

ST. LUCIE TPO

Premium Transit/Rail Corridor Study

Final Report



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Prepared for

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Executive Summary

This study was initiated by the St. Lucie Transportation Planning Organization (TPO) to assess the feasibility of rail and other premium transit services on US 1, I-95, and the Florida East Coast Railway (FEC), three of the major north-south corridors in St. Lucie County. The three selected corridors, US 1, I-95, and FEC, have close proximity and good accessibility to major origins and destinations and offer potential demand for transit services.

The study first reviews the challenges and prospects associated with passenger rail feasibility in St. Lucie County. A multitude of factors including policy support, regional projects (e.g., FEC Corridor Study and potential Amtrak passenger rail service expansion), and a renewed potential for federal funding have prompted St. Lucie and Martin counties to take a closer look at the potential for passenger rail transit in the region. The prospect of passenger rail transit service in St. Lucie County is hindered by three major challenges, including existing population and employment densities, regional commuter travel patterns, and the dispersion of potential regional trips. Several key steps are identified to enhance the opportunities for premium transit service within the county and to provide regional connectivity:

- Identify transit emphasis corridors
- Address transit funding and governance
- Develop transit corridors incrementally
- Pursue transit supportive land use policy

The goal of this study is to assess the three corridors - (FEC, US 1, and I-95), review applicable transit options, and develop an action plan that can become part of the road map for future rail and premium transit services in St. Lucie County.

A review of existing plans, studies, and documents, as well as reviews of other relevant literature were conducted to guide the transit feasibility study for the three selected corridors. The review process produced a summary of relevant local and regional plans, as well as summaries of relevant state legislative actions and federal documents related to premium transit planning. A brief review of potential premium transit technologies that could be applied in the three corridors was also conducted.

After completing the baseline conditions evaluation, a number of technology-phase combinations were developed as part of a pre-screening process to develop the applicable alternatives for the three corridors. Information from the pre-screening process provided valuable insight into local conditions, which was then combined with the characteristics of the technologies under consideration to arrive at the initial set of alternatives for the study corridors.

Existing and future conditions within one-half mile and one mile of the US 1, I-95, and FEC corridors were reviewed for evaluating each corridor for “readiness” of premium transit services based on the identification of the diversity of transit-supportive land uses, population, employment, and major trip generators. These and other relevant existing and future conditions, including those in the list below, provide a framework for evaluating the application of various transit investments.

- Existing and potential transit services planned for the corridors
- Projected future economic growth patterns of the corridors
- Availability of feeder bus routes serving the corridors
- Role of each corridor as a key regional transit emphasis corridor
- Current regional economic growth patterns

The review of existing and future conditions combined with the characteristics of the technologies under consideration suggests that US 1 is the most feasible transit corridor in St. Lucie County. The US 1 corridor, which is already served by a number of local transit routes, presents the best potential for building transit demand over time, while I-95 provides the best initial regional travel choice corridor. The feasible premium transit alternatives recommended for consideration and potential application in St. Lucie County over the next 20 years are presented in Table ES-1 below:

**Table ES-1
Feasible Premium Transit Alternatives**

Corridor	Near-Term (1 – 5 Years)	Mid-Term (6 – 10 Years)	Long-Term (11 – 20 Years)
I-95	Enhanced Express Bus (Implement within 1 to 3 years)	Enhanced Express Bus	Enhanced Express Bus
US 1	Enhanced Express Bus (Implement within 3 to 5 years)	<ul style="list-style-type: none"> • Enhanced Express Bus • Mixed-traffic BRT 	<ul style="list-style-type: none"> • Mixed-traffic BRT • Exclusive-lane BRT
FEC			Commuter Rail

Finally, an action plan was developed to present needed steps in pursuing the implementation of premium transit/rail service on the FEC, US 1, and I-95 corridors in St. Lucie County. These action steps provide guidance for St. Lucie County to follow in its effort to establish premium transit/rail modes within the next 20 years. The action plan, presented later in this report, categorizes the recommended action steps by implementation timeframe: near-term (1 to 5 years), mid-term (6 to 10 years), and long-term (11 to 20 years). Some of the key action steps identified include the following.

- Establish Regional Transit Organization and Regional Transportation Authority
- Implement transit-supportive policies and plans
- Secure dedicated funding
- Establish advisory group
- Implement alternatives

In addition, the action plan also identifies a number of performance thresholds to help determine when premium transit/rail is appropriate for implementation in St. Lucie. Performance thresholds include the following.

- Population density threshold of 5 to 7 dwelling units per acre within the corridor
- Employment density threshold of 4 to 5 employees per acre within the corridor
- Average existing daily transit ridership of 3,000 riders within the corridor

The action plan was presented to and recommended for approval by the St. Lucie Transportation Planning Organization (TPO) Citizens Advisory Committee and Technical Advisory Committee on May 18, 2010, followed by approval by the St. Lucie TPO Board on June 2, 2010. The next steps for this effort include beginning the implementation of the action plan.



1: Passenger Rail in St. Lucie—Challenges & Prospects

This study was initiated by the St. Lucie TPO to assess the feasibility of rail and other premium transit services on the three major north-south corridors in St. Lucie County, including US 1, I-95, and the FEC. Florida’s Turnpike, the north-south toll facility in St. Lucie County and southeast Florida, is not included due to accessibility and/or regulatory limitations that could impact implementation of transit service on such a facility. In addition, given closer proximity and better accessibility to major origins and destinations, the US 1, I-95, and FEC corridors offer greater potential demand for transit services than does the Turnpike at this time.

The challenges and prospects associated with passenger rail feasibility in St. Lucie County are summarized in this chapter and assessed in greater detail throughout this report. The study was coordinated with a similar assessment initiated by the Martin Metropolitan Planning Organization (MPO). Similar challenges and prospects exist for Martin County and potential future connections south to existing commuter rail service (Tri-Rail) currently operated by the South Florida Regional Transportation Authority (SFRTA) in Palm Beach, Broward, and Miami-Dade counties. While many challenges confront passenger rail feasibility in the near-term, emphasis is placed on near- and long-term actions that can potentially be taken to expedite the feasibility of premium transit investments in both St. Lucie and Martin counties.

1.1 LOCAL CONSIDERATIONS FOR RAIL

While the potential feasibility of passenger rail in the Treasure Coast region has been discussed over the years, evolving public policy has led to a more serious discussion of passenger rail as a potential mobility option for the region. Evolving public policy has resulted in the following recent efforts to further passenger rail in Florida and southeast Florida.

- A “Premium Transit/Rail Corridor Connection Study” to examine the feasibility of extending commuter rail service from West Palm Beach to St. Lucie County was included in the St. Lucie TPO FY 2007/2008 Unified Planning Work Program (UPWP).
- Florida Department of Transportation (FDOT) District Four FEC rail corridor feasibility study from just south of Martin County to Miami downtown area.
- Potential Amtrak passenger rail service expansion, which includes potential future stations in Fort Pierce (St. Lucie County) and Stuart (Martin County).
- Florida was awarded \$1.25 billion from the Federal Railroad Administration (FRA) as part of the High Speed Intercity Passenger Rail Program to construct high speed rail between Tampa and Orlando.
- FDOT’s commitment to select a consultant and fund the planning and engineering study for the potential future high speed rail connection between Orlando and Miami.
- Potential future federal grants for high speed rail in Florida.
- In December 2009, the Florida Legislature passed a comprehensive rail transit policy for Florida. The legislation, among other things, created the Florida Rail Enterprise for the development and operation of state-owned passenger rail systems. In addition, it created the Statewide Passenger Rail Commission to monitor the efficiency, productivity, and management of all publicly-funded rail systems.
- In addition, the St. Lucie TPO Board, which is composed of elected officials from St. Lucie County and the three municipalities including the cities of Ft. Pierce, and Port St. Lucie, and the Town of St. Lucie Village, also has consistently supported any efforts to advance the potential for passenger rail service in St. Lucie.

