historic resources.

An improved transit service along any of the alignments has the potential to result in impacts on archaeological resources, historic structures, and archaeological resources within the study area (see **Table 3.23**). The footprint for the proposed FEC alignment is expected to be relatively narrow (approximately 50 feet wide) and would likely be placed within the existing, available contiguous right-of-way of the FEC Railway corridor. The transit alignment can be shifted or re-routed to avoid or minimize impacts to historic structures and/or archaeological resources. Therefore, the proposed FEC Alternative is not expected to have a significant negative impact on historic and archaeological resources. Likewise, proposed transit stations can be reconfigured at specific locations to potentially avoid or minimize impacts to these resources.

Table 3.23: Summary of historic sites adjacent to or within the proposed alignments

Alignment	Historic Structures
FEC	5
I-95	0
US-1 (East / West)	10 / 12

Note: Values for US-1 represent the number of sites adjacent to the eastern and western right-of-way.
Source: Bureau of Archaeological Research (2007)

Archaeological resources and historical structures would more likely be impacted by the construction of a dedicated transit-way along the US-1 alignment which would require new construction outside of existing right-of-way. However, when combined with past and planned transit projects any of the proposed alternatives could contribute to the negative cumulative impacts to archaeological resources and historical structures.

At the program level, mitigation for the cumulative impacts to historic, archaeological, and cultural resources relate to avoidance measures through identification of sensitive resources within the project level analysis and project design refinement and careful selection of alignments. Consultation with the SHPO and CEMO would continue to define and describe general procedures to be applied in forthcoming fieldwork, analysis, and the development of specific mitigation measures to address effects and impacts to cultural resources.

Visual and Aesthetics Qualities

Any of the proposed alternatives, when combined with other transit projects along the project corridors, could likely contribute to cumulative impacts on visual resources throughout the study area. Any of the proposed alternatives would contribute to temporary cumulative impacts on visual quality from transit related construction activities, construction equipment and materials in adjacent staging areas, construction-related signage, railroad tracks, bridges, and night lighting. The construction activities (e.g., earth disturbance, removal of vegetation, dust), construction equipment (e.g., cranes, bulldozers, trucks), and materials staging areas would be highly visible to motorists and adjacent residents and businesses over a prolonged period, and would detract from landscape features along the corridors.

The proposed alternatives would also have long-term effects on visual resources from additional pavement and/or railroad tracks added, as well as bridges, noise barriers and retaining walls. In addition, long-term visual changes would result from the introduction of 85 miles of a new transportation system that would be visible along major highways, and from metropolitan and residential areas.

Program-level mitigation (Phase 1) for any of the transit alternative's contributions to the cumulative impacts on aesthetic and visual resources include design practices that will incorporate local agency and community input during subsequent project level environmental review in order to develop context sensitive aesthetic designs and treatments for infrastructure that may integrate landscape contexts, reduce potential view blockage, and light and shadow effects.

Parklands and Recreation Areas

Section 4(f) resources include publicly owned parklands and recreation lands that are covered by Section 4(f) of the DOT Act of 1966. Although it is expected that impacts to 4(f) resources from planned projects within the study area would be limited as a result of typical design and construction practices, it would not be possible to eliminate or mitigate all impacts.

As shown in **Table 3.24**, there are approximately 33 publicly owned parks adjacent to and outside the FEC right-of-way. However, impacts on park resources are expected to be less significant along the FEC than along the US-1 alignment, since the US-1 Alternative would require new construction of a dedicated right-of-way. In addition, the FEC Alternative may be designed to avoid or minimize impacts to parks located adjacent to its right-of-way. However, when combined with past and planned transportation projects within the study area, either of these alternatives (FEC or US-1) could contribute to cumulative impacts on parks and recreational resources.

Table 3.24: Summary of publicly owned parks adjacent to or within the proposed alignments

Alignment	Publicly Owned Parks
FEC	33
I-95	0
US-1 (East / West)	21 / 14

Note: Values for US-1 represent the number of sites adjacent to the eastern and western boundaries of the alignment's right-of-way.

Source: Miami-Dade Parks & Rec., Broward County Planning Services, Palm Beach Parks & Rec.

Program-level mitigation (Phase 1), includes design practices to maximize use of existing rights-of-way to minimize potential impacts on parks and recreational areas. Avoidance and minimization measures would be incorporated into the development, design, and implementation phases at project level environmental analysis. In addition, construction standards and BMP would be incorporated during construction activities.

Air Quality

Local adverse air quality impacts could occur at transitway-highway crossings and near proposed stations related to increased traffic. Regionally, air quality may improve as a result of the significant reduction in VMT in the Tri-County area. However, detailed analysis to be conducted during Phase 2 studies will determine the net impacts to air quality.

Overall, the potential impacts of an improved transit service along any of the alignments, in combination with the air quality impacts of other passenger transit projects identified in **Table 3.21**, could adversely contribute to cumulative impacts on localized air quality. On a regional level the proposed project when combined with past transit and planned transit projects may contribute to beneficial cumulative impacts as a result of a reduction in VMT and the corresponding reduction in emissions. Air quality impacts, beneficial or adverse, will be analyzed at the necessary level of detail to determine the net effects of each alternative (alignment, modal technology and service segment) during Phase 2 studies.

At the program-level (Phase 1), mitigation strategies to address localized impacts could include increasing emission controls from power plants that supply power for electric transit service (if applicable), designing the system to be energy efficient, use of state-of-the-art equipment; promoting increased use of public transit, alternative fueled vehicles, and parking for carpools, bicycles, and other alternative transportation methods; alleviation of traffic congestion around passenger station areas; and minimizing construction air emissions.

Noise and Vibration

Noise and vibration impacts will continue to increase as population grows and use of highways and airports increases. Any of the proposed alternatives have the potential to result in noise and vibration impacts along the project corridor. When combined with past and planned transportation projects, any of the alternatives would be expected to contribute to cumulative noise and vibration impacts, primarily in urban areas with a higher density of receptors.

At the program-level (Phase 1), mitigation strategies to address localized noise and vibration impacts may include, but not necessarily be limited to, sound barrier walls within the right-of-way; track treatments to minimize train vibrations; and construction mitigation.

Natural Resources

The additional land required and the linear features added under either the FEC, US-1 or I-95 alignments is not considered to be a significant contribution to cumulative impacts on biological resources and wetlands throughout the study area. **Table 3.25** below shows the sensitive habitat and wetland area (acres) found within the footprint and immediately adjacent to each of the proposed alternative's right-of-way. It is in this footprint that natural resources are most likely to be affected. However potential sensitive

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

habitat and wetland impacts could be completely avoided or minimized depending on the design and type of modal technology chosen and the adherence to avoidance and minimization measures.

Table 3.25: Summary of sensitive habitats and wetland areas found adjacent to and within the right-of-way of the proposed alignments.

Alignment	Sensitive Habitats / Conservation Areas	Wetlands (Acres)
FEC	5	30
I-95	0	31
US-1 (East / West)	13 / 13	10 / 11

Note: Values for US-1 represent wetland area adjacent to the eastern and western boundaries of the alignment's right-of-way.

Source: FWC (2000), USFWS (2006)

As shown in **Table 3.25** above, the wetland area adjacent to the proposed alignment's right-of-way does not appear to be significant. However, when combined with the potential impacts of past and planned transit projects in the Tri-County area, the potential cumulative impacts on natural resources (i.e., water quality, wetlands) could be significant.

At the program-level (Phase 1), mitigation for cumulative impacts to biological resources and wetlands, include design practices to maximize use of existing rights-of-way to minimize potential impacts on biological resources and wetlands. Avoidance and minimization measures would be incorporated into the development, design, and implementation phases at project level environmental analysis. The level of loss caused by the proposed transit improvements, however, would be relatively small when considered against the overall losses which can be attributed to past and future population growth and development throughout the corridor.

Public Utilities

Construction of multiple linear facilities such as a dedicated busway or railway and other reasonably foreseeable future projects in the study area would create cumulative impacts on public utilities and future land use opportunities because of right-of-way needs and property restrictions associated with these types of improvements. These multiple facilities would place constraints on future development, including future development of public utilities. Based on the expected impacts related to past and reasonably foreseeable future projects within the study area, cumulative impacts to public utilities may occur.

All of the proposed alternatives would result in the construction of new linear facilities albeit the FEC Alternative would utilize a large amount of existing right-of-way. As a result utility relocation from any of the alternatives could cause a considerable contribution to cumulative impacts on public utilities.

Program-level mitigation (Phase 1) for contributions to the cumulative impacts to public utilities, include design practices that will avoid potential conflicts to the extent feasible and practical. At the project-level, coordination with utility representatives during construction in the vicinity of critical infrastructure will occur. Design methods to avoid crossing or using utility rights-of-way include modifying both the horizontal and vertical profiles of proposed transportation improvements. Emphasis would be placed on detailed alignment design to avoid potential contribution to cumulative impacts from linear facilities on land use opportunities and to minimize conflicts with existing major fixed public utilities and supporting infrastructure facilities.

Contamination and Hazardous Materials

Although past, and reasonably foreseeable future projects within the study area could cause cumulative impacts from hazardous materials and waste, none of the proposed transit improvements would directly or indirectly generate hazardous materials or wastes. Any hazardous wastes encountered through ground-disturbing activities during construction for any of the alternatives would be handled and disposed of in accordance with regulatory requirements. In addition, the proposed project also has the potential to remediate designated brownfield sites. When combined with planned transportation projects that may also involve remediation of contaminated sites, the proposed project could have a beneficial cumulative impact with regards to hazardous materials. Therefore, none of the alternatives are expected to cause a considerable contribution to cumulative hazardous material and waste impacts. **Table 3.26** below summarizes the approximate number of potentially contaminated and permitted sites.

Table 3.26: Summary of potentially contaminated and permitted sites adjacent to or within the right-of-way of the proposed alignments.

Alignment	Potentially Contaminated	Permitted Sites
FEC	17	57
I-95	0	N/A
US-1 (East / West)	45 / 50	19 / 33

Note: Values for US-1 represent the number of sites adjacent to the eastern and western boundaries of the alignment's right-of-way.

Source: FDEP (2007), DERM

Floodplains and Water Quality Resources

Although it is expected that impacts to water quality resources from planned projects within the study area would be limited through the incorporation of BMP and typical design and construction practices to meet permit conditions, it would not be possible to eliminate or mitigate all impacts to hydrology and water resources. Based on the expected impacts related to past, and planned transit projects within the study area, it is anticipated that cumulative impacts to hydrology and water resources could occur.

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Improvements to transportation infrastructure associated with the any of the alternatives would encroach into floodplains and wellfield protection areas as shown in **Tables 3.27** and **Table J.6** (see **Appendix J**), respectively.

Table 3.27: Summary of floodplain area within the right-of-way of the proposed alignments

Alignment	Floodplain (Acres)
FEC	411
I-95	39
US-1 (East / West)	150 / 140

Note: Values for US-1 represent the number of sites adjacent to the eastern and western boundaries of the alignment's right-of-way.
Source: FEMA (1990)

New infrastructure associated with the US-1 alignment could add approximately 639 to 825 acres of impervious surface within the study area (includes alignment footprint and proposed stations), which would decrease groundwater recharge and increase stormwater runoff and flooding potential. The proposed FEC and I-95 Alternatives could also contribute to potential cumulative impacts on hydrologic resources but to a lesser extent than the US-1 Alternative. Approximately 126 to 315 acres of impervious surface area could be added from proposed transit stations along the FEC alignment. There are only five transit stations proposed for the 14-mile I-95 Alternative therefore, its contribution to cumulative impacts would be minimal (8 to 20 acres).

Because much of the FEC and I-95 alignments would consist of relatively permeable fill, the amount of impervious surface associated with these alignments could be much less than that of the US-1 Alternative. Overall, any of the proposed alternatives when combined with past and planned transportation projects could potentially contribute to cumulative impacts on water quality. However, improvements under the FEC and I-95 Alternatives would be expected to have fewer impacts on floodplain and surface water resources than the US-1 Alternative.

The Biscayne Aquifer is the principle source of water for all of Miami-Dade and Broward Counties and the southeastern part of Palm Beach County. Because the Biscayne aquifer is highly permeable and is at or near the land surface practically everywhere, it is readily susceptible to ground-water contamination. Major sources of contamination are saltwater encroachment, direct infiltration of contaminants from chemical spills or application of pesticides and surface runoff. Each of the counties (Miami-Dade, Broward and Palm Beach) have policies and regulations, in the form of wellfield protection ordinances, to protect their drinking water supply from contamination. As shown in **Table J.6** in **Appendix J**, each of the proposed transit alignments would encroach on existing wellfield protection areas throughout the Tri-

County area. The FEC alignment has the greatest number of encroachment points compared to the US-1 and I-95 alignments. However, as stated in the Contamination and Hazardous Materials section, none of the proposed transit improvements would directly or indirectly generate hazardous materials that could threaten the wellfield protection areas. **Figures J.11 – J.23**, in **Appendix J** shows each alignment relative to wellfield protection areas throughout the Tri-County area. Overall, any of the alternatives when combined with past and planned transportation projects could potentially contribute to cumulative impacts to wellfields and drinking water supplies. However, improvements along the US-1 and I-95 alignments would be expected to have fewer impacts on floodplain and surface water resources than the FEC Alternative.

Program-level (Phase 1) mitigation for any of the proposed transit alternatives contributions to the cumulative impacts to hydrology and water resources include design practices to maximize use of existing rights-of-way to minimize potential impacts on water resources. Avoidance and minimization measures would be incorporated into the development, design, and implementation phases at project level environmental analysis. In addition, close coordination will occur with the regulatory agencies to develop specific design and construction standards, erosion control measures, sediment controlling excavation/fill practices, and other BMP.

3.15 Affected Environment and Environmental Consequences Conclusion

This chapter provided the data and framework for the consideration of environmental and natural resources and the human environment included in the alternatives analysis in order to comply with the NEPA, FTA, and FHWA requirements. Utilizing GIS data and analysis, the tremendous quantity of catalogued social-economic, natural, biological, and physical resources within the SFECCTA study area have been documented and queried for each proposed alternative.

Consistent with the tiering process previously discussed in Section S.3, the broad environmental assessment completed in Phase 1 identified a number of potential adverse impacts as well as beneficial effects to the natural and human environment associated with the proposed improvements. A summary, listed below, has been prepared to facilitate comparison between the potential adverse and beneficial effects of the project.

The potential ***adverse*** environmental impacts associated with the proposed improvements include:

- **Noise and Vibration** – The increase in rail vehicles using the corridor is anticipated to increase noise and vibration in the immediate vicinity of the project corridor. Additional increase in noise levels may also be associated with the use of train horns/whistles at transit crossings except where grade crossings are modified to allow for Quiet Zones. However, passenger trains are significantly quieter and shorter than existing freight trains.

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- **Community Cohesion** – The improved north-south transit service may potentially require protective fencing along the right-of-way, especially for greenway or trail provisions along FEC Railway or adjacent roadways. The potential for fencing, along with additional temporary roadway closures, could increase the existing barrier effect in communities within the SFECCTA study area. However, there is also the potential for including a continuous north-south greenway (or substantial stretches of trails) that could simultaneously enhance community cohesion, thereby mitigating some of the barrier effect.
- **Local Traffic** – Local traffic may be adversely affected by a new Regional Rail alignment along I-95, at transit-highway crossings, and in the vicinity of transit stations. Temporary roadway closures are possible during construction.
- **Cultural Resources** – Historic structures, districts or neighborhoods as well as archaeological sites, districts or zones adjacent to the project corridor may be affected by a change in the viewscape, noise and vibration.
- **Visual/Aesthetics** – Long-term effects on visual resources include the addition of pavement and/or railroad tracks, as well as bridges, noise barriers and retaining walls. In addition, long-term visual changes to the viewscape would result from the introduction of a new transportation system and the construction of new transit stations and O&M facilities that would be visible from major highways, and from metropolitan and residential areas.
- **Contamination Sites** – The greatest potential for encountering contaminated sites/areas would primarily exist at station areas, O&M sites and at east-west connection locations through industrial areas.
- **Relocations/Displacements** – The potential for relocations may exist where the FEC right-of-way is constrained to less than 100 ft or along any other alignment where right-of-way may be required for the proposed improvements. Other areas where relocation of commercial and/or residential properties is possible include station areas, O&M sites and east-west connection areas. Indirect or induced displacement may also occur as a result of residential, commercial, and industrial development associated with transit improvements in the project corridor, particularly in the vicinity of station areas.
- **Canal and Waterway Crossings** – Water quality may be affected where the transit improvements cross water bodies including wetlands, EFH, and manatee CH. Direct or ICE impacts to wetlands in the right-of-way may occur as well. Recreational navigation may be temporarily affected during construction activities.

The anticipated environmental ***benefits*** associated with the proposed improvements include:

- **Air Quality** – A reduction in VMT will benefit regional and possibly local air quality and help achieve or maintain Clean Air Act requirements. The proposed passenger transit improvements would divert trips from the use of automobiles, trucks and buses that would otherwise contribute to highway congestion and increase localized emissions.

- **Urban Infill and Densification** – An improved passenger transit system with conveniently accessible transit stations could serve as the focal point for TOD. Changes in land use to facilitate or encourage such development would support the Florida's Eastward Ho! Initiative which encourages urban infill and discourages sprawl and moving the urban development boundary (UDB). Transit oriented developments are typically mixed-use, high-density residential developments with commercial/retail components thus offering economic development as well as housing and employment opportunities to local communities.

- **Economic Development and Redevelopment** – Introducing new transit service that complements existing transit systems in established urbanized areas is supportive of CRA and Empowerment Zone efforts within coastal cities, including increased funds for economic development and redevelopment that may result from increased property values near transit stations. In addition, there may be new opportunities to improve or provide new affordable or workforce housing at proposed station location areas. Redevelopment of designated Brownfield areas and associated urban infill will benefit disadvantaged communities along the SFECCTA study area. Maintaining and enhancing rail freight service along the FEC improves economic productivity and facilitates international trade.

- **Environmental Justice** – The SFECCTA is evaluating transit service improvement within existing linear corridor(s), not the construction of new alignments through minority or low-income communities. Low-income and minority populations, generally within ½ mile of transit stations, would benefit from premium transit with better and/or new connections to employment areas, transportation hubs, as well as medical/health care, government/institutional services, educational opportunities, along with recreational and cultural facilities. Large numbers of other transit-dependent populations such as the elderly, youth, disabled and minority groups will also benefit from an improved passenger service. Indirect benefits of the proposed improvements may include the availability of affordable and workforce housing at/near proposed transit stations as a result of TOD.

- **Transportation Mobility and Safety** – An improved, north-south passenger transit system through the Tri-County area would improve commuter travel times and travel reliability. Roadway congestion contributes to unreliable travel times for commuters, commercial traffic and on-street transit systems, factors that affect the quality of life and economic well-being of residents, businesses, and tourism in the Tri-County region. In addition, mass transit systems are generally a safer mode of travel than highway travel.

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources have on future generations. Irreversible effects primarily result from use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural site).

Irreversible and irretrievable commitment of resources cannot feasibly be quantified at this phase of the study. Specific alternative alignments for each section and assessment of resultant commitment of resources for each will not be fully identified until sectional Phase 2 NEPA studies. Currently, only broad regional environmental issues have been evaluated consistent with FTA, FHWA, and FDOT guidelines. However, it is anticipated that Phase 2 assessments of irreversible and irretrievable commitment of resources may potentially include: the acquisition of right-of-way (converting existing land uses to rail and/or roadway transit uses); permanent loss of wetlands due to filling; and the borrowing of fill material from new areas. However, Phase 2 assessments of irreversible and irretrievable commitment of resources will necessarily involve consideration of all measures to avoid, minimize and develop mitigation for all unavoidable permanent loss of wetlands or other adverse impacts as required by law.

Chapter 4 – Transportation System which follows, describes the potential impacts to existing highway, transit, and freight operations in the SFECCTA study area from the different proposed alternatives. These impacts, together with the environmental analyses, cost and ridership information will be used to further evaluate alternatives.

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4.1 Highway

4.1.1 Traffic Conditions and Impacts (Regional and Neighborhood)

As indicated in the Purpose and Need, the regional transportation system in the area includes two continuous major north-south roadways, US-1 and I-95. Dixie Highway is another major north-south roadway but is not continuous throughout the Tri-County area. There are also major east-west State Routes and Interstates that intersect with the SFECCTA corridor such as I-395/SR 836, I-195/SR 112, SR 826/NE 163rd Street, and I-595. An overall assessment of the traffic conditions in the study area found that 70% of the roadways are operating at deficient levels of service in 2004 (LOS D, E or F) and 31% are at a LOS F. The regional roadway corridors (US-1 and I-95) that are parallel to the FEC Railway are and will continue to be heavily congested in 2030 for all three counties. Roadway congestion contributes to unreliable travel times and delays due to incidents and crashes and other factors that disproportionately impact personal and business travel. In Broward County alone, the number of vehicle-hours traveled (VHT) are projected to more than double from 822,000 in 2000 to 1,930,000 in 2030. Furthermore, the number of vehicle hours of delay is expected to increase from 10,000 hours to 858,000 during the same time span. I-95 is the most highly utilized north-south corridor, carrying over 300,000 vehicles daily. Uncongested travel time in 2030 along I-95 from Palm Beach County to Miami-Dade County is three hours and six minutes, whereas congested travel times in 2030 for the same segment increases to four hours and 12 minutes. Previous studies of I-95 confirm that the significant delays along the corridor, especially in Miami-Dade and Broward Counties, were during the A.M. and P.M. peaks. Recently, the region received federal transportation dollars to implement congestion pricing along I-95.

Different alignments and modal technologies being considered for the study area will have different impacts to traffic. For example:

- A RGB along the I-95 alignment (service segment 1 only) would have minimal impact to traffic since it is a limited access facility. However, a RGR Alternative along I-95 would require a new rail facility that would impact the bridges on I-95. Reconstruction of I-95 bridges would be a significant local traffic impact.
- Any proposed transit along the US-1 corridor would negatively impact traffic if the transit vehicle would operate in mixed traffic. If a dedicated lane is provided, then additional right-of-way impacts must be accommodated.
- Although the FEC Railway corridor is a separate facility from existing roadways, the impact of any transit along that corridor would be to the cross streets. The number of existing railroad-highway grade crossings have been listed below for each service segment. **Figure J.2** in **Appendix J** depicts the location of these crossings.

- In Service Segment 1: 15 to 17 grade crossings
- In Service Segment 2: 87 grade crossings
- In Service Segment 3: 101 grade crossings
- In Service Segment 4: 57 crossings
- In Service Segment 5: 102 crossings
- In Service Segment 6: 46 crossings

Increasing train traffic through these railroad-highway grade crossings would have an impact on vehicular, pedestrian and bicycle traffic on cross streets. Some of these impacts will need to be addressed with grade separation or other mitigating measures. A detailed analysis of all crossings, including highway, transit, freight and navigable waterways will be completed in Phase 2. **Figures J.7 – J.9** in **Appendix J**, also identifies the existing bridges which pass above the FEC Railway (typically waterway crossings), and bridges that cross over the FEC Railway (typically major highways).

The SERPM5 travel demand model was used to analyze the alternatives and initial results indicate that all the alternatives would reduce overall vehicle miles traveled in the study area from the No-Build Alternative. However, VMT is significantly reduced along the FEC alignments with a 2% reduction, versus the street transit alternative alignments and the RGB Alternative along I-95, where VMT was reduced by 1% respectively. All the alternatives had a positive impact on delay.

4.1.2 Parking Demand and Supply

Parking measures should be complimentary to transit services to encourage transit ridership. Parking rates at the destination (located within the study area) will greatly impact the decision to make a trip by regional transit for trips originating outside of the study area. Station areas have been identified to serve transit along the study area and these areas will need to be sized based on the drive and walk access to each. A low parking supply with high fees will make transit a more desirable option compared to automobile travel. Preferential parking for ridesharing can make carpooling a more attractive commuter travel option as well. A preliminary review of municipal parking policies indicates that they still plan to accommodate large amounts of parking. Therefore, policy changes limiting the amount of parking with new residential development in the study area, through zoning or code changes can increase local transit usage.

An analysis of the existing type of parking along the SFECCTA corridor indicated that off-street parking is the most frequent parking type along the SFECCTA corridor mainline. Parking rate information was only available from the Miami Off-Street Parking Authority and ranged from $20 a month to $135 a month. Key to making transit a viable option along the SFECCTA corridor is to provide park-and-ride locations at end of the line stations or key transfer stations with Tri-Rail. Within CBD locations along the corridor, parking supply should be minimized to encourage walking to stations and parking rates should be consistent with FTA guidelines. Eliminating or reducing the supply of convenient (free/unregulated or under regulated) on-street parking in the vicinity of the station areas will also discourage short distance auto trips.

Although the SERPM5 model is not sensitive to parking supply in a quantitative way, it does represent parking supply on the highway side as an added cost to auto travel in the form of parking costs. On the transit side, parking supply is used in relation to station areas where the mode choice model recognizes that auto access to that particular transit stop is possible and if there is a cost associated with it, it adds impedance to whatever transit path utilizes the auto access to that station. Travel demand models recognize two kinds of parking: one is the parking lots at transit stations, which are seen by the model as opportunities for access to transit and the other is parking lots not associated with transit, which are seen by the model as costs associated with auto travel. Therefore, existing and future parking supply and rates within the study area can impact transit ridership of a proposed transit service along the SFECCTA corridor area.

Refinement of the required parking supply needed at each potential station area will be a Phase 2 process. Requirements for additional land necessary to accommodate parking at appropriate stations will also be further studied in Phase 2. Right-of-way issues with respect to potential alternatives are discussed further in Chapter 6.

4.2 Transit

4.2.1 Service and Operations

As indicated in the Purpose and Need, existing transit in the study area is comprised of the following services and agencies.

- Miami-Dade Transit
- Broward County Transit
- Palm Tran
- South Florida Regional Transportation Authority (Tri-Rail)
- National Railroad Passenger Corporation (Amtrak)
- Intercity Bus Services (i.e., Greyhound)
- Jitneys (privately operated public transit, vehicles intermediate between taxis and buses)
- Shuttle Bus Services
- Para-transit Services

➢ Waterborne Transit

In Miami-Dade County, the Metrorail and Metromover systems, and 37 bus routes, are in the SFECCTA study area. Broward and Palm Beach Counties also provide bus transit service within the study area. The bus routes within the study area for each respective county are considered the highest ridership routes. For example, in Palm Beach County, study area bus routes constitute over 70% of the Palm Tran system ridership. More detailed information regarding the existing transit system is included in the Purpose and Need and in the *Existing Conditions Technical Memorandum*. One significant transit component in the SFECCTA study area is Tri-Rail which operates along the CSXT/SFRC line. Any proposed transit project within the study area will be compatible with and build upon the existing Tri-Rail system. As discussed in Chapter 2, all the alternatives being considered assume connections with Tri-Rail. Therefore, it is important to understand Tri-Rail travel characteristics and patterns so that alternatives developed for the SFECCTA can complement Tri-Rail characteristics.

On a typical weekday Tri-Rail operates forty commuter passenger trains. All of these trains run between Mangonia Park at the northern end of the Tri-Rail district and MIA at the southern end of the Tri-Rail district. The most recent survey of Tri-Rail passengers was completed in mid-December 2004. A total of 920 usable responses were received from a one-day sample of all passengers boarding and disembarking trains between 6 A.M. and 3:00 P.M. The results of this survey indicate that Tri-Rail passengers make trips for a variety of purposes as shown in **Table 4.1** and **Figure 4.1**.

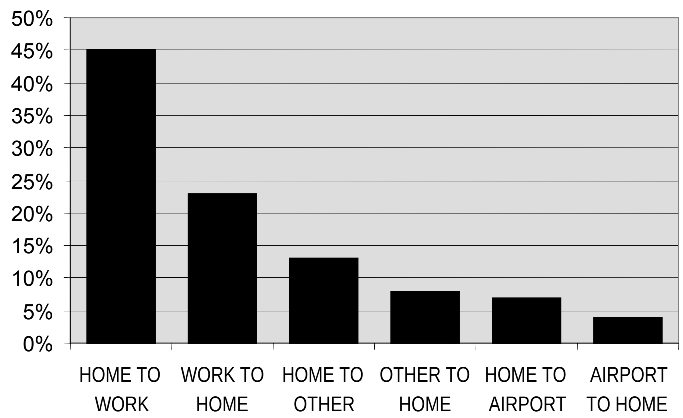
Table 4.1: Tri-Rail Morning Passengers by Trip Type

Passenger Trip Type	Percentage of Total
Home to work	45
Work to home	23
Home to other	13
Other to home	8
Home to airport	7
Airport to home	4
Total	100

Source: EK Analysis based on South Florida Regional Transportation Authority Transit Development Plan FY 2006-2010, August 2005.

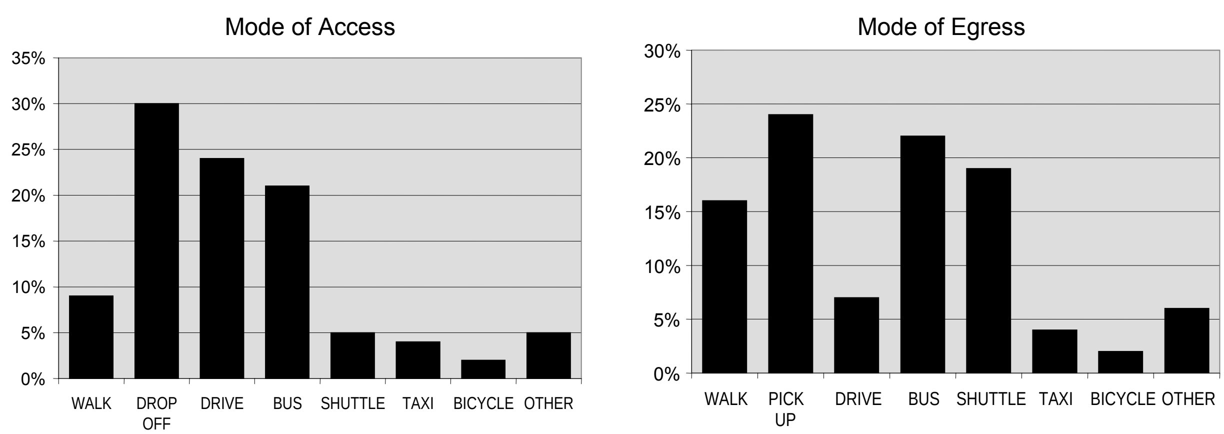
NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Figure 4.1: Tri-Rail Trips by Trip Purpose



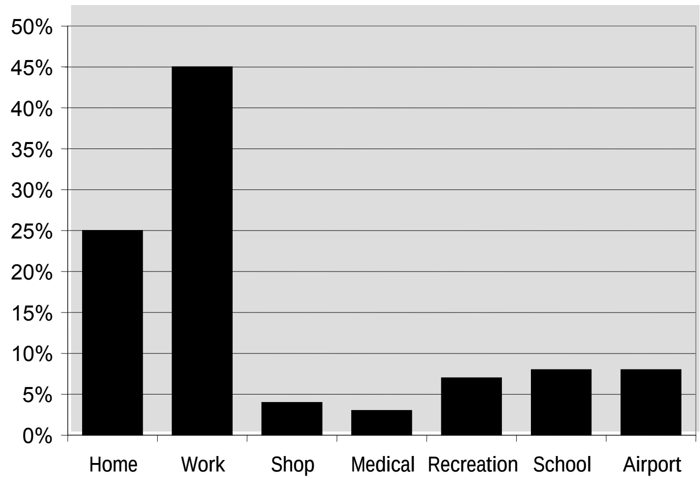
- **Arrival and Departure Modes:** For a "commuter railroad", the Tri-Rail arrival mode shows relatively low levels of park-and-ride ridership for customers traveling between 6:00 A.M. and 3:00 P.M. The most common way of reaching a Tri-Rail station is to be dropped off from a private auto. The most common way of leaving a Tri-Rail station is to be picked up in a private auto. The departure mode shows a high level of pick-up arrangements, as shown in **Figure 4.2**.

Figure 4.2: Tri-Rail Station Access and Egress Mode



- **Riding Destinations:** The destinations of Tri-Rail passengers in the morning rush hour are shown in **Figure 4.3**. The majority of trips are work bound. Up to 25% of the trips are home-bound, which might represent night-shift workers at the airports and elsewhere going home after work or day-trippers returning home before 3:00 P.M. About 7% of trips represent students commuting to school in Palm Beach County. Other destinations account for the remaining 23

Figure 4.3: Tri-Rail Morning and Midday Passengers Trip Destinations



- **Time of Operation:** Tri-Rail operates commuter passenger trains in the study area throughout the day but the greatest density of service is from 6:00 A.M. to 9:00 A.M. and from 4:30 P.M. to 7:30 P.M., when the service headway is as short as 20 minutes. The reduced density of passenger train operations in the mid-day and evening periods appears to provide employees of CSXT with an opportunity to perform routine maintenance and service local freight customers with reduced interference by commuter passenger trains.

- **Connecting Transit Services: Table 4.2** illustrates services and transfer costs to other transit services from Tri-Rail. Free shuttle buses connect most Tri-Rail stations with nearby downtown areas and other important locations, including the Miami, Fort Lauderdale and Palm Beach International Airports (MIA, FLL, and PBIA). Passengers can also transfer between Tri-Rail and Metrorail at the Tri-Rail/Metrorail Transfer station.

