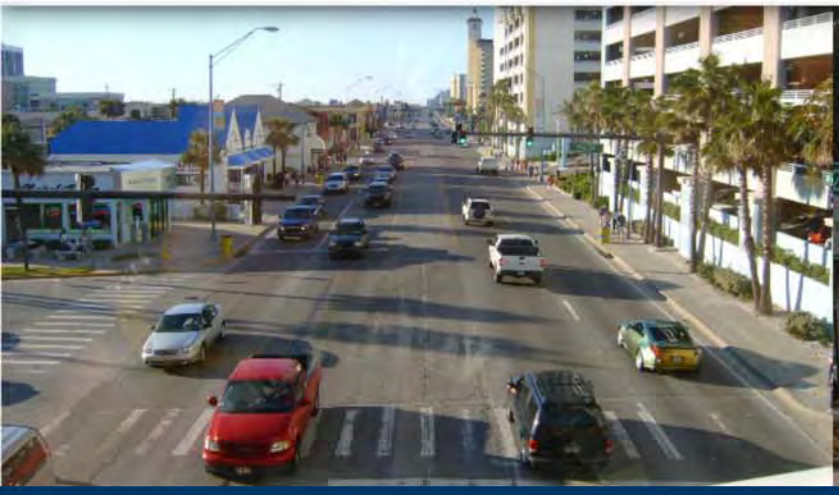
Transit Corridor Feasibility Analysis Study

Volusia County MPO

Prepared for:
Florida Department of Transportation and Volusia County Metropolitan Planning Organization

Prepared by:

TranSystems



MARCH 2009

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Chapter 1 – Project Background

1.1 Project Purpose

The Florida Department of Transportation (FDOT) in collaboration with the Volusia County Metropolitan Planning Organization (MPO) retained TranSystems to assess the feasibility of potential transit corridors within Volusia County. The end product of the study is to have sufficient technical documentation to apply for Federal Transit Administration (FTA) funding to continue studying the most feasible transit corridors. Figure 1 displays the study area.

This report should be used as a "vision" to help determine the future transit potential in various parts of the county. Various corridors were suggested and studied including north-south cross-county corridors, east-west cross-county corridors, and corridors considered to be local circulators within various communities. The information presented in the report, including potential stations, is conceptual in nature and was developed as a first level analysis of transit potential. This study should be used as a guide to provide input and direction for future transit studies. Additional study and research will be required before any final recommendation can be given. This report can also be used by Volusia County municipalities as a guide for future land use development. Land uses that are mixed, have a range of densities, and are designed in a more traditional setting which accommodate pedestrians, are most appropriate along transit corridors.

1.2 Previous Reports and Studies

There are a variety of completed reports and studies assessing transit options in Volusia County. Reports and studies pertinent to this study were collected and reviewed. A synopsis of each of these studies is presented below.

A. Central Florida Commuter Rail Transit (CRT) Line Study (SunRail)

The Central Florida CRT (SunRail) is a proposed 61-mile system that will link Volusia, Seminole, Orange, and Osceola counties. The service will operate on the CSX Transportation "A" Line (formerly Atlantic Coast Line Railroad) from its southern terminus at Poinciana Boulevard (Kissimmee) through Downtown Orlando, terminating in DeLand. Freight service and Amtrak service (two daily round-trip trains) currently operate on the same line.

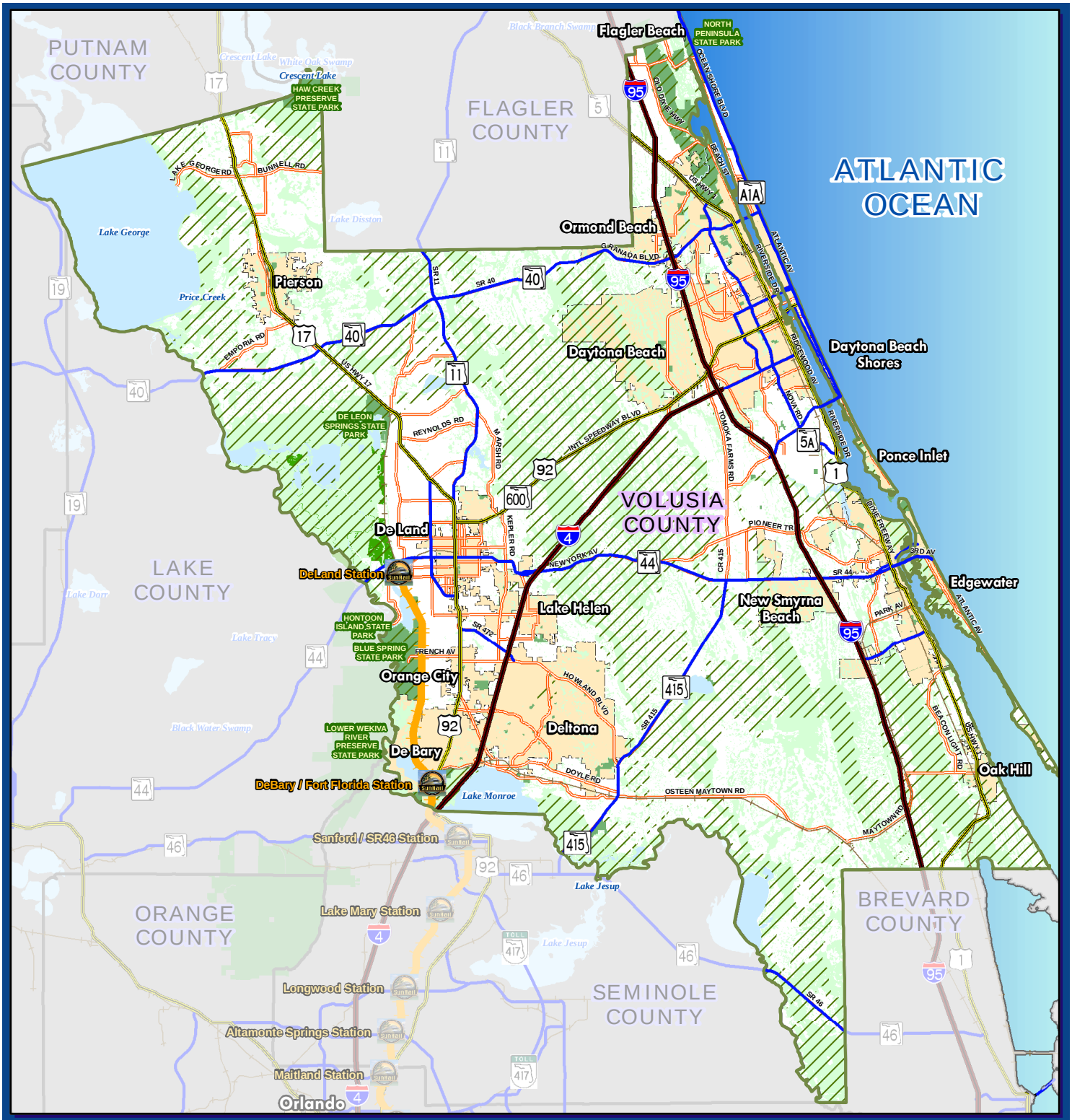
Volusia County, Seminole County, Orange County, Osceola County, and the City of Orlando are partners in the project. The total cost of the system is estimated at $615 million (2007 dollars); 50% of the funding will come from the FTA New Starts funding. SunRail is expected to be fully completed and operational in 2013. Two of the proposed stations, DeBary/Fort Florida Road and the DeLand Amtrak Station are in Volusia County.

B. Inter-Regional Transit Systems Analysis, December 1997

The *Inter-Regional Transit Systems Analysis Study* was conducted as a cooperative effort between Volusia County MPO, METROPLAN Orlando, VOTRAN, LYNX, and the Florida Department of Transportation (FDOT) by the study consultant BRW Incorporated and addresses the transit needs to accommodate increased travel between west Volusia County and the Orlando area. The need for increased transit includes the following trip/market types in order of need: commuter, shopping, medical, and educational. The study found that the commuter market has an immediate need, the shopping market has an emerging need, and the medical market has a need, but recommendations focused on the I-4 and 17/92 corridors.

The report considered linkages between West Volusia County and the Greater Orlando Area. Findings did not consider rail as an option. The number one recommended option was bus service from Deltona to Downtown Orlando. The follow are some suggestions presented in the report:

- Implement express bus service from Deltona to Downtown Orlando
- Increase coordination between community transportation coordinators (VOTRAN Gold, LYNX A+) for improved paratransit service
- Add express bus service from Deltona to North Orange Seminole County activity centers
- Link existing VOTRAN and LYNX routes with a medical/shopping shuttle
- Expand FDOT (and other) Commuter Assistance Program (CAP) efforts to target major employers



LEGEND

Planned SunRail Commuter Rail

- SunRail Commuter Rail Station
- SunRail Commuter Rail

Transportation Network

- Interstate Highway
- U.S. Highway
- State Route
- Other Highway
- Other Railroad

Other Layers

- Study Area
- Other Counties
- City Limits
- Parks

Environmental Layers

- SJRWMD Wetlands
- Environmental Core Overlay

Volusia County MPO Transit Corridor Feasibility Study

Figure 1 - Study Area Map

Prepared for: FDOT, Volusia County MPO Transportation Planning

Prepared by: TranSystems

N

0 2.5 5 Miles

Source: FDOT, Volusia County MPO, Volusia County, and TranSystems

C. Preliminary Rail Feasibility Study, 1996-2000

The *Preliminary Rail Feasibility Study* was prepared for the Volusia County Council over the period between 1996 and 2000. Several task order reports were produced on a variety of topics. A brief synopsis of each of these reports is described below:

1. Documentation and Analysis of Previous Studies, August 1998

This task reviewed the following reports:

- Volusia County 2015/2020 MPO plans
- Central Florida Transportation Authority Plan (LYNX)
- I-4 Multi Modal Plan
- Volusia County Rail Feasibility Application
- Volusia County Comprehensive Plan
- Inter-Regional Transit System Analysis
- Public opinion research of the Daytona Beach International Airport

The following are excerpts from the *I-4 Multi-Modal Plan* and the *Volusia County Rail-Feasibility Application*. The *Inter-Regional Transit System Analysis Report* has been reviewed above. These reports are the most pertinent to this study and have been summarized in this chapter.

a. *I-4 Multi-Modal Master Plan*

The *I-4 Multi-Modal Master Plan* was completed by PBS&J in March of 1996. The plan notes that rail was being considered by the FDOT as part of the *I-4 Major Investment Study*. Additionally, Orange County identified the need for rail connections to the convention center.

The *I-4 Multi-Modal Master Plan* delineated existing transit services in the Central Florida area. The LYNX bus system was described as a radial system with Downtown Orlando as the core of the service area. The radial network provides relatively quick movement from the Central Business District (CBD) to the outer fringes of the city. For passengers who do not wish to travel to Downtown Orlando, the transit trip is less efficient. However, the report noted that trip patterns that are not associated with the CBD are becoming more prevalent.

The Central Florida Regional Transportation Authority (CFRTA) d/b/a LYNX, has designed the I-4 corridor as the region's highest priority for fixed guideway transit. Future land use within the I-4 corridor includes residential areas along with pockets for industrial development. Although Downtown Orlando was identified as the region's primary employment center, the report also recognized that other activity centers are emerging.

The LYNX transit service expansion includes creating satellite hubs. These satellite hubs would allow quicker and more convenient service to outlying areas. However, the focus of the LYNX network will remain the CBD of Orlando. Future plans call for express bus service between West Volusia County and the I-4 activity centers in Seminole and Orange Counties. The plan includes dedicated High Occupancy Vehicle (HOV) lanes on I-4.

The plan concluded that Light Rail Transit (LRT) is needed, and would provide cost efficient transportation. The plan did not recommend a final alignment. High-speed rail was not a component of the *I-4 Multi-Modal Master Plan*. The plan considered preserving the median of I-4, as a future rail envelope. A 44-foot rail envelop was recommended between the Polk/Osceola County line and US 17/92 in Volusia County. From US 17/92 to just west of I-95, a 64-foot envelope was recommended.

The LRT alignments through this area were along the CSX right-of-way. The report also detailed four suggested alignments for light rail that would connect the CBD of Orlando to the outlying areas.

b. *Volusia County Rail Feasibility Study Application*

Ghyabi, Lassiter and Associates, Inc. completed this study in August of 1996. The study included a comprehensive analysis of the needs for a rail system in Volusia County. The *Volusia County Rail Feasibility Study Application* concluded, "An extension of a rail system such as proposed in the I-4 corridor is logical given the significant number of commuters that travel from Volusia County into the Orlando Urban Area and vice-versa."

2. Volusia County Community Leader Interview Summary (Task 1.1), November 1998

The following is a summary of answers and conclusion based on interviews with various Volusia County community leaders in late 1998 as part of the Volusia County Rail Feasibility Study:

- Community leaders stated that funding would be available from other sources
- Public transportation plays a large role and would increase with county growth
- Two significant impediments exist for transit service: lack of education about the current system and "a love affair" with the automobile
- Rail will compliment everyone's goals; no governmental conflicts expected
- Express bus service brought a varied response--most dismissed it, some suggested HOV lanes
- Most noted that coordinating bus and rail is necessary
- The I-4 corridor was cited by all as best choice for corridor
- Few talked about using the CSX corridor with varying concerns
- The SR 415 corridor was discussed as a possible transit corridor
- Some discussed the I-95 corridor, though was not seen as a realistic option
- Volusia County connectors included SR 472 and SR 44
- The Volusia County transit system needs to be part of a bigger regional system. (i.e. Orlando needs a transit system also)
- West Volusia County wants a commuter system; East Volusia County wants access to Orlando for employment and entertainment
- Time frame for the possible transit and rail initiatives should be 5 to 20 years
- Operational considerations: All realized that there will be a need for a governing body for the rail system

3. Goals, Policies, and Objectives in Support of Transit (Task 1.2), March 2000

The following is an excerpt from the conclusion portion of this report:

> *In summary, the adopted Volusia County Comprehensive Plan was reviewed and the development patterns within the county examined. Currently, the county has a variety of growth management strategies in place to support the strong relationships, which exist between land use, its location and intensity, and the overall transportation system. Volusia County may want to refocus attention in several essential areas as a means of strengthening the outcome of this strategy. Changes in land use patterns with infill development will continue to be helpful. Implementing broad- based area plans for roadway connectivity will be another means of fostering the land use and transportation relationship. Finally, considering additional ways to permit a proactive approach for new development will benefit both the near term and long-term growth management objectives in Volusia County.*

4. Land Use and Socioeconomic Data (Task 1.5.2), March 2000

The following is an excerpt from the conclusion portion of this report:

> *It is recommended that following the selection of a preferred corridor option that land use policies in the area immediately adjacent to potential rail transit stations be reevaluated. This reevaluation could include, but not be limited to, changes to the adopted comprehensive plans to increase the allowable densities of development for land adjacent to transit service.*

5. Evaluation of Alternative Rail Corridors and Technologies (Task 1.5 & 1.6), April 2000

The following corridors were evaluated in the report:

- I-4, US 17/92, US 92, CR/SR 415, SR 44, SR 40, Florida East Coast Railroad right-of-way, I-95, US 1, and SR A1A.

Four primary corridors were recommended for east-west connectivity:

- Line 1: The southwest corridor from the St Johns River to the intersection with the International Speedway Boulevard; consists of I-4, US 17/92, and CSX corridors.
- Line 2: The cross county corridor from US 17 east past I-95 and US 1 to SR A1A.; consists of I-4 and US 192 corridors.
- Line 3: The east county corridor from Hernandez Avenue to Volco Road. This corridor is comprised of the area from I-95 east to the Intra-Coastal Waterway.
- Line 4: The south county corridor from US 1 on the east to US 17/92 on the west; consists of the abandoned Florida East Coast railroad right-of-way.

The following transit technologies/modes were considered:

- Light Rail Transit
- Commuter Rail Transit (Standard)
- Commuter Rail Transit (DMU)
- Express Bus Transit

All technologies were evaluated with the exception of Commuter Rail (DMU). Commuter Rail (DMU) was not evaluated due to the high cost of the technology. A cost evaluation of the preferred technologies and corridors was done and concluded that the break even fare for a rail solution was more than twice as much as an express bus fare.

6. Analysis of Policies and Plans, Infrastructure Inventory, and Potential Rail Corridors (Task 1.5), November 1998

a. Analysis of Policies and Plans

This section analyzes the impacts of the regulatory, built, and natural environment on rail services in Volusia County. Future land use activity centers identified for Policy and Plan Analysis include:

- Southwest (Howland Boulevard and I-4)
- Halifax (US 92/I-95/I-4/Daytona Beach International Airport)
- Southeast (SR 44 and I-95 interchange)

Volusia County overall economic development plan activity centers identified for Policy and Plan Analysis:

- Daytona Beach International Airport
- The LPGA/CTLC Development of Regional Impact (DRI)

- Daytona Beach Business Park
- Daytona Beach Enterprise Zone
- Daytona Beach Coastal Tourist Core
- Volusia County Mall
- Interstate Business Park (Port Orange)
- Eastport Center
- Ridgewood Development Center
- Ormond Beach Municipal Airport and Airport Business Park
- Downtown Ormond Beach
- East Granada Boulevard - Corridor/Casements Area
- Granada Boulevard/SR 40/Williamson Boulevard commercial node
- North US 1 Corridor
- New Smyrna Beach Downtown
- Southeast Activity Center (I-95/SR 44)
- New Smyrna Beach Airport and Airport Industrial Park
- Northwest Commercial and Industrial Region.
- Ridgewood/US 1 Commercial Corridor
- Indian River Boulevard/SR 442 Industrial Area
- Daytona Beach Outlet Mall and Big Tree Plaza
- South Daytona Business Park
- South Daytona's Ridgewood/US 1 Corridor
- Beville Road - SR 400 Commercial Corridor
- North Ridgewood Avenue/US 1 Commercial Corridor
- Nova Road/SR 5 Mixed Heavy Commercial/Industrial Corridor
- Halifax Activity Center
- DeLand Municipal Airport and Industrial Park
- Buckminster Fuller Research and Development Park
- Downtown DeLand
- I-4/SR 44 Activity Center
- US 17-92 Commercial Corridor
- Orange City Industrial Center, Shadick Drive
- Four Townes Commercial Corridor
- Southwest Activity Center (I-4 and SR 472)
- Saxon Boulevard Corridor/I-4 Interchange
- South Volusia County Heavy Industrial Park
- Power Plant Facilities
- Gemini Springs resource-Based District Park
- Lake Helen Industrial Park
- Volusia County Beaches
- Deleon Springs State Park
- Blues Springs State Park

Policy and Plan Analysis conclusions:

- New development should incorporate multimodal transportation.
- Establish a new method for the "area of influence" of transit.
- Density of development along rail corridors must be significant.
- Investigate alternative levels of service.
- Need to develop "Transit corridor plan and implementation schedule".
- Policy supporting increased land use densities along transit corridors.
- Policy that connects VOTRAN to future rail facilities.
- Establish dedicated revenue sources.
- Establish method of managing multi-jurisdictional transit resources.
- Establish locations for transit oriented developments.
- Develop transit design standards.

b. Infrastructure Inventory

The *Infrastructure Inventory* concludes that the roadway network in important to the development of the county and shows different corridors to connect the following areas:

- The Halifax area has a variety of transit, roadways, and other facilities and environmental resources to the west may inhibit new facilities.
- Southeast Volusia County has an emerging roadway network resulting from residential and commercial development in New Smyrna and Port Orange and environmental resources to the west may inhibit new facilities.

- The southwest Volusia area (DeLand, Deltona, and DeBary) provides urban oriented facilities and includes a variety of economic resources. The roadway system provides the best access across the St John River and connectivity between the different municipalities.
- The northwest Volusia area consists of smaller residential areas, but has large areas of agricultural land uses. This area lacks an extensive collector roadway network.

The Roadway Network Inventory included a brief review of the following roadways:

- SR 600/ US92, SR 40, SR 44, SR 415, CR 415, SR 15/US 17-92, SR 5/US 1, SR A1A, I-95/SR 9, I-4/SR 400, SR 400, and SR 421.

The Railroad Right-Of-Way Inventory included a brief review of the following railroad corridors:

- Florida East Coast (Abandoned) running North/South in East Volusia County.
- CSX Line running North/South in West Volusia County.

The Utility Easement Inventory included a brief review of the following utility corridors:

- Florida Power and Light (FPL) running North/South along US 1 in Ormond Beach.
- Drainage Canal (Along portion of FEC Railroad line).
- FPL along portion of Seaboard Coast Line.
- FPL Southwest Volusia County approximately 150' west of the previous easement.

c. Potential Rail Corridors

Suggested potential rail corridors based on technical, environmental, financial, socio-economic, and political factors are:

- I-4/SR 400 Corridor
- Abandoned FEC Railroad Line
- CSX Rail Line

D. Other Reports and Studies

A variety of other reports and studies were also reviewed as part of the data collection efforts. These included VOTRAN's Transit Development Plan (December 2006) VOTRAN's West Side Transit Plan (April 2007), the West Volusia Transit Study, and the Florida Intercity Passenger Rail "Vision Plan" (August 2006).

1.3 Data Collection

Data pertinent to this study was collected in a variety of ways. The following data was reviewed and incorporated into the report:

- Site observations
- Aerial photography
- Existing land use maps
- Comprehensive plans
- Previous reports and studies
- Environmental resource data
- VOTRAN and LYNX schedules and ridership information
- Geographic Information System (GIS) data
- Public input and stakeholder interviews

1.4 Socio-Economic Data

Population, percentage of elderly, race and percentage of individuals below the poverty level estimates for each municipality within the study area are listed in Tables 1 -3 below.

TABLE 1: POPULATION ESTIMATES FOR STUDY AREA

Community	2008 Population	Percent (%) 65+ Years	2013 Population Forecast
Daytona Beach	66,362	17.9%	68,355
Daytona Beach Shores	4,582	49.2%	4,809
DeBary	19,564	23.0%	21,767
DeLand	25,478	23.6%	27,262
Deltona	86,201	15.0%	95,235
Edgewater	21,977	21.4%	23,884
Holly Hill	12,797	21.2%	13,410
Lake Helen	2,850	20.7%	3,023
New Smyrna Beach	24,335	34.9%	26,433
Oak Hill	1,828	21.0%	2,005
Orange City	8,090	31.1%	8,816
Ormond Beach	41,000	27.4%	44,034
Pierson	2,936	6.9%	3,126
Ponce Inlet	3.102	32.9%	3,409
Port Orange	57,234	23.6%	62,859
South Daytona	13,484	18.9%	13,908
Totals	388,721	24.29% (average)	422,335

Source: Volusia County Department of Economic Development, ESRO BIS forecasts for 2008 and 2013

The top four (4) municipalities with 2008 population over 40,000 are: Daytona Beach, Deltona, Ormond Beach and Port Orange. The next group of municipalities with population approximately 20,000 to 40,000 is: DeBary, DeLand, Edgewater, and New Smyrna Beach. The municipalities with the lowest amount of population are: Daytona Beach Shores, Holly Hill, Lake Helen, Oak Hill, Orange City, Pierson, and South Daytona. Communities with more significant older populations include Daytona Beach Shores, New Smyrna Beach, Orange City and Ponce Inlet. It is important to note that senior citizens are typically more transit dependent than other age groups.

Table 2 provides information by race for each of the communities within the study area. Table 3 lists the percentage of households below the poverty level for each of the communities. Environmental justice issues must be considered when planning transit services. Environmental justice is a holistic effort to analyze the potential impacts that a project may have on groups considered minority or disadvantaged. Environmental injustice occurs when an undue portion of negative impacts of a project are borne by minority and low-income populations. Environmental justice occurs when there is a fair share of positive impacts received by minority and low-income populations.

TABLE 2: YEAR 2000 POPULATION PERCENT BY RACIAL GROUP FOR STUDY AREA

Community	White Race	Other Races
Daytona Beach	59.1%	40.9%
Daytona Beach Shores	96.6%	3.4%
DeBary	94.9%	5.1%
DeLand	75.0%	25.0%
Deltona	84.3%	15.7%
Edgewater	96.4%	3.6%
Holly Hill	87.1%	12.9%
Lake Helen	87.0%	13.0%
New Smyrna Beach	91.6%	8.4%
Oak Hill	81.8%	18.2%
Orange City	93.0%	7.0%
Ormond Beach	94.3%	5.7%
Pierson	81.9%	18.1%
Ponce Inlet	97.7%	2.3%
Port Orange	95.6%	4.4%
South Daytona	88.7%	11.3%

Source: US Census Bureau, 2000

The communities with larger non-white populations include Daytona Beach, DeLand, Oak Hill, and Pierson.

TABLE 3: YEAR 2000 PERCENTAGE OF HOUSEHOLDS BELOW POVERTY LEVEL IN STUDY AREA

Community	Percentage of Individuals Below Poverty Level
Daytona Beach	21.7%
Daytona Beach Shores	6.6%
DeBary	7.0%
DeLand	17.2%
Deltona	8.1%
Edgewater	9.2%
Holly Hill	16.2%
Lake Helen	9.2%
New Smyrna Beach	10.8%
Oak Hill	13.8%
Orange City	9.4%
Ormond Beach	6.0%
Pierson	33.6%
Ponce Inlet	5.1%
Port Orange	7.5%
South Daytona	10.6%

Source: US Census Bureau, 2000

The communities with larger number of individuals below the poverty level include Daytona Beach, DeLand, Holly Hill, Oak Hill, and Pierson.

1.5 Work and Non-Work Trips

Figure 2 shows work and non-work trip data within Volusia County. This trip data is based on the 2000 U.S. Census and shows typical trips for both work and non work purposes within the County.

1.6 Transit Potential Index

Figure 3 shows the transit potential index (TPI) map for Volusia County. The transit potential index exhibit overlays the population and employment densities in the county and then stipulates what the densities can currently support in terms of "fixed route" transit. The transit potential index is based on documented research sponsored by the Transportation Research Board and the Transit Cooperative Research Program (TCRP). The TCRP's Transit Capacity and Quality of Service Manual provides guidelines for the appropriate level of service given population and employment densities. The TPI shows areas where demand response, flexible service, or fixed route service are the appropriate type of service based on densities.

As the map indicates, there are some areas in Daytona Beach, South Daytona, Port Orange, DeLand and Deltona that currently can support fixed route transit, including potentially some higher speed transit options, such as bus rapid transit, light rail transit or commuter rail.

1.7 *Land Use and Land Use Models*

Three (3) varying land use models are currently being evaluated by FDOT District 5 and its MPOs in an effort to select a new preferred land use model that more accurately represents how the region wants to grow. This effort was generated due to interest in the regional "How Shall We Grow?" initiative. This initiative is the Central Florida Regional Growth Vision, which is a shared vision for how the Central Florida region can grow between now and 2050. Evaluation of these three (3) land use models also gives the regional MPOs land use scenarios other than the traditional Future Land Use Allocation Model (FLUAM) method with which to forecast transportation needs. These models provide socioeconomic data to support the Long Range Transportation Plan (LRTP) and comprehensive planning processes. Currently the models have been accepted by the regional MPOs and FDOT will soon select a preferred model. The three models being considered are:

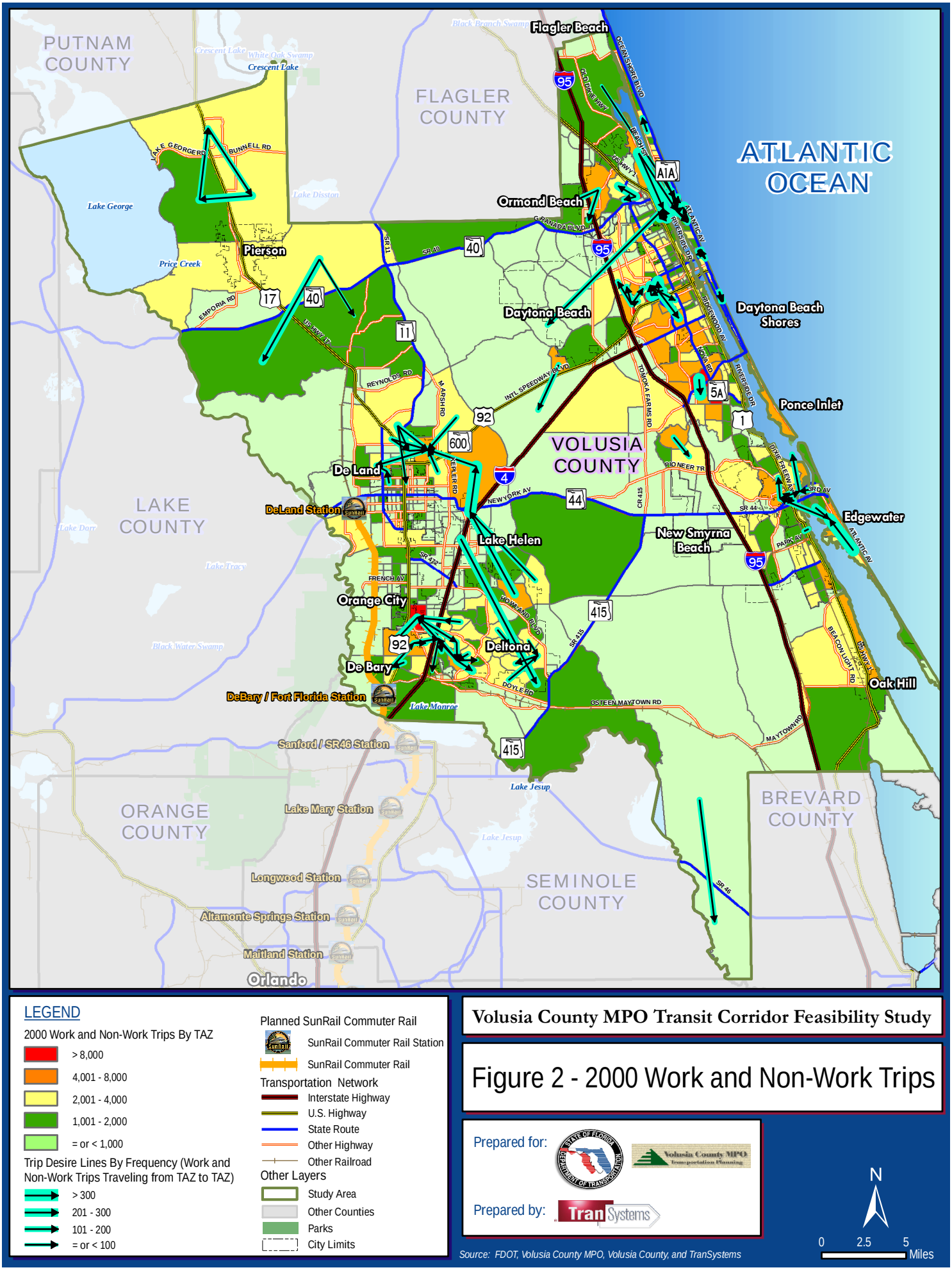
• 2035 FLUAM Trend - This traditional model predicts growth based on compliance with local government's adopted land use and comprehensive plans. Current land use information is integrated to extrapolate future socioeconomic data based on how local governments have planned to grow.

• 2035 LUCIS Trend (Land Use Conflict Identification Strategy) - This model relies on historical growth to predict future growth. Urban, conservation, agricultural, and other land uses are compared to identify conflicts. Historical socioeconomic data and growth is analyzed and projected to create a model of the county's future socioeconomic data.

• 2035 LUCIS Composite - This model is the 2035 version of the 2050 "How Shall We Grow?" initiative. The "How Shall We Grow" model focuses on land uses that promote conservation, countryside, balanced corridors, and centered populations. This model projects the socioeconomic data based on the ideal growth scenario.

1.8 Environmental Conditions

Volusia County is home to numerous wetlands, threatened and endangered species, natural areas, creeks, waterways, floodplains, parks, and other sensitive environmental conditions. Development in the central part of the county has been restricted by the great amount of wetlands and other natural areas. Until further study is done during later phases of transit planning it is not known if there is a presence of threatened and endangered species immediately in the study area. Table 4 lists the Volusia County federally listed species that could potentially exist within the proposed transit corridors.


PUTNAM COUNTY
FLAGLER COUNTY
VOLUSIA COUNTY
LAKE COUNTY
ORANGE COUNTY
SEMINOLE COUNTY
BREVARD COUNTY
ATLANTIC OCEAN
Flagler Beach
Ormond Beach
Daytona Beach
Daytona Beach Shores
Ponce Inlet
Edgewater
New Smyrna Beach
Oak Hill
Pierson
De Land
DeLand Station
Lake Helen
Orange City
Deltona
De Bary
DeBary / Fort Florida Station
Sanford / SR46 Station
Lake Mary Station
Longwood Station
Altamonte Springs Station
Maitland Station
Orlando
Lake George
Crescent Lake
Price Creek
Lake Dorr
Lake Tracy
Black Water Swamp
Lake Monroe
Lake Jesup
I-95
I-4
SR A1A
SR 40
SR 11
US 17
US 92
SR 600
SR 44
SR 472
SR 415
SR 46
LEGEND
2000 Work and Non-Work Trips By TAZ
> 8,000
4,001 - 8,000
2,001 - 4,000
1,001 - 2,000
= or < 1,000
Trip Desire Lines By Frequency (Work and Non-Work Trips Traveling from TAZ to TAZ)
> 300
201 - 300
101 - 200
= or < 100
Planned SunRail Commuter Rail
SunRail Commuter Rail Station
SunRail Commuter Rail
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Other Railroad
Other Layers
Study Area
Other Counties
Parks
City Limits
Volusia County MPO Transit Corridor Feasibility Study
Figure 2 - 2000 Work and Non-Work Trips
Prepared for:
Prepared by:
TranSystems
Source: FDOT, Volusia County MPO, Volusia County, and TranSystems
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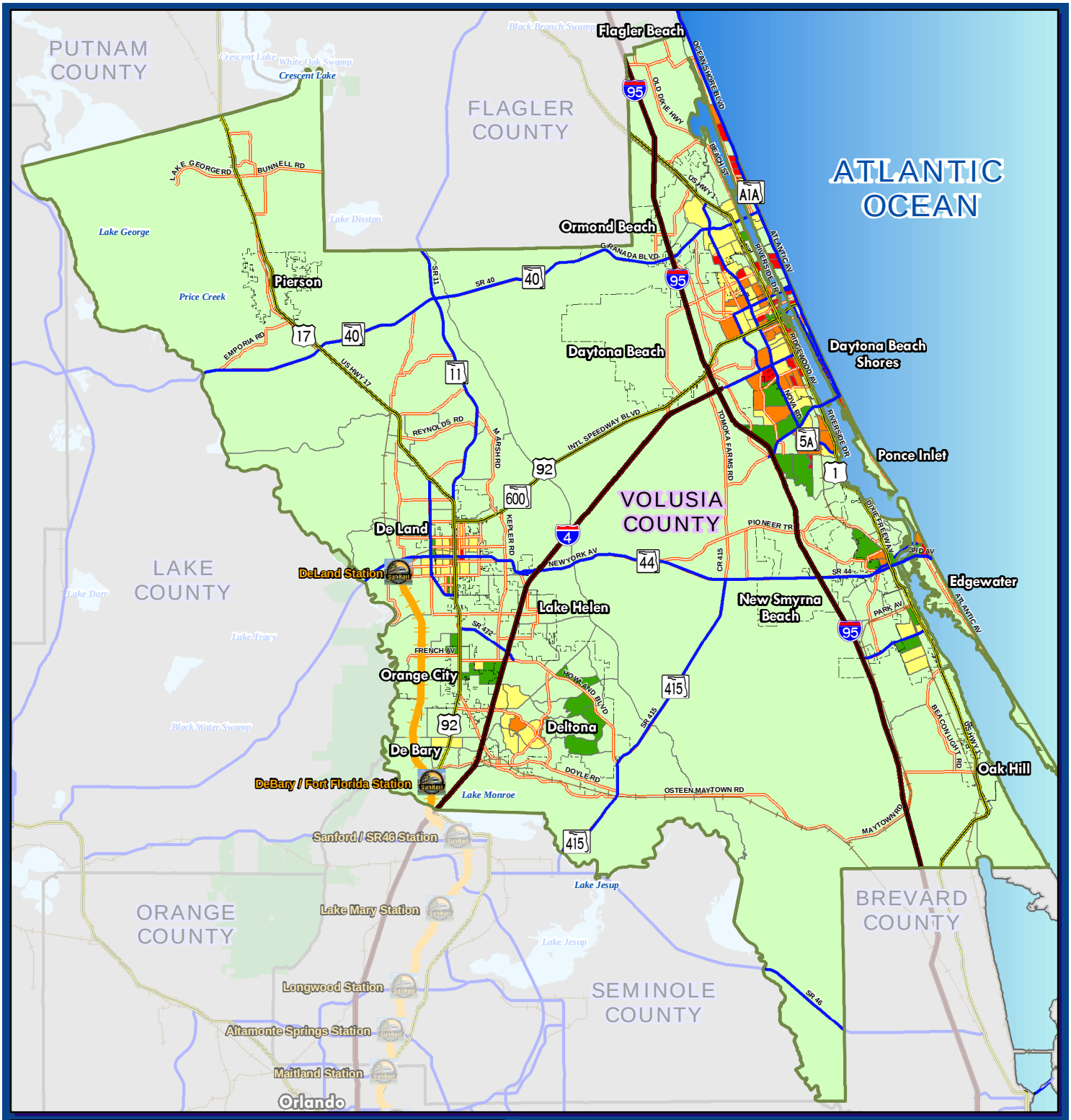


LEGEND

Transit Potential Index*

- Bus Rapid Transit / Light Rail Transit
- Fixed
- Flexible and Fixed
- Demand Response Flexible / Fixed
- Demand Response Flexible

*NOTE:

Important indicators of the potential for transit to be effective include population density and employment density. The Transit Cooperative Research Program Transit Capacity and Quality of Service Manual provides guidelines about the appropriate type of transit based on density. To create the Transit Potential index, employment density and residential densities were combined. The higher the score, the more sustainable regularly scheduled service can be.

Planned SunRail Commuter Rail

- SunRail Commuter Rail Station
- SunRail Commuter Rail

Transportation Network

- Interstate Highway
- U.S. Highway
- State Route
- Other Highway
- Other Railroad

Other Layers

- Study Area
- Other Counties
- Parks
- City Limits

Volusia County MPO Transit Corridor Feasibility Study

Figure 3 - Transit Potential Index

Prepared for: FDOT, Volusia County MPO Transportation Planning

Prepared by: TranSystems

Source: FDOT, Volusia County MPO, Volusia County, and TranSystems

N

0 2.5 5 Miles

TABLE 4: VOLUSIA COUNTY FEDERALLY LISTED SPECIES

Category	Species Common Name	Code[1]
Mammals	West Indian Manatee	E/CH
Birds	Everglade Snail Kite	E
	Piping Plover	T
	Florida Scrub-Jay	T
	Wood Stark	E
	Red-cockaded Woodpecker	E
Reptiles	Eastern Indigo Snake	T
	Green Sea Turtle	E
	Hawksbill Sea Turtle	E
	Leatherback Sea Turtle	E
	Kemp's Ridley Sea Turtle	E
	Loggerhead Sea Turtle	T
	Atlantic Salt Marsh Snake	T
Plants	Rugel's Pawpaw	E
	Okeechobee gourd	E

Environmental conditions were analyzed for each transit corridor proposed to determine which corridors had more environmentally sensitive lands that could potentially be impacted. The results of this analysis are presented later in this report on a corridor level basis. A more detailed environmental assessment would need to be conducted as the study progresses.

[1] E=Endangered, T=Threatened, CH=Critical Habitat; Source: U.S. Fish& Wildlife Service, North Florida Field Office

2.1 Volusia County MPO Meetings

The project team met throughout the study with representatives from the Volusia County Metropolitan Planning Organization (MPO). The project was kicked off at a Volusia County MPO Long Range Transportation Plan (LRTP) Workshop on October 15, 2008. At the workshop, the project team discussed the purpose and scope of the study and presented the transit modes that would be studied. The meeting attendees, consisting of MPO Board and committee members, were then asked to identify potential corridors that would be appropriate for transit. On November 18, 2008, the project team presented the information developed to date on the project to members of the MPO Citizen Advisory Committee and the Transportation Coordinating Committee. On November 25, 2008, the same information was presented to the MPO Board of Directors. The information included a review of the corridors being studied, a discussion on characteristics of the various transit modes, the evaluation rating to be used to evaluate each of the corridors, a preliminary review of potential modes by corridor, and a review of the Federal Transit Authority (FTA) guidelines of the Alternatives Analysis (AA) process.

The findings of the study were then presented to the MPO Citizen Advisory Committee and the Transportation Coordinating Commission on January 20, 2009 and the MPO Board on January 27, 2009.

2.2 Stakeholder Interviews

66 stakeholders were interviewed to assess transit types, needs, priorities, motivations, corridors, popular support, and current or past projects or studies. The stakeholders consisted of members of the Volusia County MPO Transportation Coordinating Committee, Citizen Advisory Committee, Board and support staff consisting of city managers, city clerks, and planning directors for local and county governments.

The following key points were made:

- Stakeholders and the community have expressed a need for varying degrees of bus and rail service to support the proposed commuter rail line (SunRail) and to provide transit within Volusia County. The need for transit was identified as follows, in order of priority: future growth in county and related congestion, work commuters, event goers, tourists, shoppers, travelers, and evacuees.
- Accommodating growth was expressed by many as a concern that needed immediate attention.
- Stakeholders felt addressing transit needs will alleviate congestion, decrease travel times, and allow easier access to destinations\attractions - within and outside Volusia County.
- Needs focused around East/West connectivity. Concerns for North/South connectivity were primarily for the eastern portion of the county (east of I-95). North\South connectivity and other circulators were discussed as a way to alleviate various local and county-wide congestion issues.
- Corridors discussed included: I-4, FEC Railroad Connector, US 92, SR 44, SR 415, SR 40, SR 44, Saxon/Maytown Rd, US 17-92, Williamson Boulevard, US 1, A1A, and the Edgewater to SR 417 connector. The SR 417 connector is a controversial corridor. The controversy is regarding environmentally sensitive land west of Edgewater and the cost involved with seven to nine miles of bridging over environmentally sensitive land. Most would accept the SR 417 connector corridor assuming that the corridor was structured in such a way that wouldn't allow development. Most thought I-4 was the most feasible corridor. A few didn't want to see I-4 as the preferred corridor as it would promote further development along I-4.
- Discussions suggested that providing a "spine" of bus or rail transit for East\West connectivity and connecting to the planned commuter rail line (SunRail) should be the priority. Providing bus transit solutions for circulators, North/South connectors, and other East\West connectors would be the next priorities.

- Most saw the Daytona to DeLand corridor as a priority. This is assuming that the commuter rail connector from DeBary to DeLand was constructed. The commuter rail connector from DeBary to DeLand has support.
- One stakeholder suggested that rail should connect the large regional/international airports(Sanford, Orlando, Daytona) as the spine of the regional transit system.
- Common regional destinations include: Orlando area attractions, the Ocean Center, Daytona Beach Speedway, Daytona Beach International Airport, and the beaches. Common commuter destinations include Orange\Seminole counties, West Volusia, and East Volusia.
- Many stakeholders thought Volusia County's transit requirements are dependent on people's motivation to use transit. The motivators vary. Economics were listed by some. Many hoped that the use of transit would make trips to attractions easier and faster. Others thought that rail would allow commuters better use of their time and a more enjoyable experience while traveling. There is a belief that VOTRAN needs more accommodations and amenities on their vehicles (e.g. Wi-Fi, television) to attract more riders. There is also a belief that rail is more appealing and will attract more riders. Some thought that educating and informing the public was necessary for both bus and rail. Others thought that congestion, travel times, and high fuel prices are key motivators.
- Popular support centered around different types of bus service for connectivity locally, within the county and to support commuter rail. VOTRAN's Volusia to Orlando express bus service (along I-4) has experienced very strong ridership. VOTRAN and a few others suggested that bus ridership should dictate whether a rail line is substantiated. Others believe that rail would attract more riders and need not be preceded by a bus line. In other words, rail would create its own demand. A small portion suggested pedestrian, bike, and intermodal options were needed.
- Many stated that trolleys have popular support for local service.
- Stakeholders stated that funding for future transit must first be addressed. VOTRAN saw funding problems due to high fuel prices even though ridership had increased. Many believe funding should be justified by demand. Some suggested scalability must be built into transit solutions to ensure efficient fund use.
- Past studies discussed include a 1988-90 VOTRAN E/W Transit Study which concluded that trips did not support a route east/west but that DeLand to Orlando was a feasible route. Current and future studies/projects within the county include:

    1. A circulator feasibility study for Daytona Beach
    2. A southwest transportation study
    3. Orange City transit initiatives for local attractors (Private)
    4. Evaluating or incorporating transit guidelines
    5. DeLand multimodal transit district
    6. HOV/Hot Lanes (FDOT)
    7. Light Rail in I-4 Corridor (FDOT)
    8. VOTRAN East side comprehensive operating analysis
    9. VOTRAN evaluating frequencies along US 1 International Speedway Boulevard and beachside
    10. A large DRI in Edgewater west of I-95
    11. VOTRAN bus transfer station on Thompson Creek (Design phase)
    12. TSM/TDM for Port Orange Town Center

Chapter 3 – Potential Transit Corridors

The following transit corridors were developed based on public input at the Volusia County MPO meeting on October 15, 2008. The corridors were categorized as North/South corridors, East/West corridors, and local circulators. The North/South and East/West corridors are considered to be cross-county corridors that target a different market than the local circulators. The cross-county corridors are expected to serve more of an employment based trip allowing travel between cities and across the county to major employment destinations. The local circulators would most likely serve a variety of trip types including trips for medical, recreational, education, employment and shopping/retail purposes. Local circulators would also provide connections to other transit services to travel beyond the immediate area.