These efforts have reinvigorated the discussion of passenger rail in St. Lucie and Martin counties and the potential connection to Florida’s only commuter rail system, Tri-Rail. As indicated previously, Tri-Rail serves Palm Beach, Broward, and Miami-Dade counties, and currently operates along 72 miles of the South Florida Rail Corridor or CSX corridor. Tri-Rail serves 18 stations, connecting three international airports, seaports, and major destinations throughout southeastern Florida.

While Tri-Rail's northern terminus is at Mangonia Park in Palm Beach County, FDOT District Four, in cooperation with SFRTA and the MPOs of Palm Beach, Broward, and Miami-Dade counties, led a comprehensive study of the FEC corridor to evaluate the potential for extending Tri-Rail north into northern Palm Beach County, with a likely terminus in Jupiter. The South Florida East Coast Corridor Transit Analysis (SFECCTA) is ongoing and will develop and analyze alternatives that potentially integrate passenger and freight transportation along the 85-mile corridor. The study considered various alignments and transit technologies, including bus, waterway transit, light rail, commuter rail, and heavy rail. With the possibility of transit service along portions of the corridor as early as 2014, the interest and support for rail in both Martin and St. Lucie counties have increased for the extension of Tri-Rail north into these counties.

In addition, an effort to re-establish intercity passenger rail, which served the area until about six decades ago and connected St. Lucie and Martin counties with the region, also is gathering momentum. A federal funding application to re-establish passenger service on the FEC corridor from Jacksonville south to West Palm Beach in the form of Amtrak has been submitted by FDOT. The project also is identified in the State of Florida's Rail Plan and is expected to be completed in 2012, if funding becomes available. The service, if re-established, would result in locating two of the eight proposed new stations in St. Lucie and Martin counties, one in Fort Pierce and one in Stuart.

In summary, a multitude of factors including policy support, regional projects (e.g., FEC Corridor Study and potential Amtrak passenger rail service expansion), and a renewed potential for federal funding have prompted St. Lucie and Martin counties to take a closer look at the potential for passenger rail transit in the region. The major challenges and, more importantly, the opportunities for overcoming these challenges are summarized in the remainder of this chapter.

1.2 EXISTING CHALLENGES

The prospect of passenger rail transit service in St. Lucie County is hindered by three major challenges, including:

- Existing Population and Employment Densities
- Regional Commuter Travel Patterns
- Impact of Origin-Destination Dispersion on Potential Regional Trips

1.2.1 EXISTING POPULATION AND EMPLOYMENT DENSITIES

Among the key factors that determine the success of a transit system are service area population and employment density. As expected, higher population and employment densities have a strong positive correlation with transit ridership, which corresponds with the need for transit options that can carry more people. Various transit options offer different service characteristics, different speeds, and different capacities. For instance, a typical commuter rail technology can carry up to 1,500 passengers per train at 50 mph, while a local bus can carry 40 to 60 passengers at a typical average speed of 15 mph (with delays due to bus stops, traffic signals, and congestion).

In Figure 1-1, the characteristics of transit mode options are illustrated for three categories: (1) street transit; (2) semi-rapid transit; and (3) rapid transit. The figure illustrates the positive relationship between performance (travel speed) and person capacity (thousands of riders/hour) as the technology progresses from street transit to semi-rapid transit to rapid transit. More importantly, the figure indicates ridership productivity levels typically applicable to various transit technologies, ranging from street transit technologies, such as rubber-tired bus to rapid transit technologies, such as commuter rail. Higher population and employment densities typically contribute to higher line capacities in terms of riders per hour, further supporting the implementation of premium transit technologies such as rail.

A large part of St. Lucie County is characterized by a population density of less than 2 persons per acre. Only a few areas have 2 to 7 persons per acre, and these areas are not concentrated but dispersed throughout the county. A similar observation is made about employment densities. In most areas of the corridors under study—US-1, I-95, and the FEC—population densities range from less than 2 to 4 persons per acre while employment densities range from less than 2 to 4 employees per acre.

According to industry standards, the minimum density thresholds for commuter rail are 5 to 7 dwelling units per acre and/or 4 to 5 employees per acre. Considering the typical household size of 2.5 persons in St. Lucie, these thresholds indicate that a minimum population density of 12 persons per acre or 4 employees per acre may be needed to support a rail investment decision. When compared to these thresholds, the existing population and employment densities in St. Lucie suggest that existing transit demand is not likely to be sufficient to support premium transit options.

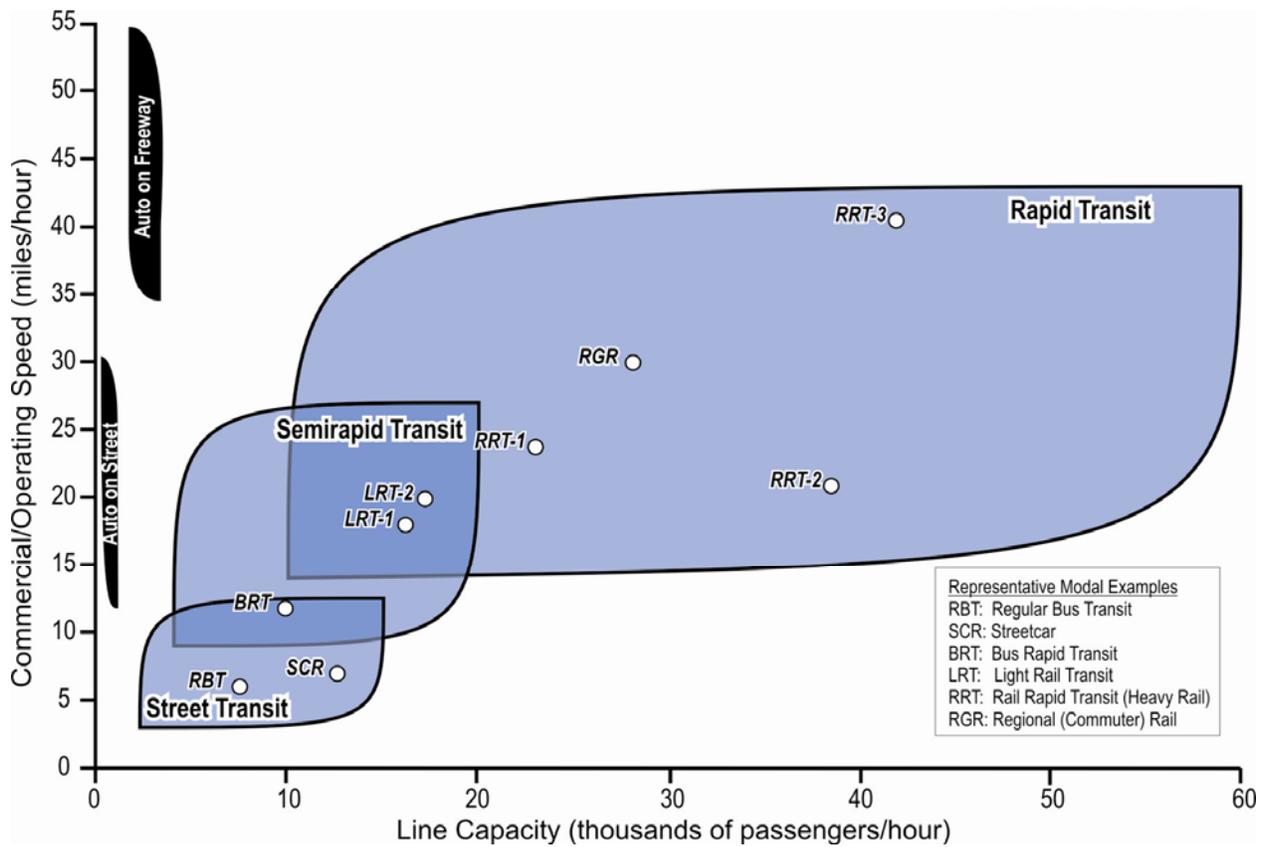


Figure 1-1: Characteristics of Transit Technologies

1.2.2 REGIONAL COMMUTER TRAVEL PATTERNS

The number of commuters who live in one county but work in another is generally a good indicator of ridership potential for commuting to work by transit. Table 1-1 shows the number of workers commuting within and between St. Lucie, Martin, and Palm Beach counties. Most people live and work in the same county; however, there is significant regional commuting among the three counties. On a typical weekday:

- More than 32,000 workers commute from St. Lucie County south to Martin County (25,000) and Palm Beach County (7,000).
- More than 17,000 workers commute from Martin County south to Palm Beach County.
- A combined 24,000 workers commute from St. Lucie County/Martin County south to Palm Beach County.