- **Tri-Rail Operating Schedule:** The first Tri-Rail schedule to take advantage of the recently completed double-track between the Gator Interlocking and Hialeah Yard went into service effective March 27, 2006. Compared with previous service, this schedule offered more frequent trains and shorter trip times. Up until late March 2006, Tri-Rail offered a more limited schedule of 30 weekday trains with longer 119 minutes (1-hour, 59-minutes) running time and relatively poor on-time performance. Today, Tri-Rail operates 40 weekday trains with a 110-minute (1-hour, 50-minute) running time. Tri-Rail runs on hourly headways throughout the day, except for the peak period when trains run every 20 minutes.

  Service operates on a 120-minute (2-hour) headway throughout the day on Saturdays, Sundays, and Holidays. One pair of late-night train operates Saturdays only which departs from Mangonia Park and MIA at 8:47 P.M. and 9:28 P.M. respectively.

Table 4.2: Tri-Rail Connecting Transit Services

Station	Connecting Bus Service	Cost	Station	Connecting Bus Service	Cost
Mangonia Park	Palm Tran	$1.25	Fort Lauderdale Airport	BCT	$1.00
West Palm Beach	Palm Tran	$1.25		SFRTA	Free
Lake Worth	Palm Tran	$1.25	Sheridan St.	BCT	$1.00
Boynton Beach	Palm Tran	$1.25		SFRTA	Free
Delray Beach	Palm Tran	$1.25	Hollywood St.	BCT	$1.00
Boca Ration	Palm Tran	$1.25	Golden Glades	BCT	$1.00
	SFRTA	Free		MDT	$1.25
Deerfield Beach	BCT	$1.00	Opa-Locka	MDT	$1.25
	SFRTA	Free	Metrorail Transfer	Rapid Transit	$1.25
Pompano Beach	BCT	$1.00	Hialeah Market	MDT	$1.25
Cypress Creek	BCT	$1.00		SFRTA	Free
Fort Lauderdale	BCT	$1.00	Miami International Airport	MDT	$1.25
	SFRTA	Free		SFRTA	Free

Source: SFRTA Transit Development Plan (2006-2010).
Notes: BCT - Broward County Transit; MDT - Miami-Dade Transit; SFRTA - South Florida Regional Transportation Authority.

Since its inception in 1989, Tri-Rail ridership has ranged between 6,000 and 10,000 boardings each weekday. During its first year, the system carried about 3,000 passengers each weekday. By 1991, ridership had grown to approximately 7,600 passengers each weekday. The average weekday system ridership reached 10,000 passengers in 1994. In the final season of I-95 reconstruction, when Tri-Rail operated between MIA and West Palm Beach, the weekday ridership averaged 9,700 boardings.

However, by the summer of 1995, that number had fallen to 6,700 daily Tri-Rail riders. This decrease was attributed to a fare increase and train delays caused by work to construct the first section of double-track. Since that low point, the system has shown steady progress toward returning to 10,000 daily boardings. As expected, ridership has increased substantially with the completion of the double tracking program and, more recently with high gas prices. Double-tracking has lessened delays and improved on-time performance. With the double-track, SFRTA was also able to increase the frequency of train service by 33% to 40 daily trains. Currently there are plans to add eight additional trains per day in the near future.

- **Tri-Rail Trip Length Distribution:** Based on the winter trip table, the mode (the element that occurs most frequently) of the trip-length on Tri-Rail is in the 10-15 mile range, comprising of almost 15% of all trips. However, the mean (midpoint) trip-length (total passenger miles divided by total passengers) is 30.4 miles, suggesting that there is substantial longer-distance traffic on Tri-Rail. This trip length distribution is rather typical of a transit system serving dispersed demand generators and attractors. The trip table analyses confirm that present Tri-Rail traffic patterns are not dominated by the commuter market to and from Miami. As Tri-Rail currently operates, Metrorail is a strong attractor of traffic but weaker than would be typically expected. A possible reason for this is the unattractive commuting path to downtown and from downtown Miami requiring a 21-minute Metrorail trip (plus an average of 3 minutes' wait time).

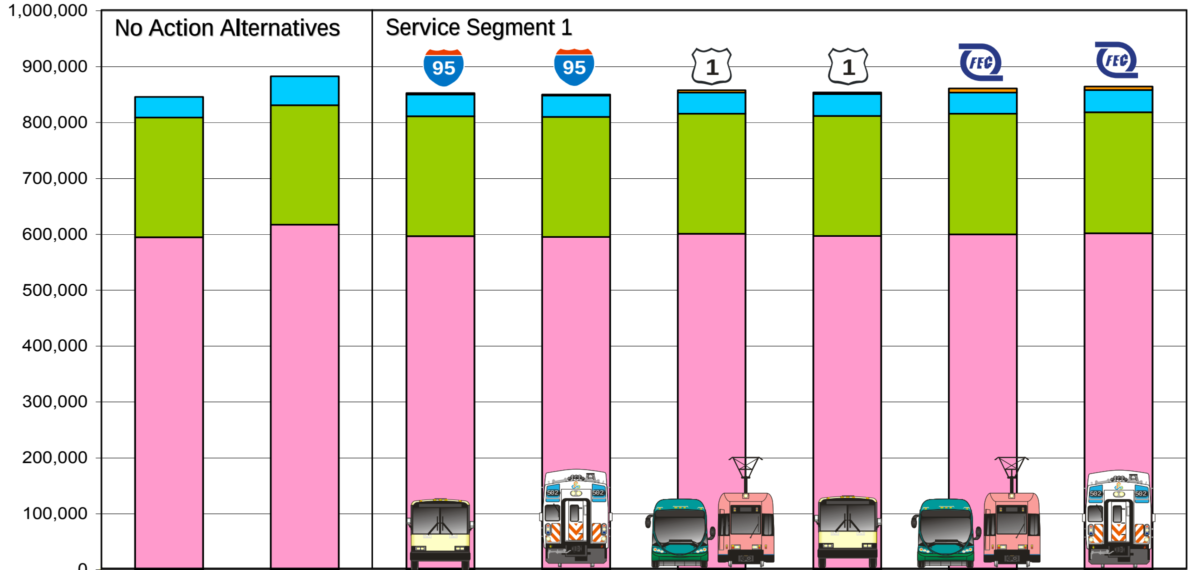
4.2.2 Ridership

A total of 15 runs of the 2030 travel demand forecast model (SERPM5) were produced by the SFECCTA project team to provide an initial test of the preliminary alternatives. Two runs were made to model the "No-Action" Alternatives (No-Build and TSM). Six runs modeled the alternatives associated with Service Segment 1 (West Palm Beach North) that function to extend existing Tri-Rail service. Three additional runs consolidated corridor-length modeling of Service Segments 2 through 6 using different modal technologies (BRT, LRT and RGR) and alignments (US-1 and FEC). Another run consolidated the modeling of the two RRT Alternatives on the FEC associated with Service Segments 5 and 6. The final three runs modeled the Special Analysis Segments (7 though 9). The results of the Service Segment 1 runs are summarized in **Figure 4.4** and the results of the Service Segment 4 through 6 runs are summarized in **Figure 4.5**. Note there is not a one-to-one correspondence between individual model runs and alternatives for these initial Phase I forecasts except for the Service Segment 1 alternatives.

As clearly illustrated in **Figure 4.4** and **Figure 4.5**, local bus services and Metrorail are forecasted as the predominant forms of public transportation in the region, collectively representing over 800,000 weekday passenger trips in the Year 2030.

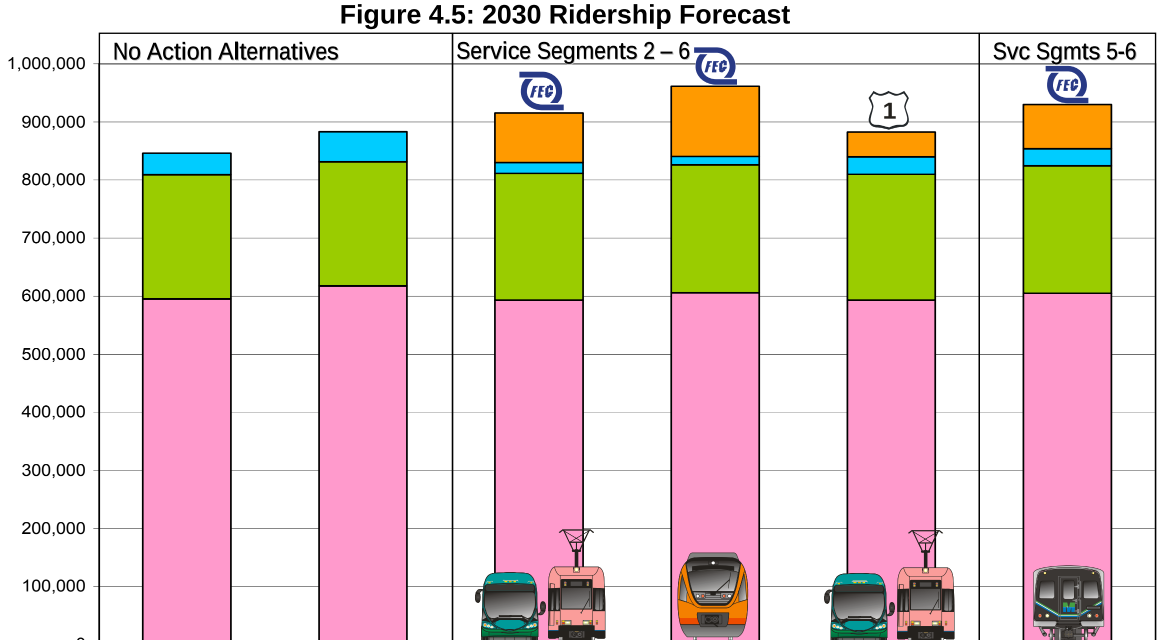
- The leading alternative in terms of system ridership are the alternatives operating RGR on the FEC alignment with about 961,000 weekday passenger trips, or 115,000 trips over the No-Build Alternative.
- RRT on the FEC was second, yielding 930,000 weekday passenger trips over a significantly shorter alignment (35 miles vs. 85 miles).
- BRT and LRT on the FEC alignment yield greater system ridership than comparable alternatives along US-1 alignments.
- Relatively short Service Segment 1 alternatives, designed as rubber-tired or steel-wheeled extensions of the existing Tri-Rail service, result in modest increases in systemwide ridership.
- Service Segment 1 alternatives yield modest ridership increases over the No-Build Alternative, with a direct extension of Tri-Rail service to Northern Palm County over the FEC alignment generating the largest ridership increase (46,000 weekday trips on existing Tri-Rail and extension combined), followed closely by a SRT extension from Mangonia Park over the FEC (with a combined weekday ridership of 45,000 trips).

Figure 4.4: 2030 Weekday Ridership Forecasts (Service Segment 1)



	No Build	TSM	RGB on I-95	RGR on I-95	LRT & BRT on US1	RGB on US1	LRT & BRT on FEC	RGR on FEC
Alternative	-	-	2,623	2,107	4,355	2,696	7,554	6,442
TriRail	36,700	51,759	38,847	38,210	37,561	38,995	37,655	39,734
Metrorail	214,144	213,756	214,690	214,668	214,963	214,984	215,987	216,341
Bus	595,065	617,365	596,666	595,416	600,937	597,146	599,944	602,163

Figure 4.5: 2030 Ridership Forecast



	No Build	TSM	LRT & BRT on FEC	RGR on FEC	LRT & BRT on US1	RRT on FEC
Alternative	-	-	85,200	120,649	42,613	76,122
TriRail	36,700	51,759	18,597	14,539	30,054	29,579
Metrorail	214,144	213,756	218,545	220,240	216,882	219,668
Bus	595,065	617,365	593,064	605,764	592,925	604,665

4.2.3 Relationship between Tri-Rail and Build Alternatives

A synergistic interrelationship was observed between Tri-Rail and the Build Alternatives. In the No-Build Alternative, Tri-Rail was modeled at 20-minute peak headways and 60-minute headways off-peak, consistent with the counties LRTP, yielding about 37,000 Tri-Rail trips and about 846,000 transit trips systemwide. A TSM Alternative was also modeled with Tri-Rail service augmented headways of 15 minute in the peak and 30 minutes off-peak (the so-called "Tri-Rail-on-Steroids" scenario), yielding about 52,000 Tri-Rail trips and 883,000 transit trips systemwide.

Each of the consolidated runs for Service Segments 2 through 6 generated significantly greater ridership than that forecasted for the No Action Alternatives, reflecting the same relationship discussed above for systemwide ridership. Tri-Rail's share of ridership — while greater than today's ridership levels — is diminished in the build scenarios relative to a No-Build and TSM Alternative. A series of special model runs were conducted to better assess the affect of new SFECCTA passenger service on Tri-Rail ridership.

The initial model run for Service Segments 2 through 6 operating RGR on the FEC (Model Run 11) yielded 121,000 new trips for the new alternative, 961,000 transit trips systemwide, and increased ridership on Metrorail and local bus. Tri-Rail ridership, however, decreased to about 15,000 trips. In this run, Tri-Rail was modeled at LRTP headways (20 minute peak/60 minute off-peak) while the FEC service was modeled at 15-minute peak headways, 30-minutes off-peak north of Fort Lauderdale and half those headways south of Fort Lauderdale.

Two additional model runs were produced to test the affect of varying service headways:

- Model Run 11A modeled 15 minutes peak/30 minutes off-peak headways on both Tri-Rail and FEC, yielding 111,000 trips on the FEC Alternative, 18,000 trips on Tri-Rail, and 954,000 trips systemwide.
- Model Run 11B modeled 15 minutes peak/30 minutes off-peak headways on Tri-Rail but reduced FEC headways 20 minutes peak/60 minutes off-peak, yielding 72,000 trips on the FEC Alternative, 35,000 trips on Tri-Rail, and 922,000 trips systemwide.

The conclusion drawn of these comparisons is that passenger rail service on the FEC would increase regional transit usage overall, but limit future Tri-Rail ridership relative to a No-Build Alternative. This would be the case even if Tri-Rail service headways are increased to maximum levels and the FEC alternative headways are arbitrarily reduced below recommended levels. This disparity may be attributable to the higher residential and commercial development density in proximity to the FEC alignment.

- **Southern Termini Considerations:** Special model runs designated as “Special Analysis Segments (SAS) 7, 8 & 9” were made to provide an assessment of the relative strength of a Downtown Miami and

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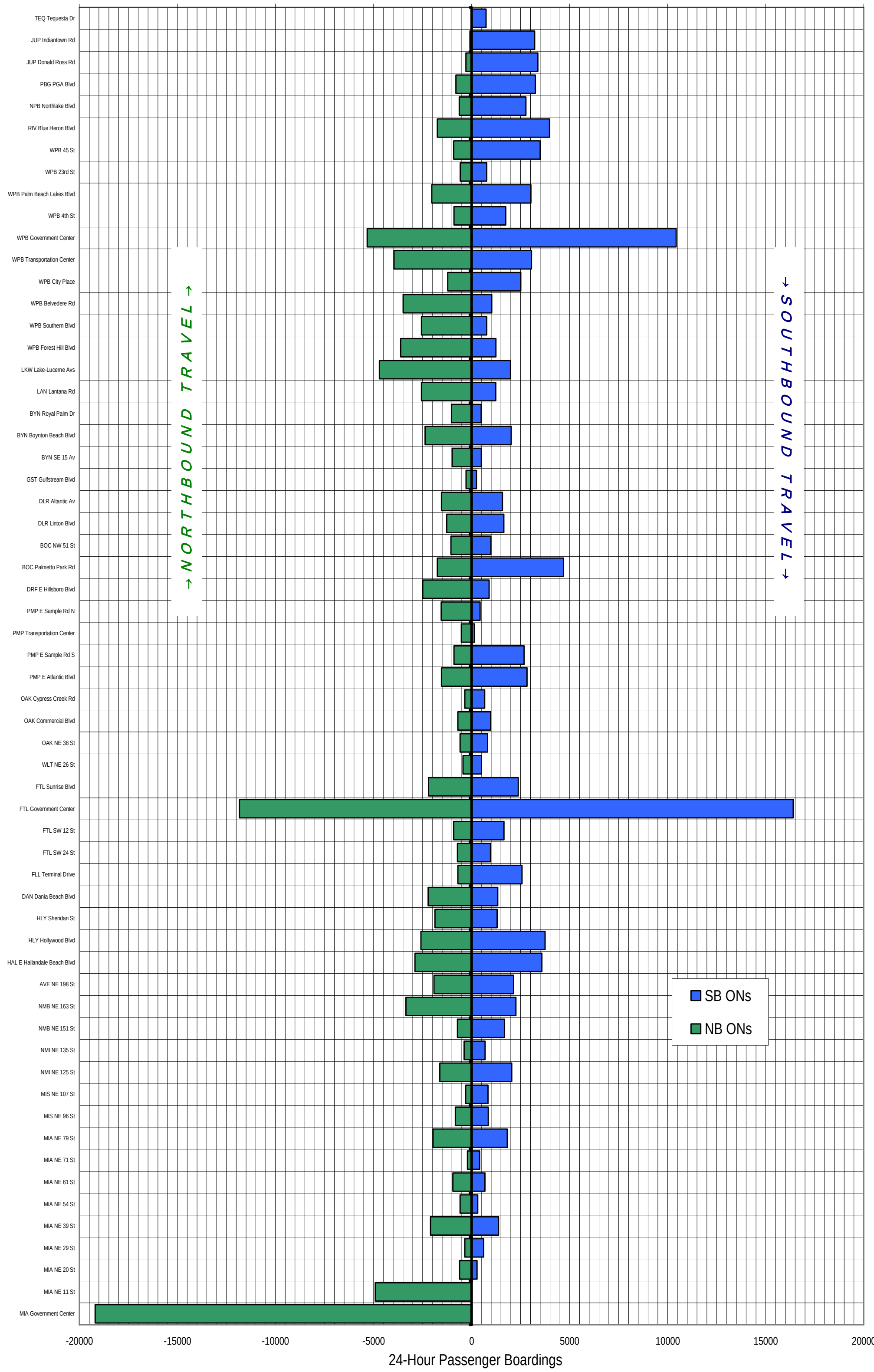
MIA/MIC southern terminus for either service. The No-Build Alternative modeled the existing Tri-Rail service to MIA/MIC, yielding 36,700 weekday passenger trips, while SAS 9 (Miami Tri-Rail) modeled diversion of Tri-Rail service to Government Center and yielded a slightly higher 38,000 weekday passenger trips. In contrast, SAS 7 (Miami East Coast) modeled an FEC-length service to Government Center and SAS 8 (Airport East Coast) modeled an FEC-length service to MIA/MIC, yielding 86,900 and 82,400 trips on the FEC, respectively. While this analysis demonstrated a slight bias towards Downtown Miami relative to MIA/MIC as a southern terminus, it more importantly demonstrated the need to support regional access to both destinations and interconnectivity between Tri-Rail and any new SFECCTA alternative.

- **24-Hour Ridership Forecast:** Preliminary 24-hour station-level ridership information was also generated for each model run, which was also analyzed and described in detail in the *SFECCTA Phase 1 Ridership Forecast Analysis Technical Memorandum*, which is available upon request. As an example, **Figure 4.6** provides a graph of 24-hour weekday boardings at each station for a consolidated run of RGR on FEC for Service Segments 2 through 6, illustrating the profile of passenger activity by station across the length of the FEC corridor. **Figure 4.6** confirms the attractiveness of Miami, Hallandale, Hollywood, Fort Lauderdale, Boca Raton, Boynton Beach, West Palm Beach and Palm Beach Gardens as trip destinations, as initially suggested by **Figure 2.4** in Chapter 2. It also highlights the relatively low ridership volume forecasted for Tequesta, the northern-most station in the SFECCTA study area at the top of the diagram. The low level of ridership demand identified for Tequesta, coupled with the relatively high capital cost of a new high-level crossing of the Loxahatchee River to reliably access the station area, suggests that Indiantown Road in Jupiter may be a more cost-effective northern terminus for SFECCTA alternatives in subsequent analyses.

Figure 4.6: 2030 24-Hour Passenger Boardings by Station (RGR on FEC)



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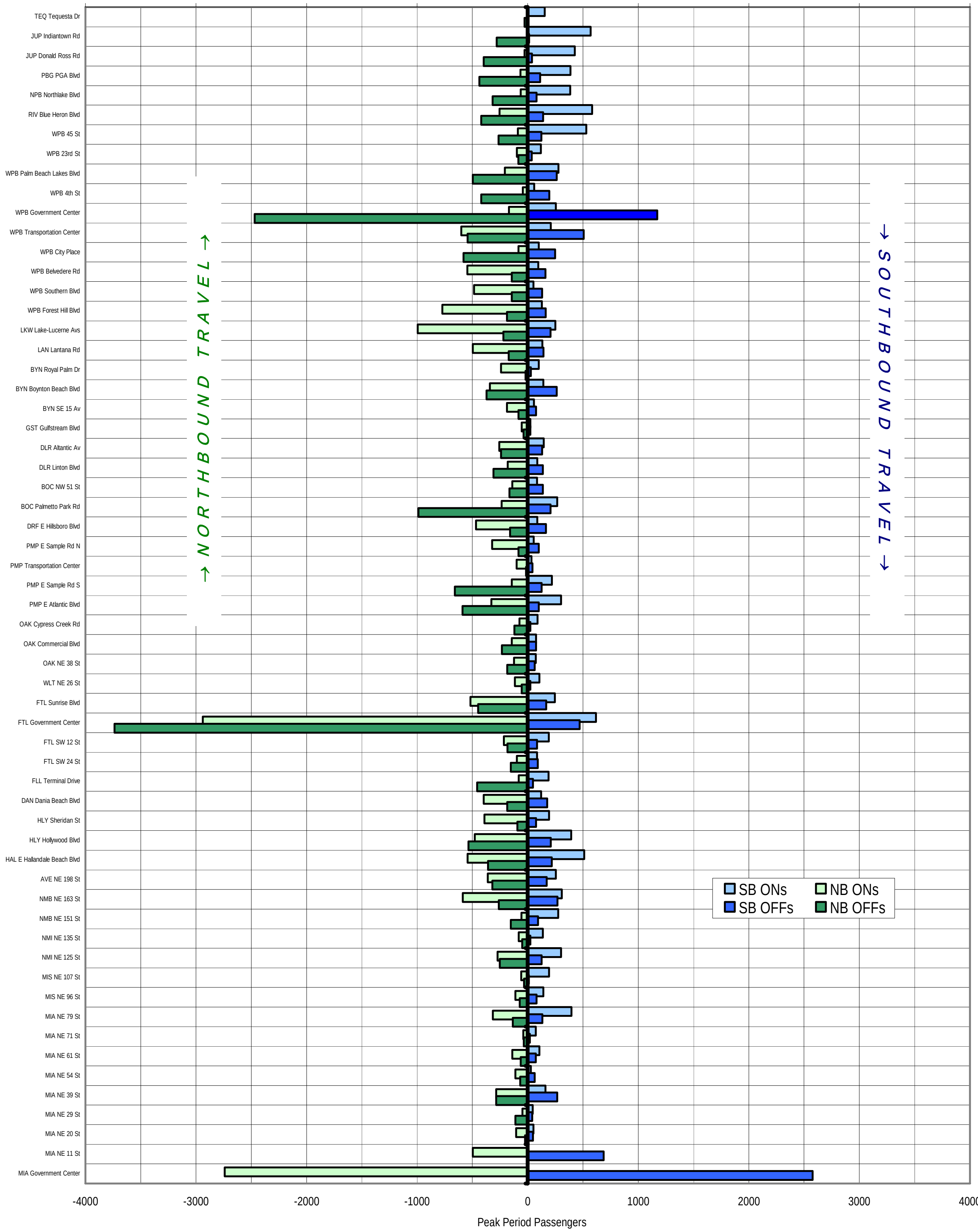
- **Peak-Period Ridership Forecast:** Time-of-day factors were applied to the 24-hour travel demand forecast to produce a trip table of origins and destinations by station for the three-hour A.M. peak period, illustrated in **Figure 4.7.** **Figure 4.8** attempts to illustrate the origin and destination of A.M. peak period travel between groupings of stations. The diameter of boarding and alighting circles are proportional to the forecasted volume of passenger trips with origins or destinations within each group, respectively. The thickness of the lines connecting each pair of groups is likewise proportional to the relative volume of A.M. peak period travel. Finally, **Figure 4.9** illustrates the volumes of intra-county and inter-county travel forecasted for an RGR service on the FEC during the A.M. peak period. From these figures, passenger travel patterns can be discerned in greater detail than in the 24-hour ridership graph alone as follows:
  - Ridership as forecasted in general shows little regard for county boundaries.
  - Downtown Miami and West Palm Beach are evident as significant destinations for southbound travel in the A.M. peak period for travelers originating throughout the length of the corridor.
  - In contrast, a large amount of northbound travel originates at Government Center in Miami bound for downtown Fort Lauderdale.
  - There is virtually a turn-over of northbound seats at Fort Lauderdale.
  - Ridership at Miami-Dade County stations north of downtown are almost evenly split between destinations in Miami-Dade and Broward Counties.
  - There is a significant volume of ridership between stations north of West Palm Beach, between those stations and downtown West Palm Beach, and between Central Palm Beach County stations and downtown West Palm Beach.

Figure 4.7: 2030 A.M. Peak Period Passenger Boardings & Alightings by Station (RGR on FEC)



NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Figure 4.8: 2030 A.M. Peak Period Passenger Origins & Destinations by Station (RGR on FEC)

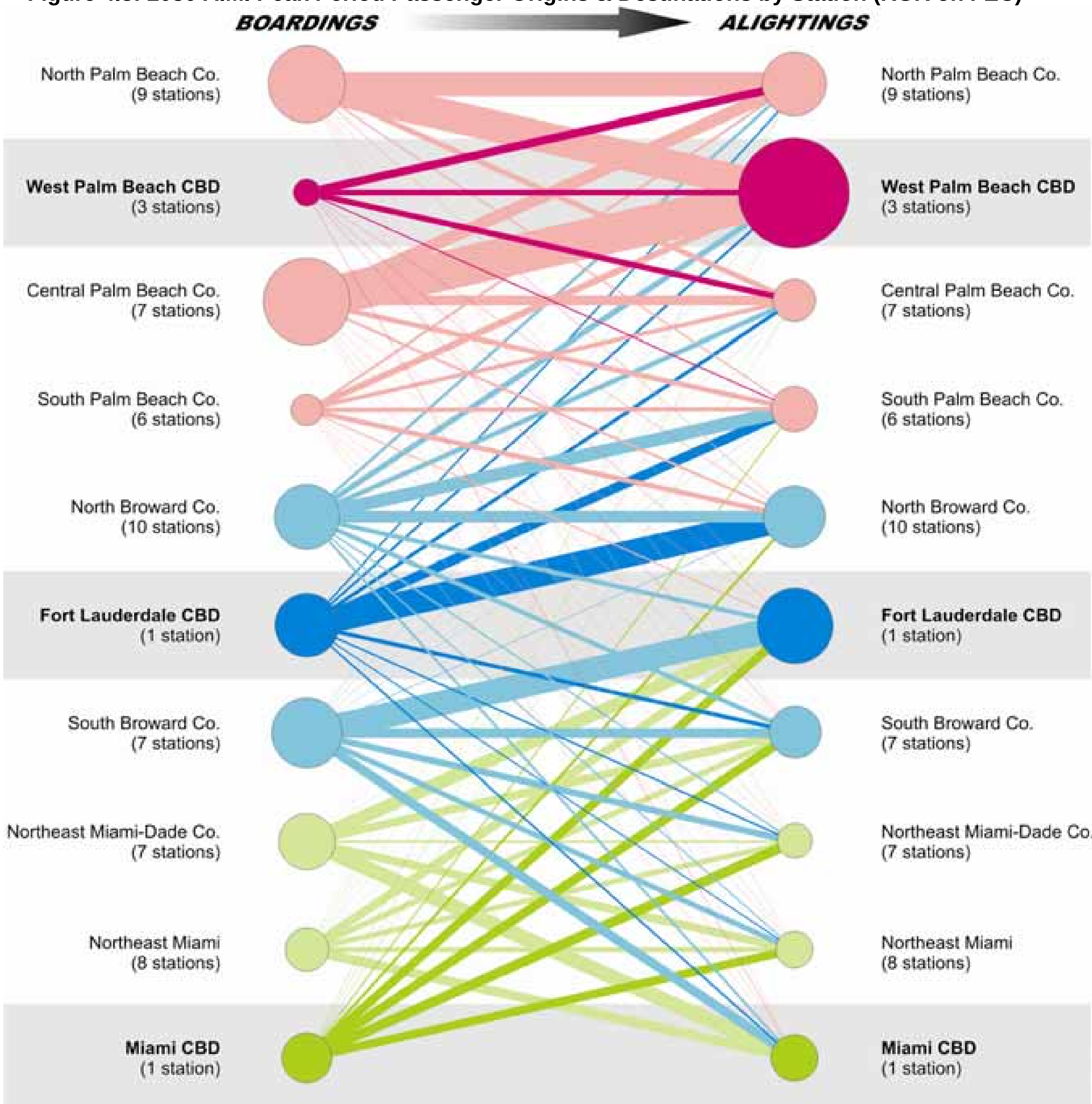
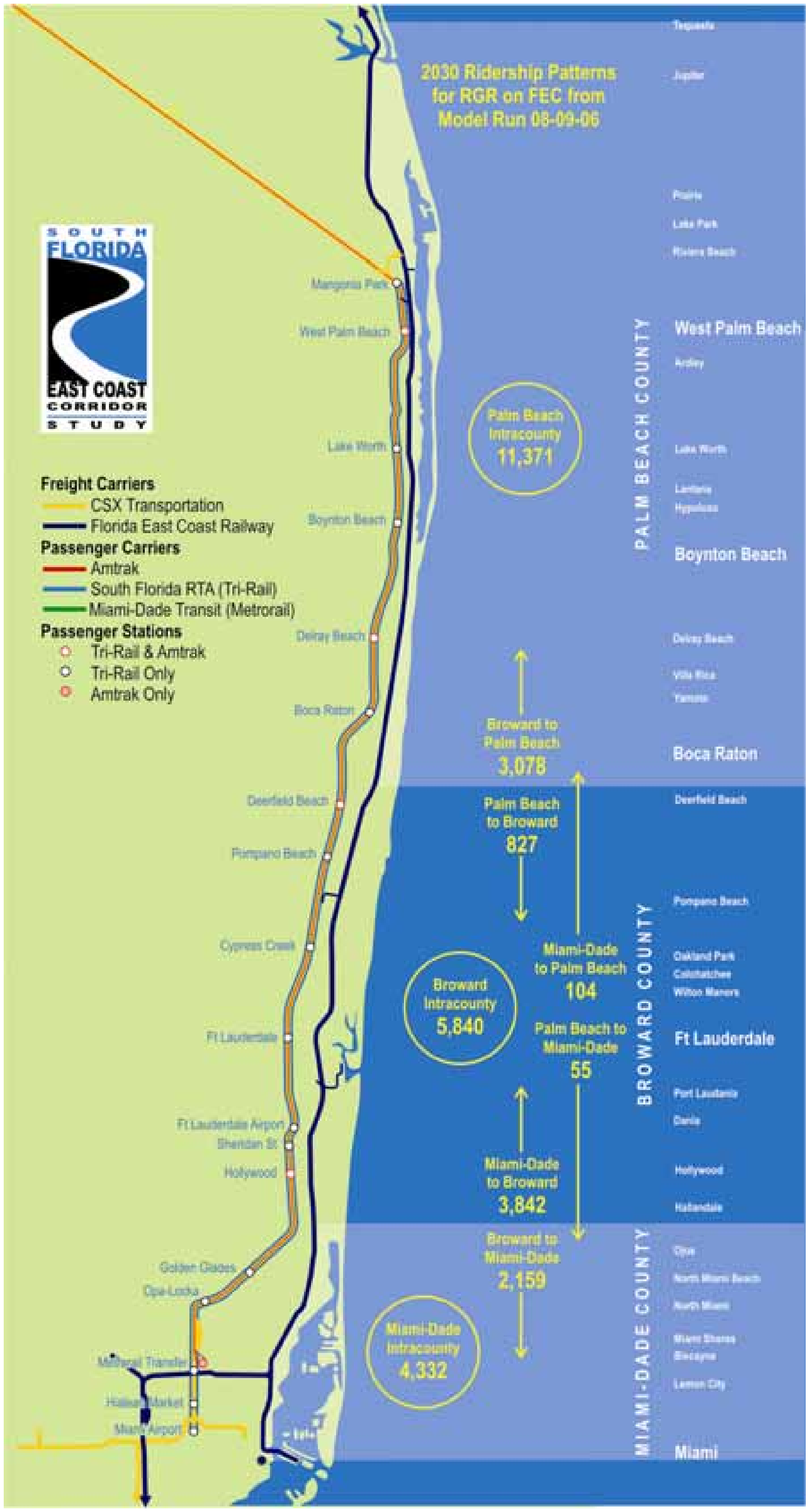


Figure 4.9: 2030 A.M. Peak Period Passenger Travel Patterns by County (RGR on FEC)



NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

- **Safety and Security:** Safety and security are priorities with any system of public transportation. Both the FTA and FRA have requirements for transit systems being developed under their respective jurisdictions to produce system safety and security plans. The requirements for projects increase significantly as a project evolves from Planning and Conceptual Engineering to Preliminary Engineering and, ultimately, to Final Design. However, regardless of which alternative is selected there is little difference at this stage between them with respect to safety and security. The ultimate goal of the transit systems safety and security development process is to result in equivalent levels of safety whichever alignment or modal technology is selected. Safety statistics for public transportation in general tend to indicate that public transportation is safer than comparable forms for surface passenger transportation (**Table 4.3**). Therefore, traveler safety in the SFECCTA study area is expected to increase in direct proportion to the number of travelers diverted from automobiles to transit.