The following describes each of the suggested transit corridors. They are shown on Figures 4, 5 and 6.

3.1 North-South Cross-County Corridors

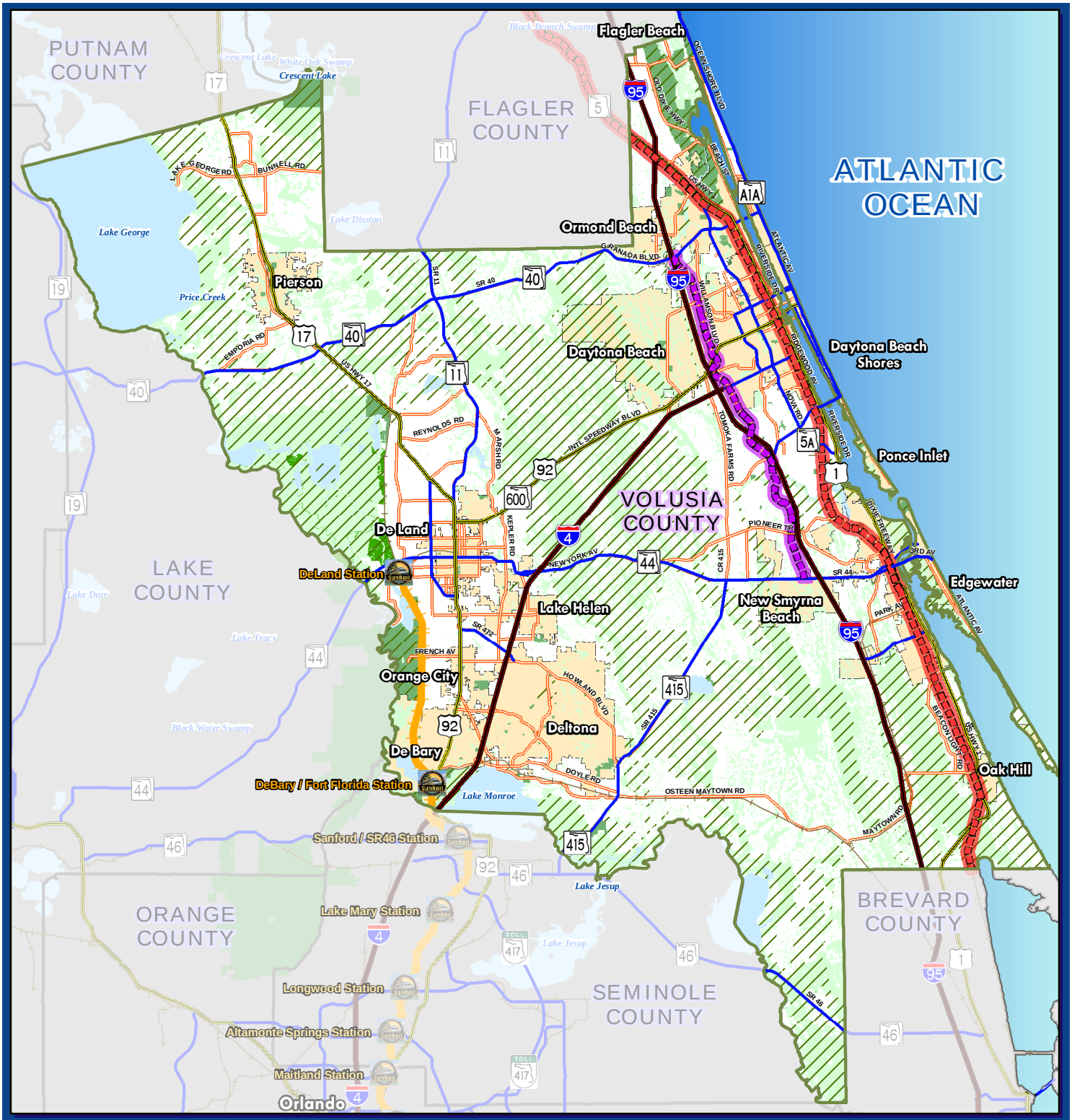
Two North-South corridors were proposed for evaluation as follows:

- Florida East Coast (FEC) Railroad Corridor: This corridor is within an existing railroad corridor that serves freight traffic. The corridor extends the entire length of Volusia County on the east side of the County. It extends through the communities of Ormond Beach, Holly Hill, Daytona Beach, South Daytona, Port Orange, New Smyrna Beach, Edgewater, and Oak Hill.
- Williamson Boulevard Corridor: This corridor is along the existing Williamson Boulevard roadway, extending from SR 44 on the south to SR 40 to the north. It is parallel to Interstate 95. The corridor extends through the communities of Daytona Beach and New Smyrna Beach on the east side of the county. Not all of the roadway infrastructure is in place near the southern limits.

3.2 East-West Cross-County Corridors

Six East-West corridors were proposed for evaluation as follows:

- State Road (SR) 40 Corridor: The SR40 corridor extends from SR 5 on the east coast to US 17 in western Volusia, passing through the community of Ormond Beach.
- US 92 Corridor: The corridor extends along US 92 between US 1 on the east coast and the proposed SunRail commuter rail station in the City of DeLand in western Volusia County. The corridor passes through the communities of Daytona Beach and DeLand.
- Interstate 4 (I-4) Corridor: The I-4 corridor extends from Daytona Beach southwest to the City of DeBary at the county limits. It travels through the communities of Daytona Beach, Lake Helen, DeLand, Orange City, Deltona, and DeBary.
- State Road (SR) 44 Corridor: The SR 44 corridor provides a connection between New Smyrna Beach on the east coast and the proposed DeLand commuter rail station in the City of DeLand in western Volusia County. The corridor passes through the cities of New Smyrna Beach and DeLand.
- SR 412 to SR 442 Corridor: This is a corridor which does not follow any existing roadway or rail right-of-way. It provides a corridor connection between two state roads, through mainly unincorporated and undeveloped areas of the county. It serves the City of Edgewater located on the east coast.
- Saxon Boulevard/Maytown Road Connection: This corridor provides a connection between the cities of Oak Hill and the DeBary, and serves the proposed DeBary commuter rail station. The corridor is located on some existing roadway right-of-way between the two cities.



LEGEND

Potential Transit Corridors (North-South Connections)

- FEC Railroad Connector
- Williamson Blvd. Connector

Planned SunRail Commuter Rail

- SunRail Commuter Rail Station
- SunRail Commuter Rail

Environmental Layers

- SJRWMD Wetlands
- Environmental Core Overlay

Transportation Network

- Interstate Highway
- U.S. Highway
- State Route
- Other Highway
- Other Railroad

Other Layers

- Study Area
- Other Counties
- Parks
- City Limits

Volusia County MPO Transit Corridor Feasibility Study

Figure 4 - Potential Transit Corridors North - South Connections

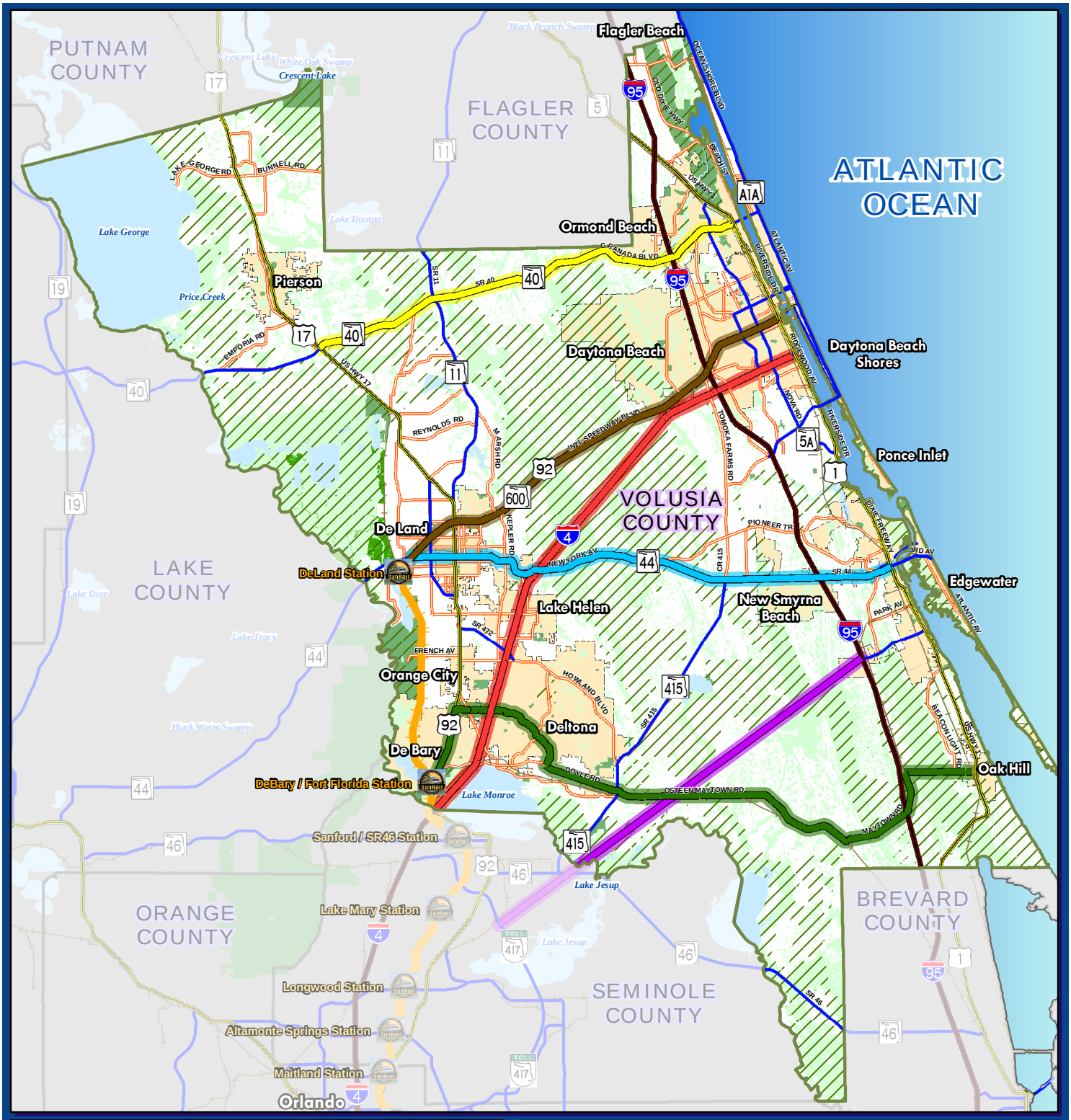
Prepared for: FDOT, Volusia County MPO

Prepared by: TranSystems

Source: FDOT, Volusia County MPO, Volusia County, and TranSystems

N

0 2.5 5 Miles



LEGEND

Potential Transit Corridors (East-West Connections)

- Connection of DeLand Station to East Coast via US 92
- I-4 Connection (Median Dedicated)
- SR 40 Connector
- Saxon Blvd / Maytown Rd Connection
- SR 44 Connection
- SR 417 to SR 442 Connection

Planned SunRail Commuter Rail

- SunRail Commuter Rail Station
- SunRail Commuter Rail

Environmental Layers

- SJRWMD Wetlands
- Environmental Core Overlay

Transportation Network

- Interstate Highway
- U.S. Highway
- State Route
- Other Highway
- Other Railroad

Other Layers

- Study Area
- Other Counties
- Parks
- City Limits

Volusia County MPO Transit Corridor Feasibility Study

Figure 5 - Potential Transit Corridors East - West Connections

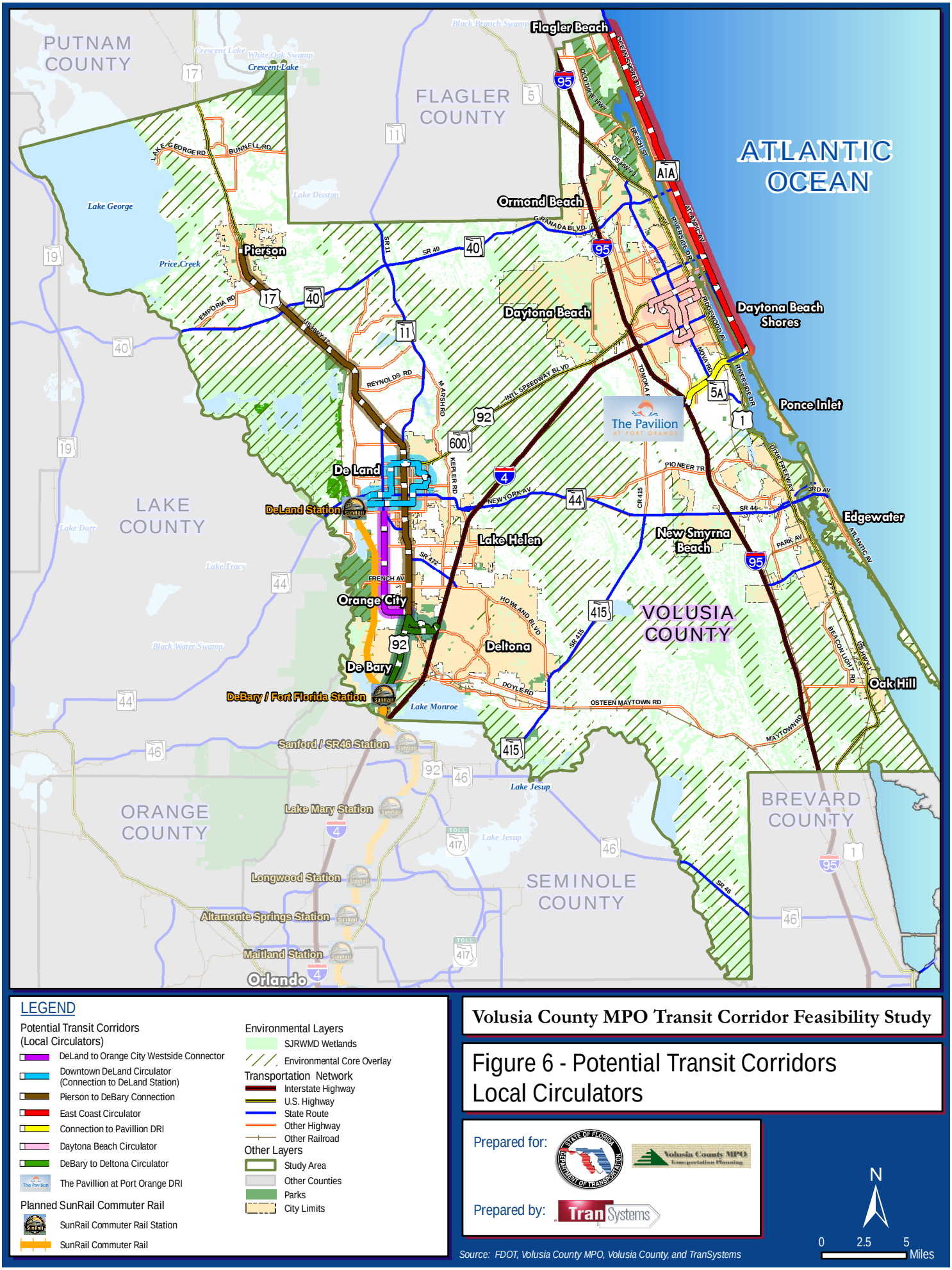
Prepared for: FDOT, Volusia County MPO

Prepared by: TranSystems

Source: FDOT, Volusia County MPO, Volusia County, and TranSystems

N

0 2.5 5 Miles



LEGEND

Potential Transit Corridors (Local Circulators)

- DeLand to Orange City Westside Connector
- Downtown DeLand Circulator (Connection to DeLand Station)
- Pierson to DeBary Connection
- East Coast Circulator
- Connection to Pavillion DRI
- Daytona Beach Circulator
- DeBary to Deltona Circulator
- The Pavillion at Port Orange DRI

Planned SunRail Commuter Rail

- SunRail Commuter Rail Station
- SunRail Commuter Rail

Environmental Layers

- SJRWMD Wetlands
- Environmental Core Overlay

Transportation Network

- Interstate Highway
- U.S. Highway
- State Route
- Other Highway
- Other Railroad

Other Layers

- Study Area
- Other Counties
- Parks
- City Limits

Volusia County MPO Transit Corridor Feasibility Study

Figure 6 - Potential Transit Corridors Local Circulators

Prepared for: FDOT, Volusia County MPO

Prepared by: TranSystems

N

0 2.5 5 Miles

Source: FDOT, Volusia County MPO, Volusia County, and TranSystems

3.3. Local Circulators

Seven local circulators were originally proposed for this study. They are as follows:

- East Coast Circulator
  The East Coast Circulator would provide a transit connection along the peninsula serving Ponce Inlet, Daytona Beach Shores, Daytona Beach, and Ormond Beach. It would provide a connection up to Flagler Beach at the northern border of the county.
- Daytona Beach Circulator
  The Daytona Beach Circulator would provide a circulator connection within the City of Daytona Beach serving a variety of destinations including the Daytona Beach International Airport and the International Speedway.
- Connection to The Pavilion at Port Orange DRI Circulator
  This circulator would allow a connection between US 1 and I-95 via Dunlawton Avenue. It would provide a connection between the eastern edge of Port Orange and the Pavilion at Port Orange. The Pavilion at Port Orange is a regional shopping center currently under development and located off of Williamson Boulevard.
- Pierson to DeBary Connection Circulator
  This circulator would connect the rural community of Pierson with the City of DeBary. The transit connection would be via US 17 and US 92 and provide circulation through the cities of DeLand, Orange City and DeBary.
- Downtown DeLand Circulator
  This circulator would allow travel on the local streets of the City of DeLand with a connection to the proposed commuter rail station.
- DeLand To Orange City
  This circulator would provide a connection between the City of DeLand and Orange City, operating on local streets.
- DeBary to Deltona Circulator
  The DeBary to Deltona Circulator would allow circulation between the two cities. It would operate on local streets. It would provide a connection to the proposed DeBary commuter rail station.

Each of these corridors were evaluated with the Screen One analysis as described in Chapter 5 to determine which transit corridors should proceed to Screen Two. The objective of Screen Two is to analyze those corridors that best meet the transit needs of the County and have the most potential for future funding opportunities through the FTA. The results of the screening analysis are shown in Chapter 5.

4.1 Rail and Bus Modes Considered

The project team identified five mode alternatives for initial consideration. The modes are both bus and rail alternatives as follows:

- Commuter Rail
- Light Rail Transit (LRT)
- Bus Rapid Transit (BRT)
- Arterial Rapid Transit (ART)
- Streetcar

Each of these modes has distinct characteristics. This report includes a definition of each mode as follows.

Commuter Rail

Commuter rail service is focused on shorter distance trips, typically with a cruise speed of 70 m.p.h., and stations spaced 3 to 5 miles apart. Diesel locomotives hauling unpowered coaches are the most common form of equipment used on commuter rail systems. Diesel multiple unit (DMU) cars can also be used, particularly if there are shorter distances. In a few major U.S. cities (and very commonly overseas) commuter rail systems use Electric Multiple Unit (EMU) cars or trains hauled by electric locomotives. Most U.S. commuter rail systems use equipment designed for operation on routes with mixed conventional freight and passenger service; such trains are considered as "Federal Railroad Administration (FRA) compliant".

Diesel Commuter Rail Demonstration Vehicle


LRT at a Typical Station, Minneapolis, MN

Light Rail Transit (LRT)

This is a very flexible mode that is sometimes operated in dedicated rights-of-way (tunnels, elevated structures, at-grade), but often operates in dedicated corridor on city streets. Stations may be spaced as close as a half-mile apart in urban areas but may be two miles or more apart in suburban areas. Cars can be coupled together to form short trains. Trains are normally operated by one person. Proof of Payment (POP) fare collection is universally used on the most systems. Trains are almost always powered by electricity, from overhead power wires, so they can be very easily connected to power grids and used for transportation.

Bus Rapid Transit (BRT)

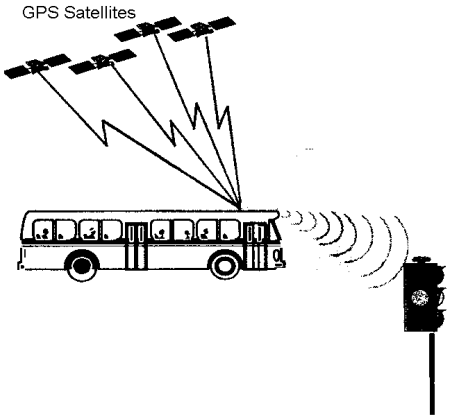
Similar to a LRT system, a Bus Rapid Transit (BRT) system operates on a dedicated "transit-way". Transit-ways can be designed for conventionally steered buses or for Curb Guided Bus (CGB) operation. This latter option allows buses to operate at high speed in a right-of-way barely wider than the bus itself. BRT buses are usually more highly styled than standard buses. Construction costs for a BRT system are lower than a LRT system, particularly due to the lack of overhead power supply. Also, a big advantage compared to LRT is the ability for buses to divert from the dedicated alignment to regular roadways or streets.

Orange Line BRT at Typical Station, Los Angeles, CA

Arterial Rapid Transit (ART)

ART is a variation of BRT, the difference being that it operates on streets, not on dedicated right-of-way. This greatly reduces construction costs, but removes the advantage of being immune from traffic congestion. To partially achieve this goal ART corridors and buses can be equipped with Transit Signal Priority (TSP) equipment allowing them to travel through intersections quickly.

Curb Guided Bus (notice the front guide-wheels), England



Streetcar

Streetcar technology is very similar to LRT in that it operates on a fixed-guideway and both have frequent and regular stations.. However, significant portions of their routes operate in mixed traffic lanes; thus, speeds are lower. Vehicles operate in single units and they are not equipped with couplers for operation with trains. Stops (not stations) are usually spaced approximately a quarter mile apart. Streetcars can be built using either contemporary-styled bodies or as replicas of early 20th century streetcars.

Replica Streetcar
Tampa, FL

4.2 Rail and Bus Modes Not Considered

The following details the rail and bus modes not considered.

High Speed Rail: High speed rail is most appropriate for lengthy regional or cross-country travel. It uses an exclusive right-of-way allowing it to travel up to speeds of 200+ miles per hours. High speed rail would not serve the trip purpose for travel within Volusia County and is not considered for this study.

Incremental High Speed Rail: Incremental high speed rail is characteristic of intercity travel with station spacing of 25 miles minimum. Subsequently, incremental high speed rail is not appropriate for travel within Volusia County. However, the capability of "through routing" or interfacing a commuter rail system with an incremental high speed rail longer as proposed within Florida is appropriate. These routes consist of the Inland Route, which would connect Orlando, Tampa and Miami using the CSX line as its base (with a stop in DeLand) and the Coastal Route using the FEC Railroad (with a stop in Daytona Beach). To support projects such as these, legislation was recently signed (October 16, 2008) authorizing the first federal program providing 80% funding to match state money for intercity passenger rail projects.

Modern Streetcar with Typical Streetcar Station
Portland, OR

High Speed Rail Line (unknown location)

Metro System: A metro system, also called rapid transit or a subway system is typically found in dense urban areas. A metro system has a dedicated guideway either above ground or below ground, and is costly to build. The high cost of constructing a Metro system to serve the expected volume of trips that would be made within Volusia County makes it cost prohibitive to construct.

Automated People Mover (APM): An APM system is typically found in tourist areas, airports (such as the Orlando International Airport), or in central business districts (such as Jacksonville) in dense urban centers. It is constructed on an elevated structure and the vehicles are unmanned. The APM service makes frequent stops. Due to the high cost of construction and inappropriate land use characteristics in Volusia County, an APM system is not recommended for study.

Express Bus: Express buses typically travel between park and ride lots and major employment centers. They do not meet the focus of the study which is travel within the county, serving multiple destinations. They also operate in regional mixed traffic so congestion is a concern and conflict.

Fixed Route Bus: Fixed route bus is traditional bus service with closely-spaced stops. It usually serves medium to high-density corridors and carries short to medium length trips. VOTRAN currently operates fixed route bus service throughout the County. Although fixed route bus could apply to many of the proposed corridors, the focus of the study was to determine if "rapid" transit modes could better serve long distance corridors instead.

Dial-a-Ride Service: Dial-a-ride services typically are available in rural areas or serve a small market sector such as an elderly population traveling for medical needs. This mode does not meet the objective of this study and is not considered.

Metro System Vehicle (unknown location)

Automated People Mover (unknown location)

Dial-a-Ride Service (unknown location)

Chapter 5 – Evaluation of Proposed Transit Corridors

5.1 Evaluation Criteria

This chapter describes the evaluation framework that was used to conduct the two-step (screen 1 and 2) alternatives screening for the Volusia County alternatives. The evaluation approach presented here is based on the study team's current understanding of the study area conditions, including population, employment statistics, and land use. The evaluation criteria are based on the Federal Transit Administration's (FTA) planning and project development process for New Starts funding. Projects eligible for New Starts include any fixed guideway system which utilizes and occupies a separate right-of-way or rail line for the exclusive use of mass transportation and other high-occupancy vehicles. This includes, but is not limited to, rapid transit, light rail, commuter rail, automated guideway transit, people movers, and exclusive facilities for buses and other high-occupancy vehicles.

These evaluation criteria allows for the benefits and impacts of each alternative to be evaluated with an objective set of criteria that relate to the specific needs of this project. As the evaluation progresses, through a comparison of the performance of the alternatives with respect to these criteria, the most suitable, efficient transit corridors options will emerge for detailed analysis in future studies.

The project justification was developed through SAFETEA-LU (The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users) legislation for New Starts funding. SAFETU-Lu requires that projects be based on several criteria including:

- Mobility Improvements
- Cost Effectiveness
- Transit Supportive Land Use Policies and Future Patterns
- Environmental Benefits

The following describes each of the above justification categories and the measures of effectiveness (MOE) that have been established for each. A MOE is a quantitative measure that gives some insight into how effectively a "unit" (in this case, a "corridor") is performing.

A. Mobility Improvements

The following MOEs for mobility improvements will be used to quantify the performance of each corridor:

Transit System Usage

The ridership potential and the convenience of trips are two of the factors that are analyzed. If the corridor can support a mode choice that can serve a greater number of riders, and the ability of this corridor to support more frequent, efficient and "one-seat" rides will be analyzed.

Accessibility

Accessibility assesses the ability of the proposed corridor to support intermodal opportunities to locations outside of the county. Connections with existing and proposed transit alternatives will be determined.

Environmental Justice
Environmental justice is a holistic effort to analyze the potential impacts a project may have on groups considered minority or disadvantaged. Environmental injustice occurs when an undue portion of negative impacts of a project are borne by minority and low income populations. Environmental justice occurs when there is a fair share of positive impacts received by minority and low-income populations. For purposes of this evaluation, it is assumed that a corridor is more favorable if it serves more minority and low-income populations.

Transit Dependent Riders
Transit dependent riders are generally considered elderly, disabled and low-income people who do not have regular access to personal automobiles. Census statistics are used to determine the corridors that have the ability to serve the higher percentage of transit dependent riders.

B. Cost Effectiveness

The following MOEs for cost effectiveness will be used to quantify the performance of each corridor:

Capital Cost Estimates
Grand scale capital cost estimates that include rolling stock and infrastructure estimates will be provided for comparison purposes.

Operating Cost Estimates
Estimated annual operating costs will be used for analysis purposes.

C. Transit Supportive Land Use and Future Patterns

The following MOEs for transit supportive land use and future patterns will be used to quantify the performance of each corridor:

Land Use
Transit supportive land use can maximize access to transit. By encouraging a certain type of site and urban design characteristics, the number of single occupant vehicle trips can be reduced and there will be more dependency on transit. Public policies such as comprehensive plans, land use maps, zoning maps and county-wide plans were reviewed to determine the corridor that best supports transit oriented development and economic development opportunities. Whether there is a sense of permanency of the transit infrastructure could also lend support for one corridor and mode choice over another.

Neighborhood and Community
The proposed transit corridors were analyzed to determine how well they enhance the connections between neighborhoods and communities.

Population and Employment Centers
Population and employment characteristics of the proposed corridors were analyzed to determine the corridors that serve the greatest population and employment centers. Travel data was used to analyze these corridors.

D. Environmental Benefits

The following MOE for environmental benefits will be used to quantify the performance of each corridor:

Natural and Built Environments
Data was collected and mapped within 500 feet of the proposed corridors to determine the presence of natural and built environments. Included as part of the measures of effectiveness for this category were wetland impacts,

presence of natural areas, impacts on threatened and endangered species, parklands, and floodplains. If there was a presence of an environmental feature within 500' of the corridor it was considered a negative impact.

E. Summary

The proposed evaluation methodology for the Volusia County transit corridor alternatives is a two-step (Screen 1 and 2) process in which all alternatives are run through a minimum number of MOEs with the resulting alternatives identified as the best potential transportation investments proceeding to step two. As the screening progresses to Screen 2, the full list of the MOEs will be applied to the remaining alternatives. The evaluation process will be both *quantitative* and *qualitative*. To the extent possible, quantitative measures will be used. For most qualitative measures, performance for a given alternative will be rated high, medium, or low or substantial effect likely, moderate effect likely, effects not likely based on information about the presence or absence of a given resource.

Table 5 presents the evaluation framework. The first column is the evaluation criteria, the second is the MOE, the third column contains the evaluation factors that are applied, and the fourth column reflects the analysis measures. The next two columns indicate the MOEs applied in the first screen and the second screen.

TABLE 5: EVALUATION SCREENING PROCESS

Criteria	Measures of Effectiveness (MOE)	Evaluation Factors	Analysis Measures	Screen One	Screen Two
Mobility Improvements	Transit System Usage	Ridership	Estimated ridership		x
		Convenience of Trip	Frequency		x
	Accessibility	Intermodal Connection Opportunities	Number of other transit mode connections		x
			Ability for through routing		x
	Environmental Justice	Effect on Low-income or Minority Populations	Presence of low-income residents		x
			Presence of minority residents		x
	Transit Dependent Riders	Automobile Ownership	Percent of households without vehicles		x
Cost Effectiveness	Costs	Order of Magnitude Capital Costs	Costs of infrastructure and rolling stock		x
		Order of Magnitude Operating Costs	Costs of operating and maintenance		x
Transit Supportive Land Use and Future Patterns	Land Use	Consistency with existing land use	Existing land use	x	x
		Extent to which station area can be developed for TOD	Proposed/future land use	x	x
	Neighborhoods and Community	Increased accessibility	Connectivity between neighborhoods	x	x
	Population & Employment	Travel markets served	Population & employment centers served	x	x
Environmental Benefits	Natural and Built Environments	Wetland impacts	Presence of wetlands within corridor		x
		Natural area impacts	Presence of natural areas acreage within corridor		x
		Threatened and endangered species impacts	Presence of threatened and endangered species in corridor		x
		Historic and archeological resource impacts	Presence of historic and archeological resources in corridor		x
		Parks	Presence of parks		x

5.2 Screen One Analysis

The intent of the Screen One evaluation is to compare the relative performance of a large number of transit alternatives using a small number of criteria. This level of analysis is intended to weed out the alternatives that would be considered to be the least suitable transportation options. Note that the corridors are evaluated against each other by "type"; county-wide corridors are evaluated against county-wide corridors and local circulators are evaluated against other local circulators.

At this stage, all reasonable transit technologies or modes have been identified. Technologies are assessed primarily on their suitability to the proposed corridor being analyzed. Similarly, all reasonable alignments within the study area are identified. Alignments were identified to make the best possible use of existing transportation infrastructure.

As shown in Table 5, three of the MOEs were determined to carry a greater factor in determining which alternatives will move to the Screen Two level screening analysis. The three measures to determine which alternatives are to progress to Screen Two are as follows: land use, neighborhoods and community, and population and employment. Population and employment and land use densities are the driving forces behind successful transit system corridors. Fixed route transit cannot exist without the ridership support that is associated with denser and more varied land uses.

For both the first and second level screening, general conclusions of the alternatives' ability to address the evaluation measures are typically used. The following symbols indicating relative effectiveness in addressing evaluation measures are used to present the evaluation.

- ● This symbol indicates that an alternative fully addresses the measure, or is the best relative to the consideration.
- ◒ This symbol indicates that an alternative somewhat or partially addresses the measure. The alternative is acceptable, but not preferred relative to the consideration.
- ○ This symbol indicates that an alternative fails to address the measure. The alternative is not acceptable relative to the consideration.

Population and Employment:

For this measure, two types of data was used: the amount of population within three miles of the cross-county corridors and one mile within the local circulators, and the amount of employment within three miles of the cross-county corridors and one mile within the local circulators. It is assumed that the longer corridors would draw from a larger area where the rider would be driving to the station; therefore a three mile radius was used. For the local circulators, it was assumed that they would attract a population within walking distance, so a one-mile radius was used. The population and employment data was obtained from U.S. Census Bureau data. Each corridor was then ranked within their respective categories (i.e. cross-county versus local circulator).

By virtue of the total ranking number they received, the alternatives fell into three groups. The alternatives with the highest population and employment in the corridor received a ● on the screening matrix. The alternatives with a medium amount of population and employment in the corridor received a ◒. Those alternatives with the least amount of population and employment received a ○. Figures 7 and 8 show the potential transit corridors overlaid onto the 2005 population and employment densities by traffic analysis zones (TAZ).

Land Use:

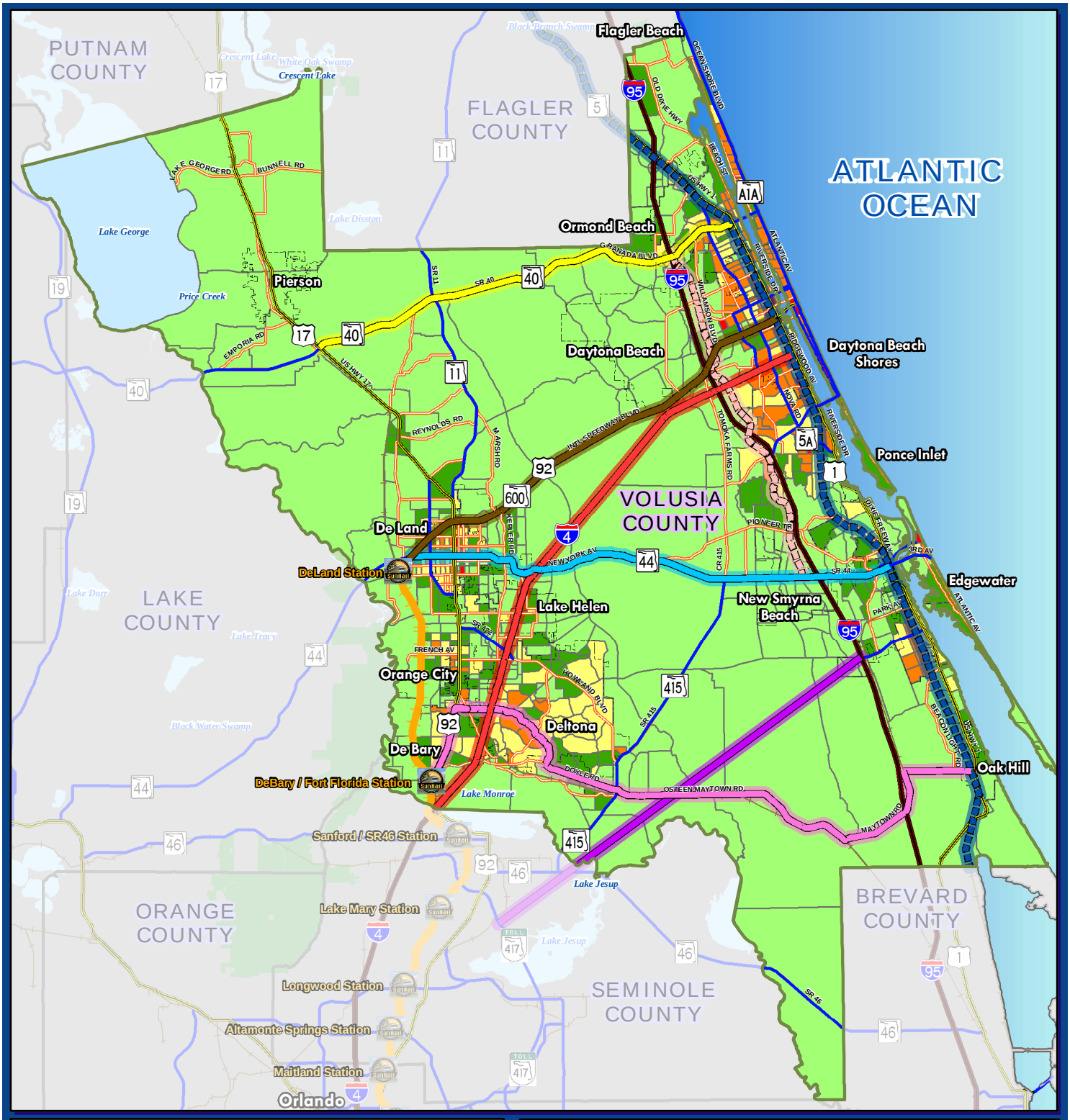
Consistency with Existing Land Use

Existing land use maps provided by the municipalities in the study area were reviewed. If an existing land use map was not available, aerial maps were utilized. A qualitative assessment was made for each alternative to determine if the existing land use was supportive of transit. Land use that is supportive of traditional transit is dense, compact,

and contains a mix of uses including commercial, residential, office, recreational, and government. The alternatives were then given a ● ◒ or ○ depending if the existing land use patterns surrounding the alternatives were very supportive, somewhat supportive or minimally supportive.

Consistency with Future Land Use Plans

Locally adopted future land use plans were collected from each of the communities and counties in the study area. The plans were reviewed to assess whether the alternative met the intent of the future land use and transportation goals as stated in the plans, and a qualitative assessment was made. For those alternatives that best meet the future land use goals, a ● was assigned. Those alternatives that didn't endorse the future land use plans to the same degree were assigned a ◒. Those alternatives which contradicted the identified goals in the future land use plans were assigned a ○.



LEGEND

2005 Population Density (Persons per Acre) by TAZ

- > 10.0
- 5.1 - 10.0
- 3.1- 5.0
- 1.1 - 3.0
- < = 1.0

Potential Transit Corridors

- Connection of DeLand CRS to East Coast via US 92
- I-4 Connection (Median Dedicated)
- SR 40 Connector
- Saxon Blvd / Maytown Rd Connection
- SR 44 Connection
- SR 417 to SR 442 Connection
- FEC Railroad Connector
- Williamson Blvd. Connector

Planned SunRail Commuter Rail

- SunRail Commuter Rail Station
- SunRail Commuter Rail

Transportation Network

- Interstate Highway
- U.S. Highway
- State Route
- Other Highway
- Railroad

Other Layers

- Study Area
- Other Counties
- City Limits
- Parks

Volusia County MPO Transit Corridor Feasibility Study

Figure 7 - 2005 Population Density and Potential Transit Corridors

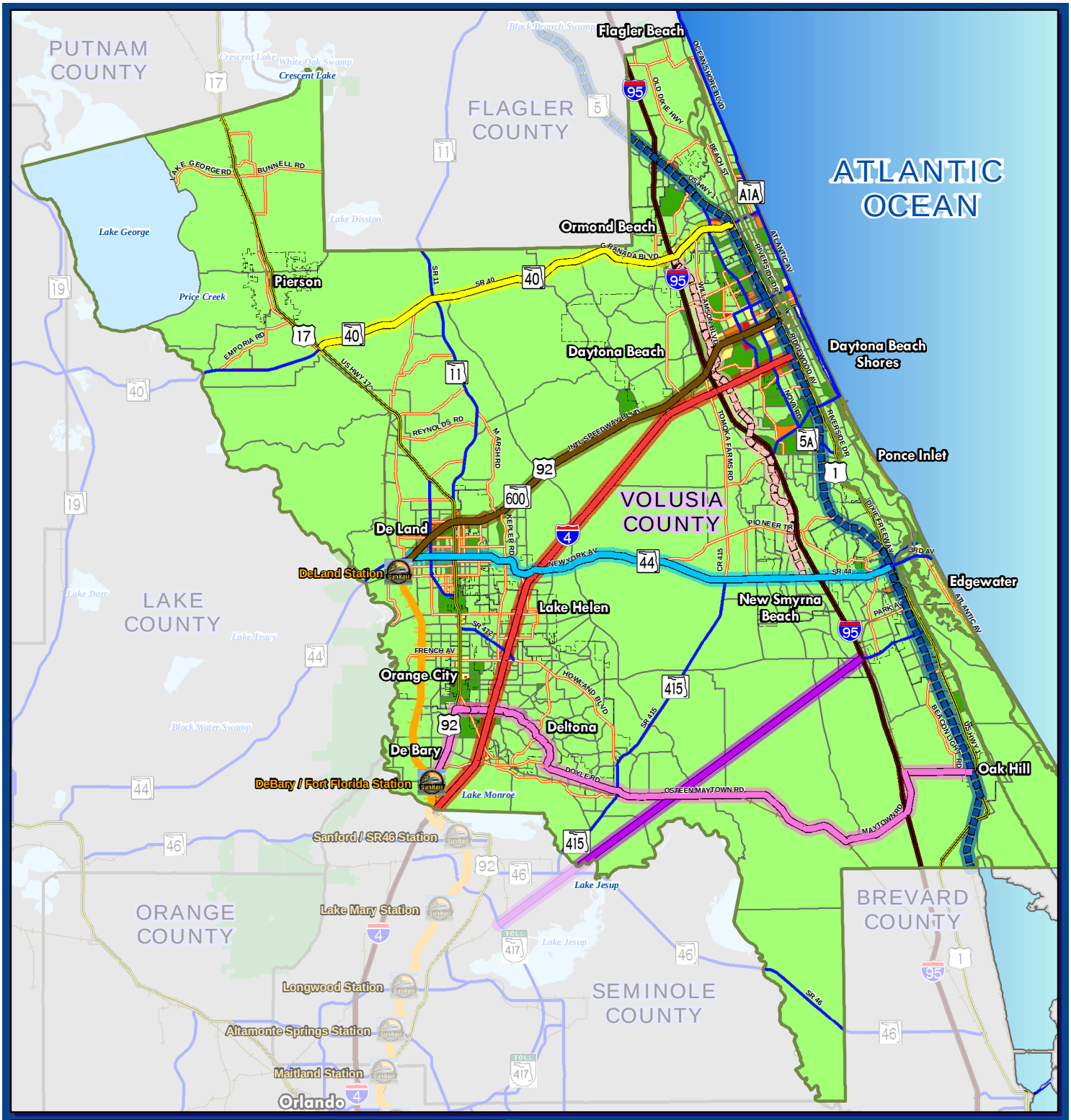
Prepared for: FDOT, Volusia County MPO Transportation Planning

Prepared by: TranSystems

Source: FDOT, Volusia County MPO, Volusia County, and TranSystems

N

0 2.5 5 Miles



LEGEND

2005 Employment Density (Persons per Acre) by TAZ

- > 10.0
- 5.1 - 10.0
- 3.1- 5.0
- 1.1 - 3.0
- < = 1.0

Potential Transit Corridors

- Connection of DeLand CRS to East Coast via US 92
- I-4 Connection (Median Dedicated)
- SR 40 Connector
- Saxon Blvd / Maytown Rd Connection
- SR 44 Connection
- SR 417 to SR 442 Connection
- FEC Railroad Connector
- Williamson Blvd. Connector

Planned SunRail Commuter Rail

- SunRail Commuter Rail Station
- SunRail Commuter Rail

Transportation Network

- Interstate Highway
- U.S. Highway
- State Route
- Other Highway
- Railroad

Other Layers

- Study Area
- Other Counties
- City Limits
- Parks

Volusia County MPO Transit Corridor Feasibility Study

Figure 8 - 2005 Employment Density and Potential Transit Corridors

Prepared for: State of Florida Department of Transportation; Volusia County MPO Transportation Planning

Prepared by: TranSystems

Source: FDOT, Volusia County MPO, Volusia County, and TranSystems

N

0 2.5 5 Miles

Neighborhoods and Community

Each proposed corridor was analyzed to determine which ones provided the most connectivity opportunities within neighborhoods, between communities, and to locations outside Volusia County. For those corridors that provided the most connectivity opportunities, a ● was assigned. Those alternatives that provide a moderate connectivity opportunity were given a ◒. Those corridors that provided lesser degree of connectivity were given a ○.

5.3 Corridors Carried Forward

Table 6 shows the fifteen corridors and how they rank by the three MOEs being used for the screen one process. Data tables that provide the back-up to Table 6 are located in Appendix A-1.

TABLE 6: SCREEN 1 ANALYSIS

Category	Corridor	Population and Employment	Land Use		Neighborhoods and Community
			Consistency with Existing Land Use	Consistency with Future Land Use Plans	
North-South Corridors	FEC Railroad	●	●	●	●
	Williamson Blvd.	◒	◒	◒	○
East-West Corridors	SR 40	◒	○	○	○
	US 92	●	◒	◒	●
	I-4	●	●	●	●
	SR 44	◒	◒	◒	●
	SR 417 to SR 442	○	○	○	○
	Saxon/ Maytown	◒	○	○	●
Local Circulators	Pierson to DeBary	●	○	○	◒
	DeBary to Deltona	○	●	●	●
	DeLand to Orange City	○	◒	◒	◒
	DeLand	◒	●	●	◒
	Pavilion at Port Orange DRI	◒	◒	◒	○
	East Coast	●	●	●	●
	Daytona Beach	●	●	●	◒

The proposed corridors were analyzed by type (i.e. cross-county versus local circulator) as each type shares similar characteristics and trip purposes. The eight cross-county corridors were compared against each other and the seven local circulators were compared against each other. Based on the rankings, four cross-county corridors and four local circulators are recommended for further analysis under Screen Two as they received the highest relative scores.