**Table 1-1
Existing County-to-County Home-Based Work Trip Flows**

County	St. Lucie Work	Martin Work	Palm Beach Work	Total
St. Lucie residence	78,412	25,307	6,974	110,693
Martin residence	7,722	54,799	17,436	79,956
Palm Beach residence	1,375	6,078	754,228	761,681
Total	87,508	86,183	778,638	952,330

Note: Shaded cells show trips from St. Lucie to Martin and Palm Beach counties and from Martin to Palm Beach County.

To estimate premium transit ridership potential for workers in St. Lucie County, the 2008 American Community Survey (ACS) was used to evaluate mode choice for the work trip. Based on the data, “drive alone” is still the predominant mode of travel with more than 86 percent, while “carpool” is second with 12 percent. Only 0.3 percent of workers use public transportation. If new commuter transit services were provided, an increase in transit use could be expected. Transit mode splits in Florida typically range from 1 to 2 percent in most areas to a high of 5 percent in Miami/Dade County. Assuming that 2 percent of regional commuters were to use a newly-implemented premium transit service, this would equate to about 640 work trips (32,000 x 2 percent = 640) from St. Lucie County to Martin County/Palm Beach County and 340 work trips (17,000 x 2 percent = 340) from Martin County to Palm Beach County for a total of 980 works trips on a typical weekday.

To put this level of ridership potential in context, when Tri-Rail began operating in January 1989, it carried 3,000 passenger trips each weekday in the first year. This has increased to an average of 12,000 daily trips in 2009. According to the 1990 Census, the population density at the time was 2.59 persons per acre in Palm Beach County and 4.78 persons per acre in Broward County, with substantially greater densities in the proximity of the commuter rail stations.

1.2.3 IMPACT OF ORIGIN-DESTINATION DISPERSION ON POTENTIAL REGIONAL TRIPS

In transit, transfers are often a necessary aspect of operations, but not necessarily a desirable one. From the rider’s viewpoint, transfers present a penalty because of the additional wait time between buses or trains that typically occurs and the general inconvenience of having to switch vehicles. “One-seat” rides are preferred, and the transfer penalty is exacerbated when the transfer occurs between different modes, especially from an auto trip to a transit one.

In such cases, as the transfer occurs farther away from a person’s origin, the likelihood or willingness of that person to accept the penalty and switch modes decreases. The perception is that the benefit of not having to drive and being able to relax while riding transit is diminished as the comparative distance that must be traveled on each mode equalizes. That is, a 30-mile work trip that involves 5 miles of driving and 25 miles of transit travel is more desirable than one involving 15 miles of driving and 15 miles of transit travel for the same trip.

For this reason, access to premium transit modes used primarily for commuting purposes typically occurs within a shorter distance of stations so that the auto (or non-transit) portion of the trip is minimized to the greatest extent possible. This is evident from the Origin-Destination data collected during Tri-Rail’s 2007 on-board survey.

The Tri-Rail on-board survey shows that nearly 70 percent of the riders in Palm Beach County live within a two-mile radius of a transit station. This same radius was applied to the FEC corridor in St. Lucie County to support a sketch planning method of estimating potential demand. The Treasure Coast Regional Planning Model was used to estimate the volume of work trips from St. Lucie to Martin and Palm Beach counties, as well as the percent of work trips originating from the two-mile corridor buffer in St. Lucie County and traveling to Martin and Palm Beach counties. Map 1-1 shows the existing work trip travel patterns while Table 1-2 and Figures 1-2 and 1-3 show the trip flows from two districts, the FEC corridor buffer and St. Lucie County, to Martin and Palm Beach counties.

**Table 1-2
Existing District-to-District Home-Based Work Trip Flows**

Trip Origin	Destination		
	Martin	Palm Beach	Total
FEC Corridor in St. Lucie (within two-mile buffer)	3,102	797	3,899
St. Lucie	25,307	6,974	32,281

Based on Table 1-2, only 12 percent (3,899 / 32,281) of trips that are destined to Martin and Palm Beach counties originate within two miles of the FEC corridor. This is due to the extent of work trip origin dispersion currently existing within St. Lucie County. Thus, even a 5-percent transit mode share of these work trips would generate only 195 transit trips on an average weekday, again suggesting that insufficient demand currently exists to support premium transit within the FEC corridor in St. Lucie County.



St. Lucie TPO - Premium Transit Corridor Study

Map 1-1: Existing Travel Patterns (2005)

LEGEND

Study Corridors

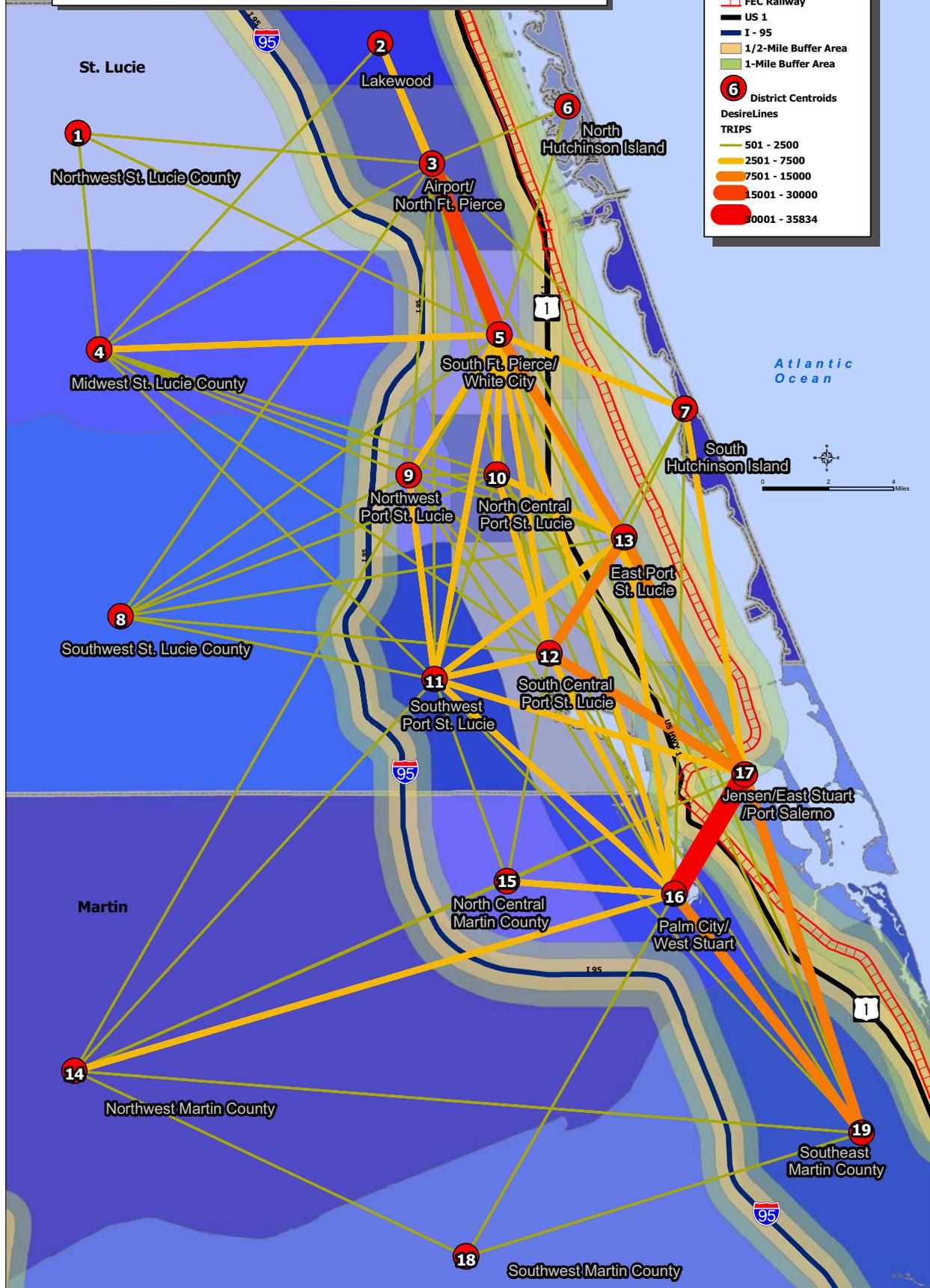
- FEC Railway
- US 1
- I - 95
- 1/2-Mile Buffer Area
- 1-Mile Buffer Area

District Centroids

DesireLines

TRIPS

- 501 - 2500
- 2501 - 7500
- 7501 - 15000
- 15001 - 30000
- 30001 - 35834



NOTE: Desire lines represent 500 trips or greater between districts.