Table 4.3: Public Transportation Safety

Surface Transport Mode	Number of Deaths per 100 Million Passenger Miles
Automobiles (General)	0.79
Vans, SUVs, Pick Up Trucks	0.76
Intercity Bus	0.02
Intercity and Commuter Railroads	0.03
Other Rail Transit	Not Reported
Bus Transit	0.01

Convenient and reliable transit options in the study area can also reduce vehicular congestion, thereby allowing greater access for emergency vehicles in and around a study area that includes several major hospitals.

4.3 Freight Train Operations

4.3.1 Florida East Coast Railway

Operations for the FEC Railway are based in Saint Augustine, Florida. The FEC is an independent Class II railroad, operating a 371-mile single-track mainline between Bowden Yard in Jacksonville and Hialeah Yard in Miami.

- **FEC Road Freights:** On weekdays FEC Railway operates between 11 and 12 northbound with between 10 and 13 southbound road trains on the SFECC (road freight/road train are railroad terms for through freight that is passing through an area, not serving local customers), see **Table 4.4** below. The northbound FEC Railway operations in the study area consist of:

- Six daily trains carrying a mixture of intermodal boxes and carload shipments. Two are based in Fort Lauderdale and four are based in Hialeah.
- Up to five daily rock trains moving aggregate from Miami-Dade County to points north.
- Every other day, an automobile carrier train is operated to and/or from the Hialeah Freight Yard.

It's FEC's practice to fill-out its trains with carload freight as tonnage and train length limits allow. Consequently, most trains carry some carload freight. All FEC intermodal trains originate or terminate in Jacksonville. Information on FEC freight operations is based on dispatching data provided by the FEC for ten representative days in 2005 and other sources.

Table 4.4: FEC Railway Study Area Road Trains by Type (Typical Weekday)

Train Type	Number Operated		Range of Typical Lengths (feet)
	Southbound	Northbound	
Mixed Traffic	7.0	6.0	7,000 – 8,000
Automobile	0.5	0.5	8,500
Rock	4.0	5.0	4,500 – 5,000
Total	11.5	11.5	

With delays for meets and passes, the typical FEC freight train requires approximately 9½ to 10 hours to travel between Jacksonville and Miami for a commercial velocity of approximately 39 mph. The time required to traverse the southernmost 128 miles of the route between Miami and Fort Pierce is 3 to 4 hours for a velocity of approximately 36 mph.

The line is maintained as a single track railway with numerous passing sidings to accommodate the bidirectional movement of trains and work for local customers. The track is generally maintained to a standard that allows freight trains to operate at a maximum allowable speed of 60 mph. A speed profile for the FEC line in the study area is shown in **Figure 4.10**.

The FEC Railway operates trains on the railway at all times, but the density of operations is greatest after 4:00 P.M. until 9:00 A.M. the following morning. The slow midday period allows FEC to serve local customers and perform maintenance work with reduced interference. **Table 4.5** reports mainline freight traffic densities by time of day along the most heavily used portion of SFECC near Fort Lauderdale.

Figure 4.10: Freight Speed Profile – Jupiter to Downtown Miami

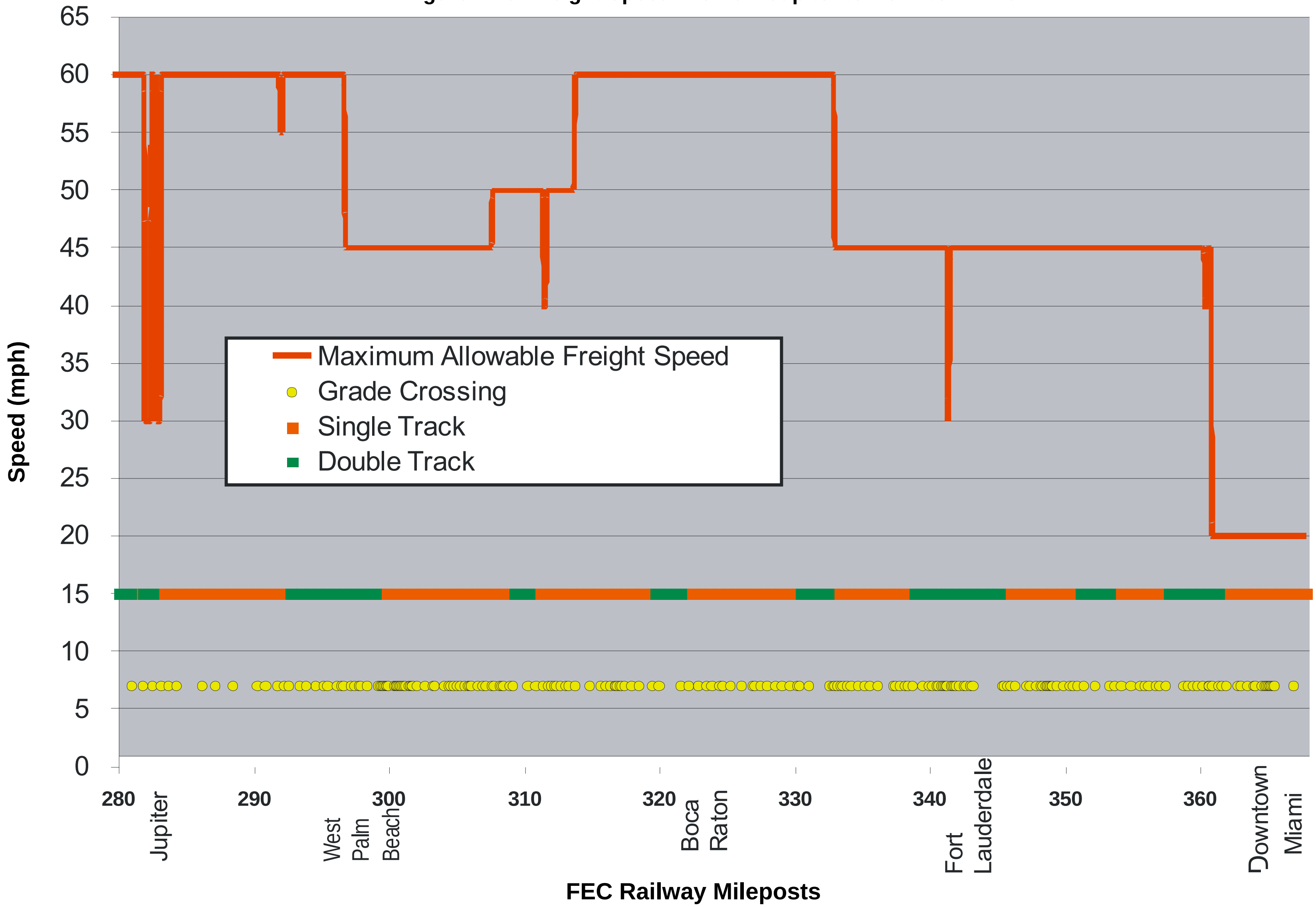


Table 4.5: Typical Freight Train Volumes by Time of Day at FLL Interlocking

Time period	Average Trains per Hour		Typical Train Counts	
	Road Freight	Local Freight On Main	Northbound	Southbound
Midnight to 6 A.M.	1.8		6	5
6 A.M. to 9 A.M.	1.3	0.7	2	2
9 A.M. to 4 P.M.	0.5	1.0	1	3
4 P.M. to 7 P.M.	1.0	0.3	2	1
7 P.M. to Midnight	1.0		3	2

FEC Railway freight traffic has been increasing in recent years. Overall in 2005 the FEC carried 550,000 carloads of freight traffic. Continued increases in freight rail volumes should be anticipated with a corresponding increase in the number of trains. Approximately one third of the intermodal traffic moving on the FEC is containers moving through the region's three major seaports.

- **Local Trains:** The FEC maintains three principal yards within the SFECCTA study area, Hialeah, Fort Lauderdale and West Palm Beach. Each yard has local trains which serve online customers. On a weekday one or two local trains serve customers on the mainline near Fort Lauderdale. One local train works from West Palm Beach, and one local train works from Hialeah. Those local trains serve 26 online customers, 14 of which are active. The online customers primarily ship building materials (10), food products (3) and paper (1). Local trains tend to operate on the mainline between 9:00 A.M. and 4:00 P.M.

4.3.2 South Florida Rail Corridor (SFRC)

All freight operations on the SFRC (Tri-Rail) alignment are conducted by CSXT of Jacksonville, Florida. The CSXT, one of the nation's seven Class I railroads, operates in 23 eastern states over a 22,000-mile route. Florida DOT purchased the SFRC from CSXT in 1988 but CSXT retained a perpetual and exclusive easement to operate freight service on this line under the terms of the sale. However, dispatch control over the SFRC is anticipated to be transferred to SFRTA in the very near future.

CSXT operations on the line consist of two to four daily manifest trains of carload commodities predominantly destined for warehouses along the line in Broward and Miami-Dade Counties and up to two daily rock trains moving aggregate from Miami-Dade County to points north. Information on SFRC freight operations is based on dispatching data provided by CSXT for eight consecutive representative days in 2000, and more recent local train observations. Unlike the FEC, CSXT's volume of intermodal container and trailer on flat car freight is negligible. **Table 4.6** provides a typical mix of passenger and freight trains in the vicinity of Ft. Lauderdale, Broward County, Florida.

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Table 4.6: Typical Passenger and Freight Train Volumes by Time of Day at Fort Lauderdale

Time period	Commuter Trains	Amtrak Trains	CSXT Road Freight Trains	CSXT Local Freight Trains	Total Trains
Midnight to 6 A.M.	2	0	4	2	8
6 A.M. to 9 A.M.	10	1	0	0	11
9 A.M. to 4 P.M.	14	1	0	0	15
4 P.M. to 7 P.M.	8	2	0	0	10
7 P.M. to Midnight	6	0	2	2	10
Total	40	4	6	4	54

- **Road Freights:** On weekdays CSXT operates between two and three northbound and between two and three southbound road trains daily. One or two trains in each direction carry carload freight to businesses in Miami-Dade and Broward Counties. One or two northbound rock trains operate between 10:00 P.M. and 2:30 A.M. The corresponding empties are returned southbound when required.

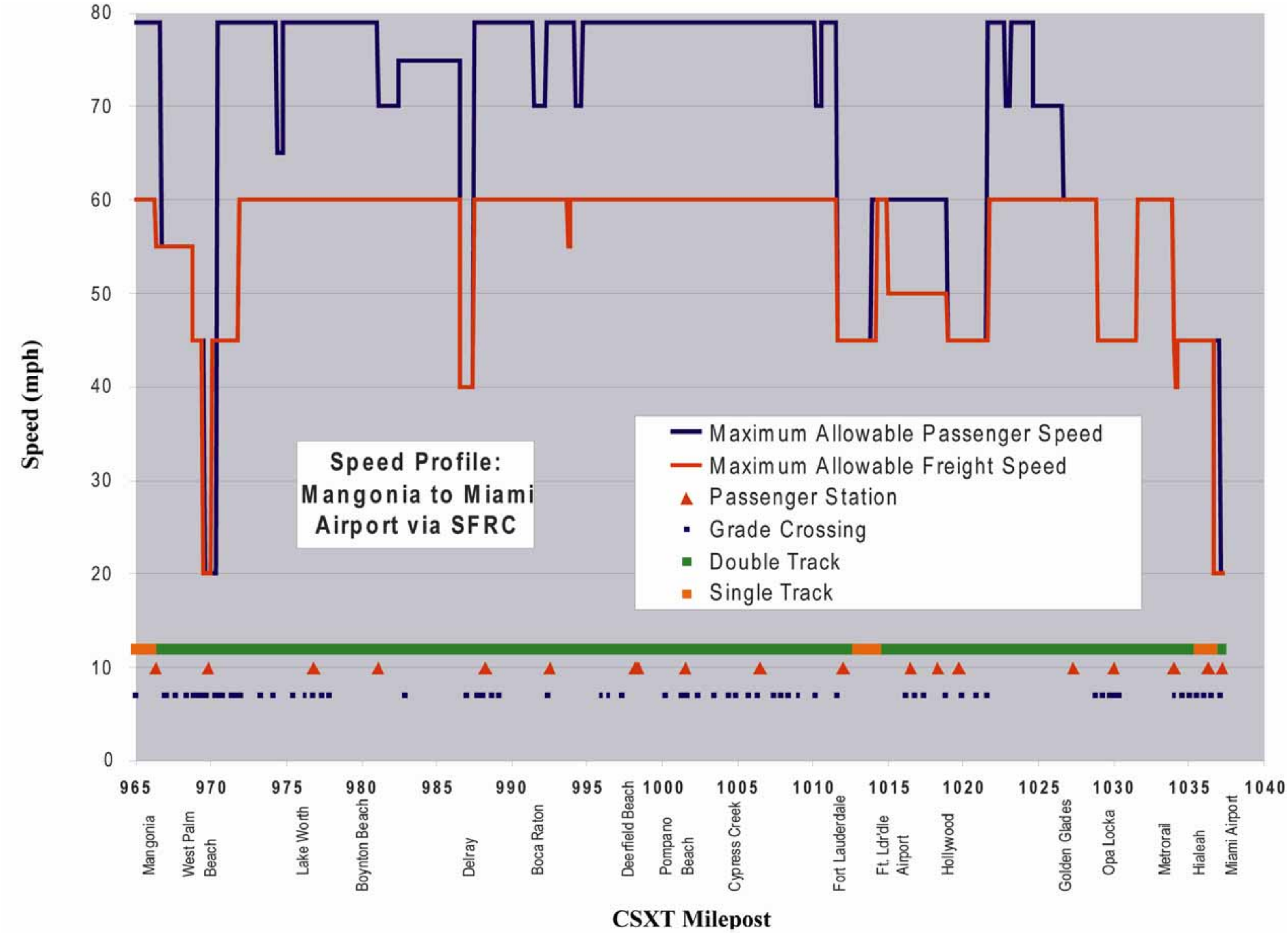
The typical CSXT freight train requires 2 hours to travel between Mangonia Park and Miami for a commercial velocity of approximately 35 miles per hour. The line is maintained as a double track railway with numerous crossovers. The track is generally maintained to a standard that allows freight trains to operate at a maximum allowable speed of 60 mph. A speed profile for the CSXT / SFRC line in the study area is shown in **Figure 4.11**.

- **Locals:** CSXT typically operates five daily local trains (see **Table 4.7**). Three operate overnight. Two operate during the midday period. Some local trains operate on Saturday on an abbreviated schedule. No local trains were observed to operate on Sundays.

Table 4.7: Typical Weekday Local Train Activities

Local Train	Train	Train Start	Extent of Territory	Tie-up time
Ft. Lauderdale	O717	20:00	Deerfield Beach	1:30
Fort Lauderdale	O718	21:00	Varies	Varies
Pompano South	O719	1:00	Varies	9:30
Miami Plantation	O722	7:00	Dania	14:15
Dyer South	O716	10:00	Lake Worth	17:00

Figure 4.11: Speed Profile of the Passenger Corridor



NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

4.3.3 Freight Integration Analysis

A freight integration study conducted for Phase 1 explored options available to shift or restructure freight operations on both the FEC and the SFRC in the event that proposed passenger services present substantial conflicts with current and future freight use of the lines. A technical memorandum documenting this freight integration analysis is available on the project website or by request. The analysis considered the physical, operational, economic, competitive and institutional viability of configuring the region's rail freight network in several ways. This work focused on the development and evaluation of three scenarios (see **Figure 4.12**):

- **Status Quo** – Current freight operations restricting FEC trains to SFECC and CSXT trains to the SFRC are preserved.
- **SFRC Freight Spine** – All through operations of FEC are rerouted to the SFRC
- **Western Freight Bypass** – All through operations of FEC and CSXT are rerouted to new rail line on the eastern edge of the Everglades.

Up to 18 current daily FEC trains are candidates for potential rerouting, based on existing traffic patterns. Four local trains, four trains based in Fort Lauderdale serving PEV, and two rock trains between Miami-Dade County and West Palm Beach are not viable candidates for rerouting.

On average, two current daily CSXT trains are candidates for potential rerouting. Four local trains and two general merchandise trains are not viable candidates for rerouting from the SFRC. The future scenario (with growth in freight traffic) assumes up to 24 FEC trains and six CSXT trains would be candidates for rerouting on a daily basis.

- **SFRC Freight Spine**
  - Two new connections between the SFRC and FEC would be required: a northern connection in the vicinity of Mangonia Park, and a southern connection at Iris near the Tri-Rail/Metrorail intermodal station. No other infrastructure improvements were assumed.
  - The analysis integrates 24 FEC through freight trains with 50 Tri-Rail trains, four Amtrak trains, six CSXT road freights, appropriate CSXT local freight train access and required maintenance of way windows.
  - Overall, the current pattern of FEC operations can be maintained with adjustments of less than 15 minutes for all but two northbound rock trains.

Figure 4.12: SFECCTA Freight Alignments

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- The difference in mileage between the FEC and SFRC routes is negligible for the purposes of economic route costing algorithms.
- Train performance calculations indicate that FEC trains can be interoperated with most local passenger service. FEC trains would be prohibited from SFRC for approximately 3.5 hours each day when passenger trains are operating at 20 minute headways. (Heavily loaded rock trains as presently operated are not suitable for interoperation with passenger services. Adding a fourth locomotive to the rock trains would allow them to operate during off peak periods.)
- Relative to highway safety, the SFRC Spine would reduce train crossings on the SFECC by 80% on the typical weekday but increase train crossings on the SFRC by 47%.
- For the typical FEC through freight train, the SFRC route could be up to 30 minutes faster than current operation by avoiding meet-pass delays on the current route. These delays may be reduced in the future by a state-funded capacity improvement near Boynton Beach. Also some increased speed on the SFRC would be eroded waiting for operating windows between passenger trains.
- The team could not accurately assess how the introduction of up to 24 FEC freight trains on the SFRC corridor would affect the reliability of passenger service delivery.
- The FEC has numerous concerns about the SFRC Spine scenario. These include: the need to maintain redundant freight capacity since the SFECC would not be abandoned, the prospect that duplicative maintenance costs would be paid by the FEC through SFRC track access fees, FEC train crews would be required to qualify on SFRC/CSXT rules and territory, SFRC operation without ATC signal protection provided by SFECC, possibly increasing risks and liability, possible erosion of freight service quality as the FEC competes for track time with passenger trains, and loss of control of freight dispatching and maintenance of way.
- The SFRTA also has many concerns relating to the SFRC Spine scenario, including: prospect that 24 new freight trains on the line would impact Tri-Rail service reliability, freight traffic may conflict with future improvements in passenger service, increased infrastructure wear-and-tear from dramatically increased volume of freight traffic, fewer and shorter windows for maintenance of way due to freight traffic, increased need to "wrong-rail", platform occupancy issues at Mangonia Park, and increased potential for noise complaints.

➢ **Western Bypass**

- The Western Bypass would construct 130 miles of new Class 4 mainline track. The Bypass requires 60 miles of new right-of-way, at least three new bridges, 31 control points, 43 new turnouts, six new grade crossings, 51 upgraded grade crossings and 13 new or rebuilt passing sidings.

- The Western Bypass would allow the corridor's railroads to reroute up to 24 FEC through freight trains and six CSXT through freight trains off lines in densely populated areas.
- For the typical freight train, the trip times on the Western Bypass will remain fairly similar to that achieved on the current routes.
- The difference in mileage between the original routes and the Western Bypass is negligible.
- As envisioned, the Bypass would entail a new right-of-way in the Everglades approximately 1,200 ft to the west of the current US 27 alignment and/or substantial reconstruction of at least six highway interchanges.
- Substantial drainage management and environmental mitigation may be required. The potential disruption to the sensitive Everglades ecosystem may prove simply unacceptable.
- The present owner of the Western Bypass alignment in the Everglades has not been determined, and it is not clear that cooperation from the current railway controlling the northern 45 miles of the new alignment would be forthcoming.
- From a highway safety perspective, the Western Bypass could feature 155 fewer grade crossings than the FEC, and 15 fewer than the SFRC. FEC trains moving from Hialeah to Fort Pierce could encounter only 57 grade crossings.
- The construction of a new infrastructure and upgrade of branch line track will result in a substantial additional ongoing maintenance burden. FEC is concerned that it may be saddled with unproductive and duplicative maintenance burden (whether directly or through track-access charges) under this scenario.
- The FEC is concerned that it would be difficult to grow on-line businesses and/or expand intermodal terminal capacity along the Western Bypass since the sensitive ecosystem in the Everglades would be disturbed by the development of freight terminals along the route.
- In contrast, the SFRTA notes that the environmental impacts and costs of upgrading the SFECC to provide both freight and passenger service may be greater than the environmental constraints and expenses encountered in constructing the Western Bypass.

➢ **Comparative Analysis:** The study evaluates the three scenarios on several dimensions. Comparative findings on each dimension are provided below.

- Freight Operations and Train Movements - On a typical day under the Status Quo scenario the SFECC would operate 18 through freight trains, five intermediate freight trains and four local freight trains (see **Figure 4.13** below). With the SFRC Spine scenario, all 18 through freight trains would be rerouted to the SFRC. Under the Western Bypass scenario the same 18 FEC trains and two CSXT trains would be rerouted to the Western Bypass.

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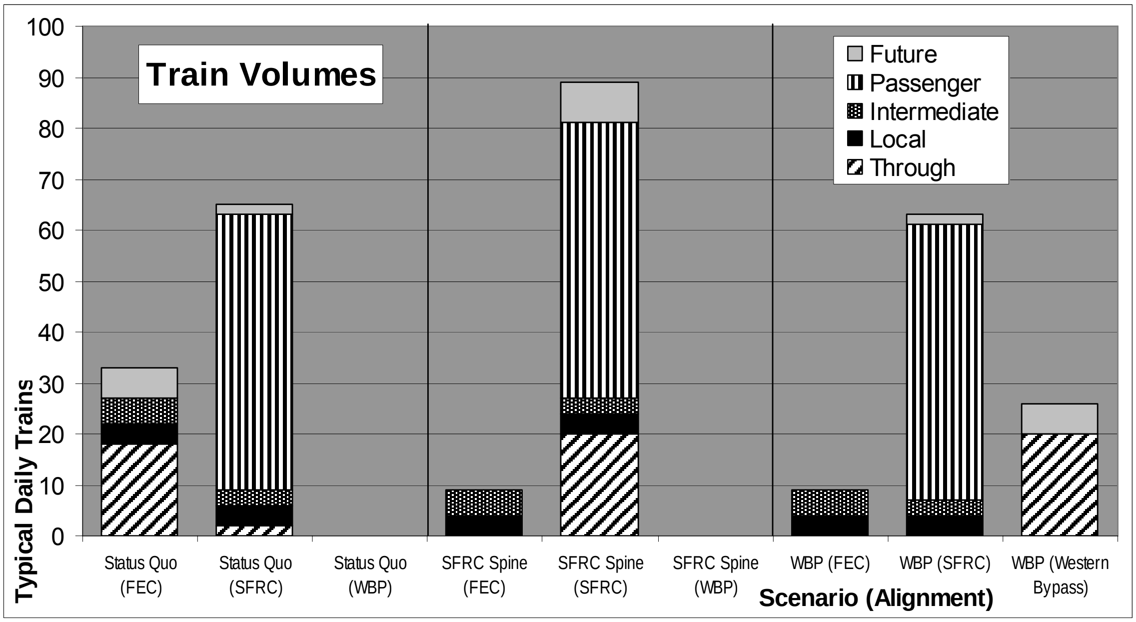
Figure 4.13: Typical Daily Trains Volumes by Scenario and Alignment



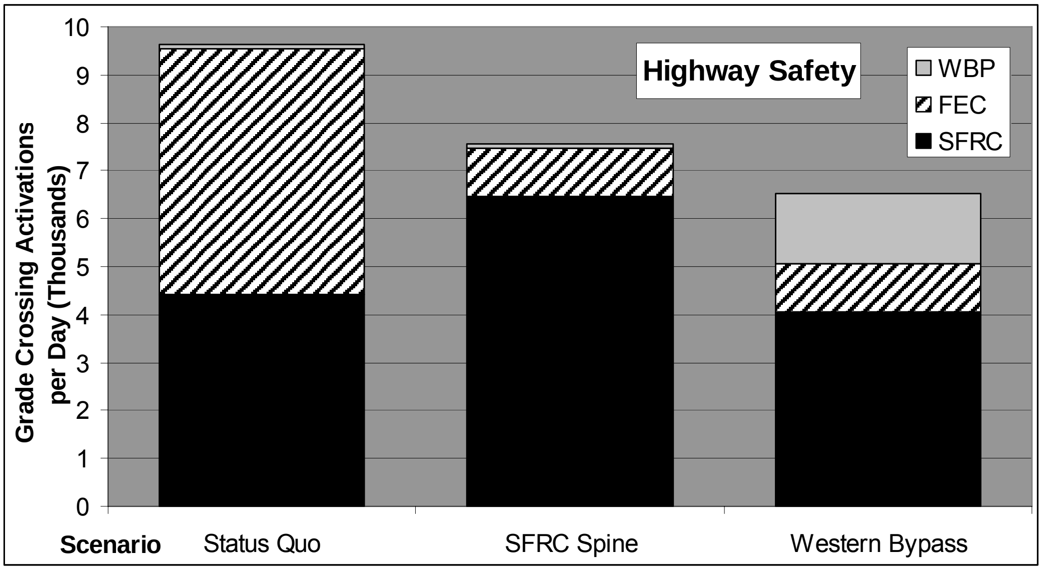
- Under the Status Quo, the SFRC hosts twice the train volume of the FEC. FEC carries mainly freight whereas SFRC carries mainly passenger trains.
- The SFRC Spine scenario shifts all through FEC freight to the SFRC, bringing its future daily train count to 88.
- Under the Western Bypass Scenario, the through FEC trains are absorbed by a new bypass alignment instead of the SFRC.
- **New Infrastructure Required:** No new infrastructure is required for the Status Quo freight operations, but maintaining the Status Quo may require substantial investment on the SFECC to allow frequent passenger commuter rail service in that corridor. The alternative freight integration scenarios require investment in freight facilities; however, the Western Bypass is by far the more expensive alternative (see **Table 4.8**).

Table 4.8: New Infrastructure Required

	Right-of-way (Miles)	Track (Miles)
Status Quo	0	0
SFRC Spine	4	17
Western Bypass	60	173

- **Highway Safety:** One goal of the freight integration is to reduce grade-crossing risks. Grade-crossing accident risk is partially a function of the daily grade-crossing train occupancies. Under the Status Quo, the SFECC accounts for about half of all grade-crossing activations. The SFRC Spine scenario shifts many through freight trains onto the SFRC, reducing grade-crossing activation counts for those trains. Although the total number of activations increased on the SFRC, the activations on the SFECC decreased much more. The Western Bypass scenario reduces grade-crossing risk exposure even further (see **Figure 4.14** below).

Figure 4.14: Typical Daily Train Crossings



- **Economics:** All three scenarios are essentially identical with respect to the operating mileage and travel times required for service. Both of the carriers are unlikely to incur substantially different “above the rail” operating costs due to the proposed re-routings. However, development of the Western Bypass would dramatically increase “below the rail” (infrastructure) cost for rail infrastructure in the region by adding almost 175 new main line miles of track to the RGR network.

- **Competitive and Institutional Concerns:** The FEC Railway is a very successful regional freight carrier in Florida. It carries at least four times more traffic in the corridor than CSXT, including all the premium intermodal, express and automobile traffic. CSXT is a major Class I railroad, but its South Florida franchise suffers from the lower costs of the FEC Railway.

  The presence of CSXT in the South Florida is an important competitive force in the region. CSXT’s operation provides a service floor and a price ceiling for rail freight services. Without the CSXT, the market forces limiting the FEC pricing and service strategy would be relaxed. South Florida would be well advised to preserve and encourage rail freight competition.

  Institutionally, both the FEC Railway and CSXT are Federally regulated railroads engaged in interstate commerce. The railroads are private property with special protections from regulation and interference by states and localities. In most matters States and localities must deal with the railroads as peers since railroads are immune from many State powers. In exchange for these protections, the railways have common carrier obligation that prohibits them from denying service to freight customers or from closing a freight line.

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The most salient institutional considerations that will circumscribe the possible integration of regional freight operations revolve around three points. First, the State of Florida's influence on CSXT or FEC to reroute any of their trains to an alternative route is very limited or nonexistent. Second, neither FEC nor CSXT are free to abandon freight operations on their lines. Third, CSXT is free to block FEC trains from using the SFRC. Conversely, the FEC Railway is free to block CSXT trains from using the SFECC.

The regional competitive impacts of the SFRC Spine operation would be neutral at best. FEC Railway and CSXT service would share infrastructure but remain essentially unchanged. However, FEC's flexibility to unilaterally innovate and grow would be curtailed by the need to coordinate with other users of the Spine. The institutional hurdles associated with the SFRC Spine scenario are formidable. It seems that the SFRC Spine scenario would only be attractive if circumstances surrounding development of passenger services along the SFECC were sufficiently grave to force the State to consider a fallback option.

The Western Bypass would create uncertainty and risk for the FEC Railway in many of the same areas as the SFRC Spine. The FEC Railway still would be reluctant to reroute a key portion of its network over a mainline shared with other operations and dispatched/maintained by a third party as long as the FEC Railway had the option to use its current route. The new route would not relieve either the FEC Railway or CSXT of their obligations to customers on their existing mainlines and would therefore be redundant. However, in contrast to the SFRC Spine, the Bypass would not be shared with 54 or so Tri-Rail or Amtrak passenger trains. Consequently, the risk for freight train delays due to conflicts with passenger trains would be ameliorated or eliminated with implementation of the Western Bypass.

Institutionally, it has not been determined how the South Central Florida Express (SCFE) Railroad on the northern end of the Bypass would interact with CSXT and FEC in the creation and operation of the Western Bypass. The SCFE's lease for 45 miles of the former FEC K-branch expires in 2025. Assuming that SCFE is amenable to cooperating with Florida to build and operate the Bypass, the State would not be enjoined from inviting both FEC and CSXT to use the new facility. However, the State still could not force either carrier to use the new facility. Neither CSXT nor FEC would be able to completely abandon the lines they are currently using for freight service, due to obligations to serve communities and stations that are not on the Bypass route.

4.4 Greenways and Rail-with-Trail (RWT)

RWT describes any shared use path, or other trail located on or directly adjacent to an active railroad corridor. These pedestrian/bicycle paths are physically separated from motorized vehicular traffic by an open space or barrier and generally run parallel to an existing railway. Similarly, greenway systems can also utilize, but are not limited to, railroad rights-of-way. They can include canal and wide road rights-of-ways, utility easements and waterways. Greenways and RWT create countywide and/or regional networks of safe, clean, equestrian, bike and pedestrian trails that connect neighborhoods, parks and recreation areas, cultural and historic sites, schools and businesses.

In accordance with Section 335.065(1) (a), FS, the FDOT shall give bicycle and pedestrian ways full consideration in the planning and development of transportation facilities, including the incorporation of such ways into state, regional, and local transportation plans and programs.

Broward County has amended their County Comprehensive Plan to include a greenway network with over 370 miles of land and water trails throughout the County. The proposed Dixie Highway Greenway will afford pedestrians the opportunity to traverse Broward County from Palm Beach County to Miami-Dade County along historic main streets and through downtowns of its eastern cities. Of importance to the proposed project, is Broward County's plan to parallel the FEC Railway for practically the entire length of the greenway. When combined with the potential for passenger service along the FEC Railway, the Dixie Highway Greenway would become a multi-modal facility affording residents and visitors easy access to Broward County's CBD, natural areas and parks. The City of Oakland Park plans to construct part of the greenway as part of its redevelopment program. Likewise, Miami-Dade County has plans for a county wide greenway network which includes 34 greenways and over 500 miles of trails. The Flagler Trail (14.9 miles) is planned to be developed entirely within the FEC railroad right-of-way between the county line at the north and Miami's CBD at the south. Currently, Palm Beach County is in the process of developing a plan for a regional network of greenways and trails through a series of countywide sessions involving various agency representatives.

All stakeholders involved would benefit from a regional plan designed to create a continuous, uninterrupted greenway that would traverse the Tri-County area. Such a network of trails would afford local residents and visitors/tourists the opportunity to combine alternate modes of transportation to visit various municipalities, shopping centers, schools, dining establishments, recreation areas, and cultural sites. Within the project corridor alone, there is a total of approximately 1400 municipal, county, and State parks, as well as cultural centers and historic features (bridges, cemeteries, structures) with a 400 feet buffer of the FEC alignment (see **Table A.21** in **Appendix A**). A regional greenway would also support daily commuters traveling between neighborhoods and/or employment centers. The following section offers a broad overview of the issues and design concepts associated with planning a RWT along an existing railway.

RWT offers pedestrians and cyclists the opportunity for an alternate avenue for commuting as well as a recreational facility. When integrated with a passenger transit service, RWT provides increased linkages between neighborhoods, reduce the need to travel by automobile and the associated need for automobile

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parking, and offers a more affordable and often more direct mode of travel particularly to/from transit stations. These trails may also be safer than alternative bike trails located on streets due to the use of exclusive rights-of-way and the minimal interaction with automobiles. However, there are several concerns associated with having pedestrian and bicycle traffic adjacent to an active railway:

- **Possible business reasons some railroads may oppose RWT:** the trails are not related to railroad operations and generally do not generate revenue for the railroads; railroad rights-of-way may be needed for future enhancements to system capacity; poor design or maintenance of trails could lead to increased trespassing, with consequent increases in injuries and deaths; narrowing the railroad's portion of the right-of-way drives up the cost of maintaining track and structures (including complicating safety protection for roadway workers); and significant new populations of pedestrians close to the active track structure may result in additional stress on train crews seeking to ensure the safety of train movements.