These eight (8) corridors are:

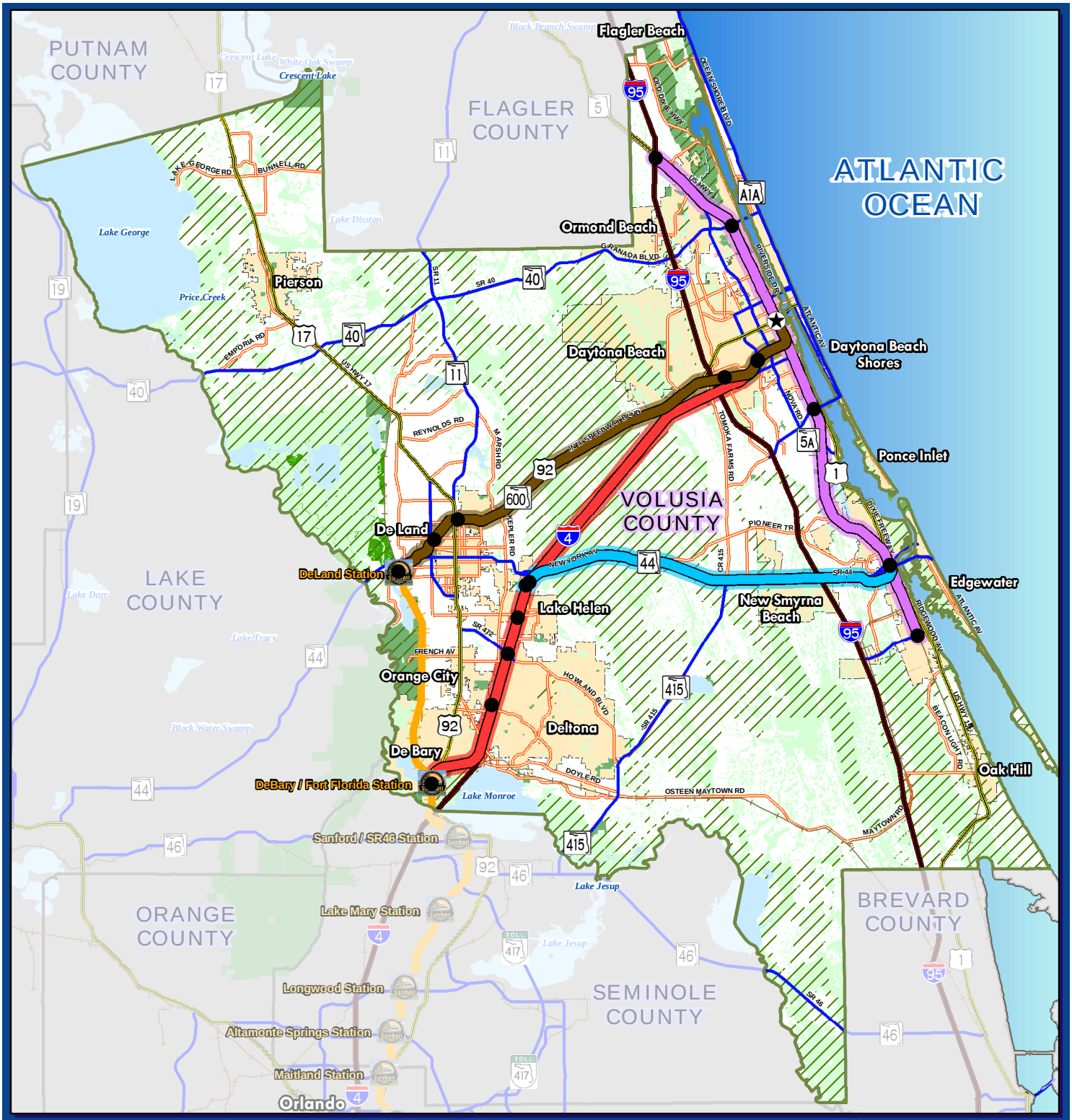
Cross-County Corridors

- FEC Railroad
- US 92
- I-4
- SR 44

Local Circulators

- DeBary to Deltona
- DeLand
- East Coast
- Daytona Beach

Figures 9 and 10 show the corridors selected to proceed to Screen Two.



LEGEND

Selected Transit Corridors (Cross County Alignments)

- Potential Station
- Proposed Downtown Daytona Intermodal Transportation Center
- Connection of DeLand CRS to East Coast via US 92
- I-4 Connection (Median Dedicated)
- SR 44 Connector
- FEC Railroad Connector

Environmental Layers

- SJRWMD Wetlands
- Environmental Core Overlay

Transportation Network

- Interstate Highway
- U.S. Highway
- State Route
- Other Highway
- Railroad

Planned SunRail Commuter Rail

- SunRail Commuter Rail Station
- SunRail Commuter Rail

Other Layers

- Study Area
- Other Counties
- City Limits
- Parks

Volusia County MPO Transit Corridor Feasibility Study

Figure 9 - Selected Transit Corridors Cross County Alignments

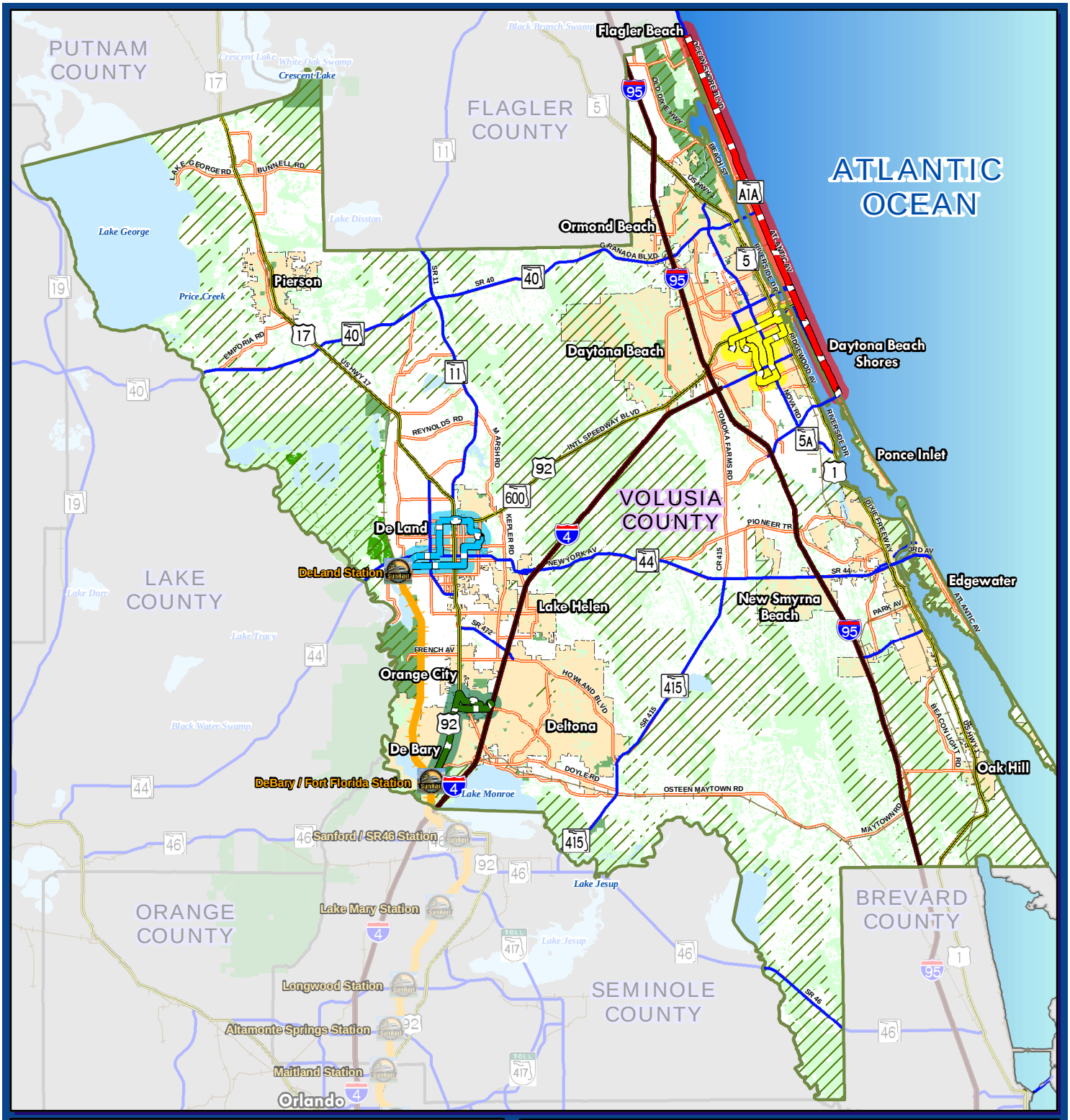
Prepared for: FDOT, Volusia County MPO

Prepared by: TranSystems

N

0 2.5 5 Miles

Source: FDOT, Volusia County MPO, Volusia County, and TranSystems



LEGEND

Selected Transit Corridors (Local Circulators)

- DeLand Circulator
- East Coast Circulator
- Daytona Beach Circulator
- DeBary to Deltona Circulator

Planned SunRail Commuter Rail

- SunRail Commuter Rail Station
- SunRail Commuter Rail

Environmental Layers

- SJRWMD Wetlands
- Environmental Core Overlay

Transportation Network

- Interstate Highway
- U.S. Highway
- State Route
- Other Highway
- Other Railroad

Other Layers

- Study Area
- Other Counties
- City Limits
- Parks

Volusia County MPO Transit Corridor Feasibility Study

Figure 10 - Selected Transit Corridors Local Circulators

Prepared for: FDOT, Volusia County MPO

Prepared by: TranSystems

Source: FDOT, Volusia County MPO, Volusia County, and TranSystems

Chapter 6 – Proposed Alternatives and Modes

As discussed in Chapter 5, four (4) cross-county corridors and four local circulators were selected for further analysis based on the results of the Screen One evaluation criteria. For each of these proposed corridors, transit modes were selected for analysis that was the most appropriate given the corridor characteristics. The following describes the modal alternatives and the proposed alignments for the eight corridors under analysis. Exhibits of each of these alignments are shown in Appendix A-2.

6.1 East-West Cross-County Corridors

A. I-4

Five modal alternatives were considered for the I-4 Corridor:

- 2 Commuter Rail (CR1A, CR1B)
- 2 Bus Rapid Transit (BRT1, BRT2)
- 1 Arterial Rapid Transit (ART1)

I-4 is generally a four-lane freeway, except at the south end of the County where the interstate is six-lanes wide. When the interstate was reconstructed, FDOT reserved right-of-way in the median for future installation of a transit alternative.

The western terminus for each alternative is the planned DeBary SunRail (i.e. Central Florida Commuter Rail) Station, which is planned to operate on CSX track. The eastern terminus is within the city limits of Daytona Beach. All modes would operate for most of their length in the I-4 corridor. All modes are assumed to have a Deltona station, with parking, at Saxon Boulevard. and a DeLand station near the overcrossing of Summit Avenue.

1. CR 1A and CR 1B

For both alternatives, new track would need to be laid the entire length of the alignment. The right-of-way within the median of I-4 is proposed to be utilized for the commuter rail alternatives (single track with occasional passing sidings) for the majority of the corridor. On the west end, the two commuter rail alternatives are shown as linking to the CSX alignment via construction of track, essentially in the power line right-of-way immediately north of Dirksen Drive. Because they use the same technology, the commuter rail alternatives would support through operation to Orlando via SunRail, without a change of vehicles.

On the east end in Daytona Beach, alternative CR1A would connect to the FEC Railroad at a proposed new multimodal station near International Speedway Boulevard. This would support possible future through operation to St. Augustine and Jacksonville on the FEC Railroad. Alternative CR1B is proposed to terminate at a station located between the International Speedway and the Daytona Beach airport and in convenient walking distance to both.

The following are the proposed stations for CR1A:

Future Downtown Daytona Beach Intermodal Transportation Center (ITC)

This potential future station would consolidate numerous transportation elements under one roof. This facility could host future intercity passenger rail at a station at the intersection of the FEC tracks and West International Speedway Boulevard in Downtown Daytona Beach. A new ITC would replace the existing VOTRAN but transfer located nearby. Additionally, it is recommended that any future Downtown Daytona Beach ITC at this site consolidate

VOTRAN buses, the existing Amtrak shuttle bus (from DeLand), and Greyhound intercity buses into one facility. Additional transportation elements include kiss'n ride, taxi stands, bicycle rental, and possibly a park and ride lot. The proposed Daytona Beach streetcar circulators presented in this study would also serve this ITC if advanced from the concept level. This CR1A station would be within a three to four block walking distance of most of Downtown Daytona Beach's commercial and office employment.

Clyde Morris Boulevard Station

This station would include a park and ride lot and could also be served by a future streetcar circulator (STC5). In addition to a potential streetcar connection, VOTRAN buses could connect with this station. Shuttle buses could serve the Embry-Riddle Aeronautical University, the Daytona Beach International Airport, the Volusia Mall, the Daytona International Speedway and the population center of medium-density residential housing to the south of Beville Road.

East DeLand / Summit Avenue Station

This station would include a park and ride lot and could also be served by a potential future streetcar circulator (STC2) that could help serve the nearby Daytona Beach Community College West Campus and DeLand. VOTRAN bus routes serving DeLand could also possibly be modified to serve this station and shuttle buses could serve the nearby fairgrounds if deemed feasible. This station would serve the population on the east side of DeLand.

Lake Helen / Orange Camp Road Station

This station would include a park and ride lot drawing potential riders from population centers of low and medium-density residential housing in southeast DeLand, in Lake Helen, and in northeast Orange City.

SR 472 Station

This station would serve the new 1,700 acre activity center that is currently being permitted within the City of Deltona. The new commercial development is proposed to be a prime location for corporate headquarters, regional offices, professional buildings, high-tech industries, distribution centers, and retail uses.

DeBary – Deltona / Saxon Boulevard Station

This station would include a park and ride lot drawing potential riders from a moderately large population center of medium-density residential housing in northeast DeBary and particularly from the west side of Deltona. A commuter rail station here would in theory replace existing bus route 200 (and its respective park and ride lot) if CR1A was extended into Downtown Orlando. VOTRAN bus routes could be modified to serve this station from both DeBary and Deltona and a streetcar circulator (STC3) could possibly link this station to noteworthy retail and the Florida Hospital Fish Memorial to the west.

Fort Florida Road Station

This station would include a park and ride lot drawing potential riders from the southern tip of DeBary and the small southwest corner of Deltona. This station is also the site of the proposed SunRail station at Fort Florida Road. The SunRail line would continue northward with a station on the west side of DeLand. Heading southward the SunRail line would serve Orlando and Kissimmee. The CR1A alignment could continue service to Orlando and Kissimmee by making this potential track connection immediately north of Fort Florida Road.

The following are the proposed stations for CR1B:

CR1B would have the same stations serving DeLand, DeBary, Lake Helen, Orange City, and Deltona on the west end of the I-4 corridor, however a different station would serve Daytona Beach on the east end of the I-4 corridor, as follows:

Daytona International – Speedway and Airport Station

This station would be situated immediately between the Daytona International Speedway and the Daytona Beach International Airport. A pedestrian bridge would link this station across Midway Avenue to the airport terminal

building. VOTRAN bus routes could be modified to serve this station and a possible future Daytona Beach streetcar circulator could also terminate at this station (STC4 and STC5). Modified VOTRAN routes and possible streetcars could link this station to medium-density residential housing south of Beville Road and to several employment centers along International Speedway Boulevard including significant commercial, educational and medical facilities.

2. BRT 1 and BRT 2

Both BRT alternatives are proposed to operate within the median of I-4 for the majority of the alignment. This right-of-way would allow for the construction of a single bus and HOV lane, with a shoulder, that would be used in the peak traffic direction with BRT operation in the opposite direction in mixed traffic.

On the west end, BRT1 is routed using US 92. BRT 2 would leave I-4 and serve the DeBary Station via Dirksen Drive.

On the east end, both BRT alternatives are shown as leaving I-4 and moving to US 92 via the connection about 2.8 miles west of I-95, making limited stops as they enter Daytona Beach. East of the Volusia Mall, the BRT alternatives would enter a newly-constructed busway, which would provide direct service to Halifax Medical Center and Daytona Beach Community College (see the description of the Daytona BRT Circulator for a more complete description of this busway).

Both BRT alternatives would have stations spaced approximately every one mile. There would be no stations in the undeveloped area in the center of the County.

3. ART 1

ART 1 service would operate in mixed traffic in both directions on Interstate 4. On the west end, the ART 1 is routed via US 92 and Saxon Boulevard. On the east end, the ART 1 alternative would stay on International Speedway Boulevard, making limited stops at it enters the City of Daytona Beach. It also would serve the Daytona Beach Community College. It is proposed to operate to the Beachside Intermodal Transit Facility.

Under the ART 1 alternative, stations would be spaced approximately one half mile apart, but not be located in the undeveloped area in the center of the County.

B. State Road 44 (SR 44)

A total of three alternatives were considered in this corridor:

- 1 Commuter Rail (CR2)
- 1 Light Rail (LRT1)
- 1 Arterial Rapid Transit (ART2)

SR 44 is generally a four-lane arterial highway with a 200' right-of-way. There is virtually no development along the corridor between I-4 on the west and I-95 on the east. All alternatives would originate on the west end with the existing DeLand Amtrak station, which is also a planned station for the SunRail service. At the east end, all alternatives are proposed to terminate in New Smyrna Beach station at the FEC Railroad alignment, near the downtown business district.

1. CR 2

A single track (with passing sidings) would be constructed along the side of SR 44. Since it has not been possible to identify an alignment for construction of a dedicated commuter rail right-of-way on the west end through the City of DeLand it is assumed that this alignment would not terminate at I-4. However, an option would be for the CR 2 alignment to utilize new tracks within the median of I-4 and ultimately onto the SunRail (i.e. CSX) tracks eliminating the need for passengers to transfer.

On the east end, a dedicated alignment for entry to New Smyrna Beach has been identified and shown on the corridor map in Appendix A-2

The following are the proposed stations for CR2:

New Smyrna Beach Station

This station would be situated at the FEC tracks and Canal Street immediately west of the commercial center of New Smyrna Beach. The station could have a park and ride lot and VOTRAN Routes 40 through 44 could be modified to serve the station. The New Smyrna Beach commercial town center is one of the largest employment centers in far southeast Volusia County and nearly all of it along Canal Street would be in walking distance from this station.

East DeLand / Summit Avenue Station

This station would include a park and ride lot and could also be served by a potential future streetcar circulator (STC2) that could help serve the nearby Daytona Beach Community College West Campus. VOTRAN bus routes serving DeLand could be modified to serve this station and shuttle buses could serve the nearby fairgrounds, if deemed feasible.

The CR2 alignment would terminate here. No feasible route has been identified projecting commuter rail from the SR 44 corridor westward through DeLand. If the SR 44 corridor were to proceed as a preferred transit corridor option it would merge into the I-4 commuter rail corridor headed southbound to the Fort Florida Road SunRail station and possibly further south to Orlando.

2. LRT 1

A single light rail track would be constructed to the side of the SR 44 highway. When it reaches the high-density residential and population center areas on either end (west and east), the LRT 1 alternative is assumed to operate on tracks embedded in the local streets.

On the east end, in New Smyrna Beach, the LRT 1 alignment would serve both the eastern end of the central business district at Riverside Drive and Canal Street and a potential future intercity passenger rail station where Canal Street intersects with the FEC Railroad tracks. As the alignment moves west it would serve the employment and retail center of the New Smyrna Beach Regional Shopping Center. VOTRAN Routes 40 through 44 could be modified to serve proposed LRT 1 stations and the western most LRT1 station could include a park and ride station to capture riders continuing on to west Volusia County.

On the west end in DeLand, this alignment would serve the following population and employment centers:

- Volusia County Fairgrounds (if deemed necessary)
- Potential SunRail or one of this studies proposal stations at Summit Avenue
- Daytona Beach Community College West Campus
- Blue Lake Elementary School
- DeLand Plaza Shopping Center
- Downtown DeLand
- Stetson University
- DeLand Amtrak Station

Typical station spacing for LRT 1 would be 1/4 to 1/2 mile in populated areas. No stations would be located in the undeveloped areas in the center of the County.

3. ART 2

ART 2 buses would operate in mixed traffic in both directions on SR 44. The ART 2 alternative would operate between the proposed DeLand SunRail station and its operation on SR 44 via city streets, generally in mixed traffic,

with stops en route in Downtown DeLand and at the Daytona Beach Community College West Campus. On the east end, the alignment would follow the same route as LRT 1.

C. US 92

A total of 7 alternatives were considered in this corridor:

- 2 Commuter Rail (CR3A, CR3B)
- 2 Bus Rapid Transit (BRT3, BRT4)
- 2 Arterial Rapid Transit (ART3, ART4)
- 1 Light Rail (LRT2)

US 92 is generally a four-lane arterial highway in a 200' right-of-way. Service on all modes would originate on the west end at the existing DeLand Amtrak station, which is a planned SunRail terminal station.

1. CR3A and CR3B

A single track would be constructed along US 92. Since they share the same characteristics of the proposed SunRail trains, CR3A/CR3B alternatives could operate as a through-service, acting as an extension of the SunRail service eliminating the need for passengers to transfer. An alignment for construction of a dedicated commuter rail right-of-way through the City of DeLand on the west end to connect to US 92 has been identified and shown in the corridor maps in Appendix A-2. Stations at Memorial Hospital and Northgate Plaza are proposed.

Entry into Daytona Beach on the east end would be similar to that described for the I-4 alternatives. Alternative CR3A would connect to the FEC Railroad at a proposed new multimodal station near International Speedway Boulevard. This would support possible future through operation to St. Augustine and Jacksonville on the FEC Railroad. CR3B is proposed to terminate at a station located between the International Speedway and the Daytona Beach Airport (and in convenient walking distance to both), as well as at a station that could be constructed adjacent to a remote lot for the International Speedway.

The following are proposed CR3A stations:

Future Downtown Daytona Beach Intermodal Transportation Center (ITC) Station

This facility could host a future intercity passenger rail station located on the FEC Railroad tracks at the intersection of the FEC Railroad tracks and International Speedway Boulevard in Downtown Daytona Beach. All three of the Daytona Beach local circulators proposed by the project team would also serve this station. This CR3A station would be within a three to four block walking distance of most of Downtown Daytona Beach's commercial and office employment.

Clyde Morris Boulevard Station

This station would include a park and ride lot and could also be served by a future streetcar circulator (STC5). In addition to a potential streetcar connection, VOTRAN buses could connect with this station. Shuttle buses could serve the Embry-Riddle Aeronautical University, Volusia Mall, Daytona Beach International Airport, and medium-density residential housing to the south of Beville Road.

International Speedway Park and Ride Station

This station would be situated immediately south of the existing park and ride lot serving the Daytona International Speedway off Williamson Boulevard (known as Lot Number 10). This station would function only during major International Speedway events and would otherwise serve no population and employment centers.

DeLand / Northgate Shopping Plaza Station

This station would be situated immediately north of the Northgate Shopping Plaza on the north edge of DeLand serving a small population center of low to medium-density residential housing, and a moderately large commercial employment and retail shopping area immediately to the south. This station would have a park and ride lot and the transfer point for VOTRAN's Routes 20, 24 and 60 could be modified to serve this station.

Hospital – West Volusia Station

This station would serve the Memorial Hospital of West Volusia, low density residential housing nearby, and a small commercial shopping area to its west. VOTRAN Route 20 could be modified to serve this station and it could possibly have a small park and ride lot drawing riders from the northwest side of DeLand.

DeLand Amtrak Station

This station would serve the existing DeLand Amtrak station, which is the proposed SunRail terminal station. This station could possibly have a park and ride lot.

CR3B would have the same stations serving DeLand on the west end of the US92 corridor; however a different station would serve Daytona Beach on the east end of the US92 corridor, as follows:

Daytona International – Speedway and Airport Station

This station would be situated immediately between the Daytona International Speedway and the Daytona Beach International Airport. A pedestrian bridge would link this station across Midway Avenue to the airport terminal building. VOTRAN bus routes could be modified to serve this station and a possible future Daytona Beach streetcar circulator could also terminate at this station (STC4 and STC5). The modified VOTRAN routes and possible streetcars could link this station to medium-density residential housing south of Beville Road and to several employment centers along International Speedway Boulevard including significant commercial, and educational and medical facilities.

2. BRT3 and BRT4

It is proposed that under both BRT alternatives a single BRT/HOV lane would be constructed in the median of US 92. It is assumed that buses operating in the reverse peak direction would operate in mixed traffic. On the west end, the BRT alternatives would operate between the proposed DeLand SunRail station and its operation on US 92 via city streets, generally in mixed traffic, with stops enroute in Downtown DeLand and at the Northgate Mall.

On the east end, the BRT alternatives would make limited stops as it enters Daytona Beach on International Speedway Boulevard. East of the Volusia Mall, the BRT alternatives would enter a newly-constructed busway that would provide direct service to Halifax Medical Center and Daytona Beach Community College (see the description of the Daytona BRT Circulator for a more complete description of this busway). Typical station spacing would be one mile apart in populated areas.

3. ART3 and ART4

ART buses would operate in mixed traffic in both directions on US 92. The ART alternatives would operate between the proposed DeLand SunRail station and its operation on US 92 via city streets, generally in mixed traffic, with stops enroute in Downtown DeLand and at the Northgate Mall.

On the east end, the ART 3 alternative would stay on International Speedway Boulevard, making limited stops at it enters town. Alternative 4 would enter Daytona Beach via Beville Road and Ridgeville Road making limited stops. Typical station spacing would be one-half mile apart.

4. LRT2

On both the east and west ends the LRT2 option is assumed to operate on tracks embedded in the street, using the same route through town as the BRT alternatives also in mixed traffic, and then move to exclusive right-of-way along

the rural portions of US 92 between the northeast side of DeLand and west side of Daytona Beach. The LRT 2 would follow the same route into the City of Daytona Beach as the BRT (using the dedicated busway alignment). Typical station spacing would be 1/4 to 1/2 mile.

In Daytona Beach the LRT 2 alignment would serve numerous population and employment centers along International Speedway Boulevard. Those would include the following:

- Downtown Daytona Beach
- The future Downtown Daytona Beach ITC
- Volusia Mall
- University of Central Florida – Daytona Beach Regional Campus
- Daytona Beach Community College
- Mainland High School
- Halifax Medical Center
- Numerous hotels
- Daytona Plaza Shopping Center
- Volusia Mall
- Daytona International Speedway
- Volusia Square Shopping Center
- Volusia Point Shopping Center
- Daytona Beach Dog Track

Additionally, a park and ride lot could be placed at the westernmost station capturing riders headed westbound. Numerous VOTRAN bus routes could be modified to serve LRT2 and a shuttle bus could be dedicated between the closest LRT2 station and the Daytona Beach International Airport terminal building.

In DeLand this LRT2 alignment would serve population and employment centers in the following areas:
- Northgate Shopping Plaza
- Stetson University
- Downtown DeLand
- DeLand Amtrak Station

Additionally, a park and ride lot could be placed at the easternmost station capturing riders headed eastbound towards Daytona Beach.

6.2 North –South Cross-County Corridors

A. FEC Railroad Corridor

One modal alternative was considered for the FEC Railroad Corridor:
- 1 Commuter Rail (CR 4)

1. CR4

CR 4 would originate at the north end of the county and continue the entire length of the county. This alignment could potentially be part of a larger alignment as part of the Florida Intercity Passenger Rail "Vision Plan" supported by FDOT. FDOT has developed conceptual plans for implementing passenger service on the FEC Railroad. The FEC Railroad was originally built as a high-speed passenger railroad and remained a through Miami-New York passenger route until 1963. In 1963, the railroad was reduced from double track to single track with passing siding coincident with the switch to freight-only status. In the first phase of FDOT's Vision Plan, three trains per day would operate between Miami and Jacksonville, operating at 79 mph, with a subsequent increase in the number of trains, and

eventual operation at 110 mph. Presumably, restoration of the second main track would be required at some point. A new route connecting Orlando to the FEC Railroad at Cocoa Beach (suitable for 125 mph operation) is also proposed, initially for use by Orlando-Miami trains, but also Orlando-Jacksonville trains. The only station in Volusia County shown on the current FDOT Vision Plan maps is in Daytona Beach.

As part of this study, the CR4 alternative is proposed to originate near the north end of the County, where the railroad intersects with I-95 and operate to a south terminal at Edgewater. Intermediate stations are proposed at Ormond Beach, a proposed new multimodal station in Daytona Beach (near International Speedway Boulevard), South Daytona, and New Smyrna Beach. Commuter rail service uses technology that is compatible with freight incremental high-speed rail passenger service and thus could share the same tracks. Commuter rail service could be extended to points further north or south on the FEC Railroad, beyond Volusia County.

Commuter rail stations along the CR4 corridor were selected based upon proximity to these same traffic generators as described above, with emphasis on finding locations with close access to east-west bridges leading to the densely populated outer banks east of the Intracoastal Waterway. Four of the six stations identified on the CR4 alignment have immediate access to such east-west bridges.

The following are proposed CR4 stations:

National Gardens / I-95 Station

This station would primarily serve as a park and ride lot with riders being drawn from points north, who would exit from I-95 at the US 1 interchange. No significant population or employment center is immediately near this station, however residential population areas of low and medium-density are found a few miles north off of I-95.

Ormond Beach / Granada Boulevard Station

This station would have a park and ride lot serving population centers across the Intracoastal Waterway along Atlantic Avenue and medium-density population centers west of Nova Road. VOTRAN Routes 3, 6, and 1B could be modified to serve this station.

Future Downtown Daytona Beach Intermodal Transportation Center (ITC) Station

This facility could host future intercity passenger rail at a station located on the FEC Railroad tracks at the intersection of the FEC Railroad tracks and International Speedway Boulevard in Downtown Daytona Beach. The proposed Daytona Beach streetcar circulators studied in this report would also serve this ITC. This CR3A station would be within a three to four block walking distance of most of Downtown Daytona Beach's commercial and office employment.

Port Orange / Dunlawton Avenue Station

This station would have a park and ride lot and would serve high-density population centers across the Intracoastal Waterway in Halifax Estates. It would also serve medium-density residential population centers in South Daytona, Port Orange and Allandale. VOTRAN Routes 4, 40, and 17B could be modified to serve this station.

New Smyrna Beach Station

This station would be situated at the FEC Railroad tracks and Canal Street immediately west of the commercial center of New Smyrna Beach. The station could have a park and ride lot and VOTRAN Routes 40 through 44 could be modified to serve the station. The New Smyrna Beach commercial town center is one of the largest employment centers in southeast Volusia County.

Edgewater / Indian River Boulevard Station

This station would have a park and ride lot and would serve low and medium-density housing in the area of a roughly one mile radius around the center of Edgewater. VOTRAN Route 41 could serve this station.

6.3 Local Circulators

A. East Coast Circulator

One modal alternative was considered for the East Coast Circulator:

- 1 Streetcar (STC 1)

1. STC1

This streetcar circulator would operate along the peninsula, serving numerous dense population and employment centers along this nearly twenty-six mile long corridor. The streetcar alternative would be constructed along Ocean Shore Boulevard (and Atlantic Avenue), between Flagler Beach on the north and Ponce Inlet on the south. VOTRAN currently operates rubber-tired trolleys over most of this area, as well as conventional fixed route bus service. Operation in the curb lane (the side of the travel lanes) of the roadways is proposed for this alternative.

Streetcar stops would be spaced at approximately every quarter-mile, but would be tailored to accommodate local constraints and match density as best as possible. The most common type of population density along this corridor is in the form of mid-rise to high-rise condo, hotel, and rental apartment towers along the Atlantic Ocean coastline. Several dozen of these towers can be found in Daytona Beach alone, with numerous additional apartment towers in Daytona Beach Shores, Ponce Inlet, and Ormond Beach. On the north end, no development exists along the North Peninsula State Park.

Other employment and population centers include:

- Ocean Center
- Peabody Auditorium
- Bellair Plaza
- Atlantic Medical Center
- Ormond Mall
- Seabreeze High School
- Fountain Square Shopping Village

The East Coast Circulator would then link Downtown Daytona Beach with several stops in the central business district (CBD) area and one at the future Downtown Daytona Beach Intermodal Transportation Center.

B. DeLand Circulator

There are three modal alternatives considered for this circulator:

- 2 Arterial Rapid Transit (C- ART 1 and C- ART 2)
- 1 Streetcar (STC2)

The City of DeLand is planned as the current terminus of the proposed SunRail service. The station location will be the existing Amtrak station. Currently, some internal circulation in DeLand is provided by existing VOTRAN Route 20 (which also provides a link to Orange City and DeBary). However, VOTRAN does not currently serve the Amtrak station but has plans to provide bus feeder service once the SunRail service is operating.

1. C-ART 1/ART 2

Two ART circulators were developed that would provide feeder service between residential areas in the community and the proposed SunRail service at the Amtrak station. The north terminal for both is at Northgate Plaza. C-ART1 also serves Stetson University and DeLand High School. Both alternatives would operate on local streets in existing right-of-way. Station spacing would be spaced approximately every 1/2 mile.

2. STC2

Two streetcar routes were developed, grouped under the designation STC2. One is a north-south route between the Northgate Plaza area, through Downtown DeLand, continuing to Stetson University. The other is an east-west route operating between the planned SunRail station (the Amtrak station) and the Daytona Beach Community College West Campus. This would also serve a proposed commuter rail station at I-4. The tracks of the east-west route could be shared with LRT2, and the route to New Smyrna Beach via SR 44.

A limited number of medium-density population and employment centers would be served by this streetcar concept, with a total of four branches stretching out in four directions from Downtown DeLand. Primary traffic generators include a possible future commuter rail station at Summit Ave/I-4, Downtown DeLand, Stetson University, Northgate Shopping Plaza, the West Volusia Regional Shopping Center, and the DeLand Amtrak station.

C. DeBary Circulator

Three modal alternatives have been proposed with the DeBary Circulator as follows:

- 2 Arterial Rapid Transit (C-ART 3, C-ART 4)
- 1 Streetcar (STC 3)

Phase I of the SunRail service plans to terminate at a new DeBary station at Fort Florida Road, south of the present community. The DeBary/Deltona area is served by VOTRAN Routes 20, 21, 22, and 23: No VOTRAN bus route currently serves the planned DeBary station site.

1. C- ART3 / ART 4

Two Arterial Rapid Transit routes have been developed that would provide feeder service from the more densely populated residential areas in Deltona to the DeBary station. The ART alternatives would operate on street within existing right-of-way. Serving the residential areas of Deltona effectively and efficiently is particularly difficult, however, because of the layout of the streets in many subdivisions that only have one way in and out and do not allow pedestrians to access main roads directly. Typical station spacing would be ½ mile.

2. STC3

A streetcar route has been developed that would operate via US 17/92 (Charles R. Beall Boulevard South), connecting the proposed DeBary SunRail station with the commercial area along Saxon Boulevard and to the north. The route would loop through this area. Most of this routing is currently served by VOTRAN Route 23.

Only a small number of medium and mostly low-density population and employment centers would be served by a streetcar circulator in DeBary. These primarily consist of low-density residential housing along Charles Richard Beall Boulevard and medium-density retail and a medical facility on the north end of DeBary. Typical station spacing would be 1/4 to 1/2 mile.

D. Daytona Beach Circulator

Four modal alternatives are proposed for the Daytona Beach Circulator:

- 2 Streetcar (STC4, STC5)
- 1 Bus Rapid Transit (C-BRT 1)
- 1 Arterial Rapid Transit (C-ART 5)

1. STC4

STC4 originates at a station located between the Daytona Beach International Airport and the International Speedway and operates to the Downtown Daytona Beach area via International Speedway Boulevard. It would serve

the proposed new multimodal transit center in Downtown Daytona Beach and operate through the downtown area in a loop manner to reduce the distance people would need to walk to destinations.

Numerous medium-density population and employment centers would be served by the STC4 streetcar route in Daytona Beach. Those would include Downtown Daytona Beach, Halifax Medical Center, Daytona Beach Community College, Volusia Mall, International Speedway, and the Daytona Beach International Airport.

2. STC5:

STC5 is focused on service in areas with high transit potential south of the downtown Daytona Beach area, operating via US 1 (Ridgewood), South Street., Nova Road., Old Big Tree Road, and Clyde Morris Boulevard to the campus of Embry-Riddle Aeronautical University. It would operate through the campus with some track located on a routing that is not currently a street. North of the campus it would operate on Clyde Morris Boulevard, going past Mainland High School, then turning west on International Speedway Boulevard (serving Volusia Mall), and terminating between the Daytona Beach International Airport and the International Speedway, in the same manner as STC4.

Numerous medium-density population and employment centers would be served by the STC5 streetcar route in Daytona Beach. Those would include Downtown Daytona Beach, medium-density residential housing and retail establishments south of Beville Road, Embry-Riddle Aeronautical University, Halifax Medical Center, Volusia Mall, the International Speedway, and the Daytona Beach International Airport.

3. C-BRT 1

C-BRT1 is a Bus Rapid Transit route that serves the same general corridor as streetcar STC5, but more closely resembles VOTRAN Route 10. It would operate on a designated busway through town. Stations would be spaced approximately every 1/2 mile.

4. C-ART 5

C-ART5 is proposed as an express bus route operating over virtually the same routing as streetcar STC4. Stations would be spaced every 1/2 mile. C-ART 5 would operate on-street.

6.4 Infrastructure Inventory

Appendix A-3 details the infrastructure inventory along the proposed corridors evaluated in this study. While the majority of these corridors consist of roads and/or existing/abandoned rail lines, others do not, and therefore limited information is available. The table provides corridor segment, type, and information.

6.5 Summary Matrix

The various potential alignments and other options within modes expand the number of alternatives. Table 7 summarizes the 27 build alternatives that result from the combination of mode and alignment alternatives.

TABLE 7: SUMMARY OF MODES AND CORRIDORS

Corridors	Modes						
I-4	ART 1	BRT 1	BRT 2	CR1A	CR 1B		
SR 44	ART 2	CR 2	LRT 1				
US 92	ART 3	ART 4	BRT 3	BRT 4	CR 3A	CR 3B	LRT 2
FEC Railroad	CR 4						
East Coast Circulator	STC 1						
DeLand Circulator	ART 1	ART 2	STC 2				
DeBary Circulator	ART 3	ART 4	STC 3				
Daytona Beach Circulator	BRT 5	ART 5	STC 4	STC 5			

7.1 Infrastructure and Equipment

The physical infrastructure and equipment needed for each conceptualized transit alignment is summarized below by modal type. Each of these critical components, along with additional capital elements, has been analyzed and had conceptual order of magnitude costs (2009 dollars) generated for inclusion in this study. The following assumptions have been made when estimating capital costs.

A. Commuter Rail (CR)

Stations

Commuter rail stations would typically have small park and ride lots (i.e. 200 to 300 spaces) with small station houses (i.e. 800 -1,000 square feet); fares would be purchased on-board the train. Stations would become small local transit bus transfer facilities with bus bays, taxicab stands, special event shuttle buses (where applicable), drop-off lanes, and appropriate signage and other intermodal transportation elements. Stations would typically be located near major collector roadways so that the length of access roads into the station area would be limited.

Track

New single-track would be constructed inside highway medians to accomplish the East-West cross-county commuter rail routes. A few sites would be selected for passing sidings to enable efficient scheduling of passenger operations. For the FEC Railroad commuter rail option (CR4) an upgrade of the existing track was conceptualized for passenger service along with the addition of passing sidings where needed.

Equipment type and fleet size

Equipment that could be used for commuter rail service may include a locomotive pulling bi-level or single-level passenger coaches or diesel multiple units (DMU's). In order to provide a reasonable order-of-magnitude cost figure for this category, locomotives and bi-level passenger coaches were conceptualized. Each bi-level passenger coach has a maximum seated capacity of up to 150, and as such each train run conceptualized in this study would possess only one passenger car pulled by a diesel locomotive.

B. Light Rail Transit (LRT)

Stations

LRT stations would have two platforms, one for each individual track. LRT stations would not have station houses, and instead would have ticket vending machines. Tickets would need to be purchased on the platform by patrons prior to boarding any LRT train.

Track

LRT would run in-street with double track in well-established and developed corridors (Daytona Beach, New Smyrna Beach, and DeLand city limits) and on single track in exclusive right-of-way in all other corridors. In-street running would require sharing of lanes with automotive traffic, while exclusive right-of-way would enable LRT vehicles to reach their maximum operating speed where geometrically possible. A few sites along the single track section would be selected for passing sidings to enable efficient scheduling of passenger operations.

Equipment type and fleet size

LRT equipment best suited for running the long distance across the undeveloped wetland from east Volusia County to west Volusia County would consist of DMU LRT vehicles. Construction of overhead catenary wires and support

posts along such a great distance for LRT service would not be a justifiable capital expenditure and maintenance expenses could become highly excessive over a full life-cycle with Volusia County being an area vulnerable to potential Hurricane damage. As such, these LRT DMU's would operate with their diesel engines providing propulsion instead of receiving electricity from overhead wires.

C. Streetcar (STC)

Stops

Streetcar stops would consist of 12" to 18" curbs providing near-level boarding capabilities with the low-floor section of a modern streetcar. However, each streetcar stop would be individually tailored to surrounding site constraints. These stops would consist of curb, tactile strip, signage, a possible curb bump-out (when street curb parking is present) and a bus shelter modified and possibly with minimal upgrades such as lighting. Fare collection would take place on-board the streetcar and no fare vending machines would be at the streetcar stops.

Track

Streetcar track would be embedded in the pavement. Some utilities would require adjustments in the pavement and/or insulation to protect them from some stay current being transferred into the ground from the streetcar. These streetcar tracks have conceptual costs associated with being new track set into existing streets, none of these track costs have been conceptualized as running in turf track or in newly built streets.

Equipment type and fleet size

"Modern" streetcars have been envisioned in this Volusia County study. Typically these vehicles reach up to 66' in length and can carry approximately 30 to 35 seated passengers with additional room for standees. The center section of these vehicles contains a low-floor section enabling a near-level boarding if the vehicle meets a 12" to 18" curb.

D. Bus Rapid Transit (BRT)

Running Ways

BRT vehicles typically operate for, at least part of their trip, on a dedicated busway. The I-4 and US 92 BRT routes are proposed to operate in the peak direction in a newly-constructed lane in the highway median; operation in the less-busy direction would be in regular traffic lanes. To the extent that the median lane can be shared with High Occupancy Vehicles (i.e. automobiles with more than a specified number of passengers, including carpools, and buses) without degradation in performance due to congestion, this should be allowed. Thus the cost of constructing these bus/HOV lanes could be primarily considered as serving general traffic, and funded as such. It is anticipated that the portion of these BRT routes off of I-4 and US 92 would operate in mixed traffic in general traffic lanes. A segment of a "busway" (roadway dedicated for the exclusive use of buses) is proposed for construction in Daytona Beach. This would provide a shortcut for BRT service connecting Volusia Mall and Bethune Boulevard while allowing direct service to Halifax Medical Center and Daytona Beach Community College. This could be utilized by either cross county service or West Daytona local service, or both. Traffic Signal Priority (TSP), early and extended green phases, would be provided for BRT vehicles on call.

Stations

BRT stations along street segments would consist of a high quality, stylish shelter structure, real-time passenger information signs, a ticket vending machine, and lighting installed on the sidewalk. At a few locations along the I-4 bus/HOV lane it is proposed that online stations would be constructed. These would have bays for BRT vehicles to pull out of traffic for passengers to allow BRT vehicles to pick up and discharge passengers without delay to through riders that would result from leaving the freeway to reach a station. Tickets would need to be purchased by patrons prior to boarding a BRT vehicle. This would allow the implementation of Proof of Payment (POP) fare collection that, in turn, would allow passenger to board at all doors, speeding service.

Equipment

BRT vehicles are buses with bodies that are much more stylish than conventional buses. Vehicles intended for cross county service should be equipped with headrest seats, to provide neck support, and wireless internet service. Rest rooms should be considered. It is assumed that straight body buses (rather than articulated), will provide adequate capacity for the routes being considered for Volusia County.

E. Arterial Rapid Transit (ART)

Running Ways

ART routes would operate in mixed traffic in general traffic lanes. Traffic Signal Priority (TSP), early and extended green phases) would be provided for BRT vehicles on call.

Stations

BRT stations would consist of a high-quality, stylish shelter structure and real-time passenger information signs, installed on the sidewalk.

Equipment type

ART vehicles would be essentially the same as BRT vehicles.

7.2 Order of Magnitude Capital Costs

Table 8 thru 12 displays the capital cost estimates for all corridors. Capital cost figures were developed from approximate quantity calculations multiplied times peer system unit prices. These are intended to perform the function of order of magnitude costs and are not intended to be detailed cost estimates, hence the allowance for a 35% concept level contingency which is typical for planning level studies such as this.

Costs not included in the order of magnitude capital costs presented in this study include property and right-of-way acquisition, large-scale project insurance, service "start up" costs and railroad settlements, negotiations and agreements. More detailed spreadsheets of these estimates can be found in Appendix A-4.