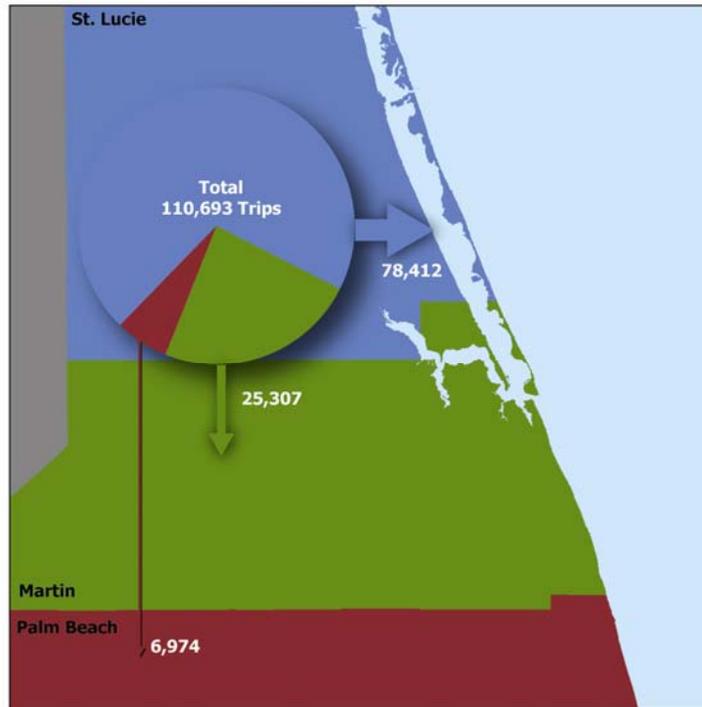


Figure 1-2: Existing Work Trip Flows from St. Lucie County



Figure 1-3: Existing Work Trip Flows from FEC Corridor (2-mile buffer area)

1.3 OPPORTUNITIES FOR EXPEDITING PASSENGER RAIL FEASIBILITY

The goal of this study is to assess the three corridors – (FEC, US 1, and I-95), review applicable transit options, and develop an action plan that can become part of the road map for future rail and premium transit services in St. Lucie County. Although current conditions indicate a lack of feasibility for premium transit investments, this does not preclude policy decisions to impact future conditions and incrementally build toward premium transit solutions, including the ultimate implementation of passenger rail.

So, the question remains, **“What can St. Lucie County do to expedite the feasibility of passenger rail connections south into Martin and Palm Beach counties?”** Following are potential steps that St. Lucie decision-makers and stakeholders may want to consider in guiding the process to enhance the opportunities for premium transit service within the county and to provide regional connectivity. This guidance has been incorporated into the steps that are recommended later in this report as part of an overall action plan for St. Lucie County.

- **Identify Transit Emphasis Corridors** - Identify existing and future transit emphasis corridors to which transit supportive policies can be targeted. The recently-adopted Regional Transit Development Plan (TDP) provides a ten-year vision for transit in St. Lucie and Martin counties.
- **Address Transit Funding and Governance** - Addressing the local transit funding and governance issues are keys to ultimately leveraging state and federal funding for rail and other premium transit services. In addition, local funding is needed to implement adequate local transit services that will provide connections to and from future premium transit services. Moving forward with the interim Regional Transit Organization and the Regional Transit Authority Action Plan are critical steps toward resolving transit funding and governance in the region.
- **Develop Transit Corridors Incrementally** - Pursue the incremental development of transit emphasis corridors by implementing service and incrementally expanding transit service over time. Starting with express bus service to begin building transit ridership within the corridor is the first step toward future transition to premium transit service. Such a strategy should include a plan to build transit demand along the FEC rail corridor. With no rail service on the FEC corridor, parallel transit corridors can be targeted to build corridor ridership. As such, US 1, which runs immediately parallel to the FEC rail corridor, and I-95 both provide excellent opportunities to gradually build north-south demand for regional transit, especially building from the

Treasure Coast Connector that currently operates along US 1. Building transit demand along transit emphasis corridors will ultimately strengthen the ability to pursue state and federal funding.

- **Pursue Transit Supportive Land Use Policy** – Transit-supportive land use planning is needed along transit emphasis corridors. This may include increased densities and intensities, optimal mix of land uses, mixed-income transit oriented development, and other transit-supportive policies. Transit-supportive land use policies must be integrated formally into land development regulations and the development review process. The Federal New Starts program recently revised its criteria to increase the emphasis on transit supportive land use associated with a proposed new or small start project.
- **Premium Transit Service Must Be Rapid** - When the time becomes right, premium transit service must be rapid and branded as such. This is achieved by operating on exclusive rights-of-way wherever possible and maintaining wide spacing between stations. Separate rights-of-way will enhance speed, reliability, and identity. In situations where premium transit is operated in mixed traffic, travel time savings must be achieved through other mechanisms, such as signal priority and/or queue jumps at selected signalized intersections.
- **Coordinate Traffic Engineering and Transit Planning** - Coordinated traffic engineering and transit service planning is essential for premium transit system design. This is critical in establishing signal priorities, applying traffic controls, and locating bus stops and turn lanes.

1.4 RE-ESTABLISHMENT OF AMTRAK PASSENGER RAIL SERVICE IN ST. LUCIE

Currently, the Treasure Coast Regional Planning Council (TCRPC), St. Lucie, and Martin counties have joined forces with others to seek the re-establishment of passenger rail service on the FEC rail corridor. While this study of premium transit feasibility on the I-95, US 1, and FEC corridors is not related nor does it adversely impact this other effort, there could be some synergy between the two. It is possible that an earlier implementation of the passenger rail service in the FEC corridor through both Martin and St. Lucie counties could help improve regional mobility while potentially helping to shrink the timeframe in which a commuter rail mode also could operate on the corridor (i.e., extension of Tri-Rail) because of the new development and demand for transit that the passenger rail service could help attract within the rider-sheds of the stations.



2: Baseline Conditions Evaluation

A detailed evaluation of baseline conditions was conducted to support and guide the transit feasibility study for the three selected corridors, including US 1, I-95, and the Florida East Coast Railway. The evaluation included the following components.

- Review of relevant literature & applicable transit technologies
- Review of existing and future conditions in the corridors

The remainder of this chapter briefly summarizes the information included in each of these components. The detailed summaries of these components are presented in a separately bound appendix not included with this report.

2.1 REVIEW OF TRANSIT PLANS AND TECHNOLOGIES

A review of existing plans, studies, and documents, as well as reviews of other relevant literature were conducted to guide the transit feasibility study for the three selected corridors. The review includes a summary of relevant local and regional plans, summaries of relevant state legislative actions, and federal documents related to premium transit planning, including the following.

- 2035 Regional Long Range Transportation Plan
- 2030 Regional Long Range Transportation Plan
- Regional Transit Efficiency Study
- FY 2010/19 Regional Transit Development Plan

- South Florida East Coast Corridor Study
- Florida State Legislature Special Session on Rail
- Florida High Speed Intercity Passenger Rail Program
- Florida Freight and Passenger Rail Plan
- Florida Intercity Passenger Rail Vision Plan
- Application to the Federal Railroad Administration for Funding
- Federal Railroad Administration Programmatic NEPA Documents

A brief review of the potential premium transit technologies was also conducted and summarized as part of the baseline conditions review. These technologies included the following.