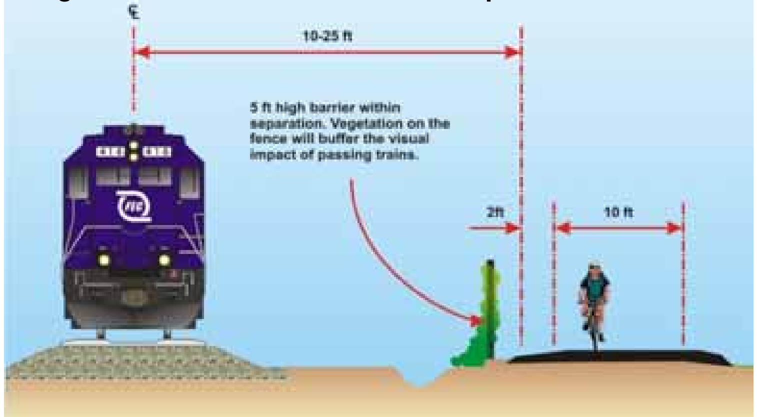
- **Possible business reasons railroads may benefit from well-designed RWT:** financial compensation; reduced petty crime, trespassing, dumping, and vandalism; reduced illegal track crossings through channelization of users to grade-separated or well-designed at-grade crossings; increased public awareness of railroad company service; increased aesthetics of railroad right-of-way; increased tourism revenue; increased adjacent property values; and improved access to transit for transit users, law enforcement and maintenance vehicles.

According to a study conducted by the USDOT, involving stakeholders early in the planning process of RWT is "critical for success". Typical stakeholders may include: railroad companies, including representatives of real estate, operations, maintenance, and legal departments; railroad customers (such as businesses that ship and/or receive shipments by rail; utility companies, such as telephone, cable, water, sewer, electric, and gas; law enforcement officials; other adjacent landowners; trail user groups; and transportation, public transit, parks and recreation, and health departments.

Liability concerns may be mitigated by a State enacted "Recreational Use Statute" (RUS). The RUS is a term given to legislation generally intended to promote public recreational use of privately owned land. All 50 States have RUS which protects landowners who allow the public to use their land for recreational purposes. The underlying policy of a RUS is that the public's need for recreational land has outpaced the ability of local, State, and Federal governments to provide such areas therefore, owners of large acreages of land are encouraged to help meet this need (Chapter 375, FS, §375.251: Limitation on liability of persons making available to public certain areas for recreational purposes without charge).

No national standards or guidelines dictate RWT facility design. Guidance must be pieced together from standards related to shared use paths, pedestrian facilities, transit and railroad facilities, and/or roadway crossings of railroad rights-of-way. Useful documents include the Manual on Uniform Traffic Control Devices, the AASHTO Guide for the Development of Bicycle Facilities (1999), ADA publications for trails and pedestrian facilities, and numerous FRA documents regarding grade-crossing safety and trespass prevention. Generally, setback and separation distances are dictated by various factors including: type, speed, and frequency of trains in the corridor; separation technique; topography; sight distance; and maintenance requirements (**Figure 4.15**).

Figure 4.15 General Setback and Separation Distances



The point at which trails cross active tracks is the area of greatest concern to railroads, trail planners, and trail users. When it is necessary to intersect a trail with an active railway, there are three options: an at-grade crossing, a below-grade (underpass) crossing, or an above-grade (overpass) crossing. All of these options will require further study, including the goal of minimizing the number of required crossings.

A full environmental assessment will be included as part of a Phase 2 RWT study. The environmental analysis will be conducted simultaneously with passenger transit studies to allow for the RWT design team to minimize or avoid significant environmental impacts. The environmental analysis will provide a good forum for public input and political approvals.

A well designed RWT can bring numerous benefits to communities and railroads alike. Working closely with transit agencies, railroad companies and other stakeholders is crucial to a successful RWT. Limiting new and/or eliminating at-grade trail-rail crossings, setting the trail back as far as possible from tracks, and providing physical separation through fencing, vertical distance, vegetation, and/or drainage ditches can help create a well-designed trail.

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5.1 Federal Transit Administration Criteria and Evaluation Method

The initial 36 Phase 1 preliminary transit alternatives, consisting of combinations of service segment, alignment and technology, were evaluated and ranked relative to each other based on general FTA criteria with eight broad areas (**Table 5.1**). Each of these broad areas has more specific evaluation criteria that were assessed and discussed in greater detail in previous sections of this document. The FTA criteria applied to this study are defined as follows:

A. Effectiveness: the extent to which the alternatives solve the stated transportation problems in the corridor and address the purpose and need

- Performance in satisfying the project purpose and need (Section 1.2)
- Performance in satisfying the project goals and objectives (Section 1.3)

B. Impacts: the extent to which the alternatives can either positively or negatively affect the natural and physical environment including natural resources, neighborhoods, air quality, land use, the adjacent transportation network and facilities, the local economy, etc

- Identified impacts to the transportation system (Section 4.0)
- Identified potential impacts to land use (Section 3.2)
- Identified potential impacts to environmental (NEPA) resources (Chapter 3)

C. Cost Effectiveness: the extent to which the cost of the alternatives are commensurate with their benefits

- Projected daily ridership (Section 4.2.2)
- Capital cost per mile (Section 2.5)

D. Equity: are the costs and benefits of the alternatives distributed fairly across different population groups

- Compatibility with socio-demographic and socio-economic conditions (Section 3.1)

The alternatives were ranked from high (1) to low (4), depending on the segment and alignment. Alternatives receiving a “high” ranking were found to more closely meet the project’s purpose and needs/goals and objectives. The rankings for impacts to the transportation system were based on a qualitative analysis and ranged from minimal impact (1) to significant impact (5).

Table 5.1: Summary of Alternatives Evaluation Relative Rankings

Effectiveness		Impacts			Cost Effectiveness		Equity
Purpose & Need	**Goals & Objectives**	**Transportation System Impacts**	**Land Use**	**NEPA**	**Ridership**	**Capital Cost/ Mile**	**Socio-Economic**
			Segment 1				
1. All FEC Alternatives	1. I-95 RGB1/ 1RGB1A	1. I-95 1RGB1/ 1RGB1A	1. All US-1 Alternatives	1. I-95 RGB1A	1. FEC 1RGR1/ 1RGR1A	1. I-95 1RGB1	1. All US-1 Alternatives
2. All US-1 Alternatives	2. All FEC Alternatives	2. I-95 1RGR2	2. All FEC Alternatives	2. I-95 1RGB1	2. FEC 1BRT2A/ 1LRT2A	1. US-1 1RGB2	2. All FEC Alternatives
3. All I-95 Alternatives	3. All US-1 Alternatives	3. US-1 1RGB2/2A	3. All I-95 Alternatives	3. I-95 1RGR2	3. US-1 1BRT1/ 1LRT1	2. I-95 1RGB1A	3. All I-95 Alternatives
	4. I-95 1RGR2	4. All FEC Alternatives		4. FEC 1BRT2A/ 1RGR1	4. US-1 1RGB2/ 1RGB2A	2. US-1 1RGB2A	
		5. US-1 1BRT1/ 1LRT1		5. US-1 1RGB2A	5. I-95 1RGB1/ 1RGB1A	3. FEC 1LRT2A	
				FEC 1BRT2	6. I-95 1RGR2	4. FEC 1RGR1A	
				6. US-1 1RGB2		5. FEC 1RGR1	
				7. FEC 1RGR1A		6. US-1 1BRT1	
						7. US-1 1LRT1	
						8. I-95 1RGR2	
			Segment 2				
1. All FEC Alternatives	1. All FEC Alternatives	1. FEC 2BRT2/ 2LRT2	1. All US-1 Alternatives	1. FEC 2BRT2/ 2LRT2	1. FEC 2RGR1	1. FEC 2BRT2	1. All FEC Alternatives
2. FEC 2BRT2/ 2LRT2	2. All US-1 Alternatives	2. FEC 2RGR1	2. All FEC Alternatives	2. All US-1 Alternatives	2. FEC 2BRT2/ 2LRT2	2. FEC 2LRT2	2. All US-1 Alternatives
3. All US-1 Alternatives		3. All US-1 Alternatives		3. FEC 2RGR1	3. US-1 2BRT1/ 2LRT1	3. FEC 2RGR1	
						4. US-1 2BRT1	
						5. US-1 2LRT1	
			Segment 3				
1. All FEC Alternatives	1. FEC 3BRT2/ 3LRT2	1. FEC 3BRT2/ 3LRT2	1. All US-1 Alternatives	1. All FEC Alternatives	1. FEC 3RGR1	1. FEC 3BRT2	1. All FEC Alternatives
2. FEC 3BRT2/ 3LRT2	2. FEC 3RGR1	2. FEC 3RGR1	2. All FEC Alternatives	2. All US-1 Alternatives	2. FEC 3BRT2/ 3LRT2	2. FEC 3RGR1	2. All US-1 Alternatives
3. All US-1 Alternatives	3.All US-1 Alternatives	3. All US-1 Alternatives			3. US-1 3BRT1/ 3LRT1	3. FEC 3LRT2	
						4. US-1 3BRT1	
						5. US-1 3LRT1	

Note: See **Table 5.5** below for graphic representation of the modal technologies and service segments ranked herein. Rankings = 1 being best, 2 next best, etc.

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Table 5.1: Summary of Alternatives Evaluation Relative Rankings, continued

Effectiveness		Impacts			Cost Effectiveness		Equity
Purpose & Need	**Goals & Objectives**	**Transportation System Impacts**	**Land Use**	**NEPA**	**Ridership**	**Capital Cost/Mile**	**Socio-Economic**
Segment 4							
1. FEC 4RGR1	1. FEC 4RGR1	1. FEC 4BRT2/ 4LRT2	1. All US-1 Alternatives	1. All US-1 Alternatives	1. FEC 4RGR1	1. FEC 4BRT2	1. All FEC Alternatives
2. FEC 4BRT2/ 4LRT2	2. FEC 4BRT2/ 4LRT2	2. FEC 4RGR1	2. All FEC Alternatives	2. All FEC Alternatives	2. FEC 4BRT2/ 4LRT2	2. FEC 4LRT2	2. All US-1 Alternatives
3. All US-1 Alternatives	3. All US-1 Alternatives	3. US-1 4BRT1/ 4LRT1			3. US-1 4BRT1/ 4LRT1	3. FEC 4RGR1	
						4. US-1 4BRT1	
						5. US-1 4LRT1	
Segment 5							
1. FEC 5RRT1	1. FEC 5RGR1	1. FEC 5RRT1, 5BRT2/5LRT2	1. All US-1 Alternatives	1. All FEC Alternatives	1. FEC 5RRT1	1. FEC 5BRT2	1. All FEC Alternatives
2. FEC 5RGR1	2. FEC 5RRT1	2. FEC 5RGR1	2. All FEC Alternatives	2. All US-1 Alternatives	2. FEC 5RGR1	2. FEC 5LRT2	2. All US-1 Alternatives
3. FEC 5BRT2/ 5LRT2	3. FEC 5BRT2/ 5LRT2	3. All US-1 Alternatives			3. FEC 5BRT2/ 5LRT2	3. FEC 5RGR1	
4. All US-1 Alternatives	4. All US-1 Alternatives				4. US-1 5BRT1/ 5LRT1	4. FEC 5RRT1	
						5. US-1 5BRT1	
						6. US-1 5LRT1	
Segment 6							
1. FEC 6RGR1	1. FEC 6RGR1	1. FEC 6RRT1	1. All US-1/FEC Alternatives	1. All FEC Alternatives	1. FEC 6RRT1	1. FEC 6BRT2	1. All FEC Alternatives
2. FEC 6RRT1	2. FEC 6RRT1	2. FEC 6BRT2/ 6LRT2		2. All US-1 Alternatives	2. FEC 6RGR1	2. FEC 6RGR1	2. All US-1 Alternatives
3. FEC 6BRT2/ 6LRT2	3. FEC 6BRT2/ 6LRT2	3. FEC 6RGR1			3. FEC 6BRT2/ 6LRT2	3. FEC 6LRT2	
4. All US-1 Alternatives	4. All US-1 Alternatives	4. All US-1 Alternatives			4. US-1 BRT/LRT	4. FEC 6RRT1	
						5. US-1 6BRT1	
						6. US-1 6LRT1	
Segment 7,8, 9							
1. FEC Down-town Miami	1. SRRC	1. SFRC	1. FEC Down-town Miami	1. SFRC	1. FEC MIC		1. FEC Down-town Miami
2. FEC MIC	2. FEC MIC	2. FEC/Downtown Miami / MIC	2. FEC MIC	2. FEC Down-town Miami	2. FEC Down-town Miami		2. FEC MIC
3. SFRC	3. FEC Down-town Miami		3. SFRC	3. FEC MIC	3. SFRC		3. SFRC

Note: See **Table 5.5** below for graphic representation of the modal technologies and service segments ranked herein Rankings =1 being best, 2 next best, etc.

Rankings established under ridership were based on a comparative analysis of SERPM5 modeling results for the different service segment alternatives. High ridership contributed to an alternative's high ranking versus low ridership. Finally, rankings for cost were based on a total cost per mile comparison and the lower the cost the higher the alternative ranked. The ranking process summarized in **Table 5.1** is supported by **Tables 5.2 – 5.4**. These three support tables 5.2 through 5.4 are found together on an oversized graphic titled "Environmental (NEPA) Analysis Summary" in the insert sleeve. These summary/support tables are labeled as follows:

Table 5.2: Land Use Data and Alternatives Analysis Matrix
Table 5.3: NEPA Evaluation Criteria
Table 5.4: Census Data and Alternatives Analysis Matrix

Furthermore, the background data to support the summary information in **Table 5.3** is included in **Tables A.18 – A.23** in **Appendix A**. These background summary tables document the GIS data layers utilized to analyze an alternatives' potential for involvement with contaminated sites, biological/natural resources, socio-economic services, cultural resources, or noise and vibration sensitive receptors. These tables also document the results of the GIS "buffer analyses" described in Section 5.1.1. As a graphical reference for **Table 5.1** above, **Table 5.5** below presents the same SFECCTA preliminary alternatives presented in **Table 2.16** in Section 2.3.3. Build Alternatives.

5.1.1 GIS Analysis Methodology Description

The process of screening the alternatives based on a GIS buffer analyses was determined to be the most appropriate approach for Phase 1 of the SFECCTA considering the level of detail known for each transit alignment and technology. The GIS analysis procedure employed in Phase 1 utilized all available data gathered primarily from the FGDL (http://www.fgdl.org/), State sources (e.g., SFWMD), data repositories at universities such as Florida International University, University of Florida, and University of Miami, as well as other local and Federal sources. GIS analyses of the various alternative alignments were conducted by utilizing a series of geographically referenced "shapefiles" (data layers containing information such as type of site, name, address or coordinates, size or shape). Shapefiles of all available FEC Railway lines for the 85-mile mainline and connecting spurs (both former and existing trackways) were overlaid on recent (2004) aerial color photographs, along with shapefiles for US-1 roadways or shapefiles obtained or created along potential new corridor connections within utility or canal rights-of-way. The FEC Railway network can be seen on the oversized GIS figures in **Appendix A** where it alone was displayed as the center line for the entire study area. This allowed the creation of a centerline for the GIS buffer analyses to identify "features" (i.e., data points) relative to the centerline.GIS buffer analyses provided quantities of features present within a specified buffer distance from particular reference points or alignment centerline (see **Tables A.18 – A.23** for layers utilized). These

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Table 5.5: SFECCTA Preliminary Alternatives

Service Segment	Alignment	Regional Bus	Bus Rapid Transit	Light Rail Transit	Rail Rapid Transit	Regional Rail: Tri-Rail	Regional Rail: Other RGR
1 West Palm Beach North	FEC		1BRT2A	1LRT2A		1RGR1/1A	
	US1	1RGB2	1BRT1	1LRT1			
	I-95	1RGB1				1RGR2	
2 North Palm Beach County	FEC		2BRT2	2LRT2			2RGR1
	US1		2BRT1	2LRT1			
3 West Palm Beach South	FEC		3BRT2	3LRT2			3RGR1
	US1		3BRT1	3LRT1			
4 East Broward County	FEC		4BRT2	4LRT2			4RGR1
	US1		4BRT1	4LRT1			
5 Ft Lauderdale – Miami	FEC		5BRT2	5LRT2	5RRT1		5RGR1
	US1		5BRT1	5LRT1			
6 Miami Northeast	FEC		6BRT2	6LRT2	6RRT1		6RGR1
	US1		6BRT1	6LRT1			
	Technology:	RGB	BRT	LRT	RRT	RGR	

Legend

1BRT2A

- Alignment Variation
- Alternative #
- Technology
- Service Segment

datasets do not automatically identify anticipated impacts, or the degree of impacts to individual resources, nor do they identify the quality or value of the resources shown. For Phase 1 of the SFECCTA the buffer analyses utilized either I-95 in northern Palm Beach County, or for the FEC Railway and US-1 alignments for the entire study area length.

The presence or absence of a resource was used as a proxy for determining potential impacts to the resources located in proximity to each of the alternative alignments. These buffer analyses were therefore used strictly for comparison purposes between alternative alignments. The buffer distances from the alignment centerlines used to identify the various resources were selected based on best professional judgment and experience performing NEPA analysis for numerous PD&E Studies for FDOT and municipal transportation projects. Available FTA guidelines for transit noise and vibration offset distances were followed in the preliminary noise and vibration "screening" analysis.

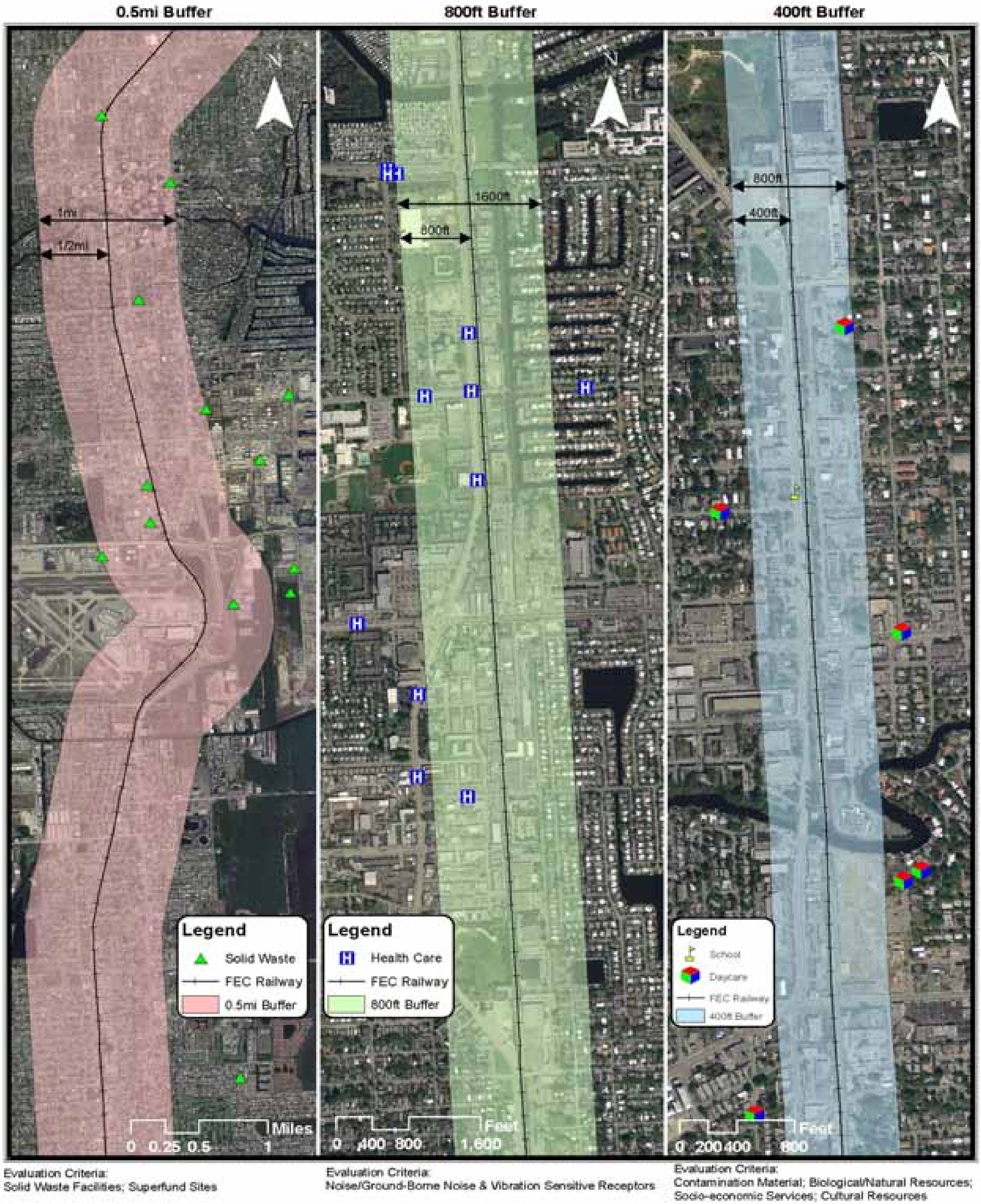
The specific buffer distances utilized in this analyses ranged from 400 feet on either side of the centerline, (800-foot wide buffer) to 0.5 mile on either side (1-mile wide buffer), as noted in the legend for **Tables 5.2 – 5.4** on the Environmental (NEPA) Analysis Summary pullout matrix. **Figure 5.1** illustrates these buffer widths centered on the FEC Railway alignment as an example (similar buffers were applied to US-1 and I-95, the latter in northern Palm Beach County only). The land use GIS analysis calculated (quantified) percentages of various types of land use categories present within the buffer area per alternative segment (**Table 5.2**). The GIS analysis of NEPA data (i.e. biological, cultural and physical criteria) determined the number of sites present within a specified buffer distance (**Table 5.3**). Buffer analysis of the census data identified persons or households within a specific buffer distance (**Table 5.4**). The census data utilized for this analysis consisted of a subset of available demographic statistics that are considered applicable to transit-dependent populations or populations benefiting from transit (**Table 5.4**).

The percent land use, populations, or number of sites per linear mile for each "modal technology-alternative" was then calculated to normalize the results among the differing segment lengths. This provided the number of sites/features under each evaluation criteria per segment mile within each alignment and modal technology combination. Potential impacts to United States Census demographic data and NEPA were evaluated quantitatively and the results were ranked using a combination of four- and five-point ordinal scales. Biological and physical resources listed in **Table 5.3** were ranked utilizing an equal interval, five-point ordinal scale. Similarly, demographic data in **Table 5.4** were ranked utilizing an equal interval, four-point ordinal scale. The five-point ordinal scale was determined by taking the resulting values described above (sites/features per mile), calculating their range (maximum minus minimum value), and then distributing these values equally over a five-point scale. A five color scheme was created ranging from green (more favorable) to red (less favorable) and assigned to the five-point ordinal scale in order to provide the reader with a visual interpretation of the analytical process.

Evaluation criteria were ranked based on the number of sites/features per segment mile. For example, an alternative containing a large number of cultural resources, hazardous sites and large areas of biological and natural resources ranked less favorably (i.e. red) compared to alternatives with fewer of these features (i.e. green). On the other hand, greater numbers of socio-economic services along an alternative may be considered favorable with regards to ridership. Therefore, alternatives containing large numbers of socio-economic features were ranked more favorably than those with lower numbers since they were selected for analysis as either transit-dependent or very supportive of transit. Similarly, an equal interval, four-point ordinal scale was utilized to rank the census data listed in **Table 5.4** and the relative impact of alternatives on existing socio-economic factors. It is important to note that due to the large size of the study area, this Phase 1 analysis provided a conservative approach to identifying potential environmental impacts by identifying large buffer areas along the alignments and comparing the alternatives, relative to each other, with respect to the absence or presence of these resources. In Phase

2 potential environmental impacts will be better quantified based on an approximately 50 feet footprint for each of the transit alternatives

Figure 5.1: GIS Analysis Buffer Widths



 NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

5.1.2 Effectiveness: Performance in Satisfying the Project Purpose and Need, and Goals and Objectives

All of the alternatives were qualitatively evaluated to determine their performance in satisfying the project's purpose and need and the established six goals and thirty-two objectives. The ultimate ranking of the alternatives in relation to these factors are represented in columns 1 and 2 of **Table 5.1**. Under this category, the FEC Railway alignment alternatives outperformed the US-1 alignment alternatives on all segments in terms of more closely meeting the purpose and need as well as the goals and objectives.

5.1.3 Impacts: Transportation System, Land Use and Other Environmental Effects

All of the alternatives were qualitatively evaluated for transportation system impacts and quantitatively evaluated for land use impacts, and other NEPA evaluation criteria. Impacts to the transportation system also included a consideration of impacts to the adjoining highway, transit and rail freight network, compatibility with other modes such as airports and seaports, as well as to navigable waterway crossings. The land use impacts considered the percentages of land use categories adjacent to each alignment. A very extensive and comprehensive analysis was performed for seven major NEPA evaluation criteria with each having multiple sub-criteria. The ultimate ranking of the alternatives in relation to these factors are represented in columns 3, 4 and 5 of **Table 5.1**.

With regards to land use compatibility, the US-1 alignment alternatives outperformed the FEC Railway alignment alternatives. In terms of the transportation and NEPA evaluation, the FEC alignment alternatives outperformed the US-1 alignment alternatives within most segments. The potential for direct displacements along the alignments were part of the NEPA impact evaluation. In Service Segment 1, the potential impacts from the I-95 RGR Alternatives would be to over 500 parcels (analyzed along the east side), over 300 parcels along US-1 (analyzed along the east side), and no impacts to parcels would be anticipated along the FEC alignment. For the remainder of the corridor, the potential impacts to parcels along the FEC alignment (over 500) would be six times less than the potential impacts to parcels along the US-1 alignment (over 3,000). As part of the FEC needs, a detailed assessment was conducted to determine the number of parcels needed to complete a 100 foot right-of-way throughout the entire corridor.

5.1.4 Cost Effectiveness: Projected Ridership and Capital Cost Per Mile

All of the alternatives were modeled to determine future ridership values and developed to sufficient detail to estimate capital costs. The ultimate ranking of the alternatives in relation to these factors are represented in columns 6 and 7 of **Table 5.1**. Generally, the FEC alignment alternatives had greater ridership values than the US-1 alignment alternatives for all of the segments. Capital costs per mile were lower along the FEC alignment alternatives therefore it ranked higher than the US-1 alignment alternatives.

5.1.5 Equity: Socio-economic Conditions

All of the alternatives were evaluated with respect to demographic characteristics that could potentially support an improved transit system within the study area. The ultimate ranking of the alternatives in relation to this factor is represented in column 8 of **Table 5.1**. Generally, the FEC alignment alternatives outperformed the US-1 alignment alternatives in most segments.

5.2 Summary of Evaluation Results

The initial environmental assessments completed and summarized in **Tables 5.2 – 5.4** provided the supporting data which served to evaluate and rank the proposed Phase 1 alternatives. The positive/beneficial and adverse impacts of this analysis are summarized in Section 3.15. The following conclusions are based on the summary of alternatives evaluation matrix (**Table 5.1**) and the supporting documentation provided in previous chapters.

- All FEC alignment alternatives best met the project Purpose and Need.
- The FEC alignment alternatives best met the project Goals and Objectives in all service segments but Service Segment 1, where the RGB Alternatives on I-95 (1RGB1 and 1RGB1A) were the best fit.
- All of the BRT and LRT Alternatives on the FEC alignment, the RRT Alternatives in Service Segments 5 and 6 (5RRT1 and 6RRT1) and the RGB Alternatives on I-95 (1RGB1 and 1RGB1A) had the least negative impact on the existing transportation system.
- The FEC alignment alternatives ranked highest in terms of accessibility to transit-dependent populations except in Service Segment 1 where US-1 ranked highest.
- Most of the US-1 Alternatives ranked low in terms of NEPA criteria primarily due to the number of potential residential and business displacements along the corridor, approximately 300 and 2,400 parcels respectively. In order to provide a dedicated premium service along the US-1 alignment, the economic and social impacts were deemed unacceptable. Estimates of potential right-of-way costs associated with these displacements were included in Chapter 2. The FEC Alternatives had the least adverse impacts to the NEPA related criteria.
- The RGR Alternative on I-95 (1RGR2) in Service Segment 1 also ranked low with regards to meeting NEPA criteria primarily due to the potential residential displacement (approximately 450 parcels) for a new rail alignment. Right-of-way needs and costs associated with these displacements were included in Chapter 2.
- The RGR Alternative on I-95 in Service Segment 1 (1RGR2) also had the lowest ridership of all alternatives.
- The FEC Alternatives in Service Segments 2 through 6 had three times the ridership potential than comparable alternatives on US-1.

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- The BRT and LRT on US-1 are consistently the most expensive alternatives.
- RRT in Service Segment 5 (5RRT1) and RGR on I-95 (1RGR2) are the next most expensive alternatives, although the former also attracts significant ridership where the latter does not.

Due to the greater number of environmental impacts, such as direct displacements of businesses and residential areas, low ridership and very high costs, all of the US-1 alignment alternatives and the RGR Alternative on I-95 (1RGR2) are not recommended for further evaluation in Phase 2.

5.2.1 Preliminary Evaluation of Operations & Maintenance Facilities

As discussed in Chapter 2, given the extent of the SFECC study area, there will likely be at least one central O&M facility required for each modal technology ultimately selected, varying in scale and scope with the complexity of the choice. At a minimum, given the current configuration of SFECC service segments and dependent upon ultimate decisions regarding the extent of service segments, satellite facilities will likely be needed in the vicinity of:

- Tequesta/Jupiter
- West Palm Beach
- Pompano Beach
- Hollywood/Hallandale
- Downtown Miami

Eight potential sites were preliminarily evaluated based on the needs discussed above. A preliminary GIS analysis in Phase 1 was conducted to screen the initial environmental issues associated with the potential location of each O&M facility. **Table 5.6** provides an evaluation of the potential O&M sites based on their impacts on known environmental resources. **Figures 2.19 – 2.22** illustrate the service segments with generalized "preferred maintenance facility areas" identified. Since no specific sites are being recommended at this time in Phase 1 a detailed analysis cannot be completed. O&M facility needs

Table 5.6: Preliminary Evaluation for Operations and Maintenance (O&M) Facilities Alternatives

Operations & Maintenance Facilities	O&M Facility H	O&M Facility G	O&M Facility F	O&M Facility A	O&M Facility B	O&M Facility C	O&M Facility D	O&M Facility E
Shapefile Name								
Aquatic Preserves	0	0	0	0	0	0	0	0
Brownfield Site Boundaries	0	0	0	0	0	0	0	0
Brownfield Locations	0	0	0	0	0	0	0	0
City Parks (Miami-Dade County)	0	0	0	0	0	0	0	0
City Parks (Broward County)	0	0	0	0	0	0	0	0
City Parks (Palm Beach County)	0	0	0	0	0	0	0	0
Coastal Barrier Resources	0	0	0	0	0	0	0	0
Conservation and Recreation	Jonathan Dickinson State Park	0	0	0	0	0	0	0
County Operated Parks (Palm Beach County)	0	0	0	0	0	0	0	0
County Operated Parks (Broward County)	0	0	0	0	0	0	0	0
County Operated Parks (Miami-Dade County)	0	0	0	0	0	0	0	0
Environmentally Sensitive Shorelines	0	0	0	0	0	0	0	0
EPA Toxic Release Inventory	0	0	0	0	0	0	0	0
FDEP Restoration Inventory	0	0	0	0	0	0	0	0
Flood Zones (Martin, 9643)	X, X-500	0	0	0	0	0	0	0
Flood Zones (Palm Beach County, 9650)	0	X	X, X-500	0	0	0	0	0
Flood Zones (Broward County, 9606)	0	0	0	AH	X, AH	AH	AE	X, AE
FNAI - Managed Conservation Areas (Public & Private Ownerships)	Jonathan Dickinson State Park	0	Hypoluxo Scrub Natural Area	0	Pompano Airpark	0	0	0
FL State Parks	Jonathan Dickinson State Park	0	0	0	0	0	0	0
Forest Inventory Analysis	0	0	0	0	0	0	0	0

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Operations & Maintenance Facilities	O&M Facility H	O&M Facility G	O&M Facility F	O&M Facility A	O&M Facility B	O&M Facility C	O&M Facility D	O&M Facility E
Greenways: Cultural and Historic Features	0	0	0	0	0	0	0	0
Groundwater Contamination Areas	0	0	0	0	0	0	0	0
HAZMAT Sites	0	0	0	0	0	0	0	0
Major Rivers	0	0	0	0	0	0	0	0
Manatee Protection Zones	0	0	0	0	0	0	0	0
Mangrove Habitat	0	0	0	0	0	0	0	0
National Wetland Inventory 43 (Martin County)	Upland, PEM1A	0	0	0	0	0	0	0
National Wetland Inventory 50 (Palm Beach)	0	Upland	Upland	0	0	0	0	0
National Wetland Inventory 06 (Broward County)	0	0	0	Upland	Upland	Upland	Upland, PUBHx	Upland
Navigable Waterways	0	0	0	0	0	0	0	0
Superfund/National Priority List Site Boundaries	0	0	0	0	0	0	0	0
Outstanding FL Waters	Jonathan Dickinson State Park	0	0	0	0	0	0	0
Public Lands	Jonathan Dickinson State Park	0	Hypoluxo Scrub Natural Area	0	Pompano Airpark	0	0	0
Scripps Biomedical Research Park	0	0	0	0	0	0	0	0
Seagrass Beds	0	0	0	0	0	0	0	0
SFWMD Canals	0	0	0	0	0	0	0	0
Special Drainage District	0	0		Broward County WCD#3		Broward County WCD#3	0	0
Strategic Habitat and Conservation Areas	0	0	0	0	0	0	0	0
Superfund Sites	0	0	0	0	0	0	0	0
Underground Petroleum Tanks	0	West Palm Beach City Lift Station #21	0	0	Driscoll Towing	OK Service Center, Inc., Shell-JD;s	0	Lauderhill City Utility Dept.