TABLE 8

Volusia County Transit Study

Order of Magnitude - Commuter Rail Capital Costs

January 9, 2009

ITEM DESCRIPTION	I-4 CR1 A&B	SR-44 CR2	US-92 CR3 A&B	FEC CR4
Track (New and Improvements)	$ 76,533,940	$ 48,966,668	$ 58,171,055	$ 2,958,936
Structure (New and Upgrades)	$ 129,085,828	$ 31,950,043	$ 9,842,200	$ -
Stations	$ 21,992,014	$ 8,699,242	$ 7,409,232	$ 12,994,663
Layover & Maintenance Facilities	$ 25,000,000	$ 25,000,000	$ 25,000,000	$ 25,000,000
At-Grade Roadway Crossings	$ 2,974,950	$ 11,088,450	$ 13,298,450	$ 661,200
Wayside Signal Improvements	$ 29,894,027	$ 17,492,079	$ 23,700,662	$ 4,431,920
Passing Sidings	$ 7,576,860	$ -	$ 7,576,860	$ 15,153,720
Utility Work	$ 29,305,762	$ 14,319,648	$ 14,499,846	$ 6,120,044
Environmental Work	$ 29,305,762	$ 14,319,648	$ 14,499,846	$ 3,060,022
SUBTOTAL - CONSTRUCTION ITEMS	$ 351,669,144	$ 171,835,778	$ 173,998,150	$ 70,380,505
Vehicles	$ 22,660,000	$ 12,463,000	$ 17,561,500	$ 17,561,500
Professional Services (12%)	$ 42,200,297	$ 20,620,293	$ 20,879,778	$ 8,445,661
Contingencies (35%)	$ 145,785,304	$ 71,721,675	$ 74,353,800	$ 33,735,683
TOTAL APPROXIMATE CAPITAL COST	$ 563,000,000	$ 277,000,000	$ 287,000,000	$ 131,000,000
TOTAL ROUTE MILEAGE	33.41	20.48	25.98	29.85
APPROXIMATE COST PER ROUTE MILE	$ 16,832,000	$ 13,505,000	$ 11,041,000	$ 4,360,000

TABLE 9

Volusia County Transit Study

Order of Magnitude - Light Rail Transit Capital Costs

January 9, 2009

ITEM DESCRIPTION	SR-44 LRT1	US-92 LRT2
Track (New and Improvements)	*$ 118,762,360*	*$ 97,917,960*
Structure (New and Upgrades)	*$ 25,815,612*	*$ 13,556,850*
Stations	*$ 3,295,176*	*$ 3,409,880*
Layover & Maintenance Facilities	*$ 15,000,000*	*$ 15,000,000*
At-Grade Roadway Crossings	*$ 463,500*	*$ 1,081,500*
Wayside Signal Improvements	*$ 22,532,712*	*$ 21,821,604*
Passing Sidings	*$ 5,947,800*	*$ 5,947,800*
Utility Work	*$ 19,181,716*	*$ 15,873,559*
Environmental Work	*$ 19,181,716*	*$ 15,873,559*
SUBTOTAL - CONSTRUCTION ITEMS	*$ 230,180,592*	*$ 190,482,713*
Diesel Light Rail Vehicles	*$ 24,477,120*	*$ 18,357,840*
Professional Services (12%)	*$ 27,621,671*	*$ 22,857,926*
Contingencies (35%)	*$ 98,797,784*	*$ 81,094,467*
TOTAL APPROXIMATE CAPITAL COST	*$ 382,000,000*	*$ 313,000,000*
TOTAL ROUTE MILEAGE	*29.19*	*25.77*
APPROXIMATE COST PER ROUTE MILE	*$ 13,055,000*	*$ 12,136,000*

TABLE 10

Volusia County Transit Study

Order of Magnitude - Streetcar Capital Costs

January 9, 2009

ITEM DESCRIPTION	East Coast STC1	DeLand STC2	DeBary STC3	Daytona West STC4	Daytona West STC5
Trackwork	$ 195,844,200	$ 130,992,400	$ 46,993,750	$ 27,779,100	$ 69,926,700
Electrification	$ 92,308,600	$ 61,182,000	$ 23,360,400	$ 13,420,900	$ 33,114,500
Streetcar Stops	$ 3,084,850	$ 1,035,150	$ 499,550	$ 437,750	$ 932,150
Maintenance Facilities	$ 5,780,160	$ 2,353,350	$ 2,085,138	$ 2,085,138	$ 2,353,350
Utility Work	$ 44,552,672	$ 29,334,435	$ 10,940,826	$ 6,558,433	$ 15,949,005
Environmental Work	$ 14,850,891	$ 9,778,145	$ 3,646,942	$ 2,186,144	$ 5,316,335
SUBTOTAL - CONSTRUCTION ITEMS	$ 356,421,372	$ 234,675,480	$ 87,526,606	$ 52,467,466	$ 127,592,040
Streetcars - vehicles	$ 83,275,500	$ 31,724,000	$ 15,862,000	$ 19,827,500	$ 35,689,500
Professional Services (12%)	$ 42,770,565	$ 28,161,058	$ 10,503,193	$ 6,296,096	$ 15,311,045
Contingencies (35%)	$ 168,863,603	$ 103,096,188	$ 39,862,129	$ 27,506,872	$ 62,507,405
TOTAL APPROXIMATE CAPITAL COST	$ 652,000,000	$ 398,000,000	$ 154,000,000	$ 107,000,000	$ 242,000,000
TOTAL TRACK MILEAGE	57.4	38.0	13.6	8.1	20.5
APPROXIMATE COST PER TRACK MILE	$ 11,359,000	$ 10,474,000	$ 11,324,000	$ 13,210,000	$ 11,805,000

TABLE 11

Volusia County Transit Study

Order of Magnitude - Arterial Rapid Transit Capital Costs

January 9, 2009

ITEM DESCRIPTION	I-4 ART1	SR-44 ART2	US-92 ART3	US-92 ART4	DeLand C-ART1	DeLand C-ART2	DeBary C-ART3	DeBary C-ART4	Daytona C-ART5
ART Station	$ 1,500,000	$ 1,650,000	$ 2,850,000	$ 3,300,000	$ 1,275,000	$ 525,000	$ 900,000	$ 900,000	$ 1,725,000
Traffic Signal Priority Signaling	$ 640,000	$ 920,000	$ 1,520,000	$ 1,320,000	$ 160,000	$ 160,000	$ 40,000	$ 40,000	$ 840,000
Queue Jump Lanes									
Mainteance Facility Allocation	$ 2,000,000	$ 2,000,000	$ 2,000,000	$ 2,000,000	$ 2,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 2,000,000
SUBTOTAL - CONSTRUCTION ITEMS	$ 4,140,000	$ 4,570,000	$ 6,370,000	$ 6,620,000	$ 3,435,000	$ 1,685,000	$ 1,940,000	$ 1,940,000	$ 4,565,000
Buses	$ 3,500,000	$ 4,900,000	$ 4,200,000	$ 4,900,000	$ 2,100,000	$ 1,400,000	$ 2,100,000	$ 2,100,000	$ 5,600,000
Contingencies (10%)	$ 1,528,000	$ 1,894,000	$ 2,169,000	$ 2,359,000	$ 1,107,000	$ 617,000	$ 808,000	$ 808,000	$ 2,033,000
TOTAL APPROXIMATE CAPITAL COST	$ 9,168,000	$ 11,364,000	$ 13,014,000	$ 14,154,000	$ 6,642,000	$ 3,702,000	$ 4,848,000	$ 4,848,000	$ 12,198,000
TOTAL ROUTE MILEAGE	67.76	57.00	52.00	58.20	17.16	11.62	14.86	16.26	23.00
APPROXIMATE COST PER ROUTE MILE	$ 136,000	$ 200,000	$ 251,000	$ 244,000	$ 388,000	$ 319,000	$ 327,000	$ 299,000	$ 531,000

TABLE 12

Volusia County Transit Study

Order of Magnitude - Bus Rapid Transit Capital Costs

January 9, 2009

ITEM DESCRIPTION	I-4 BRT1	I-4 BRT2	US-92 BRT3	US-92 BRT4	Daytona C-BRT5
Divided Highway Station	$ 10,000,000	$ 20,000,000	$ 10,000,000	$ 10,000,000	
Streetside BRT Station	$ 1,800,000	$ 1,950,000	$ 900,000	$ 1,200,000	$ 1,575,000
Traffic Signal Priority Signaling	$ 1,040,000	$ 1,440,000	$ 1,520,000	$ 2,000,000	$ 2,000,000
Queue Jump Lanes	$ 55,000				
Mainteance Facility Allocation	$ 2,000,000	$ 2,000,000	$ 2,000,000	$ 2,000,000	$ 2,000,000
Guideway	$ 59,400,000	$ 69,300,000	$ 49,500,000	$ 49,500,000	$ 3,300,000
SUBTOTAL - CONSTRUCTION ITEMS	$ 74,295,000	$ 94,690,000	$ 63,920,000	$ 64,700,000	$ 8,875,000
Buses	$ 3,200,000	$ 4,800,000	$ 5,600,000	$ 4,800,000	$ 3,200,000
Contingencies (10%)	$ 15,499,000	$ 19,898,000	$ 13,904,000	$ 13,900,000	$ 2,095,000
TOTAL APPROXIMATE CAPITAL COST	$ 92,994,000	$ 119,388,000	$ 83,424,000	$ 83,400,000	$ 12,570,000
TOTAL ROUTE MILEAGE	65.00	68.80	52.00	58.20	9.74
APPROXIMATE COST PER ROUTE MILE	$ 1,431,000	$ 1,736,000	$ 1,605,000	$ 1,433,000	$ 1,291,000

7.3 Operating Assumptions

The following assumptions were made for each mode type when developing operating scenarios and operating costs.

A. Commuter Rail (CR)

Average velocities

Average commuter rail speeds were determined from maximum equipment speed capabilities in certain portions of the alignment, acceleration/deceleration, station spacing, conceptualized track geometry and the geometry's corresponding speed restrictions. Average speeds would be 70-79 mph.

Travel times

Travel times were extrapolated from alignment distances and average velocities. Travel times were critical in determining possible passing siding locations.

Schedule

The commuter rail schedules have been based off schedules of peer size commuter rail systems with CR1 (I-4) providing 3 roundtrips in the morning and 3 roundtrips in the evening (a total of 12 runs per day), no mid-day service, and no weekend or holiday service. CR2 (SR44) and CR3 (US92) would have only 2 roundtrips in the morning and 2 roundtrips in the evening, no mid-day service, and no weekend or holiday service. These schedules have direct correlation to the number of passenger cars in each train and the number of train miles operated per year which in turn determines operating costs.

B. Light Rail Transit (LRT)

Average velocities

Average speeds for LRT were divided into in-street and exclusive guideway sections.

Travel times

Travel times for the two LRT concepts were developed using those average speeds for the given length that they run in-street and in an exclusive guideway.

Service hours and Frequencies

Service hours for LRT were derived from the beginning and ending points of scheduled hours of service that would typically be needed for longer distance cross-county commuting. Since these are Light Rail Vehicles (LRV) no specific schedule was generated (as was completed for commuter rail), but instead frequencies were selected to match typical LRT operations.

C. Streetcar (STC)

Average velocities

Average speeds for the streetcar runs were extrapolated from existing VOTRAN bus routes along alignments that would be similar in nature to concept streetcar routes. Route lengths were divided by schedule running times to determine average mile per hour speeds. These speeds were then adjusted for each streetcar route based upon the physical layout of the street such as the presence of on-street parallel parking, turning lanes, lane width, etc.

Travel times

Streetcar travel times for each concept route were then developed by using those average speeds and the concept route length. Travel times and the desired frequencies were then used to determine fleet size requirements with the addition of equipment spares.

Service hours

Service hours were determined by analyzing current VOTRAN bus service hours and the service hours of the trolley bus along the East Coast in Daytona Beach. Adjustment was then made to account for public "rail bias" which is understood to draw additional transit patrons for slightly longer service hours.

Frequencies

Frequencies were assumed based upon density, assumed ridership and current VOTRAN bus frequencies in some areas.

D. Bus Rapid Transit (BRT)

Average velocities

Average velocities were calculated as using by determined by using doubling the average travel time of bus VOTRAN buses and a premium was added when a busway is proposed. The accounted for different velocities for each alternative. The cross county alternatives averaged 28 to 38 mph, while the circulator speed is estimated at 15 mph.

Travel times

Travel times are a factor of average speed and route length. Travel times were estimated by calculating the average speed by mileage. With stop spacing anticipated with an average of every mile (with the exception of the cross county routes through the middle of the County) BRT service will be much quicker than average bus service. These travel times ranged from 19 minutes for the Daytona Circulator C-BRT1 to 67 minutes for US 92 BRT4.

Service hours

Service hours for the Daytona Circulator were determined by analyzing current VOTRAN service hours for the routes that serve the VOTRAN Transfer Plaza in Daytona Beach. Cross county service hours were set to serve the proposed Central Florida rail service in DeLand and DeBary.

Frequencies

Frequencies for the cross county service were set to meet Central Florida Rail service in DeLand and DeBary. Daytona Circulator hours were based upon density, and current VOTRAN bus frequencies in Downtown Daytona Beach. Service hours and frequency of service were established appropriate to each route. Cross county routes are anticipated to require less frequent service than local circulators, but never more than hourly. Routes connecting with CFCR fare set with 30 minute peak headways to match proposed SunRail headways. Daytona Circulators were established as having 15 minute weekday daytime service and 7 day per week service, similar to the service now operated by VOTRAN in the area

E. Arterial Rapid Transit (ART)

Average velocities

Average velocities were calculated as using by determined by using decreasing the average travel time of bus since service will only stop on average every ¾ mile. Peer services were used for comparison purposes. The cross county alternatives averaged 20 to 35 mph, while the circulator speed is estimated at 15 mph.

Travel times

Travel times are a factor of average speed and route length. Travel times were estimated by calculating the average speed by mileage. With stop spacing averaging ¾ mile (with the exception of the cross county routes through the middle of the County) cross county ART, similar to BRT will travel much quicker than normal bus service. Travel time of ART circulators will increase slightly over current bus service. The travel times for circulators ranged from 23 to 48 minutes and cross county routes ranged from 58 to 87 minutes.

Service hours

Service hours for the circulators were determined by analyzing current VOTRAN service hours for the routes that serve the VOTRAN Transfer Plaza in Daytona Beach. Cross county service hours were set to serve the proposed Central Florida rail service in DeLand and DeBary.

Frequencies

Service hours for the circulators were determined by analyzing current VOTRAN service hours for the routes that serve the VOTRAN Transfer Plaza in Daytona Beach. Cross county service hours were set to serve the proposed Central Florida rail service in DeLand and DeBary. Cross county routes are anticipated to require less frequent service than local circulators, but never more than hourly. Routes connecting with SunRail are set with 30 minute peak headways to match proposed CFCR headways. Daytona Circulators were established as having 15 minute weekday daytime service and 7 day per week service, similar to the service now operated by VOTRAN in the area.

7.4 Order of Magnitude Operating Costs

Order of magnitude operating and maintenance expenses were generated for commuter rail using an average of dollars expended per train mile of commuter rail peers. The number of train miles per year that each of these commuter rail concepts would experience were then multiplied by that average to determine the order of magnitude O&M costs that each of these systems would be expected to incur.

Streetcar, BRT, ART, and LRT O&M costs were factored from estimated running times, route length, frequency of service assumptions, and hours of service assumptions. This calculation allows a quantity of vehicle hours to be calculated. These were multiplied by a cost factor typically experienced by peer systems to determine order of magnitude annual O&M costs. Table13 shows the annual operating costs assumed for each alternative.

TABLE 13

Volusia County Transit Study

Order of Magnitude - Annual Operating Costs

January 9, 2009

	I-4 CR1 A&B	SR-44 CR2	US-92 CR3 A&B	FEC CR4	SR-44 LRT1	US-92 LRT2	East Coast STC1	DeLand STC2	DeBary STC3	Daytona West STC4	Daytona West STC5
Order of Magnitude Annual Operating Cost (2009 dollars)	$ 4,856,000	$ 2,020,000	$ 2,570,000	$ 2,937,000	$ 2,754,000	$ 2,040,000	$ 7,735,000	$ 2,893,000	$ 1,281,000	$ 1,332,000	$ 2,664,000

	I-4 ART1	I-4 BRT1	I-4 BRT2	SR-44 ART2	US-92 ART3	US-92 ART4	US-92 BRT3	US-92 BRT4	DeLand C-ART1	DeLand C-ART2
Order of Magnitude Annual Operating Cost (2009 dollars)	$ 1,778,000	$ 1,402,000	$ 2,102,000	$ 2,436,000	$ 1,975,000	$ 2,436,000	$ 2,593,000	$ 2,102,000	$ 1,350,000	$ 773,500

	DeBary C-ART3	DeBary C-ART4	Daytona C-ART5	Daytona C-BRT1
Order of Magnitude Annual Operating Cost (2009 dollars)	$ 1,350,000	$ 1,350,000	$ 3,306,000	$ 2,180,000

Chapter 8 – Evaluation Matrix

8.1 Evaluation Results

Each of the four cross-county corridors and four local circulators were run through the Screen Two evaluation process. As described in Chapter 5, the following measures of effectiveness were examined:

- Transit System Usage
- Accessibility
- Environmental Justice
- Transit Dependent Riders
- Costs
- Land Use
- Neighborhoods and Community
- Population and Employment
- Natural and Built Environments

Each corridor was run through a quantitative and qualitative assessment. The corridors were compared to each other within the same type of corridor (i.e. cross-county corridors were compared to each other and local circulators were compared to each other.) Modes within each of the corridors are also rated so that the "most appropriate" mode choice can be applied to the "most feasible" corridors. Matrices for all of the selected corridors to move to Screen Two are on the next two pages. Backup data tables to the matrices are provided in Appendix A-5.

● This symbol indicates an alternative fully addresses the measure, or is the "best" relative to the consideration.

◒ This symbol indicates an alternative somewhat or partially addresses the measure. The alternative is acceptable but not preferred relative to the consideration.

○ This symbol indicates an alternative fails to address the measure. The alternative is not acceptable relative to the consideration.

TABLE 14: SCREEN 2 ANALYSIS/EVALUATION

Cross-County Corridors	East-West															N-S
	I-4					SR 44			US 92							FEC
Measures of Effectiveness	ART1	BRT 1	BRT 2	CR1 A	CR1B	ART 2	CR2	LRT1	ART3	ART4	BRT3	BRT4	CR3A	CR3B	LRT2	CR4
Transit System Usage	●	●	●	●	●	○	○	○	●	●	●	●	◒	◒	●	◒
Accessibility	◒	◒	◒	●	●	◒	○	◒	◒	◒	◒	◒	●	●	◒	◒
Environmental Justice	◒	◒	◒	◒	◒	◒	◒	◒	●	●	●	●	●	●	●	◒
Transit Dependent Riders	◒	◒	◒	◒	◒	●	●	●	●	●	●	●	●	●	●	◒
Costs	●	◒	◒	○	○	●	◒	○	●	●	◒	◒	◒	◒	○	●
Land Use	●	●	●	●	●	◒	◒	◒	◒	◒	◒	◒	◒	◒	◒	●
Neighborhoods and Community	●	●	●	●	●	◒	◒	◒	◒	◒	◒	◒	◒	◒	◒	●
Population and Employment	●	●	●	●	●	○	○	○	◒	◒	◒	◒	◒	◒	◒	●
Natural and Built Environments	○	○	○	○	○	◒	◒	◒	●	●	●	●	●	●	●	●

Local Circulators	East Coast Circulator	DeLand Circulators			DeBary Circulator			Daytona Beach Circulator			
Measures of Effectiveness	STC1	ART1	ART2	STC2	ART3	ART4	STC3	BRT1	ART5	STC4	STC 5
Transit System Usage	●	○	○	◒	○	○	○	●	◒	◒	◒
Accessibility	◒	◒	◒	○	◒	◒	○	◒	◒	◒	◒
Environmental Justice	◒	◒	◒	◒	○	○	○	●	●	●	●
Transit Dependent Riders	●	○	○	○	◒	◒	◒	●	●	●	●
Costs	○	●	●	○	●	●	●	○	○	●	◒
Land Use	●	◒	◒	◒	●	●	●	●	●	●	●
Neighborhoods and Community	●	○	○	○	◒	◒	◒	○	○	○	○
Population and Employment	●	○	○	○	○	○	○	◒	◒	◒	◒
Natural and Built Environments	○	●	●	●	●	●	●	◒	◒	◒	◒

9– Conclusion and Next Steps

Based on the existing population and employment densities and trip data shown in the County, there is not a current substantial need for high-capacity transit service. Many of the areas simply do not have the density to support high-capacity transit services. High-capacity transit modes, such as commuter rail, BRT or LRT, have corridors with characteristics such as high travel flows through the corridor, development patterns that are supportive of transit (i.e. dense and mixed land uses), key destinations along or near the corridor, and a market sector that is willing or needs to use transit. However, given the fact that many of the communities are focused on growing in the future, the SunRail commuter rail implementation on the west side of the County, and the significant tourist travel market along the east coast, it is important to plan for future transit needs. Therefore, it is important to view this document as a Vision for the future and plan for the next phase of high capacity transit.

As the County continues to grow, it should work to shape growth to support phased implementation of transit corridors. Each community should work to encourage future transit supportive land use as they continue to grow. The County will be better served by having in place an overall strategy for addressing mobility needs not only today, but in the future.

9.1 Cross County Corridors

Each corridor has positive and negatives characteristics. A summary of the positive and negative characteristics for each corridor are as follows:

A. I-4

Positives

- Projected ridership is generally better on all modes compared to all other corridors
- Dedicated right-of-way is already available in the median resulting in significantly less cost than other corridors except for FEC Railroad Option/Alternative
- Alternative would provide through routing capabilities or transfer possibilities to SunRail
- Alternative would allow for a potential cross-county rail service as part of FDOT's Vision Plan and allow a connection between the CSX Railroad and the FEC Railroad
- Serves the two most dense and growing areas in the County: Daytona Beach and Deltona
- Serves a relatively higher number of minority and low-income individuals
- I-4 is a high tech corridor with several existing and proposed employment centers

Negatives

- There are several environmental features within 500 feet of the corridor that could be impacted, including five natural areas and one state forest.
- High cost of laying new track entire length of corridor for commuter rail alternatives

B. US 92

Positives

- Projected ridership for some modes is significant
- Alternative would provide through routing capabilities or transfer possibilities to SunRail
- Serves the dense and growing area of Daytona Beach

- Serves the highest percentage of minorities and low-income individuals
- No significant environmental features within 500 feet of the corridor

Negatives

- Significant right-of-way issues on the north side of DeLand to allow alignment to continue to US 92
- Does not serve Deltona
- No dedicated right-of-way

C. SR 44

Positives

- Serves a higher number of transit dependent riders
- Serves a relatively higher number of minority and low-income individuals

Negatives

- Connects less populated cities
- Most likely alignment would need to terminate at I-4 on the west end
- Four natural areas and one community park (open space) within 500 feet of corridor
- No dedicated right-of-way

D. FEC Railroad

Positives

- Connects the most number of cities than any of the other corridors
- Low cost for commuter rail mode
- Lowest number of environmental features within 500 feet of corridor

Negatives

- Potential commuter rail service on the FEC Railroad as part of FDOT's Vision Plan only in conceptual stage, so no through routing possibilities
- Proposed ridership is the lowest of any of the commuter rail options

9.2 Recommended Cross-County Corridors for Further Study

Both the I-4 Corridor and the US 92 Corridor are recommended for further study. Both corridors connect the City of Daytona Beach with the proposed SunRail service allowing for more opportunities to serve employment centers and travel beyond Volusia County. Of these two, the I-4 corridor has more promise for a few reasons, particularly if a commuter rail mode was selected. One, the I-4 corridor is considered a high-tech employment corridor, and therefore, would provide a stronger ridership base for a high-capacity system. Secondly, the I-4 corridor also serves the City of Deltona, a city that is more populated than Daytona Beach. Thirdly, the I-4 corridor has available right-of-way which is a significant cost savings when talking about a dedicated guideway. Finally, service in the I-4 corridor could be a "spoke" in the wheel of future intercity passenger rail service throughout Florida as part of FDOT's Vision Plan, as discussed below.

Over the years there has been ongoing consideration of establishing intercity rail passenger service within Florida. FDOT's Vision Plan describes a network concept throughout the state. It includes Miami-Jacksonville service on the FEC Railroad and Orlando-Jacksonville service on the CSX route via DeLand and Palatka. Clearly, fast through Miami-Jacksonville service, stopping at major population centers, would attract a significant portion of travelers now

using I-95. Similarly, Orlando-Jacksonville service would attract travelers now using I-4. However, an Orlando-Jacksonville route crossing Volusia County on the I-4 alignment would have several advantages over the Palatka routing: it would be more direct, faster, and serve much more populated areas. Internal Volusia County riders could also utilize the intercity service. The intercity rail infrastructure would also support commuter rail service (which would likely have more stops in the County).

9.3 Local Circulators

Each local circulator corridor has positive and negatives characteristics. A summary of the positive and negative characteristics for each local circulator corridor are as follows:

A. East Coast Circulator

Positives

- Connects the largest number of cities
- Potential ridership is the greatest among local circulator alternatives

Negatives

- Alignment is long and therefore expensive
- VOTRAN's existing trolley service is currently in place to serve similar trips
- Presence of environmental features within 500 feet of corridor

B. DeLand Circulator

Positives

- Bus option costs are relatively inexpensive
- Would provide a connection to the planned SunRail station
- No environmental features within 500 feet of corridor

Negatives

- Not all areas of the city have the densities to support high-capacity transit

C. DeBary Circulator

Positives

- Bus option costs are relatively inexpensive
- Would provide a connection to the planned SunRail station
- Provide a connection to Deltona
- No environmental features within 500 feet of corridor

Negatives

- Not all areas of the city have the densities to support high-capacity transit

D. Daytona Beach Circulator

Positives

- One of the most populated cities in the county
- Circulator would serve a lot of trip generators including the International Speedway, Daytona Beach International Airport, colleges, employment centers and commercial activity centers
- Alignments are shorter so costs are lower with high-capacity mode options
- Would serve more minority and lower income individuals

Negatives

- Does not provide a connection to the planned SunRail service
- A few potential historic properties are located within 500 feet of corridor

9.4 Recommended Local Circulator for Further Study

The Daytona Beach Circulator is the circulator option/alternative that has the most potential for a high-capacity transit option, given the fact that it serves a heavily populated area and the most trip generators. Although it does not serve an area outside of Daytona Beach, it does provide an opportunity for transit connections outside of the City, via the planned Daytona Beach Intermodal Transportation Center. Therefore, it would be the recommended local circulator for further study.

Appendix

Screen One Data Tables

Screen One Data Table

Category	Corridor	Population[1]	Employment[2]	Land Use		Neighborhoods and Community
				Consistency with Existing Land Use	Consistency with Future Land Use Plans	
North-South Corridor	FEC Railroad	316,144	94,379	Ormond Beach- Predominantly single family residential with a high percentage of commercial uses, limited industrial activity and with a high percentage of open space Holly Hill- Largely single family residential community (12,000 population) with commercial and industrial land uses Daytona Beach—Denser populated residential and commercial center with airport, colleges, and racetrack and tourist activities South Daytona-Small community (population 13,000) with a mix of land uses including small business, office, commercial, and residential. Port Orange-Larger community	Ormond Beach – No significant change in land use is expected Holly Hill – Goal of city is to serve a regional and international function in East Central Florida; has a plan for community redevelopment along Ridgewood Ave; plans for a large wholesale and industrial corridor to the west of Ridgewood Avenue along FEC corridor; single family residential to the east of Ridgewood Avenue. Daytona Beach – Plans reflect continuing mixed use development including emphasis on expanding commercial uses around	Provides a continuous north-south linkage between county and municipalities to the north (i.e. Flagler County) and county and municipalities to the south (i.e. Brevard County)

[1] Population within a 3-mile corridor of the N-S and E-W routes and within a 1-mile corridor of the circulator routes
[2] Employment within a 3-mile corridor of the N-S and E-W routes and within a 1-mile corridor of the circulator routes

Category	Corridor	Population[1]	Employment[2]	Land Use		Neighborhoods and Community
				Consistency with Existing Land Use	Consistency with Future Land Use Plans	
				(56,067 population) with largely single family residential and significant commercial uses New Smyrna Beach – Mainly residential and commercial uses along railroad corridor; some agricultural and industrial; airport adjacent to corridor Edgewater – Mainly residential community with significant natural areas; 20,000 population; rural character Oak Hill- Small rural community (population 1,200) with open space and minor commercial land uses.	airport, expanding Halifax Medical center, and promoting economic development possibilities with colleges South Daytona – City has plans for redevelopment along Ridgewood Avenue with goal of mixed use, residential and office Port Orange- Goal is to increase economic base by capturing more employment uses, industrial parks, and a town center with a mix of land uses. New Smyrna Beach- Proposed high density, medium density, and low density residential, commercial, some recreational land uses Edgewater- Land uses expected to remain the same; no redevelopment anticipated Oak Hill - - Land uses expected to remain the same; no redevelopment anticipated	
				Daytona Beach—Denser populated	Daytona Beach – Plans	

Category	Corridor	Population[1]	Employment[2]	Land Use		Neighborhoods and Community
				Consistency with Existing Land Use	Consistency with Future Land Use Plans	
	Williamson Boulevard	175,769	28,367	residential and commercial center with airport, colleges, and racetrack and tourist activities New Smyrna Beach- Mainly residential and commercial uses along railroad corridor; some agricultural and industrial; airport adjacent to corridor	reflect continuing mixed use development including emphasis on expanding commercial uses around airport, expanding Halifax Medical center, and promoting economic development possibilities with colleges New Smyrna Beach- Proposed high density, medium density, and low density residential, commercial, some recreational land uses	Provides connection between Dayton Beach and New Smyrna Beach; corridor in outlying area of both cities
East-West Corridor	SR 40	84,151	24,183	Ormond Beach- Predominantly single family residential with a high percentage of commercial uses, limited industrial activity and with a high percentage of open space Pierson - A small agricultural based community with large lot farmsteads	Ormond Beach – No significant change in land use is expected Pierson - No significant change in land use is expected	No significant destination on west end of corridor.
	US 92	181,844	78,086	Daytona Beach- Denser populated residential and commercial center with airport, colleges, and racetrack and tourist activities DeLand- Existing land uses include	Daytona Beach- Growing metropolitan area; plans reflect continuing mixed use development including emphasis on expanding commercial uses around airport, expanding Halifax	Connects high growth area to proposed SunRail service

Category	Corridor	Population[1]	Employment[2]	Land Use		Neighborhoods and Community
				Consistency with Existing Land Use	Consistency with Future Land Use Plans	
				retail, residential and manufacturing including a local airport and business park complex.	Medical center, and promoting economic development possibilities with colleges DeLand- Growth expected in future due to proposed Sun Rail service and airport/business park expansion.	
	I-4	233,492	78,303	Daytona Beach- Denser populated residential and commercial center with airport, colleges, and racetrack and tourist activities South Daytona-Small community (population 13,000) with a mix of land uses including small business, office, commercial, and residential Deltona- Large city (86,000 population) with mainly residential land uses; residential land uses include single-family homes, gated communities, condominiums, and apartments DeBary- Mainly residential community with mix of small and large lot developments; large amount of open space due to environmentally sensitive lands. Springview Industrial	Daytona Beach – Growing metropolitan area; plans reflect continuing mixed use development including emphasis on expanding commercial uses around airport, expanding Halifax Medical center, and promoting economic development possibilities with colleges. South Daytona – City has plans for redevelopment along Ridgewood Avenue with goal of mixed use, residential and office. Deltona- Situated along the I-4 corridor with vacant land encourages future development of commercial and industrial development; new commercial being planned at the I-4/SR 472	Connects the two largest cities and other growth areas along the high tech I-4 corridor with the proposed SunRail service.

Category	Corridor	Population[1]	Employment[2]	Land Use		Neighborhoods and Community
				Consistency with Existing Land Use	Consistency with Future Land Use Plans	
				Park has light industrial uses. Orange City- A small, historic (8,000 population) community; newer commercial development has allowed Orange City to emerge as a regional marketplace	interchange to allow for future office and warehouse development. DeBary- Projected steady growth due to I-4 growth corridor and proposed SunRail commuter service; available land around I-4 interchange for future development Orange City-A community focusing on redevelopment opportunities including new commercial being planned at the I-4/SR 472 interchange to allow for future office and warehouse development	
	SR 44	109,389	32,511	New Smyrna Beach- Mainly residential and commercial uses along railroad corridor; some agricultural and industrial; airport adjacent to corridor. DeLand- Existing land uses include retail, residential and manufacturing including a local airport and business park complex.	New Smyrna Beach- Proposed high density, medium density, and low density residential, commercial, some recreational land uses.	Connects less populated area of the east coast with the proposed SunRail service
	Seminole County to East Coast	21,494	1,636	Edgewater – Mainly residential community with significant natural areas; 20,000 population; rural character	Edgewater- Land uses expected to remain the same; no redevelopment anticipated	Does not connect any significant population or employment centers

Category	Corridor	Population[1]	Employment[2]	Land Use		Neighborhoods and Community
				Consistency with Existing Land Use	Consistency with Future Land Use Plans	
	Saxon Blvd/Maytown Road	112,954	17,539	DeBary- Mainly residential community with mix of small and large lot developments; large amount of open space due to environmentally sensitive lands. Springview Industrial Park has light industrial uses Deltona- Large city (86,000 population) with mainly residential land uses; residential land uses include single-family homes, gated communities, condominiums, and apartments Oak Hill - Small rural community (population 1,200) with open space and minor commercial land uses.	DeBary- Projected steady growth due to I-4 growth corridor and proposed SunRail commuter service; available land around I-4 interchange for future development Deltona- Proposed continued commercial and industrial development due to presence in high-tech corridor and the I-4/SR 472 interchange planned development Oak Hill - Land uses expected to remain the same; no redevelopment anticipated	Connects some significant population areas with connection to proposed SunRail service
Local Circulators	Pierson to DeBary	72,906	28,367	Pierson - A small agricultural based community with large lot farmsteads Deltona- Large city (86,000 population) with mainly residential land uses; residential land uses include single-family homes, gated communities, condominiums, and apartments Orange City- A small, historic (8,000 population) bedroom community; newer commercial development has	Pierson - No significant change in land use is expected Deltona- Proposed continued commercial and industrial development due to presence in high-tech corridor and the I-4/SR 472 interchange planned development Orange City-A community focusing on redevelopment opportunities including new	Provides connection for four communities to proposed SunRail service

Category	Corridor	Population[1]	Employment[2]	Land Use		Neighborhoods and Community
				Consistency with Existing Land Use	Consistency with Future Land Use Plans	
				allowed Orange City to emerge as a regional marketplace DeBary- Mainly residential community with mix of small and large lot developments; large amount of open space due to environmentally sensitive lands. Springview Industrial Park has light industrial uses	commercial being planned at the I-4/SR 472 interchange to allow for future office and warehouse development DeBary- Projected steady growth due to I-4 growth corridor and proposed SunRail commuter service; available land around I-4 interchange for future development	
	DeBary to Deltona	36,283	8,818	DeBary- Mainly residential community with mix of small and large lot developments; large amount of open space due to environmentally sensitive lands. Springview Industrial Park has light industrial uses Deltona- Large city (86,000 population) with mainly residential land uses; residential land uses include single-family homes, gated communities, condominiums, and apartments	DeBary- Projected steady growth due to I-4 growth corridor and proposed SunRail commuter service; available land around I-4 interchange for future development Deltona -Proposed continued commercial and industrial development due to presence in high-tech corridor and the I-4/SR 472 interchange planned development	Provides connection between a larger community with proposed SunRail service
	Deland to Orange City	28,908	11,600	DeLand- Existing land uses include retail, residential and manufacturing including a local airport and business park complex. Orange City- A small, historic	DeLand- Growth expected in future due to proposed Sun Rail service and airport/business park expansion.	Provides connection for two smaller cities to SunRail service

Category	Corridor	Population[1]	Employment[2]	Land Use		Neighborhoods and Community
				Consistency with Existing Land Use	Consistency with Future Land Use Plans	
				(8,000 population) bedroom community; newer commercial development has allowed Orange City to emerge as a regional marketplace	Orange City-A community focusing on redevelopment opportunities including new commercial being planned at the I-4/SR 472 interchange to allow for future office and warehouse development	
	Downtown Deland	46,290	18,680	DeLand- Existing land uses include retail, residential and manufacturing including a local airport and business park complex.	DeLand- Growth expected in future due to proposed Sun Rail service and airport/business park expansion.	Allows for circulatoion around DeLand to connect to proposed SunRail service
	Port Orange Pavilion DRI	45,709	13,025	Port Orange-Larger community (56,067 population) with largely single family residential and significant commercial uses	Port Orange- Expected significant growth due to location along two major interstates; proximate to airport and nearly port facilities; strong residential growth expected to continue	Only provides connection to DRI
	East Coast	102,368	26,049	Daytona Beach Shores- A 5.5 mile long island resort community consisting mainly of high rise condominiums, hotels, motels and townhomes, and some single family residences. Daytona Beach - Denser populated residential and commercial center	Daytona Beach Shores- Continued development of residential and tourist amenities expected Daytona Beach – Growing metropolitan area; plans reflect continuing mixed use development including emphasis on expanding	Provides connection between several tourist based communities on east coast

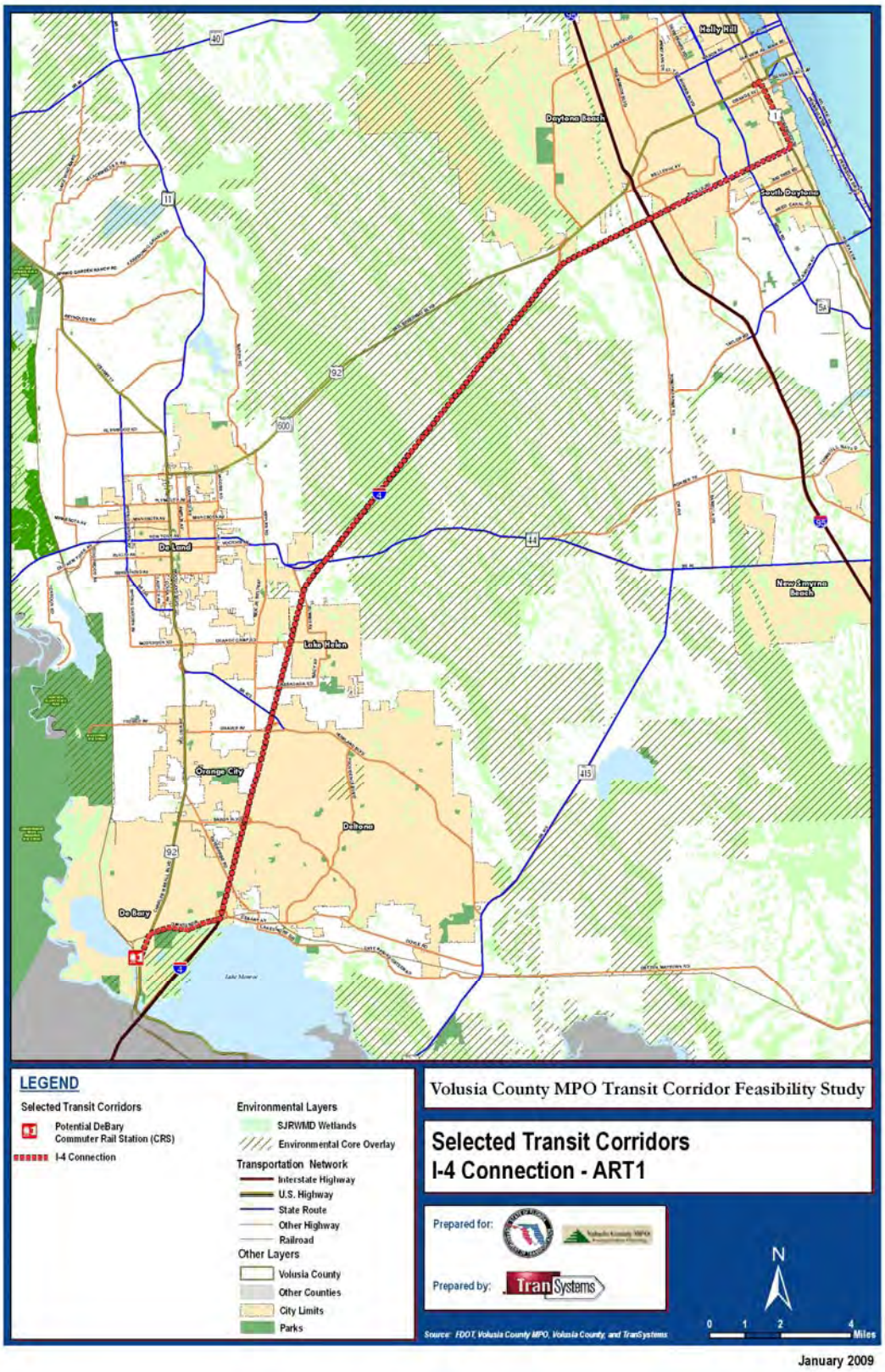
Category	Corridor	Population[1]	Employment[2]	Land Use		Neighborhoods and Community
				Consistency with Existing Land Use	Consistency with Future Land Use Plans	
				with airport, colleges, and racetrack and tourist activities Ormond Beach- Predominantly single family residential with a high percentage of commercial uses, limited industrial activity and with a high percentage of open space Ponce Inlet- A small residential beach community	commercial uses around airport, expanding Halifax Medical center, and promoting economic development possibilities with colleges Ponce Inlet- Existing land uses expected to continue	
	Daytona Beach	64,785	36,370	Daytona Beach- - Denser populated residential and commercial center with airport, colleges, and racetrack and tourist activities	Daytona Beach – Growing metropolitan area; plans reflect continuing mixed use development including emphasis on expanding commercial uses around airport, expanding Halifax Medical center, and possibilities with colleges	Provides circulation to many activity centers in Daytona Beach

Screen Two Data Tables

	I-4					SR 44			US 92							FEC
Analysis Measures	ART1	BRT1	BRT2	CR1A	CR1B	ART2	CR2	LRT1	ART3	ART4	BRT3	BRT4	CR3A	CR3B	LRT2	CR4
Estimated Daily Ridership	1200	1200	1400	900	900	300	300	350	1000	850	1100	1200	500	500	1100	400
Frequency/headways	30 min peak 60 min off-peak	30 min peak 60 min off-peak	30 min peak 60 min off-peak	3AM Rd. Trips 3PM Rd. Trips	2AM Rd Trips 2 PM RdTrips	30 min peak 60 min off-peak	30 min.	30 min.	30 min peak 60 min off-peak	30 min peak 60 min off- peak	30 min peak 60 min off-peak	30 min peak 60 off-peak	2AM RdTrips 2PM Rd Trips	2AM RdTrips 2 PM RDTrips	30 min.	2AM RdTrips 2 PM RDTrips
Transit mode connections/through routing	SunRail Votran	SunRail Votran	SunRail Votran	SunRail Votran	SunRail Votran	SunRail Votran	Votran	SunRail Votran	SunRail Votran	SunRail Votran	SunRail Votran	SunRail Votran	SunRail Votran	SunRail Votran	SunRail Votran	Votran
Percent of low-income residents	14.0%	14.0%	14.0%	14.0%	14.0%	14.1%	14.1%	14.1%	20.7%	20.7%	20.7%	20.7%	20.7%	20.7%	20.7%	12.7%
Percent of minority residents	19.7%	19.7%	19.7%	19.7%	19.7%	16.9%	16.9%	16.9%	37.7%	37.7%	37.7%	37.7%	37.7%	37.7%	37.7%	17.4%
Percent of households without vehicles	4.5%	4.5%	4.5%	4.5%	4.5%	10.0%	10.0%	10.0%	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%	9.6%	5.7%
Costs of infrastructure and rolling stock	$9.2mil	$93mil	$119.4mil	$563 mil	$563 mil	$11.4mil	$277mil	$382mil	$13mil	$14.1mil	$83.4mil	$83.4mil	$287mil	$283mil	$313mil	$131mil
Annual costs of operating and maintenance	$1.78mil	$1.40mil	$2.10mi	$4.86 mil	$4.86 mil	$2.43mi	$2.02mi	$2.75mil	$1.98mil	$2.44mil	$2.59mil	$2.10mil	$2.57mil	$2.57mil	$2.04mil	$2.94mil
Compatibility with existing land use	High	High	High	High	High	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	High
Compatibility with proposed land use	High	High	High	High	High	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	High
Connectivity between neighborhoods	6 cities	6 cities	6 cities	6 cities	6 cities	2 cities	2 cities	2 cities	2 Cities	2 cities	2 cities	2 cities	2 cities	2 cities	2 cities	8 cities
Population	233,492	233,492	233,492	233,492	233,492	109,389	109,389	109,389	181,844	181,844	181,844	181,844	181,844	181,844	181,844	316,144
Employment	78,303	78,303	78,303	78,303	78,303	32,511	32,511	32,511	78,086	78,086	78,086	78,086	78,086	78,086	78,086	94,379
Presence of wetlands within corridor	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Analysis Measures	I-4-all mods	SR 44-all modes	US 92- all modes	FEC
Presence of natural areas acreage within corridor	Port Orange Mitigation Bank, Gemini Springs, West Conservation Area, Longleaf Pine Preserve, Port Orange Wellfiedl, DEP Submerged	Longleaf Pine Preserve, Leifler Property, DEP Submerged, Sugar Mill Ruins	Clark Bay Conservation Area, Port Orange Wellfield, DEP Submerged	DEP,Doris Leeper Preserve
Presence of historic and archeological resources in corridor	Several potentially eligible properties	Several potentially eligible properties	Several potentially eligible properties	Several potentially eligible properties
Parks served	Tiger Bay State Forest	Bicentennial Youth Park	Tiger Bay State Forest	Tomoko State Park