- Enhanced Express Bus
- Bus Rapid Transit
- Light Rail
- Commuter Rail
- Heavy Rail

While typically not considered “premium,” express bus transit also was considered as part of this feasibility assessment. Express bus transit provides limited stop service serving mostly long distances and frequently uses more enhanced buses equipped with advanced technologies such as AVL (Automatic Vehicle Location) and Wi-Fi Internet access.

2.2 ASSESSMENT OF EXISTING AND FUTURE CONDITIONS

The existing and future conditions along the three candidate corridors (US 1, I-95, and FEC) also were analyzed for this feasibility assessment. The existing and future conditions within one-half mile and one mile of the corridors were reviewed for evaluating each corridor for “readiness” of premium transit services based on the identification of the diversity of transit-supportive land uses, population, employment, and major trip generators. These and other relevant existing and future conditions provide a framework for evaluating the application of various transit investments.

The existing and future conditions analyzed include the following.

- Transit Services and Facilities
- Land Use
- Population, Employment, and Demographic Profile
- Trip Generators and Attractors
- Roadway Conditions

- Bicycle and Pedestrian Facilities
- Rail Facilities
- Highway Railway Crossings and Waterway Crossings
- Travel Patterns
- Environmental Features
- Transit Funding Sources

As indicated previously, a detailed review of existing and future conditions for each of the study corridors organized by the above key subject areas is presented in a separately bound appendix. A description of each of the study corridors is presented below.

2.3 PHYSICAL DESCRIPTION OF CORRIDORS

A detailed description of each the three study corridors are provided below. Map 2-1 shows all three study corridors.

US 1 Corridor - This corridor extends from the Indian River County boundary just north of Kings Highway to the boundary of Martin County just south of Westmoreland Boulevard. The corridor is 22.3 miles long and located east of Florida's Turnpike and the I-95 corridor. US 1 consists of six lanes from the Martin County Line to Midway Road and four lanes from Midway Road to the Indian River County Line.

I-95 Corridor - This corridor extends from the Indian River County boundary west of Lakewood Park to the boundary of Martin County just south of SW Becker Road. The 35.3-mile corridor is the only Interstate Highway running through St. Lucie County. I-95 consists of six lanes from the Martin County Line to Okeechobee Road and four lanes from Okeechobee Road to the Indian River County Line.

FEC Corridor - This corridor includes 23.7 miles of the Florida East Coast railway along the east coast of St. Lucie County. Beyond St. Lucie, the FEC extends from Jacksonville to Miami and is owned and operated by the Florida East Coast Railway LLC based in St. Augustine. The FEC corridor currently has only one track.



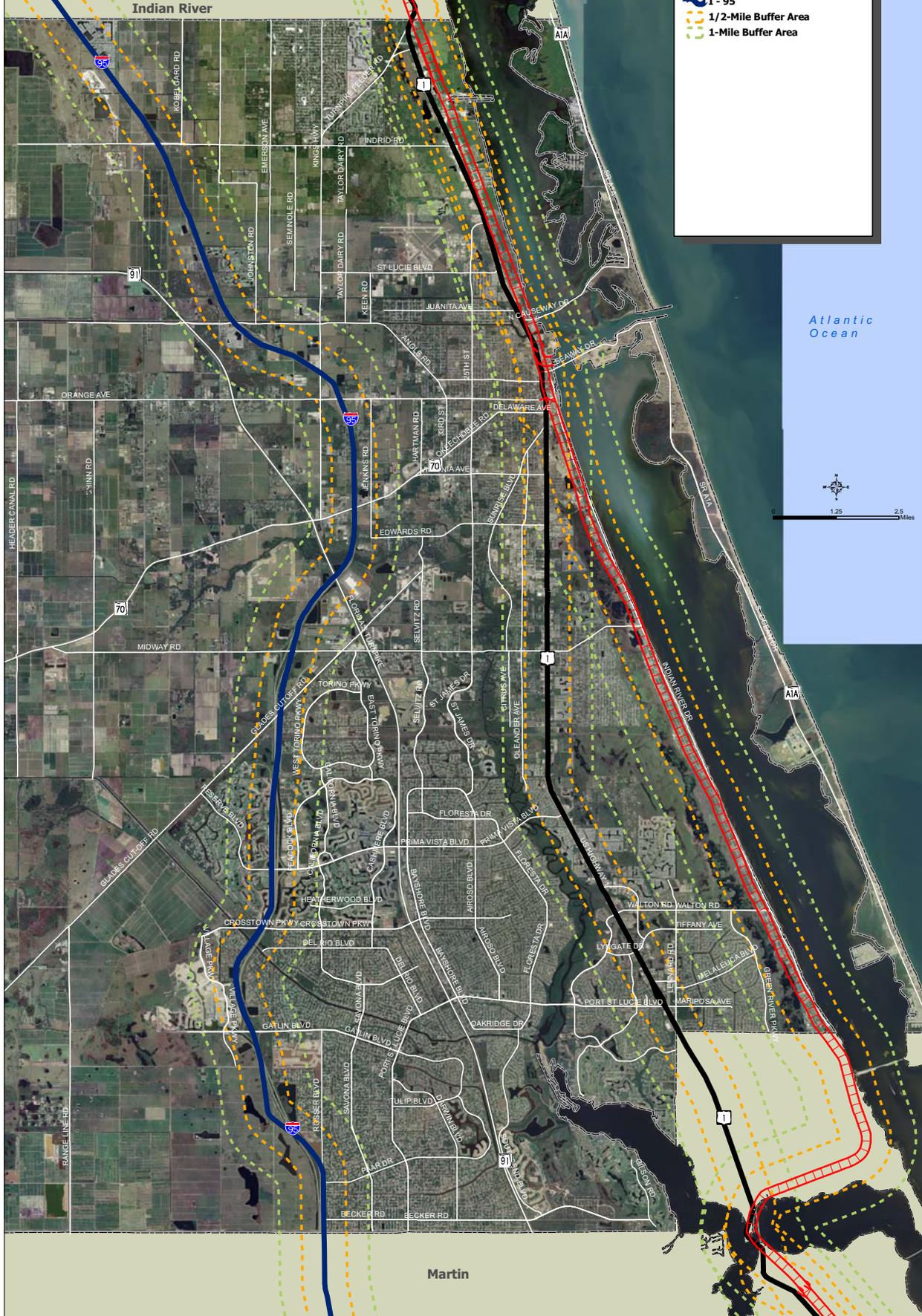
St. Lucie TPO - Premium Transit Corridor Study

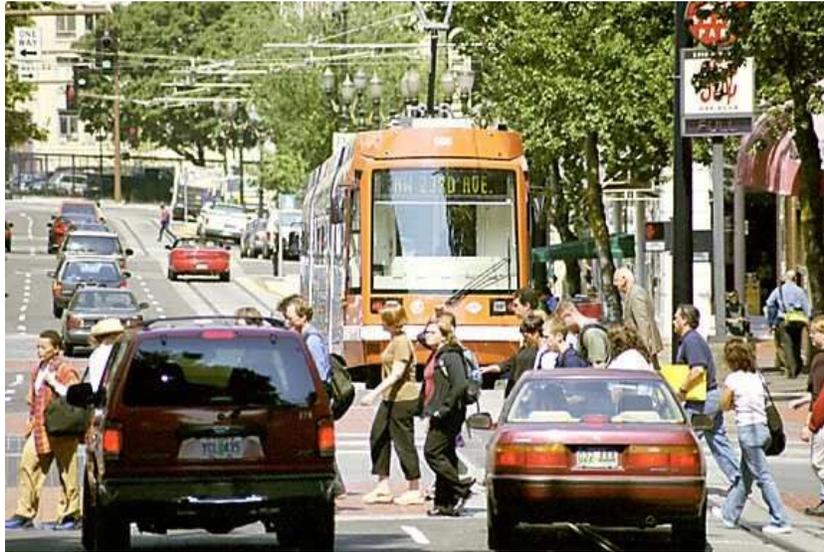
Map 2-1: Study Corridors

Legend

Study Corridors

- FEC Railway
- US 1
- I - 95
- 1/2-Mile Buffer Area
- 1-Mile Buffer Area





3: Premium Transit/Rail Feasibility Assessment

This chapter briefly outlines the development of alternatives and the feasibility assessment of premium transit services for the three identified corridors in St. Lucie County. Table 3-1 shows premium transit technologies that may be applicable for the three identified corridors. A review of these technologies as well as the feasibility assessment of the alternative technology-phase combinations is presented in detail in a separately bound appendix not included with this report.