Note: The maintenance facilities are arranged from north to south beginning with H in Martin County. Facilities G and F are in Palm Beach Co. and facilities A, B, C, D and E are in Broward County. The evaluations were conducted for a 20 acre area centered on the potential facility locations. These are preliminary evaluations to be revisited and refined in Phase 2, potentially including Miami-Dade County locations as well as others in the other two counties.

and location will be further evaluated in the Phase 2 sectional studies; O&M sites locations will not be determined until Phase 2 studies have resulted in an implementation plan, including project scheduling.

5.3 Evaluation of Alternatives Conclusions

A preliminary evaluation of alternatives, as outlined in this chapter, was completed for Phase 1 based upon both qualitative and quantitative assessments (see Section 5.1). The results of the preliminary screening of alternatives are summarily presented in **Table 5.1** in a manner that ranks alternatives by how well they comply with the FTA criteria of Effectiveness, Impacts, Cost Effectiveness, Financial Feasibility, and Equity. These qualitative and quantitative assessments are based on extensive data collection and GIS analysis, travel demand modeling, financial forecasting tools, and sound engineering, environmental and planning judgment and protocols, as outlined in Chapters 1 through 4 of this Conceptual AA/ESR.

The FEC alignment alternatives best met the overall project purpose and need as well as the project goals and objectives (except for RGB on I-95 as a bus extension of Tri-Rail from West Palm Beach to Jupiter in Service Segment 1, the shortest alternative, which ranked highest for goals and objectives). The FEC Railway also resulted in the least negative impacts on the existing transportation system while ranking highest in terms of accessibility to transit-dependent populations, with the exception of Service Segment 1 (US-1 Alternatives do best in that short Service Segment). The FEC Alternatives also had three times the ridership potential comparable to US-1 Alternatives.

Considering costs and the potential relocations or displacements, there are two US-1 Alternatives (BRT and LRT) that are consistently and significantly the most expensive of the alternatives. The costs are higher along all of the US-1 Alternatives both with and without right-of-way costs as outlined in Chapter 2. The higher costs can be attributed to the highly developed nature of the US-1 corridor and to the amount of new railway ballast or roadbed necessary for new exclusive busway or railway right-of-way on one or both sides of the roadway (possibly for in-street trackbed construction), as compared to the relatively clear and prepared FEC Railway right-of-way. Compared to US-1, the FEC Railway corridor is already virtually ready for initial construction. On the other hand, US-1 Alternatives would need lengthy and costly demolition, including contamination cleanup (remediation), prior to initial construction.

Maintenance of traffic (MOT) costs are also anticipated to be much higher on US-1 compared to the FEC Railway alignment. To build an exclusive lane for transit along US-1 would greatly impact the heavy flow of vehicular traffic while MOT for potential construction along the existing FEC right-of-way would be less costly and would have much less impact to vehicular traffic as well as to the existing freight traffic. The impacts to existing communities are also potentially greater along the US-1 Alternatives than the FEC Alternatives from a social and economic perspective. For example, the potential for relocations and displacements, while not possible to quantify precisely in the Phase 1 screening level of assessment, are approximately six times greater (approximately 500 vs. 3,000) for the US-1 Alternatives due to the limited availability of public right-of-way and the highly developed nature of this alignment. These displacements could entail substantial Environmental Justice issues due to minority and/or low-income communities identified along the project corridor. The economic impact of relocating the many existing businesses along the US-1 corridor would be significant. In contrast, the potential for displacements and relocations along the FEC Alternatives are considerably less due to the existence of available right-of-way. A detailed list of potential impacts to parcels along the FEC right-of-way is included in **Appendix J**. As discussed previously in the document, these extra costs and potential relocations/displacements along US-1 would be incurred in order to gain only 1/3 the ridership potential that the FEC Railway is modeled to produce.

The I-95 RGR Alternative in Service Segment 1 was also eliminated from further consideration in Phase 2 for the following reasons:

- It was the alignment that least met the project purpose and need and goals and objectives
- It was the alignment with the least ridership and highest capital cost per mile.
- It was the alignment that had less favorable concentrations of productions and attractions thereby having the potential to capture walk-up transit riders and transit-dependent individuals.
- The alignment land needs indicated a potential for significant residential displacements (approximately 450 parcels) in order to accommodate a new rail facility.

Finally, as depicted in **Tables 5.2 – 5.4**, the environmental criteria for which the US-1 Alternatives ranked low included contamination, cultural resources, and ground-borne noise and vibration sensitive receptors for five of the six Service Segments. Biological and natural resources were also most prevalent along the US-1 Alternatives in four of the six Service Segments and therefore the potential for negative impacts to these with a transit alternative along US-1 would be greater than along the FEC Railway Alternatives.

As a result of the alternatives evaluation, all of the US-1 alignment alternatives and the I-95 1RGR2 Alternative are not recommended for further evaluation in Phase 2. The FEC Railway alignment alternatives and the I-95 RGB extension of Tri-Rail to Jupiter are recommended for further evaluation in Phase 2. The remaining 21 viable Build Alternatives, based on the three sub-corridor sections and one corridor-length section, were reconsolidated to produce 13 viable and logical Build Alternatives (comprised of five technologies, three study sections, and primarily the FEC alignment) that will proceed forward into Phase 2.

6 HASE 1 DECISIONS

6.1 Introduction

The tiered environmental process supports decision-making on issues that are ripe for decision and provides a means to preserve those decisions (40 CFR 1502.20). Tiering breaks down the decision-making process into two steps with the broad regional issues and alternatives being grouped together and addressed in the first tier document, followed by more specific issues grouped and addressed in the second tier documents. The Tiered EIS process actually allows the agency to determine with certainty the level of effect from the agencies and public early on in the process so that only the appropriate level of environmental analysis is performed during the Phase 2 environmental analysis for the individual sections. The environmental tiering process allows for earlier identification and clarification of potential environmental impacts, especially focusing on ICE, and of subsequent processes for addressing potential adverse impacts in Phase 2. It also avoids segmentation concerns that can arise when large projects are developed in a series of related but separate studies. Tiering in this study allows all the affected Federal, State, and local agencies (including the study funding partners) to agree on the selection of alternatives to proceed into Phase 2, on alternatives to be eliminated during Phase 1, and on the logical sectional priorities to study for eventual implementation. These agreements are summarized below.

6.2 Decisions made during the Conceptual AA/ESR Phase

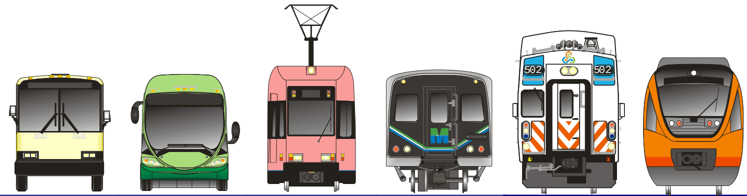
6.2.1 Agreement on Phase 1 screening of viable alternatives.

The viable alternatives include 21 combinations of service segments, alignment and technologies (see **Table 6.1**) and are overall represented as follows:

- BRT along portions or all of the FEC alignment
- LRT along portions or all of the FEC alignment
- RGR along portions or all of the FEC alignment
- RRT along portions or all of the FEC alignment south of Pompano Beach
- RGB along the I-95 alignment in North Palm Beach as a possible rubber-tired extension of Tri-Rail

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Table 6.1: Viable Phase 1 Alternatives



Service Segment	Alignment	Regional Bus	Bus Rapid Transit	Light Rail Transit	Rail Rapid Transit	Regional Rail: Tri-Rail	Regional Rail: Other RGR
1 West Palm Beach North	FEC		■	■		■	
	US1						
	I-95	■					
2 North Palm Beach County	FEC		■	■			■
	US1						
3 West Palm Beach South	FEC		■	■			■
	US1						
4 East Broward County	FEC		■	■			■
	US1						
5 Ft Lauderdale – Miami	FEC		■	■	■		■
	US1						
6 Miami Northeast	FEC		■	■	■		■
	US1						
	Technology:	RGB	BRT	LRT	RRT	RGR	

6.2.2 Agreement on Phase 1 screening non-viable alternatives

These non-viable Phase 1 alternatives consist of:

- All the US-1 alignment alternatives, which are significantly more expensive, are less productive in terms of ridership, and generate more negative environmental impacts than their counterparts using the FEC alignment.

- The I-95 RGR Alternative along Service Segment 1, which is the most costly alternative in terms of cost per mile, is the least productive alternative in terms of ridership, and has significant negative environmental impacts. Use of the I-95 alignment for alternatives south of West Palm Beach was eliminated due to the minimal number of attractors within reasonable walking distance of the I-95/Tri-Rail alignment (see **Figure 2.4** in Chapter 2). Moreover, given the presence of Tri-Rail immediately adjacent to I-95 south of West Palm Beach, alternatives involving the I-95 alignment are effectively included in the No-Build and TSM Alternatives.

- Any service north of Jupiter since the Tequesta station generates little ridership and a reliable corridor service across the Loxahatchee River would require an expensive high-level crossing. Connections between the Tequesta community and the rest of the corridor using feeder bus service will be further considered, however, in Phase 2.

- Technologies including HSF, Electric Bus/Streetcar (including Trolley Bus or Trackless Trolley), Intercity Motor Coach, AGT (e.g., Peoplemover), Monorail, RTR, or HSR (Maglev, electric, or other). See **Table 6.2** for summary results.
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Table 6.2: Alignments and Modal Technologies Considered By Service Segment

Alignments Considered	Modal Technologies Considered Viable	Modal Technologies Considered Non-Viable
Segment 1 West Palm Beach North		
Interstate 95	RGB	RGR
Florida East Coast Railway	BRT, LRT, RGR	RGB
US Route 1	None	RGB, BRT, LRT
Segment 2 North Palm Beach County		
Florida East Coast Railway	BRT, LRT, RGR	None
US Route 1	None	BRT, LRT
Segment 3 West Palm Beach South		
Florida East Coast Railway	BRT, LRT, RGR	None
US Route 1	None	BRT, LRT
Segment 4 East Broward County		
Florida East Coast Railway	BRT, LRT, RGR	None
US Route 1	None	BRT, LRT
Segment 5 Ft. Lauderdale-Miami		
Florida East Coast Railway	BRT, LRT, RGR, RRT	None
US Route 1	None	BRT, LRT
Segment 6 Miami Northeast		
Florida East Coast Railway	BRT, LRT, RGR, RRT	None
US Route 1	None	BRT, LRT

Legend: BRT – Bus Rapid Transit; LRT – Light Rail Transit; RRT– Rail Rapid Transit; RGR – Regional Rail; RGB – Regional Bus

6.2.3 Agreement on the logical limits for sections moving forward for further individual analysis in Phase 2

The following study section descriptions refer to the study limits and not necessarily to implementation phasing. These limits are based on the analysis of forecasted travel patterns and markets serviced with regards to the six service segments considered in Phase 1 which were subdivided and reconsolidated into three sub-corridor sections and one corridor-length section (illustrated in **Figure 6.1**).

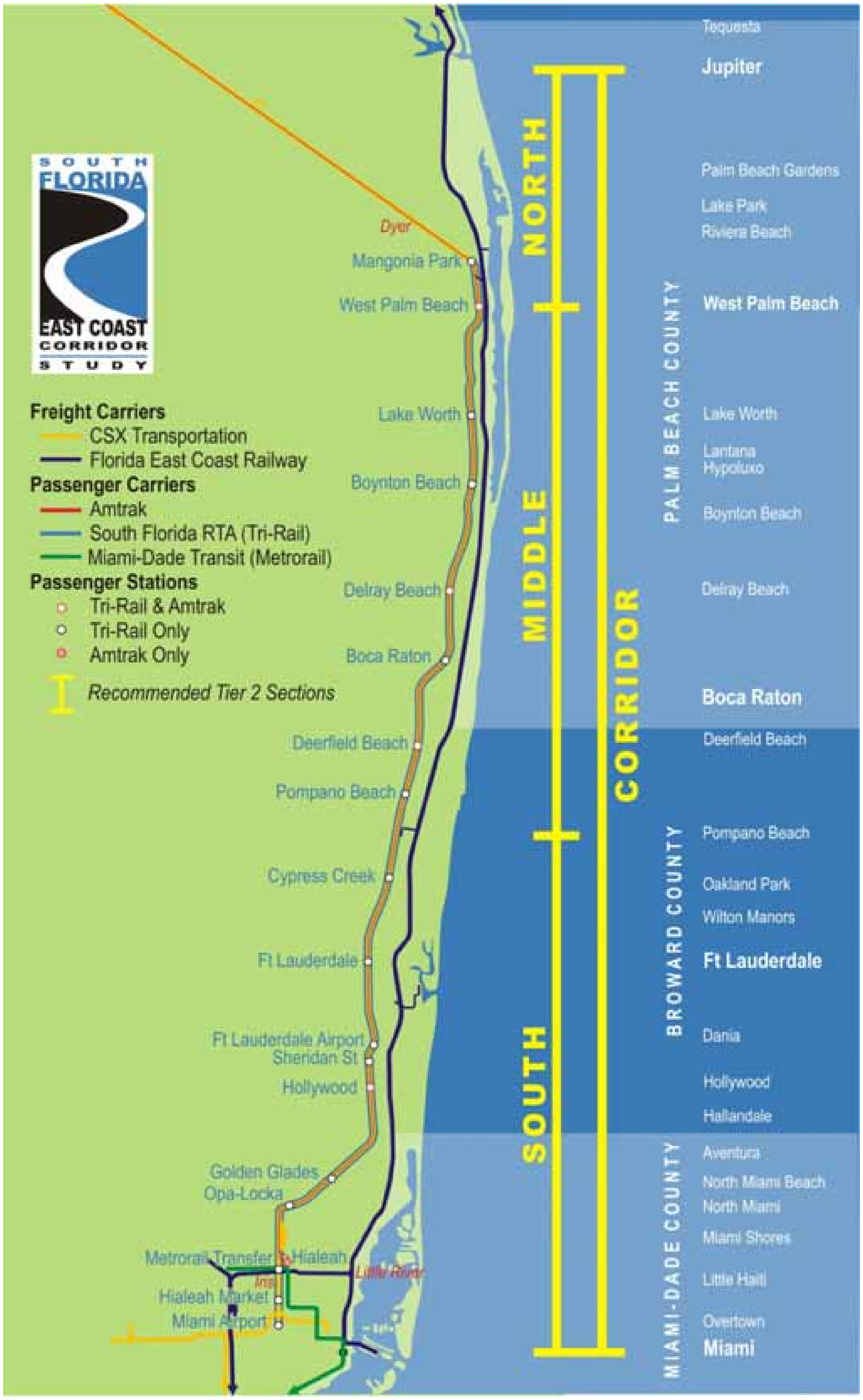
NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

- **South Corridor Section**: Extending north from approximately Miami-Dade Government Center through Fort Lauderdale to an interchange station with Tri-Rail in the vicinity of the Pompano Beach Station via the FEC alignment (encompassing Service Segments 4, 5, and 6).
- **Middle Corridor Section**: Extending between the West Palm Beach Station and an interchange with Tri-Rail in the vicinity of the Pompano Beach Station via the FEC alignment (the southern portion of Service Segment 2 and Service Segment 3).
- **North Corridor Section**: Extending north from an interchange with Tri-Rail at the West Palm Beach Station to Jupiter either via the Mangonia Park Station (Service Segment 1) or via another connection in West Palm Beach (the northern portion of Service Segment 2). The limits for the north corridor section were changed from Tequesta (original north end limit of service segment 1) to Jupiter due to the low ridership generated at the Tequesta Station modeled. Additionally, to provide reliable service to a station at this location would require an expensive high level bridge crossing.
- **South East Florida Corridor Section**: Extending the entire length of the corridor and overlaying the South, Central and North Corridor Sections; this "section" addresses inter-section travel issues and coordination, as well as overarching corridor issues common to all sections (e.g., Amtrak and freight operations, design standards, express and premium longer-distance travel markets).

6.2.4 Agreement on viable alternatives to move forward into Phase 2 for further analyses

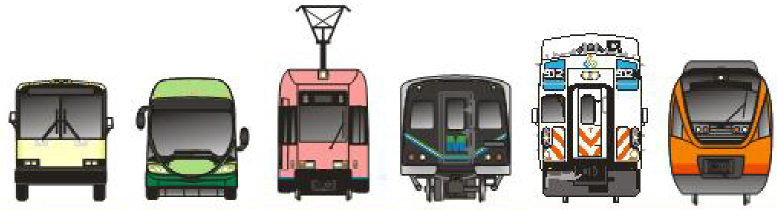
Based on the three sub-corridor sections and one corridor-length section, the 21 viable Build Alternatives (based on the six overlapping service segments) were reconsolidated to produce 13 viable and logical Build Alternatives (comprised of five technologies, three study sections, and primarily the FEC alignment) that will proceed forward into Phase 2. These alternatives are illustrated visually in a matrix format as **Table 6.3**. The TSM Alternative (including Tri-Rail, local bus and other low-cost transit and highway improvements) will also be studied in greater detail in Phase 2.

Figure 6.1: Recommended Phase 2 Study Sections



NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Table 6.3: Build Alternatives Recommended For Phase 2 Analyses



Section	Alignment	Regional Bus	Bus Rapid Transit	Light Rail Transit	Rail Rapid Transit	Regional Rail: Tri-Rail	Regional Rail: E/DMU
Miami – Pompano Beach	FEC		■	■	■		■
West Palm Beach – Jupiter	FEC		■	■		■	■
	I-95	■					
West Palm Beach – Pompano Beach	FEC		■	■			■
Corridor Solutions	FEC						■
		RGB	BRT	LRT	RRT	RGR	

6.2.5 Agreement on further study in Phase 2

Agreement on further study in Phase 2 of the SFECCTA:

- **Development of a proactive strategy**: To reduce the number and/or community impacts and enhance the safety of at-grade transitway-highway crossings of the FEC alignment.
- **Preliminary station locations including park-and-ride locations**: To avoid overburdening other stations in Jupiter and Palm Beach Gardens with intra-regional trips originating north of the study area (Martin and St. Lucie Counties), a significant park-and-ride facility is recommended for further study in the vicinity of PGA Boulevard due to that location's superior access to I-95 and Florida's Turnpike. As indicated in Chapter 2, the land uses surrounding Jupiter and Palm Beach Gardens are more residential and the public process supported minimal parking for external origin trips at these proposed station locations.
- **Preliminary O&M facility locations**: These could still possibly include locations north of Jupiter that would not require a high-level crossing of the Loxahatchee River.
- **Segment 1 and 2 north end connections.**
- **Consideration for bicycle/pedestrian trails running north-south along the SFECC corridor** in Phase 2 in accordance with Sections 335.065 and 260.0161 of the FS.

- **Consideration of Green/Sustainable Transit Station Area Planning and Conceptual Design** in Phase 2 in accordance with three executive orders (07-128, 07,127, and 07-126) on energy efficiency and greenhouse gas reduction recently signed by Florida Governor Charlie Crist (July 2007). Coordinate with local (municipal and county) governments on green/sustainable issues, since the mayors from 8 of the 28 municipalities along the SFECC study corridor are participating in the US Conference of Mayors Climate Protection Agreement. This agreement commits the participating cities to reduce greenhouse gas emissions, reduce traffic congestion, improve transportation choices, and enhance economic development and job creation. The use of public transit, and the practice and promotion of sustainable green design building practices are specific actions to be taken.

The United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) Green Building and Neighborhood Development Rating System™ is a voluntary, consensus-based, national standard for developing high-performance, sustainable development and buildings. It is also known as Green Design, Sustainable Design, or Design for the Environment. In the transit industry the LEED concept is referred to as Green Transit, or Sustainable Public Transportation. The principles of LEED can be applied to public transportation facilities in five areas:

- Transit stations,
- Transit station areas (1/2 mile radius area around transit stations),
- Transit vehicle operations and maintenance facilities,
- Transit modal technology, and/or
- The transit guideway.

Similarly, the USEPA is actively supporting and promoting the implementation of "Green Infrastructure" approaches as it relates to stormwater management (see the Green Infrastructure topic under the USEPA NPDES Home Page at http://cfpub.epa.gov/npdes/home.cfm?program_id=298). Green infrastructure represents a new approach to stormwater management that is cost-effective, sustainable, and environmentally friendly. These techniques utilize natural systems, or engineered systems that mimic natural landscapes, to capture, cleanse and reduce stormwater runoff utilizing plants, soils and microbes. The use of Low Impact Development (LID) techniques (Post-Construction Stormwater Management in New Development and Redevelopment) is a major element of green infrastructure. For example, the elements introduced above (i.e., LEED, Green Infrastructure, LID as well as Florida EOs 07-128, 07,127, and 07-126) can be evaluated in at least three major project development phases where green features for assessment and incorporation into transit stations and transit vehicle maintenance facilities:

- Phase 1: Site Assessment and Selection
- Phase 2: Site Layout/Configuration
- Phase 3: Facility and Building Design

6.2.6 Decisions anticipated to be made during the Phase 2 phase (issues to be resolved)

- Environmental Determinations (Class of Action Determination) at the beginning of Phase 2, resulting most likely in :
  - Phase 2 EIS, EA, and/or Categorical Exclusions – Type 2 (CE-II), or State Environmental Impact Report (SEIR) supported by information provided in Phase 1.
- Agreement on regional and sectional LPA. Each LPA will consist of:
  - A combination of an alignment and modal technology
  - Final station location sites
  - Final O&M facility location sites
- Agreement on a environmentally preferable alternative:
  - The Environmentally Preferable Alternative has not yet been singled out as part of the Phase 1 analysis but it will be one of the viable alignment and modal technologies being further refined and screened as part of Phase 2.
- Agreement on a methodology for addressing potentially historic linear resources, possibly documented in a project-specific Programmatic Agreement Memorandum for Cultural Resources, based upon:
  - Continued coordination with the Florida SHPO regarding the types of improvements associated with the transit service and how they may affect historic resources.
  - Development of a protocol by FDOT, SHPO, FTA and FHWA (and possibly others) for identification, documentation, and evaluation of such linear historic resources as the FEC Railway, US-1, Dixie Highway, Miami Canal, and other major canals related to the Everglades Drainage District.
- Although sectional priorities for further studies were recommended based on results of the technical analysis, financial feasibility, and local MPO and SFRTA support, priorities for ultimate construction and implementation of the different sections have yet to be resolved and agreed upon.
- Determination of best use of the FEC right-of-way for public transit passenger service (through either purchase or lease of a portion or all of the right-of-way, or other use agreement).
- Acquisition of private property (including pre-existing FEC Railway parcels or FEC-owned out parcels) or public right-of-way, either as advance acquisition or traditional acquisition at one or all of the following:
  - Constrained FEC right-of-way areas
  - Pre-existing railroad right-of-way
  - Station areas
  - Maintenance facility areas
  - East-west connections

- o Other transit facility infrastructure such as drainage ponds or electrical substations.

- ➢ State and local funding sources and commitments for transit system right-of-way and/or new infrastructure.

6.3 Potential Corridors on New Location

No potential corridors along entirely new locations or alignments have been identified in Phase 1 of the SFECCTA study area. Several partial corridors on new locations have been identified that are potential connections along canal banks or utility rights-of-way that extend between existing rail or roadway alignments for Service Segment 1. These alternatives (considered variations on alternatives for modeling comparative scenarios), should they be carried forward from the final Phase 1 alternatives selection process into Phase 2, and will be examined in closer detail during Phase 2.

6.4 Right-of-Way

Only the FEC Alternatives and the I-95 RGB Alternative in Service Segment 1 are being recommended for further study in Phase 2. The following discussion focuses on the potential right-of-way acquisition associated with these alternatives that may occur during Phase 2. Generally, consideration will be given to the purchase of the FEC Railroad right-of-way, to the acquisition of parcels immediately adjacent to and outside of the FEC right-of-way to preserve the 100-foot wide corridor, and those parcels necessary for transit related infrastructure and east-west connections as described below.

- ➢ FEC Railroad right-of-way.

- ➢ Pre-existing railroad right-of-way.

To develop transit alternatives within the existing corridor, the FDOT must acquire enough property interests to provide significant control over the corridor in order to enable continuous and uninterrupted service for commuter transit operations. These interests can range from the purchase of the entire corridor in fee simple, to the purchase of easements sufficient enough to protect the needs of the FDOT and other transit agencies. Purchasing in fee simple would necessitate easements reserved to FEC Railway for continued freight usage.

The purchase of FEC Railroad right-of-way by the State (i.e. FDOT) could support a wide array of interests aside from the proposed SFECC commuter service. Investments in the FEC right-of-way for the 85-mile project corridor could have regional as well as statewide benefits, should the entire FEC Railroad right-of-way be purchased, ranging from intercity rail to freight integration. For example, the disruptive effects of operating freight trains through downtown urban centers could be mitigated by constructing and

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moving freight operations to adjacent tracks or possibly the CSX railway. In addition, State interests in the FEC railway would further strengthen Florida's SIS transportation system.

The acquisition of pre-existing railroad right-of-way may be allowed prior to the conclusion of an environmental review for "Corridor Preservation", provided the acquired railroad right-of-way is not developed in advance of the completion of all environmental reviews on the project as described in Section 3024 of SAFETEA-LU, amended 49 USC 5324(c). Pre-existing railroad right-of-way is typically defined as being linear in design and is visually identifiable by the existence of tracks or other features unique to railroad right-of-way. Under certain circumstances, the acquisition may be evaluated for NEPA purposes separately from the future project that will ultimately be built (e.g. utilizing an acquired parcel for a park and ride lot in interim prior to implementation of premium transit services). See **Figure J.26** in **Appendix J** for an illustration of pre-existing railroad right-of-way segments that have been identified along the FEC Railway corridor within the SFECCTA study limits during Phase 1.

The following discussion applies to the potential acquisition of other FEC Industries and/or private property outside of the FEC Railroad right-of-way. These opportunities for right-of-way acquisition from FEC Industries can be pursued by FDOT or other entities such as local municipalities as the opportunities arise in Phase 2.

- Other FEC Industries' properties located adjacent to or near the FEC railroad alignment.
- East-west transitway connections between FEC and SFRC/CSXT.
- East-west contiguous property such as utility corridors or canal rights-of-way.
- Transit station locations or portions thereof.
- East-west roadway property at potential transitway-highway grade separations.
- Viable O&M facility sites or portions thereof.
- Stormwater management facilities (drainage ponds) or electrical infrastructure (substations) for an electrified transit system.

The FEC Railway is generally a 100-foot wide corridor along the entire 85 miles and is currently held in private ownership. Where the right-of-way is 100 feet, land acquisition may not be necessary to operate the proposed transitway because the 100 foot corridor can accommodate up to six tracks of freight and passenger transit or a busway typical section. However, there are 16 constrained areas along the corridor, including eight in Miami-Dade County, one in Broward County and seven in Palm Beach County where the FEC Railway right-of-way is less than 100 feet in width. In fact, there are areas that appear to be as little as 25 to 50 feet in width. A complete land survey of the current corridor owned by FEC Railway will be provided in Phase 2. At these "pinch points" or constrained areas, land acquisition may be necessary for passenger operations. These acquisition efforts would likely include partial acquisitions with the opportunity to acquire entire properties during the negotiation process.

Land uses along the corridor study area range from low to high density residential, industrial, and commercial development. Significant redevelopment activity is occurring along the corridor which dramatically changes development patterns and residential density. Recent legislation pertaining to the actions of the CRA and the use of eminent domain may delay current redevelopment efforts.

Current market conditions in South Florida indicate a leveling off or a reduction in property values. This trend follows a period of time in which South Florida experienced significant market appreciation. However, given the current, continued, and projected growth rates for South Florida, residential units will continue to be in high demand regardless of market price fluctuations. Demand will also increase around station locations as there is an indication local municipalities are currently evaluating land uses along the corridor with the implementation of TOD designations.

Other areas in which right-of-way acquisition may be necessary will be for maintenance facilities/yards, station locations and transit alignments, and/or transit connections between the FEC Railway and the SFRC/CSXT on which the Tri-Rail currently operates, as well as other transit systems.

The acquisition of land for public purpose projects is almost always accomplished under local and State eminent domain law, regulations, and procedures. These laws and regulations generally require the public agency to obtain one or more appraisals, to negotiate with the landowner in good faith, and to offer the landowner a fair and reasonable price for the land. The owner usually has the right to obtain his/her own appraisal, legal counsel, and expert advisors; and if not satisfied with the results of the negotiation, to take the case to court, where through mediation, settlement, or jury verdict a final value is determined. Florida eminent domain law and regulations are similar to some states across the nation but differ in that they require the public agency to reimburse the landowner of all reasonable costs incurred by the landowner in presenting his/her case throughout the process including litigation.

Land acquisition programs will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act, and in Rule Chapter 14.75, FAC, specifically Rule 14.75.003. Relocation programs will be conducted in accordance with Florida Statute 339.09, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Rule Chapter 14.66 (Part III), and the FAC (Rule 14.75.003). Relocation resources are available to all residential and business relocatees without discrimination. The FDOT enforces Title VI and VIII of the Civil Rights Act of 1968 and amendments making discriminatory practices in the purchase or rental of housing illegal if based on race, religion, sex, or national origin.

Where relocation is required, relocatees will be eligible for:

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- Owner Replacement Housing: The costs that the owner incurs associated with purchasing or renting of a replacement site (i.e., purchase additives).
- Residential Move Cost: The moving costs associated with relocating a residential dwelling unit to the replacement site (i.e., moving company, self move, utility reconnections, etc.).
- Business/Farm Move Cost: The moving costs associated with relocating a business to the replacement site (i.e., moving company, self move, re-establishment, etc.).
- Personal Property: The costs to move personal property to the remainder property (i.e., moving company, self move, etc.).
- Signs: The cost to relocate an on-premise sign to the remainder property (i.e., sign mover, electrical reconnection, permitting, direct losses, etc.).

As part of the overall Right-of-Way Acquisition Program in Phase 2, serious consideration should be given to advance acquisition, hardship acquisition, protective buying and other programs allowed under Title 23 CFR, Section 710.501 and Section 710.503; FS Section 337.243 and Section 337.273; and FDOT Right-of-Way Manual Section 8.1.

6.4.1 Advance Acquisition Program

The FDOT Right-of-Way Procedures manual describes advance acquisition programs as follows:

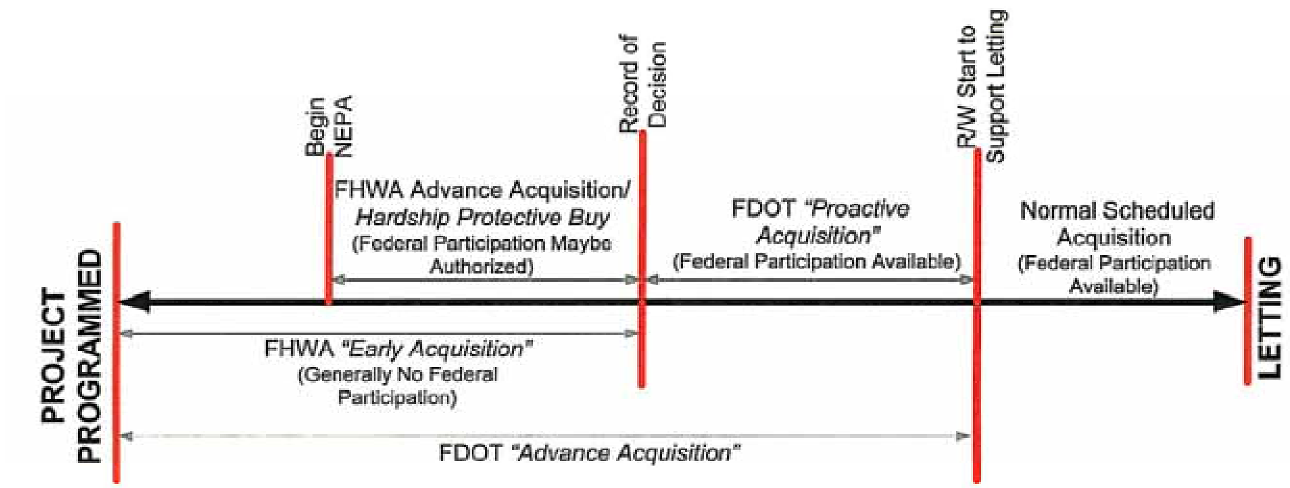
- Advance Acquisition: The term is used to describe right-of-way acquisition occurring prior to the year in which right-of-way acquisition is programmed or scheduled. This term is used to describe Federally assisted hardship acquisitions and protective buying occurring during the NEPA process.
- Early Acquisition: The term is used to describe right-of-way acquisition, other than hardship acquisition or protective buying, occurring prior to completion of the NEPA process (**Figure 6.2**).
- Hardship Acquisition: The term is used to describe federally assisted acquisition of a particular parcel or limited number of parcels at the owner's request occurring during the NEPA process to alleviate health, safety or financial hardships experienced by a landowner as a result of an impending project (**Figure 6.2**).
- Proactive Acquisition: The term is used to describe right-of-way acquisition occurring after completion of the NEPA process but prior to the year in which right-of-way acquisition is programmed or scheduled.
- Protective Buying: The term is used to describe federally assisted acquisition of a particular parcel or limited number of parcels during the NEPA process to prevent imminent development of a parcel(s) which is needed for a proposed transportation corridor or site. Documentation must clearly demonstrate that development of the land would preclude future transportation use and that such development is imminent (**Figure 6.2**).

