The City of SARASOTA

City of Sarasota
Downtown Circulator Feasibility Study

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Table of Contents

Section 1: Introduction and Background 1-1
1.1: Introduction 1-1

Section 2: Baseline Conditions and Rider Market Assessment 2-1
2.1: Introduction 2-1
2.2: Overview of Study Area 2-1
2.3: Demographics/Socioeconomic Characteristics 2-3
2.4: Land Use Framework 2-10
2.5: Existing/Planned Transit 2-18
2.6: Summary Conclusions 2-25

Section 3: Transit Demand Assessment 3-1
3.1: Introduction 3.1
3.2: Transit Rider Market Evaluation 3-1
3.3: Activity Center Assessment 3-1
3.4: Traditional Market Assessment 3-4
3.5: Discretionary Market Assessment 3-4
3.6: Potential Ridership Estimates 3-10
3.7: Summary Conclusions 3-16

Section 4: Engineering and Technology Assessment 4-1
4.1: Introduction 4-1
4.2: Engineering Assessment 4-4
4.3: Identification of Alternative Routes 4-7
4.4: Rolling Stock Options 4-7
4.5: Conceptual Cross Sections 4-16
4.6: Travel Time and Number of Vehicles 4-30

Section 5: System Costs and Potential Revenues 5-1
5.1: Introduction 5-1
5.2: Capital Costs 5-1
5.3: Operating Costs 5-3
5.4: Potential Operating Revenues 5-5
5.5: Capital Funding Sources 5-6
5.6: Summary Conclusions 5-9

Section 6: Economic Benefits of a Downtown Circulator 6-1
6.1: Introduction and Methodology 6-1
6.2: Economic Development Impacts of Rubber-Tire Circulator vs. Streetcar 6-1
6.3: Base Case and Streetcar Case Scenarios 6-1
6.4: Study Area Overview 6-2
6.5: Study Area Results 6-13
6.5.1: Circulator A Alignment Summary 6-13
6.5.2: Circulator B Alignment Summary 6-15
6.5.3: Circulator C Alignment Summary 6-16
6.5.4: Cross-Comparison of the Alignments 6-17
6.6: Economic Impact Summary Results 6-18

Section 7: Organizational Business Model 7-1
7.1: Introduction 7-1
7.2: Municipal Operation 7-1
7.3: Transit Agency 7-3
7.4: Not-For-Profit 7-4
7.5: Summary Conclusions 7-5

Section 8: Comparative Case Studies 8-1
8.1: Introduction 8-1
8.2: Kenosha, Wisconsin 8-2

8.3: Little Rock, Arkansas 8-4
8.4: Tacoma, Washington 8-8
8.5: Tampa, Florida 8-10
8.6: Orlando, Florida 8-13
8.7: Chattanooga, Tennessee 8-15

Section 9: Public Involvement Summary 9-1
9.1: Introduction 9-1
9.2: Stakeholder Meetings 9-1
9.3: Public Workshop 9-1
9.4: Public Involvement Summary 9-1

Section 10: Conclusions and Next Steps 10-1
10.1: Background 10-1
10.2: Streetcar Next Steps 10-1
10.3: Rubber-Tire Circulator Next Steps 10-3

Appendix A: Circulator Conceptual Alignments - Utility Map Set
Appendix B: Sample Streetcar Budget Tables
Appendix C: FTA Fact Sheet for Section 5309
Appendix D: Economic Benefits of Streetcar Detailed Methodology and Analysis

List of Tables

Table 2-1: City of Sarasota Demographics 2-3
Table 2-2: Annual Unemployment Rate North Port–Bradenton–Sarasota MSA 2006–2010 2-6
Table 2-3: Annual Visitors to Sarasota County 2008–2010 2-6
Table 2-4: Future Land Use Category Development Characteristics 2-11
Table 2-5: Ten Largest Downtown Development Projects Since 2001 2-14
Table 2-6: SCAT Existing Routes Using the Downtown Transfer Center 2-21
Table 2-7: TDP FY 2013-2020 System Improvements 2-22
Table 3-1: DTA Density Thresholds 3-7
Table 3-2: TBEST Sarasota Downtown Circulator Bus Ridership Estimates (Year 3) 3-11
Table 3-3: TBEST Sarasota Downtown Circulator Bus Ridership Estimates (Year 5) 3-11
Table 3-4: TBEST Sarasota Downtown Circulator Bus Ridership Estimates (Year 10) 3-11
Table 3-5: BRT Attractiveness Factor Estimation 3-12
Table 3-6: TBEST Sarasota Downtown Circulator BRT Ridership Estimates (Year 3) 3-13
Table 3-7: TBEST Sarasota Downtown Circulator BRT Ridership Estimates (Year 5) 3-13
Table 3-8: TBEST Sarasota Downtown Circulator BRT Ridership Estimates (Year 10) 3-13
Table 3-9: Peer System Ridership (2010) 3-14
Table 3-10: TBEST Sarasota Downtown Circulator Streetcar Estimates (Year 3) 3-15
Table 3-11: TBEST Sarasota Downtown Circulator Streetcar Estimates (Year 5) 3-15
Table 3-12: TBEST Sarasota Downtown Circulator Streetcar Estimates (Year 10) 3-15
Table 3-13: Sarasota Downtown Circulator Annual Ridership Estimates - Bus, BRT & Streetcar (Years 1 & 2) 3-16
Table 3-14: Sarasota Downtown Circulator Annual Ridership Estimates - Bus, BRT & Streetcar (Years 3, 5 & 10) 3-16
Table 5-1: Streetcar Systems Capital Cost Range Estimate 5-1
Table 5-2: Streetcar Vehicle Cost Range Estimate 5-1
Table 5-3: Streetcar Systems – Capital Cost Variances by Component 5-3
Table 5-4: Rubber-Tire Circulator Capital Cost Range Estimate 5-3
Table 5-5: Case Study Operating Comparison 5-4
Table 5-6: Summary of Conceptual Annual Operating Cost Estimates 5-5

Table 6-1: Circulator A Influence Area Land Parcels Overview by Category 6-5
Table 6-2: Circulator B Influence Area Land Parcels Overview by Category 6-8
Table 6-3: Circulator C Influence Area Land Parcels Overview by Category 6-11
Table 6-4: Revenue Summary – Cumulative Values for Five-Year Periods – Circulator A 6-14
Table 6-5: New Development Summary – Cumulative Values for Five-Year Periods – Circulator A 6-14
Table 6-6: Revenue Summary – Cumulative Values for Five-Year Periods – Circulator B 6-15
Table 6-7: New Development Summary – Cumulative Values for Five-Year Periods – Circulator B 6-15
Table 6-8: Revenue Summary – Cumulative Values for Five-Year Periods – Circulator C 6-16
Table 6-9: New Development Summary – Cumulative Values for Five-Year Periods – Circulator C 6-16
Table 6-10: New Development Summary – Cumulative Values for Five-Year Periods – All Circulators 6-17

List of Figures

Figure 2-1: DID Proposed Sarasota Main Street Improvements 2-14
Figure 4-1: Main Street - Existing Condition Cross Section 4-19
Figure 4-2: Main Street - Proposed Condition Cross Section 4-20
Figure 4-3: Central Avenue - Existing Condition Cross Section 4-22
Figure 4-4: Central Avenue - Proposed Condition Cross Section 4-23
Figure 4-5: US-41 - Existing Condition Cross Section 4-25
Figure 4-6: US-41 - Proposed Condition Cross Section 4-26
Figure 4-7: Pineapple Park - Existing Condition Cross Section 4-28
Figure 4-8: Pineapple Park - Proposed Condition Cross Section 4-29

List of Maps

Map 2-1: Downtown Circulator Study Area with Potential Circulator Alignments 2-2
Map 2-2: Study Area Population Density 2-4
Map 2-3: Study Area Housing Unit Density 2-5
Map 2-4: Study Area Employment Density (2007) 2-7
Map 2-5: City of Sarasota Future Land Use 2-12

Map 2-6: City of Sarasota Special District Boundaries 2-13
Map 2-7: Study Area Development Projects Completed Since 2001 2-15
Map 2-8: Study Area Public Parking Lots 2-17
Map 2-9: Study Area Existing and Planned Transit 2-24
Map 3-1: Study Area Activity Centers 3-3
Map 3-2: Study Area Transit Orientation Index 3-6
Map 3-3: Study Area Density Threshold Analysis – Population 3-8
Map 3-4: Study Area Density Threshold Analysis – Employment 3-9
Map 4-1: Proposed Downtown Circulator Routes and Study Area 4-3
Map 6-1: Conceptual Circulator Alignments - Taxable Value per Acre 6-3
Map 6-2: Circulator A - Taxable Value per Acre 6-6
Map 6-3: Circulator B - Taxable Value per Acre 6-9
Map 6-4: Circulator C - Taxable Value per Acre 6-12

Section 1: Introduction and Background

SECTION 1.1: INTRODUCTION

The City of Sarasota retained Tindale-Oliver & Associates (TOA) in 2012 to complete a study to document the feasibility for the development of a transit circulator system to serve the Downtown area. This feasibility study is one of many initiatives associated with the City's larger mobility strategy, which is aimed at providing a variety of effective transportation modes to serve its citizens throughout the City.

The City developed two initial, potential circulator alignments to be analyzed within this study. In addition, TOA identified a third potential alignment, which was designed as a hybrid of the two alignments proposed by the City. The purpose of this third alignment is to illustrate the potential benefits of different alternative alignments. In addition, a fourth alternative is shown on Map 2-1 for illustrative purposes. This fourth alternative represents the proposal forwarded for consideration by the Sarasota Streetcar Initiative advocacy group. No specific analysis has been completed in relation to this fourth alternative, but it represents another potential option for future consideration. Thee three primary alignments are conceptual only, and it is likely that a detailed analysis will lead to their modification in the future to maximize the proposed system's efficiency and effectiveness. However, these alignments do illustrate three possible ways in which the major attractors and activity centers of Downtown Sarasota could potentially be connected by either a fixed guideway or rubber-tire circulator system.

This study provides important information and insight to community stakeholders and decision makers regarding the many issues and complexities that arise with the implementation of a circulator system of any type. This study contains nine (9) sections, beginning with the *Baseline Assessment and Rider Market Assessment* that will identify and describe existing conditions in the study area, and continues on to evaluate *Transit Demand, Engineering and Technology, System Costs and Revenues, Economic Benefits, Business Models, Comparative Case Studies, and Summary Conclusions.*

The study also included interactive public involvement with both Downtown stakeholders and the general public. The cost and benefit considerations of circulator services makes it necessary and essential to have a sound community understanding and stakeholder buy-in for each phase of planning, development, marketing, and ongoing operations of any new circulator system. The study's examination of the costs and opportunities of both rubber-tire circulator buses and fixed-guideway streetcars in serving the needs of the community in the Downtown Sarasota area requires consensus about the purpose, need and goals of the circulator if the community and its elected officials are to make sound decisions about moving forward with either alternative.

The original draft of this study was completed in 2012, and even though some sections have been updated through subsequent rewrites, the base data that serves as the foundation of this report remains from that time period. Although the general conclusions of the study remain valid, due to the 2012 vintage, the detailed information related to planning, capital programming, and property valuation trends may be somewhat dated. Many of these items could be updated fairly easily with a review of the latest capital improvements plan (CIP) and transit/transportation plans, but some items, such as those related to long term projections of

property values over time, would require significant effort to update the models with the latest parcel information.

In practical terms, if the City was to pursue a new urban circulator system, additional analysis and documentation would be required. At that time, a more comprehensive update to this study could be completed reflecting the latest economic trends and perhaps most importantly, the latest in capital and operating costs for circulator and fixed-guideway systems.

The available technologies and financing strategies that can be used to implement an urban circulator system are changing quickly, and it will be important for the City to continue to keep track on the latest innovations as it considers investment in new transit service and technologies. This report is a snapshot of the most current information at its writing, but it will need to be revisited and updated in the future if it is to provide decision makers with the most current and relevant information.

Summary descriptions of each of the report sections are included below.

Section 2: Baseline Conditions and Rider Market Assessment

This section provides an assessment of baseline conditions to help identify potential demand for a transit circulator route from existing ridership markets within the study area. The assessment includes a review of the study area population, employment, socio-demographic characteristics, housing and labor force, activity centers, tourism data, future land use, existing downtown parking, and existing and planned transit services.

Section 3: Transit Demand Assessment

This section includes the summary of the results of a *transit market assessment* conducted using various transit demand assessment tools designed to identify initial potential for a new circulator service. The assessment includes consideration of Activity Centers, traditional ridership for transit, choice ridership for transit and a cursory parking demand analysis. In addition, an examination of future development potential along each alignment and the impact on ridership, and 10-year sketch ridership projections, has been included in the analysis.

Section 4: Engineering and Technology Assessment

This section evaluates two transit modes (fixed-rail, rubber-tire) in the context of the three potential circulator alignments, one of which has been added by the consultant to shorten one alignment and broaden the reach of another. As the community deliberates alignments and possibilities, other potential alignments may also emerge, for either discussion or further analysis at a later date. In this section, the alignments are evaluated for their ability to reach activity centers and other generators of ridership, followed by a preliminary assessment of potential obstructions and/or engineering issues that may affect alignment decisions, rolling stock types, possibilities and costs, travel time estimates and several conceptual cross-sections demonstrating how a fixed guideway option might be addressed in several different right-of-way situations in the downtown area.

Section 5: System Costs and Potential Revenues

System costs are examined comparatively in this section, looking at other operations around the U.S., with the goal of giving the City an accurate range of capital costs and operating costs for both fixed and

rubber tire systems, for a similar distance (±2 miles), depending on the option chosen, and goals for the system. Revenues to pay for operating costs for transit are generated in a variety of ways around the country, and potential options for the City are provided both comparatively, and within the context of existing revenues and sources potentially available locally.

Section 6: Economic Benefits of a Downtown Circulator

This section of the study forecasts the market growth potential resulting from the introduction of a circulator transit system within the defined study area. The study evaluates all three potential alignments, and is based primarily on survey-based and hedonic approaches and a review of center-city Sarasota characteristics. This section includes an analysis of potential growth in assessed property value in the study area. This section also addresses several key revenue options over a 20 – year period (ad valorem growth as a TIF tool and a special assessment at several millage-equivalent levels), and cross-compares the three alignment options over that 20-year period of time.

Section 7: Organizational Business Model

Who builds the transit system (if a fixed guideway is constructed) and the entity operating it does have implications, and varies around the country. This section documents multiple distinct models (municipal, transit agency, non-profit and private company) from both construction and operating perspectives.

Section 8: Comparative Case Studies

This section provides case studies for five streetcar systems and two rubber-tire circulator operations in cities around the country. It includes a summary of operational characteristics, capital costs, design issues identified, funding cost and sources, resulting economic development, operating costs, and ridership, as comparatively as practical.

Section 9: Public Involvement Summary

This section summarizes the public input received during the study. This involvement included stakeholder interviews and a public workshop.

Section 10: Conclusions and Next Steps

This section includes a series of recommended next steps that the City should consider undertaking depending on the specific transit mode chosen (fixed-guideway streetcar or rubber-tire circulator).

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Section 2: Baseline Conditions and Rider Market Assessment

2.1: INTRODUCTION

Downtown Sarasota is an unique urban environment, serving as the commercial and cultural heart of the City of Sarasota. It is home to a variety of assets including established residential neighborhoods, government and private sector offices, thriving retail uses, and arts and cultural resources. In order to determine if there is sufficient demand within the area to support a transit circulator system, a general analysis of potential demand must be completed using existing data from a variety of sources. This section summarizes the baseline conditions and rider market assessment for a potential circulator system to determine if Downtown Sarasota meets basic thresholds that would be indicative of a transit supportive environment.