3.1 DEVELOPMENT OF ALTERNATIVES

A number of technology-phase combinations were developed as part of a pre-screening process for the three corridors. Although this pre-screening process to identify the potential combinations is not specifically included in the scope of this effort, it was essential to ensure a more meaningful alternative feasibility assessment process. The pre-screening to develop the applicable alternatives included consideration of the following components as well as industry-based professional judgment.

- Existing and projected future conditions of the corridors
- Role of St. Lucie County as a key regional partner in South Florida
- Federal and regional funding initiatives and future funding potential
- Regional economic growth patterns
- Projected growth in regional multi-modal transportation network

**Table 3-1
Applicable Premium Transit Technologies**

Premium Transit Technology & Characteristics				
	Enhanced Express Bus	BRT	Light Rail	Commuter Rail
Distance Between Stops/Stations	Limited stops along normal bus routes	0.25-2 Miles	~1 Mile	2-5 Miles
Service Frequency	10-20 Minutes	8-20 Minutes	5-30 Minutes	20-30 Minutes

The extent of consideration of these components varied for purposes of the pre-screening process, but all were important in providing valuable insight into local conditions, which was then combined with the characteristics of the technologies under consideration to arrive at the initial set of alternatives for the study corridors.

The type and implementation timeframe for premium transit technologies to potentially be feasible for each of the three corridors is summarized below. As presented, the three time periods for implementation include the following.

- **Near-Term** - possible implementation within one to five years, or by 2015
- **Mid-Term** - possible implementation within 6 to 10 years, or by 2020
- **Long-Term** - possible implementation between 11 to 20 years from the current time period, or by 2030

3.1.1 US 1 CORRIDOR PREMIUM TRANSIT

Near-Term Alternative

1. **Enhanced Express Bus from N. Beach Causeway Drive in Ft. Pierce to Martin County** - Only the selected relatively high-demand and high-density segment will be provided with transit service. Based on the proximity to the St. Lucie International Airport, current conditions, and projected growth for the corridor, the service would be provided from N. Beach Causeway Drive to the Martin County limits.
2. **Enhanced Express Bus on Total Corridor** - Enhanced Express Bus service throughout US-1 corridor from the Indian River County line to the Martin County line.

Mid-Term Alternatives

1. **Hybrid of Enhanced Express Bus/BRT** - Combined technologies: Enhanced Express Bus service north of N. Beach Causeway Drive, BRT service from N. Beach Causeway Drive to Martin County.
2. **BRT on Total Corridor** - BRT service throughout US-1 corridor from the Indian River County line to the Martin County line.

Long-Term Alternatives

1. **BRT on Total Corridor** - BRT service throughout US-1 corridor from the Indian River County line to the Martin County line.
2. **Hybrid of BRT/Light Rail** - Combined technologies: BRT service north of N. Beach Causeway Drive, light rail from N. Beach Causeway Drive to Martin County.

3.1.2 I-95 CORRIDOR PREMIUM TRANSIT

Near-Term Alternative

1. **Enhanced Express Bus from SR 70/Okeechobee Road to Martin County** - Only the selected relatively high-demand segment will be provided with transit service. Based on the current conditions and projected growth for the corridor, service would be provided from SR 70 (Okeechobee Road) to Martin County.
2. **Enhanced Express Bus on Total Corridor** - Enhanced Express Bus service throughout I-95 corridor from the Indian River County line to the Martin County line.

Mid-Term Alternatives

1. **Enhanced Express Bus on Total Corridor** - Enhanced Express Bus service throughout I-95 corridor from the Indian River County line to the Martin County line.
2. **Hybrid of Enhanced Express Bus/BRT** - Combined technologies: Enhanced Express Bus service north of SR 70 (Okeechobee Road), BRT from SR 70 (Okeechobee Road) to Martin County.

Long-Term Alternatives

1. **Hybrid of Enhanced Express Bus/BRT** - Combined technologies: Enhanced Express Bus service north of SR 70 (Okeechobee Road), BRT from SR 70 (Okeechobee Road) to Martin County.
2. **BRT on Total Corridor** - BRT service throughout I-95 corridor from the Indian River County line to the Martin County line.

3.1.3 FEC RAIL CORRIDOR PREMIUM TRANSIT

Based on the pre-screening process and a closer review of the near- and mid-term funding potential, no premium alternatives were developed for the FEC corridor for the near- or mid-term. However, this assumption may be revised if the study progressed further and new information on rail funding potential becomes available and/or the FEC rail transit availability potential south of St. Lucie County becomes clearer.

Long-Term Alternatives

1. **Commuter Rail on Partial Corridor** -Tri-Rail-type commuter rail service from the N. Beach Causeway Drive area to the Martin County line.
2. **Commuter Rail on Total Corridor** -Tri-Rail-type commuter rail service throughout FEC corridor from the Indian River County line to the Martin County line.

The alternatives are examined using a sketch-level feasibility assessment process to evaluate their potential implementation in the selected study corridors, as presented below.

3.2 PREMIUM TRANSIT FEASIBILITY ASSESSMENT

This section summarizes the process used to screen the potential alternatives discussed previously for the three St. Lucie study corridors. Using a range of criteria defined and applied in the remainder of this section, the potential alternatives were evaluated to determine the feasibility of each alternative. It should, however, be noted that the scope of this study effort calls for a sketch-level feasibility assessment. The range of alternatives considered by corridor was, therefore, evaluated within such a framework.

3.3 RECOMMENDED ALTERNATIVES

Based on the potential alternatives identified for each corridor, a number of technology-phase combinations are recommended for the three corridors. The alternatives are recommended for each corridor and timeframe based on consideration of the following components:

- Existing and potential transit services planned for the corridors in the adopted Transit Development Plan (TDP) for St. Lucie.
- Projected future economic growth patterns of the corridors
- Availability of feeder bus routes serving the corridors
- Role of each corridor as key regional transit emphasis corridors
- Current regional economic growth patterns

A review of these components, combined with the characteristics of the technologies under consideration, suggests that US 1 is the most feasible transit corridor in St. Lucie County. The US 1 corridor, which is already served by a number of local transit routes, presents the best potential for building transit demand over time, while I-95 provides the best initial regional travel choice corridor.

Based on these considerations as well as the need for a coordinated task of incrementally building future transit demand on US 1, I-95, and FEC in St. Lucie, the feasible premium transit alternatives recommended for consideration and potential application in St. Lucie County over the next 20 years are presented in Table 3-2.

**Table 3-2
Recommended Premium Transit Alternatives**

Corridor	Near-Term (1 – 5 Years)	Mid-Term (6 – 10 Years)	Long-Term (11 – 20 Years)
I-95	Enhanced Express Bus (Implement within 1 to 3 years)	Enhanced Express Bus*	Enhanced Express Bus*
US 1	Enhanced Express Bus (Implement within 3 to 5 years)	<ul style="list-style-type: none"> • Enhanced Express Bus • Mixed-traffic BRT 	<ul style="list-style-type: none"> • Mixed-traffic BRT • Exclusive-lane BRT
FEC			Commuter Rail

*Review for potential continuation/elimination.



4: Premium Transit/Rail Action Plan

This chapter summarizes the premium transit/rail action plan for St. Lucie County. The plan first reviews the characteristics of the recommended premium transit/rail alternatives and the probable costs of implementing the alternatives. Then, a series of action steps is identified that provides guidance for St. Lucie County to follow in achieving the goal of implementing the premium transit/rail services that are proposed previously in this study and summarized again as follows.