6. PHASE 1 DECISIONS

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

➢

Figure 6.2: Advance Acquisition



6.4.2 Phase 2 Right-of-Way Acquisition Considerations

This Conceptual AA/ESR, once reviewed, does not in itself necessarily lead to pre-award authority to acquire right-of-way. In a Federal Register notice published on November 30, 2005, outlining changes resulting from the implementation of SAFETEA-LU states, "When a tiered environmental review in accordance with 23 CFR 771.111(g) is being used, pre-award authority is NOT provided upon completion of the first-tier environmental document except when the Phase 1 Record of Decision (ROD) or FONSI signed by FTA explicitly provides such pre-award authority for a particular identified acquisition."[9]

The advance acquisition of other real property may occur in one of two ways: 1) separate NEPA studies, and 2) Phase 2 ROD

The advance acquisition of a "limited" amount of real property may occur as a result of Phase 1 per one of the following: 1) hardship and/or protective acquisition (23 CFR 771.117), and 2) pre-existing railroad right-of-way (49 USC 5324(c)).

The environmental actions anticipated after Phase 1 (i.e., in Phase 2) will consist of either: 1) "parcel" advance acquisition as a separate study or studies (CE or EA) for the FEC corridor property following completion and circulation of this document; 2) "project" advance acquisition as studies included as part of the Phase 2 transit analysis environmental document(s); or, 3) pre-existing railroad right-of-way acquisition consistent with Federal guidance.

Examples of how advance acquisition of non-railroad right-of-way (whether as "parcel" or "project" advance acquisition) may be used in Phase 2 would include the following:

- constrained areas.
- transit terminals/station areas.
- maintenance and operating facility sites.
- transit alignments (off FEC Railway) and/or transit connections (e.g., to Tri-Rail or Metrorail) through non-railroad private property.
- stormwater management facility sites.

The Phase 1 phase examined which, if any, individual parcels can be purchased or otherwise preserved for future transportation improvements. Results of the analysis completed, subsequent to the DPEIS, indicated that there are over 500 parcels adjacent to the FEC Railway that may be required to be purchased, in whole or in part, in order to preserve an entire 100-foot wide corridor. Lists and maps regarding these constrained areas where the FEC Railway corridor is less than 100 feet in width are represented in **Table J.3**; **Figures J.3 – J.6** in **Appendix J**.

Approximately 72 initial FEC station areas for the FEC Railway corridor have been identified for preliminary assessment as part of Phase 1. Through advance acquisition opportunities and surplus property owned by the FDOT in excess of the main line corridor requirements, opportunities exist in further developing the FEC Railway into a viable transit corridor by means of making Joint Public/Private Development of right-of-way available to developers interested in creating transit station hubs. Joint

[9] http://edocket.access.gpo.gov/2005/pdf/05-23322.pdf page 71976

Public/Private Development of right-of-way is authorized under Title 23 CFR, 710 Subpart D; Rule Chapter 14-109, FAC and FS 337.251. Given proper approval and authority, Joint Development presents an opportunity for the FDOT to generate an income stream while also gaining needed amenities such as parking and office space within the Joint Developments. Additional income opportunities exist within the corridor by continuing to lease or originate lease opportunities for fiber optics, telecommunications, natural gas lines, outdoor advertising, and other income generating sources.

Advance acquisition policies would be immediately effective also when considering the need for maintenance facilities and yards to support overnight storage, running repairs, heavy repair, and central maintenance. Ideal locations would be currently vacant or abandoned industrial properties within compatible land uses. Secondarily, advance acquisition programs should be instituted once the identification of right-of-way needs have been determined for the transit alignments and/or transit connections between the FEC Railway and Tri-Rail.

7.1 Scoping Comments and Results

7.1.1 Agency and Elected Officials Kick-off Meetings

Agency and elected officials kick-off meetings were held on December 12, 15 and 19, 2005 in Miami City Hall Commission Chambers, Broward County Main Library Auditorium, and West Palm Beach Cohen Pavilion at Kravis Center, respectively (**Figure 7.1**). The purpose of the meetings was to provide an overview of the project and the Tiered DPEIS process. The meeting format included one-on-one question-and-answer period with the consultant team and FDOT display boards, a PowerPoint® presentation, and a group question-and-answer period.

Figure 7.1: Elected Officials/Agency Representative Kick-Off Meeting (December 12, 2005)

Photo 1: One-on-one question-and-answer period

Photo 2: Presentation

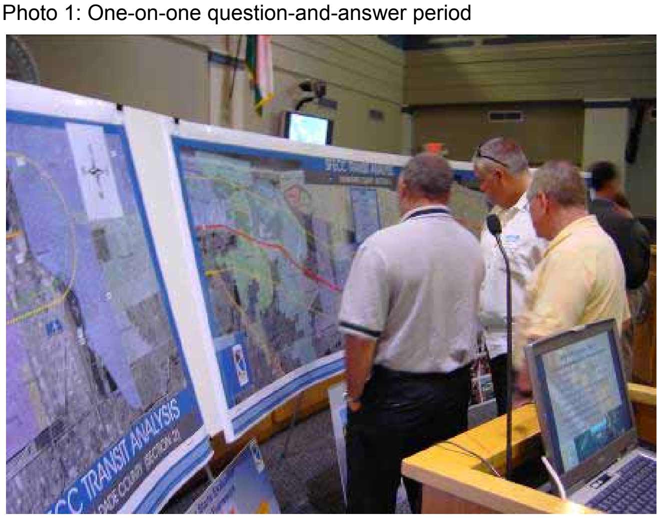


Photo 3: One-on-one question-and-answer period

Photo 4: Group presentation with question-and-answer session

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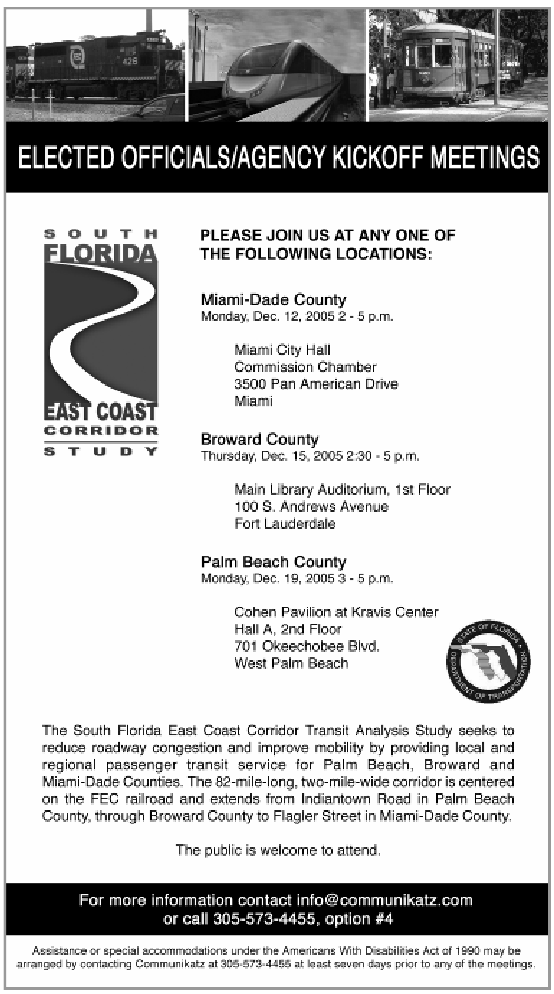
7. PUBLIC COMMENT AND AGENCY COORDINATION

Over 1,300 agency representatives and elected officials of the Tri-County area were invited to attend the kick-off meetings by Mr. James A. Wolfe, P.E., FDOT District 4 Secretary. The meetings were also advertised by various City Clerk offices as well as by local newspapers (**Figure 7.2**). In attendance at the meetings were 33, 71, and 55 individuals in Miami-Dade, Broward, and Palm Beach Counties, respectively. In general, the majority of the attendees were in support of having passenger service along the FEC corridor. The following issues were discussed: time of implementation; funding and transit priorities; rail freight; grade crossings, quiet zones and crossing delays from freight trains; transit stations, TOD, and local zoning; right-of-way acquisition and potential impacts; historic resources; hurricane impacts; cyclists, pedestrians and greenways; municipal support for transit; minimization of transfers and use of a single technology; east-west connections; maintenance facilities; and navigable and sensitive waterway crossings.

Figure 7.2: Newspaper Display Advertisements



7.1.2 Scoping and Public Kick-off Meetings

Project Scoping began in March 2006 when the FTA published the NOI to prepare a PEIS in the Federal Register (Vol. 71, No. 59/Tuesday, March 28, 2006/Notices Page 15511-15513) “Preparation of Environmental Impact Statement for the South Florida East Coast Corridor Transit Analysis in Southeast Florida; Including Miami-Dade, Broward, Palm Beach Counties, FL”. In addition, the Florida Administrative Weekly (FAW) also listed the dates of all three scoping and public kick-off meetings that were held on April 17, 19 and 24, 2006 in Broward County Main Library, Miami-Dade County Gwen Margolis Community Center, and West Palm Beach Cohen Pavilion at Kravis Center, respectively. Two sessions per day were conducted at each location, one at 3:00 P.M. and the other at 6:00 P.M. The purpose of the meetings was to comply with the scoping process and to introduce the general public to the project. The format of the meetings included an individual question-and-answer period around display boards with the consultant team and FDOT personnel, a PowerPoint® presentation, and a group question-and-answer period.

Over 1,300 residents from the Tri-County area were invited to attend the public kick-off meetings by Mr. Gustavo Schmidt, P.E., FDOT District 4 District Planning and Environment Engineer. Over 222,000 invitation postcards were mailed out to property owners, businesses and other stakeholders located along the FEC Railway corridor in the Tri-County area (**Figure 7.3**). Over 1,300 electronic invitations were sent to those individuals on the project mailing list who have included an e-mail address. In addition, the scoping and public kick-off meetings were advertised locally in area newspapers as well as in the Public Meetings section of the project website. The total number of attendees at the Miami-Dade County, Broward County and Palm Beach County meetings were 150, 189, and 104 respectively. A 13-page color Scoping Information Booklet, a 4-page project fact sheet and a 4-page project Frequently Asked Questions (FAQ) handout were produced in English, Spanish and Creole and distributed to all attendees at the meeting. Written Comment Cards were also distributed and collected at the end of each meeting.

In general, the majority of the attendees were in support of having passenger service along the FEC Railway corridor. The following issues were discussed: project costs; timeliness of implementation; transit use incentives and public education, express versus local transit services; need for a single and seamless mode/technology; quiet zones; noise/vibration impacts and noise abatement; brownfields; potential right-of-way impacts and relocations; funding sources; greenway; potential property value impacts; east-west and intermodal connections; station locations and zoning; rail freight; grade crossings and traffic impacts; elevated versus at-grade technologies; landscaping buffers; affordable housing and connections to employment centers; integration with existing Tri-Rail service; use of ETDM process; future intercity passenger rail service; parking supply and costs; navigable waterway crossings; and FEC

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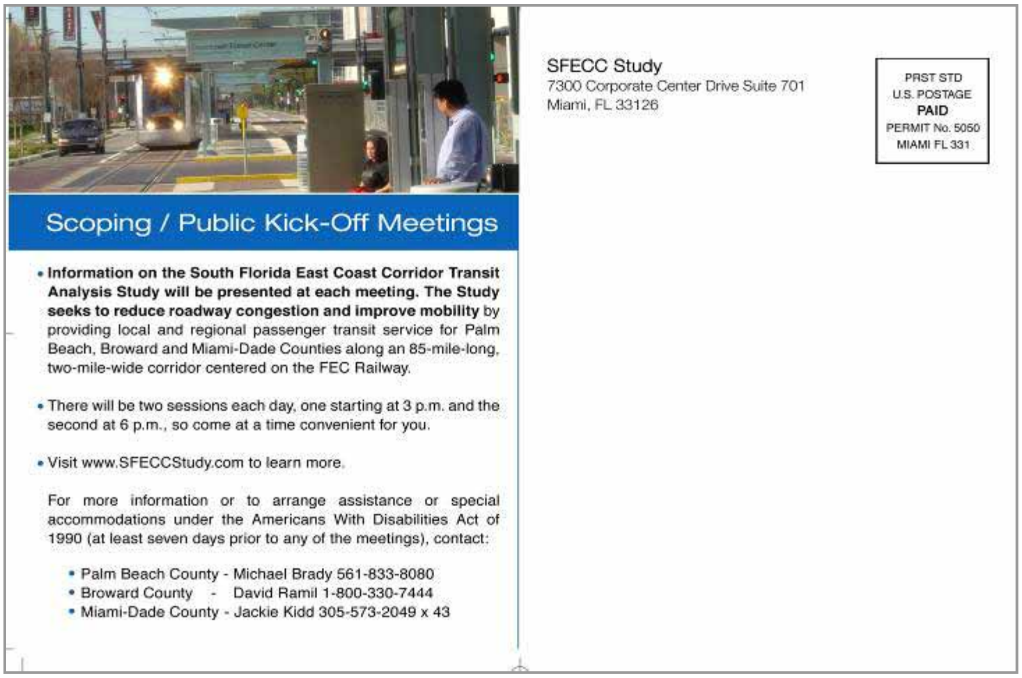
Figure 7.3: Postcard Invitation



Railway position on new passenger service. Although Native American owned lands were discussed at the kick-off meetings, there are no tribal lands in the project vicinity as referenced in Chapter 3.

7.2 Federal, State, and Local Agency Coordination

7.2.1 Efficient Transportation Decision Making (ETDM)

➢ **The Transportation Equity Act for the 21st Century**

Passed by the United States Congress in July 1999, the Transportation Equity Act for the 21st Century (TEA-21) contained initiatives (specifically in Section 1309) for planning transportation projects and conducting environmental reviews that are known as "streamlining" provisions. The objectives in TEA-21 included:

- Effective/timely decision making without compromising environmental quality
- Integrating review and permitting processes
- Early NEPA reviews and approvals
- Full and early participation
- Meaningful dispute resolution

These initiatives were in response to concerns expressed by citizens regarding the amount of time it takes to implement a transportation project. In addition, departments of transportation, agencies, citizens and non-governmental organizations have seen the inefficiency in implementing the NEPA environmental review process with long periods of time periods elapsing between agency NEPA reviews and the environmental reviews conducted during project permitting. The FDOT seized the initiative when Congress passed TEA-21 and decided to reexamine the Department's entire process from the very early stages of planning through project development and permitting. Revamping the entire process required that a more efficient methodology be used to present project planning information and to gather input from agencies and the affected community. Therefore, development of Florida's Efficient Transportation Decision Making (ETDM) Process was undertaken, in keeping with the environmental streamlining provisions in Section 1309 of TEA-21. As part of the new ETDM process for the State of Florida, the FDOT implemented an Internet-accessible interactive database tool (see described after **Tables 7.1** and **7.2** below) which allows reviewing agencies the opportunity to review the SFECCTA online. The ETDM project number established for Phase 1 of the SFECCTA is 7519.

- **The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU):** The environmental streamlining initiatives contained in TEA-21 Section 1309 were superseded by SAFTETEA-LU when it was passed on August 10, 2005 as Public Law 109-59 (PL 109-59), authorizing Federal surface transportation programs for highways, highway safety, and transit for the 5-year period 2005-2009. The FDOT and FHWA have established that the ETDM process fulfills statutory requirements of SAFTETEA-LU Section 6002, Efficient Environmental Reviews for Project Decisionmaking, and has been approved by FHWA for use in development of Federal-aid projects. Finally, FHWA participation in the ETDM project 7519 for SFECCTA is consistent with Section 6002(b) of SAFETEA-LU, wherein states have the option of continuing to advance projects under processes "approved" under TEA-21's Section 1309 authority.

FDOT has also formed the Environmental Technical Advisory Team (ETAT), consisting of representatives from agencies which have statutory responsibility for issuing permits or conducting consultation under NEPA. The ETAT membership for FDOT Districts 4 and 6 is provided in the **Table 7.1** and **Table 7.2**, below.

NOTE: This report documents Tier 1 of a Tiered EIS process that was completed as an early scoping/alternatives analysis process. References to the tiering process should be disregarded.

Table 7.1: FDOT District 4 ETAT Participating Agencies

Role	Agency
ETDM Coordinator	FDOT District 4
CLC Coordinator	FDOT District 4
CEMO Liaison	FDOT District 4
ETAT Member	FL Department of Transportation
MPO ETDM Coordinator	Indian River County MPO
MPO ETDM Coordinator	Broward County MPO
MPO ETDM Coordinator	St. Lucie MPO
MPO ETDM Coordinator	Indian River County MPO
MPO ETDM Coordinator	Broward County MPO
MPO ETDM Coordinator	Palm Beach MPO
ETAT Member	Palm Beach MPO
MPO ETDM Coordinator	Martin County MPO
ETAT Member (1)	US Environmental Protection Agency
ETAT Member (2)	US Environmental Protection Agency
ETAT Member (1)	US Army Corps of Engineers
ETAT Member (2)	US Army Corps of Engineers
ETAT Member (3)	US Army Corps of Engineers
ETAT Member	US Fish and Wildlife Service
ETAT Member	US Coast Guard
ETAT Member (1)	Federal Transit Administration
ETAT Member (2)	Federal Transit Administration
ETAT Member (1)	Federal Highway Administration
ETAT Member (2)	Federal Highway Administration
ETAT Member (3)	Federal Highway Administration
ETAT Member (4)	Federal Highway Administration
ETAT Member (5)	Federal Highway Administration
ETAT Member (1)	National Marine Fisheries Service
ETAT Member (2)	National Marine Fisheries Service
ETAT Member	National Park Service
ETAT Member	Natural Resources Conservation Service
ETAT Member	Seminole Tribe
ETAT Member	Miccosukee Tribe
ETAT Member (1)	FL Department of State
ETAT Member (2)	FL Department of State
ETAT Member (1)	FL Department of Community Affairs
ETAT Member (2)	FL Department of Community Affairs
ETAT Member (1)	FL Fish and Wildlife Conservation Commission
ETAT Member (2)	FL Fish and Wildlife Conservation Commission
ETAT Member (3)	FL Fish and Wildlife Conservation Commission
ETAT Member (4)	FL Fish and Wildlife Conservation Commission
ETAT Member (5)	FL Fish and Wildlife Conservation Commission
ETAT Member (1)	FL Department of Environmental Protection
ETAT Member (2)	FL Department of Environmental Protection
ETAT Member (1)	FL Department of Agriculture and Consumer Services
ETAT Member (2)	FL Department of Agriculture and Consumer Services
ETAT Member	South Florida Water Management District
ETAT Member	Saint Johns River Water Management District

Table 7.2: FDOT District 6 ETAT Participating Agencies

Role	Agency
ETDM Coordinator	FDOT District 6
CLC Coordinator	FDOT District 6
CEMO Liaison	FDOT District 6
Public Information Officer	FDOT District 6
ETAT Member (1)	FDOT District 6
ETAT Member (2)	FL Department of Transportation
MPO ETDM Coordinator	Miami Urbanized Area MPO
ETAT Member (1)	US Environmental Protection Agency
ETAT Member (2)	US Environmental Protection Agency
ETAT Member (1)	US Army Corps of Engineers
ETAT Member (2)	US Army Corps of Engineers
ETAT Member (3)	US Army Corps of Engineers
ETAT Member	US Fish and Wildlife Service
ETAT Member	US Coast Guard
ETAT Member (1)	Federal Transit Administration
ETAT Member (2)	Federal Transit Administration
ETAT Member (1)	Federal Highway Administration
ETAT Member (2)	Federal Highway Administration
ETAT Member (3)	Federal Highway Administration
ETAT Member (4)	Federal Highway Administration
ETAT Member	National Marine Fisheries Service
ETAT Member	National Park Service
ETAT Member	Natural Resources Conservation Service
ETAT Member	Seminole Tribe
ETAT Member	Miccosukee Tribe
ETAT Member (1)	FL Department of State
ETAT Member (2)	FL Department of State
ETAT Member (1)	FL Department of Community Affairs
ETAT Member (2)	FL Department of Community Affairs
ETAT Member (1)	FL Fish and Wildlife Conservation Commission
ETAT Member (2)	FL Fish and Wildlife Conservation Commission
ETAT Member (3)	FL Fish and Wildlife Conservation Commission
ETAT Member (4)	FL Fish and Wildlife Conservation Commission
ETAT Member (5)	FL Fish and Wildlife Conservation Commission
ETAT Member (1)	FL Department of Environmental Protection
ETAT Member (1)	FL Department of Agriculture and Consumer Services
ETAT Member (2)	FL Department of Agriculture and Consumer Services
ETAT Member	South Florida Water Management District

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- **Environmental Screening Tool (EST):** The ETAT members may provide comments on the project based on information presented (or "loaded") in the EST, which is operated and maintained by the Florida GeoPlan Center at the University of Florida in Gainesville, Florida.[10]

  An innovative technology application, the EST provides a vital foundation to the ETDM process, supporting agency participation and community involvement throughout the project life cycle. The EST is an Internet-accessible application that provides tools to input and update information about transportation projects, perform standardized analyses, gather and report comments about potential project effects, and provide information to the public. The EST user community includes staff from seven FDOT district offices, 26 MPOs, approximately 26 resource agencies, and the general public (public access via http://etdmpub.fla-etat.org/). Performing an "Advanced Search" with the ETDM Project Number established for the SFECCTA links the user to the project's ETDM public information screens.

- **Environmental Technical Advisory Team (ETAT) Coordination:** Each FDOT District has an ETDM Coordinator, and for the SFECCTA the District 4 lead ETDM Coordinator is also the point of contact for EST implementation. For example, the District 4 ETDM Coordinator uploaded the AN on the EST for the ETAT to review. The ETDM Coordinator also prepares the ETDM Programming Summary Report, which is included in **Appendix C** with the Coordinator's summary of effects response to individual ETAT comments. In addition, the ETAT Coordinators for FDOT Districts 4 and 6 are routinely involved in monthly progress meetings on the SFECCTA Study.

With several regional projects underway in Southeast Florida, the FDOT Districts 4 and 6 have joined in ETAT Coordination efforts. Invitations were sent via correspondence as well as electronically to FDOT ETAT personnel from Districts 4 and 6 to attend an ETAT presentation held on July 12, 2006. The presentation was at FDOT District 6 in Miami. The key project issues highlighted during the workshop included the Tiered NEPA process, the status of the study to date and a summary of AN responses (meeting minutes included in **Appendix C**). Another Joint ETAT Workshop was held solely on the SFECCTA DPEIS on October 30, 2006 at FDOT District 4 in Ft. Lauderdale. The meeting was focused on the DPEIS, the Tiered NEPA process being utilized for the SFECCTA, and to solicit ETAT comments on the document (minutes of meetings with several written comments on the DPEIS also included in **Appendix C**).

7.2.2 Class of Action Determination

The Class of Action Determination for the SFECCTA was determined through coordination with the FTA Regional Office in Atlanta, Georgia. In a letter dated August 11, 2005, the FTA agreed to be the lead agency on the study and concurring with development of the Tiered EIS. This determination letter is attached in **Appendix B**.

[10] http://www.geoplan.ufl.edu/

7.2.3 Advance Notification (AN)

The AN for the SFECCTA is the first step in Phase 1 of a Tiered, PEIS that includes Transit Feasibility and AA. The AN fulfills the Intergovernmental Coordination and Review (ICR) Process that is required by the President's Executive Order 12372 and the Governor's Executive Order 95-359. This document serves as the initial public outreach and coordination effort in Phase 1, to be followed by separate ANs for future Phase 2 Analysis of independent SFECCTA sections as they are initiated. The format of the AN for the SFECCTA incorporates both the FTA guidelines for public notification of AA Studies for New Starts Funding while simultaneously addressing FHWA guidelines as per Part 1, Chapter 3 of the FDOT PD&E Manual. This hybridized approach followed a modified AN outline that is summarized in a separate Technical Memorandum available in the documents section of the project website (www.SFECCStudy.com/documents).

- **Advance Notification Package:** Due to the magnitude of the project and the readily available digital data for GIS analysis from local, State (e.g., FGDL, SFWMD, Universities such as Florida International University, University of Florida, and University of Miami), and Federal sources, a very detailed AN (over 70 pages) was circulated in January 2006 to a large distribution of Federal, State, and local government agencies and other interested parties. Over 1,200 recipients were copied on the AN in accordance with the FDOT list of recipients contained in a Technical Memorandum summarizing the AN Responses (available online on the project website documents download page at Uniform Resource Locator [URL] http://www.sfeccstudy.com/documents.html). The AN was circulated both by mail and by uploading to the ETDM EST for ETAT members to review. The AN had an expanded outline blending FTA, FHWA, and FDOT formats, as outlined in the AN and AN Responses Technical Memorandum.

- **Advance Notification Responses Summary:** A table summarizing the responses received on the AN is included in the AN Responses Technical Memorandum. The AN responses include 19 agencies and a private company that responded to the January 2006 AN. All concerns have been addressed in the Technical Memorandum or have been deferred to Phase 2 if that was the most appropriate course of action. The FDOT, through the AN process, informed a number of Federal, State, and local agencies of the existence of this project and its scope. The FDOT initiated early project coordination on January 23, 2006, by distributing the AN package to the State Clearinghouse at the FDEP in Tallahassee, Florida. In addition, the FDOT submitted over 1,200 individual packages to more than 130 Federal, State, and local governments. These agencies, governmental bodies, and other entities that received, as well as those who responded to the AN, are listed in the AN Responses Technical Memorandum and **Appendices D – H**.

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7.2.4 DPEIS Comment Summary

Comments in response to the DPEIS have been collected from cooperating and commenting agencies as well as comments received during the public hearing and have been summarized in **Table J.2** in **Appendix J**. Furthermore, the DPEIS was made available on the project website for electronic public review with an on-line comment input form. These public and intergovernmental coordination and review venues were fully advertised at the Federal (Federal Register[11] Notice of Availability [NOA] of DPEIS), State (Florida Administrative Weekly notification), and local (newspapers, public hearing mass mailings/e-mail notifications) levels prior to the public hearing and for the required open record period following the public hearing (see Section 7.2.7 Public Hearing below).

A Notice of Availability (NOA) of a Draft PEIS was published the in the Federal Register (Vol. 71, No. 198 / Friday, October 13, 2006 / Notices Page 60509) "Draft EIS No. 20060413, PROGRAMMATIC—South Florida East Coast Corridor Transit Analysis Study Tier 1". This NOA had an announced closing date for comments of December 8, 2006. However, any comments received at the public hearing or written comments received prior to December 11, 2006 regarding the project or the DPEIS have been included in **Table J.2** in **Appendix J**.

7.2.5 Local Agency Resolutions Supporting Project

Broward County: The City of Ft. Lauderdale adopted Resolution Number 02-179 to the City Commission on October 15, 2002. This resolution supports FDOT and the SFRTA for strategic investment in transit along the FEC Corridor area.

Miami-Dade County: Eight municipalities comprising the Northeast Miami-Dade Mayor's Joint Task Force on Transportation adopted Resolution Number R2006-01 on April 5, 2006. This resolution expresses support for the Miami-Dade County MPO funding the FDOT for the SFECCTA study and encourages FDOT to complete the study by no later than July 2006 in the effort to implement a rapid transit system.

Miami-Dade County: The Transportation Aesthetics Review Committee (TARC) of the County MPO has adopted Resolution Number 1-07 on March 7, 2007. This resolution accepts FDOT suggestions for TARC involvement in the study, particularly with regard to aesthetics and design features, including early integration of Art in Public Places as well as aesthetics between stations.

Citizens Transportation Advisory Committee: The Citizens Transportation Advisory Committee of the MPO has adopted Resolution Number 21-06 October 18, 2006. This resolution supports the continuation of the SFECC study being conducted by the FDOT and its affiliated regional and county transportation agencies.

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[11] FR Vol. 71, No. 198 / Friday, October 13, 2006 / Notices Page 60509) "Draft EIS No. 20060413, PROGRAMMATIC—South Florida East Coast Corridor Transit Analysis Study Tier 1"

City of Dania Beach: The City Commission to the City of Dania Beach has adopted Resolution Number 2006-184 on October 10, 2006. This resolution expresses support for the FDOT and its affiliated regional transportation agencies to recommend strategic investment to expand local and regional passenger service along the FEC corridor.

City of Hallandale Beach: The City of Hallandale Beach has adopted Resolution Number 2002-25 on December 17, 2002. This resolution urges the FDOT and its affiliated regional transportation agencies to support and fund the expansion of the FEC corridor to provide for local and regional passenger service.

City of Hollywood, Florida: The City of Hollywood, Florida has adopted Resolution Number R-2007-65 on February 21, 2007. This resolution urges the FDOT and its affiliated regional transportation agencies to recommend strategic investment in the FEC Corridor areas to meet the growing transit needs and complement freight industry growth in the Southeast Florida area.

City of Lake Worth: The City of Lake Worth has adopted Resolution Number 51-2006 on December 5, 2006. This resolution supports the FDOT and its affiliated regional transportation agencies to aggressively pursue the development of local and regional passenger service along the FEC corridor.

City of Lauderdale Lakes: The City of Lauderdale Lakes has adopted Resolution Number 07-29 on February 27, 2007. This resolution advocates the FDOT and its affiliated regional transportation agencies to recommend strategic investment in the FEC Corridor areas to meet the growing transit needs and complement freight industry growth in the Southeast Florida area.

The complete resolutions are included in **Appendix I**.

7.2.6 Other Agency Correspondence

South Florida Regional Transportation Authority responded to the AN for SFECCTA, (see **Appendix G**, Regional Agency Correspondence) with the following comments:

The Executive Director expressed that a transit project along the FEC Railway corridor between Jupiter and downtown Miami is one of five projects adopted by the SFRTA Board of Directors as a part of the SFRTA Master Plan. The proposed project is supportive of the SFRTA goals, while the project's regional nature is representative of the purpose of SFRTA.

7.2.7 Public Hearing

An informal public hearing was held throughout the Tri-County area on November 8, 9 and 15, 2006 to inform the public of the results of the Phase 1 DPEIS for the SFECCTA study and to afford the public the opportunity to express their views regarding the specific location, design, socio-economic effects, and environmental impacts associated with the various alternatives. The preliminary nature of these Phase 1 findings, as outlined in the DPEIS, was explained along with the opportunity for continuing public input in

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Phase 2 of the study (participants were encouraged to sign up for the project mailing/e-mail list for future notifications). The format and content presented to the attendees at each of three public hearing locations (venues) and dates was identical, presented by the same project team members, and presided over by the same project manager. **Figure 7.4** presents photographs of the SFECCTA public hearing held in November 2006 at all three venues illustrating these common elements and public participation.

Public and agency notification of the public hearing was made through various means. A total of 222,415 notification postcards headlined in English, Spanish, and Creole describing the purpose of the public hearing were sent as bulk mail, 2,560 electronic invitations were submitted, including 1,300 invitations to government agencies and elected officials and 1,260 invitations to the general public, approximately 35 public notices were e-mailed to the clerk's offices of various municipalities requesting they place the hearing date, time and location on their municipal calendars and bulletin boards, and 875 notification letters signed by the FDOT District 4 Secretary were mailed to a list of elected officials and administrators throughout the Tri-County area. An NOA to review the DPEIS was posted in the October 13, 2006 issues of the Federal Register (FR) and the Florida Administrative Weekly (FAW) which also listed the dates of all three public hearing locations. The public hearing was also advertised in local newspapers throughout the Tri-County area. These newspapers included: South Florida Sun-Sentinel; Broward Times; The Miami Herald; El Nuevo Herald (Spanish language); Diario Las Americas (Spanish language); The Miami Times; Haiti En Marche (Creole language); and The Palm Beach Post. A professional videographer videotaped the public hearing at each of the three hearing venues.

Figure 7.4: Photos of the SFECCTA Public Hearing held in November 2006

Photo 1: Palm Beach County venue held on November 8, 2006, Service Planning Station.

Photo 2: Palm Beach County venue held on November 8, 2006, Welcome/Sign-In Station.

Photo 3: Miami-Dade County venue held November 9, 2006, Welcome Signs in conformance with Titles VI and VIII of the Civil Rights Acts of 1964 and 1968.

Photo 4: Miami-Dade County venue public participation with video viewers (foreground) and discussions at information stations (background).

Photo 5: Broward County venue held on November 15, 2006, public interaction at an information station (foreground) with video presentation (background).

Photo 6: Broward County venue, close up of the environmental station with GIS display boards that represented social, natural and physical features.

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7. PUBLIC COMMENT AND AGENCY COORDINATION

Copies of the DPEIS were available at the sign-in tables and at comment tables for all attendees to review in addition to a notice of availability flyer listing other locations where the DPEIS could be viewed. Project brochures and newsletters in English, Spanish and Creole were also made available to all attendees at each of the hearing locations. Individuals signing in were offered numbered speaker cards and/or comment cards. The SFECCTA Project Manager of the District Planning and Environmental Management Office presided over the hearing to informally discuss the project with the general public.

During the public hearing an informal, continuous loop video summarizing the need for the project and the relative merits of each alternative as well as the potential socio-economic, right-of-way acquisition/ relocation, and environmental impacts played in a continuous loop for 45 minutes. During the video presentation, attendees were also afforded the opportunity to review various display boards and ask questions of project team members that were staffing each of three stations: Service Planning (including modal technologies and corridor alignments); Station Areas (including general station area locations and station types); and, Environmental (presenting resources identified along the corridor). In addition, right-of-way specialists were available at a "Right-of-Way" table for individual discussions and for the distribution of acquisition and relocation brochures.