To identify the baseline conditions and existing transit demand in and around Downtown Sarasota, data on demographic and socio-economic characteristics as well as other key factors related to transit demand were collected and analyzed. The data assessed include the following:

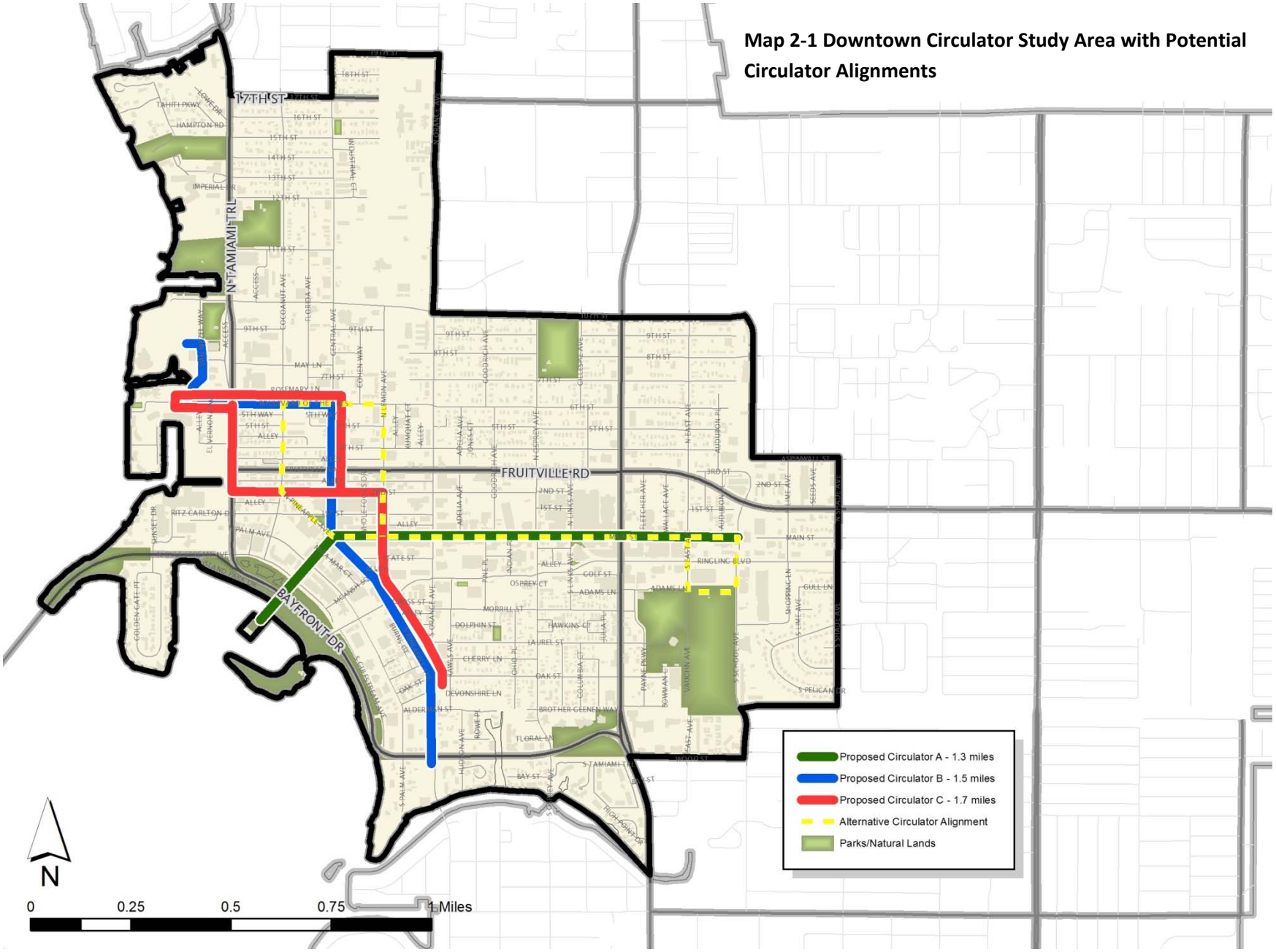
- Population, housing, and employment densities
- Labor force
- Tourist and visitor levels
- Key activity centers
- Land uses
- Parking availability

Recent data provided by the Sarasota-Manatee Metropolitan Planning Organization (MPO), the Sarasota County Area Transit (SCAT) system, the City of Sarasota, and other local agencies, as well as data available from the U.S. Census Bureau, the Bureau of Labor Statistics, and other relevant sources, were used to assess the baseline conditions for the study area. A description of the study area and a summary of its pertinent baseline conditions are presented in the remainder of this section.

2.2: OVERVIEW OF STUDY AREA

The study area for this transit assessment study is shown in Map 2-1. While this effort is primarily focused on identifying transit needs in and around the three conceptual circulator alignments in Downtown Sarasota, the study area extends somewhat outside of downtown-proper to include some of the immediate surrounding neighborhood areas. There are several reasons for structuring the study area in this manner. First, the study area needed to include the entirety of the Downtown Community Redevelopment Area (CRA) and major employers and attractions that are in close proximity to Downtown. A successful circulator system will need to connect these key activity centers. Second, the proposed Sarasota SCAT Bus Rapid Transit line (BRT) is planned to run north-south through Downtown Sarasota, intersecting with all three potential circulator alignments. The study area includes a number of the proposed BRT station areas, some of which are planned for significant new development, which could greatly influence the final design/operation of a circulator system. Furthermore, this future premium transit line will provide a significant number of riders into Downtown Sarasota, which will greatly increase the need for an efficient circulator system to service them after arrival. Finally, the proposed study area also uses Traffic Analysis Zone (TAZ) data, which is aggregated to the zonal level. The study area has been

Map 2-1 Downtown Circulator Study Area with Potential Circulator Alignments



designed to include only complete TAZ's to ensure easier data aggregation. These factors have led to the creation of a study area generally bordered by 17th Street and 10th Street to the north, South Shade Avenue and Washington Boulevard (US 301) to the east, Hudson Bayou to the south, and Sarasota Bay to the west.

2.3: DEMOGRAPHICS/SOCIOECONOMIC CHARACTERISTICS

To better understand growth and change within Sarasota, a review of population trends was conducted. As a whole, from 2000 to 2010, the population of Sarasota dropped by approximately by 1.5%, from 52,715 in 2000 to 51,917 in 2010. This decrease did not carry over into surrounding Sarasota County, which saw a significant population increase during the same period (16.4%). Table 2-1 summarizes some of the recent socio-economic indicators for the City of Sarasota.

Table 2-1: City of Sarasota Demographics

Characteristics	2010
Population	51,917
People per Square Mile	3,540
Average Household Size	2.2
Housing Units	29,151
Land Area (square mile)	114
Median Household Income	$40,183

Source: Census 2010 and American Community Survey Five-Year estimates

The population loss in the City is not significant, but it is notable given the nature of Florida's growth and development over the years. However, the strong growth in surrounding Sarasota County is likely an indicator that the development of large master-planned communities has captured some of the growth that could have potentially gone to the City.

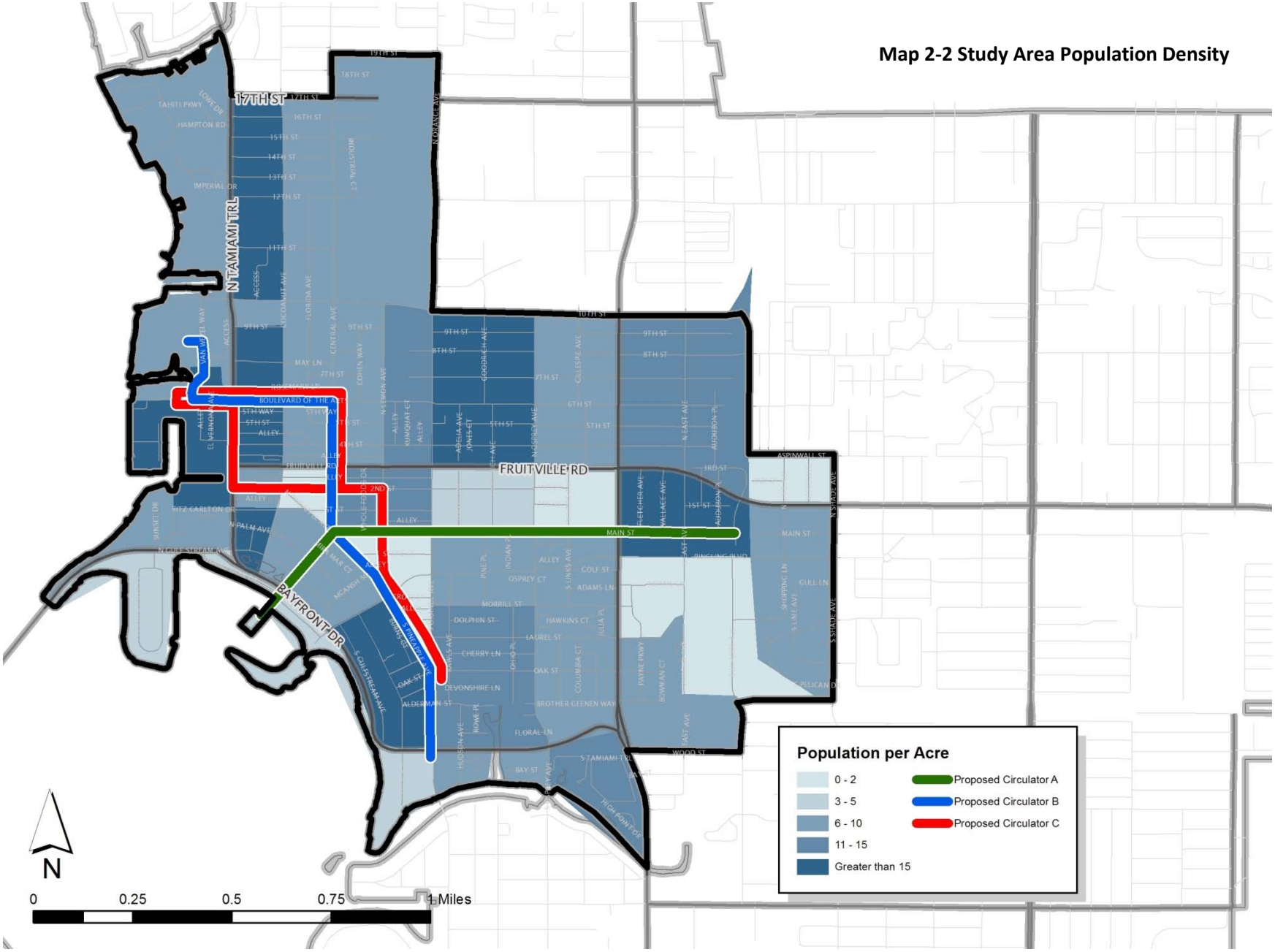
Population Density

Map 2-2 shows the population density of the study area based on 2007 population estimates. These estimates were created for use in the TAZ-level socio-economic data forecast developed for the 2035 Sarasota-Manatee Long Range Transportation Plan (LRTP). The study area consists primarily of population densities over six persons per acre. The population is most dense along Tamiami Trail, though there is also significant density on the east-west axis heading out of Downtown on Fruitville Road. The specific locations within the study area that show the lowest population densities are primarily those more oriented to non-residential (retail/office/commercial) uses. These areas include Main Street and the Payne Park area in the southeastern part of the study area. Map 2-2 shows that there are a significant number of residents living in close proximity to Downtown Sarasota with its multiple attractors. These residents have easy access to the key downtown corridors and activity centers and present a potential market for transit services. Further discussion of densities/intensities and transit viability is contained in Section 3 of this report.

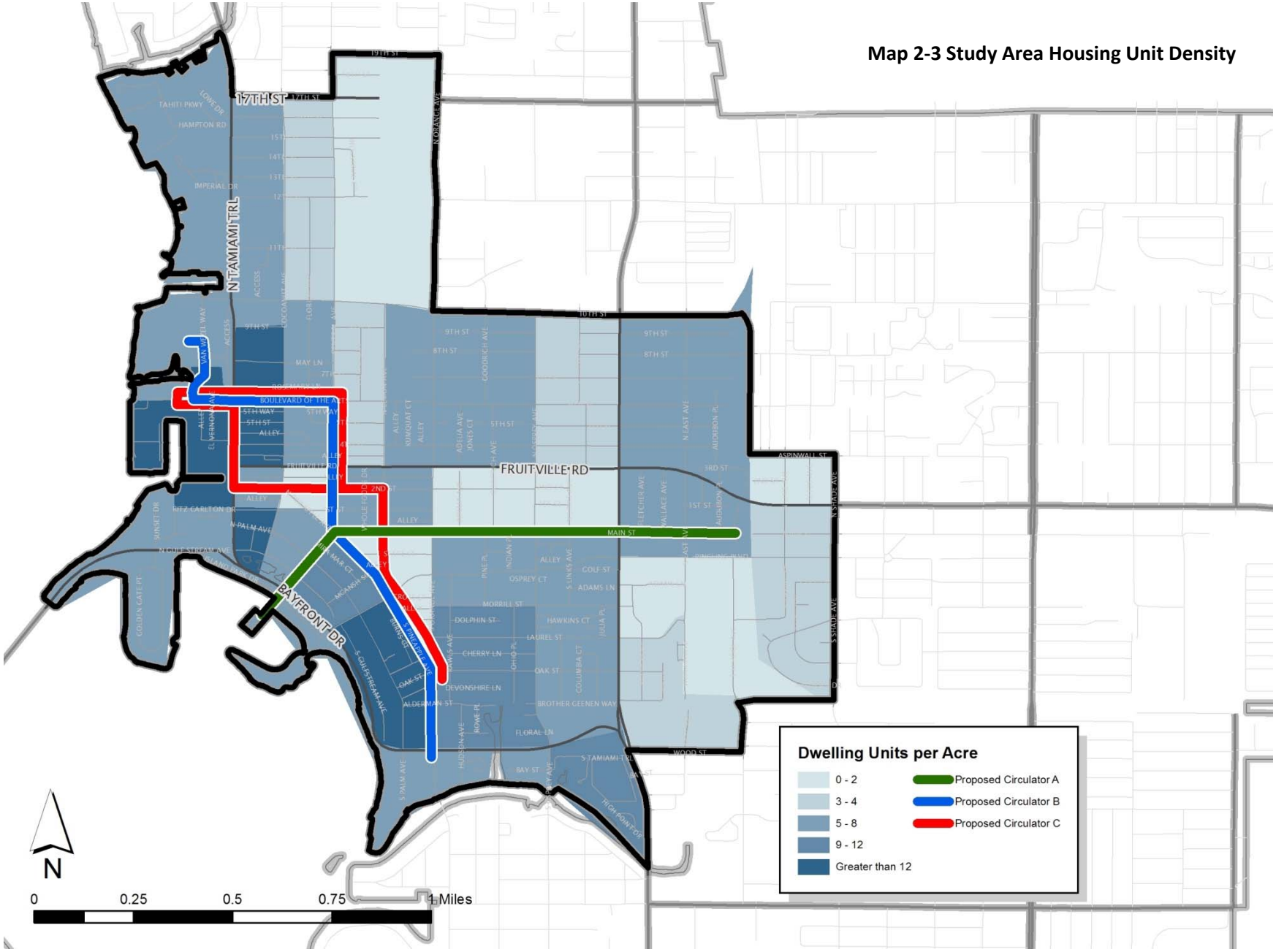
Housing Density

The study area contains a wide variety of housing typologies, with large multi-family apartments and condominium buildings existing in close proximity to stable single-family housing in areas such as Laurel Park and Gillespie Park, both located immediately adjacent to Downtown. The dwelling unit density, as illustrated in Map 2-3, varies greatly, but overall reflects a downtown area with a density of residential units supportive of a variety of transit modes. Map 2-3 illustrates housing unit density within the study area.

Map 2-2 Study Area Population Density



Map 2-3 Study Area Housing Unit Density



Labor Force

The study area contains a number of large employers, which translates into some significant employment density in certain locations. Map 2-4 illustrates the locations where there is fairly substantial employment density, with many areas registering over 16 employees per acre according to the MPO's 2007 estimates. As is discussed further in Section 3 the density of employees is an important ingredient to ensuring the success of transit services.