- **Near-term Alternatives (1 to 5 years)**

- Enhanced Express Bus on I-95 from SR 70/ Okeechobee Road to Martin County (1-3 years)
- Enhanced Express Bus on US 1 from North Beach Causeway Drive (A1A) in Ft. Pierce to Martin County (3-5 years)

- **Mid-term Alternatives (6 to 10 years)**

- Enhanced Express Bus on US 1 from Indian River County to North Beach Causeway Drive
- Mixed Traffic BRT on US 1 from North Beach Causeway Drive to Martin County
- Enhanced Express Bus on I-95 (Review for potential continuation/elimination)

- **Long-term Alternatives (11 to 20 years)**
 - Commuter rail on FEC corridor from North Beach Causeway Drive to Martin County
 - Mixed Traffic BRT on US 1 from Indian River County to North Beach Causeway Drive
 - Exclusive-lane BRT on US 1 from North Beach Causeway Drive to Martin County
 - Enhanced Express Bus on I-95 (Review for potential continuation/elimination)

The remainder of this chapter provides details of each of these transit alternatives and action steps required to implement the proposed services.

4.1 PREMIUM TRANSIT/RAIL ACTION PLAN

This section presents an action plan that would potentially need to be implemented in order to pursue the recommended premium transit/rail alternatives recommended previously for implementation in St. Lucie County. Table 4-1 presents the action steps that are needed in pursuing the implementation of premium transit/rail service on FEC, US 1, and I-95 corridors in St. Lucie County.

The action plan categorizes the recommended action steps by implementation timeframe: near-term (1 to 5 years), mid-term (6 to 10 years), and long-term (11 to 20 years). For each action item, the plan presents the following information.

- Description/Details of Action Item
- Responsible Entity
- Implementation Timeline
- Estimate of probable cost, where applicable

These action steps provide guidance for St. Lucie County to follow in its effort to establish premium transit/rail modes within the next 20 years.

**Table 4-1
PREMIUM TRANSIT/RAIL ACTION PLAN**

Action Item	Description/Details of Action Item	Responsible Entity	Implementation Timeline	Potential Implementation Cost*
Near-term Actions				
<p>1. Establish & implement regional vision for public transportation consistent with the adopted regional transit plan.</p>	<p>A regional agency dedicated solely to public transportation can certainly improve the chances of achieving the region-wide vision for transit established in the Regional TDP. Such an agency is not hampered by competing interests and can focus efforts on improving public transportation and allocating resources where they are most needed. The St. Lucie-Martin Regional TDP outlines where that need exists and where service improvements should be made. One of the major conclusions that can be drawn from the Regional TDP is the need to expand service. A regional transit governance structure should be established that could help facilitate the pursuit of more funding for service improvements and expansions that could meet transit needs in the area.</p>	<p>TPO/ St. Lucie County/ Martin MPO/ Martin County</p>	<p>Immediately</p>	<p>n/a</p>
<p>2. Establish Regional Transit Organization (RTO).</p>	<p>To create the RTO, an interlocal agreement must be prepared that, at a minimum, defines the purpose of the RTO; specifies the RTO Board composition, specifies the RTO's powers and duties; and identifies staff support for the RTO. Once complete, the interlocal agreement should be taken to each general-purpose local government board for approval.</p>	<p>TPO/St. Lucie County/ Martin MPO/ Martin County/ RTO Members</p>	<p>Immediately</p>	<p>n/a</p>
<p>3. Verify preferred premium transit alternative(s) for near-, mid-, and long-term implementation</p>	<p>This step includes conducting public involvement activities to engage key stakeholders and the public in a review of the recommended alternatives for each corridor and the selection of a preferred alternative(s) for near-term implementation.</p>	<p>TPO/ St. Lucie County/ RTO</p>	<p>1 to 2 years</p>	<p>n/a</p>
<p>4. Develop and implement transit-supportive growth management policies and plans.</p>	<p>Work with the County and the cities to adopt growth management policies/plans that:</p> <ul style="list-style-type: none"> • Promote infill development and redevelopment in established urban activity centers • Concentrate development around existing and planned major transit facilities • Allow transfers of development rights to urban areas 	<p>TPO/Local Jurisdictions</p>	<p>1 to 2 years / ongoing</p>	<p>n/a</p>
<p>5. Establish Regional Transportation Authority (RTA).</p>	<p>Creation of a regional transit authority enhances the ability to achieve greater and more secure funding for transit. The County should work to implement all action steps in the RTA Action Plan to establish the RTA. As the interim board, the RTO will lead the transition to the RTA until the RTA is established.</p>	<p>RTO</p>	<p>2 to 3 years</p>	<p>n/a</p>
<p>6. Secure dedicated funding for public transportation.</p>	<p>One of the major reasons for establishing a regional transit authority is to pursue a dedicated funding source for transit. Funding that is free from competing interests enhances stability and is essential in maintaining adequate service levels and planning for future service improvements.</p>	<p>RTA</p>	<p>2+ years</p>	<p>n/a</p>

* Potential implementation cost includes initial basic capital costs and first year operating costs.

Table 4-1 (continued)
PREMIUM TRANSIT/RAIL ACTION PLAN

Action Item	Description/Details of Action Item	Responsible Entity	Implementation Timeline	Potential Implementation Cost*
Near-term Actions				
7. Develop and implement bicycle and pedestrian-friendly land use and zoning policies.	Walking and bicycling should be encouraged as these modes support transit services. Existing land use and zoning policies should be modified and new policies should be adopted to improve the safety and comfort of bicyclists and pedestrians. A key aspect of these policies should involve the implementation of a more complete, accessible network of sidewalks and bicycle paths.	Local Jurisdictions	1 to 2 years	n/a
8. Develop and implement transit-supportive corridor policies and plans.	Work with the county and the cities to adopt policies/plans such as: <ul style="list-style-type: none"> • Subarea and station area plans and policies that include initiatives to develop or redevelop in the premium transit/rail corridors • Policies that promote mixed-use development within and near premium transit/rail corridor • Requirements and/or capital improvement plans that outline sidewalk improvements, connected streets and walkways, and other pedestrian infrastructure around stations 	Local Jurisdictions	2 to 3 years	n/a
9. Pursue strategy for funding the Enhanced Express Bus on I-95 from SR 70/Okeechobee Road to Martin County.	Develop a strategy for funding the Enhanced Express Bus alternative on I-95 from SR 70/Okeechobee Road to Martin County. The funding strategy should focus on locally- or regionally- generated funding mechanism(s).	RTA	1 to 2 years	n/a
10. Plan and implement Enhanced Express Bus on I-95 from SR 70/Okeechobee Road to Martin County.	Develop service and financial plans and implement Enhanced Express Bus on I-95 from SR 70/Okeechobee Road to Martin County.	RTA	3 to 4 years	\$2.0 - \$3.0 million
11. Pursue strategy for funding the Enhanced Express on US 1 from North Beach Causeway Drive (A1A) in Ft. Pierce.	Develop a strategy for potentially funding the Enhanced Express Bus alternative on US 1. If the alternative has potential for federal funding under the Federal Section 5309 Very Small Starts grants program, review FTA guidelines and pursue funding. If the alternative may not be eligible for federal funds, then develop a funding strategy that focuses on locally or regionally generated funding mechanism(s). Unless significant station costs are expected, this would be locally funded too.	RTA	1 to 3 years	n/a
12. Identify locations for potential BRT stations on US 1 and adopt supportive zoning regulations near transit stations.	Identify feasible station locations and work with the County and the cities to adopt supportive zoning regulations near transit stations such as: <ul style="list-style-type: none"> • Transit overlay zoning to apply supplemental provisions to promote premium transit/rail • Zoning incentives for increased development in station areas, such as density bonuses 	TPO/RTA Local Jurisdictions	1 to 3 Years	n/a

* Potential implementation cost includes initial basic capital costs and first year operating costs.