	East Coast Circulator	DeLand Circulators			DeBary Circulator			Daytona Beach Circulator			
Analysis Measures	STC1	ART1	ART2	STC2	ART3	ART4	STC3	BRT1	ART5	STC4	STC 5
Estimated Daily Ridership	3,000	500	500	600	500	500	200	1600	700	700	800
Frequency (headways)	15 min peak 30 min off- peak	30 min peak 60 min off- peak	30 min peak 60 min off- peak	30 min	30 min peak 60 min off- peak	30 min peak 60 min off- peak	30 min	15 min peak 30 min off- peak	15 min peak 30 min off- peak	15 min peak 30 min off- peak	15 min peak 30 min off- peak
Transit mode connections/through routing	FEC Votran	SunRail Votran	SunRail Votran	SunRail Votran	SunRail Votran	SunRail Votran	SunRail Votran	FEC Votran	FEC Votran	FEC Votran	FEC Votran
Presence of low-income residents	15.4%	17.2%	17.2%	17.2%	7.8%	7.8%	7.8%	21.8%	21.8%	21.8%	21.8%
Presence of minority residents	27.1%	25.0%	25.0%	25.0%	28.6%	28.6%	28.6%	41.8%	41.8%	41.8%	41.8%
Percent of households without vehicles	5.0%	2.0%	2.0%	2.0%	3.8%	3.8%	3.8%	4.1%	4.1%	4.1%	4.1%
Costs of infrastructure and rolling stock	$652mil	$7.5mil	$3.7mil	$398mil	$4.8mil	$4.8mil	$154mil	$12.5mil	$12.2mil	$107mil	$242mil
Costs of operating and maintenance	$7.74 mil	$1.35mil	$0.8mil	$2.89mil	$1.4mil	$1.4mil	$1.28mil	$2.2mil	$3.3mil	$1.33mil	$2.66mil
Consistency with existing land use	High	Medium	Medium	Medium	High	High	High	High	High	High	High
Consistency with proposed land use	High	Medium	Medium	Medium	High	High	High	High	High	High	High
Connectivity between neighborhoods	4 cities	1 city	1 city	1 city	2 cities	2 cities	2 cities	1 city	1 city	1 city	1 city
Population	102,368	46,290	46,290	46,290	36,283	36,283	36,283	64,785	64,785	64,785	64,785
Employment	26,049	18,680	18,680	18,680	8,818	8,818	8,818	36,370	36,370	36,370	36,370
Presence of wetlands within corridor	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Presence of natural areas acreage within corridor	Ponce Preserve, DEP	None			None			None			
Presence of historic and archeological resources in corridor	Several potentially eligible properties	None			None			Several potentially eligible properties			
Parks within corridor	North Peninsula Bulow Creek	None			None			None			


Holly Hill
Daytona Beach
South Daytona
De Land
Lake Helen
New Smyrna Beach
Orange City
Deltona
Do Bary
LEGEND
Selected Transit Corridors
Potential DeBary Commuter Rail Station (CRS)
I-4 Connection
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
I-4 Connection - ART1
Prepared for:
Prepared by:
TranSystems
N
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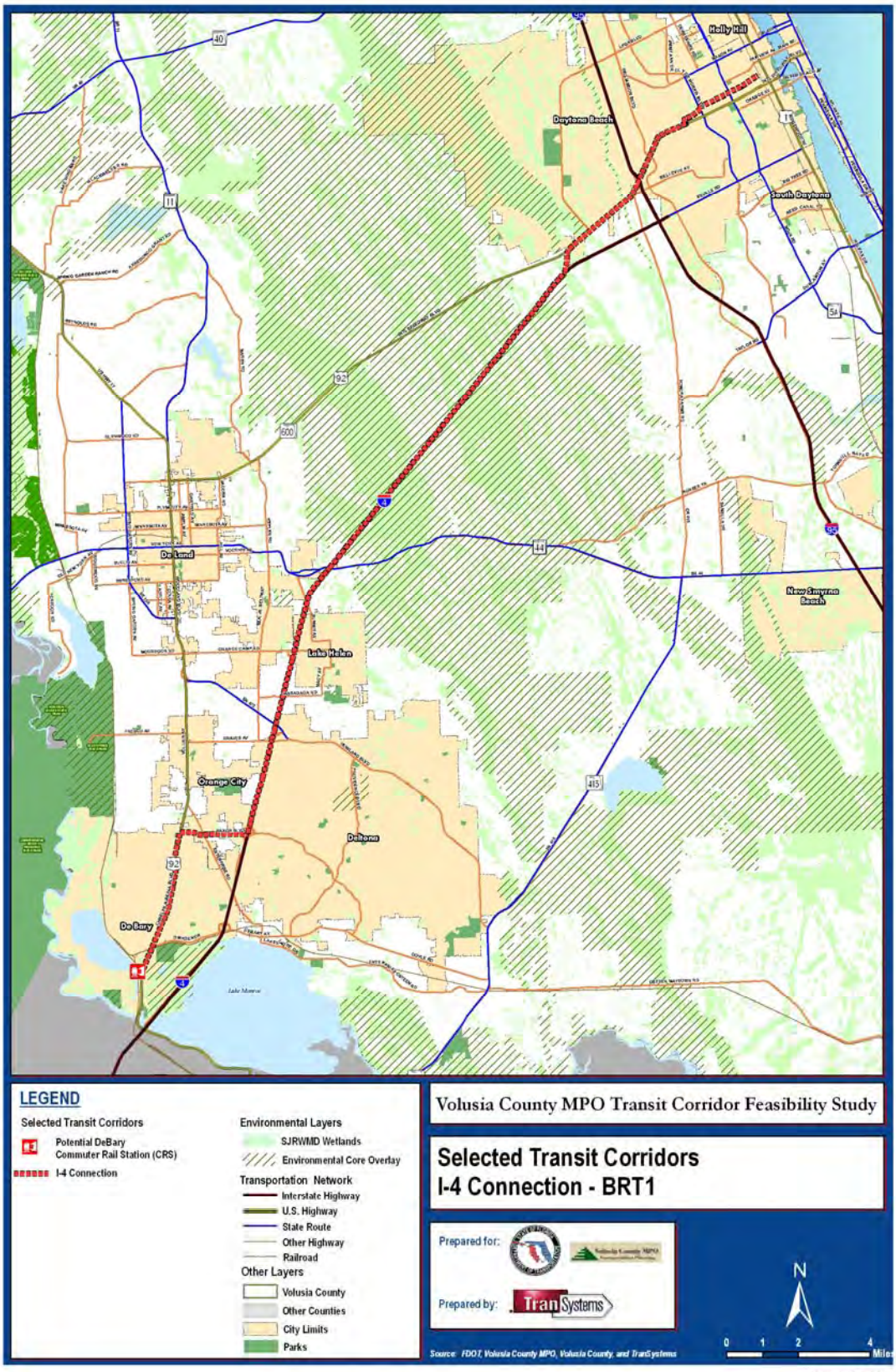
Source: FDOT, Volusia County MPO, Volusia County, and TranSystems
January 2009


Holly Hill
Daytona Beach
South Daytona
New Smyrna Beach
De Land
Lake Helen
Orange City
Deltona
De Bary
LEGEND
Selected Transit Corridors
Potential DeBary Commuter Rail Station (CRS)
I-4 Connection
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
I-4 Connection - BRT1
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Prepared by:
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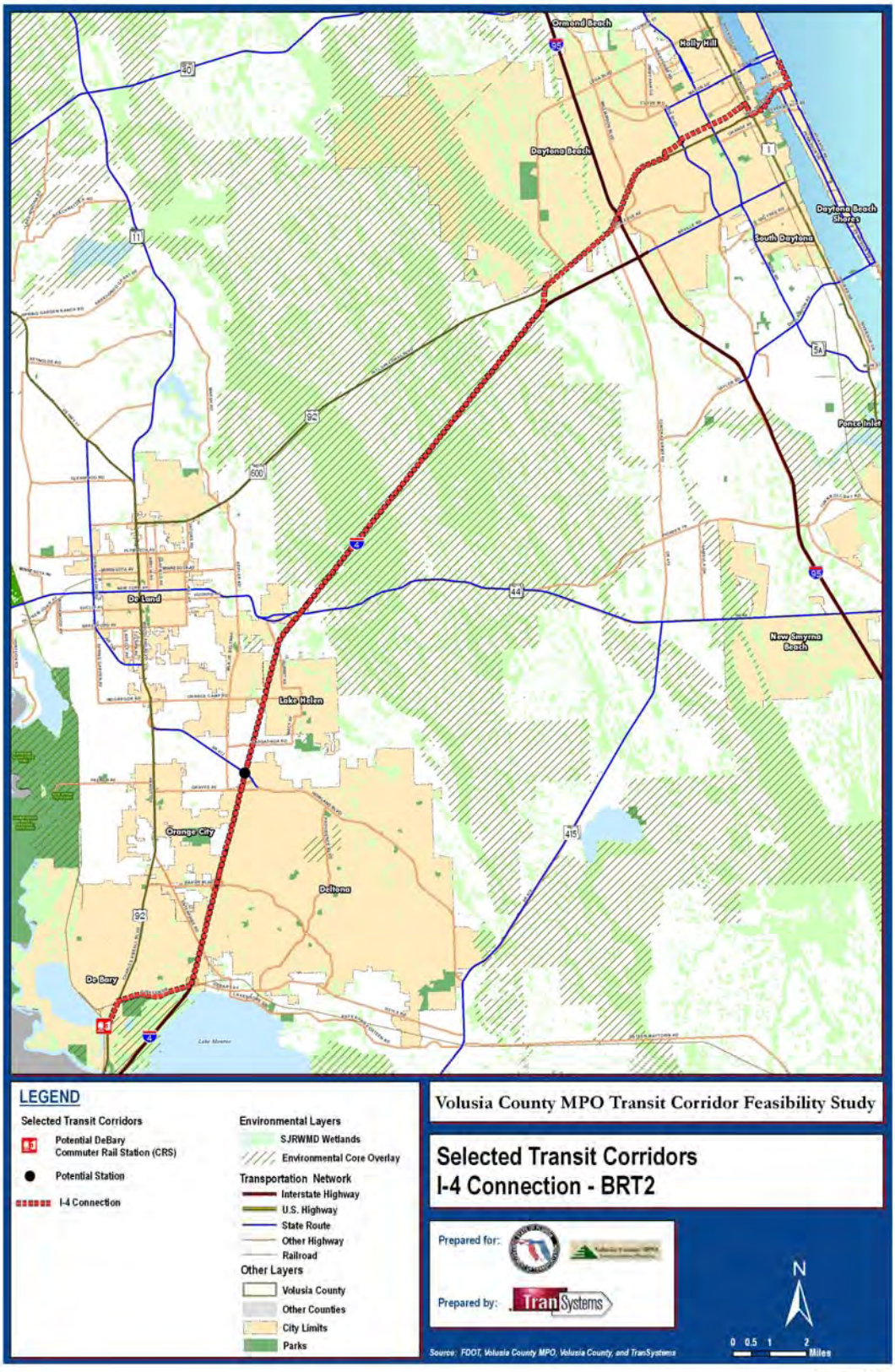
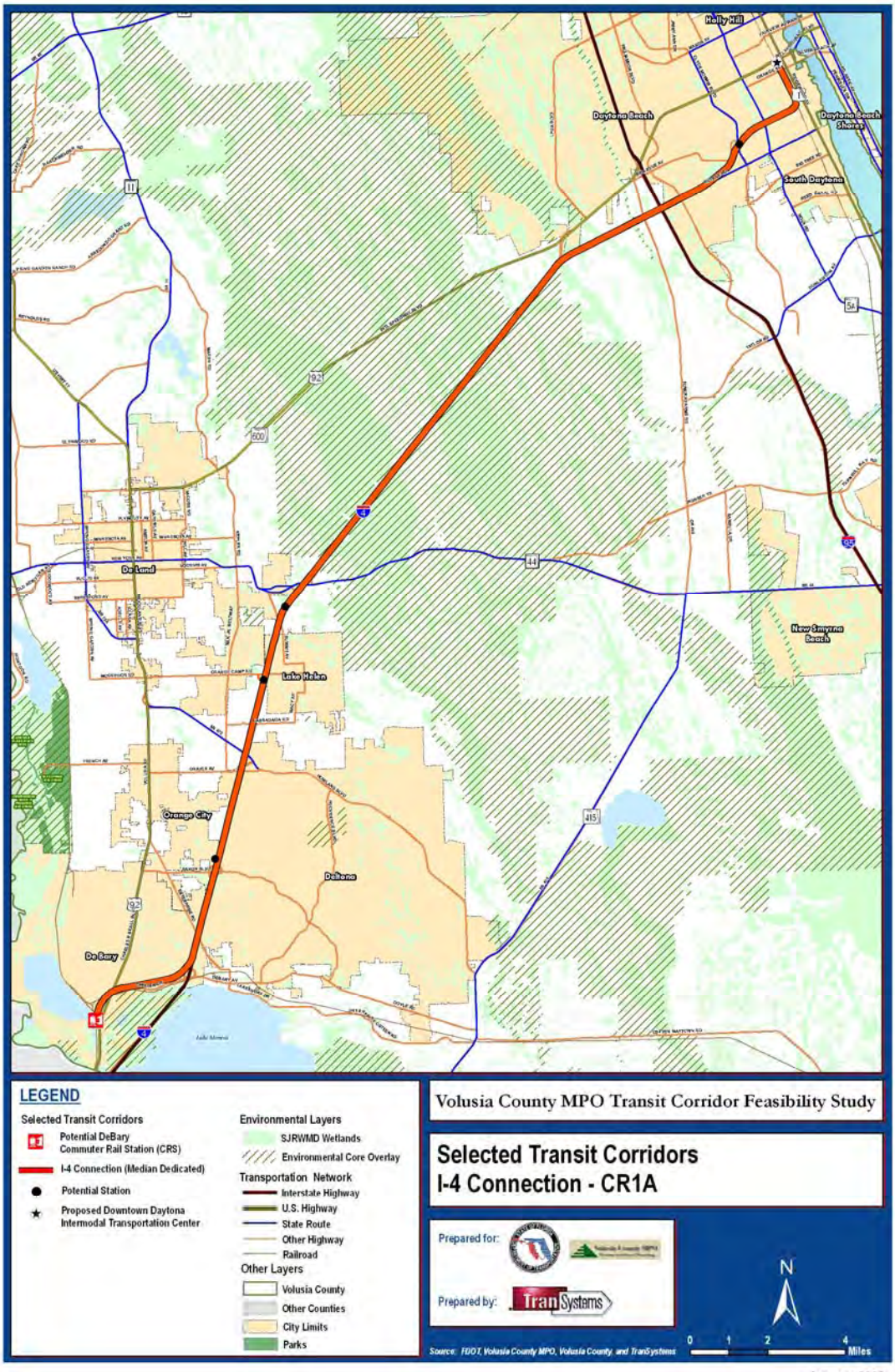
January 2009



January 2009


Holly Hill
Daytona Beach
Daytona Beach Shores
South Daytona
De Land
Lake Helen
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Orange City
Deltona
De Bary
LEGEND
Selected Transit Corridors
Potential DeBary Commuter Rail Station (CRS)
I-4 Connection (Median Dedicated)
Potential Station
Proposed Downtown Daytona Intermodal Transportation Center
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
I-4 Connection - CR1A
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Prepared by:
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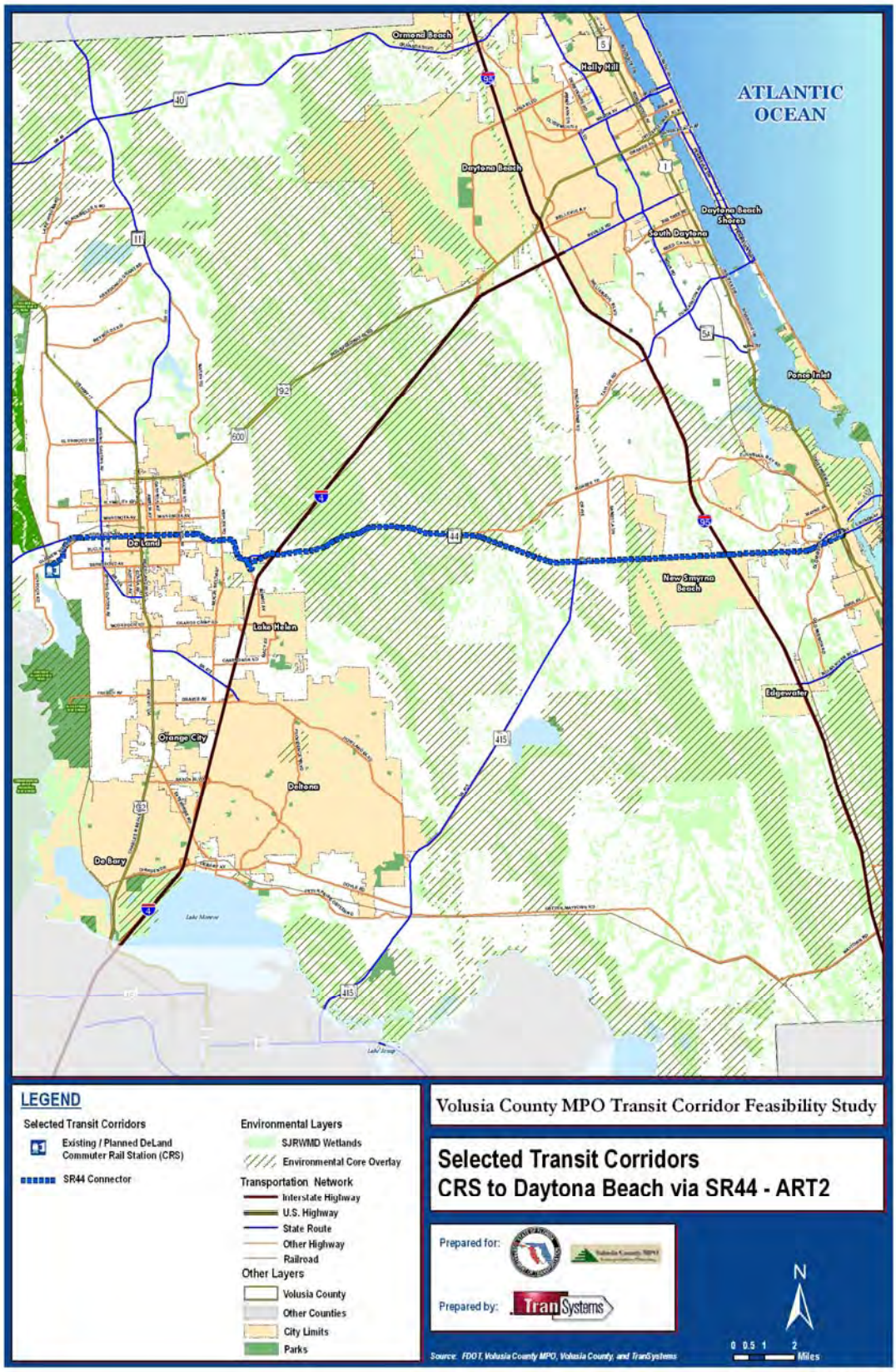
Source: FDOT, Volusia County MPO, Volusia County, and TranSystems
January 2009


ATLANTIC OCEAN
Ormond Beach
Holly Hill
Daytona Beach
Daytona Beach Shores
South Daytona
Ponce Inlet
DeLand
New Smyrna Beach
Lake Helen
Edgewater
Orange City
Deltona
Debary
LEGEND
Selected Transit Corridors
Existing / Planned DeLand Commuter Rail Station (CRS)
SR44 Connector
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
CRS to Daytona Beach via SR44 - ART2
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Prepared by:
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Miles
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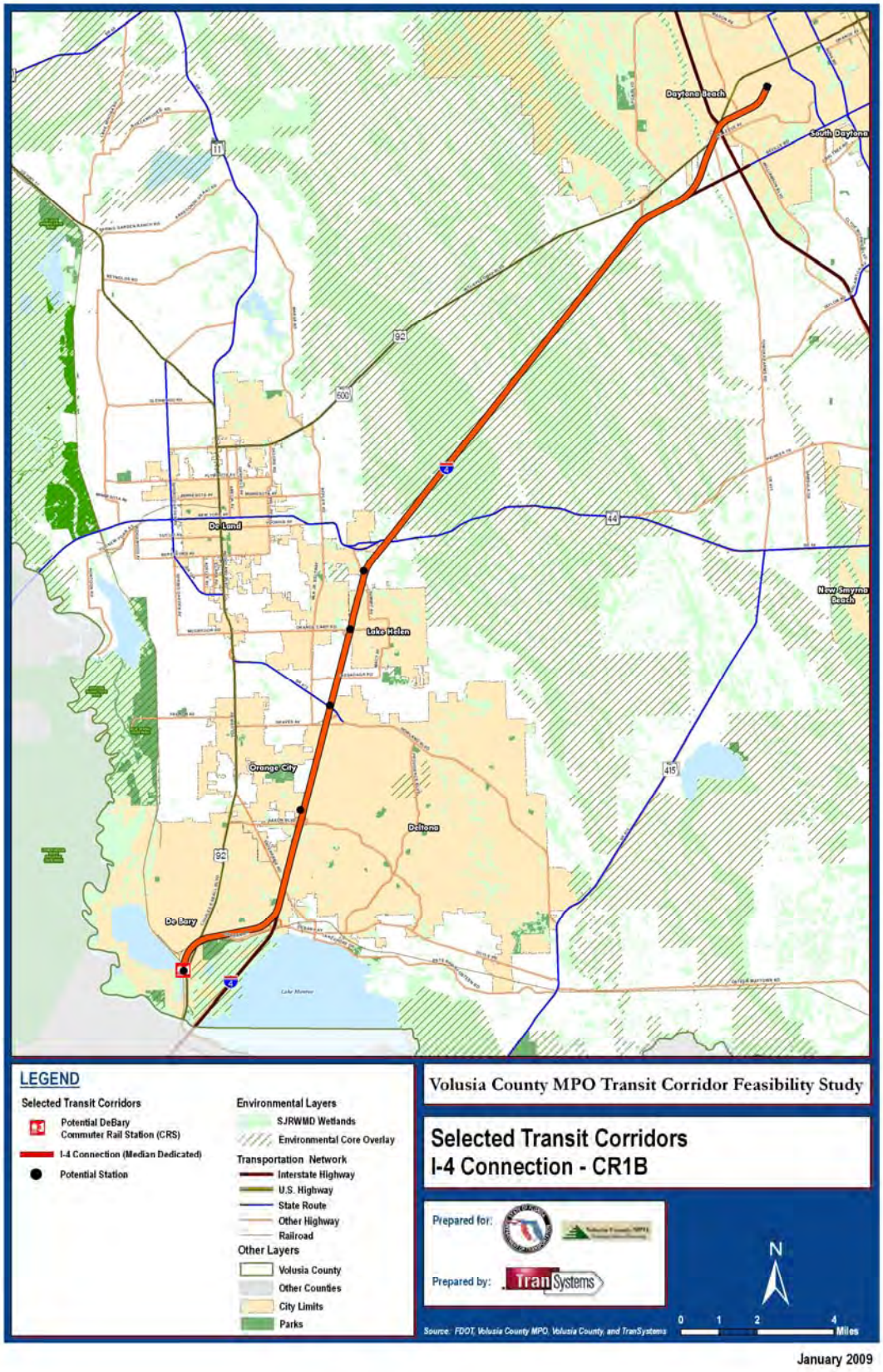
January 2009


Daytona Beach
South Daytona
De Land
Lake Helen
New Smyrna Beach
Orange City
Deltona
De Bary
LEGEND
Selected Transit Corridors
Potential DeBary Commuter Rail Station (CRS)
I-4 Connection (Median Dedicated)
Potential Station
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
I-4 Connection - CR1B
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Prepared by:
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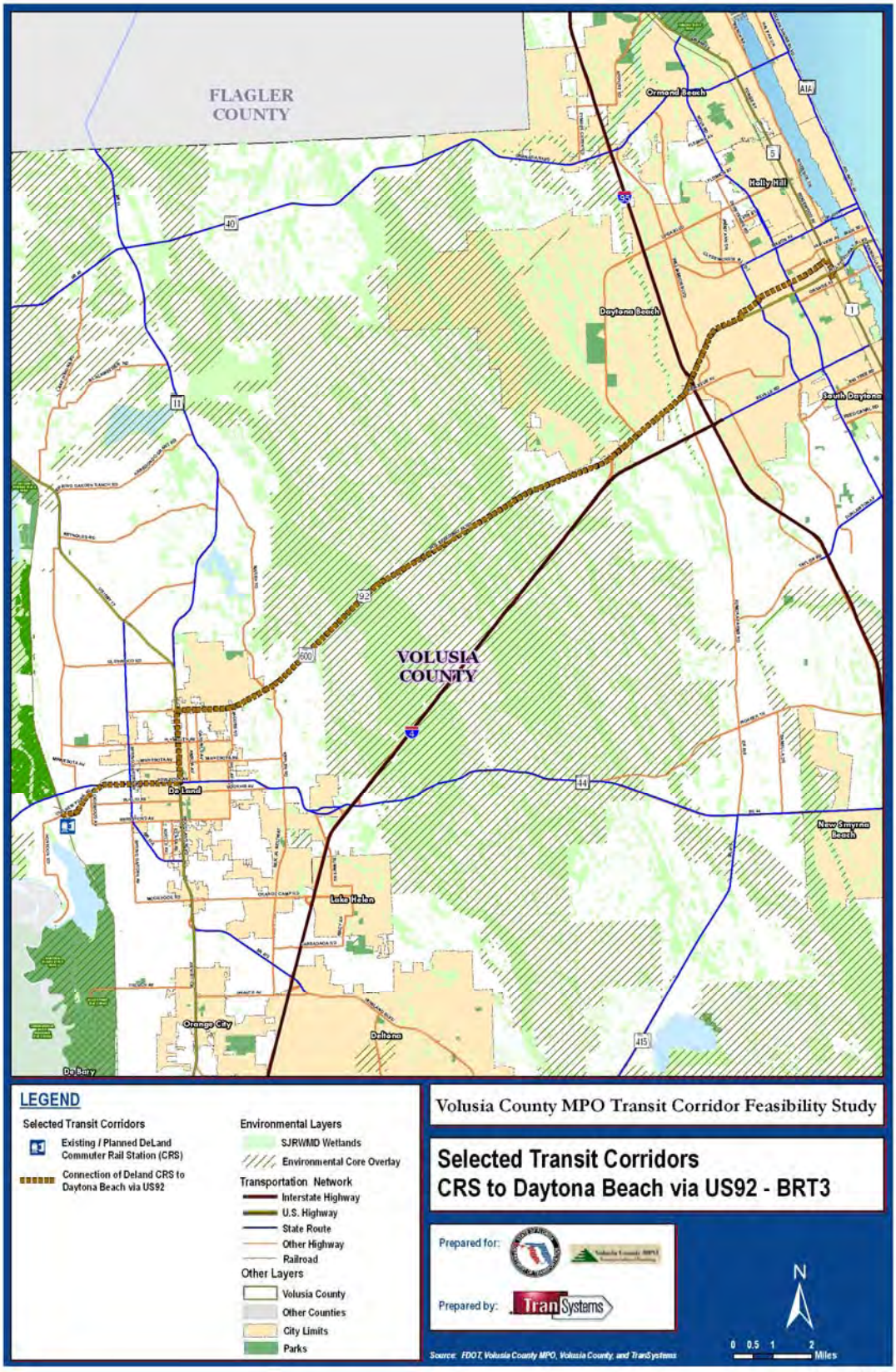
January 2009


FLAGLER COUNTY
VOLUSIA COUNTY
Ormond Beach
Holly Hill
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South Daytona
Deland
New Smyrna Beach
Lake Helen
Orange City
Deltona
Debary
LEGEND
Selected Transit Corridors
Existing / Planned DeLand Commuter Rail Station (CRS)
Connection of Deland CRS to Daytona Beach via US92
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
CRS to Daytona Beach via US92 - BRT3
Prepared for:
Prepared by:
TranSystems
Source: FDOT, Volusia County MPO, Volusia County, and TranSystems
N
0 0.5 1 2
Miles
January 2009


FLAGLER COUNTY
ATLANTIC OCEAN
VOLUSIA COUNTY
SEMINOLE COUNTY
Ormond Beach
Holly Hill
Daytona Beach
Daytona Beach Shores
South Daytona
Ponce Inlet
New Smyrna Beach
Edgewater
Deland
Lake Helen
Orange City
Deltona
De Bary
LEGEND
Selected Transit Corridors
Existing / Planned DeLand Commuter Rail Station (CRS)
SR 44 Connector
Potential Station
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
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Other Counties
City Limits
Parks
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Selected Transit Corridors
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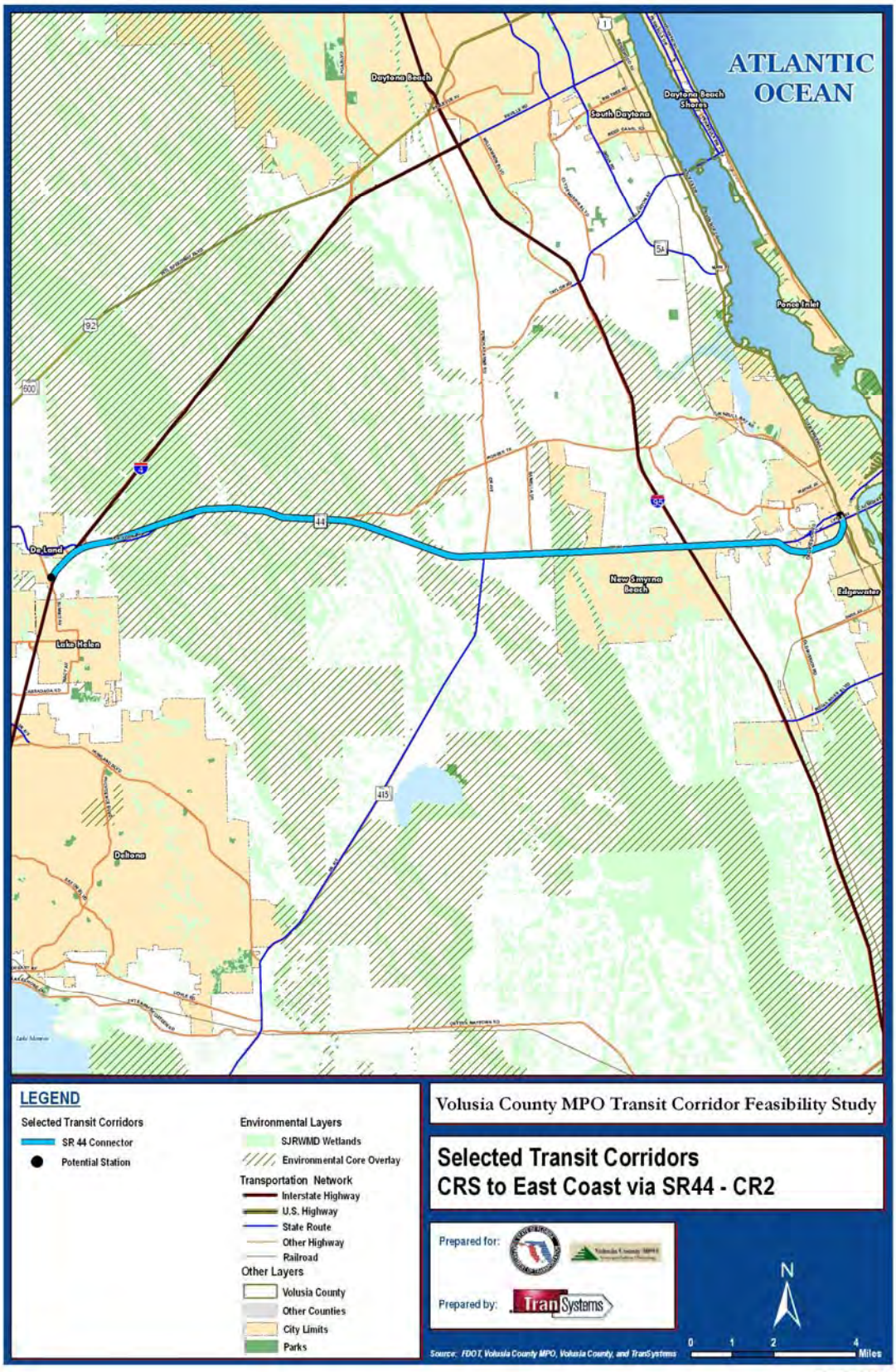
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Ponce Inlet
New Smyrna Beach
Edgewater
De Land
Lake Helen
Deltona
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Selected Transit Corridors
SR 44 Connector
Potential Station
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
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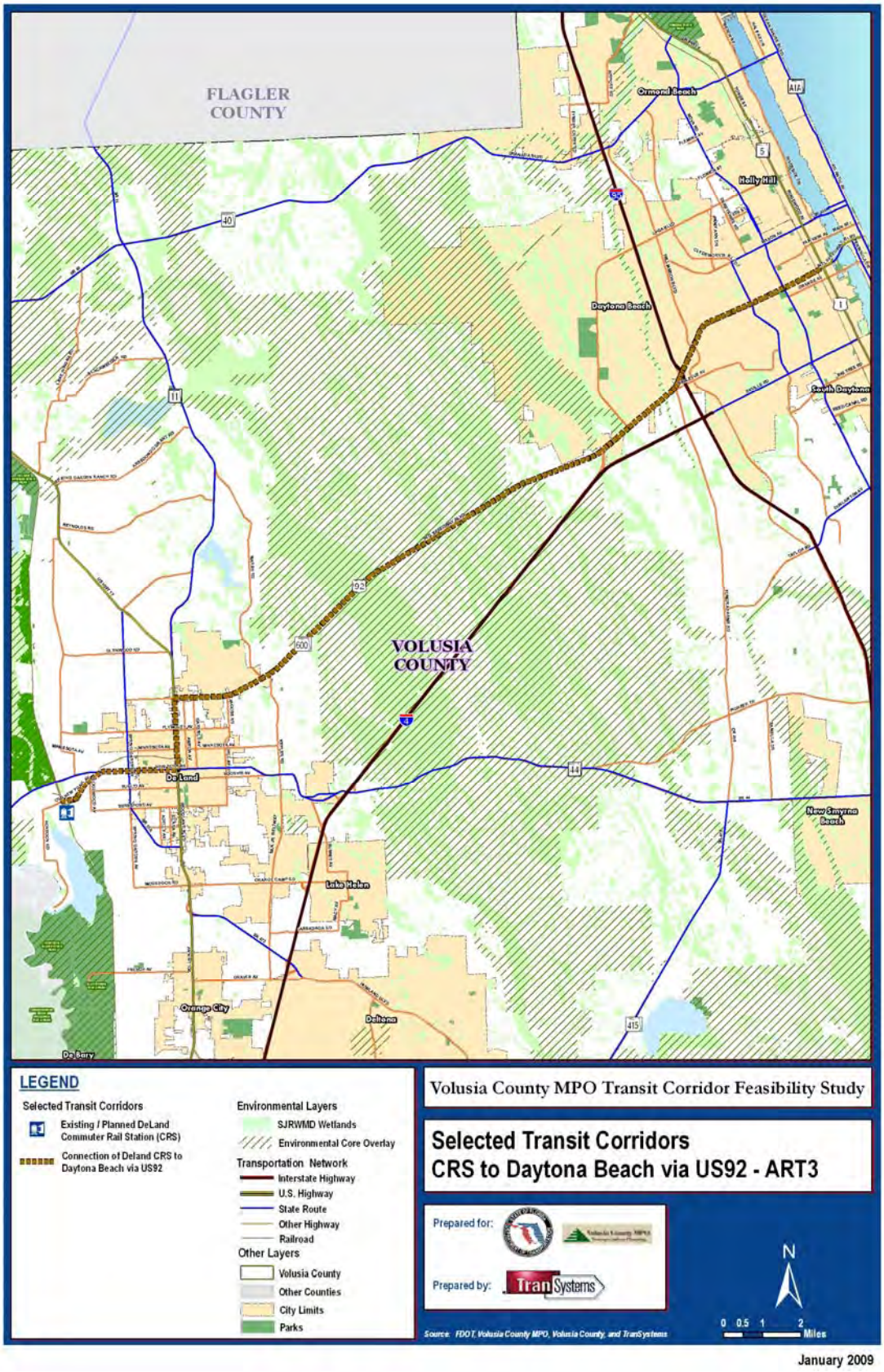
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415
LEGEND
Selected Transit Corridors
Existing / Planned DeLand Commuter Rail Station (CRS)
Connection of Deland CRS to Daytona Beach via US92
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
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Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
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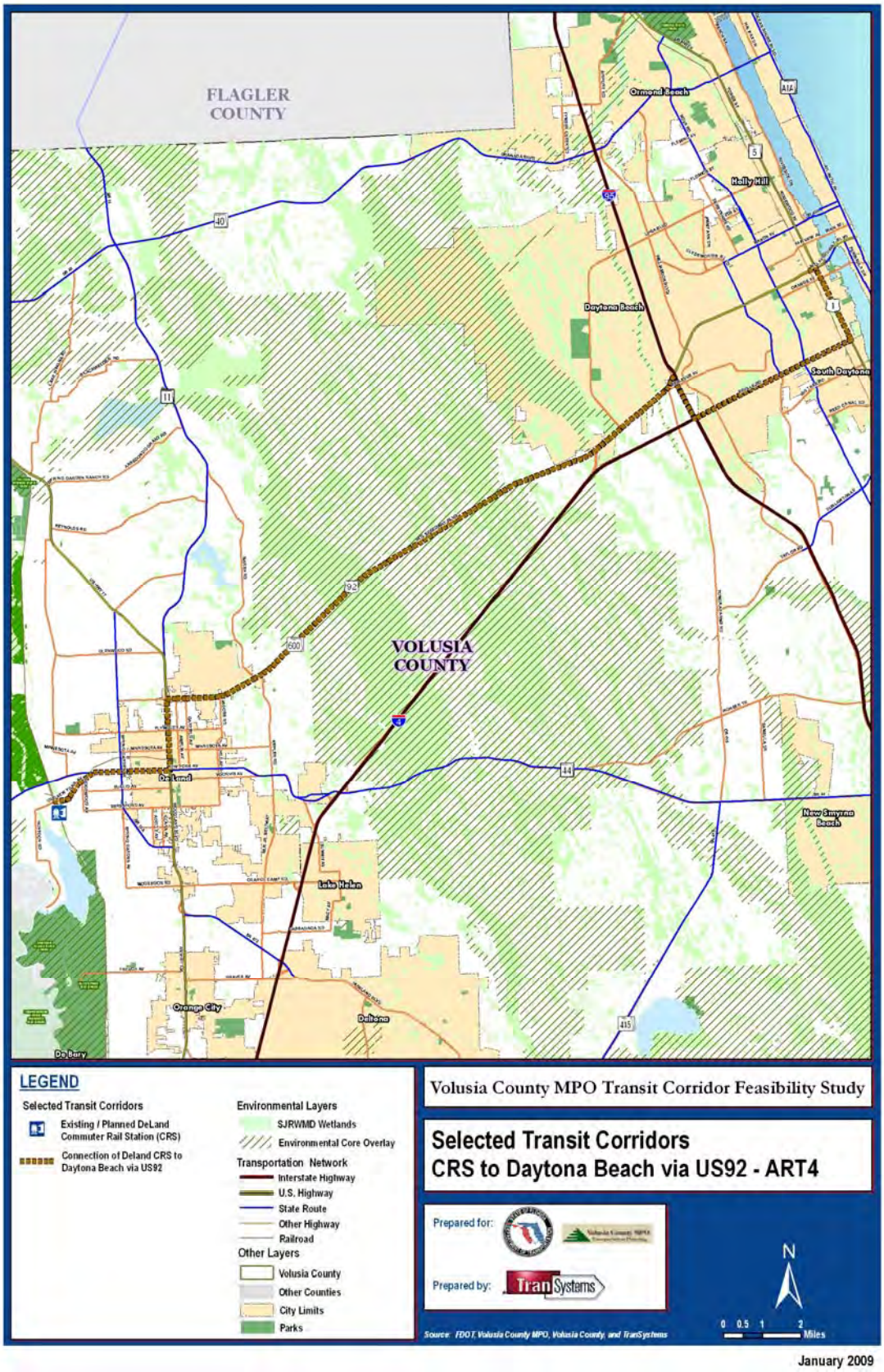
FLAGLER COUNTY
VOLUSIA COUNTY
Ormond Beach
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Debary
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SJRWMD Wetlands
Environmental Core Overlay
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Interstate Highway
U.S. Highway
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Other Highway
Railroad
Other Layers
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Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
CRS to Daytona Beach via US92 - ART4
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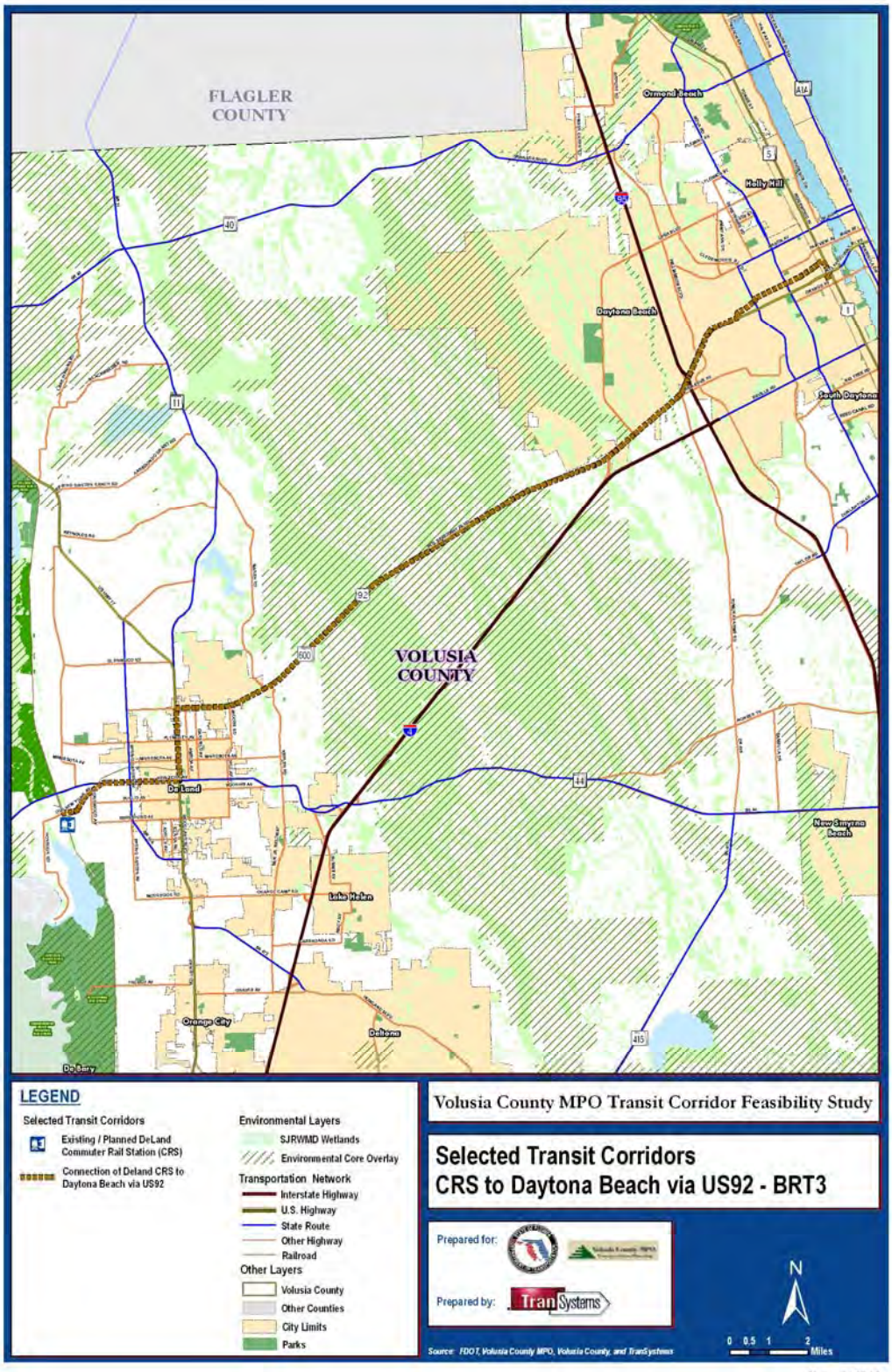
FLAGLER COUNTY
VOLUSIA COUNTY
Ormond Beach
Holly Hill
Daytona Beach
South Daytona
New Smyrna Beach
DeLand
Lake Helen
Orange City
Deltona
Deland
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Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
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Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
CRS to Daytona Beach via US92 - BRT3
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Prepared by:
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N
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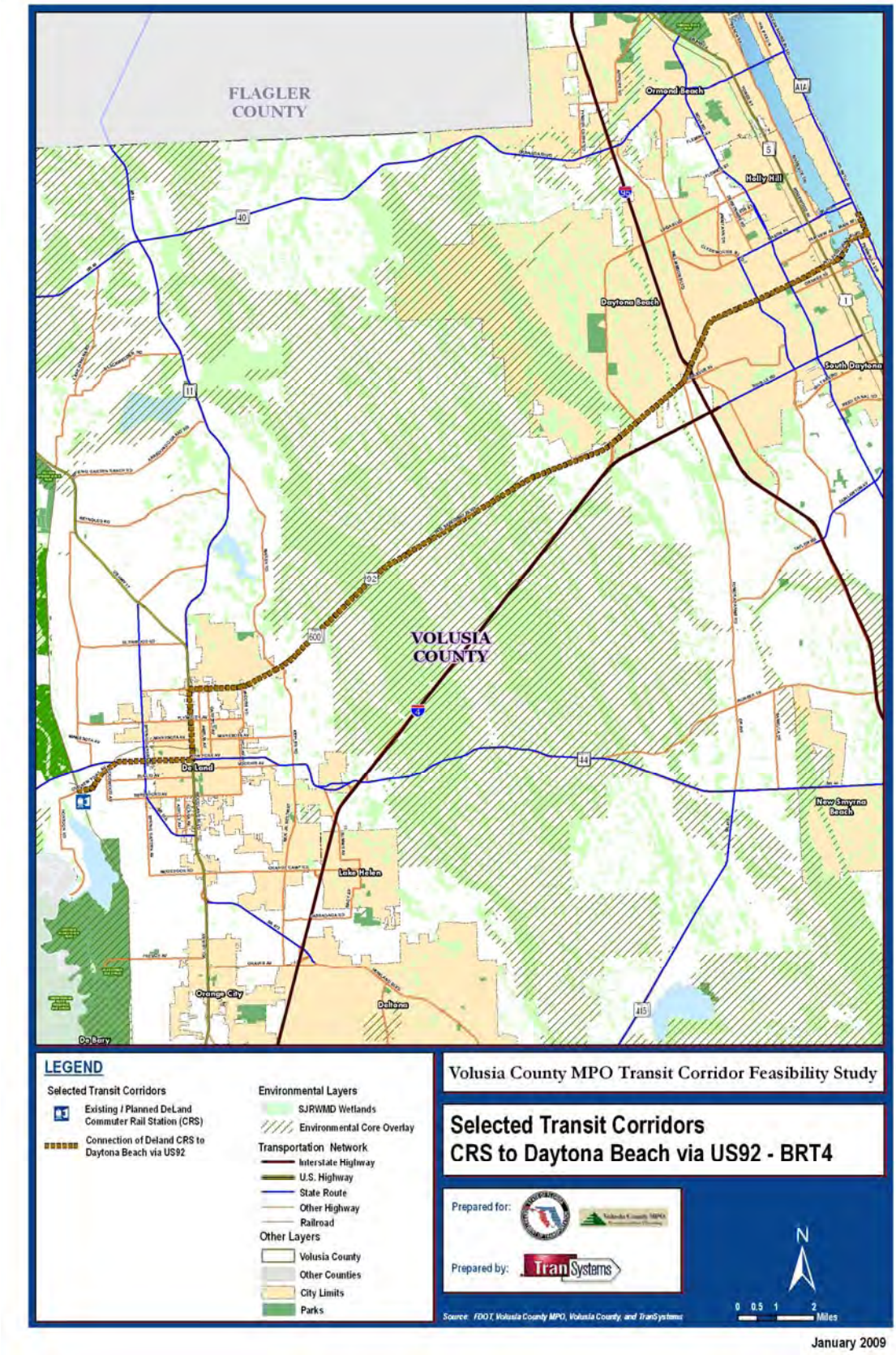
Miles
Source: FDOT, Volusia County MPO, Volusia County, and TranSystems
January 2009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De Land
New Smyrna Beach
Lake Helen
Orange City
Deltona
Volusia County MPO Transit Corridor Feasibility Study
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LEGEND
Selected Transit Corridors
Existing / Planned DeLand Commuter Rail Station (CRS)
Connection of Deland CRS to Daytona Beach via US92
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
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Prepared by:
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Miles
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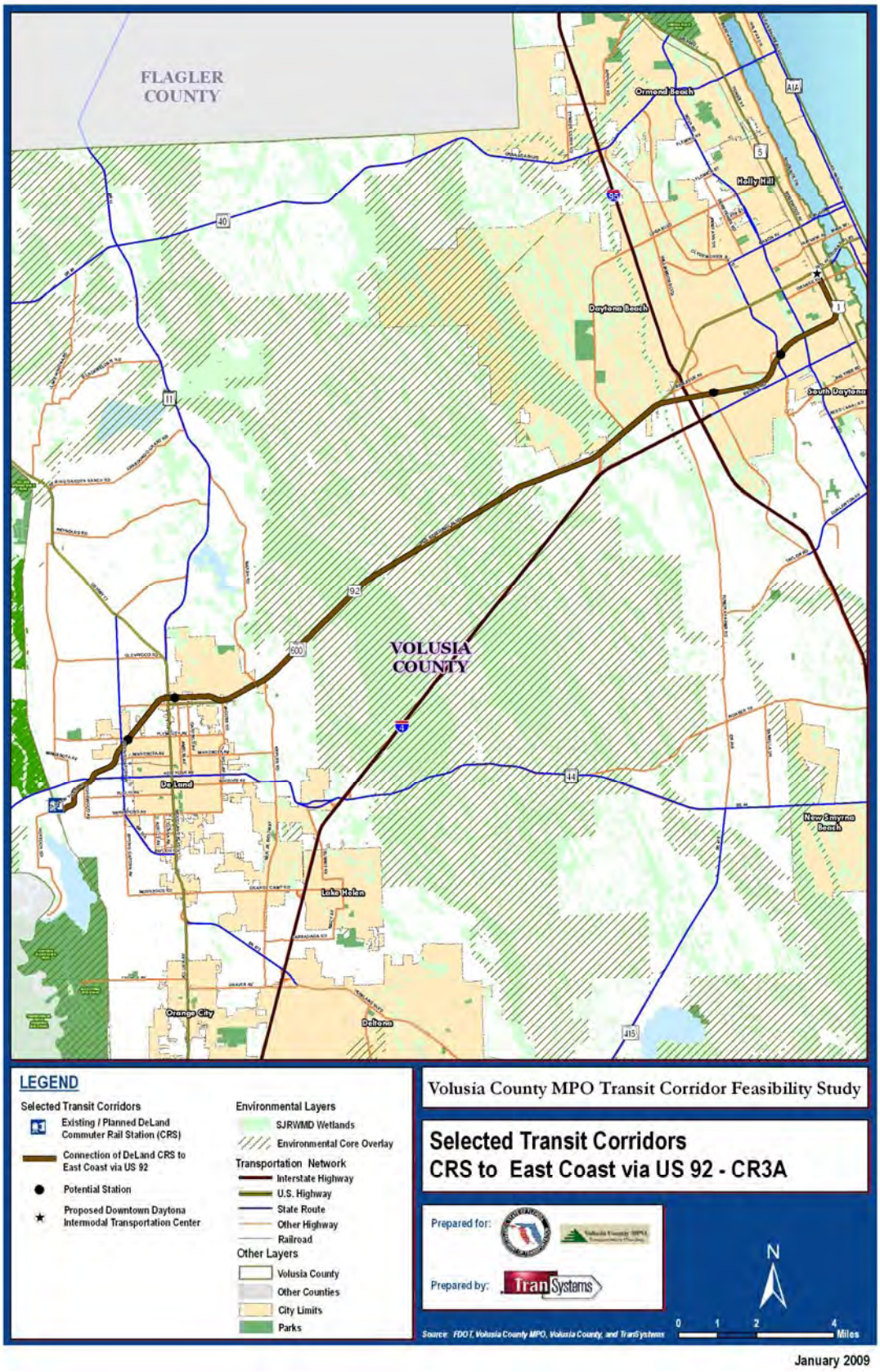
FLAGLER COUNTY
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Ormond Beach
Holly Hill
Daytona Beach
South Daytona
Deland
New Smyrna Beach
Lake Helen
Orange City
Deltona
LEGEND
Selected Transit Corridors
Existing / Planned DeLand Commuter Rail Station (CRS)
Connection of DeLand CRS to East Coast via US 92
Potential Station
Proposed Downtown Daytona Intermodal Transportation Center
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
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Prepared by:
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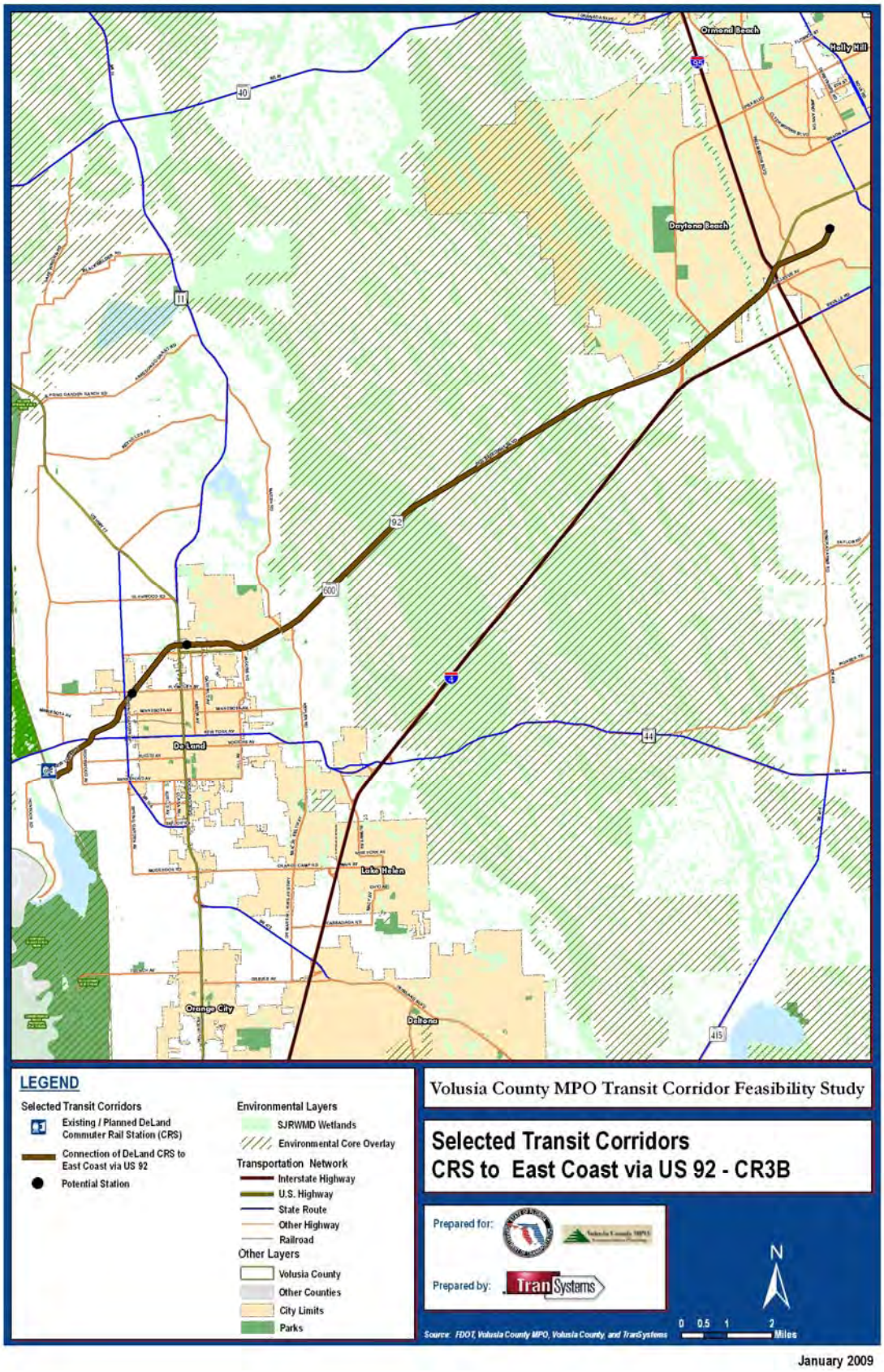
0 1 2 4 Miles
January 2009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LEGEND
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Environmental Layers
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Interstate Highway
U.S. Highway
State Route
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Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
CRS to East Coast via US 92 - CR3B
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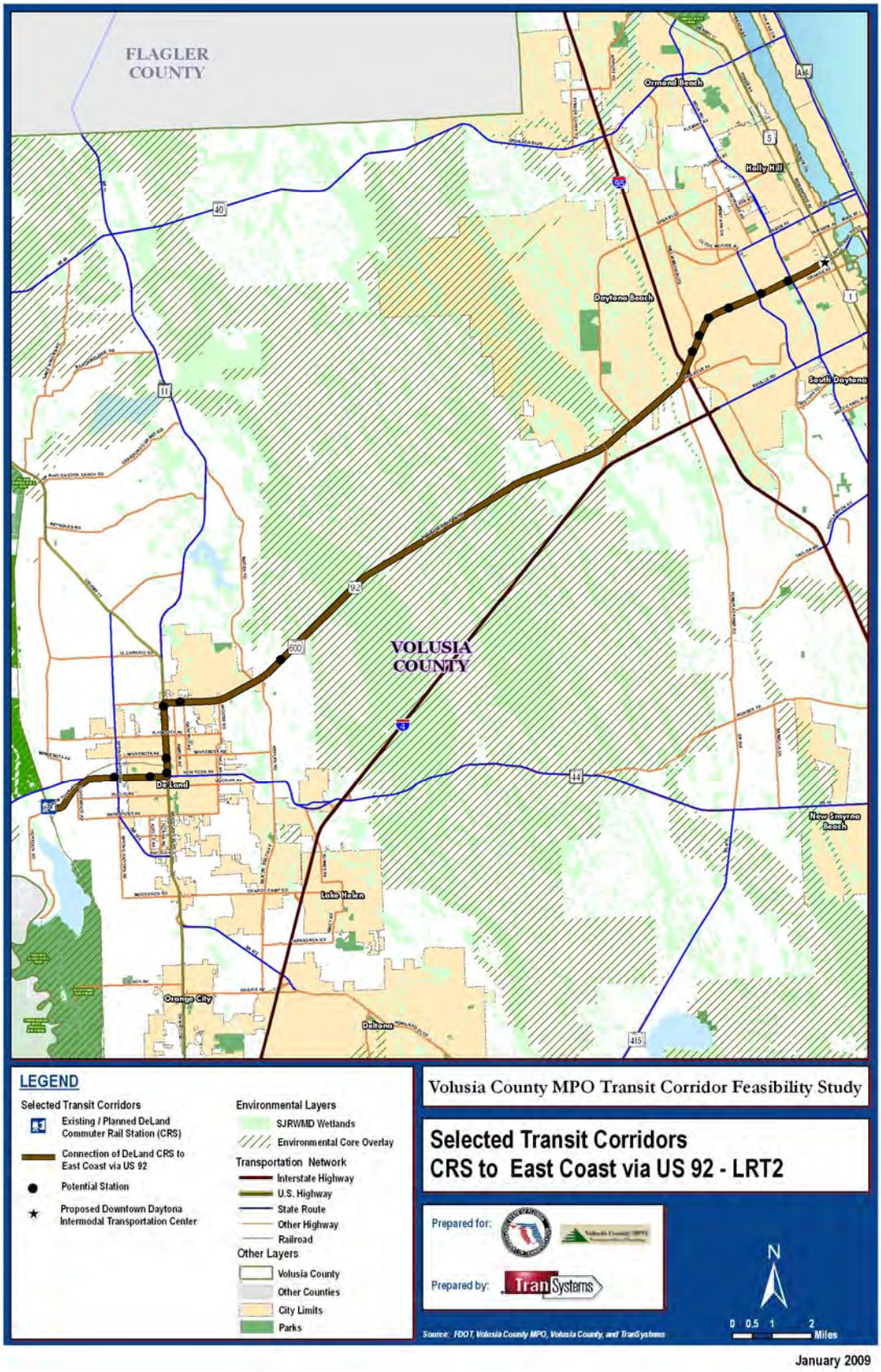
January 2009