The economy in recent years has taken its toll on the employment opportunities in the area. Based on the data compiled by the U.S. Bureau of Labor Statistics, the total persons unemployment rate in the North Port–Bradenton–Sarasota MSA was 9.7% in January 2012 (not seasonally adjusted). This is a significant decrease over the high of 12.7% reached during September 2010, but significantly higher than pre-recession rates, which were as low as 2.7% in 2006. Table 2-2 summarizes the annual unemployment rates for the metropolitan area between 2006 and 2010.

Table 2-2: Annual Unemployment Rate
North Port- Bradenton-Sarasota MSA 2006–2010

Category	2006	2007	2008	2009	2010
Unemployment Rate (%)	3	4.2	6.9	11.1	12.2

Source: Bureau of Labor Statistics

Although the trends are currently moving towards greater employment opportunity, there are still significantly fewer jobs in the metropolitan area than there were pre-recession.

Tourism Data

In general, the City of Sarasota and Sarasota County attract most of their visitors during the winter and spring seasons, although tourism in the area has evolved into a 12 month business over the years. For the year 2010, Sarasota County had over 4.4 million visitors. Table 2-3 below summarizes the overall tourist numbers for each of the past three years, which have been gradually increasing despite the difficulties of the economy.

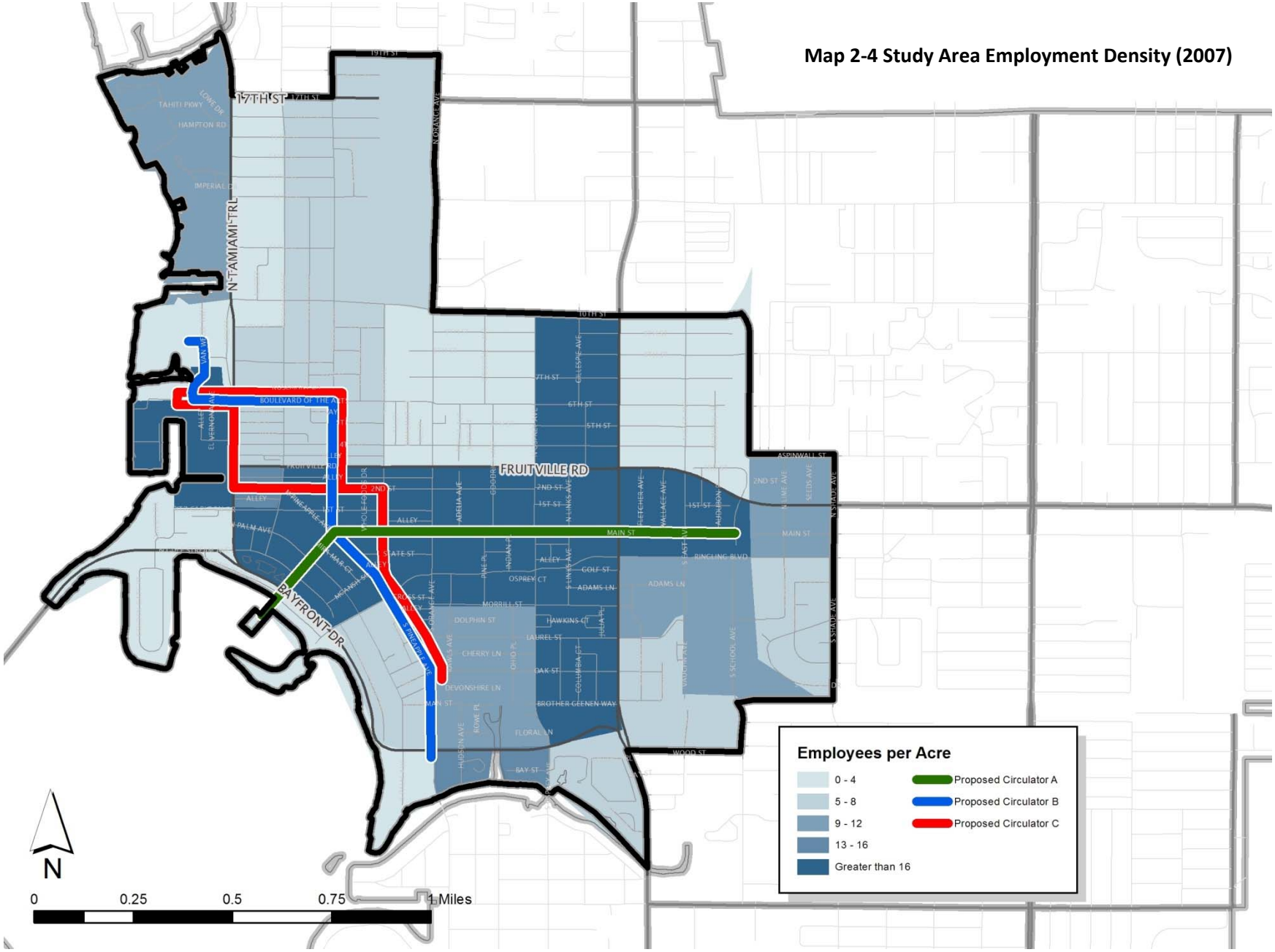
Table 2-3: Annual Visitors to Sarasota County 2008–2010

Year	# of Visitors
2008	4,436,600
2009	4,410,200
2010	4,456,300

Source: Sarasota Convention & Visitors Bureau

Downtown Sarasota, with its many recreational and cultural venues, is among the primary tourist attractions within Sarasota County, and therefore, most visitors to Sarasota County are likely travel to there at some point during their visit. A visitor survey conducted by Sarasota Convention and Visitors Bureau identified that over half of the visitors surveyed (61.4%) traveled to St. Armands Circle, approximately 18.2% visited the Ringling Museum of Art, and 16.4% visited the Mote Marine Aquarium. While these attractions are not located immediately adjacent to Downtown Sarasota and the study area, they are in close proximity, and it is likely that many of those visitors also visited Downtown at some point during their trip. Within the study area, there are three major hotels (Ritz-Carlton, Hotel Indigo, and Hyatt Regency) as well as a number of smaller hotels and bed and breakfast establishments that provide lodging opportunities for overnight guests.

Map 2-4 Study Area Employment Density (2007)



Activity Centers

A review of complementary activity centers in the study area was also conducted. This review identified the key sites that could potentially be served by an integrated and efficient transit circulator network designed to move key rider markets to their desired destinations within and near downtown. These activity centers include both cultural and recreational facilities as well as employment centers. The varied mix of attractors located within Downtown Sarasota serves both tourists and locals who live and/or work in the study area.

Van Wezel Performing Arts Center

The Van Wezel Performing Arts Center is the premier performing arts venue within the North Port–Bradenton–Sarasota MSA. Van Wezel is located in the northwestern portion of the study area just west of Tamiami Trail. The center was built in 1968–1969 and seats 1,738 patrons. On average, the facility hosts 225,000 patrons annually.

Art Center Sarasota

The Art Center Sarasota is a member-based organization that hosts over 25 exhibitions a year, as well as 100 classes and art educational programs for adults and children. The Art Center is located at 707 N. Tamiami Trail, immediately to the east of the Van Wezel Performing Arts Center. In 2011, the Art Center had 42,000 visitors, and is expecting close to 45,000 in 2012.

Bayfront Park & Marina Jack Restaurant and Marina

Marina Jack, a time-honored local attraction, is home to a marina, several restaurants, and other activities. The facility is located at the terminus of Marina Plaza Road on the west side of Downtown. Bayfront Park is located immediately adjacent to Marina Jack, and is also a major attractor.

Selby Library

The Selby Library, located at 1331 First Street in Downtown Sarasota, is the central library for the Sarasota County Public Library System. It is approximately 72,446 square feet and contains 300,000 volumes. In 2011 the library had 684,350 visitors.

Burns Court Cinema

The Burns Court Cinema is located at 506 Burns Lane in Downtown Sarasota and is home to the Sarasota Film Society, which maintains a regular showing schedule and hosts several events and festivals during the year.

Regal Hollywood 20 Cinema

The Regal Hollywood 20 Cinema is located at 1993 Main Street in Downtown Sarasota. The facility is a modern theater with 20 active screens and is located immediately adjacent to the Sarasota Main Plaza development.

Ritz-Carlton Hotel and Conference Center

The Ritz Carlton Sarasota is located at 1111 Ritz Carlton Drive, which is just to the north of Gulfstream Avenue and west of Bayfront Drive. The

hotel has 266 rooms, several restaurants, and 18,000 square feet of meeting space for conferences and corporate meetings.

Hyatt Regency Hotel and Conference Center

The Hyatt Regency in Downtown Sarasota is located at 1000 Boulevard of the Arts just to the west of Tamiami Trail. The hotel contains 294 guest rooms and over 20,000 square feet of meeting space available for rental.

In addition to the major activity centers, there are several other smaller centers, including:

- Publix Supermarket on Tamiami Trail
- Whole Foods Market on 1st Street
- Five Points Plaza Building on Main Street
- Selby Botanical Gardens on Palm Avenue
- Sarasota County Office Complex on Ringling Boulevard
- Many downtown area restaurants

There are also a number of retail and office uses located within the study area, particularly along Main Street in the core of Downtown, many of which have had loyal customers over many decades.

Pedestrian Generators

A recent study completed by Drs. Phyllis and Roger Barry for the Sarasota Chamber of Commerce identified and analyzed pedestrian generators in Downtown Sarasota. They identified four Pedestrian Generator Clusters which are as follows:

- Historic downtown
- Bayfront
- Uptown
- Cultural District

For each of the four clusters, they identified the largest pedestrian generators which are listed below:

- Historic downtown
    - Whole Foods
    - Selby Library
    - SCAT Transfer Station
- Bayfront
    - Island Park/Bayfront Business Complex
    - Ringling Bridge
    - Ritz Carlton Hotel
    - Selby Garden
- Uptown
    - Regal Cinemas Hollywood 20
    - Walgreens Drug Store
    - County Offices
    -
    - Payne Park
    - Downtown YMCA
- Cultural District
    - Publix Supermarket
    - Cultural District Complex
    - Hyatt Hotel
    - Hotel Indigo

Each of the clusters was found to generate a significant amount of pedestrian traffic with the exception of the Cultural District, which

generated a significant number of visits, but most of which were by automobile.

The location of potential pedestrian generators is an important consideration when deciding on the potential route for a circulator. A well designed system would connect as many of these generators together as possible, increasing ridership and reducing dependence on the automobile for short trips.

2.4: LAND USE FRAMEWORK

Comprehensive Plan

The most recent iteration of the Sarasota City Plan (City Plan) was adopted in 2008. The Future Land Use Element (FLUE) and the Future Land Use Map (FLUM) dictate the pattern of allowable uses, and set limits for maximum densities/intensities allowed for new development. The FLUE has a specific objective and associated action strategies for the continued implementation of the Downtown Master Plan. These Action Strategies continue to serve as focus areas for continued implementation and include an assortment of policy recommendations and specific design guidance for areas covered by the Urban Neighborhood, Urban Edge, Downtown Core, or Downtown Bayfront Future Land Use Classifications. Table 2-4 contains a listing of the different Future Land Use categories and their associated density/intensity maximums. As can be seen in Map 2-5 , the study area contains a number of these Future Land Use categories, including those associated within the Downtown that allow the greatest development potential within Sarasota.

The allowable densities/intensities, especially for those areas surrounding the potential circulator routes, are considered transit supportive, if future development occurs at or near the allowable maximums. The potential Main Street Circulator (Circulator A) is nearly surrounded by the Downtown Core and Downtown Bayfront designations, which are the densest within the City. The other two potential circulator alignments (Circulator B & C) also have a large section of their routes abutting these designations, which allows for a great amount of development/redevelopment opportunity in close proximity of the potential service.

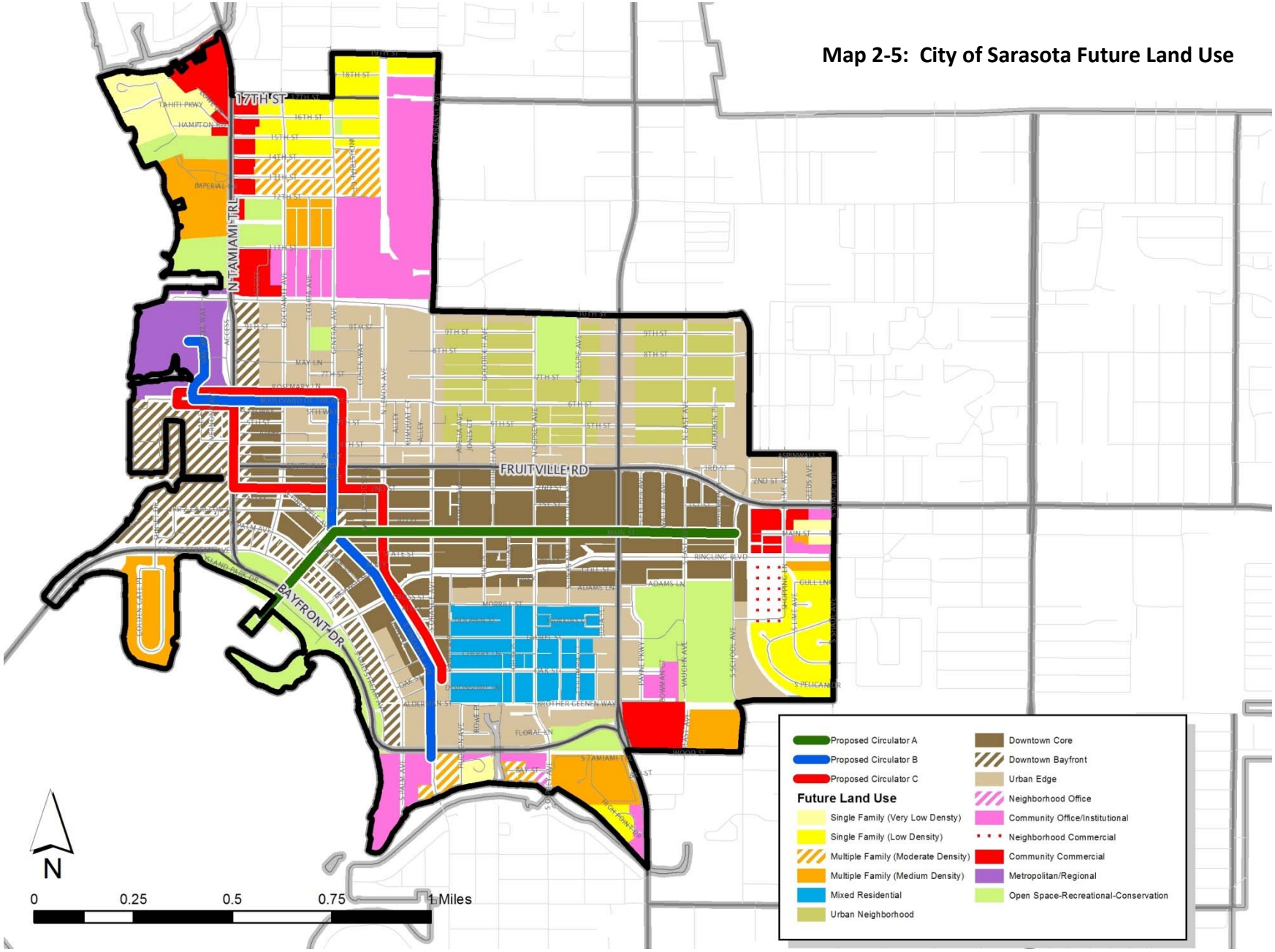
Downtown Community Redevelopment Area (CRA)

The Sarasota Downtown CRA encompasses a large part of the study area, as can be seen in Map 2-6. The Downtown Master Plan (2002) was the most recent update to the CRA Plan completed by Duany Plater-Zyberk (DPZ) and has served as the framework for public investment in the downtown area. The plan focuses on the connection of the Downtown to the Bayfront area, improved walkability, creation of a balanced, multi-modal transportation system and civic and cultural improvements, and implementable objectives. Many recommendations from the Downtown Master Plan have been followed, and the City remains committed to implementation. The Downtown zoning districts, discussed further below, were developed as a result of the Downtown Master Plan.