Table 4-1 (continued)
PREMIUM TRANSIT/RAIL ACTION PLAN

Action Item	Description/Details of Action Item	Responsible Entity	Implementation Timeline	Potential Implementation Cost*
Near-term Actions				
13. Establish RTO Premium Transit/Rail Advisory Group.	An advisory group should be established to coordinate the execution of policy-, service-, and funding-related actions needed for the establishment of premium transit in St. Lucie County. The RTO could serve as the Premium Transit/Rail Advisory Group.	RTO	2-5 Years	n/a
14. Plan and implement Enhanced Express Bus on US 1 from North Beach Causeway Drive in Ft. Pierce to Martin County.	Develop service and financial plans and implement Enhanced Express Bus on US 1 from North Beach Causeway Drive (A1A) in Ft. Pierce to Martin County.	RTA	3-5 years	\$2.9 - \$4.4 million
15. Expand/modify existing routes and initiate new bus routes that can serve as feeder routes for new service on I-95 and US-1.	This policy will support expansion of existing bus routes as well as the development of new bus routes that can operate as feeder service. The feeder routes should be in place when a premium transit service starts. It is also a mechanism to enhance ridership demand and gradually build transit as a more viable and attractive alternative.	RTA	Ongoing	n/a
Mid-term Actions				
16. Develop strategy for funding Enhanced Express Bus on US 1 from Indian River County to North Beach Causeway Drive.	Develop a strategy for funding the Enhanced Express Bus alternative on US 1 from Indian River County to North Beach Causeway Drive. The funding strategy should focus on locally- or regionally- generated funding mechanism(s).	RTA	4 to 6 years	n/a
17. Pursue strategy for funding mixed-traffic BRT on US 1 from North Beach Causeway Drive to Martin County.	Develop a strategy for potentially funding mixed-traffic BRT on US 1 from North Beach Causeway Drive to Martin County. If the alternative has potential for federal funding under the Federal Section 5309 Small Starts grants program, conduct an Alternatives Analysis (AA) and follow FTA funding guidelines and pursue funding. If the alternative may not be eligible for federal funds, then develop a funding strategy that focuses on locally- or regionally-generated funding mechanism(s).	RTA	4 to 6 years	n/a
18. Review Enhanced Express Bus on I-95 for potential continuation or discontinuation. If continued, review/verify funding strategy and availability.	The Enhanced Express Bus service on I-95 should be evaluated to determine whether sufficient demand exists to support continuation of the service with the start-up of US 1 premium service, and if deemed the route is not efficient, it should be eliminated. Otherwise, review/verify the funding strategy and availability.	RTA	5 to 6 years	n/a

* Potential implementation cost includes initial basic capital costs and first year operating costs.

**Table 4-1 (continued)
PREMIUM TRANSIT/RAIL ACTION PLAN**

Action Item	Description/Details of Action Item	Responsible Entity	Implementation Timeline	Potential Implementation Cost*
Mid-term Actions				
20. Plan and implement Enhanced Express Bus on US 1 from Indian River County to North Beach Causeway Drive	Develop service and financial plans and implement Enhanced Express Bus on US 1 from Indian River County to North Beach Causeway Drive.	RTA	6-10 years	\$2.0 - \$3.1 million
21. Plan and implement mixed-traffic BRT on US 1 from North Beach Causeway Drive to Martin County	Develop BRT service and financial plans and implement mixed-traffic BRT on US 1 from North Beach Causeway Drive (A1A) in Ft. Pierce to Martin County.	RTA	6-10 years	\$4.4 - \$6.6 million
22. Expand/modify existing routes and initiate new bus routes that can serve as feeder routes for new/expanded service on I-95 and US-1	This policy will support expansion of existing bus routes as well as the development of new bus routes that can operate as feeder service.	RTA	6-10 years	n/a
23. Identify locations for potential Commuter Rail stations on FEC Corridor and adopt supportive zoning regulations near transit stations	Identify feasible commuter rail station locations and work with the county and the cities to adopt supportive zoning regulations near transit stations such as: <ul style="list-style-type: none"> • Transit overlay zoning to apply supplemental provisions to promote premium transit/rail • Zoning incentives for increased development in station areas, such as density bonuses 	RTA/Local Jurisdictions	8 to 10 Years	n/a
Long-term Actions				
24. Develop performance thresholds and evaluate rail-readiness of the FEC corridor	Performance thresholds that can be used to help determine when a comprehensive rail feasibility assessment is appropriate may include the following. <ul style="list-style-type: none"> • Population density threshold of 5 to 7 dwelling units per acre within the corridor area • Employment density threshold of 4 to 5 employees per acre within the corridor area • Average existing daily transit ridership of 3000 riders within the corridor area 	RTA	8 to 10 Years	n/a
25. Identify locations and secure needed right-of-way for future park-and-ride lots and operations and maintenance facilities.	The FEC corridor runs through the eastern part of the county, along the Coast. In order to increase trip catchment area, park-and-ride facilities will most likely be needed. Wherever feasible, the local jurisdictions should identify right-of-way from developments adjacent to the FEC corridor through conditions of approval for a subdivision or site plan. The local jurisdictions may also enter into public-private agreements for building new park-and-ride sites and integrating shared parking facilities in new or existing developments.	RTA/FDOT/Local Jurisdictions	8 to 10 Years	n/a

* Potential implementation cost includes initial basic capital costs and first year operating costs.

Table 4-1 (continued)
PREMIUM TRANSIT/RAIL ACTION PLAN

Action Item	Description/Details of Action Item	Responsible Entity	Implementation Timeline	Potential Implementation Cost*
Long-term Actions				
26. Develop and pursue strategy for funding Commuter Rail on FEC corridor.	Develop a strategy for potentially funding commuter rail on FEC. If the alternative has potential for federal funding under the Federal Section 5309 New Starts grants program, such findings should be pursued.	RTA	9 to 12 years	n/a
27. Develop and pursue strategy for funding exclusive-lane BRT on US 1 corridor.	Develop a strategy for potentially upgrading mixed-traffic BRT to exclusive-lane BRT. If the alternative has potential for federal funding under the Federal Section 5309 Small Starts grants program, such funding should be pursued. If the alternative may not be eligible for federal funds, then develop a funding strategy that focuses on locally or regionally generated funding mechanism(s).	FDOT/RTA	9 to 12 years	n/a
28. Plan and implement commuter rail on FEC corridor from North Beach Causeway Drive to Martin County	Develop necessary service and financial plans and implement commuter rail on FEC rail corridor from North Beach Causeway Drive to Martin County.	RTA	13 to 20 years	\$260 - \$391 million
29. Plan and implement mixed-traffic BRT on US 1 from Indian River County to North Beach Causeway Drive	Develop service and financial plans and implement mixed-traffic BRT on US 1 from Indian River County to North Beach Causeway Drive.	RTA	11 to 20 years	\$3.1 - \$3.2 million

* Potential implementation cost includes initial basic capital costs and first year operating costs.

Table 4-1 (continued)
PREMIUM TRANSIT/RAIL ACTION PLAN

Action Item	Description/Details of Action Item	Responsible Entity	Implementation Timeline	Potential Implementation Cost*
Long-term Actions				
30. Plan and implement exclusive-lane BRT on US 1 from North Beach Causeway Drive to Martin County	Develop service and financial plans and implement exclusive-lane BRT on US 1 from North Beach Causeway Drive to Martin County.	RTA	13 to 20 years	\$60 - \$90 million
31. Review Enhanced Express Bus on I-95 for potential continuation or discontinuation. If continued, review/verify funding strategy and availability.	The Enhanced Express Bus service on I-95 should be evaluated to determine if sufficient demand exists to support continuation of the service, and if deemed the route is not efficient, it should be eliminated. Otherwise, review/verify funding strategy and availability.	RTA	11 to 20 years	n/a
32. Expand/modify existing routes and initiate new bus routes that can serve as feeder routes for new/expanded service on I-95 and US-1.	This policy will support expansion of existing bus routes as well as the development of new bus routes that can operate as feeder service.	RTA	11 to 20 years	n/a

* Potential implementation cost includes initial basic capital costs and first year operating costs.