FLAGLER COUNTY
VOLUSIA COUNTY
Ormond Beach
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Daytona Beach
South Daytona
De Land
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Orange City
Deltona
New Smyrna Beach
LEGEND
Selected Transit Corridors
Existing / Planned DeLand Commuter Rail Station (CRS)
Connection of DeLand CRS to East Coast via US 92
Potential Station
Proposed Downtown Daytona Intermodal Transportation Center
Environmental Layers
SJRWMD Wetlands
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Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
CRS to East Coast via US 92 - LRT2
Prepared for:
Prepared by:
TranSystems
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Miles
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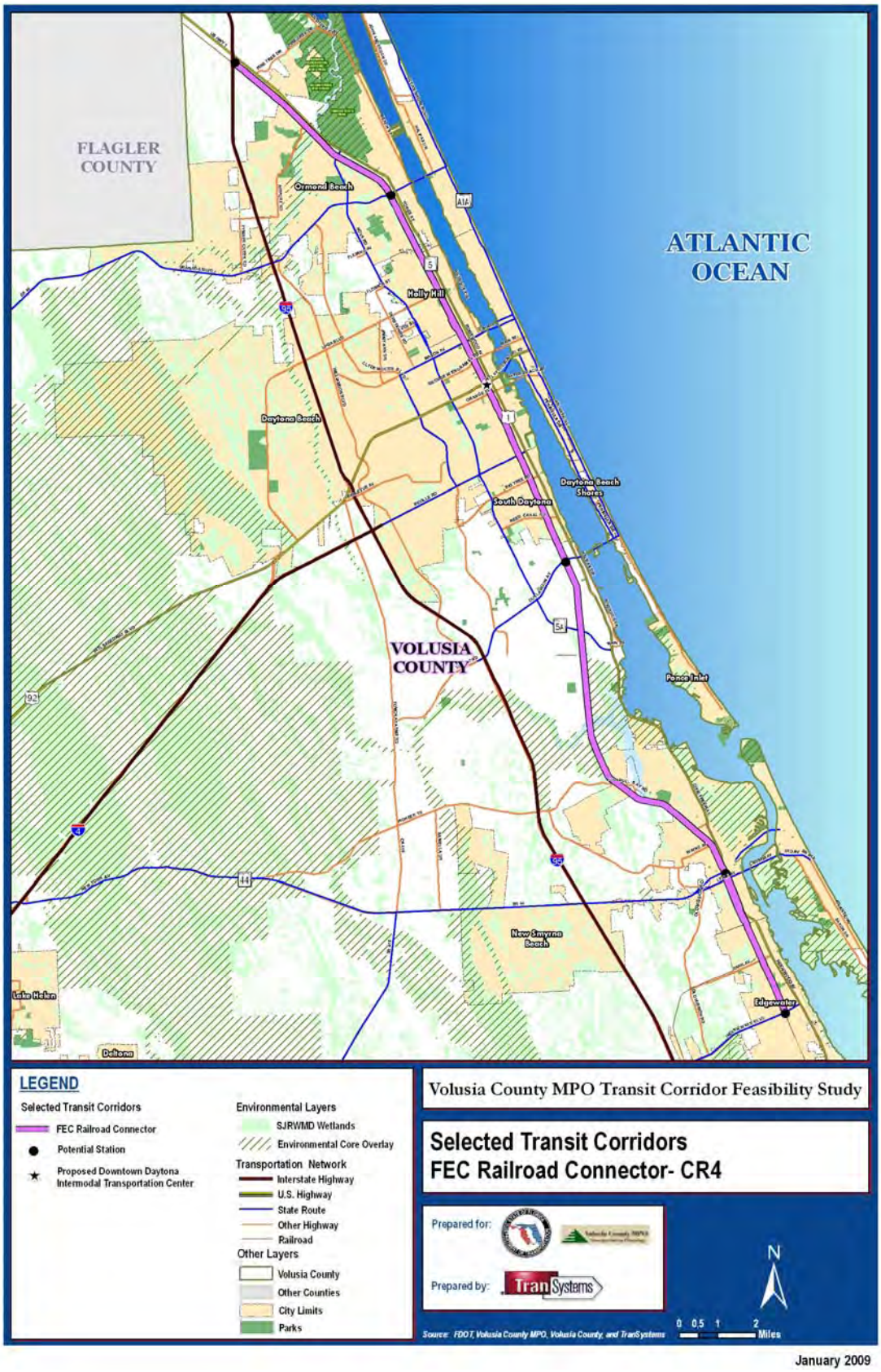
January 2009


FLAGLER COUNTY
ATLANTIC OCEAN
VOLUSIA COUNTY
Ormond Beach
Holly Hill
Daytona Beach
Daytona Beach Shores
South Daytona
Ponce Inlet
New Smyrna Beach
Edgewater
Lake Helen
Deltona
LEGEND
Selected Transit Corridors
FEC Railroad Connector
Potential Station
Proposed Downtown Daytona Intermodal Transportation Center
Environmental Layers
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Environmental Core Overlay
Transportation Network
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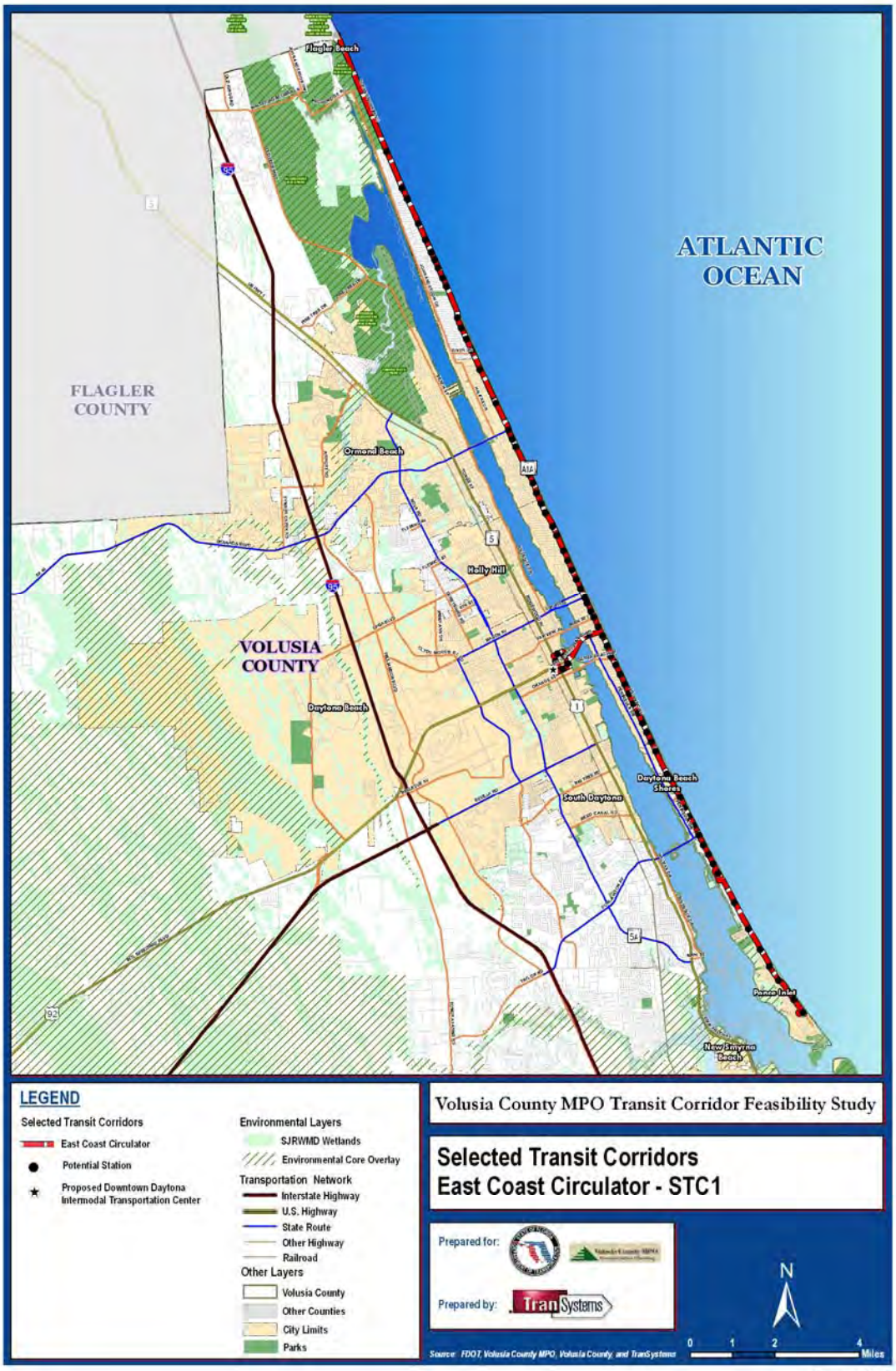
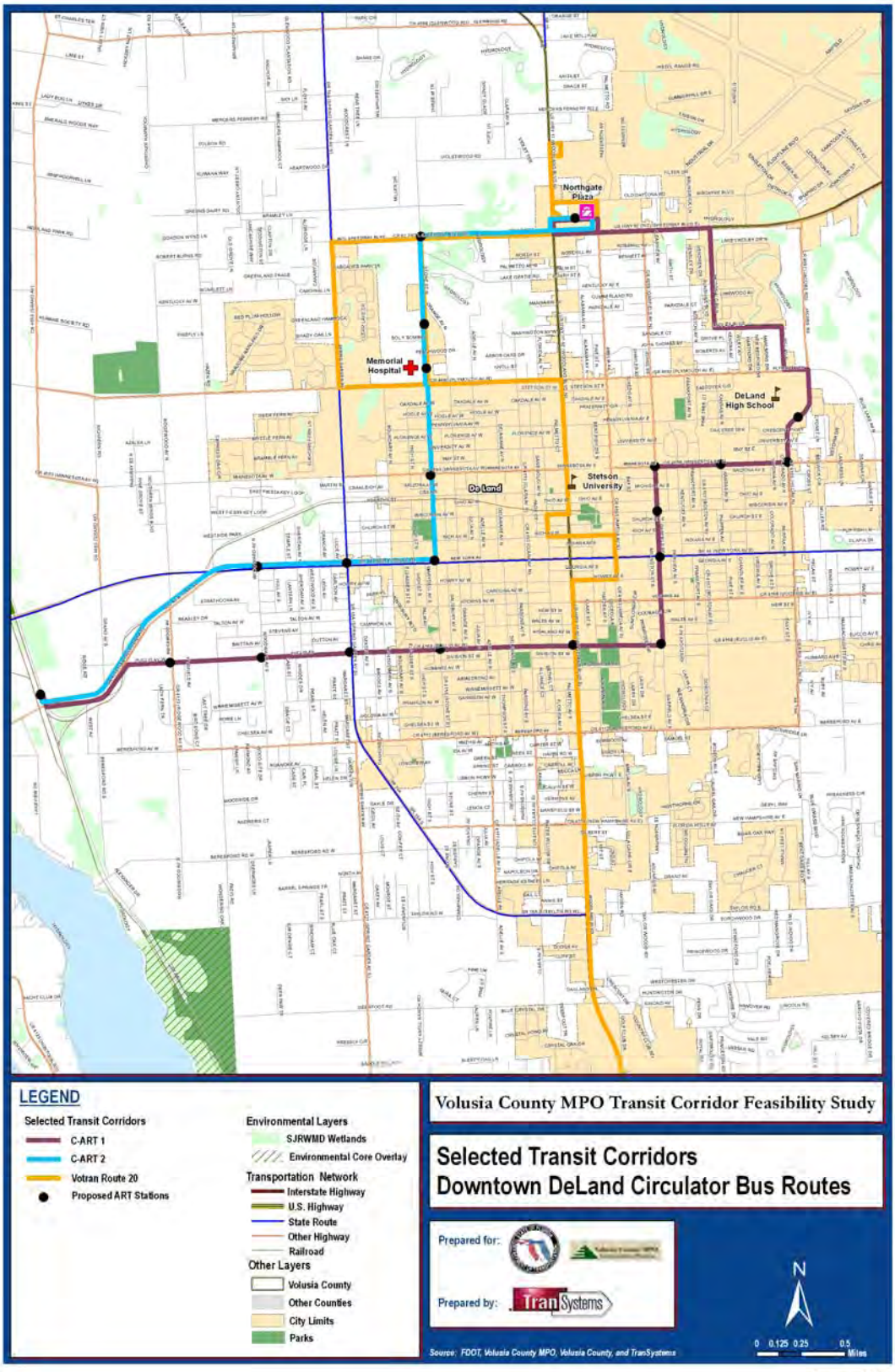
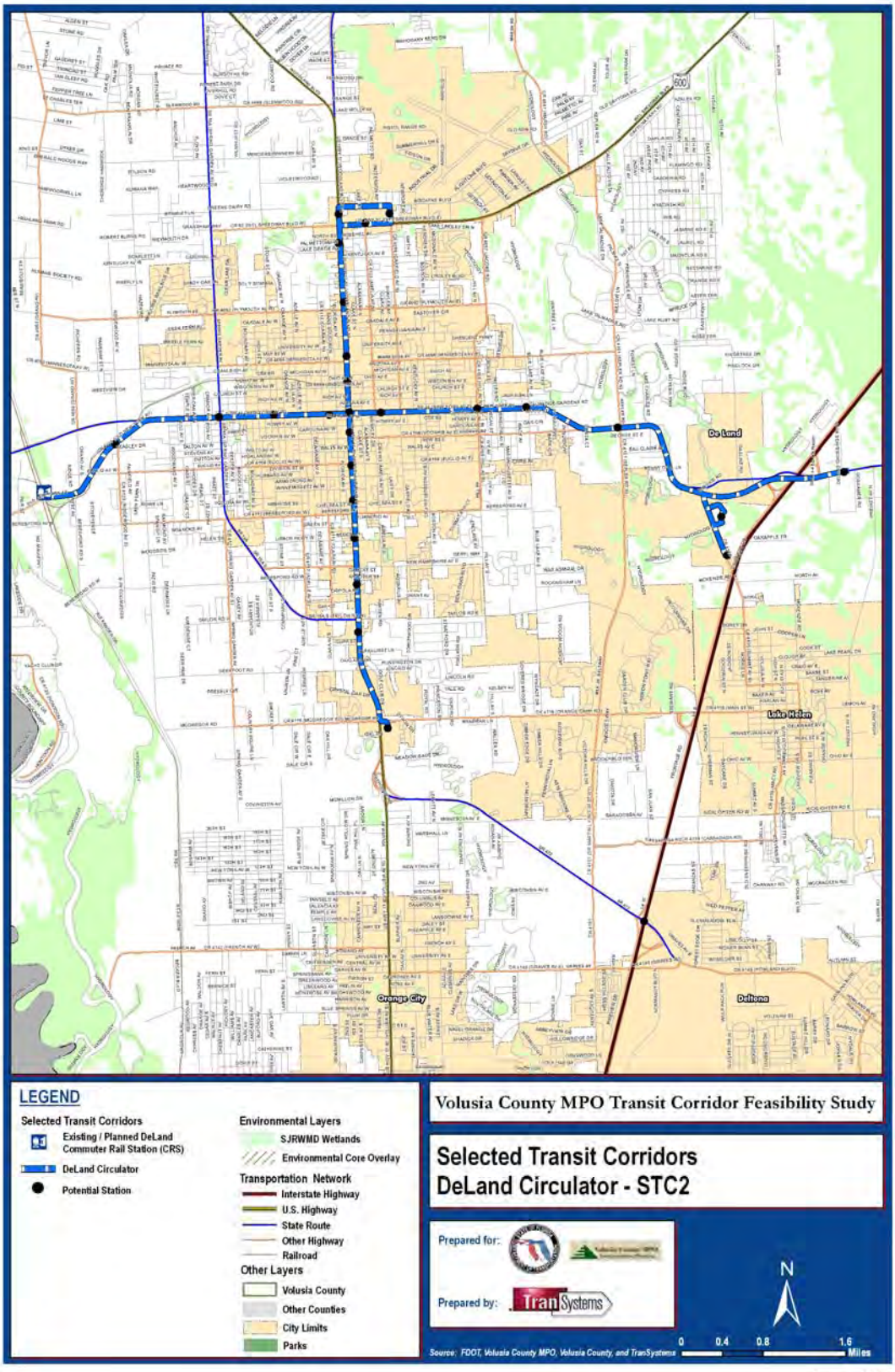
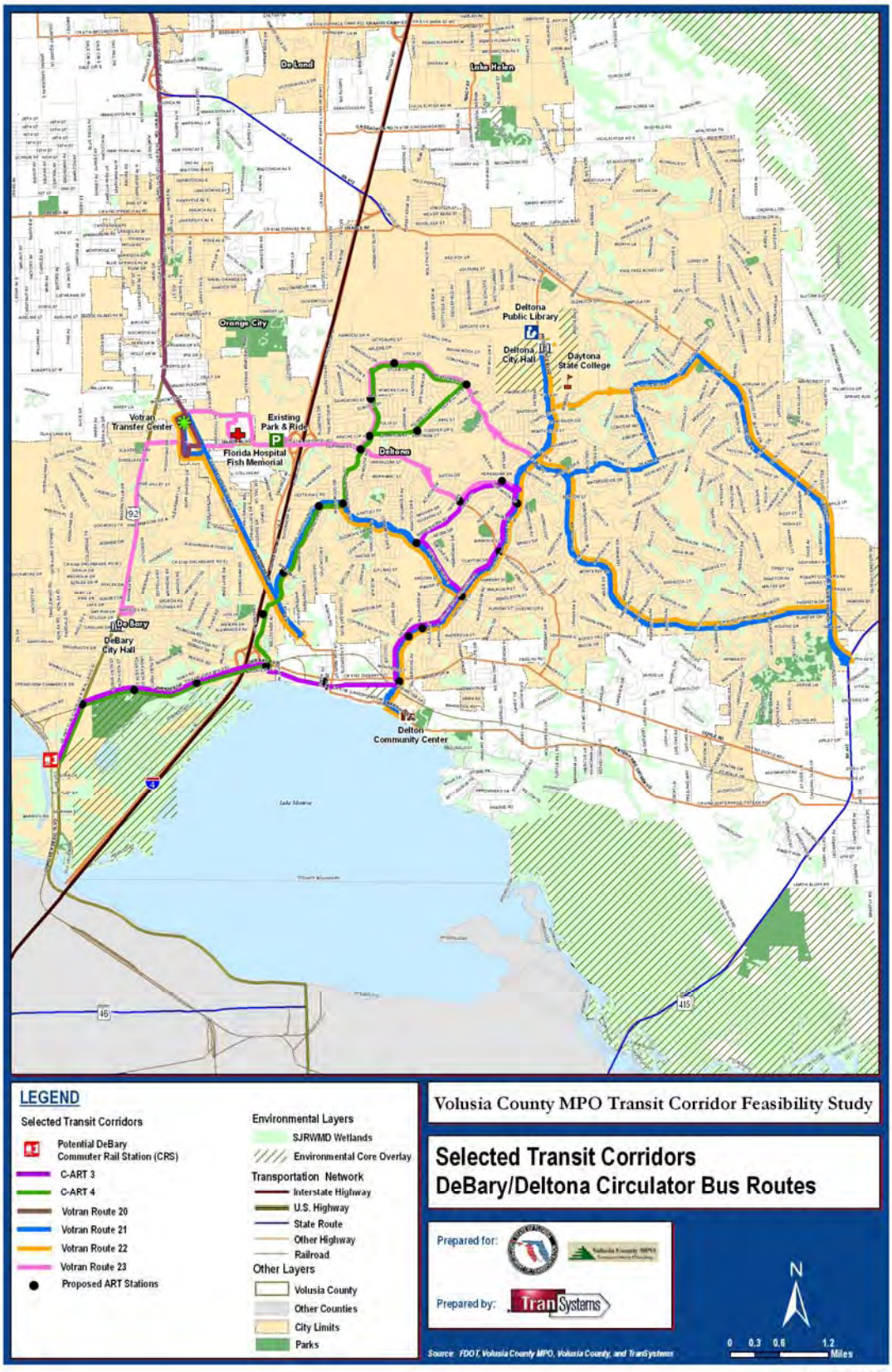
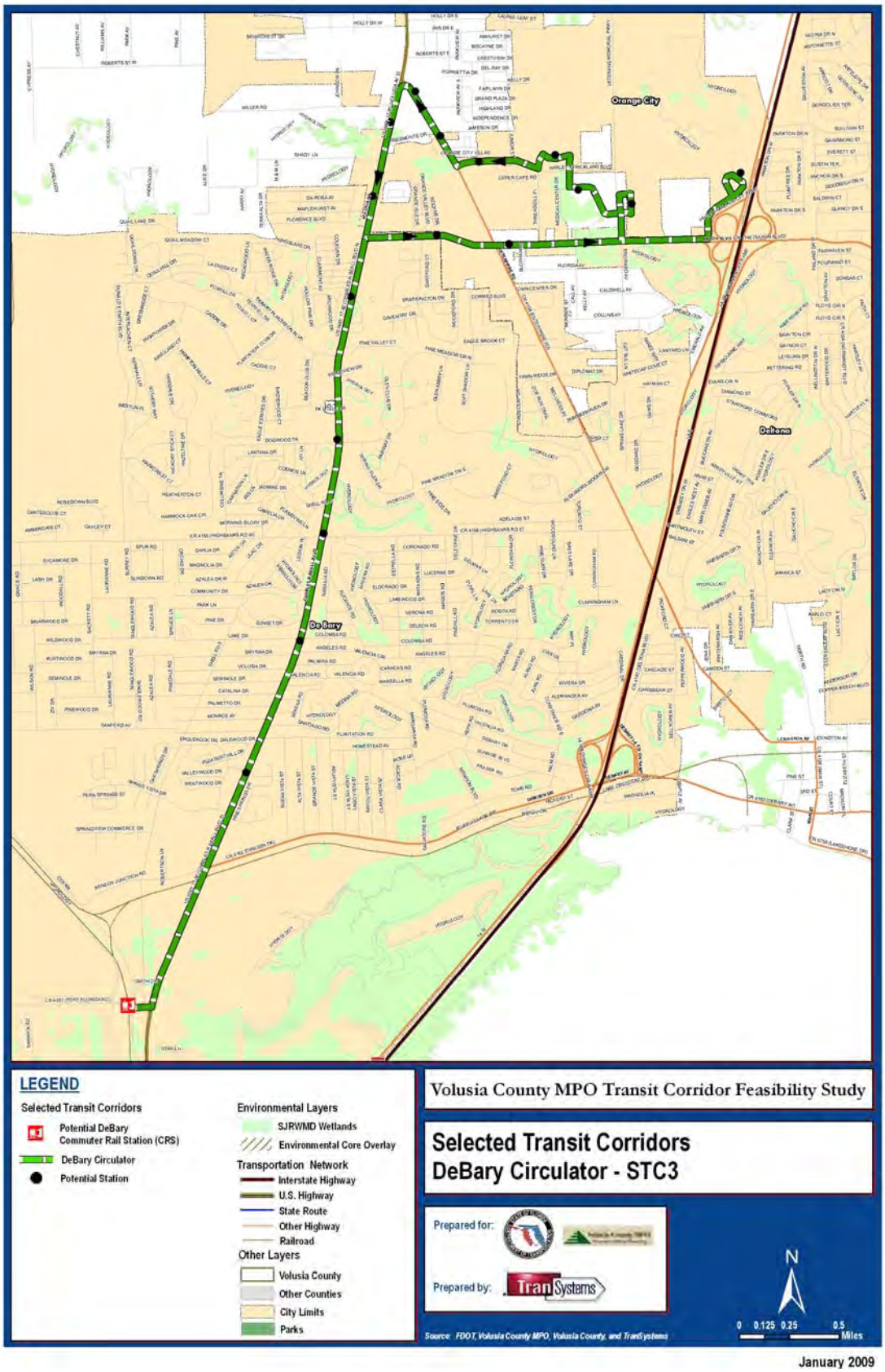
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
FEC Railroad Connector- CR4
Prepared for:
Prepared by:
TranSystems
N
0 0.5 1 2
Miles
Source: FDOT, Volusia County MPO, Volusia County, and TranSystems
January 2009


ATLANTIC OCEAN
FLAGLER COUNTY
VOLUSIA COUNTY
Flagler Beach
Ormond Beach
Holly Hill
Daytona Beach
Daytona Beach Shores
South Daytona
Ponce Inlet
New Smyrna Beach
LEGEND
Selected Transit Corridors
East Coast Circulator
Potential Station
Proposed Downtown Daytona Intermodal Transportation Center
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
East Coast Circulator - STC1
Prepared for:
Prepared by:
TranSystems
N
0 1 2 4 Miles
Source: FDOT, Volusia County MPO, Volusia County, and TranSystems
January 2009

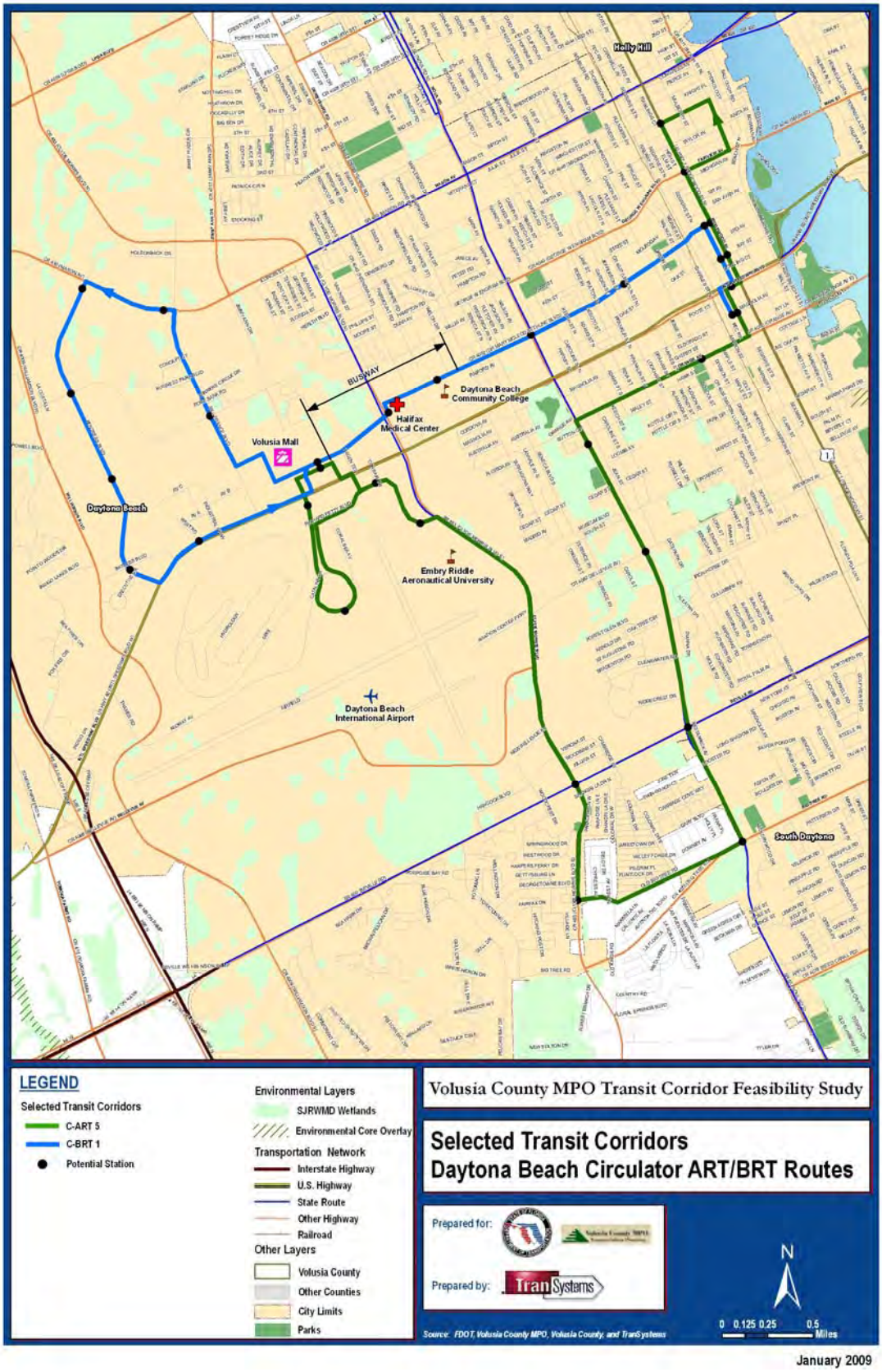

Northgate Plaza
Memorial Hospital
DeLand High School
DeLand
Stetson University
LEGEND
Selected Transit Corridors
C-ART 1
C-ART 2
Votran Route 20
Proposed ART Stations
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
Downtown DeLand Circulator Bus Routes
Prepared for:
Prepared by:
TranSystems
N
0 0.125 0.25 0.5
Miles
Source: FDOT, Volusia County MPO, Volusia County, and TranSystems
January 2009


LEGEND
Selected Transit Corridors
Existing / Planned DeLand Commuter Rail Station (CRS)
DeLand Circulator
Potential Station
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
DeLand Circulator - STC2
Prepared for:
Prepared by:
TranSystems
N
Source: FDOT, Volusia County MPO, Volusia County, and TranSystems
0 0.4 0.8 1.6
Miles
DeLand
Lake Helen
Orange City
Deltona
January 2009