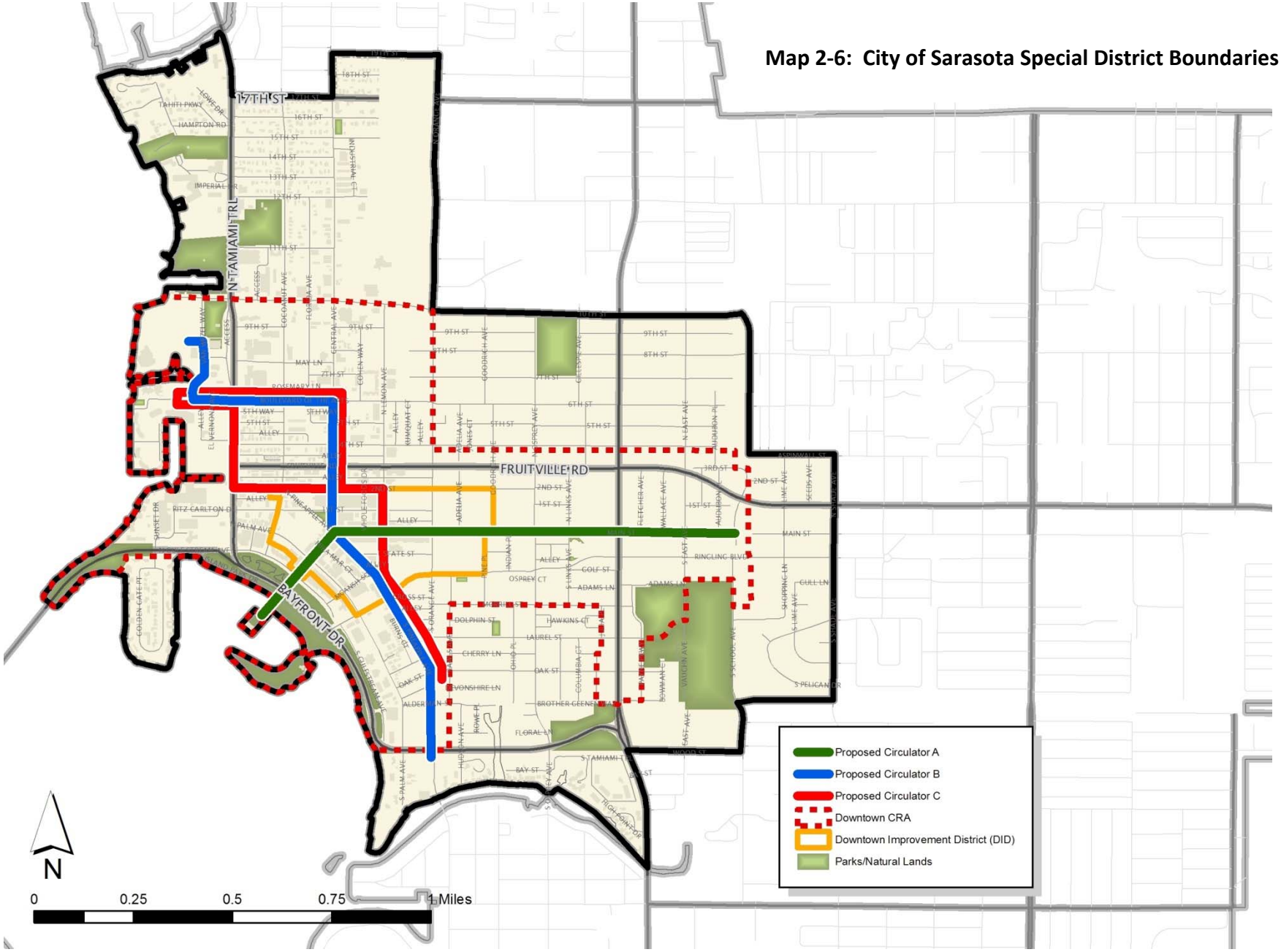
Table 2-4: Future Land Use Category Development Characteristics

Category	Density (Units/Acre)	Intensity (Floor Area Ratio – FAR)
Residential Classifications		
Single Family (Very Low Density)	≤ 4.5 Units/Acre	NA
Single Family (Low Density)	< 9 Units/Acre	NA
Multiple Family (Moderate Density)	≤ 13 Units/Acre	NA
Multiple Family (Medium Density)	≤ 25 Units/Acre	NA
Multiple Family (High Density)	≤ 50 Units/Acre	NA
Mixed Residential	≤ 9 Units/Acre	NA
Non-Residential Classifications		
Neighborhood Office	≤ 9 Units/Acre	≤ 0.35 FAR
Community Office/Institutional	≤ 25 Units/Acre (Retirement Center or Secondary Use Multi-Family)	≤ 0.50 FAR
Neighborhood Commercial	≤ 18 Units/Acre	≤ 0.50 FAR
Community Commercial	≤ 25 Units/Acre (Retirement Center/Multi-Family); ≤ 35 Units/Acre (Hotel/Motel)	≤ 0.75 FAR
Production Intensive Commercial	NA	≤ 0.50 FAR
Mixed Use Classifications		
Urban Neighborhood	≤ 12 Units/Acre	≤ 1.0 FAR
Urban Edge	≤ 25 Units/Acre	≤ 2.0 FAR
Downtown Core	≤ 50 Units/Acre	≤ 5.0 FAR
Downtown Bayfront	≤ 50 Units/Acre	≤ 8.0 FAR
Special Purpose Classifications		
Resort Residential	≤ 18 Units/Acre (Multi-Family); ≤ 50 Units/Acre (Hotel/Motel)	NA
Metropolitan/Regional	≤ 25 Units/Acre (Residential)	≤ 1.0 FAR; ≤ 2.0 FAR (Hospital Uses)

Map 2-5: City of Sarasota Future Land Use



Map 2-6: City of Sarasota Special District Boundaries



Downtown Improvement District (DID)

The Downtown Improvement District (DID) was created in November 2008 by ordinance at the request of a committee of downtown commercial property owners. The DID is a special assessment district, which taxes property owners within the boundary additional ad valorem property taxes to generate additional revenue to fund improvements. The DID has invested revenue on a number of projects, including improvements to Five Points Park and new landscaping. The DID is currently working on parking/pedestrian improvements along Main Street (see Figure 2-1) that will improve landscaping, add brick sidewalks, and increase on-street parking both within the DID and in the area immediately nearby.

Figure 2-1: DID Proposed Sarasota Main Street Improvements

Development Trends

The study area has experienced a significant amount of real estate investment in the form of development and redevelopment over the last several years. In addition to those projects actually built, there were also a number of projects that were proposed and entitled, but never constructed due to the economic downturn. The purpose of this section of the memorandum is to identify the new development projects and their proximity to the potential circulator alignments.

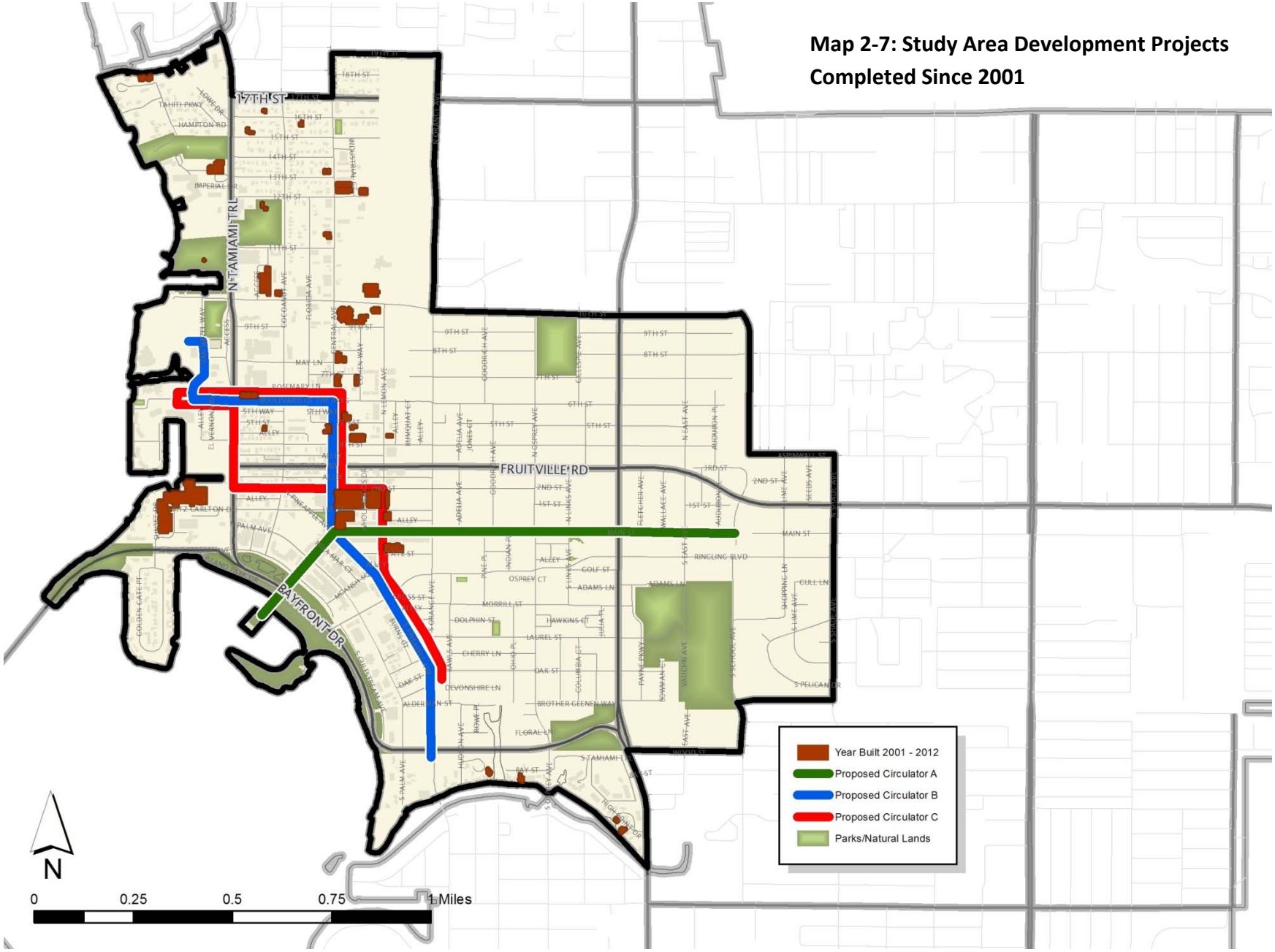
Table 2-5 contains a listing of the ten largest developments that have been built in the study area since 2001. Map 2-7 illustrates the locations of all the new developments that have been constructed, regardless of size.

Table 2-5: Ten Largest Downtown Development Projects Since 2001

Parcel ID	Development Description	Year Built	Acreage ±	Square Footage
2025-13-0102	Publix	2006	1.007	37,500
2025-15-0002	Industrial Warehouse - Multi-Tenant	2003	2.737	38,412
2027-07-0029	Ringling Square	2005	0.692	53,835
2026-03-0026	Salvation Army	2003	3.718	60,883
2026-15-0091	Sarasota Herald Tribune	2006	3.277	72,408
2026-05-0028	Hotel Indigo	2006	1.047	77,448
2026-14-0069	Whole Foods/100 Central Mixed Use	2004	3.930	110,065
2029-05-0040	Sarasota Police Department	2010	1.595	131,079
2027-03-0038	Plaza Five Points Mixed Use	2005	1.010	208,567
2010-01-0035	Ritz Carlton Hotel	2001	7.622	274,624
2007-03-4950	1350 Main Development	2007	.727	346,690

Source: Sarasota County Property Appraiser

Map 2-7: Study Area Development Projects Completed Since 2001



Vacant Land

In addition to the recently-constructed developments listed herein, the study area also has a significant amount of vacant land available for future development. This is an important asset, as a circulator (particularly if it is fixed guideway) will help in driving new development along its route. Available vacant land is an attractive asset to have along a proposed circulator route, as it will help the market respond to the availability of a new, convenient transit mode.

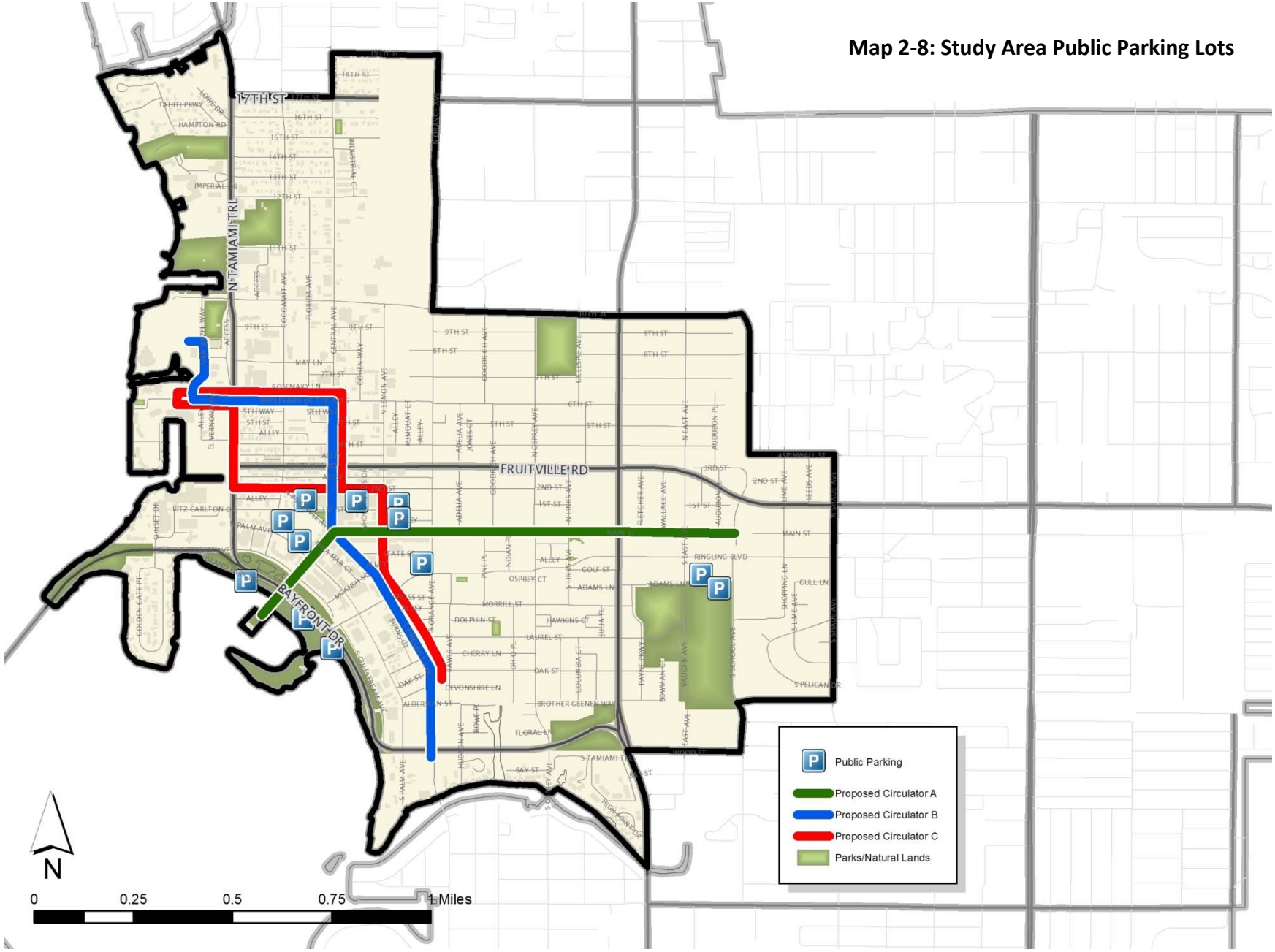
Existing Parking Supply

The availability and management of parking within an urban setting can have a significant effect on the success of a circulator system. Because of its status as a destination for unique shopping and cultural events, downtown Sarasota has worked diligently to plan for improving the provision of parking while encouraging improved transit services.