Following the video presentation, the FDOT Project Manager invited the public to make their comments and/or provide written statements. Specific questions and comments raised were answered at the hearing during informal discussions with concerned individuals. The DPEIS was also made available for public and agency comments for a period of 45 days ending December 11, 2006 (25 days after the last public hearing). A total of 103 written comments, either in letter format or via the SFECC website, were received during the 45 day comment period. These comments were received from both government agencies and the general public. **Table J.2** in **Appendix J** summarizes all of the written and verbal comments on the DPEIS and/or the project study in general, and the corresponding responses, received from both government agencies and the general public during the 45 day comment period, including comments received at each venue of the public hearing described below.

- **Palm Beach County**

The Palm Beach County public hearing venue was held on November 8, 2006 at 5:30 P.M. in the Cohen Pavilion at the Kravis Center, 701 Okeechobee Blvd., West Palm Beach, Florida. Public notification of the Palm Beach County venue included: an advertisement in the Palm Beach Post; 76,544 postcards sent as bulk mail; 15 public notices e-mailed to the clerk's offices of various municipalities; and, 274 notification letters mailed to a list of elected officials and administrators. Approximately 62 persons attended this venue of the public hearing (see Photos 1 and 2 in **Figure 7.4**). Eleven persons spoke for the public record, including one public official. Two attendees were provided with translations in Creole.

Attendees at this venue generally supported the idea of improved passenger service along the FEC Railway corridor, including a show of support from one local government official. Several attendees encouraged the inclusion of a bike path along the corridor. The primary concerns revolved around noise in residential areas, funding, and railway crossing safety. For example, a representative of both a local historical association and the "Citizens for Quiet Trains" group expressed that the noise issue is also very important along historic districts in Palm Beach County. Substantive comments made at the hearing as well as comments received by letter or via the SFECC web page are summarized in **Table J.2** found in **Appendix J**. In addition, a Public Hearing Summary document is available at the FDOT District 4 offices with elements of the document such as the presentation slideshow, script, and transcripts also available on the project website.

- **Miami-Dade County**

The Miami-Dade County public hearing venue was held on November 9, 2006 at 5:30 P.M. in the Gwen Margolis Community Center, 1590 N.E. 123rd Street, North Miami, Florida. Public notification of the Miami-Dade County hearing venue included: advertisements in The Miami Herald, El Nuevo Herald, Diario Las Americas, The Miami Times, and Haiti En Marche; 66,300 postcards sent as bulk mail; approximately 10 public notices e-mailed to the clerk's offices of various municipalities; and, 228 notification letters mailed to a list of elected officials and administrators. Approximately 68 persons attended this public hearing venue (see Photos 3 and 4 in **Figure 7.4**). Twelve persons spoke for the public record, including two public officials. Three attendees were provided with translations in Creole.

Attendees at this venue also generally supported the idea of improved passenger service along the FEC Railway corridor, including a show of support from two local government officials. The primary concerns expressed related to noise and station locations, in particular by residents living adjacent to the corridor and/or in proximity to a proposed station. Some residents were concerned the project would lead to high density development in proximity to proposed stations. One resident expressed support and concern that the study was not proceeding fast enough for rapid implementation. Substantive comments made at the hearing as well as comments received by letter or via the SFECC web page are summarized in **Table J.2** found in **Appendix J**. In addition, a Public Hearing Summary document is available at the FDOT District 4 offices with elements of the document such as the presentation slideshow, script, and transcripts also available on the project website.

- **Broward County**

The Broward County public hearing venue was held on November 15, 2006 at 5:30 P.M. in the Broward County Main Library, 100 S. Andrews Avenue, Ft. Lauderdale, Florida. Public notification of the Broward County hearing included: advertisements in the South Florida Sun-Sentinel and The Broward Times; 79,571 postcards sent as bulk mail; 10 public notices e-mailed to the clerk's offices of various municipalities; and, 373 notification letters mailed to a list of elected officials and administrators. Approximately 48 persons attended this public hearing venue (see Photos 5 and 6 in **Figure 7.4**). Seven persons spoke for the public record, including three public officials. One attendee was provided with translations in Creole.

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The three public officials present expressed support for the proposed project, and one official encouraged the development of a station in his jurisdiction. However, the general public appeared to have mixed opinions on the proposed project (two of the four speakers were for the project, the other two against it). The primary concern was related to funding and the potential increase in taxes as a result of the proposed project. Substantive comments made at the hearing as well as comments received by letter or via the SFECC web page are summarized in **Table J.2** found in **Appendix J**. In addition, a Public Hearing Summary document is available at the FDOT District 4 offices with elements of the document such as the presentation slideshow, script, and transcripts also available on the project website.

Public Hearing Attendee Summary Statistics: A total of 178 attendees attended the three public hearing venues (combined total), 32 of which were agency representatives, elected officials or their staff, including 3 ETAT members (see **Table J.8** in **Appendix J**). Speakers included 24 public stakeholders (members of the general public) and 6 public officials.

7.2.8 Municipal Workshops

Municipal Workshops were held on May 22 and 23, 2006 in Delray Beach City Hall and the South Florida Regional Planning Council in Hollywood, respectively. The purpose of these workshops was to provide a forum for Mayors and other elected municipal officials and city managers and department directors to offer input on the project. These workshops also provided the opportunity for the elected officials to interact with their counterparts in other municipalities to discuss issues of mutual interest. The format for the workshops included a presentation and status report on the project and an agenda of discussion items that included: freight traffic, noise, quiet zones, vibration, land use, station area planning, property values, traffic circulation, rail crossing closings, elevated transit, municipal transit service and current and potential funding sources.

7.3 Public Involvement Plan (PIP)

The scale and complexity of the SFECCTA required a comprehensive, and specialized public involvement effort. The Consultant Team was responsible for preparing a comprehensive Public Involvement Plan (PIP) document for submittal and approval by the FDOT (approved June 1, 2006 after circulation and comment by team members including three local MPOs). At the initiation of the study, a schedule of tasks, meetings, presentations, and milestones was developed by the Consultant Team and reviewed by the FDOT Districts 4 and 6.

Within each of the three counties, the PIP goals were to:

- Identify stakeholders and inform them of the study and of opportunities to participate in it
- Reach out to minority and low-income populations by producing materials in English, Spanish and Creole

- Encourage participation by representatives of community organizations that could benefit from enhanced public transit in the SFECCTA
- Educate the public by using language that is easily understood by laypersons
- Provide opportunities for interaction between stakeholders and the study's technical team
- Maintain an ongoing dialogue between stakeholders and the study team
- Meet the requirements of the NEPA/ETDM processes
- Generate awareness, consensus and support for the project

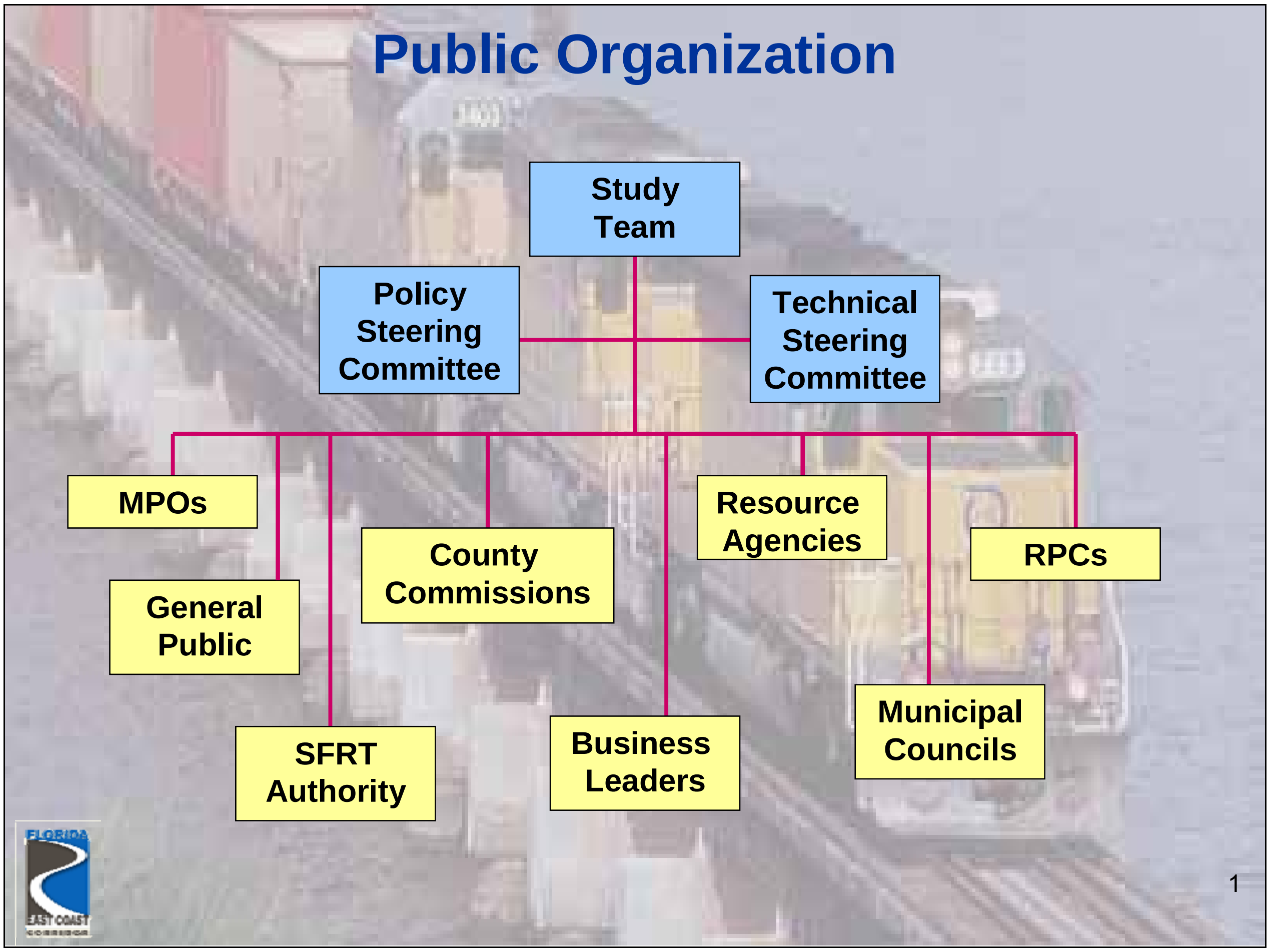
The universe of affected and interested parties in such a large-scale study is considerable. **Figure 7.5** represents the organization of the project's many public entities. Individuals within each group have been identified and added to the project database as they have become known.

Those groups are:

- Policy Steering Committee
- Technical Steering Committee (TSC)
- MPOs of Miami-Dade, Broward and Palm Beach Counties
- County Commissions of the three counties
- Resource agencies
- Regional Planning Councils (two)
- SFRTA
- Business leaders
- Municipal councils from the jurisdictions through which the study corridor passes
- General public

The approach to developing the PIP and conducting the public involvement activities included coordination with and review by the Public Involvement Managers from the three MPOs. The Consultant Team included four public involvement firms. Three of those firms were each assigned a county within the study area and the fourth was responsible for communicating with the business community in all three counties. The PIP complied with all NEPA requirements and the FDOT ETDM process. The PIP was approved by the FDOT Project Manager on June 1, 2006. As done in Phase 1, during sectional Phase 2 NEPA studies the FDOT will not make a final decision on the proposed action or any alternative until public hearings have been held on this project and all comments received have been taken into consideration.

Figure 7.5: Flow Chart of Public Organization



7.3.1 Mailing List and Newsletters

- **Mailing Lists:** The development of the project mailing database commenced at the outset of the study and continued throughout the project as the database was updated to include new persons, businesses and organizations as they become known to the Consultant Team. Gathering of e-mail addresses and fax numbers was a critical task, because mailing of all meeting notices and study material is unfeasible due to the exceptionally large number of individuals living and working within the study area. Each public involvement team firm gathered contact information on elected officials, agencies, civic organizations, property owners and business operators within its respective county. Representatives of homeowner and community groups and major business interests within the study corridor were also identified and included in the project database.

  Lists of those who use the para-transit services of the Palm Tran Connection in Palm Beach County, the Transportation Options (TOPS) program in Broward County and the Special Transportation Service (STS) in Miami-Dade County are not readily released. However, every effort was made to inform them of all the public meetings. Additionally, a significant effort was undertaken to take advantage of the travel surveys performed to reach out to travelers within the study corridor, particularly those that currently utilize bus transit. Two types of comprehensive weekday surveys were performed for travelers in the study area with information provided in English, Spanish, and Creole:

- A mailed license plate Origin and Destination (O-D) survey for drivers at 21 stations along I-95, US-1 and Dixie Highway in all three counties, and
- An on-board transit survey for bus riders on 21 north-south bus routes in the three counties located near the study corridor.

The mailed license plate survey included a listing of the project website address in large bold letters and a Toll Free (1-800) phone number set up for assistance. The on-board transit survey included a listing of the project website address in large bold letters as well as a space (Question # 17) for respondents to provide a mailing address or e-mail address to be added to the project mailing list. The license plate survey was mailed out to over 64,000 Florida-registered vehicle addresses while the on-board transit survey was distributed to over 4,700 bus riders. Almost 2,000 of the on-board surveys were completed and returned with approximately 650 containing an e-mail address. For comparison, over 8,137 license plate surveys were returned but it was an anonymous survey therefore no additional e-mail addresses were obtained.

In the interest of economy, the database has been limited to 300,000 contacts, or 100,000 in each county. The database includes:

- Federal, State and local officials and agencies
- News media
- Homeowner and condo association officers
- Business associations
- Para-transit users
- Individual business and property owners within in the study area (limited to 100,000 in each county)

➢ **Newsletters:** Two color newsletters were provided at two project milestones. The first (Summer 2006) newsletter was published in June 2006 after the initial screening of alternatives was completed. This first project newsletter was distributed during the Public Workshops held throughout the study corridor (June 22, 26, 27, 28, and 29, 2006) and also distributed to interested stakeholders by the Consultant Team via handout during the course of the study and by mailing to review agencies, citizen committees and other parties on the project mailing list.

The second (Fall 2006) newsletter was published in early November prior to the public hearing. The newsletters were distributed with the public hearing brochures and all materials were produced in three

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languages (English, Spanish and Creole) and distributed according to the project corridor demographics. Both of these newsletters are available on the project website.

- **FAQ's and Project Fact Sheet:** Two black and white Frequently Asked Questions (FAQ's) handouts and one color Project Fact Sheet were produced and distributed at two project milestones. The FAQ's were also posted on the project website. The first FAQ and the Project Fact Sheet were published in April 2006 prior to the Scoping and Public Kick-off Meeting. The second FAQ handout was produced in August 2006 for the Public Workshops. All three items were produced in English, Spanish and Creole and were distributed at the meetings and to other interested stakeholders at other venues that followed. Each of the FAQ's was a four page foldout that included an introduction, the FAQ's, a project location map, team contact information, and the project website address. The Project Fact Sheet was a five page handout that included a description of the project, project history, project schedule, project costs, project issues, the project website address, and a project location map. The Fact Sheet and FAQs are also available on the project website.

7.3.2 Website/E-mail Link

A stand-alone project website has been developed (http://www.SFECCStudy.com). The website is consistent with the FDOT policies and has been designed to provide summarized and detailed project information and to visually inform visitors about how various alternatives and potential station areas are situated within the study area throughout the region. The website was updated nearly every two weeks during the course of the study to reflect the progress of the study, thereby keeping visitors interested in returning to the website. Website updates have included news items, document uploads, project schedule updates and notices of public workshops. Also of note, the website includes reciprocal hyperlinks to/from the websites of partners in the study; MPO and transit agencies. **Figure 7.6** provides a "screenshot" of the project website. As a way of making technical memoranda, reports and graphic-intensive project illustrations available to the review agencies and the general public, the project website is also used as a repository for project documentation, as shown in **Figure J.27** in **Appendix J**. This is in addition to FTP sites made available by the consultant team members to the review agencies for download of selected project documentation.

Figure 7.6: Project Website

Note that as another added feature to the project website, an e-mail sign-up dialog box appears in the upper right-hand corner of the homepage for users to sign-up to be placed on the SFECCTA mailing list.

7.3.3 Press Releases

Press releases are prepared by the Consultant Team for television and radio to promote the project and to announce dates/times and promote attendance at upcoming public meetings. The public involvement managers of the 3 MPOs are also assisting the study team in this regard. Press releases and public service announcements are prepared in three languages (English, Spanish and Creole).

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7.3.4 Pertinent Correspondence

- Pertinent Project Correspondence includes newspaper display advertisements, direct mailings (letters and postcards), electronic postcards, municipal calendar notices and comment cards.

- Newspaper display advertisements have been published in the Miami Herald, Sun-Sentinel and Palm Beach Post newspapers, as well as selected community newspapers to draw attention to the project and attract larger audiences to the various meetings.

- Direct mailings to property owners, elected and municipal officials have included letters and postcards notifying stakeholders of upcoming public meetings and workshops.

7.3.5 Public Workshops

Two series of Public Workshops were held; one series of five in late June 2006 and another series of five in late August 2006 and Mid-October 2006. The first series concentrated on informing the general public about the project, particularly with updating them on progress of the study since their first exposure to it in April 2006 during the Public Kick-Off / Scoping Meetings. The second series of workshops followed in the same vein with providing updates on various aspects of the study and continuing to ask for input on the narrowed selection of alternatives and station locations. For both series of meetings, the project website was updated with the presentations used as well as the project illustrations referred to during the workshops. Meeting summaries of the workshops were also posted on the project website.

7.3.6 Public Workshop Series 1 (June 2006)

Public Workshops were held throughout the study area on June 22, 26, 27, 28 and 29, 2006. All workshops were conducted from 6 to 8 P.M. in the following locations:

- Miami-Dade County: Thursday, June 22 at the Gwen Margolis Community Center
- Palm Beach County: Monday, June 26 at the Delray Beach Community Center
- Broward County: Tuesday, June 27 at the Hollywood Performing Arts Center
- Palm Beach County: Wednesday, June 28 at the Palm Beach Gardens Municipal Complex
- Broward County: Thursday, June 29 at the Mitchell Moore Community Center

Over 227,000 invitation postcards were mailed out to property owners, businesses and other stakeholders located along the FEC corridor in all three counties. Over 1,300 e-mail invites were sent to those individuals in the project mailing list who have included an e-mail address. Workshop dates were also advertised in six local newspapers and listed in the Public Meetings section of the project website. Electronic postcards were sent via e-mail to municipalities within the study area, and requests were made to place the meeting date, time and location on the municipal calendars and bulletin boards. Attendance at the meetings included 85 individuals in Miami-Dade County, 87 and 34 individuals in the workshops held in Broward County, and 40 and 59 individuals in the workshops held in Palm Beach County (305 total). Materials distributed and available at the workshops included a 4-page color project newsletter, a 13-page color Scoping Information Booklet and a 4-page project FAQ handout. The Scoping Information Booklet and FAQ handout were available in English, Spanish and Creole. A Creole translator was available at the workshop conducted in Miami-Dade County. Written Comment Cards were also distributed and collected during the meetings.

The purpose of the workshops was to update the general public on the project and to engage attendees in discussions on the various alternatives, technologies, station areas and other study-related issues such as freight traffic, noise, quiet zones, land use, traffic circulation, rail crossing closings, elevated transit, and current and potential funding sources.

The workshop format included an informal "open house" period in which attendees could view project illustrations posted around the room. Study team members were available to assist the public in examining the aerials and exhibits and answer questions regarding the project. The workshop also included a PowerPoint® presentation, and a group question-and-answer period.

In general the majority of the attendees were in support of providing passenger service along the FEC corridor. It is also noteworthy that most expressed a preference for the FEC alignment as compared with either the US-1 or I-95 alignment. The following study-related issues were discussed: project schedule; current and potential project funding sources; costs of alternatives, including grade-separated alignments; need for a single and seamless mode/technology; quiet zones; rail freight; zoning, station areas and typical measures of land needed for stations and maintenance facilities; east-west and intermodal connections; grade crossings, grade-crossing closings and traffic impacts; elevated versus at-grade technologies; integration with existing Tri-Rail service; and coordination with municipal comprehensive development master plans.

7.3.7 Public Workshop Series 2 (August and October 2006)

The second series of Public Workshops was scheduled throughout the study area for August 21, 22, 24, 28 and 29, 2006 to be conducted from 6 to 8 P.M. in the following locations as follows:

- Broward County: Monday, August 21 at the Hollywood Performing Arts Center
- Broward County: Tuesday, August 22 at the E. Pat Larkins Community Center
- Palm Beach County: Thursday, August 24 at the Palm Beach Gardens Municipal Complex
- Palm Beach County: Monday, August 28 at the Delray Beach Community Center
- Miami-Dade County: Thursday, August 29 at the Gwen Margolis Community Center

Over 230,000 invitation postcards were mailed out to property owners, businesses and other stakeholders located along the FEC corridor in all three counties and over 1,300 e-mail invites were sent to those individuals on the project mailing list who included an e-mail address. Workshop dates were also

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advertised in six local newspapers and listed in the Public Meetings section of the project website. Electronic postcards were e-mailed to municipalities within the study area, and requests were made to place the meeting date, time and location on their municipal calendars and bulletin boards. Public Service Announcements were distributed to 11 media outlets including newspaper, television and radio. Notices were also posted on city and county calendars. Attendance at the meetings totaled 74 and 50 individuals in the workshops held in Broward County, and 31 and 32 individuals in the workshops held in Palm Beach County (187 total). Due to Tropical Storm Ernesto, the August 29 Public Workshop planned for Miami-Dade County was cancelled and was rescheduled for three workshops that were held as follows: 1.) Tuesday, October 10 at the Miami-Dade County Government Center; 2.) Wednesday, October 11 at the Aventura Community Center; and, 3.) Thursday, October 12 at Legion Park. Materials distributed and available at the workshops has included a 4-page color project newsletter and a 4-page project FAQ handout. The FAQ handout is available in English, Spanish and Creole. A Creole translator was available at the workshops conducted in Miami-Dade County. Written Comment Cards were also distributed and collected during the meetings.

The purpose of this second series of workshops was to update the general public on the project and to engage attendees in active discussions on alternatives, technologies, and service planning issues as well as land use and station area planning.

Similar to Public Workshop Series 1, the Series 2 workshops included an informal "open house" period in which attendees could view project illustrations posted around the room. Study team members were available to assist the public in examining the aerials and exhibits and answer questions regarding the project. Each workshop also included a PowerPoint® presentation. These workshops also included break-out sessions on service planning and transit station suitability designed to engage participants and solicit their input.

During the service planning and station suitability break-out sessions, attendees were provided with a brief explanation of how the analysis was conducted and then were invited to comment on the alternative sections, potential station locations, and station amenities. In addition, participants were encouraged to indicate their preference for alternative sections, station locations, and where they would most like to board and alight a transit service by placing self-adhesive tabs on a map of the study area (**Figure 7.7**).

Figure 7.7: Station and Service Planning Public Workshop

Photo 1: Showing the public giving their opinion, comments, approval or disproval of possible station areas along the corridor on the corridor maps

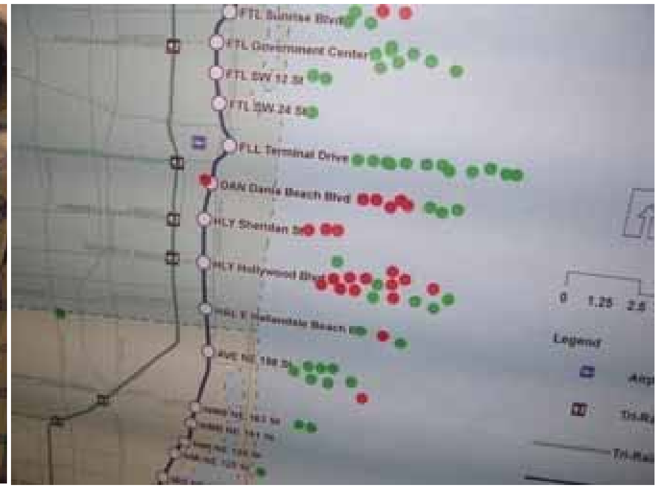

Photo 2: The public placed dots on the origin and destination of trips they would make along the corridor on maps displayed at the meeting

Photo 3: Break-out group presentation

Photo 4: Showing the public giving their opinion, comments, and asking questions during the break-out session.

These workshops concluded with a full group wrap-up and question-and-answer period. Again, the majority of the attendees were in support of having passenger service along the FEC Railway corridor. The following study-related issues were discussed during the break-out group sessions:

- the need for east-west connections and connectivity with Tri-Rail;
- the need to continue to consider grade-separated alignments due to the number of rail crossings;
- noise and vibration;
- the logical placement of transit stations, and

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- the need to consider station accessibility including non-motorized modes such as pedestrian and bicycle.

Workshop participants agreed, in general, with the preliminary conclusions of the study. Consensus was reached that the FEC Railway corridor should be the preferred alignment, and that the US-1 corridor would be too expensive and impractical to develop as a high-performance, premium transit corridor throughout the study area. Some dissent was expressed from a minority of workshop participants who expressed a desire for Tri-Rail service improvements as opposed to creating new service along the SFECCTA corridor. General consensus was also reached among workshop participants on the station area locations, as presented at the workshops and in the DPEIS.

7.3.8 Visualization Techniques for Decision Makers, Agencies and the General Public

From the outset of the project, every effort was made to provide as much information as possible in a visually appealing and easy to understand format to all project stakeholders. The visual information contained imagery related to proposed transit concepts as well as potential impacts to the human and natural environment. This included having a public involvement team with each member focused on specific geographic areas; an interactive project website with links to other local agency sites, large display boards with drawings and maps at all meetings; extensive use of GIS tools and visual imagery (both with and without color aerial photography); animated PowerPoint® presentations (over 40 separate presentations prepared and presented) with visual imagery; large scale interactive charts, graphs and boards; three dimensional images and color photographs of the various transit technologies, vehicles and stations; and other visual images and tools. Some of the visualization graphics have been included in this document and some of the presentations are also posted on the project website. During the entire PEIS phase to date, the team has received extensive positive feedback on the use of the visualization tools.

The various meetings and visualization techniques implemented during Phase 1 for elected officials/decision makers, agencies and the general public are summarized as follows:

Elected Officials/Decision Makers:

- Three different presentations utilizing PowerPoint® conducted over the course of the study to the three MPO's and the SFRTA Boards and subcommittees. These presentations were in color and utilized different types of visualization techniques. Handout versions of the presentations were provided in advance for all meetings. One-on-one meetings were also conducted with most board members and project material was handed out and discussed.

- More thorough/detailed presentations utilizing PowerPoint® conducted for our project Technical and Policy Committee that included senior staff from the three MPO's, the SFRTA, FDOT Districts 4 and 6, and the three transit agencies.

- PowerPoint® presentations to each of the 28 affected municipality's elected officials (councils and Mayors).

- Two municipal workshops geared specifically to municipal elected officials and City Managers. A PowerPoint® presentation and large color display board geared for municipal issues were included.
- Invitation and attendance at our various public meetings/workshops and public hearing. Very good participation of elected officials occurred at our public meetings/workshops.
- Production and distribution of two Multilanguage (English/Spanish/Creole) color newsletters and two project fact sheets. The newsletters contained color images of the various technologies under study.
- The 65 page AN package was sent out in hard copy to all elected officials and board members prior to commencing the study. This package was in color and included several visual exhibits.
- All project documents (most in color), and major presentations and displays have been included on our project website for easy viewing and downloading.

Agencies:

- Agency kick-off meeting with PowerPoint® presentation and large color display boards, including color photographic images of the entire 85 mile study corridor (**Figure 7.1**).
- Comprehensive (65 page) color AN package.
- All key agency representatives were invited to attend all public meetings/workshops and the public hearing.
- Interactive ETDM screening tool available to all ETAT members in both districts.
- Two separate ETAT meetings with comprehensive PowerPoint® presentation and display boards.
- Draft PEIS document circulation and access to all supporting tech memos.

General Public:

- Kick-off and Scoping meetings included various visualization techniques such as a PowerPoint® presentation, large color display boards, and color handout materials (**Figure 7.1**). All material was produced in three languages (English/Spanish/Creole) and translators for each were available at all meetings.
- Small individual group meetings/presentations within communities included PowerPoint® presentations and color handout materials.
- Specialty Public Involvement firm for one-on-one meetings with business groups and business owners.
- All public workshops included PowerPoint® presentations, large color display boards and color handout materials (**Figure 7.7**). Our second public workshop was interactive allowing the public to personally “mark-up” various displays regarding alignments, technologies and station areas (see photos 1 and 2 in **Figure 7.7**). The various transit vehicle types were displayed to scale in both section and elevation views. All material was produced in three languages (English/Spanish/Creole) and translators for each were available at all workshop meetings.

- The Public Hearing included a professional voice over automated PowerPoint® presentation, continuous loop images (slideshows and videos) of transit stations and transit technologies, large color display boards of maps and GIS based data, and color handout materials (**Figure 7.4**). All material was produced in three languages (English/Spanish/Creole) and translators for each were available at all three Public Hearing venues.

7.3.9 Other Meetings/Presentations

During the course of the Phase 1 study, over 230 public presentations and/or briefings were held throughout the study area including the Elected Officials/Agency Representatives Kick-Off Meetings, and the Public Kick-Off/Scoping Meetings (**Table 7.3**). In addition, over 50 meetings with technical and citizen review committees and 11 unscheduled meetings with interested parties such as homeowner associations, grassroots organizations (e.g., Sierra Club) and civic groups were also conducted. At least 20 “one-on-one” meetings with local business leaders were held from June through December 2006.

Presentations were given to Mayors, City Commissions, and City and Village Council members between the months of June 2006 and November 2006. Over 30 of these presentation meetings were held with elected officials and/or their representatives. These presentations were informational and included updates on the alternatives and sectional priorities selected during Phase 1 as well as discussions on the role the various municipalities may play in supporting the proposed project. Some of the comments received from the City Mayors and City Commission members during these presentations were related to financing of the project, station suitability study, and security at the proposed station areas.

Table 7.3: Summary List of Scheduled Public Meetings Held

Audience	Number of Presentations/Briefings
Public Hearing*	3
Public Meetings/Workshops	35
Technical Review Committees	40
Citizens’ Review Committees	15
Transportation Policy Boards	20
City/Town Councils	23
Municipal Workshops	11
Municipal Officials / Community Leaders	65
Local Business Leaders	20+
	Total = >232

* A Public Hearing was held at three different venues/dates throughout the Tri-County area

7.4 Summary of Agency and Key Stakeholder Phase 1 Coordination

As outlined in this chapter, there has been a detailed, comprehensive PIP including an active outreach to the regulatory and governing agencies as well as key stakeholders such as elected officials, community organizations, and non-governmental organizations (NGOs). The sub-sections below describe the steps of the Phase 1 study in relation to alternatives analysis, document preparation and review, public and agency meetings, media, etc.

7.4.1 Participation in Alternative Development and Environmental Review Process

- The general public and agencies were given several opportunities in Phase 1 through a collaborative process to be involved in the development of the project purpose and need, defining the range of alternatives, screening methodologies, and the level of detail for the analysis of alternatives. During Phase 2, project stakeholders will again be given multiple opportunities to be involved with refinements to the purpose and need, alternatives, screening methodologies, and level of detail. This continuity between tiers, throughout the course of the full SFECCTA study, is in accordance with NEPA, SAFETEA-LU, and FDOT Guidelines.
- Issues of concern regarding the project's potential environmental or socioeconomic impacts were identified, assessed, and documented in Phase 1 and will continue to be identified, assessed and documented in Phase 2.
- During the early stages of Phase 1 a Public Involvement Plan and Tiered Programmatic EIS Methodology Technical Memorandum were prepared and circulated. During the early stages of Phase 2 an Agency Coordination Plan, a Public Involvement Plan, and an Environmental Screening Methodology Technical Memorandum will be prepared and circulated.
- In Phase 1 project alternatives were developed, screened, vetted with agencies/key stakeholders, and documented through rational analytical methods (see Chapter 5) as well as the various public involvement processes documented in this chapter. Only those alternatives (both modal technologies and general alignments/corridors) that were clearly inferior both from an environmental and engineering perspective were eliminated from further study. All the alternatives were fully evaluated in terms of their compliance with the project purpose and need; transportation impacts; capital and operating costs; social, economic and environmental impacts; and technical considerations.
- Phase 1 had a two-phase approach to alternative development and screening (Phase 1 – modal technologies and Phase 2 – combinations of service segments, general alignments and viable modal technologies). Phase 2 is also anticipated to have at least a two-phase approach to alternative refinement and screening (on sequential regional and sectional analyses). At each phase the level of detail in terms of the engineering and environmental analysis has and will continue to increase as necessary to support decision-making.

7.4.2 Compilation of Coordination Activities in Phase 1

A summary matrix has recently been added to the Conceptual AA/ESR in **Appendix J** (New Materials Since DPEIS). This new table, Agency/Stakeholder Coordination and Response Summary for SFECCTA Phase 1 (**Table J.8**), conservatively tabulates which agencies, elected officials, organizations and other major stakeholders provided comments on the documents that were sent or circulated, including the

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Advance Notification (AN), Purpose and Need in Florida's ETDM process[12], Technical Memorandums or Reports, as well as the DPEIS itself. It also summarizes which of the stakeholders attended Agency Kickoff/Scoping Meetings, Workshops, Policy and Technical Steering Committee Meetings, One-on-One Meetings, or the Public Hearing. This summary includes stakeholders who either received documents (with or without commenting) or attended meetings, workshops or public hearings (with or without speaking or providing written comments to the SFECCTA Public Involvement Team). Comments (written or spoken) on the documents the agencies and stakeholders received or through the public involvement process during Phase 1 include those documented in text of tables appended to separate project documents such as the SFECCTA AN Response Summary, Project Scoping Summary, Public Hearing Summary Report, etc. (available on project website at www.sfeccstudy.com).