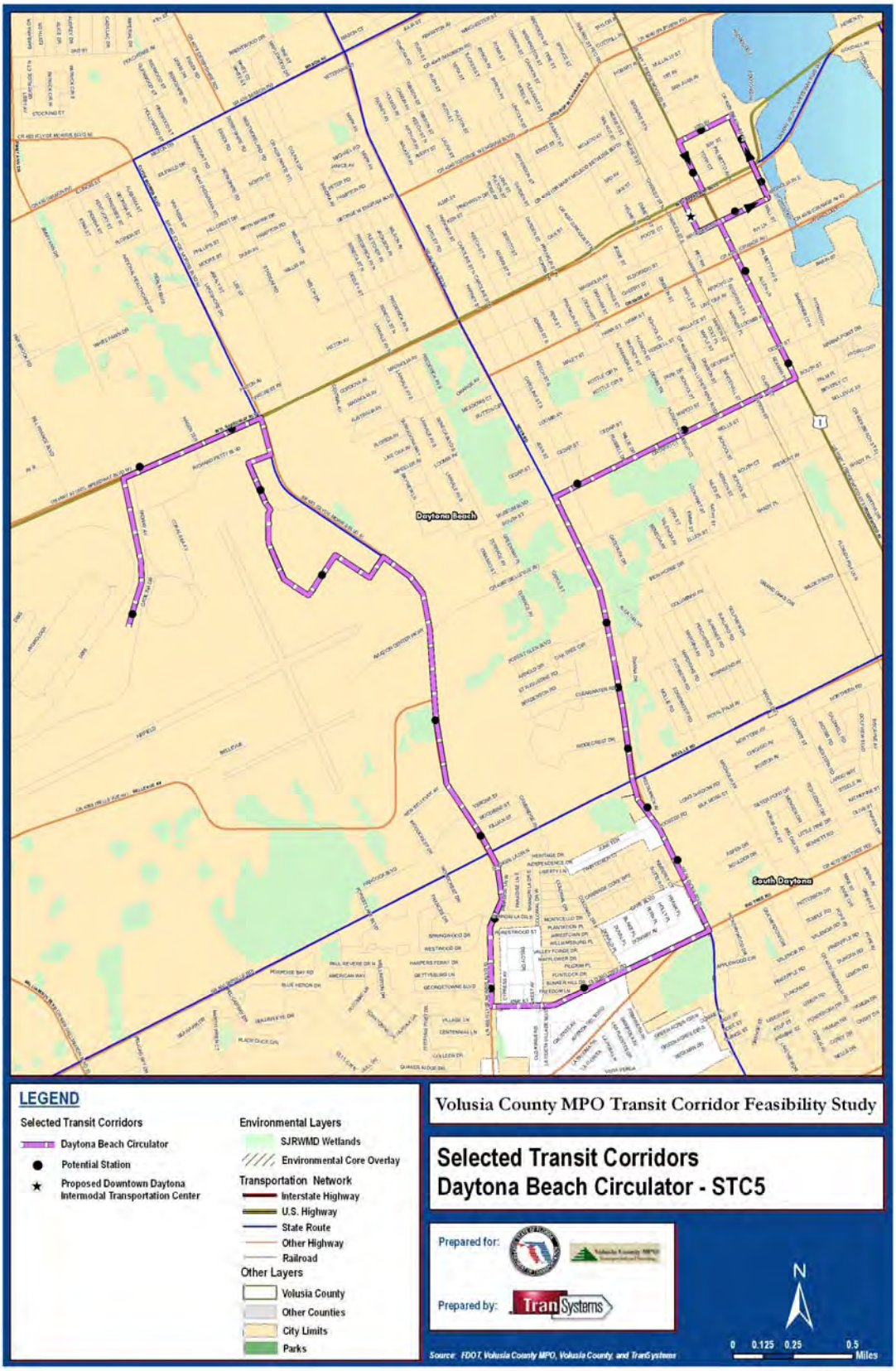

DeLand
Lake Helen
Deltona Public Library
Orange City
Deltona City Hall
Daytona State College
Votran Transfer Center
Existing Park & Ride
Florida Hospital Fish Memorial
Deltona
DeBary
DeBary City Hall
Delton Community Center
LEGEND
Selected Transit Corridors
Potential DeBary Commuter Rail Station (CRS)
C-ART 3
C-ART 4
Votran Route 20
Votran Route 21
Votran Route 22
Votran Route 23
Proposed ART Stations
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
DeBary/Deltona Circulator Bus Routes
Prepared for:
Prepared by:
TranSystems
Source: FDOT, Volusia County MPO, Volusia County, and TranSystems
N
0 0.3 0.6 1.2
Miles
January 2009



January 2009


Holly Hill
BUSWAY
Daytona Beach Community College
Halifax Medical Center
Volusia Mall
Daytona Beach
Embry Riddle Aeronautical University
Daytona Beach International Airport
South Daytona
LEGEND
Selected Transit Corridors
C-ART 5
C-BRT 1
Potential Station
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
Daytona Beach Circulator ART/BRT Routes
Prepared for:
Prepared by:
TranSystems
Source: FDOT, Volusia County MPO, Volusia County, and TranSystems
N
0 0.125 0.25 0.5
Miles
January 2009


Holly Hill
Daytona Beach
South Daytona
LEGEND
Selected Transit Corridors
Daytona Beach Circulator
Potential Station
Proposed Downtown Daytona Intermodal Transportation Center
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
Daytona Beach Circulator - STC4
Prepared for:
Prepared by:
TranSystems
Source: FDOT, Volusia County MPO, Volusia County, and TranSystems
N
0 0.125 0.25 0.5
Miles
January 2009


Daytona Beach
South Daytona
LEGEND
Selected Transit Corridors
Daytona Beach Circulator
Potential Station
Proposed Downtown Daytona Intermodal Transportation Center
Environmental Layers
SJRWMD Wetlands
Environmental Core Overlay
Transportation Network
Interstate Highway
U.S. Highway
State Route
Other Highway
Railroad
Other Layers
Volusia County
Other Counties
City Limits
Parks
Volusia County MPO Transit Corridor Feasibility Study
Selected Transit Corridors
Daytona Beach Circulator - STC5
Prepared for:
Prepared by:
TranSystems
N
0 0.125 0.25 0.5
Miles
Source: FDOT, Volusia County MPO, Volusia County, and TranSystems
January 2009

Volusia County Potential Transit Corridors - Roadway Infrastructure Inventory

Potential Transit Corridor-Type	Segment Description:	Segment From:	Segment To:	Approx. Roadway ROW Width (Feet)	Total Number of Lanes	SIS Roadway Classification Status
CR1A (I-4) - East\West Connections						
	I-4 Commuter Rail	Ft. Florida Road Station	Dirksen Drive / I-4 Interchange	N/A	N/A	N/A
	I-4 Commuter Rail via I-4 Parallel	Dirksen Drive / I-4 Interchange	I-4 / SR 472 Interchange	300	6	Existing SIS
	I-4 Commuter Rail via I-4 Parallel	I-4 / SR 472 Interchange	Just east of I-4 / I-95 Interchange	300	4	Existing SIS
	I-4 Commuter Rail via Beville Rd Parallel	Just east of I-4 / I-95 Interchange	Pelican Bay Drive	200	4	NOT SIS
	I-4 Commuter Rail	Pelican Bay Drive	Daytona International - Speedway and Airport	N/A	N/A	N/A
CR1B (I-4) - East\West Connections						
	I-4 Commuter Rail	Ft. Florida Road Station	Dirksen Drive / I-4 Interchange	N/A	N/A	N/A
	I-4 Commuter Rail via I-4 Parallel	Dirksen Drive / I-4 Interchange	I-4 / SR 472 Interchange	300	6	Existing SIS
	I-4 Commuter Rail via I-4 Parallel	I-4 / SR 472 Interchange	Just west of I-4 / I-95 Interchange	300	4	Existing SIS
	I-4 Commuter Rail	Just west of I-4 / I-95 Interchange	Future Downtown Daytona Beach Intermodal Transportation Center (ITC)	N/A	N/A	N/A
CR2 (SR 44) - East\West Connections						

Volusia County Potential Transit Corridors - Roadway Infrastructure Inventory

Potential Transit Corridor-Type	Segment Description:	Segment From:	Segment To:	Approx. Roadway ROW Width (Feet)	Total Number of Lanes	SIS Roadway Classification Status
	SR 44 Commuter Rail	East DeLand	Old Sawmill Rd	N/A	N/A	N/A
	SR 44 Commuter Rail via SR 44 Parallel	Old Sawmill Rd	SR44 / I-95 Interchange	200	4	NOT SIS
	SR 44 Commuter Rail via SR 44 Parallel	SR44 / I-95 Interchange	Lake Dr	110	4	NOT SIS
	SR 44 Commuter Rail	Lake Dr	New Smyrna Beach Station	N/A	N/A	N/A
CR3A (US 92) - East\West Connections						
	US 92 Commuter Rail	DeLand Amtrak Station	US 17/US 92 Intersection	N/A	N/A	N/A
	SR 44 Commuter Rail via Old Daytona Rd Parallel	US 17 / US 92 Intersection	Flightline Blvd.	70	2	NOT SIS
	SR 44 Commuter Rail via SR 44 Parallel	Flightline Blvd.	Detrick Ave	50	2	NOT SIS
	SR 44 Commuter Rail via US 92 Parallel	Detrick Ave	Frances Dr.	200	4	NOT SIS
	SR 44 Commuter Rail	Frances Dr.	Future Downtown Daytona Beach Intermodal Transportation Center (ITC)	N/A	N/A	N/A
CR3B (US 92) - East\West Connections						
	US 92 Commuter Rail	DeLand Amtrak Station	US 17/US 92 Intersection	N/A	N/A	N/A
	SR 44 Commuter Rail via Old Daytona Rd Parallel	US 17 / US 92 Intersection	Flightline Blvd.	70	2	NOT SIS

Volusia County Potential Transit Corridors - Roadway Infrastructure Inventory

Potential Transit Corridor-Type	Segment Description:	Segment From:	Segment To:	Approx. Roadway ROW Width (Feet)	Total Number of Lanes	SIS Roadway Classification Status
	SR 44 Commuter Rail via SR 44 Parallel	Flightline Blvd.	Detrick Ave	50	2	NOT SIS
	SR 44 Commuter Rail via US 92 Parallel	Detrick Ave	Frances Dr.	200	4	NOT SIS
	SR 44 Commuter Rail	Frances Dr.	Daytona International - Speedway and Airport	N/A	N/A	N/A
CR4 (FEC) - North - South Connections						
	Edgewater / Indian River Blvd.	Edgewater / Indian River Blvd. Station	National Gardens / I-95 Station	N/A	N/A	N/A
LRT2 (US 92) - East\West Connections						
	US 92 Light Rail	DeLand Amtrak Station	SR 44 Just east of Hazen Rd SR 44	N/A	N/A	N/A
	US 92 Light Rail via SR 44 (New York Ave) Parallel	SR 44 Just east of Hazen Rd SR 44	N. Florida Ave	60	2	NOT SIS
	US 92 Light Rail via N. Florida Ave. Parallel	Howry Ave	Wisconsin Ave	30	2	NOT SIS
	US 92 Light Rail via (Wisconsin Ave) Parallel	Florida Ave	CR 4103 (Amelia Ave)	60	2	NOT SIS
	US 92 Light Rail via CR 4103 (Amelia Ave) Parallel	Wisconsin Ave	Howry Ave	60	2	NOT SIS
	US 92 Light Rail via Howry Ave Parallel	CR 4103 (Amelia Ave)	Florida Ave	60	2	NOT SIS
	US 92 Light Rail via 17-92 US Parallel	Wisconsin Ave	US 92 (International	100	4	Emerging SIS

Volusia County Potential Transit Corridors - Roadway Infrastructure Inventory

Potential Transit Corridor-Type	Segment Description:	Segment From:	Segment To:	Approx. Roadway ROW Width (Feet)	Total Number of Lanes	SIS Roadway Classification Status
			Speedway Blvd)			
	US 92 Light Rail via US 92 (International Speedway Blvd)) Parallel	US 17 (Woodland Blvd)	US 92 (International Speedway Blvd) / I-95 Interchange	250	4	NOT SIS
	US 92 Light Rail via US 92 (International Speedway Blvd)) Parallel	US 92 (International Speedway Blvd) / I-95 Interchange	Nova Rd	120	6	Emerging SIS Connector
	US 92 Light Rail via US 92 (International Speedway Blvd)) Parallel	Nova Rd	FEC Railroad	100	4	Emerging SIS Connector
	US 92 Light Rail via FEC Railroad Parallel	US 92 (International Speedway Blvd)	Potential Station (Magnolia Ave)	N/A	N/A	N/A
LRT1 (SR 44) - East\West Connections						
	SR 44 Light Rail via CR 4110 (Old New York Ave) Parallel	CSX Railroad	SR 44 (New York Ave)	50	2	NOT SIS
	SR 44 Light Rail via SR 44 (New York Ave) Parallel	CR 4110 (Old New York Ave)	N Florida Ave	60	2	NOT SIS
	SR 44 Light Rail via N. Florida Ave. Parallel	N Florida Ave	Michigan Ave	60	2	NOT SIS
	SR 44 Light Rail via Michigan Ave. Parallel	SR 44 (New York Ave)	CR 4103 (Amelia Ave)	60	2	NOT SIS
	SR 44 Light Rail via CR 4103 (Amelia Ave) Parallel	Michigan Ave	SR 44 (New York Ave)	70	4	NOT SIS

Volusia County Potential Transit Corridors - Roadway Infrastructure Inventory

Potential Transit Corridor-Type	Segment Description:	Segment From:	Segment To:	Approx. Roadway ROW Width (Feet)	Total Number of Lanes	SIS Roadway Classification Status
	SR 44 Light Rail via SR 44 (New York Ave) Parallel	CR 4103 (Amelia Ave)	Summit Ave	60	2	NOT SIS
	SR 44 Light Rail via Summit Ave Parallel (Station)	SR 44 (New York Ave)	McKenzie Rd	40	2	NOT SIS
	SR 44 Light Rail via McKenzie Rd Parallel	Summit Ave	SR44 I-4 WB On Ramp	40	2	NOT SIS
	SR 44 Light Rail via SR44 I-4 WB On Ramp	McKenzie Rd	SR 44 (New York Ave)	N/A	N/A	N/A
	SR 44 Light Rail via SR 44 (New York Ave)	SR44 I-4 EB On Ramp	Old Sawmill Rd	N/A	N/A	N/A
	SR 44 Light Rail via SR 44 (New York Ave) Parallel	Old Sawmill Rd	SR 44 / I-95 Interchange	200	4	NOT SIS
	SR 44 Light Rail via SR 44 (New York Ave) Parallel	SR 44 / I-95 Interchange	Ingham Rd	100	4	NOT SIS
	SR 44 Light Rail	Ingham Rd	FEC Railroad	N/A	N/A	N/A
	SR 44 Light Rail via FEC Railroad Parallel (Station)	SR 44	Canal St	N/A	N/A	N/A
	SR 44 Light Rail via Canal St Parallel	FEC Railroad	Riverside Dr	70	2	NOT SIS
STC1 (SR A1A) - East Coast Circulator						
	SR A1A Street Car via SR A1A (Atlantic Ave S) Parallel	Inlet Harbor Rd	Marcelle Ave	75	4	NOT SIS
	SR A1A Street Car via Marcelle Ave Parallel	SR A1A (Atlantic Ave S)	Cardinal Blvd	60	2	NOT SIS

Volusia County Potential Transit Corridors - Roadway Infrastructure Inventory

Potential Transit Corridor-Type	Segment Description:	Segment From:	Segment To:	Approx. Roadway ROW Width (Feet)	Total Number of Lanes	SIS Roadway Classification Status
	SR A1A Street Car via Cardinal Blvd Parallel	Marcelle Ave	Unnamed Corridor	70	2	NOT SIS
	SR A1A Street Car via Unnamed Corridor Parallel	Cardinal Blvd	SR A1A (Atlantic Ave S)	N/A	N/A	N/A
	SR A1A Street Car via SR A1A (Atlantic Ave S) Parallel	Marcelle Ave	US 92 (International Speedway Blvd)	75	4	NOT SIS
	SR A1A Street Car via US 92 (International Speedway Blvd) Parallel	SR A1A (Atlantic Ave S)	CR 4029 (Beach St N)	N/A (BRIDGE)	4	NOT SIS
	SR A1A Street Car via CR 4029 (Beach St N) Parallel	3rd Ave	Magnolia Ave	100	4	NOT SIS
	SR A1A Street Car via Magnolia Ave Parallel	CR 4029 (Beach St N)	FEC Railroad	100	2	NOT SIS
	SR A1A Street Car via FEC Railroad Parallel	Magnolia Ave	US 92 (International Speedway Blvd)	N/A	N/A	N/A
	SR A1A Street Car via US 92 (International Speedway Blvd) Parallel	FEC Railroad	US 1 (Ridgewood Ave)	70	4	Emerging SIS Connector
	SR A1A Street Car via US 1 (Ridgewood Ave) Parallel	US 92 (International Speedway Blvd)	3rd Ave	100	4	NOT SIS
	SR A1A Street Car via 3rd Ave Parallel	US 1 (Ridgewood Ave)	CR 4029 (Beach St N)	50	2	NOT SIS

Volusia County Potential Transit Corridors - Roadway Infrastructure Inventory

Potential Transit Corridor-Type	Segment Description:	Segment From:	Segment To:	Approx. Roadway ROW Width (Feet)	Total Number of Lanes	SIS Roadway Classification Status
	SR A1A Street Car via CR 4029 (Beach St N) Parallel	3rd Ave	US 92 (International Speedway Blvd)	100	4	NOT SIS
	SR A1A Street Car via SR A1A (Atlantic Ave S) Parallel	US 92 (International Speedway Blvd)	Flagler County line (Ormond Beach)	85	2	NOT SIS
STC2 (US 17-92/ SR 44) - Deland Circulator						
	US 17-92 Street Car via US 17-92 Parallel	CR 4116 (Orange Camp Rd)	CR 4112 (W Beresford Ave)	200	4	Emerging SIS
	US 17-92 Street Car via US 17-92 Parallel	CR 4112 (W Beresford Ave)	US 92 (International Speedway Blvd)	75	2	Emerging SIS
	US 17-92 Street Car via US 17 Parallel	US 92 (International Speedway Blvd)	Old Daytona Rd	100	4	Emerging SIS
	US 17-92 Street Car via Old Daytona Rd Parallel	US 17	CR 4099 (Garfield Ave N)	70	2	NOT SIS
	US 17-92 Street Car via CR 4099 (Garfield Ave N) Parallel	Old Daytona Rd	US 92 (International Speedway Blvd)	70	2	NOT SIS
	US SR 44 Street Car via CR 4110 (Old New York Ave) Parallel	CSX Railroad	SR 44 (New York Ave)	50	2	NOT SIS
	US SR 44 Street Car via SR 44 (New York Ave) Parallel	CR 4110 (Old New York Ave)	Service Rd	60	2	NOT SIS

Volusia County Potential Transit Corridors - Roadway Infrastructure Inventory

Potential Transit Corridor-Type	Segment Description:	Segment From:	Segment To:	Approx. Roadway ROW Width (Feet)	Total Number of Lanes	SIS Roadway Classification Status
	US SR 44 Street Car via SR 44 (New York Ave) Parallel	Service Rd	Gossamer Road	200	4	NOT SIS
	US SR 44 Street Car via CR 4139 Parallel	SR 44 (New York Ave)	Station	60	2	NOT SIS
STC3 (US 17-92) - Debary Circulator						
	US 17-92 Street Car via CR 4157 (Fort Florida Rd) Parallel	CSX RR	US 17-92	40	2	NOT SIS
	US 17-92 Street Car via US 17-92 Parallel	CR 4157 (Fort Florida Rd)	CR 4156 (Enterprise Rd)	120	4	Emerging SIS
	US 17-92 Street Car via CR 4156 (Enterprise Rd) Parallel	US 17-92	Harvey Strickland Blvd	85	4	NOT SIS
	US 17-92 Street Car via Harvey Strickland Blvd Parallel	CR 4156 (Enterprise Rd)	ThreadGill Pl	110	2	NOT SIS
	US 17-92 Street Car via Medical Center Drive Parallel	Medical Center Drive	Veterans Memorial Parkway	50	2	NOT SIS
	US 17-92 Street Car via Veterans Memorial Parkway Parallel	Medical Center Drive	Saxon Blvd	50	2	NOT SIS
	US 17-92 Street Car via CR 4146 (Saxon Blvd) Parallel	I-4 WB Saxon WB OFF Ramp	US 17-92	115	3	NOT SIS
STC4 (US 92) - Daytona Beach West						

Volusia County Potential Transit Corridors - Roadway Infrastructure Inventory

Potential Transit Corridor-Type	Segment Description:	Segment From:	Segment To:	Approx. Roadway ROW Width (Feet)	Total Number of Lanes	SIS Roadway Classification Status
Circulator						
	US 92 Street Car via Midway Ave Parallel	(International Speedway	US 92 (International Speedway Blvd)	80	4	Emerging SIS Connector
	US 92 Street Car via US 92 (International Speedway Blvd) Parallel	Midway Ave	Nova Rd	120	6	Emerging SIS Connector
	US 92 Street Car via US 92 (International Speedway Blvd) Parallel	Nova Rd	US 1 (Ridgewood Ave)	75	4	Emerging SIS Connector
	US 92 Street Car via US 1 (Ridgewood Ave) Parallel	US 92 (International Speedway Blvd)	3rd Ave	100	4	NOT SIS
	US 92 Street Car via 3rd Ave Parallel	US 1 (Ridgewood Ave)	CR 4029 (Beach St N)	50	2	NOT SIS
	US 92 Street Car via CR 4029 (Beach St N) Parallel	3rd Ave	Magnolia Ave	100	4	NOT SIS
	US 92 Street Car via Magnolia Ave Parallel	CR 4029 (Beach St N)	Seagrave St	100	2	NOT SIS
	US 92 Street Car via Seagrave St Parallel	Magnolia Ave	US 92 (International Speedway Blvd)	50	2	NOT SIS
STC5 (US 1- Airport) - Daytona Beach West Circulator						
	US 1- Airport Street Car via US 1 (Ridgewood Ave) Parallel	US 92 (International Speedway Blvd)	3rd Ave	100	4	NOT SIS

Volusia County Potential Transit Corridors - Roadway Infrastructure Inventory

Potential Transit Corridor-Type	Segment Description:	Segment From:	Segment To:	Approx. Roadway ROW Width (Feet)	Total Number of Lanes	SIS Roadway Classification Status
	US 1- Airport Street Car via 3rd Ave Parallel	US 1 (Ridgewood Ave)	CR 4029 (Beach St N)	50	2	NOT SIS
	US 1- Airport Street Car via CR 4029 (Beach St N) Parallel	3rd Ave	Magnolia Ave	100	4	NOT SIS
	US 1- Airport Street Car via Magnolia Ave Parallel	CR 4029 (Beach St N)	Seagrave St	100	2	NOT SIS
	US 1- Airport Street Car via Seagrave St Parallel	Magnolia Ave	US 92 (International Speedway Blvd)	50	2	NOT SIS
	US 1- Airport Street Car via Midway Ave Parallel	International Speedway	US 92 (International Speedway Blvd)	80	4	Emerging SIS Connector
	US 1- Airport Street Car via US 92 (International Speedway Blvd) Parallel	Midway Ave	SR 483 (Clyde Morris Blvd)	120	6	Emerging SIS Connector
	US 1- Airport Street Car via SR 483 (Clyde Morris Blvd) Parallel	US 92 (International Speedway Blvd)	Daytona International - Speedway and Airport (ends back on SR 483 (Clyde Morris Blvd)	N/A	N/A	N/A
	US 1- Airport Street Car via SR 483 (Clyde Morris Blvd) Parallel	Daytona International - Speedway and Airport (ends back	Pine St	100	2	NOT SIS

Volusia County Potential Transit Corridors - Roadway Infrastructure Inventory

Potential Transit Corridor-Type	Segment Description:	Segment From:	Segment To:	Approx. Roadway ROW Width (Feet)	Total Number of Lanes	SIS Roadway Classification Status
		on SR 483 (Clyde Morris Blvd)				
	US 1- Airport Street Car via Pine St Parallel	SR 483 (Clyde Morris Blvd)	Old Big Tree Rd	70	2	NOT SIS
	US 1- Airport Street Car via Old Big Tree Rd Parallel	Pine St	CR 4072 (Big Tree Rd)	60	2	NOT SIS
	US 1- Airport Street Car via CR 4072 (Big Tree Rd) Parallel	Old Big Tree Rd	SR 5A (Nova Rd)	100	3	NOT SIS
	US 1- Airport Street Car via SR 5A (Nova Rd) Parallel	CR 4072 (Big Tree Rd)	South St	175	6	NOT SIS
	US 1- Airport Street Car via South St Parallel	SR 5A (Nova Rd)	US 1 (Ridgewood Ave)	50	2	NOT SIS
	US 1- Airport Street Car via US 1 (Ridgewood Ave) Parallel	South St	Magnolia Ave	120	4	NOT SIS

NOTE: ROW source is Volusia County GIS parcel database (12/2008), and Number of Lanes and SIS Roadway Status are from FDOT GIS (12/2008)

Volusia County Transit Study

CR1A and CR1B: I-4 Commuter Rail Alignment Costs

January 9, 2009

ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	ITEM COSTS	TOTAL COST
Track Improvements for Passenger Service	*LSUM*	*1*	*$ 76,533,940*		*$ 76,533,940*
Track, Complete (grading, subballast, rail, ties, ballast)	TF	168,953	$ 450	$ 76,028,760	
Surfacing	TF	5,740	$ 5	$ 28,700	
Ballast, New	TON	1,435	$ 20	$ 28,700	
Install #15 Turnout	EA	3	$ 149,260	$ 447,780	
Structures	*LSUM*	*1*	*$ 129,085,828*		*$ 129,085,828*
Steel TPG Bridge, Freight/Passenger (Includes Sub Structure)	TF	1,960	$ 12,880	$ 25,244,800	
Bridge, Roadway (Includes Sub Structure)	SF	168,175	$ 190	$ 31,953,250	
Retaining Wall, Sheet Pile	LF	29,000	$ 2,290	$ 66,410,000	
Earthwork, Excavation	CY	273,889	$ 20	$ 5,477,778	
Stations	*LSUM*	*1*	*$ 21,992,014*		*$ 21,992,014*
Lighting	SF	50,000	$ 5	$ 250,000	
Parking Lot, Complete (pavement, utilities, drainage, landscaping)	SF	560,000	$ 16	$ 8,960,000	
Clearing & Grubbing, Rural	ACRE	14	$ 290	$ 3,994	
Station House	EA	5	$ 1,030,000	$ 5,150,000	
Platforms, Concrete	CY	950	$ 800	$ 760,000	
Pedestrian Walkway, Underground	LSUM	2	$ 1,030,000	$ 2,060,000	
Elevators	EA	2	$ 1,092,730	$ 2,185,460	
Escalators	EA	4	$ 655,640	$ 2,622,560	
Layover Facilities	*LSUM*	*1*	*$ 25,000,000*		*$ 25,000,000*
At-Grade Roadway Crossings	*LSUM*	*1*	*$ 2,974,950*		*$ 2,974,950*
Roadway/RR Crossing Surface, Prefab Concrete	TF	440	$ 530	$ 233,200	
Drainage, Road Crossing	LSUM	11	$ 17,390	$ 191,290	
Warning Device, Gates & Flashing Lights w/ Bell	EA	11	$ 231,860	$ 2,550,460	
Wayside Signal Improvements	*LSUM*	*1*	*$ 29,894,027*		*$ 29,894,027*
New CTC Signal System	MILE	32.00	$ 742,630	$ 23,763,147	
Interlocking	EA	3	$ 1,545,000	$ 4,635,000	
Signal Integration for #15 Turnout	EA	3	$ 149,260	$ 447,780	
Install Electric Lock for Hand Throw Switch	EA	1	$ 173,900	$ 173,900	
Implementation Management	LSUM	2	$ 437,100	$ 874,200	
Passing Sidings	*LSUM*	*1*	*$ 7,576,860*		*$ 7,576,860*
Track, Complete (grading, subballast, rail, ties, ballast)	TF	8,000	$ 450	$ 3,600,000	
Install #15 Turnout	EA	2	$ 149,260	$ 298,520	
Signal Integration for #15 Turnout	EA	2	$ 149,260	$ 298,520	
Interlocking	EA	2	$ 1,545,000	$ 3,090,000	
Install Island Track Circuit	EA	1	$ 289,820	$ 289,820	
Utility Work Estimate		*10%*	*$ 29,305,762*		*$ 29,305,762*
Environmental Work Estimate		*10%*	*$ 29,305,762*		*$ 29,305,762*
SUBTOTAL - CONSTRUCTION COSTS					*$ 351,669,144*
Vehicles	*LSUM*	*1*	*$ 22,660,000*		*$ 22,660,000*
Locomotive, MP36	EA	4	$ 2,832,500	$ 11,330,000	
Cab Car, Bi-Level, Bombardier	EA	5	$ 2,266,000	$ 11,330,000	
Professional Services	*LSUM*	*1*	*$ 42,200,297*		*$ 42,200,297*
Preliminary Engineering		3%	$ 10,550,074		
Final Design		5%	$ 17,583,457		
Project Managenent for Design & Construction		1%	$ 3,516,691		
Construction Administration & Management		3%	$ 10,550,074		
Contingencies		*35%*	*$ 145,785,304*		*$ 145,785,304*
TOTAL CAPITAL COST ESTIMATE			*(2009 Dollars)*		*$ 562,314,745*
TOTAL ROUTE MILEAGE					*33.41*
COST PER ROUTE MILE					*$ 16,831,342*

Legend: TF=track foot; EA=each; SF=square foot;, LF= linear foot; CY=cubic yard; LSUM= lump sum

Volusia County Transit Study

CR2: SR-44 Commuter Rail Alignment Costs

January 9, 2009

ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	ITEM COSTS	TOTAL COST
Track Improvements for Passenger Service	*LSUM*	*1*	*$ 48,966,668*		*$ 48,966,668*
Track, Complete (grading, subballast, rail, ties, ballast)	TF	108,151	$ 450	$ 48,668,148	
Install #15 Turnout	EA	2	$ 149,260	$ 298,520	
Structures	*LSUM*	*1*	*$ 31,950,043*		*$ 31,950,043*
Steel TPG Bridge, Freight/Passenger (Includes Sub Structure)	TF	1,935	$ 12,880	$ 24,925,376	
Earthwork, Furnish	CY	140,493	$ 50	$ 7,024,667	
Stations	*LSUM*	*1*	*$ 8,699,242*		*$ 8,699,242*
Lighting	SF	20,000	$ 5	$ 100,000	
Parking Lot, Complete (pavement, utilities, drainage, landscaping)	SF	175,000	$ 16	$ 2,800,000	
Clearing & Grubbing, Rural	ACRE	4	$ 290	$ 1,232	
Station House	EA	2	$ 1,030,000	$ 2,060,000	
Platforms, Concrete	CY	380	$ 800	$ 304,000	
Pedestrian Walkway, Underground	LSUM	1	$ 1,030,000	$ 1,030,000	
Elevators	EA	1	$ 1,092,730	$ 1,092,730	
Escalators	EA	2	$ 655,640	$ 1,311,280	
Layover Facilities	*LSUM*	*1*	*$ 25,000,000*		*$ 25,000,000*
At-Grade Roadway Crossings	*LSUM*	*1*	*$ 11,088,450*		*$ 11,088,450*
Roadway/RR Crossing Surface, Prefab Concrete	TF	1,640	$ 530	$ 869,200	
Drainage, Road Crossing	LSUM	41	$ 17,390	$ 712,990	
Warning Device, Gates & Flashing Lights w/ Bell	EA	41	$ 231,860	$ 9,506,260	
Wayside Signal Improvements	*LSUM*	*1*	*$ 17,492,079*		*$ 17,492,079*
New CTC Signal System	MILE	20.48	$ 742,630	$ 15,211,459	
Interlocking	EA	1	$ 1,545,000	$ 1,545,000	
Signal Integration for #15 Turnout	EA	2	$ 149,260	$ 298,520	
Implementation Management	LSUM	1	$ 437,100	$ 437,100	
Passing Sidings	*LSUM*	*1*	*$ -*		*$ -*
Track, Complete (grading, subballast, rail, ties, ballast)	TF	0	$ 450	$ -	
Install #15 Turnout	EA	0	$ 149,260	$ -	
Signal Integration for #15 Turnout	EA	0	$ 149,260	$ -	
Interlocking	EA	0	$ 1,545,000	$ -	
Install Island Track Circuit	EA	0	$ 289,820	$ -	
Utility Work Estimate		*10%*	*$ 14,319,648*		*$ 14,319,648*
Environmental Work Estimate		*10%*	*$ 14,319,648*		*$ 14,319,648*
SUBTOTAL - CONSTRUCTION COSTS					*$ 171,835,778*
Vehicles	*LSUM*	*1*	*$ 12,463,000*		*$ 12,463,000*
Locomotive, MP36	EA	2	$ 2,832,500	$ 5,665,000	
Cab Car, Bi-Level, Bombardier	EA	3	$ 2,266,000	$ 6,798,000	
Professional Services	*LSUM*	*1*	*$ 20,620,293*		*$ 20,620,293*
Preliminary Engineering		3%	$ 5,155,073		
Final Design		5%	$ 8,591,789		
Project Managenent for Design & Construction		1%	$ 1,718,358		
Construction Administration & Management		3%	$ 5,155,073		
Contingencies		*35%*	*$ 71,721,675*		*$ 71,721,675*
TOTAL CAPITAL COST ESTIMATE			*(2009 Dollars)*		*$ 276,640,746*
TOTAL ROUTE MILEAGE					*20.48*
COST PER ROUTE MILE					*$ 13,504,902*

Volusia County Transit Study

CR3A and CR3B: US-92 Commuter Rail Alignment Costs

January 9, 2009

ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	ITEM COSTS	TOTAL COST
Track Improvements for Passenger Service	*LSUM*	*1*	*$ 58,171,055*		*$ 58,171,055*
Track, Complete (grading, subballast, rail, ties, ballast)	TF	124,919	$ 450	$ 56,213,460	
Install Ties, Wood	EA	2,034	$ 70	$ 142,352	
Surfacing	TF	26,076	$ 12	$ 312,912	
Ballast, New	TON	6,519	$ 20	$ 130,380	
Ballast, Cleaning	MILE	1.93	$ 4,700	$ 9,051	
Rail Replacement	LF	20,336	$ 45	$ 915,120	
Install #15 Turnout	EA	3	$ 149,260	$ 447,780	
Structures	*LSUM*	*1*	*$ 9,842,200*		*$ 9,842,200*
Steel TPG Bridge, Freight/Passenger (Includes Sub Structure)	TF	90	$ 12,880	$ 1,159,200	
Bridge, Roadway (Includes Sub Structure)	SF	45,700	$ 190	$ 8,683,000	
Stations	*LSUM*	*1*	*$ 7,409,232*		*$ 7,409,232*
Lighting	SF	40,000	$ 5	$ 200,000	
Parking Lot, Complete (pavement, utilities, drainage, landscaping)	SF	155,000	$ 16	$ 2,480,000	
Clearing & Grubbing, Rural	ACRE	4.2	$ 290	$ 1,232	
Station House	EA	4	$ 1,030,000	$ 4,120,000	
Platforms, Concrete	CY	760	$ 800	$ 608,000	
Layover Facilities	*LSUM*	*1*	*$ 25,000,000*		*$ 25,000,000*
At-Grade Roadway Crossings	*LSUM*	*1*	*$ 13,298,450*		*$ 13,298,450*
Roadway/RR Crossing Surface, Prefab Concrete	TF	1,960	$ 530	$ 1,038,800	
Drainage, Road Crossing	LSUM	49	$ 17,390	$ 852,110	
Warning Device, Gates & Flashing Lights w/ Bell	EA	49	$ 231,860	$ 11,361,140	
Upgrade Warning System Start Point for Increased Speed	EA	4	$ 11,600	$ 46,400	
Wayside Signal Improvements	*LSUM*	*1*	*$ 23,700,662*		*$ 23,700,662*
New CTC Signal System	MILE	23.66	$ 742,630	$ 17,569,782	
Install Track Circuits	MILE	0.00	$ 115,930	$ -	
Install Island Track Circuit	EA	0	$ 289,820	$ -	
Interlocking	EA	3	$ 1,545,000	$ 4,635,000	
Signal Integration for #15 Turnout	EA	3	$ 149,260	$ 447,780	
Install Electric Lock for Hand Throw Switch	EA	1	$ 173,900	$ 173,900	
Implementation Management	LSUM	2	$ 437,100	$ 874,200	
Signal Work/Changes	LSUM	0	$ -	$ -	
Passing Sidings	*LSUM*	*1*	*$ 7,576,860*		*$ 7,576,860*
Track, Complete (grading, subballast, rail, ties, ballast)	TF	8,000	$ 450	$ 3,600,000	
Install #15 Turnout	EA	2	$ 149,260	$ 298,520	
Signal Integration for #15 Turnout	EA	2	$ 149,260	$ 298,520	
Interlocking	EA	2	$ 1,545,000	$ 3,090,000	
Install Island Track Circuit	EA	1	$ 289,820	$ 289,820	
Utility Work Estimate		*10%*	*$ 14,499,846*		*$ 14,499,846*
Environmental Work Estimate		*10%*	*$ 14,499,846*		*$ 14,499,846*
SUBTOTAL - CONSTRUCTION COSTS					*$ 173,998,150*
Vehicles	*LSUM*	*1*	*$ 17,561,500*		*$ 17,561,500*
Locomotive, MP36	EA	3	$ 2,832,500	$ 8,497,500	
Cab Car, Bi-Level, Bombardier	EA	4	$ 2,266,000	$ 9,064,000	
Professional Services	*LSUM*	*1*	*$ 20,879,778*		*$ 20,879,778*
Preliminary Engineering		3%	$ 5,219,945		
Final Design		5%	$ 8,699,908		
Project Managenent for Design & Construction		1%	$ 1,739,982		
Construction Administration & Management		3%	$ 5,219,945		
Contingencies		*35%*	*$ 74,353,800*		*$ 74,353,800*
TOTAL CAPITAL COST ESTIMATE			*(2009 Dollars)*		*$ 286,793,228*
TOTAL ROUTE MILEAGE					*25.98*
COST PER ROUTE MILE					*$ 11,040,707*

Volusia County Transit Study

CR4: FEC Commuter Rail Alignment Costs

January 9, 2009

ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	ITEM COSTS	TOTAL COST
Track Improvements for Passenger Service	*LSUM*	*1*	*$ 2,958,936*		*$ 2,958,936*
Track, Complete (grading, subballast, rail, ties, ballast)	TF	2,000	$ 450	$ 900,000	
Surfacing	TF	176,042	$ 5	$ 880,208	
Ballast, New	TON	44,010	$ 20	$ 880,208	
Install #15 Turnout	EA	2	$ 149,260	$ 298,520	
Stations	*LSUM*	*1*	*$ 12,994,663*		*$ 12,994,663*
Lighting	SF	60,000	$ 5	$ 300,000	
Parking Lot, Complete (pavement, utilities, drainage, landscaping)	SF	350,000	$ 16	$ 5,600,000	
Clearing & Grubbing, Rural	ACRE	9	$ 290	$ 2,663	
Station House	EA	6	$ 1,030,000	$ 6,180,000	
Platforms, Concrete	CY	1,140	$ 800	$ 912,000	
Layover Facilities	*LSUM*	*1*	*$ 25,000,000*		*$ 25,000,000*
At-Grade Roadway Crossings	*LSUM*	*1*	*$ 661,200*		*$ 661,200*
Upgrade Warning System Start Point for Increased Speed	EA	57	$ 11,600	$ 661,200	
Wayside Signal Improvements	*LSUM*	*1*	*$ 4,431,920*		*$ 4,431,920*
Interlocking	EA	2	$ 1,545,000	$ 3,090,000	
Signal Integration for #15 Turnout	EA	2	$ 149,260	$ 298,520	
Install Electric Lock for Hand Throw Switch	EA	6	$ 173,900	$ 1,043,400	
Passing Sidings	*LSUM*	*1*	*$ 15,153,720*		*$ 15,153,720*
Track, Complete (grading, subballast, rail, ties, ballast)	TF	16,000	$ 450	$ 7,200,000	
Install #15 Turnout	EA	4	$ 149,260	$ 597,040	
Signal Integration for #15 Turnout	EA	4	$ 149,260	$ 597,040	
Interlocking	EA	4	$ 1,545,000	$ 6,180,000	
Install Island Track Circuit	EA	2	$ 289,820	$ 579,640	
Utility Work Estimate		*10%*	*$ 6,120,044*		*$ 6,120,044*
Environmental Work Estimate		*5%*	*$ 3,060,022*		*$ 3,060,022*
SUBTOTAL - CONSTRUCTION COSTS					*$ 70,380,505*
Vehicles	*LSUM*	*1*	*$ 17,561,500*		*$ 17,561,500*
Locomotive, MP36	EA	3	$ 2,832,500	$ 8,497,500	
Cab Car, Bi-Level, Bombardier	EA	4	$ 2,266,000	$ 9,064,000	
Professional Services	*LSUM*	*1*	*$ 8,445,661*		*$ 8,445,661*
Preliminary Engineering		3%	$ 2,111,415		
Final Design		5%	$ 3,519,025		
Project Managenent for Design & Construction		1%	$ 703,805		
Construction Administration & Management		3%	$ 2,111,415		
Contingencies		*35%*	*$ 33,735,683*		*$ 33,735,683*
TOTAL CAPITAL COST ESTIMATE			*(2009 Dollars)*		*$ 130,123,348*
TOTAL ROUTE MILEAGE					*29.85*
COST PER ROUTE MILE					*$ 4,359,805*

Volusia County Transit Study

LRT1: SR-44 Light Rail Alignment Costs

January 9, 2009

ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	ITEM COSTS	TOTAL COST
Track Improvements for Passenger Service	*LSUM*	*1*	*$ 118,762,360*		*$ 118,762,360*
LRT Track, Ballasted, Complete (grading, subballast, rail, ties, ballast)	TF	86,264	$ 350	$ 30,192,400	
LRT Track, Embedded, Complete (rail, ties, ballast, pavement)	TF	135,726	$ 650	$ 88,222,160	
Install #8 Turnout	EA	4	$ 86,950	$ 347,800	
Structures	*LSUM*	*1*	*$ 25,815,612*		*$ 25,815,612*
Steel TPG Bridge, Heavy/Light Rail (Includes Sub Structure)	TF	2,742	$ 7,730	$ 21,196,278	
Earthwork, Furnish	CY	92,387	$ 50	$ 4,619,333	
Stations	*LSUM*	*1*	*$ 3,295,176*		*$ 3,295,176*
Station Stop, Mixed Traffic, Major	EA	6	$ 13,660	$ 81,960	
Station Stop, Mixed Traffic, Minor	EA	24	$ 5,464	$ 131,136	
Ticket Vending Machine, Major	EA	12	$ 92,890	$ 1,114,680	
Ticket Vending Machine, Minor	EA	48	$ 32,790	$ 1,573,920	
Automated Signage, 3 Lines - 2 Sided	EA	6	$ 21,860	$ 131,160	
Automated Signage, 1 Line - 2 Sided	EA	24	$ 10,930	$ 262,320	
Layover Facilities	*LSUM*	*1*	*$ 15,000,000*		*$ 15,000,000*
At-Grade Roadway Crossings	*LSUM*	*1*	*$ 463,500*		*$ 463,500*
Traffic Signal Priority	EA	15	$ 30,900	$ 463,500	
Wayside Signal Improvements	*LSUM*	*1*	*$ 22,532,712*		*$ 22,532,712*
Signal System, Transit	MILE	16.34	$ 1,379,170	$ 22,532,712	
Passing Sidings	*LSUM*	*1*	*$ 5,947,800*		*$ 5,947,800*
LRT Track, Ballasted, Complete (grading, subballast, rail, ties, ballast)	TF	16,000	$ 350	$ 5,600,000	
Install #8 Turnout	EA	4	$ 86,950	$ 347,800	
Utility Work Estimate		*10%*	*$ 19,181,716*		*$ 19,181,716*
Environmental Work Estimate		*10%*	*$ 19,181,716*		*$ 19,181,716*
SUBTOTAL - CONSTRUCTION COSTS					*$ 230,180,592*
Vehicles	*LSUM*	*1*	*$ 24,477,120*		*$ 24,477,120*
DLRV	EA	8	$ 3,059,640	$ 24,477,120	
Professional Services	*LSUM*	*1*	*$ 27,621,671*		*$ 27,621,671*
Preliminary Engineering		3%	$ 6,905,418		
Final Design		5%	$ 11,509,030		
Project Managenent for Design & Construction		1%	$ 2,301,806		
Construction Administration & Management		3%	$ 6,905,418		
Contingencies		*35%*	*$ 98,797,784*		*$ 98,797,784*
TOTAL CAPITAL COST ESTIMATE			*(2009 Dollars)*		*$ 381,077,167*
TOTAL ROUTE MILEAGE					*29.19*
COST PER ROUTE MILE					*$ 13,054,720*

Volusia County Transit Study

LRT2: US-92 Light Rail Alignment Costs

January 9, 2009

ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	ITEM COSTS	TOTAL COST
Track Improvements for Passenger Service	*LSUM*	*1*	*$ 97,917,960*		*$ 97,917,960*
LRT Track, Ballasted, Complete (grading, subballast, rail, ties, ballast)	TF	83,542	$ 350	$ 29,239,560	
LRT Track, Embedded, Complete (rail, ties, ballast, pavement)	TF	105,124	$ 650	$ 68,330,600	
Install #8 Turnout	EA	4	$ 86,950	$ 347,800	
Structures	*LSUM*	*1*	*$ 13,556,850*		*$ 13,556,850*
Steel TPG Bridge, Heavy/Light Rail (Includes Sub Structure)	TF	200	$ 7,730	$ 1,546,000	
Bridge, Roadway (Includes Sub Structure)	SF	63,215	$ 190	$ 12,010,850	
Stations	*LSUM*	*1*	*$ 3,409,880*		*$ 3,409,880*
Station Stop, Mixed Traffic, Major	EA	8	$ 13,660	$ 109,280	
Station Stop, Mixed Traffic, Minor	EA	20	$ 5,464	$ 109,280	
Ticket Vending Machine, Major	EA	16	$ 92,890	$ 1,486,240	
Ticket Vending Machine, Minor	EA	40	$ 32,790	$ 1,311,600	
Automated Signage, 3 Lines - 2 Sided	EA	8	$ 21,860	$ 174,880	
Automated Signage, 1 Line - 2 Sided	EA	20	$ 10,930	$ 218,600	
Layover Facilities	*LSUM*	*1*	*$ 15,000,000*		*$ 15,000,000*
At-Grade Roadway Crossings	*LSUM*	*1*	*$ 1,081,500*		*$ 1,081,500*
Traffic Signal Priority	EA	35	$ 30,900	$ 1,081,500	
Wayside Signal Improvements	*LSUM*	*1*	*$ 21,821,604*		*$ 21,821,604*
Signal System, Transit	MILE	15.82	$ 1,379,170	$ 21,821,604	
Passing Sidings	*LSUM*	*1*	*$ 5,947,800*		*$ 5,947,800*
LRT Track, Ballasted, Complete (grading, subballast, rail, ties, ballast)	TF	16,000	$ 350	$ 5,600,000	
Install #8 Turnout	EA	4	$ 86,950	$ 347,800	
Utility Work Estimate		*10%*	*$ 15,873,559*		*$ 15,873,559*
Environmental Work Estimate		*10%*	*$ 15,873,559*		*$ 15,873,559*
SUBTOTAL - CONSTRUCTION COSTS					*$ 190,482,713*
Vehicles	*LSUM*	*1*	*$ 18,357,840*		*$ 18,357,840*
DLRV	EA	6	$ 3,059,640	$ 18,357,840	
Professional Services	*LSUM*	*1*	*$ 22,857,926*		*$ 22,857,926*
Preliminary Engineering		3%	$ 5,714,481		
Final Design		5%	$ 9,524,136		
Project Managenent for Design & Construction		1%	$ 1,904,827		
Construction Administration & Management		3%	$ 5,714,481		
Contingencies		*35%*	*$ 81,094,467*		*$ 81,094,467*
TOTAL CAPITAL COST ESTIMATE			*(2009 Dollars)*		*$ 312,792,946*
TOTAL ROUTE MILEAGE					*25.77*
COST PER ROUTE MILE					*$ 12,135,945*