In 2005, TOA completed a Downtown Parking Analysis for an area that included most of the study area. This analysis included recommendations for adding parking capacity while managing existing capacity more efficiently. Sarasota has proactively worked to implement many of these strategies and has added to its existing capacity through the completion of the Palm Avenue Parking Garage and the reservation of spaces for public use at some of the new Downtown condominium developments. Additionally, in 2011, the City implemented a new paid parking system that was designed to better manage the on-street parking supply. In February 2012, this system was removed at the request of downtown business owners and other stakeholders. There remains a significant publicly-accessible parking supply (see Map 2-8) in the downtown area, which provides easy access to the commercial uses.

Implementation of a new circulator system may require new parking management strategies to encourage ridership while balancing the needs of the local businesses.

Map 2-8: Study Area Public Parking Lots



2.5: EXISTING / PLANNED TRANSIT

Sarasota County Area Transit (SCAT) maintains substantial transit facilities within the study area, the most important of which is the Downtown Transfer Center, which is located at the northeast corner of N. Lemon Avenue and 1st Street. The Downtown Transfer Center is a major hub for SCAT, and a majority of its routes travel through the station on a daily basis. All of the system's routes that travel through the study area use the Transfer Center. The purpose of this section is to summarize the existing transit service that currently services the study area and to identify those new/improved services that are planned to be implemented as part of the SCAT Transit Development Plan (TDP). Map 2.9 illustrates existing and planned transit lines within the study area.

Existing Transit Service

This section includes a summary of the operating characteristics for the 16 routes that currently use the Downtown Transfer Center. All of these routes connect with the Downtown Transfer Center, and nine of them terminate there. This represents a significant potential pool of passengers that could use the circulator. Table 2-6 provides a summary of ridership data for each of these routes.

- **Route 1 & 1A** provides an east-west connection between the SCAT Downtown Transfer Center and Sarasota County offices east of I-75 along Fruitville Road. Route 1A diverts from Fruitville on Mcintosh Road and connects with the Transfer Station near Bahia Vista & McIntosh. The main activity locations for the route include the Downtown Transfer Center in Downtown Sarasota, the T&T Shell Station (Palmer and Packinghouse), and the Sarasota International Trade Center. The entire route covers major residential and commercial developments along Fruitville Road. Route 1 operates on a one-hour headway from 5:40 AM to 7:40 PM on both weekdays and Saturdays. Route 1A operates between 6:15 AM and 7:13 PM.

- **Route 2** connects the SCAT Downtown Transfer Center with the Sarasota Bradenton Airport via Cocoanut Avenue and Old Bradenton Road. It loops into a Winn Dixie Shopping Center located west of the intersection of Old Bradenton Road and Myrtle Street both ways. The main activity locations for the route include the SCAT Main Transfer Center in Downtown Sarasota, Pioneer Park, the Ringling School of Art, and the Sarasota-Bradenton Airport. Route 2 operates on a one-hour headway from 5:30 AM to 9:50 PM on weekdays and Saturdays.

- **Route 3** offers an east-west connecting service between the SCAT Downtown Transfer Center and Webber & Nodosa via the Pinecraft area. Major roads used by Route 3 include Ringling Boulevard, School Avenue, Bahia Vista Street, and McIntosh Road. The main activity points connected by Route 3 include the SCAT Downtown Transfer Center, Sarasota High School, the YMCA, the Sara Lakes Mobile Home Park, the Beneva Market Place, and Brentwood Elementary School. Route 3 operates on a one-hour headway from 5:50 AM to 7:03 PM on both weekdays and Saturdays.

- **Route 4** links the SCAT Downtown Transfer Center and South Lido Beach across the Sarasota Bay. The route travels primarily along John Ringling Boulevard and Benjamin Franklin Drive and connects to several major tourist attractions, including Tony Saprito Fishing Pier, Bird Key Park, Lido Beach, and South Lido

Beach. The route operates on one-hour headways from 6:45 AM to 6:32 PM for both weekdays and Saturdays.

- **Route 5** provides a north-south connection between the SCAT Downtown Transfer Center and the Westfield Sarasota Square Mall. Major roads traveled include Osprey Avenue, Swift Road, Gulf Gate Drive, and Beneva Road. Outbound and inbound trips operate on different roadways to connect to Southgate Plaza. Route 5 covers several major commercial developments, including the Southgate Plaza, the Sarasota Pavilion Shopping Center, and the Westfield Sarasota Square Mall, and operates on one-hour headway from 5:17 AM to 7:36 PM on both weekdays and Saturdays.

- **Route 6** offers a north-south connecting service between the SCAT Downtown Transfer Center and Westfield Sarasota Square Mall via Beneva Road. The route travels primarily along Beneva Road, linking the Kensington Park, Pinecraft, and Palmer Ranch areas. Major activity centers covered include the SCAT Downtown Transfer Center in Sarasota, Beneva Market Place, Village Plaza, Beneva Village Shops, Gulf Gate Library, and the Westfield Sarasota Square Mall. The route operates on half-hour headway from 5:13 AM to early evening, then 60-minute headway until 10:23 PM on both weekdays and Saturdays. On Sunday, it operates on 90-minute headway from 6:14 AM to 10:24 PM.

- **Route 7** is a comparatively short east-west route connecting the SCAT Downtown Transfer Center with Northeast Plaza. It travels mainly along Orange Avenue and Dr. Martin Luther King Jr. Way. The inbound trip takes the route through the Newtown Estates Neighborhood. In addition, there is a limited rush-hour service to Osprey Avenue and 35th Street. Route 7 covers several major activity centers, including the Human Services Center on 17th Street, Newtown Estates Park, the Newtown Community Center, and Northeast Plaza. It operates on one-hour headway from 5:40 AM to 9:36 PM on both weekdays and Saturdays and has Sunday service that runs from 6:45 AM to 7:10 PM.

- **Route 8** offers a north-south connecting service between the SCAT Downtown Transfer Center and Goodwill Industries where an inter-county transfer station to Manatee County and Manatee County Area Transit service is located. An hourly transit service is provided by MCAT to Bradenton by MCAT Route 16. Major roads traversed by Route 8 include Orange Avenue, US 301, and University Parkway. The main activity points covered by the route include the SCAT Downtown Transfer Center, a Human Services Center on 17th Street, the Northgate Industrial Park, and Goodwill Industries. Route 8 operates on one-hour headway from 6:30 AM to 9:16 PM on both weekdays and Saturdays and also operates on Sunday from 6:32 AM to 6:35 PM.

- **Route 11** connects the SCAT Downtown Transfer Center to the Sarasota Pavilion Shopping Center at Gulf Gate via Siesta Key in the north county service area. The route links Siesta Key located west of the South Sarasota area via Siesta Drive and Stickney Point Road. Other roads used by the route include US 41, Bahia Vista Street, and Tuttle Avenue. Route 11 accesses several major activity centers, including the SCAT Downtown Transfer Center, the Westfield Southgate Plaza, and the Sarasota Pavilion

Shopping Center. It operates on one-hour headway from 6:00 AM to 9:00 PM on both weekdays and Saturdays.

- **Route 12** offers a north-south connection between the SCAT Downtown Transfer Center and the Walmart located at The Center at University Parkway. It is a relatively short route that mainly travels along Washington Boulevard, 17th Street, and Lockwood Ridge Road. Major commercial and residential locations covered by the route include the SCAT Downtown Transfer Center, the Sarasota Youth Athletic Complex, Northeast Plaza, and the University Parkway Walmart. Route 12 operates on a 30-minute headway from 6:15 AM to early evening, then every 60 minutes until 11:05 PM on both weekdays and Saturdays, and every 90 minutes on Sunday from 7:00 AM to 10:25 PM.

- **Route 17** is the SCAT north-south bus service along US 41 that connects the north county service area and the south county service area. Major activity centers covered by the route include the SCAT Downtown Transfer Center, Sarasota Memorial Hospital, Westfield Southgate Plaza, the Landings Shopping Center, the Sarasota Pavilion Shopping Center, the Westfield Sarasota Square Mall, the Nokomis Village Shopping Center, the Bird Bay Shopping Center, and the Venice Train Depot. Route 17 operates on half-hour headway from 5:23 AM to 11:01 PM on both weekdays and Saturdays.

- **Route 1713** is an extended Route 17 service for Sundays. The route continues into Venice Island and to the South Venice Wal-Mart. Route 1713 operates every 60 minutes from 6:10 AM to 8:00 PM, then with less frequency until 10:48 PM.

- **Route 18** connects the SCAT Downtown Transfer Center to Coquina Beach, and an MCAT transfer point in the north county service area. The route links Downtown Sarasota, Lido Key, and Longboat Key by utilizing John Ringling Boulevard, John Ringling Parkway, and Gulf of Mexico Drive. Several major activity points covered by the route include the SCAT Downtown Transfer Center, St. Armand's Circle, and the Town Plaza Shopping Center. Route 18 operates on 60 minute headway 5:30 AM to 8:07 PM.

- **Route 215** is an extended Route 2 service for Sundays. The route continues as Route 15 as far as University and North Cattlemen Road, every 90 minutes from 10:45 AM to 10:30 PM.

- **Route 40** operates a limited stop service which is a highly efficient means of shuttling operators to and from their assigned routes and for providing service to the public to and from the SCAT administration offices. Route 40 operates every 30 minutes Monday-Saturday from 9:00 AM to 6:15 PM.

- **Route 99** is a north-south inter-county fixed bus route that connects the SCAT Downtown Transfer Center and the Palmetto Fairgrounds in the Bradenton area. The route travels primarily along North Tamiami Trail. Major activity centers in Sarasota County covered by the route include the SCAT Downtown Transfer Center, the Ringling Museum, University of South Florida-New College Library, and the Sarasota Bradenton Airport. Route 99 operates on a half-hour headway from 5:15 AM to 7:55 PM on both weekdays and Saturdays, with 60 minute headways through 9:10 PM.

Table 2-6: SCAT Existing Routes Using the Downtown Transfer Center

Route	Route Name	Weekday Service	Evening Service	Night Service	Sunday Service	Passengers	Revenue Hours	Passengers per Revenue Hour	Daily Ridership
Route 1	Fruitville	Yes	No	No	No	151,500	10,552	14.4	466
Route 1A	Fruitville via McIntosh	Yes	No	No	No	151,500	10,552	14.4	122
Route 2	Cocoanut Ave	Yes	Yes	Yes	No	94,056	5,573	16.9	261
Route 3	Pinecraft	Yes	No	No	No	60,216	3,838	15.7	274
Route 4	Lido	Yes	No	No	No	37,195	3,784	9.8	136
Route 5	Osprey - Swift	Yes	No	No	No	80,881	8,442	9.6	399
Route 6	Beneva	Yes	Yes	No	Yes	382,684	18,760	20.4	1,356
Route 7	Newtown - NE Plaza	Yes	Yes	No	No	110,721	4,853	22.8	348
Route 8	Newtown - 301	Yes	Yes	No	No	111,187	4,546	24.5	359
Route 11	Siesta Key	Yes	Yes	No	No	128,013	8,378	15.3	537
Route 12	North Lockwood	Yes	Yes	Yes	Yes	238,714	10,398	23.0	825
Route 17	Trail	Yes	Yes	Yes	No	455,924	27,663	16.5	1,716
Route 1713	Trail - Jacaranda	No	Yes	Yes	Yes	26,190	2,083	12.6	0
Route 18	Longboat Key	Yes	Yes	Yes	Yes	79,227	12,206	6.5	262
Route 215	Cocoanut - University	No	Yes	No	Yes	5,805	630	9.2	0
Route 40	Webber Limited	Yes	No	No	No	29,822	7,623	3.9	164
Route 99	Palmetto - Sarasota	Yes	Yes	No	No	281,147	12,959	21.7	1,056

Planned Transit Service

The most recent update of the SCAT Transit Development Plan (TDP) was an annual progress report completed in June 2011. The TDP included several recommendations for new/improved service through fiscal year 2020. There are a variety of improvements planned for routes within the study area, including the implementation of the Bus Rapid Transit (BRT) line and the completion of the Downtown Circulator. Each of these improvements has the potential to bring additional riders into the study area, which will increase potential ridership for a Downtown Circulator. The specific improvements being proposed for routes within the study area are listed in Table 2-7 and illustrated in Map 2-9.

Table 2-7: TDP FY 2013-2020 System Improvements

Route Label	Type of Improvement	Description
FY 2013 Improvements		
Route 11	Realignment	Extending Sunday service to full Route 11 and extending to downtown; 60-minute headways (10 AM - 10 PM)
FY 2014 Improvements		
McIntosh/Honore Route	New service	Downtown Sarasota to Clark Road via McIntosh; 60-minute headways (6 AM -7 PM); Mon – Sat
Route 3	Realignment	Downtown Sarasota to Bahia Vista to Cattlemen Road; 60-minute headways (6 AM - 7 PM); Mon-Sat
Route 1	Sunday service	West of I-75; 60-minute headways (6 AM - 7 PM)
	Frequency	East of I-75; 60-minute headways (6 AM - 7 PM); Mon - Sat

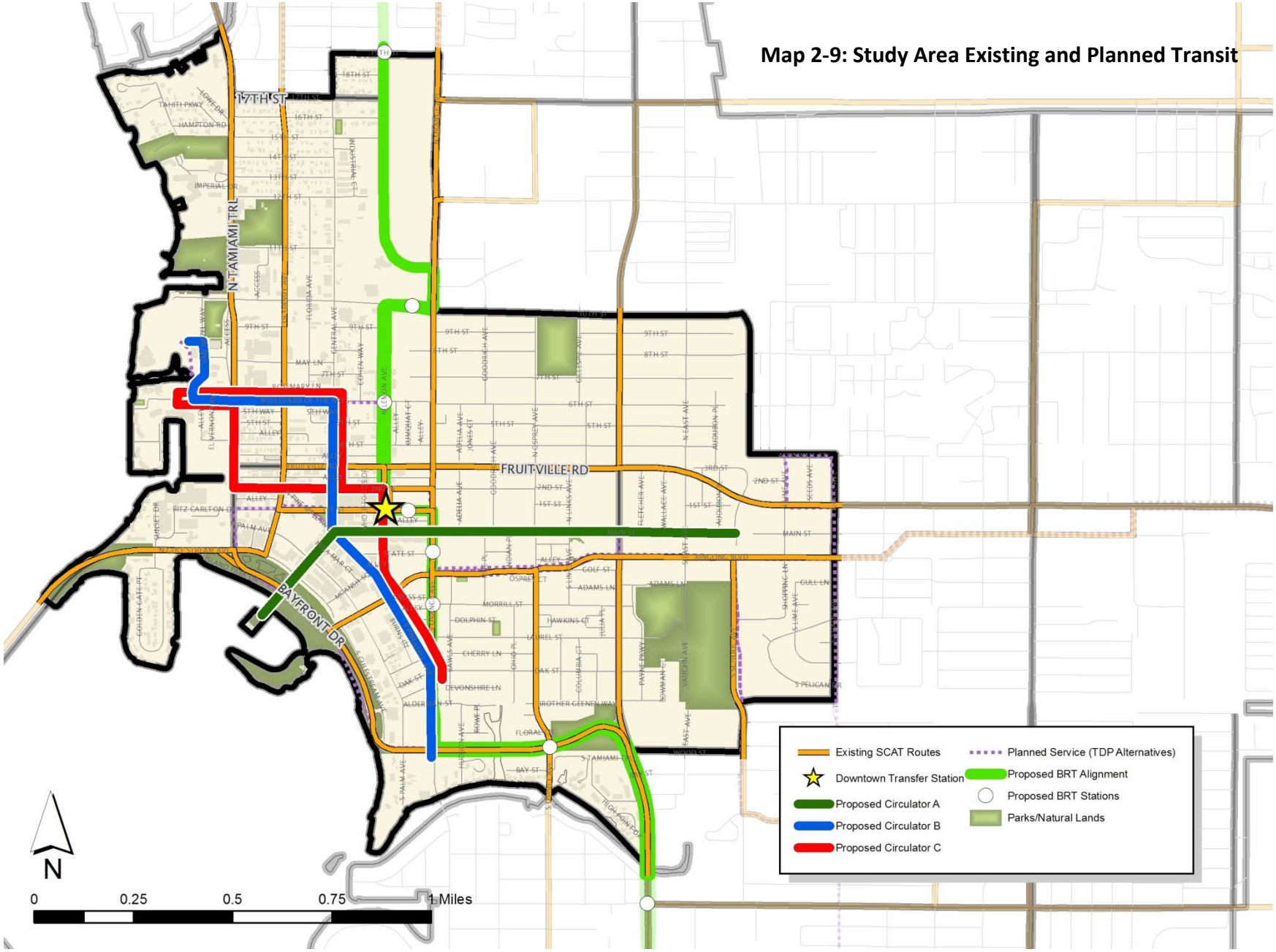
Table 2-7: TDP FY 2013-2020 System Improvements *(continued)*