The comments range from general statements of support for the project, support for transit in the area in general, to substantive comments on agency areas of concern and elected officials' constituents' concerns. While no support or opposition to the tiered NEPA or Programmatic EIS approach was documented in Phase 1, a variety of stakeholders provided input and voiced concern regarding many issues relevant to the SFECCTA study, ranging from quiet zones and at-grade transitway – roadway crossings, affordable housing and cumulative impacts at station areas, air quality (localized impacts and regional improvements from the project), traffic congestion (economic impacts if unchecked, localized degradation at rail crossings), listed species/wetlands/other natural environmental concerns, etc.

Phase 1 Agency Coordination Summary

The coordination efforts performed as part of Phase 1 commenced on September 2005 with a project Notice to Proceed and concluded in December 2008 with the decision to move forward with Alternatives Analysis from FTA. The Phase 1 agency coordination process was proactive and comprehensive and included a series of circulated documents as well as meetings/workshops and presentations to interested stakeholders. The USCG and the FRA agreed to be Cooperating Agencies in Phase 1. Following is a listing of the Phase 1 agency coordination activities:

Circulated Documents:

- Notice of Intent (NOI) – An NOI was prepared and posted in the Federal Register on March 28, 2006 and the Florida Administrative Weekly on April 14, 2006 with respect to preparing the Phase 1 programmatic EIS document.
- ETDM/EST and Advance Notification (AN) Package – The ETDM/EST and AN process commenced on January 2006 and was distributed (via mail and ETDM website) to over 1,200 agencies, elected officials and other key stakeholders. Approximately 25 responses were received including eight from

12 Both the FHWA and FTA have stated that FDOT's ETDM process satisfies the participating agency intent outlined in the SAFETEA-LU regulations (Title VI -- Transportation Planning and Project Delivery, Section 6002, "Efficient environmental reviews for project decision making"). Development of Florida's ETDM Process has been undertaken in keeping with the provisions in Section 1309 of the Transportation Equity Act for the 21st Century (TEA-21).

ETAT members. An Advance Notification and Agency Response Summary Technical Memorandum was prepared and included on the project website along with the AN Package.

- Technical Memorandums/Reports – A Tiered Programmatic EIS Methodology Technical Memorandum was developed and distributed to all FDOT ETAT members in May 2006 in order to provide basic information on a Tiered NEPA process for this project. Additional NEPA and technical memoranda and reports were prepared and included on the project website.
- DPEIS – The DPEIS document was circulated from October 13, 2006 to December 11, 2006. The document was distributed to approximately 95 agencies, elected officials and other key stakeholders and was included on the project website. Approximately 12 of these reviewers provided responses (several from multiple departments or reviewers) were received including seven from ETAT members, (including two sets each from USEPA and FDEP).
- Conceptual AA/ESR – The Conceptual AA/ESR, formerly referred to as the Final Programmatic Environmental Impact Statement document, was circulated from May 2008 to July 2008. The document was distributed to approximately 95 agencies, elected officials and other key stakeholders and was included on the project website.

Meetings:

- Elected Officials and Agency Kick-off Meeting – Approximately 325 agencies, elected officials and other key stakeholders were invited to a series of 3 meetings conducted in December 2005. Approximately 111 individuals attended including 11 ETAT members.
- Scoping and Public Kick-off Meeting – Approximately 1,250 invitations to agencies, elected officials and other key stakeholders were sent out for a series of 3 meetings (with two sessions per day) conducted in April 2006. Of these, 350 invitations went to various agencies, elected officials or other entities, and 900 invitations went to members of the general public. Approximately 269 individuals attended these meetings, including 9 ETAT members.
- ETAT Workshops – Two workshops were conducted at scheduled ETAT workshops in July and October 2006. Approximately 60 individuals attended representing 15 ETAT agencies.
- Municipal Workshop – Representatives from all 28 municipalities along the FEC Railway alignment were invited to participate in a municipal workshop. Two workshops were conducted in May 2006. Approximately 17 individuals attended representing 12 municipalities.
- Public Workshops – Approximately 459,000 invitations (457,000 postcards and over 2,600 e-mails) were distributed to agencies, elected officials and other key stakeholders on the project mailing list were invited to two sets of workshops that were conducted in June 2006 (5 locations) and August/October 2006 (7 locations). Approximately 492 individuals attended including approximately 8 individual ETAT members representing 4 ETAT Participating Agencies.

- Policy and Technical Steering Committee Meetings – 5 Steering Committee meetings were conducted between September 2005 and February 2008. A total of 14 local agencies were represented on the committee.
- One-on-One Meetings – Approximately 35 one-on-one meetings were conducted with local agencies, elected officials, business leaders and other stakeholders.
- Public Hearing – Approximately 222,415 notification postcards, 2,560 electronic invitations, approximately 35 public notices were e-mailed to the clerk's offices of various municipalities, and 875 notification letters signed by the FDOT District 4 Secretary were mailed, all to invite agencies, elected officials and other key stakeholders (public included) to a series of 3 meetings conducted in November 2006 (see Section 7.2.7 above). Approximately 178 individuals attended, 32 of which were agency representatives, elected officials or their staff, including 3 ETAT members.

Presentations:

- Transportation Agencies – A series of approximately 35 presentations were given to the three MPOs and their various committees as well as to the SFRTA and two regional planning councils. Additionally, a presentation was given to representatives of Florida East Coast Industries, Inc. (FECI), operator of the FEC Railway.
- Municipalities – Presentations were conducted at individual city commission/council meetings for most of the 28 municipalities as well as each of the three local league of cities organizations.
- Local Groups – Presentations were given to various stakeholders including Homeowners' Associations (HOA's), Civic groups, grassroots/Non-Governmental Organizations (NGOs), etc.

During the Phase 1 outreach and coordination activities over 90 key agency and other stakeholders (aside from over 100 members of the public that also attended many of these workshops and the public hearing) responded to study documents and/or attended the Public Involvement Meetings, including:

A. Phase 1 had active participation documented by 12 Federal as well as 78 tribal, State, regional and local agencies/governing bodies (90 total), including 1 State senator, 4 State representatives, 10 mayors, 31 city and county commissioners and at least 2 city councilmen/women, and 1 representative of a Native American Tribe,

B. Phase 1 also had active participation from 2 State universities, 1 private university, 1 community college, 2 railroads, 1 major utility company, 30 organizations, and 6 members of local media (newspaper and television),

C. 26 recipients of the project AN, and reviewing members of the ETDM, provided comments,

D. 109 stakeholders (including 2 Federal agency representatives) attended the Agency Kickoff/Scoping Meetings, sending 234 representatives to at least one of the three venues (one held in each of three counties),

E. 32 agency representatives (including 3 Federal agency representatives), elected officials or their staff (agency/elected official stakeholders) attended the Public Hearing in addition to the 146 members of the general public,

F. 7 agencies (represented by 9 individual staff) attended the Workshops held at FDOT Districts 4 and 6 for the Environmental Technical Advisory Teams (ETAT), the reviewing agency members participating in the State of Florida's ETDM Process, and

G. 10 agencies/departments (represented by 18 individual staff) attended at least one of the four meetings of the 18 member SFECCTA Joint Policy and Technical Steering Committee held at FDOT District 4 (March 13, June 6, July 24, 2006, and January 11, 2007).

The SFECCTA project study complies with SAFETEA-LU Section 6002 which established an environmental review process for highway and transit projects. This process must be followed for highway and transit projects that require the approval of the USDOT and involve preparation of an EIS. The process is intended to make environmental reviews more efficient and timely by clarifying agency roles and responsibilities, improving coordination, setting deadlines, and improving dispute resolution. This new process is now included in Section 139 of Title 23 of the U.S. Code (23 U.S.C. § 139). All EIS's for which a NOI was published in the Federal Register after August 10, 2005 must follow the environmental review process requirements established by SAFETEA-LU (including Tiered EIS/programmatic documents). The Phase 1 NOI for SFECCTA was published on October 13, 2006 prior to issuance of the FHA/FTA Final Guidance on environmental reviews on November 15, 2006. Therefore, the Conceptual AA/ESR is consistent with all SAFETEA-LU requirements including Section 139 even though no guidance was available when this project's Phase 1 NOI was published. The Phase 1 process for agency and public coordination was consistent with Section 139 affording ample opportunity for involvement based on the following:

1. Although no formal invitation letters were sent out to agencies and stakeholders, the FDOT Environmental Technical Advisory Team (ETAT) process designates all 19 signatory agencies as participating agencies in the environmental review process. The ETAT and AN process afforded two-way communication between the lead agency, participating and cooperating agencies, and other stakeholders throughout the Phase 1 portion of the study.

2. Two cooperating agencies were identified and provided input in Phase 1: USCG and the FRA.

3. A comprehensive Public Involvement Plan (PIP) was developed and executed. The PIP included an agency kick-off meeting, scoping meeting, ETAT workshops, and public hearing with significant agency and public collaborative interaction.

4. A series of environmental documents were prepared and circulated to agencies and stakeholders and included a Tiered Programmatic EIS Methodology Technical Memorandum, and a Draft PEIS and Final Conceptual AA/ESR. The review period for the DPEIS was 56 days (exceeded the required 45 day comment period). Substantive agency and public stakeholder comments on the DPEIS were addressed and incorporated into this Conceptual AA/ESR where applicable.

5. The public, agencies, and project stakeholders were given multiple opportunities to review and comment on the project purpose and need, goals and objectives, the range of Phase 1 alternatives, and technical methodologies for the screening of Phase 1 alternatives.

6. The Phase 1 project schedule and all other project documents were made available to all stakeholders and were included on the project website.

7. A series of Phase 1 agency and public scoping meetings were announced between April 17 and April 24, 2006, while the closing date for comments was May 30, 2006 (exceeded the required 30 day review period).

8 COMMITMENTS AND RECOMMENDATIONS

The comments received as part of the PIP for Phase 1 of the SFECCTA, combined with the ETDM Agency coordination, produced valuable information that allowed the Phase 1 study to be assessed by the project team in a regional approach consistent with environmental streamlining provisions of NEPA and SAFETEA-LU. As part of this Conceptual AA/ESR, the following are the Phase 1 commitments and recommendations.

8.1 Commitments and Recommendations

The SFECCTA Phase 1 DPEIS underwent an extensive PIP designed to afford all interested stakeholders, public agencies and the general public with opportunities to comment and participate in the early development of alternatives. This approach resulted in a number of commitments and recommendations which are summarized below. Commitments previously included in Section 6.6 of the DPEIS have been incorporated into this section.

8.1.1 Commitments

In order to minimize impacts on the natural and human environment from projects stemming from SFECCTA Phase 2 studies, the FDOT is committed to the following measures:

1. **Carry forward thirteen (13) combinations of five modal technologies, three study sections and the FEC alignment** (see Section 6.2.4, “Agreement on viable alternatives to move forward into Phase 2 for further analyses” and Sections 2.2, 2.3).

2. **Develop a proactive strategy to reduce the number of community impacts and enhance the safety of at-grade transitway-highway crossings of the FEC alignment** (see Section 6.2.5, “Agreement on Further Study in Phase 2”);

3. **Siting preliminary station locations, park-and-ride locations, and O&M facility locations**, within the three sub-corridor sections and one corridor-length section (see Section 6.2.5, “Agreement on Further Study in Phase 2”);

4. **Establish logical limits and relative priorities (as approved by all relevant agencies and stakeholders) for further individual studies** that address inter-section travel issues and coordination as well as overarching corridor issues such as consistency of technologies and station needs (see Section 6.2.3 and Section 6.2.5, “Agreement on Further Study in Phase 2”);

5. **Determine environmental determinations/Class of Action Determination** (i.e., EIS, EA, or SEIR/CE–II level studies), supported by information provided in Phase 1 (see Section 6.2.6, "Decisions anticipated to be made during the Phase 2 phase – issues to be resolved");

6. **Provide a summary of Phase 1 public and agency comments to address all detailed agency comments to the greatest extent possible**;

7. **Recommend regional and sectional LPAs**. Each LPA will consist of alignment and modal technology combinations, station location sites, and O&M facility location sites (see Section 6.2.6, "Decisions anticipated to be made during the Phase 2 phase");

8. **Initiate inter-agency coordination at onset of Phase 2, with emphasis on consensus building for recommended methodologies in Phase 2 Regional and Sectional Studies for transit planning, engineering and environmental screening/assessment of alternatives**. Proposed methodologies for assessing and addressing potential environmental (social, natural, and/or physical) impacts will be presented to/circulated with key stakeholders early and often in an effort to vet the study approach. Coordination with the ETAT and other environmental resource agencies will occur from the onset of Phase 2, as done in Phase 1, including the circulation of a Phase 2 Regional Environmental Screening Methodology Technical Memorandum for achieving consensus on the SFECCTA Phase 2 approach to NEPA analysis and documentation. It is anticipated that this regional environmental screening methodology will then be documented and presented with the alternatives' screening results in a Phase 2 Regional Environmental Analysis Report or Technical Memorandum included in the subsequent sectional NEPA studies by reference.

9. **Recommend a methodology for addressing potentially historic linear resources (with or without an approved FDOT/SHPO protocol)** based on continued coordination with the Florida SHPO and development of a protocol by FDOT and FHWA. Where reasonable and feasible, this protocol will identify, document, and evaluate such linear historic resources as the FEC Railway, US-1, Dixie Highway, Miami Canal and other major canals related to the Everglades Drainage District (see Section 3.4.2 and Section 6.2.6, "Decisions anticipated to be made during the Phase 2 phase"). Development of such methodology will consider evaluation of secondary and cumulative effects on historic resources, as well as potential development of an interagency Programmatic Agreement Memorandum for Cultural Resources;

10. **Consider potential partial corridors on new locations or alignments along existing or pre-existing railway and/or roadway facilities, canal banks, or utility rights-of-way as connections between existing rail or roadway alignments**, should they be needed (see Section 6.3 “Potential Corridors on New Location”);

11. **Conduct a detailed evaluation of the direct and indirect and cumulative effects of each alternative on social, cultural, and environmental resources relying on Conceptual AA/ESR baseline data and ICE analyses** (see Section 3.14).
    Prepare technical memoranda or reports, as appropriate for each separate Phase 2 segmental NEPA study (various segments may require different levels of study for each resource area). These environmental analyses will also be summarized in the Phase 2 EIS, EA, CE–II, or SEIR documents for each separate study segment, including:
    - Resources or issues involved (socioeconomic, natural, physical)
    - Potential effects (adverse impacts, or benefits of project)
    - Avoidance and/or minimization measures
    - Mitigation plans (for unavoidable and, potentially, minimized adverse impacts);

12. **Develop Plans as part of the SFECCTA Public Involvement Plan to comply with SAFETEA-LU for Community Cohesion** (see Section 3.1 “Neighborhoods and Communities and Section 3.1.2 Environmental Consequences”). These plans will stem from the PIP implemented during Phase 1;

13. **Identify local, State and Federal permits required, with any associated requirements, following the most current statutory regulations**, for any improvements beyond TSM. The permits will likely include, but not be limited to: USACE Dredge and Fill Permits; USCG Permits for crossing the Loxahatchee River, New River, or other waterways; SFWMD Environmental Resource permits and Right-of-Way Occupancy Permits; a determination for a Clean Water Act, Section 401 Water Quality Certification; and FDEP NPDES Permits.

14. **Develop specific mitigation measures and adhere to all permit requirements for any unavoidable impacts on Federal- and State-regulated resources by a preferred section alternative** (see **Table 3.13**);

15. **Assess control or mitigation of construction impacts to the degree possible as required per the FDOT PD&E Manual** and in accordance with FDOT’s *Standard Specifications for Road and Bridge Construction* and through the use of BMP (see Section 3.12.3);

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16. **Evaluate right-of-way acquisitions, including assessments for advance acquisition, hardship acquisition and protective buying of individual parcels and/or FEC Railway corridor (including pre-existing railway alignment), associated relocations (if any), and environmental effects related to such acquisitions**, as sectional alternative alignments are developed (see Section 6.4, "Right-of-Way");

17. **Develop avoidance and minimization measures for environmental issues identified in Phase 1 including passenger transit crossings of highways and waterways**. Section 3.13 summarizes the avoidance and minimization strategies utilized in the initial screening and development of alternatives during the Phase 1 process. These strategies will be carried forward into Phase 2 and further developed as specific information about modal technologies, alternative alignments, and station and facility locations become further developed;

18. **Provide detailed evaluations of environmental issues associated with rerouting freight service between the CSXT, FEC Railway or other off-corridor (e.g., potential future Western Freight Bypass) routes including avoidance, minimization, and mitigation measures**. These evaluations would only be performed if such freight rerouting results from this project and therefore could result in additional social and environmental impacts. Should this occur the following actions may be taken: 1) incorporate the impact assessments into the Phase 2 environmental documents, or 2) prepare separate environmental assessment document(s). Freight activities that are altered as a result of private business agreements between the freight operators and their customers will not be part of this action;

19. **Address aesthetic considerations applicable to new transit infrastructure (stations, maintenance facilities, bridges) through the development of project-specific design criteria in coordination with local community programs and preferences, such as Art in Public Places and Arts in Transit initiatives**. In response to comments received from local review committees concerned with transportation aesthetics, the Phase 2 NEPA study will make continuing reference to the need to consider the aesthetics of project elements throughout the design process. The project team will maintain periodic coordination with aesthetic review committees and community planners to ensure that such concern continue to be addressed throughout Phase 2.

20. **Continue to coordinate with FECI and CSXT representatives in Phase 2 regarding the existing and future freight services on the FEC Railway and SFRC/CSXT Railway within the SFECCTA study area**.

21. **Coordinate with Amtrak representatives in Phase 2 regarding the potential for new intercity passenger service on the FEC Railway corridor within the SFECCTA study area**.

22. **Continue coordination in Phase 2 with SFRTA, MDT, BCT, and Palm Tran regarding the integration of existing and planned transit services with the proposed SFECCTA transit services**.

8.1.2 Recommendations

No LPA will be recommended in this Conceptual AA/ESR as would result from a non-tiered EIS study. What is recommended is to conduct Phase 2 NEPA regional (i.e., corridor-length) and sectional evaluations for 13 combinations of five modal technologies, three study sections, and primarily the FEC Railway alignment, along with the No-Build and TSM Alternatives for each section and the corridor as a whole. In addition, more than 72 proposed station areas identified in Phase 1 will be further studied in Phase 2. Refer to Chapter 6, Phase 1 Decisions for the complete discussion of Phase 1 recommendations.

The Environmentally Preferable Alternative has not yet been singled out as part of the Phase 1 analysis but it will be one of the viable alignment and modal technologies being further refined and screened as part of Phase 2. Based on the Phase 1 environmental screening, only those alternatives (both modal technologies and general alignments/corridors) that were clearly inferior from both an environmental and engineering perspective were eliminated from further study. During Phase 2 a specific Environmentally Preferable Alternative will be identified and evaluated as part of the review and decision-making process. It is recommended that a Phase 2 Environmental Screening Methodology Memorandum be prepared for circulation early in Phase 2 to partner agencies and project stakeholders with specific interests and/or skill sets in order to build the best possible consensus on alternatives analysis and NEPA compliance for SFECCTA in Phase 2.

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http://www.broward.org/transportationplanning/tpi02800.htm

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http://www.sfrpc.com/eho/report.htm

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Florida Department of Transportation, Efficient Transportation Decision Making (ETDM)
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Florida Department of Transportation, Project Development and Environment Manual
http://www.dot.state.fl.us/emo/pubs/pdeman/pdeman.htm

Florida Fish and Wildlife Conservation Commission, Bald Eagle Management Plan (April 2008)
http://myfwc.com/imperiledspecies/plans.htm

9. REFERENCES

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"Get Cruisin' – Passenger Trains to the Palms" http://www.getcruising.com/rails/_trirail.html

Miami-Dade County Comprehensive Development Master Plan (Amended 2006) http://www.miamidade.gov/planzone/planning_metro_CDMP.asp

Miami-Dade Metropolitan Planning Organization 2030 Long Range Transportation Plan (2004) http://www.miamidade.gov/mpo/lrtp2030/PDFs/Miami-Dade%20Long%20Range%20Transportation%20Plan-Final.pdf

Miami-Dade County's People's Transportation Plan http://www.miamidade.gov/citt//

National Environmental Policy Act Responsibilities at FTA http://www.fta.dot.gov/planning/environment/planning_environment_224.html

Palm Beach County Comprehensive Development Master Plan (Rev. November 2005) http://www.pbcgov.com/pzb/Planning/comprehensiveplan/tableofcontent.htm

Palm Beach County Metropolitan Planning Organization 2030 Long Range Transportation Plan (March 2005) http://www.pbcgov.com/MPO/lrtp1.html

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Treasure Coast Regional Planning Council, The Florida East Coast Railroad: A Catalog of Coastal Cities and Redevelopment Opportunities along the Corridor (1997)

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University of Florida, Gainesville, Florida, Environmental Screening Tool http://www.geoplan.ufl.edu/ , public access via http://etdmpub.fla-etat.org/

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10 LIST OF CONCEPTUAL AA/ESR PREPARERS

Company / Preparer Name	Title	Experience / Expertise
Federal Transit Administration		
▪ Mr. Tony Dittmeier	Transportation Programs Specialist	Master of Public Administration with 27 years experience in the planning, development, and management of federally funded transportation projects.
▪ Mr. James Garland	Community Planner	M.S. degree in Urban Planning with 6 years of experience in planning, development, and management of federally funded transportation projects.
Florida Department of Transportation (District 4)		
▪ Mr. Scott Seeburger	Special Projects Manager	MSCE with 31 years experience in major investment studies, transit alternatives analyses, interstate multimodal master planning, and public/government review processes for transportation projects.
▪ Ms. Ann Broadwell	Environmental Administrator	M.S. in Biology with 15 years of experience in transportation related NEPA studies and environmental permit compliance.
▪ Ms. Sharon Cino	Transportation Specialist	B.S. degree in Urban Regional Planning with 6 years of experience in land development planning, site planning, community development, and assisting management with major transit investment studies.
Florida Department of Transportation (District 6)		
▪ Ms. Alice Bravo	District Director of Transportation System Development	MBA degree with 16 years of experience in transportation related projects including bridge design, highway engineer and environmental management.
Gannett Fleming, Inc.		
▪ Mr. Carlos Cejas	Vice President	MBA degree with 21 years experience in transportation project management, highway and transit project development, traffic and travel studies, roadway final designs and plan preparation, and bridge design for major transportation projects in south Florida.
▪ Ms. Odalys Delgado	Planning and Project Development Manager	M.A. degree in Public Administration with 19 years of experience in planning and program management for transportation programs and projects.
▪ Mr. Robert T. McMullen	Director of Environmental Services	M.S. degree in Environmental Sciences with 19 years of experience in environmental science and NEPA studies for transportation programs and projects, GIS analyses, environmental restoration projects, and teaching Marine Science.
▪ Mr. Tom R. Hickey	National Transit Planning Manager	B.A. degree in Urban Geography with 29 years of experience in construction design and planning of mass transit, and railroad operations.
▪ Mr. Omar Beceiro	Environmental Scientist	B.S. degree in Biology with 8 years of experience in environmental and biological work including GIS analyses for transportation and other projects.
▪ Mr. Aaron Quesada	Environmental Scientist	M.S. degree in Environmental Science with 3 years of experience in environmental document preparation, GIS analyses, and graphic design.
▪ Mr. Alejandro R. Cuadra	Graphic Designer	B.S. with 5 years of experience in graphic design.

10. LIST OF Conceptual AA/ESR PREPARERS

Company / Preparer Name	Title	Experience / Expertise
Gannett Fleming, Inc.		
▪ Mr. Hoyt Davis	Senior GIS Analyst	B.S. in Computer Science and Information with 15 years of experience with data development for transportation and environmental projects, mapping and analysis purpose.
▪ Mr. Nick Karcz	Transportation Planner	B.A. degree in Urban and Regional Planning with 3 years of experience in transportation modeling, highway, transit, and multimodal facility planning.
▪ Mr. Michael Moore	Assistant Project Manager & Vice President	B.A. degree in Environmental Science with 24 years of experience in transportation and environmental issues with technical assistance for transportation planning and engineering projects
▪ Mr. Jitender Ramchandani	Planner	Master of Urban Planning degree with 5 years of experience in urban design, transportation and land use planning including GIS analyses.
▪ Ms. Mary Ross	Transportation Manager	B.S. degree in Civil Engineer with 20 years of experience in transportation planning and engineering projects including involving corridor studies, travel demand forecasting and transportation impact evaluation.
▪ Mr. Franco Saraceno	Transportation Planner	M.A. degree in Urban and Regional Planning, M.A. degree in Public Administration with 6 years of experience in planning and 4 years of experience in Travel Demand Modeling.
▪ Mr. Myung-Hak Sung	Vice President	B.S. degree in Architectural Engineering with 38 years of experience in transportation planning and Travel Demand Modeling.
▪ Mr. Terry Winebrenner	Environmental Engineer	B.S. degree in Civil Engineering with 25 years of experience in transportation project management, highway planning and design, environmental documentation and analysis, and public involvement.
BCC Engineering, Inc.		
▪ Mr. Manny Benitez	Vice President	MSCE in roadway and structural engineering design with over 20 years of experience.
Carter & Burgess - Engineering, Architecture and Related Services		
▪ Dr. Reed Everett-Lee	Senior Project Manager	Ph.D. in anthropology with 20 years of experience in planning for transit and multi-modal corridors.
▪ Mr. Vikas U. Jain	Planner (AICP)	M.S. degree in City and Regional Planning with 4 years of experience in developing GIS models for socio-economic, land use, and environmental analysis for transportation planning projects.

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10. LIST OF Conceptual AA/ESR PREPARERS

Company / Preparer Name	Title	Experience / Expertise
Communikatz, Inc.		
▪ Mr. Ric Katz	Senior Public Affairs Manager	M.S. in Communication with 38 years of experience providing specialized public affairs public relations counseling and services to public agencies, major corporations, and political campaigns. His governmental relations expertise is highly regarded in guiding major infrastructure programs through legislative and administrative channels. He is well received by the area's news media, a much sought after public speaker, and his extensive involvement in professional and civic organizations is widely respected at local, State and national levels.
▪ Ms. Aviva Baer	Public Affairs Manager	B.A. in English Language and Literature with 20 years experience in directing successful programs for public and corporate clients and political campaigns. An accomplished writer and speaker, she has managed effective outreach programs for major transportation projects and contributed to many of the firm's award-winning brochures, newsletters, scripts, PowerPoint® presentations and videos for public sector clients.
Economics Research & Associates		
▪ Mr. Tom Moriarty	President	B.S. degree in architecture with 30 years experience in mixed-use and retail development programming for specialized settings: multi-modal transportation centers and airports, downtown business districts, museums, and resorts.
Edward D. Stone, JR., & Associates		
▪ Mr. Paul Kissinger	Associate Principal	M.L.A. degree with 15 years of experience in urban design, waterfront planning, transportation design, community planning and hotel/resort.
▪ Ms. Swati Khimesra	Associate	Master in Urban Design with 3 years of experience in planning and design of urban related projects.
Gladys Kidd & Associates		
▪ Ms. Gladys Kidd	Principal, Sr. Public Involvement Specialist	Ms. Kidd has over 20 years of experience overseeing the day-to-day public involvement activities including research, preparing community awareness plans, designing and implementing strategies, preparing recommendations, budgets and reports for major transit investment studies as well as construction projects.
▪ Mr. Herbert Ammons	Public Involvement Specialist A	B.S. degree in Technology (Communication) from Florida International University, with five years of experience in Public Involvement, with responsibility for a variety of administrative duties including research and development of Community Awareness Plans, database management, implementation of public involvement tasks, and preparing project summaries.
▪ Ms. Jackie Kidd	Public Involvement Specialist B	B.A. degree in Business Management with over three years of experience in Public Involvement. Responsible for management consulting and technical assistance to private and non-profit organizations. Manages all phases of public involvement, including: special event planning, research, managing public involvement campaigns.

10. LIST OF Conceptual AA/ESR PREPARERS

Company / Preparer Name	Title	Experience / Expertise
Glass Land Acquisition Service Specialists		
▪ Mr. Richard R. Glass	President	M.P.A. Degree with 22 years of experience in land acquisition, negotiation, closings, relocation, mediation, order of taking, relocation assistance and cost estimating for public and private organizations.
Janus Research		
▪ Ms. Amy Streelman	Preservation Planner/Senior Architectural Historian	Master of Historic Preservation with 10 years of experience in preservation planning.
Jeffrey A. Parker & Associates, Inc.		
▪ Mr. Jeffrey A. Parker	President	B.S.E degree in Finance with 35 years of experience in financial planning for major infrastructure projects.
Edwards and Kelcey		
▪ Mr. Alexander Lu	Planner	M.S.T. degree in Urban Transit Management with 6 years of experience in operations management, schedule planning, freight transportation, and infrastructure project evaluation.
▪ Mr. David Nelson	Associate Vice President	Master in Regional Planning with 26 years of experience in transportation system analysis and economy.
L.B. Limited and Associates		
▪ Mr. Michael Brady	Partner	A.A. Degree in photography with over 25 years experience in Community Relations, Media Relations and Public Involvement.
Transportation Consulting and Government Relations		
▪ Mr. Nick Serianni	President	B.A. degree in Geography/Urban Regional Planning with 30 years of experience in program management, facilitation, and financial and strategic planning for transportation programs and projects.
ZETA-TECH Associates, Inc.		
▪ Mr. Randolph R. Resor	Vice President	B.A. degree and graduate study in transportation with 27 years of experience in railroading and rail rapid transit systems.

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11 LIST OF CONCEPTUAL AA/ESR RECIPIENTS

Federal Agencies

- U.S. Army Corps of Engineers
- U.S. Coast Guard, Seventh District
- U.S. Department of Agriculture, Natural Resources Conservation Service
- U.S. Department of Commerce, National Marine Fisheries Service
- U.S. Department of Interior, Fish and Wildlife Service
- U.S. Department of Interior, National Park Service
- U.S. Department of Interior, United States Geological Survey
- U.S. Department of Transportation, Federal Aviation Administration
- U.S. Department of Transportation, Federal Highway Administration
- U.S. Department of Transportation, Federal Railroad Administration
- U.S. Department of Transportation, Federal Transit Administration
- U.S. Environmental Protection Agency
- U.S. Department of Housing and urban Development
- U.S. Department of Health and Human Services
- U.S. Department of State
- Advisory Council on Historic Preservation
- Federal Emergency Management Agency

State Agencies

- Florida Department of Agriculture and Consumer Services
- Florida Department of Community Affairs
- Florida Department of Environmental Protection
- Florida Department of Transportation – Secretary of Transportation, Central Environmental Management Office, Seaport Office, Rail Office, Public Transportation & Modal Administration, and State Transit Manager
- Florida Department of Transportation District 4
- Florida Department of Transportation District 6
- Florida Department of State

11. LIST OF Conceptual AA/ESR RECIPIENTS

- Florida Fish and Wildlife Conservation Commission

Regional Organizations

- South Florida Regional Transportation Authority
- South Florida Water Management District
- Treasure Coast Regional Planning Council
- South Florida Regional Planning Council

County Agencies

- Broward County Metropolitan Planning Organization
- Indian River County Metropolitan Planning Organization
- Martin County Metropolitan Planning Organization
- St. Lucie County Metropolitan Planning Organization
- Miami-Dade County Urbanized Area Metropolitan Planning Organization
- Palm Beach County Metropolitan Planning Organization
- Miami-Dade County Aviation Department
- Broward County Aviation Department
- Palm Beach County Airports Department
- Port of Palm Beach District
- Broward County Port Everglades
- Dante B. Fascell Port of Miami-Dade
- Martin County Commission
- Palm Beach County
- Palm Beach County Commission
- Broward County
- Broward County Commission
- Miami-Dade County
- Miami-Dade County Commission
- Miami-Dade County Public Works Department
- Miami-Dade County Department of Environmental Resources Management

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- Miami-Dade Expressway Authority
- Miami-Dade Transit
- Miami-Dade Citizen's Independent Transportation Trust
- Broward County Transit
- Palm Tran
- Palm Beach County Environmental Resources Management
- Broward County Environmental Protection Department

Local Governments

- City of Aventura
- Village of El Portal
- City of Hialeah
- City of North Miami
- City of Miami
- Village of Biscayne Park
- City of Miami Beach
- Miami Shores Village
- City of Miami Springs
- City of North Miami Beach
- City of Dania Beach
- City of Deerfield Beach
- City of Fort Lauderdale
- City of Hallandale Beach
- City of Hollywood
- Village of Lazy Lake
- City of Lighthouse Point
- City of Oakland Park
- City of Pompano Beach
- City of Wilton Manors
- City of Boca Raton
- City of Boynton Beach
- Town of Cloud Lake
- City of Delray Beach
- Town of Glen Ridge
- Town of Hypoluxo
- Town of Jupiter Inlet Colony
- Town of Jupiter
- Town of Lake Clarke Shores
- Town of Lake Park
- City of Lake Worth
- Town of Lantana
- Town of Mangonia Park
- Village of North Palm Beach
- City of Palm Beach Gardens
- City of Riviera Beach
- Village of Tequesta
- City of West Palm Beach
- Town of Jupiter Island

11. LIST OF Conceptual AA/ESR RECIPIENTS

Other Interested Parties

- Miccosukee Tribe of Indians of Florida
- Seminole Nation of Oklahoma
- Seminole Tribe of Florida
- Overtown Neighborhood Assembly
- Jupiter Inlet District
- West Palm Beach Downtown Development Authority
- Miami Downtown Development Authority
- Fort Lauderdale Downtown Development Authority
- Amtrak
- CSX Transportation
- Florida East Coast Railway
- Florida Inland Navigation District
- Loxahatchee River Environmental Control District
- Florida League of Cities

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