Volusia County Transit Study

STC1 - East Coast Circulator: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	ITEM COSTS	TOTAL COST
Trackwork	*LSUM*	*1*	*$ 195,844,200*		*$ 195,844,200*
Track in existing street (track miles)	Mile	57.4	$ 3,399,000	$ 195,102,600	
No. 4 Powered Turnouts	EA	3	$ 247,200	$ 741,600	
Electrification	*LSUM*	*1*	*$ 92,308,600*		*$ 92,308,600*
Overhead wire and support (track miles)	Mile	57.4	$ 1,339,000	$ 76,858,600	
Substations (one per route mile)	EA	30	$ 515,000	$ 15,450,000	
Streetcar Stops	*LSUM*	*1*	*$ 3,084,850*		*$ 3,084,850*
Stops (bi-directional)	EA	69	$ 41,200	$ 2,842,800	
Stops (uni-directional)	EA	5	$ 20,600	$ 103,000	
Terminal Stops (bi-directional)	EA	2	$ 51,500	$ 103,000	
Terminal Stops (uni-directional)	EA	1	$ 36,050	$ 36,050	
Maintenance Facilities	*LSUM*	*1*	*$ 5,780,160*		*$ 5,780,160*
Concrete pad for entrance to car barn	SF	15,000	$ 12	$ 185,400	
Track and overhead wire to car barn	LF	1,400	$ 958	$ 1,341,060	
Foundation, floor and pit	SF	10,000	$ 31	$ 309,000	
Car Barn (75' x 250')	SF	19,000	$ 155	$ 2,935,500	
Turnouts	EA	1	$ 80,000	$ 80,000	
Utilities	LSUM	1	$ 15,450	$ 15,450	
Tools and parts	LSUM	1	$ 515,000	$ 515,000	
Small substation	LSUM	1	$ 128,750	$ 128,750	
Landscaping	LSUM	1	$ 150,000	$ 150,000	
Permits and fees	LSUM	1	$ 120,000	$ 120,000	
Utility Work		*15%*	*$ 44,552,672*		*$ 44,552,672*
Environmental Work		*5%*	*$ 14,850,891*		*$ 14,850,891*
SUBTOTAL - CONSTRUCTION	*LSUM*	*1*	*$ 356,421,372*		*$ 356,421,372*
Vehicles	*LSUM*	*1*	*$ 83,275,500*		*$ 83,275,500*
Streetcars (modern)	EA	21	$ 3,965,500	$ 83,275,500	
Professional Services	*LSUM*	*1*	*$ 42,770,565*		*$ 42,770,565*
Preliminary Engineering		3%	$ 10,692,641		
Final Design		5%	$ 17,821,069		
Project Management for Design & Construction		1%	$ 3,564,214		
Construction Administration & Management		3%	$ 10,692,641		
Contingencies		*35%*	*$ 168,863,603*		*$ 168,863,603*
TOTAL CAPITAL COST			*(2009 Dollars)*		*$ 652,000,000*
TOTAL TRACK MILEAGE					*57.4*
APPROXIMATE COST PER TRACK MILE					$ 11,359,000

Volusia County Transit Study
STC2 - DeLand Circulator: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	ITEM COSTS	TOTAL COST
Trackwork	*LSUM*	*1*	*$ 130,992,400*		*$ 130,992,400*
Track in existing street (track miles)	Mile	38	$ 3,399,000	$ 129,162,000	
No. 4 Powered Turnouts	EA	7	$ 247,200	$ 1,730,400	
Perpendicular Diamond Crossing	EA	1	$ 100,000	$ 100,000	
Electrification	*LSUM*	*1*	*$ 61,182,000*		*$ 61,182,000*
Overhead wire and support (track miles)	Mile	38	$ 1,339,000	$ 50,882,000	
Substations (one per route mile)	EA	20	$ 515,000	$ 10,300,000	
Streetcar Stops	*LSUM*	*1*	*$ 1,035,150*		*$ 1,035,150*
Stops (bi-directional)	EA	20	$ 41,200	$ 824,000	
Stops (uni-directional)	EA	1	$ 20,600	$ 20,600	
Terminal Stops (bi-directional)	EA	3	$ 51,500	$ 154,500	
Terminal Stops (uni-directional)	EA	1	$ 36,050	$ 36,050	
Maintenance Facilities	*LSUM*	*1*	*$ 2,353,350*		*$ 2,353,350*
Concrete pad for entrance to car barn	SF	15,000	$ 12	$ 185,400	
Track and overhead wire to car barn	LF	500	$ 958	$ 478,950	
Foundation, floor and pit	SF	2,000	$ 31	$ 61,800	
Car Barn (40' x 100')	SF	4,000	$ 155	$ 618,000	
Turnouts	EA	1	$ 80,000	$ 80,000	
Utilities	LSUM	1	$ 15,450	$ 15,450	
Tools and parts	LSUM	1	$ 515,000	$ 515,000	
Small substation	LSUM	1	$ 128,750	$ 128,750	
Landscaping	LSUM	1	$ 150,000	$ 150,000	
Permits and fees	LSUM	1	$ 120,000	$ 120,000	
Utility Work		*15%*	*$ 29,334,435*		*$ 29,334,435*
Environmental Work		*5%*	*$ 9,778,145*		*$ 9,778,145*
SUBTOTAL - CONSTRUCTION	*LSUM*	*1*	*$ 234,675,480*		*$ 234,675,480*
Vehicles	*LSUM*	*1*	*$ 31,724,000*		*$ 31,724,000*
Streetcars (modern)	EA	8	$ 3,965,500	$ 31,724,000	
Professional Services	*LSUM*	*1*	*$ 28,161,058*		*$ 28,161,058*
Preliminary Engineering		3%	$ 7,040,264		
Final Design		5%	$ 11,733,774		
Project Management for Design & Construction		1%	$ 2,346,755		
Construction Administration & Management		3%	$ 7,040,264		
Contingencies		*35%*	*$ 103,096,188*		*$ 103,096,188*
TOTAL CAPITAL COST			*(2009 Dollars)*		*$ 398,000,000*
TOTAL TRACK MILEAGE					*38*
APPROXIMATE COST PER TRACK MILE					$ 10,474,000

Volusia County Transit Study

STC3 - DeBary Circulator: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	ITEM COSTS	TOTAL COST
Trackwork	*LSUM*	*1*	*$ 46,993,750*		*$ 46,993,750*
Track in existing street (track miles)	Mile	13.6	$ 3,399,000	$ 46,226,400	
No. 4 Powered Turnouts	EA	3	$ 247,200	$ 741,600	
Perpendicular Diamond Crossing	EA	1	$ 25,750	$ 25,750	
Electrification	*LSUM*	*1*	*$ 23,360,400*		*$ 23,360,400*
Overhead wire and support (track miles)	Mile	13.6	$ 1,339,000	$ 18,210,400	
Substations (one per route mile)	EA	10	$ 515,000	$ 5,150,000	
Streetcar Stops	*LSUM*	*1*	*$ 499,550*		*$ 499,550*
Stops (bi-directional)	EA	5	$ 41,200	$ 206,000	
Stops (uni-directional)	EA	10	$ 20,600	$ 206,000	
Terminal Stops (bi-directional)	EA	1	$ 51,500	$ 51,500	
Terminal Stops (uni-directional)	EA	1	$ 36,050	$ 36,050	
Maintenance Facilities	*LSUM*	*1*	*$ 2,085,138*		*$ 2,085,138*
Concrete pad for entrance to car barn	SF	15,000	$ 12	$ 185,400	
Track and overhead wire to car barn	LF	220	$ 958	$ 210,738	
Foundation, floor and pit	SF	2,000	$ 31	$ 61,800	
Car Barn (40' x 100')	SF	4,000	$ 155	$ 618,000	
Turnouts	EA	1	$ 80,000	$ 80,000	
Utilities	LSUM	1	$ 15,450	$ 15,450	
Tools and parts	LSUM	1	$ 515,000	$ 515,000	
Small substation	LSUM	1	$ 128,750	$ 128,750	
Landscaping	LSUM	1	$ 150,000	$ 150,000	
Permits and fees	LSUM	1	$ 120,000	$ 120,000	
Utility Work		*15%*	*$ 10,940,826*		*$ 10,940,826*
Environmental Work		*5%*	*$ 3,646,942*		*$ 3,646,942*
SUBTOTAL - CONSTRUCTION	*LSUM*	*1*	*$ 87,526,606*		*$ 87,526,606*
Vehicles	*LSUM*	*1*	*$ 15,862,000*		*$ 15,862,000*
Streetcars (modern)	EA	4	$ 3,965,500	$ 15,862,000	
Professional Services	*LSUM*	*1*	*$ 10,503,193*		*$ 10,503,193*
Preliminary Engineering		3%	$ 2,625,798		
Final Design		5%	$ 4,376,330		
Project Management for Design & Construction		1%	$ 875,266		
Construction Administration & Management		3%	$ 2,625,798		
Contingencies		*35%*	*$ 39,862,129*		*$ 39,862,129*
TOTAL CAPITAL COST			*(2009 Dollars)*		*$ 154,000,000*
TOTAL TRACK MILEAGE					*13.6*
APPROXIMATE COST PER TRACK MILE					$ 11,324,000

Volusia County Transit Study

STC4 - Daytona West Circulator: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	ITEM COSTS	TOTAL COST
Trackwork	*LSUM*	*1*	*$ 27,779,100*		*$ 27,779,100*
Track in existing street (track miles)	Mile	8	$ 3,399,000	$ 27,531,900	
No. 4 Powered Turnouts	EA	1	$ 247,200	$ 247,200	
Electrification	*LSUM*	*1*	*$ 13,420,900*		*$ 13,420,900*
Overhead wire and support (track miles)	Mile	8	$ 1,339,000	$ 10,845,900	
Substations (one per route mile)	EA	5	$ 515,000	$ 2,575,000	
Streetcar Stops	*LSUM*	*1*	*$ 437,750*		*$ 437,750*
Stops (bi-directional)	EA	6	$ 41,200	$ 247,200	
Stops (uni-directional)	EA	5	$ 20,600	$ 103,000	
Terminal Stops (bi-directional)	EA	1	$ 51,500	$ 51,500	
Terminal Stops (uni-directional)	EA	1	$ 36,050	$ 36,050	
Maintenance Facilities	*LSUM*	*1*	*$ 2,085,138*		*$ 2,085,138*
Concrete pad for entrance to car barn	SF	15,000	$ 12	$ 185,400	
Track and overhead wire to car barn	LF	220	$ 958	$ 210,738	
Foundation, floor and pit	SF	2,000	$ 31	$ 61,800	
Car Barn (40' x 100')	SF	4,000	$ 155	$ 618,000	
Turnouts	EA	1	$ 80,000	$ 80,000	
Utilities	LSUM	1	$ 15,450	$ 15,450	
Tools and parts	LSUM	1	$ 515,000	$ 515,000	
Small substation	LSUM	1	$ 128,750	$ 128,750	
Landscaping	LSUM	1	$ 150,000	$ 150,000	
Permits and fees	LSUM	1	$ 120,000	$ 120,000	
Utility Work		*15%*	*$ 6,558,433*		*$ 6,558,433*
Environmental Work		*5%*	*$ 2,186,144*		*$ 2,186,144*
SUBTOTAL - CONSTRUCTION	*LSUM*	*1*	*$ 52,467,466*		*$ 52,467,466*
Vehicles	*LSUM*	*1*	*$ 19,827,500*		*$ 19,827,500*
Streetcars (modern)	EA	5	$ 3,965,500	$ 19,827,500	
Professional Services	*LSUM*	*1*	*$ 6,296,096*		*$ 6,296,096*
Preliminary Engineering		3%	$ 1,574,024		
Final Design		5%	$ 2,623,373		
Project Management for Design & Construction		1%	$ 524,675		
Construction Administration & Management		3%	$ 1,574,024		
Contingencies		*35%*	*$ 27,506,872*		*$ 27,506,872*
TOTAL CAPITAL COST			*(2009 Dollars)*		*$ 107,000,000*
TOTAL TRACK MILEAGE					*8.1*
APPROXIMATE COST PER TRACK MILE					$ 13,210,000

Volusia County Transit Study
STC5 - Daytona West Circulator: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	ITEM COSTS	TOTAL COST
Trackwork	*LSUM*	*1*	*$ 69,926,700*		*$ 69,926,700*
Track in existing street (track miles)	Mile	21	$ 3,399,000	$ 69,679,500	
No. 4 Powered Turnouts	EA	1	$ 247,200	$ 247,200	
Electrification	*LSUM*	*1*	*$ 33,114,500*		*$ 33,114,500*
Overhead wire and support (track miles)	Mile	21	$ 1,339,000	$ 27,449,500	
Substations (one per route mile)	EA	11	$ 515,000	$ 5,665,000	
Streetcar Stops	*LSUM*	*1*	*$ 932,150*		*$ 932,150*
Stops (bi-directional)	EA	18	$ 41,200	$ 741,600	
Stops (uni-directional)	EA	5	$ 20,600	$ 103,000	
Terminal Stops (bi-directional)	EA	1	$ 51,500	$ 51,500	
Terminal Stops (uni-directional)	EA	1	$ 36,050	$ 36,050	
Maintenance Facilities	*LSUM*	*1*	*$ 2,353,350*		*$ 2,353,350*
Concrete pad for entrance to car barn	SF	15,000	$ 12	$ 185,400	
Track and overhead wire to car barn	LF	500	$ 958	$ 478,950	
Foundation, floor and pit	SF	2,000	$ 31	$ 61,800	
Car Barn (40' x 100')	SF	4,000	$ 155	$ 618,000	
Turnouts	EA	1	$ 80,000	$ 80,000	
Utilities	LSUM	1	$ 15,450	$ 15,450	
Tools and parts	LSUM	1	$ 515,000	$ 515,000	
Small substation	LSUM	1	$ 128,750	$ 128,750	
Landscaping	LSUM	1	$ 150,000	$ 150,000	
Permits and fees	LSUM	1	$ 120,000	$ 120,000	
Utility Work		*15%*	*$ 15,949,005*		*$ 15,949,005*
Environmental Work		*5%*	*$ 5,316,335*		*$ 5,316,335*
SUBTOTAL - CONSTRUCTION	*LSUM*	*1*	*$ 127,592,040*		*$ 127,592,040*
Vehicles	*LSUM*	*1*	*$ 35,689,500*		*$ 35,689,500*
Streetcars (modern)	EA	9	$ 3,965,500	$ 35,689,500	
Professional Services	*LSUM*	*1*	*$ 15,311,045*		*$ 15,311,045*
Preliminary Engineering		3%	$ 3,827,761		
Final Design		5%	$ 6,379,602		
Project Management for Design & Construction		1%	$ 1,275,920		
Construction Administration & Management		3%	$ 3,827,761		
Contingencies		*35%*	*$ 62,507,405*		*$ 62,507,405*
TOTAL CAPITAL COST			*(2009 Dollars)*		*$ 242,000,000*
TOTAL TRACK MILEAGE					*20.5*
APPROXIMATE COST PER TRACK MILE					$ 11,805,000

Volusia County Transit Study

ART 1 - I-4: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	QUANTITY	UNIT COST	TOTAL COST
Buses	5	$700,000	$3,500,000
ART Stops	20	$75,000	$1,500,000
Includes shelter, signage and real time information			
Traffic Signal Priority	16	$40,000	$640,000
Maintenace Facility Allocation	1	$2,000,000	$2,000,000
			$7,640,000
Contingencies (20%)			$1,528,000
TOTAL CAPITAL COST		*(2009 Dollars)*	$9,168,000

Volusia County Transit Study

ART 2 - SR-44: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	QUANTITY	UNIT COST	TOTAL COST
Buses	7	$700,000	$4,900,000
ART Stops	22	$75,000	$1,650,000
Includes shelter, signage and real time information			
Traffic Signal Priority	23	$40,000	$920,000
Maintenace Facility Allocation	1	$2,000,000	$2,000,000
			$9,470,000
Contingencies (20%)			$1,894,000
TOTAL CAPITAL COST		*(2009 Dollars)*	$11,364,000

Volusia County Transit Study

ART 3 - US 92: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	QUANTITY	UNIT COST	TOTAL COST
Buses	6	$700,000	$4,200,000
ART Stops	38	$75,000	$2,850,000
Includes shelter, signage and real time information			
Traffic Signal Priority	38	$40,000	$1,520,000
Queue Jump Lanes	5	$55,000	$275,000
Maintenace Facility Allocation	1	$2,000,000	$2,000,000
			$10,845,000
Contingencies (20%)			$2,169,000
TOTAL CAPITAL COST		*(2009 Dollars)*	$13,014,000

Volusia County Transit Study

ART 4 - SR-44: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	QUANTITY	UNIT COST	TOTAL COST
Buses	7	$700,000	$4,900,000
ART Stops	44	$75,000	$3,300,000
Includes shelter, signage and real time information			
Traffic Signal Priority	33	$40,000	$1,320,000
Queue Jump Lanes	5	$55,000	$275,000
Maintenace Facility Allocation	1	$2,000,000	$2,000,000
			$11,795,000
Contingencies (20%)			$2,359,000
TOTAL CAPITAL COST		*(2009 Dollars)*	$14,154,000

Volusia County Transit Study

C-ART 1 - DeLand Circulator: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	QUANTITY	UNIT COST	TOTAL COST
Buses	3	$700,000	$2,100,000
ART Stops	17	$75,000	$1,275,000
Includes shelter, signage and real time information			
Traffic Signal Priority	4	$40,000	$160,000
Maintenace Facility Allocation	1	$2,000,000	$2,000,000
			$5,535,000
Contingencies (20%)			$1,107,000
TOTAL CAPITAL COST		*(2009 Dollars)*	$6,642,000

Volusia County Transit Study

C-ART 2 - DeLand Circulator: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	QUANTITY	UNIT COST	TOTAL COST
Buses	2	$700,000	$1,400,000
ART Stops	7	$75,000	$525,000
Includes shelter, signage and real time information			
Traffic Signal Priority	4	$40,000	$160,000
Maintenace Facility Allocation	1	$1,000,000	$1,000,000
			$3,085,000
Contingencies (20%)			$617,000
TOTAL CAPITAL COST		*(2009 Dollars)*	$3,702,000

Volusia County Transit Study

C-ART 3 - DeBary/Deltona Circulator: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	QUANTITY	UNIT COST	TOTAL COST
Buses	3	$700,000	$2,100,000
ART Stops	12	$75,000	$900,000
Includes shelter, signage and real time information			
Traffic Signal Priority	1	$40,000	$40,000
Maintenace Facility Allocation	1	$1,000,000	$1,000,000
			$4,040,000
Contingencies (20%)			$808,000
TOTAL CAPITAL COST		*(2009 Dollars)*	$4,848,000

Volusia County Transit Study

C-ART 4 - DeBary/Deltona Circulator: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	QUANTITY	UNIT COST	TOTAL COST
Buses	3	$700,000	$2,100,000
ART Stops	12	$75,000	$900,000
Includes shelter, signage and real time information			
Traffic Signal Priority	1	$40,000	$40,000
Maintenace Facility Allocation	1	$1,000,000	$1,000,000
			$4,040,000
Contingencies (20%)			$808,000
TOTAL CAPITAL COST		*(2009 Dollars)*	$4,848,000

Volusia County Transit Study

C-ART 5 - Daytona Circulator: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	QUANTITY	UNIT COST	TOTAL COST
Buses	8	$700,000	$5,600,000
ART Stops	23	$75,000	$1,725,000
Includes shelter, signage and real time information			
Traffic Signal Priority	21	$40,000	$840,000
Maintenace Facility Allocation	1	$2,000,000	$2,000,000
			$10,165,000
Contingencies (20%)			$2,033,000
TOTAL CAPITAL COST		*(2009 Dollars)*	$12,198,000

Volusia County Transit Study

BRT 1 - I-4: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	QUANTITY	UNIT COST	UNIT	TOTAL COST
Buses	4	$800,000	Each	$3,200,000
Divided Highway BRT Station	1	$10,000,000	Each	$10,000,000
Includes station, connection across interstate, park and ride lot				
Streetside BRT Station	24	$75,000	Each	$1,800,000
Includes shelter, signage and real time information				
Traffic Signal Priority Signaling	26	$40,000	Each	$1,040,000
Queue Jump Lanes	1	$55,000	Each	$55,000
Maintenance Facility Allocation	1	$2,000,000	Each	$2,000,000
Guideway	18	$3,300,000	Mile	$59,400,000
				$77,495,000
Contingency (20%)				$15,499,000
TOTAL CAPITAL COST		*(2009 Dollars)*		$92,994,000

Volusia County Transit Study

BRT 2 - I-4: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	QUANTITY	UNIT COST	UNIT	TOTAL COST
Buses	6	$800,000	Each	$4,800,000
Divided Highway BRT Station	2	$10,000,000	Each	$20,000,000
Includes station, connection across interstate, park and ride lot				
Streetside BRT Station	26	$75,000	Each	$1,950,000
Includes shelter, signage and real time information				
Traffic Signal Priority Signaling	36	$40,000	Each	$1,440,000
Queue Jump Lanes		$55,000	Each	$0
Maintenance Facility Allocation	1	$2,000,000	Each	$2,000,000
Guideway	21	$3,300,000	Mile	$69,300,000
				$99,490,000
Contingency (20%)				$19,898,000
TOTAL CAPITAL COST			*(2009 Dollars)*	$119,388,000

Volusia County Transit Study

BRT 3 - US 92: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	QUANTITY	UNIT COST	UNIT	TOTAL COST
Buses	7	$800,000	Each	$5,600,000
Divided Highway BRT Station	1	$10,000,000	Each	$10,000,000
Includes station, connection across interstate, park and ride lot				
Streetside BRT Station	12	$75,000	Each	$900,000
Includes shelter, signage and real time information				
Traffic Signal Priority Signaling	38	$40,000	Each	$1,520,000
Maintenance Facility Allocation	1	$2,000,000	Each	$2,000,000
Guideway	15	$3,300,000	Mile	$49,500,000
				$69,520,000
Contingency (20%)				$13,904,000
TOTAL CAPITAL COST			*(2009 Dollars)*	$83,424,000

Volusia County Transit Study

BRT 4 - US 92: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	QUANTITY	UNIT COST	UNIT	TOTAL COST
Buses	6	$800,000	Each	$4,800,000
Divided Highway BRT Station	1	$10,000,000	Each	$10,000,000
Includes station, connection across interstate, park and ride lot				
Streetside BRT Station	16	$75,000	Each	$1,200,000
Includes shelter, signage and real time information				
Traffic Signal Priority Signaling	50	$40,000	Each	$2,000,000
Maintenance Facility Allocation	1	$2,000,000	Each	$2,000,000
Guideway	15	$3,300,000	Mile	$49,500,000
				$69,500,000
Contingency (20%)				$13,900,000
TOTAL CAPITAL COST			*(2009 Dollars)*	$83,400,000

Volusia County Transit Study

C- BRT 5 - Daytona Circulator: Order of Magnitude Costs

January 9, 2009

ITEM DESCRIPTION	QUANTITY	UNIT COST	UNIT	TOTAL COST
Buses	4	$800,000	Each	$3,200,000
Streetside BRT Station	21	$75,000	Each	$1,575,000
Includes shelter, signage and real time information				
Traffic Signal Priority Signaling	10	$40,000	Each	$400,000
Maintenance Facility Allocation	1	$2,000,000	Each	$2,000,000
Guideway	1	$3,300,000	Mile	$3,300,000
				$10,475,000
Contingency (20%)				$2,095,000
TOTAL CAPITAL COST			*(2009 Dollars)*	$12,570,000

Volusia County : Commuter Rail - Order of Magnitude O. and M. Annual Cost Calculations

	CR1 A&B Volusia Co.		*CR2 Volusia Co.*		*CR3 A&B Volusia Co.*		*CR4 Volusia Co.*	
Annual Train Miles	102,231		41,788		52,991		60,886	
	Annual	*per Train-Mile*	*Annual*	*per Train-Mile*	*Annual*	*per Train-Mile*	*Annual*	*per Train-Mile*
Operations	$ 4,745,114	$ 46.42	$ 1,939,632	$ 46.42	$ 2,459,612	$ 46.42	$ 2,826,069	$ 46.42
Fuel								
MOW								
	Annual	*per Station*	*Annual*	*per Station*	*Annual*	*per Station*	*Annual*	*per Station*
Station Maintenance	$ 45,000	$ 7,500.00	$ 15,000	$ 7,500.00	$ 45,000	$ 7,500.00	$ 45,000	$ 7,500.00
Protective Bus	$ 65,000		$ 65,000		$ 65,000		$ 65,000	
Feeder Bus	$ -		$ -		$ -		$ -	
Total O&M Costs	$ 4,855,114	$ 47.49	$ 2,019,632	$ 48.33	$ 2,569,612	$ 48.49	$ 2,936,069	$ 48.22
Rounded	*$ 4,856,000*	*$ 47.50*	*$ 2,020,000*	*$ 48.34*	*$ 2,570,000*	*$ 48.50*	*$ 2,937,000*	*$ 48.24*

Volusia County Transit Study
Streetcar Operating and Maintenance - Annual Order of Magnitude Costs
LRT1 (SR44)
LRT2 (US92)

Cost per Hour = $200

	One Way Roadway Miles	Roadway Average Speed (mph)	Running time (minutes)	Layover (minutes)	Cycle time (minutes)	Adj. Cycle Time (min)	Peak HW (min)	Non Peak Headway	Sat HW	Sun HW	Peak cars	Non Peak cars	Sat cars	Sun cars
LRT1	29.2	32.4	54	10	128	130	30	60	0	0	5	3	0	0
LRT2	25.8	34.4	45	10	110	110	30	60	0	0	4	2	0	0

	Weekday Hours	Saturday Hours	Sunday Hours
LRT1	0600 to 2000		
LRT2	0600 to 2000		

	Weekday Peak Hours	Weekday Non-Peak Hours	Saturday Hours	Sunday Hours		Weekday Vehicle Hours	Saturday Vehicle Hours	Sunday Vehicle Hours	Annual Hours	Cost per Hour	Weekday Cost	Saturday Cost	Sunday Cost	Annual Cost
LRT1	6	8	0	0		54	0	0	13,770	$200	$10,800	$0	$0	$2,754,000
LRT2	6	8	0	0		40	0	0	10,200	$200	$8,000	$0	$0	$2,040,000

Volusia County Transit Study
Streetcar Operating and Maintenance - Annual Order of Magnitude Costs
STC1 - East Coast Circulator

Cost per Hour = $100

	One Way Roadway Miles	Roadway Average Speed (mph)	Running time (minutes)	Layover (minutes)	Cycle time (minutes)	Adj. Cycle Time (min)	Peak HW (min)	Non Peak Headway	Sat HW	Sun HW	Peak cars	Non Peak cars	Sat cars	Sun cars
South Leg	13.4	14.5	56	9	130	130	15	30	30	30	9	5	5	5
North Leg	15.3	15	62	10	144	150	15	30	30	30	10	5	5	5

	Weekday Hours	Saturday Hours	Sunday Hours
South Leg	0630 to 0100	0700 to 2400	0700 to 2400
North Leg	0630 to 0100	0700 to 2400	0700 to 2400

	Weekday Peak Hours	Weekday Non-Peak Hours	Saturday Hours	Sunday Hours		Weekday Vehicle Hours	Saturday Vehicle Hours	Sunday Vehicle Hours	Annual Hours	Cost per Hour	Weekday Cost	Saturday Cost	Sunday Cost	Annual Cost
South Leg	5	13.5	17	17		112.5	85	85	38,038	$100	$11,250	$8,500	$8,500	$3,803,750
North Leg	5	13.5	17	17		117.5	85	85	39,313	$100	$11,750	$8,500	$8,500	$3,931,250

STC1	
Annual O&M Cost	$7,735,000

Volusia County Transit Study
Streetcar Operating and Maintenance - Annual Order of Magnitude Costs
STC2 - DeLand Circulator

Cost per Hour = $100

	One Way Roadway Miles	Roadway Average Speed (mph)	Running time (minutes)	Layover (minutes)	Cycle time (minutes)	Adj. Cycle Time (min)	Peak HW (min)	Non Peak Headway	Sat HW	Sun HW	Peak cars	Non Peak cars	Sat cars	Sun cars
E-W Leg	8.3	14.5	35	6	82	90	30	30	60	60	3	3	2	2
N-S Leg	11.4	14.5	48	8	112	120	30	30	60	60	4	4	2	2

	Weekday Hours	Saturday Hours	Sunday Hours
E-W Leg	0700 to 2000	0700 to 2000	0700 to 2000
N-S Leg	0700 to 2000	0700 to 2000	0700 to 2000

	Weekday Peak Hours	Weekday Non-Peak Hours	Saturday Hours	Sunday Hours		Weekday Vehicle Hours	Saturday Vehicle Hours	Sunday Vehicle Hours	Annual Hours	Cost per Hour	Weekday Cost	Saturday Cost	Sunday Cost	Annual Cost
E-W Leg	5	8	13	13		39	26	26	12,805	$100	$3,900	$2,600	$2,600	$1,280,500
N-S Leg	5	8	13	13		52	26	26	16,120	$100	$5,200	$2,600	$2,600	$1,612,000

STC2	
Annual O&M Cost	$2,893,000

Volusia County Transit Study
Streetcar Operating and Maintenance - Annual Order of Magnitude Costs
STC3 - DeBary Circulator

Cost per Hour = $100

	One Way Roadway Miles	Roadway Average Speed (mph)	Running time (minutes)	Layover (minutes)	Cycle time (minutes)	Adj. Cycle Time (min)	Peak HW (min)	Non Peak Headway	Sat HW	Sun HW	Peak cars	Non Peak cars	Sat cars	Sun cars
Full Route	9.4	15	38	6	88	90	30	30	60	60	3	3	2	2

	Weekday Hours	Saturday Hours	Sunday Hours
Full Route	0700 to 2000	0700 to 2000	0700 to 2000

	Weekday Peak Hours	Weekday Non-Peak Hours	Saturday Hours	Sunday Hours		Weekday Vehicle Hours	Saturday Vehicle Hours	Sunday Vehicle Hours	Annual Hours	Cost per Hour	Weekday Cost	Saturday Cost	Sunday Cost	Annual Cost
Full Route	5	8	13	13		39	26	26	12,805	$100	$3,900	$2,600	$2,600	$1,280,500

STC3	
Annual O&M Cost	$1,281,000

Volusia County Transit Study
Streetcar Operating and Maintenance - Annual Order of Magnitude Costs
STC4 - West Daytona Beach Circulator

Cost per Hour = $100

	One Way Roadway Miles	Roadway Average Speed (mph)	Running time (minutes)	Layover (minutes)	Cycle time (minutes)	Adj. Cycle Time (min)	Peak HW (min)	Non Peak Headway	Sat HW	Sun HW	Peak cars	Non Peak cars	Sat cars	Sun cars
Full Route	4.8	14	21	4	50	50	15	30	30	30	4	2	2	2

	Weekday Hours	Saturday Hours	Sunday Hours
Full Route	0645 to 2130	0645 to 2130	0645 to 2130

	Weekday Peak Hours	Weekday Non-Peak Hours	Saturday Hours	Sunday Hours		Weekday Vehicle Hours	Saturday Vehicle Hours	Sunday Vehicle Hours	Annual Hours	Cost per Hour	Weekday Cost	Saturday Cost	Sunday Cost	Annual Cost
Full Route	5	9.75	14.75	14.75		39.5	29.5	29.5	13,318	$100	$3,950	$2,950	$2,950	$1,331,750

STC4	
Annual O&M Cost	$1,332,000

Volusia County Transit Study
Streetcar Operating and Maintenance - Annual Order of Magnitude Costs
STC5 - West Daytona Beach Circulator

Cost per Hour = $100

	One Way Roadway Miles	Roadway Average Speed (mph)	Running time (minutes)	Layover (minutes)	Cycle time (minutes)	Adj. Cycle Time (min)	Peak HW (min)	Non Peak Headway	Sat HW	Sun HW	Peak cars	Non Peak cars	Sat cars	Sun cars
Full Route	11.0	14	48	8	112	120	15	30	30	30	8	4	4	4

	Weekday Hours	Saturday Hours	Sunday Hours
Full Route	0645 to 2130	0645 to 2130	0645 to 2130

	Weekday Peak Hours	Weekday Non-Peak Hours	Saturday Hours	Sunday Hours		Weekday Vehicle Hours	Saturday Vehicle Hours	Sunday Vehicle Hours	Annual Hours	Cost per Hour	Weekday Cost	Saturday Cost	Sunday Cost	Annual Cost
Full Route	5	9.75	14.75	14.75		79	59	59	26,635	$100	$7,900	$5,900	$5,900	$2,663,500

STC5	
Annual O&M Cost	$2,664,000

Volusia County Transit Study Annual Order of Magnitude Costs

I-4 ART1	Mode	OW miles	Speed	Running time	Layover	Cycle time	Adj. Cycle Time	Peak HW	Midday HW	Eve HW	Sat HW	Sun HW	Peak buses	Midday buses	Eve buses	Sat buses	Sun buses
DeBary Rail Station to Daytona via Belleville Rd.	ART	33.88	35	58	8.712	134	140	30	60	60	0	0	5	3	3	0	0
												Peak Vehicles:	5				

Hours of Operation

	Weekday	Saturday	Sunday
Start	6:00		
End	20:00		

Peak Hrs	Midday Hrs	Eve Hours	Sat Hours	Sun Hours
6	6	2	0	0

Estimated Wkdy Veh Hrs ART	54
Estimated Sat Veh Hrs ART	0
Estimated Sun Veh Hrs ART	0

Volusia County Transit Study Annual Order of Magnitude Costs

SR44 ART2	Mode	OW miles	Speed	Running time	Layover	Cycle time	Adj. Cycle Time	Peak HW	Midday HW	Eve HW	Sat HW	Sun HW	Peak buses	Midday buses	Eve buses	Sat buses	Sun buses
DeLand Rail Station to New Smyrna Beach	ART	28.5	22	78	11.65909	179	185	30	60	60	0	0	7	4	4	0	0
												Peak Vehicles:	7				

Hours of Operation

	Weekday	Saturday	Sunday
Start	6:00		
End	20:00		

Peak Hrs	Midday Hrs	Eve Hours	Sat Hours	Sun Hours
6	6	2	0	0

Estimated Wkdy Veh Hrs ART	74
Estimated Sat Veh Hrs ART	0
Estimated Sun Veh Hrs ART	0

Volusia County Transit Study Annual Order of Magnitude Costs

US92 ART3	Mode	OW miles	Speed	Running time	Layover	Cycle time	Adj. Cycle Time	Peak HW	Midday HW	Eve HW	Sat HW	Sun HW	Peak buses	Midday buses	Eve buses	Sat buses	Sun buses
DeLand Rail Station to Daytona	ART	26	22	71	10.63636	163	165	30	60	60			6	3	3		0
												Peak Vehicles:	6				

Hours of Operation

	Weekday	Saturday	Sunday
Start	6:00		
End	20:00		

Peak Hrs	Midday Hrs	Eve Hours	Sat Hours	Sun Hours
6	6	2		

Estimated Wkdy Veh Hrs ART	60
Estimated Sat Veh Hrs ART	
Estimated Sun Veh Hrs ART	

Volusia County Transit Study Annual Order of Magnitude Costs

US92 ART4	Mode	OW miles	Speed	Running time	Layover	Cycle time	Adj. Cycle Time	Peak HW	Midday HW	Eve HW	Sat HW	Sun HW	Peak buses	Midday buses	Eve buses	Sat buses	Sun buses
DeLand Rail Station to Daytona via Belleville Rd.	ART	29.1	20	87	13.095	201	205	30	60	60	0	0	7	4	4		
												Peak Vehicles:	7				

Hours of Operation

	Weekday	Saturday	Sunday
Start	6:00		
End	20:00		

Peak Hrs	Midday Hrs	Eve Hours	Sat Hours	Sun Hours
6	6	2	0	0

Estimated Wkdy Veh Hrs ART	74
Estimated Sat Veh Hrs ART	0
Estimated Sun Veh Hrs ART	0

Volusia County Transit Study Annual Order of Magnitude Costs

DeLand C-ART1	Mode	OW miles	Speed	Running time	Layover	Cycle time	Adj. Cycle Time	Peak HW	Midday HW	Eve HW	Sat HW	Sun HW	Peak buses	Midday buses	Eve buses	Sat buses	Sun buses
DeLand Circulator	ART	8.58	15	34	5.148	79	80	30	60	60	60		3	2	2	2	0
												Peak Vehicles:	3				

Hours of Operation

	Weekday	Saturday	Sunday
Start	5:00	6:00	
End	20:00	18:00	

Peak Hrs	Midday Hrs	Eve Hours	Sat Hours	Sun Hours
6	6	3	12	

Estimated Wkdy Veh Hrs ART	36
Estimated Sat Veh Hrs ART	24
Estimated Sun Veh Hrs ART	0

Volusia County Transit Study Annual Order of Magnitude Costs

DeLand Circulator C-ART2	Mode	OW miles	Speed	Running time	Layover	Cycle time	Adj. Cycle Time	Peak HW	Midday HW	Eve HW	Sat HW	Sun HW	Peak buses	Midday buses	Eve buses	Sat buses	Sun buses
DeLand Circulator	ART	5.81	15	23	3.486	53	60	30	60	60	60		2	1	1	1	0
												Peak Vehicles:	2				

Hours of Operation

	Weekday	Saturday	Sunday
Start	5:00	6:00	
End	20:00	18:00	

Peak Hrs	Midday Hrs	Eve Hours	Sat Hours	Sun Hours
6	6	3	12	0

Estimated Wkdy Veh Hrs ART	21
Estimated Sat Veh Hrs ART	12
Estimated Sun Veh Hrs ART	0

Volusia County Transit Study Annual Order of Magnitude Costs

DeBary Circulator C-ART3	Mode	OW miles	Speed	Running time	Layover	Cycle time	Adj. Cycle Time	Peak HW	Midday HW	Eve HW	Sat HW	Sun HW	Peak buses	Midday buses	Eve buses	Sat buses	Sun buses
DeBary-Deltona Circulator C-ART3	ART	7.43	15	30	4.458	68	70	30	60	60	60		3	2	2	2	0
												Peak Vehicles:	3				

Hours of Operation

	Weekday	Saturday	Sunday
Start	5:00	6:00	
End	20:00	18:00	

Peak Hrs	Midday Hrs	Eve Hours	Sat Hours	Sun Hours
6	6	3	12	0

Estimated Wkdy Veh Hrs ART	36
Estimated Sat Veh Hrs ART	24
Estimated Sun Veh Hrs ART	0

Volusia County Transit Study Annual Order of Magnitude Costs

DeBary Circulator C-ART4	Mode	OW miles	Speed	Running time	Layover	Cycle time	Adj. Cycle Time	Peak HW	Midday HW	Eve HW	Sat HW	Sun HW	Peak buses	Midday buses	Eve buses	Sat buses	Sun buses
DeBary-Deltona Circulator C-ART4	ART	8.13	15	33	4.878	75	80	30	60	60	60		3	2	2	2	0
												Peak Vehicles:	3				

Hours of Operation

	Weekday	Saturday	Sunday
Start	5:00	6:00	
End	20:00	18:00	

Peak Hrs	Midday Hrs	Eve Hours	Sat Hours	Sun Hours
6	6	3	12	0

Estimated Wkdy Veh Hrs ART	36
Estimated Sat Veh Hrs ART	24
Estimated Sun Veh Hrs ART	0

Volusia County Transit Study Annual Order of Magnitude Costs

Daytona Beach Circulator C-ART5	Mode	OW miles	Speed	Running time	Layover	Cycle time	Adj. Cycle Time	Peak HW	Midday HW	Eve HW	Sat HW	Sun HW	Peak buses	Midday buses	Eve buses	Sat buses	Sun buses
Daytona Beach Circulator	ART	11.5	14.5	48	7.137931	109	110	15	30	30	30	30	8	4	4	4	4
												Peak Vehicles:	8				

Hours of Operation

	Weekday	Saturday	Sunday
Start	5:00	6:00	9:30
End	20:00	18:00	17:30

Peak Hrs	Midday Hrs	Eve Hours	Sat Hours	Sun Hours
6	6	3	12	8

Estimated Wkdy Veh Hrs ART	84
Estimated Sat Veh Hrs ART	48
Estimated Sun Veh Hrs ART	32

Volusia County Transit Study Annual Order of Magnitude Costs

I-4 BRT1	Mode	OW miles	Speed	Running time	Layover	Cycle time	Adj. Cycle Time	Peak HW	Midday HW	Eve HW	Sat HW	Sun HW	Peak buses	Midday buses	Eve buses	Sat buses	Sun buses
DeBary Rail Station to Daytona	BRT	32.5	38	51	7.697368	118	120	30	60	60	0	0	4	2	2	0	0
												Peak Vehicles:	4				

Hours of Operation

	Weekday	Saturday	Sunday
Start	6:00		
End	20:00		

Peak Hrs	Midday Hrs	Eve Hours	Sat Hours	Sun Hours
6	6	2	0	0

Estimated Wkdy Veh Hrs BRT	40
Estimated Sat Veh Hrs BRT	0
Estimated Sun Veh Hrs BRT	0

Volusia County Transit Study Annual Order of Magnitude Costs

I-4 BRT2	Mode	OW miles	Speed	Running time	Layover	Cycle time	Adj. Cycle Time	Peak HW	Midday HW	Eve HW	Sat HW	Sun HW	Peak buses	Midday buses	Eve buses	Sat buses	Sun buses
DeBary Rail Station to Daytona A1A	BRT	34.4	28	74	11.05714	170	175	30	60	60	0	0	6	3	3	0	0
												Peak Vehicles:	6				

Hours of Operation

	Weekday	Saturday	Sunday
Start	6:00		
End	20:00		

Peak Hrs	Midday Hrs	Eve Hours	Sat Hours	Sun Hours
6	6	2	0	0

Estimated Wkdy Veh Hrs BRT	60
Estimated Sat Veh Hrs BRT	0
Estimated Sun Veh Hrs BRT	0

Volusia County Transit Study Annual Order of Magnitude Costs

US92 BRT3	Mode	OW miles	Speed	Running time	Layover	Cycle time	Adj. Cycle Time	Peak HW	Midday HW	Eve HW	Sat HW	Sun HW	Peak buses	Midday buses	Eve buses	Sat buses	Sun buses
DeLand Rail Station to Daytona	BRT	26	28	56	8.357143	128	200	30	60	60	0	0	7	4	4	0	0
												Peak Vehicles:	7				

Hours of Operation

	Weekday	Saturday	Sunday
Start	6:00		
End	20:00		

Peak Hrs	Midday Hrs	Eve Hours	Sat Hours	Sun Hours
6	6	2	0	0

Estimated Wkdy Veh Hrs BRT	74
Estimated Sat Veh Hrs BRT	0
Estimated Sun Veh Hrs BRT	0

Volusia County Transit Study Annual Order of Magnitude Costs

US92 BRT4	Mode	OW miles	Speed	Running time	Layover	Cycle time	Adj. Cycle Time	Peak HW	Midday HW	Eve HW	Sat HW	Sun HW	Peak buses	Midday buses	Eve buses	Sat buses	Sun buses
DeLand Rail Station to Daytona A1A	BRT	29.1	26	67	10.07308	154	160	30	60	60	0	0	6	3	3	0	0
												Peak Vehicles:	6				

Hours of Operation

	Weekday	Saturday	Sunday
Start	6:00		
End	20:00		

Peak Hrs	Midday Hrs	Eve Hours	Sat Hours	Sun Hours
6	6	2	0	0

Estimated Wkdy Veh Hrs BRT	60
Estimated Sat Veh Hrs BRT	0
Estimated Sun Veh Hrs BRT	0

Volusia County Transit Study Annual Order of Magnitude Costs

Daytona Circulator C-BRT1	Mode	OW miles	Speed	Running time	Layover	Cycle time	Adj. Cycle Time	Peak HW	Midday HW	Eve HW	Sat HW	Sun HW	Peak buses	Midday buses	Eve buses	Sat buses	Sun buses
Daytona Circulator Transit Center to Mall	BRT	4.87	15	19	2.922	45	50	15	15	30	30	30	4	4	2	2	2
												Peak Vehicles:	4				

Hours of Operation

	Weekday	Saturday	Sunday
Start	5:00	6:00	9:30
End	20:00	18:00	17:30

Peak Hrs	Midday Hrs	Eve Hours	Sat Hours	Sun Hours
6	6	3	12	8

Estimated Wkdy Veh Hrs BRT	54
Estimated Sat Veh Hrs BRT	24
Estimated Sun Veh Hrs BRT	16