Route Label	Type of Improvement	Description
Route 1B (Fruitville/Doctors Hospital)	New service	Replaces Route 1A; 60-minute headways (6 AM -7 PM); Mon - Sat
Route 1	Frequency	East of I-75; 60-minute headways (6 AM - 7 PM); Mon - Sat
FY 2015 Improvements		
North South Bus Rapid Transit	New service	10- to 15-minute headways (peak periods); 5 AM - midnight; Mon - Sun
FY 2016 Improvements		
Downtown Circulator A (East - West)	New service	Main Street from Marina Jacks on US 41 to end of Main Street at School Avenue; 10- to 15-minute headways (peak periods) (6 AM – midnight); Mon - Sun
Downtown Circulator B (North - South)	New service	Orange Avenue from Mound to Pineapple to Central to Sixth to Van Wezel; 10-15-minute headways (peak periods) (6 AM – midnight); Mon - Sun
Route 7 Extended Kensington Park North Cattleman	New service	NE Shopping Plaza, Kensington Park, University Town Center, Lakewood Ranch 60-minute headway
Route 2	Frequency	45-minute headways (6 AM – 9 AM); Mon - Sun
	Realignment	Via Orange Avenue instead of Coconut Avenue
Route 7	Frequency	30-minute headways (6 AM - 7 PM); 60-minute headways (after 7 PM); Mon - Sat
	Realignment	Via Coconut Avenue instead of Orange Avenue
Route 8	Frequency	30-minute headways (6 AM - 9 PM); Mon - Sat

Table 2-7: TDP FY 2013-2020 System Improvements *(continued)*

Route Label	Type of Improvement	Description
	Realignment	Via U.S. 301 north of 17th Street instead of Orange
US 41 Limited Stop	New service	Airport to Southgate; 60 minute headways (6 AM – 7 PM) Mon-Sat.
FY 2017 Improvements		
Route 6	Frequency	15- to 20-minute headways (6 AM - 7 PM); Mon - Sat
Route 12	Frequency	15- to 20-minute headways (6 AM - 7 PM); Mon - Sat
Route 17	Frequency	15- to 20-minute headways (6 AM - 7 PM); Mon - Sat
Route 99	Frequency	15- to 20-minute headways (6 AM - 7 PM); Mon - Sat
FY 2018 Improvements		
Route 1	Frequency	15- to 20-minute headways (6 AM - 7 PM); Mon - Sat
Route 5	Frequency	15- to 20-minute headways (6 AM - 7 PM); Mon - Sat
FY 2019 Improvements		
Route 4	Frequency	30-minute headways (6 AM - 7 PM); Mon - Sat
All routes	Frequency	Improve to half daytime headways (start to 10 PM); Mon - Sat
FY 2020 Improvements		
Route 17	Sunday service	30-minute headways (start to midnight)
FY 2020 Improvements		
Routes 1, 4, 5, 7, 8, 9, 12, 13, 20/29, 26, & 40	Sunday service	60-minute headways (6 AM - 9 PM)

Source: SCAT TDP Minor Update


Map 2-9: Study Area Existing and Planned Transit
N TAMIAMI TRL
FRUITVILLE RD
BAYFRONT DR
Existing SCAT Routes
Downtown Transfer Station
Proposed Circulator A
Proposed Circulator B
Proposed Circulator C
Planned Service (TDP Alternatives)
Proposed BRT Alignment
Proposed BRT Stations
Parks/Natural Lands
N
0
0.25
0.5
0.75
1 Miles

2.6: SUMMARY CONCLUSIONS

As documented throughout this section, Downtown Sarasota has a number of attributes that are supportive of the development of a circulator system. The Downtown and the surrounding study area have an existing population of residents and employees and number of important activity centers that serve both local residents and domestic/international tourists. In addition, the area acts as a major hub for SCAT transit routes and is being planned for a new BRT line. Finally, City staff and elected officials have been encouraging the continued development of more density/intensity for both residential and non-residential uses, which will continue to build the critical mass needed to support transit in and around Downtown.

The next section of this report includes a number of evaluations that attempt to identify transit demand for a circulator service.

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Section 3: Transit Demand Assessment

3.1: INTRODUCTION

This section summarizes the transit demand assessment conducted for the circulator study area. This examination provides guidance for developing a transit circulator system designed to connect all potential riders - employees, residents, shoppers, and visitors to key activity centers, including government offices, shopping and entertainment areas, attractions, and other locations within the study area. The transit demand assessment for the study area includes a transit rider market evaluation. The findings from this assessment, conducted through an array of demand evaluation tools, are used to highlight and assess travel demand and potential transit service needs in the study area. Each of these components and their related findings is summarized in the sections below. In addition, future input from the identified stakeholder committee will also be included in the analysis in later phases.

3.2: TRANSIT RIDER MARKET EVALUATION

One of the most difficult decisions faced by any planning or transit agency contemplating a downtown-related transit service is where to provide service. The City has already identified two potential circulator alignments and the consultant has added a third, but additional changes may eventually be made in order to optimize targeted riders and system performance. Downtown Sarasota is relatively large in relation to city-wide population, and there are many attractors that could be logically linked by a potential circulator.

The Transportation Research Board's, TCRP Synthesis 87*: Practices in the Development and Deployment of Downtown Circulators,* identifies five segments of riders as typical target markets for downtown circulators. These include:

- Employees
- Shoppers
- Tourists
- Event-goers
- Residents

While these present a general idea of a typical target market for a downtown transit service, a more focused market assessment was conducted for Downtown Sarasota to identify the rider market demand for a transit service in the study area. Potential demand for a downtown circulator route from the existing ridership markets in the study area was assessed using the following tools:

- Activity Center Assessment
- Traditional Market Assessment
- Discretionary Market Assessment
- Parking Demand Analysis

Each of these tools and their corresponding analyses and findings are presented in the remainder of this section.

3.3: ACTIVITY CENTER ASSESSMENT

An analysis of location and nature of key activity centers and attractors is critical to developing an efficient downtown-based transit service that connects these key locations with a single transit route. To better assess the key activity centers complementary to a potential transit service in the study area, activity centers were categorized into two tiers, including the following:

- **Tier I Activity Centers** are those that are identified as the most important to connect by a potential transit service in the study area. These are frequently-visited and heavily-utilized, and were identified in the baseline conditions assessment. They may be modified as input from the stakeholder committee is received and the study process moves forward. In considering activity centers to serve, any potential route configuration should be designed to maximize the access to Tier I locations, as identified in Map 3-1 on the following page.

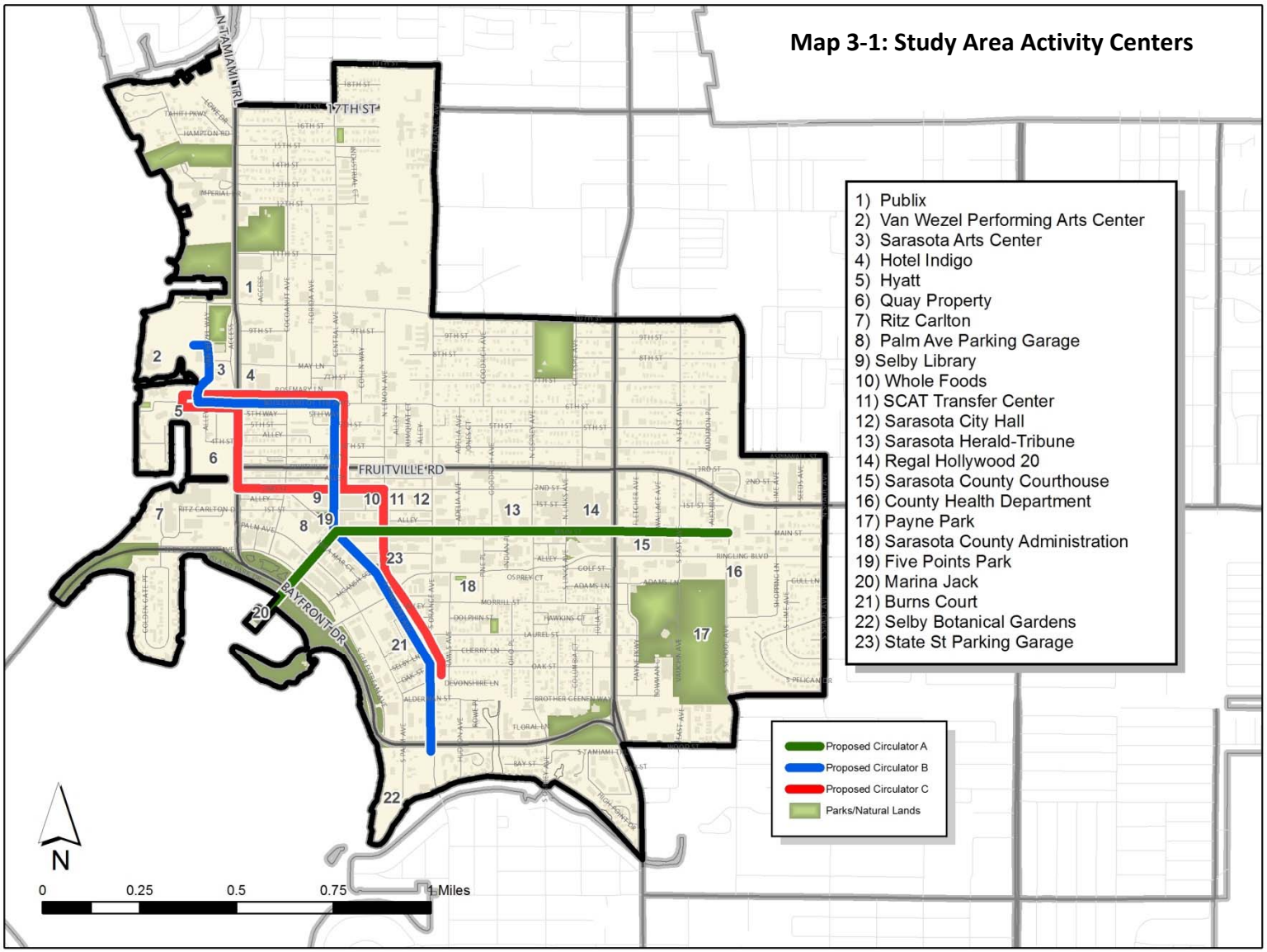
- **Tier II Activity Centers** are primarily clusters of smaller localized activity centers such as key intersections with multiple retail centers, banks, and offices, sometimes with adjacent multi-unit residential complexes.

The overall listing of activity centers and attractors shown in Map 3-1 includes both Tier I and Tier II centers, and represents a mix of uses, including employment and commercial centers.

Many of the activity centers within the study area are located in close proximity to each other and so have been combined for the purposes of this analysis. The Tier I Activity Centers include:

- Cultural Arts Center – Van Wezel Performing Arts Center, and Sarasota Arts Center
- Cultural Arts Hotel group – Ritz Carlton, Hyatt Regency, and Hotel Indigo
- SCAT Transfer Center
- Sarasota City Hall Complex
- Palm Avenue Parking Garage
- Whole Foods and adjacent Main Street restaurant/retail
- Sarasota County Courthouse
- Sarasota County Health Department
- Sarasota County Administration Building
- Regal Hollywood 20 Theatre
- Selby Gardens
- Five Points/Selby Library

As illustrated in Map 3-1, there are a number of Tier II activity centers not identified above that also have significant potential for providing riders–tourists, employees, and residents–for an urban circulator system.


Map 3-1: Study Area Activity Centers
1) Publix
2) Van Wezel Performing Arts Center
3) Sarasota Arts Center
4) Hotel Indigo
5) Hyatt
6) Quay Property
7) Ritz Carlton
8) Palm Ave Parking Garage
9) Selby Library
10) Whole Foods
11) SCAT Transfer Center
12) Sarasota City Hall
13) Sarasota Herald-Tribune
14) Regal Hollywood 20
15) Sarasota County Courthouse
16) County Health Department
17) Payne Park
18) Sarasota County Administration
19) Five Points Park
20) Marina Jack
21) Burns Court
22) Selby Botanical Gardens
23) State St Parking Garage
Proposed Circulator A
Proposed Circulator B
Proposed Circulator C
Parks/Natural Lands
N
0
0.25
0.5
0.75
1 Miles
17TH ST
FRUITVILLE RD
BAYFRONT DR

3.4: TRADITIONAL MARKET ASSESSMENT

An assessment of traditional transit markets was conducted for the study area. The traditional market refers to population segments whose characteristics are traditionally conducive to transit use, such as low-income, older adults, and youth. The traditional market is generally dependent upon transit as the main means of transportation. It is currently the most substantial part of downtown transit ridership.

The traditional market assessment was performed by using a tool called a *Transit Orientation Index (TOI*). A TOI assists in identifying areas where a traditional transit market exists. To create the TOI, 2010 Environmental Systems Research Institute (ESRI) demographic data estimates were compiled at the block group level and categorized according to each block group's relative ability to support transit based on the prevalence of the aforementioned specific demographic characteristics. For this analysis, five population and demographic characteristics were used to develop the TOI. Each characteristic is traditionally associated with the propensity to use transit. The five characteristics that are typically used to produce the index include:

- Population density (persons per square mile)
- Proportion of the population age 60 and over (older adults)
- Proportion of the population under age 16 (youths)
- Proportion of the population below the poverty level
- Proportion of households with no vehicles (zero-vehicle households)

Using this information, the TOI can then identify areas within the downtown and surrounding areas with greater traditional transit market potential (i.e., older adults, youth, low income, no-vehicle households). Unfortunately, the ESRI data do not include zero-vehicle household information. Hence, a surrogate measure—the number of households with an annual income equal to or less than $10,000—was used. It was assumed that households earning less than $10,000 would be less likely to be able to afford vehicles or other costs associated with vehicle ownership. The use of this tool highlights block groups and rates them as "Very High," "High," "Medium," or "Low" in their respective levels of transit orientation, where "Very High" reflects a very high transit orientation, i.e., a high proportion of transit dependent populations.

The results of the traditional market assessment are shown in Map 3-2. As shown, there are some areas that are rated as "Very High" within the study area where there are potentially a large number of traditional riders available that could use the circulator system.

3.5: DISCRETIONARY MARKET ASSESSMENT

In addition, an assessment of the discretionary transit markets also was conducted for the study area. This market refers to potential riders living in higher density areas of the study area and choosing to use transit as an alternative for their work or shopping trip; typically, this market does not rely on transit, but chooses to use transit as a legitimate alternative to the automobile.

The discretionary market assessment was performed by using the *Density Threshold Assessment (DTA*) tool. The DTA considers various dwelling unit and employment density thresholds for increasing transit investments and compares them to existing conditions within a study area, to see what level of potential transit service could be applied. The objective of the use of this method was to assess the discretionary transit market potential in the study area. The analysis is performed

based on industry standard relationships to identify those areas within the study area that will experience transit-supportive residential and commercial density levels. This is a very important ridership segment for consideration of a special downtown transit investment.

Three levels of density thresholds were developed to indicate whether or not an area contains sufficient densities to sustain efficient fixed-route transit operations. The levels include:

- **Minimum** – Reflects minimum population or employment densities to consider basic fixed-route transit services (i.e., fixed-route bus service).
- **High** – Reflects population or employment densities that may be able to support higher levels of transit investment than areas that meet only the minimum density threshold (i.e., increased frequencies, express bus).
- **Very High** – Reflects very high population or employment densities that may be able to support higher levels of transit investment than areas that meet the minimum or high density thresholds (i.e., premium transit services, etc.).

Map 3-2: Study Area Transit Orientation Index

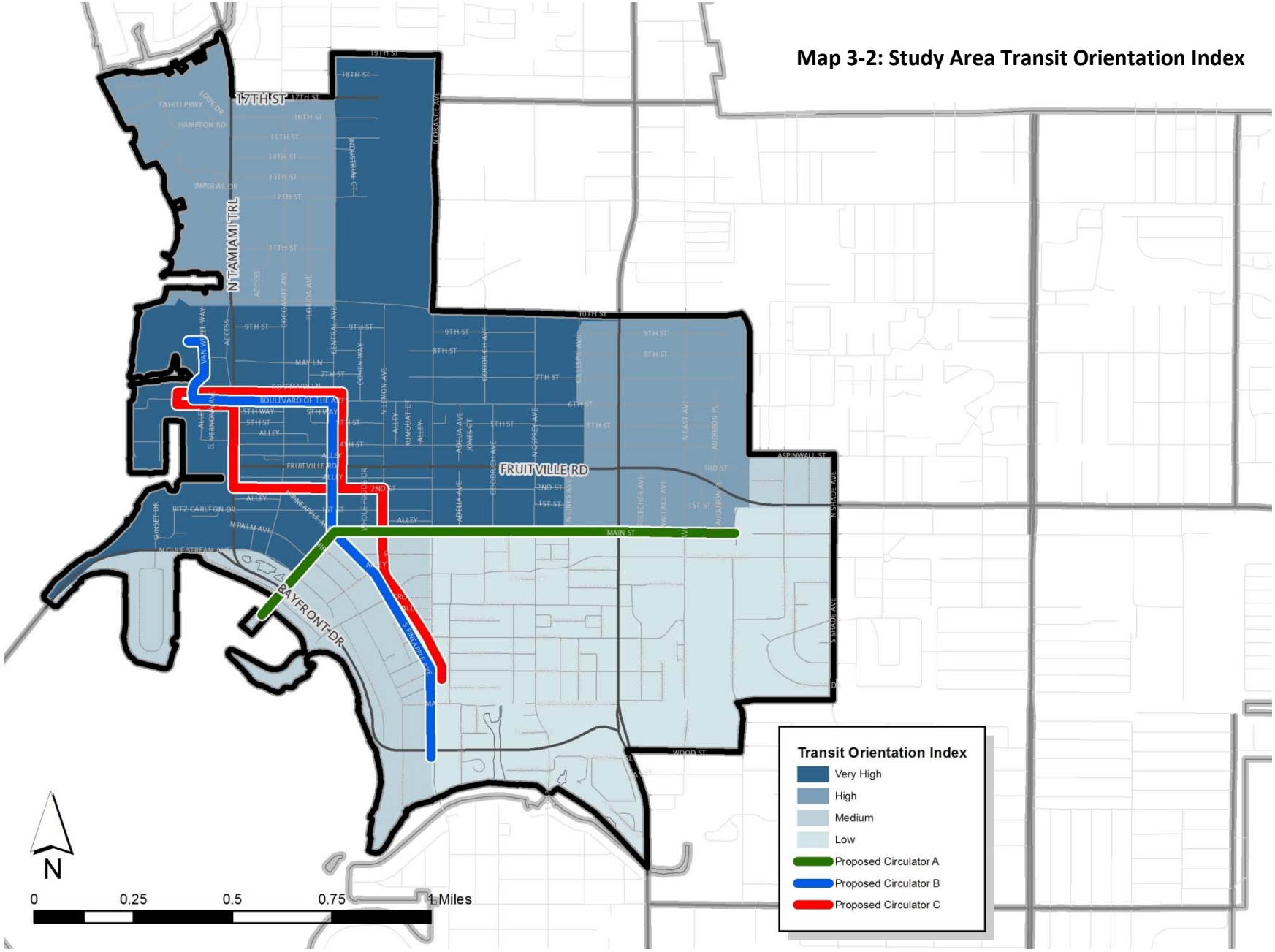


Table 3-1 presents the density thresholds for each of the categories.

Table 3-1: DTA Density Thresholds

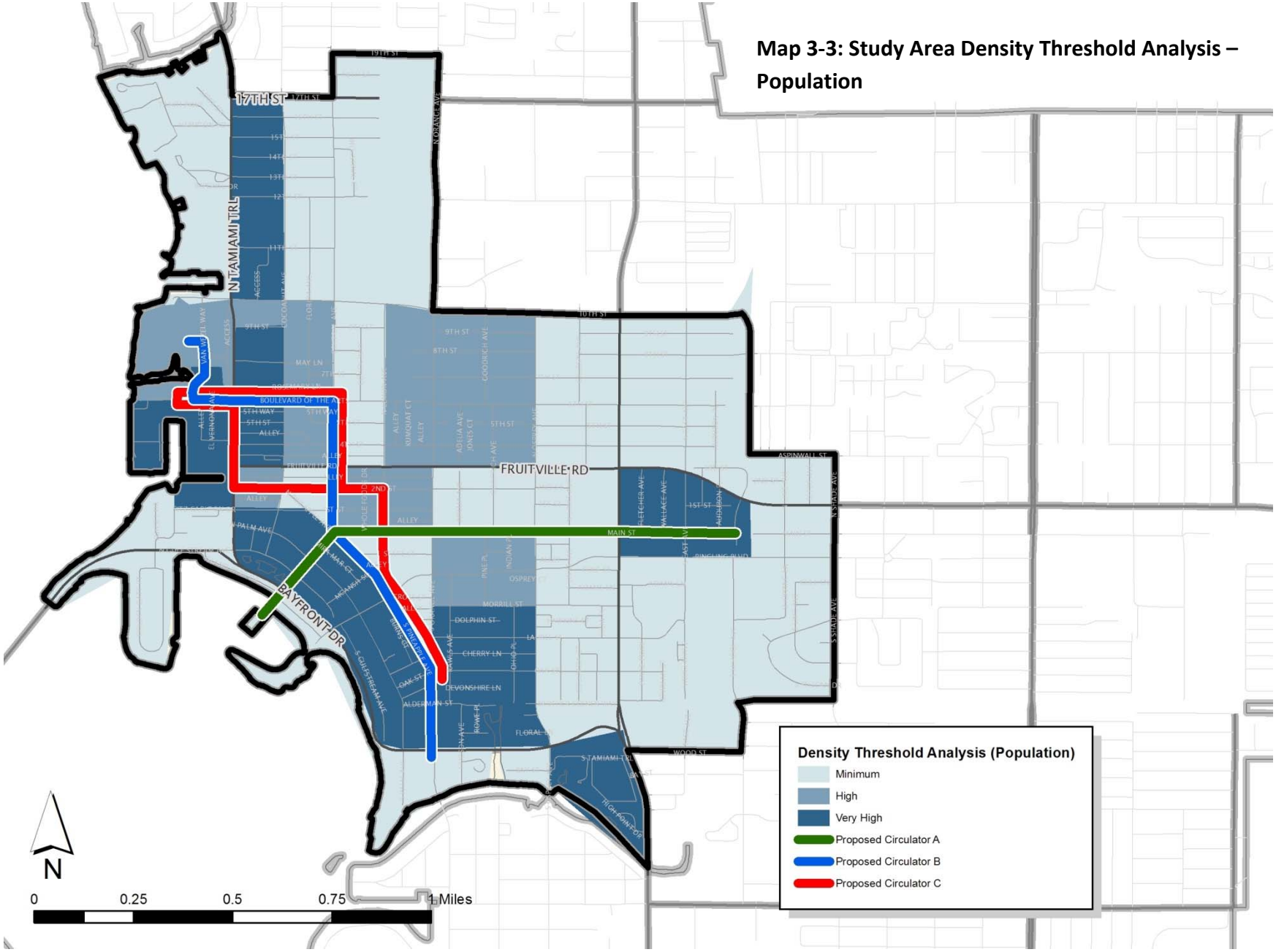
Transit Mode	Population Density Threshold[1]	Employment Density Threshold[2]
Minimum	4.5–5 dwelling units/acre	4 employees/acre
High	6–7 dwelling units/acre	5–6 employees/acre
Very High	>= 8 dwelling units/acre	>= 7 employees/acre

[1] TRB, National Research Council, 1996, *Transit and Land Use Form*, TCRP Report 16, Volume 1, November 2002, MTC Resolution 3434 TOD Policy for Regional Transit Expansion Projects.

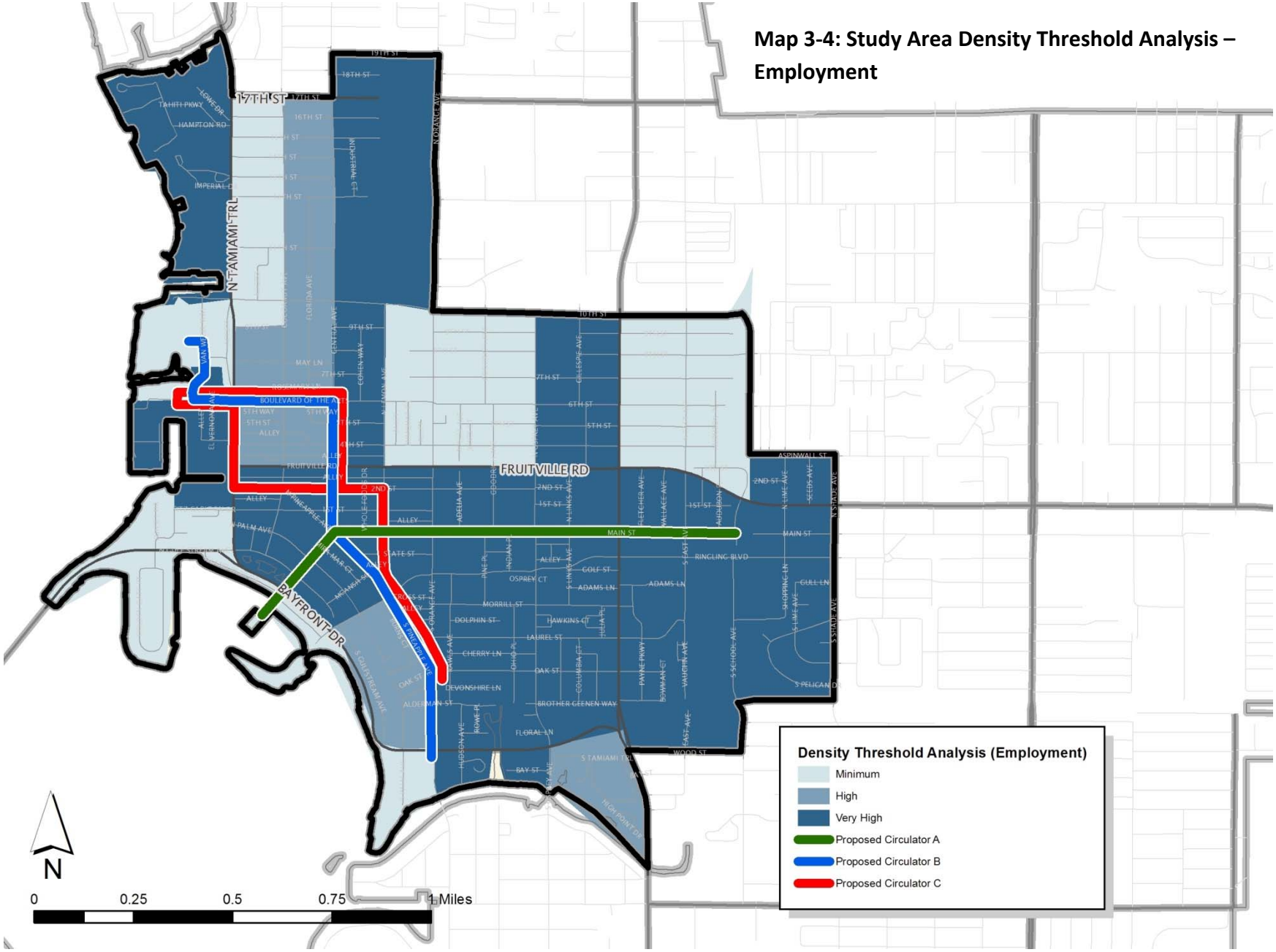
[2] Based on a review of research on the relationship between transit technology and employment densities.

The results of the discretionary market assessment using the DTA tool are shown in Map 3-3 and Map 3-4. The TAZ-level employment and dwelling unit data obtained from the Sarasota-Manatee MPO were used to perform the DTA. The study area is rated "Very High" in relation to population and employment density thresholds in multiple areas. This analysis demonstrates existing markets within the study area that a circulator could potentially serve.

Map 3-3: Study Area Density Threshold Analysis – Population



Map 3-4: Study Area Density Threshold Analysis – Employment



3.6: POTENTIAL RIDERSHIP ESTIMATES

Determining ridership for a new potential transit service is a complicated process that often requires the integration of a number of different techniques. These techniques can include the use of surveys, demographic analysis, and sophisticated software models. For the purpose of this feasibility study, a "sketch" level ridership estimate was completed, which uses a mix of methods to create estimates that can be used for comparative purposes. The numbers discussed in this section are not intended to be detailed estimates, but indicators of the ridership potential for each of the three circulator alignments. While this approach does serve as a valuable guide, it is dependent upon the existing demographics and land use characteristics, and does not respond particularly well to the development potential of individual sites or sub-areas.

This section includes a description of the methodology used to generate the sketch ridership estimates and a summary of those estimates for each of the three potential alignments for a five-year and ten-year time horizon.

Bus Ridership Projections

The first step in calculating ridership for a potential Downtown circulator service was to create estimates for a new rubber-tire bus service that would operate in mixed-traffic along the three potential alignments.

In order to calculate the distribution of total daily trips along each proposed alignment, fixed-route bus ridership projections for each were prepared using the FDOT-approved transit demand forecasting model, Transit Boardings Estimation and Simulation Tool (TBEST). TBEST is a comprehensive transit analysis and ridership-forecasting model capable of simulating travel demand at the individual route level. TBEST uses network connectivity, spatial and temporal accessibility, time-of-day variations, and route competition to project ridership; it also uses population projections and growth estimates. Land use change is not accounted for in the TBEST model, which somewhat limits its ability to estimate the ridership impact of large-scale redevelopment within a small geography.

TBEST is used by transit agencies throughout Florida (including SCAT) to estimate fixed-route bus ridership. While TBEST is a useful tool, it is important to note that its strength lies in comparative projections and not absolute projections. Simply stated, this means that the model is much more effective at identifying potential differences between routes than it is at projecting actual ridership numbers, and therefore it is likely that the projections provided in this section may not represent actual ridership that will be attained.

The specific TBEST model used for the purposes of these estimates was validated for Sarasota County Area Transit (SCAT) in 2008 in support of the Transit Development Plan (TDP). This model included the operating conditions and route structure from the 2008 model. In addition, the model included a constant, system-wide growth assumption for both population and employment. These rates are documented below:

- Annual Growth Rates (system-wide)
    - Population: 2.39%
    - Employment: 3.10%

Additional operational characteristics were also taken into account, including the following:

- Headways: 15 minutes
- Service Span: 6AM - 12AM
- Travel Time (each direction): 10 minutes
- Fare: $1.00

These characteristics remained constant for each of the time horizon years to allow for cross comparison.

Once the scenarios were built, three separate model runs were completed to estimate potential ridership. These runs were for the year of maturation (which is typically the third of service), year five, and year ten. The results of these analyses are shown in Tables 3-2 to 3-4 below.

Table 3-2: TBEST Sarasota Downtown Circulator Bus Ridership Estimates (Year 3)

	Average Weekday Ridership	Annual Ridership
Downtown Circulator A	857	226,129
Downtown Circulator B	121	32,150
Downtown Circulator C	131	34,624

Table 3-3: TBEST Sarasota Downtown Circulator Bus Ridership Estimates (Year 5)

	Average Weekday Ridership	Annual Ridership
Downtown Circulator A	1,073	283,236
Downtown Circulator B	153	40,690
Downtown Circulator C	164	43,308

Table 3-4: TBEST Sarasota Downtown Circulator Bus Ridership Estimates (Year 10)

	Average Weekday Ridership	Annual Ridership
Downtown Circulator A	1,274	344,152
Downtown Circulator B	195	51,492
Downtown Circulator C	207	54,582

For each of the three scenarios, there is a significant difference between the potential ridership potential between Circulator A versus Circulator B and Circulator C. This is likely due to the influence of the existing conditions along Main Street and their effect on Circulator A. The Main Street corridor and its immediate surroundings represent the greatest densities and intensities within the Downtown, which the model assumes will generate greater ridership from the base year, and through the time horizon.

The next portion of this analysis builds upon the TBEST estimates for rubber-tire bus to estimate the potential increase in ridership that could logically be assumed to occur as a result of premium transit service.

BRT Ridership Estimates

This section builds upon the bus transit ridership projections completed using the TBEST model to include the additional ridership that could be expected through the implementation of a fixed-guideway bus rapid transit (BRT) system.

One of the major advantages BRT systems have over traditional bus systems is that BRT provides a host of premium service amenities, infrastructure, and technologies. A modern and sophisticated BRT system draws more riders than traditional bus routes because of the

integration of improved service and infrastructure characteristics. To adjust ridership forecasts for BRT systems integrating advanced bus system features, an attractiveness factor needs to be calculated for new riders. The relative attractiveness of the potential BRT service was estimated using a methodology adapted from TCRP Report 118: *Bus Rapid Transit Practitioner's Guide* (2007). Table 3-5 includes a list of various BRT features and notes an adjustment score for each. An attractiveness factor for the BRT service was calculated using the scores in Table 3-5 consistent with various elements proposed for the service.

Using the methodology associated with Table 3-5, an attractiveness factor of 20.75% was calculated. This factor was multiplied by the fixed-route bus ridership estimates that were calculated through the TBEST model.

Table 3-5: BRT Attractiveness Factor Estimation

	Component	Percent	BRT
1	Running ways (not additive)*	20	--
	Grade separated busways	(20)	--
	At-grade busways	(15)	✓
	Median arterial busways	(10)	--
	All-day bus lanes	(5)	--
	Rush hour bus lanes	--	--
	Mixed traffic	--	--
2	Stations (additive)	15	--
	Conventional shelter	--	--
	Unique/attractively designed shelter	2	✓
	Illumination	2	✓
	Telephones/security phones	3	--
	Climate controlled waiting area	3	--
	Passenger amenities	3	✓
	Passenger services	2	--
3	Vehicles (additive)	15	--
	Conventional vehicles	--	--
	Uniquely designed vehicles	5	✓
	Air conditioning	--	✓
	Wide multi-door configuration	5	✓
	Level boarding	5	✓
4	Service patterns (additive)	15	--
	All day service span	4	✓
	High-frequency service (10 minutes or less)	4	--
	Clear, simple, service pattern	4	✓
	Off-vehicle fare collection	3	✓
5	ITS applications (selective additive)	10	--
	Passenger information at stops	7	✓
	Passenger information on vehicles	3	✓
6	BRT branding (additive)	10	--
	Vehicles & stations	7	✓
	Brochures/schedules	3	✓
	Subtotal (Maximum of 85)	85	68
7	Synergy (for scores >60 points)	15	✓
	Total	100	83
Elasticity increment (0.25 x Total)			**0.2075**

BRT Ridership Estimation

As was the case for the fixed-route bus estimates presented in Tables 3-2 to 3-4 previously, BRT ridership estimates were created using the attractiveness adjustment for each of the three horizon years, Year 3, Year 5, and Year 10. The results are shown in Tables 3-6 - 3-8 below.

Table 3-6: TBEST Sarasota Downtown Circulator BRT Ridership Estimates (Year 3)

	Average Weekday Ridership	Annual Ridership
Downtown Circulator A	1,035	273,051
Downtown Circulator B	146	38,821
Downtown Circulator C	158	41,808

Table 3-7: TBEST Sarasota Downtown Circulator BRT Ridership Estimates (Year 5)

	Average Weekday Ridership	Annual Ridership
Downtown Circulator A	1,250	329,709
Downtown Circulator B	176	46,876
Downtown Circulator C	191	50,483

Table 3-8: TBEST Sarasota Downtown Circulator BRT Ridership Estimates (Year 10)

	Average Weekday Ridership	Annual Ridership
Downtown Circulator A	1,509	398,124
Downtown Circulator B	213	56,603
Downtown Circulator C	230	60,958

Streetcar Ridership Estimates

To determine streetcar ridership estimates on the proposed Sarasota circulator alignments, streetcar examples from other cities with similar population and land uses were examined. The peer agencies were used to determine a range of ridership productivity, as measured in passengers per revenue hour. Peer system data were derived from the National Transit Database (NTD) and is shown in Table 3-9 on the next page.

Table 3-9
Peer System Ridership (2010)

		Systemwide Total		Streetcar Total		Percent Difference
City	**Transit Agency**	**Annual Ridership**	**Riders Per Revenue Hour**	**Annual Ridership**	**Riders Per Revenue Hour**	**Riders Per Revenue Hour**
Little Rock, AR	Central Arkansas Transit Authority	2,542,101	12.44	107,088	9.04	-27.33%
Tacoma, WA	Central Puget Sound Regional Transit Authority	11,334,663	23.84	873,073	89.79	276.64%
Tampa, FL	Hillsborough Area Regional Transit	13,271,696	19.29	501,959	36.26	87.97%
Kenosha, WI	Kenosha Transit	1,638,668	22.85	53,396	22.5	-1.53%
Memphis, TN	Memphis Area Transit Authority	11,504,847	20.07	1,154,848	21.17	5.48%
Average Sarasota Peers:		11,423,761	22.09	1,734,906	35.50	68.25%

Streetcar Ridership Estimation

Based on research conducted as part of the ridership estimation process, streetcar ridership is generally expected to be 15 to 30 percent more productive on average than similar local bus service. However, as was shown in Table 3-9, an evaluation of peer systems revealed that streetcar ridership could be more than 70 percent more productive. For the purposes of a startup system in Sarasota, streetcar ridership is not assumed to be in the higher ranges of productivity. A 35 percent increase over comparable local bus service was chosen to provide a conservative streetcar ridership estimate that still reflects the experience of peer cities. This number was chosen because it reflects a median point between 15 and 53 percent. Streetcar ridership estimates assume a full maturation of service, which typically occurs three years after implementation. Ridership estimates for streetcar on each of the three potential alignments are shown in Tables 3-10 through 3-12. A summary table for the ridership totals for each of the three modes can be found in Tables 3-13 and 3-14. Table 3-13 includes ridership estimates for the first and second years of operation, and Table 3-14 includes estimates for the third year, the fifth year, and the tenth year of operation.

Table 3-10: TBEST Sarasota Downtown Circulator Streetcar Estimates (Year 3)

	Average Weekday Ridership	Annual Ridership
Downtown Circulator A	1157	305,274
Downtown Circulator B	163	43,403
Downtown Circulator C	177	46,742

Table 3-11: TBEST Sarasota Downtown Circulator Streetcar Ridership Estimates (Year 5)

	Average Weekday Ridership	Annual Ridership
Downtown Circulator A	1,250	382,369
Downtown Circulator B	176	54,932
Downtown Circulator C	191	58,466

Table 3-12: TBEST Sarasota Downtown Circulator Streetcar Ridership Estimates (Year 10)

	Average Weekday Ridership	Annual Ridership
Downtown Circulator A	1,720	412,120
Downtown Circulator B	263	58,594
Downtown Circulator C	279	63,102

Table 3-13
Sarasota Downtown Circulator Annual Ridership Estimates - Bus, BRT & Streetcar (Years 1 & 2)

Alignment	Annual Ridership (Year 1)			Annual Ridership (Year 2)		
	Bus	BRT	Streetcar	Bus	BRT	Streetcar
Downtown Circulator A	113,065	174,293	137,563	169,597	242,755	284,824
Downtown Circulator B	16,075	24,780	19,558	24,113	34,514	40,495
Downtown Circulator C	17,312	26,687	21,063	25,968	37,169	43,611

Table 3-14
Sarasota Downtown Circulator Annual Ridership Estimates - Bus, BRT & Streetcar (Years 3, 5 & 10)

Alignment	Annual Ridership (Year 3)			Annual Ridership (Year 5)			Annual Ridership (Year 10)		
	Bus	BRT	Streetcar	Bus	BRT	Streetcar	Bus	BRT	Streetcar
Downtown Circulator A	226,129	273,051	305,274	283,236	329,709	382,369	344,152	398,124	412,120
Downtown Circulator B	32,150	38,821	43,403	40,690	46,876	54,932	51,492	56,603	58,594
Downtown Circulator C	34,624	41,808	46,742	43,308	50,483	58,466	54,582	60,958	63,102

3.7: SUMMARY CONCLUSIONS

Downtown Sarasota is a dynamic urban center, with a significant population and employment base for a city of its size. The City has long been proactive in planning for a truly mixed-use urban environment in the downtown area, and it has accomplished much towards this goal. The City has continued implementation of the Downtown Master Plan, the public realm improvements led by the DID and the transportation assessment related to potential roundabouts. These are but two of the most recent projects that are moving forward towards this implementation.

A summary of conclusions from Section 3 of this report follows.

Existing Activity Centers

As documented in Section 3.2 of this report, Downtown Sarasota has a significant number of activity centers that attract tourists, residents, and employees to and from the urban core on a regular basis. This mix of attractors ensures that the study area remains active, even during the off-peak tourist season, which can increase the Downtown population by over 20 percent. These centers are both regional and local in nature and serve a variety of users. Increasing transit connectivity between centers could increase the likelihood that tourists and locals would use alternative means to visit them.

Demand Assessment Tools

The demand assessments documented in Section 3 represent widely-accepted approaches to determining the potential demand for

traditional and discretionary transit riders within a given study area. In both of these assessments (Transit Orientation Index and Density Threshold Assessment), the study area shows strong evidence of potential existing rider markets that could use a new circulator system.

At a baseline level, the study area and potential circulator alignments are recommended for continued study. The balance of this feasibility study will examine the engineering constraints as they relate to various vehicular modes, system costs and supporting revenues, a market analysis to identify potential public revenue and economic development opportunities and benefits that could emerge as a result of the implementation of circulator service, and a comparative discussion of the business models for construction and operation of similar systems around the country.

Potential Ridership Estimates

Using the methodology described in Section 3.6 previously, a series of ridership estimates were developed for all three potential transit modes evaluated for the third year, the fifth year, and the tenth year of operation. These estimates are summarized in Tables 3-13 and 3-14, and show a great variety in ridership potential depending on the mode.

These estimates are primarily for comparative purposes only, and in that capacity they currently illustrate a strong bias towards Circulator A (Main Street Corridor), which is a result of the existing built density/intensity along the corridor. This bias could certainly change over time due to development/redevelopment activity that may occur along the alignments for Circulator B and Circulator C, both of which have a significant amount of vacant land available. A cursory analysis of approved but un-built projects in the project area would suggest that there is significant potential for new residential, hospitality and commercial development that would have a significant impact on all three alignment alternatives. If the feasibility/planning process moves forward for the potential circulator and additional economic development is a primary goal of the circulator, the City of Sarasota should re-analyze that unrealized development potential, and develop more detailed ridership estimates that reflect specific development scenarios and expectations on sites within the study area.

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Section 4: Engineering and Technology Assessment

4.1: INTRODUCTION

As documented within the Baseline Assessment, the Downtown Sarasota area has many of the characteristics of urban areas that are supportive of circulator systems. These include a significant number of existing activity centers, a substantial existing/planned transit system (including the proposed BRT system) centered on the SCAT Downtown Transfer Center, and supportive population and employment densities that are currently located within Downtown. These characteristics serve as good indicators that a circulator may be successful, but they do not address the engineering and economic factors that must be considered in order to determine the appropriate mode.

To better understand the potential challenges and opportunities that may arise with the choice of a given transit mode, a more in-depth analysis is required that addresses some of the engineering issues and financial costs and benefits related to different transit modes. This section of the report includes this analysis for each of the three conceptual alignments.

Transit Modes

For the purpose of this section of the study, multiple transit modes were assessed. These included rubber-tire trolley in mixed traffic, rubber-tire trolley in a dedicated lane (BRT), and modern streetcar, which includes both mixed-traffic and dedicated lane portions. From an engineering perspective, the primary focus is on the modern streetcar alternative, due to the complexity of the technology and its specific engineering requirements. For the purpose of this study, it was assumed that areas where physical limitations would not allow for a dedicated streetcar lane would also be prohibitive to BRT vehicles. It was also assumed that a mixed-traffic rubber-tire trolley could serve all of the city streets identified in the three conceptual alignments.

While the engineering assessment does focus more on the streetcar mode, documentation of potential rolling stock and ridership was completed for all three of the potential mode options.

Conceptual Alignments

As described in detail in the Baseline Assessment, three conceptual alignments were chosen to be examined for a potential circulator system. These are Circulator A, which is located on Main Street and runs east/west through the core of the City; Circulator B, which is a north/south route that runs from Marie Selby Gardens on the south to Van Wezel Performing Arts Center on the north; and Circulator C, which shares many characteristics with Circulator A, but has a loop that brings it along the western edge of Tamiami Trail to serve the hotels and residential units located there. As noted in the analysis, which included a review of existing activity centers, a Transit Orientation Index (TOI), and a Density Threshold Analysis (DTA), these three conceptual alignments appear to meet the criteria for the implementation of a successful circulator system of some kind.

In addition to the three alignments discussed above, there are a number of additional potential alignments that could be examined, each of which would likely exhibit a unique variety of ridership and economic development characteristics. If the City of Sarasota chooses to move forward with the implementation of a circulator system, future analyses, particularly an Alternatives Analysis, will examine each potential alignment in greater detail and document potential costs and benefits. While that level of analysis is outside the scope of this study, the examination of the three potential alignments does provide some

insight into the possible options and challenges to implementing a new circulator system. The three conceptual circulator alignments are described in more detail below and are illustrated in Map 4-1.

Circulator A – Green Alignment

The conceptual alignment for Circulator A is along Main Street, terminating on the west at Marina Jack and on the east at School Avenue. This conceptual alignment runs directly through the core of Downtown and captures many of the existing retail/office/commercial and residential uses within the core. From end to end, this alignment is approximately 1.3 miles long.

Circulator B – Blue Alignment

The conceptual alignment for Circulator B captures many of Downtown's cultural assets, tourist destinations, and residential properties. The alignment begins at Marie Selby Gardens in the south, heads north on Orange Avenue and Pineapple Avenue through Burns Court, crosses Main Street, then moves north on Central Avenue to Boulevard of the Arts, terminating at Van Wezel Drive to the north. In addition to serving the community's important cultural assets, the alignment also connects two important urban neighborhoods, Laurel Park and the Rosemary District, to the core. From end to end, this alignment is approximately 1.5 miles long.

Circulator C – Red Alignment

The third conceptual alignment considered in this assessment is a hybrid of both Circulator A and Circulator B. Circulator C terminates in the south at the apex of South Orange Avenue and Pineapple Avenue in Burns Court, heads north on Pineapple Avenue, cuts through Pineapple Park, then goes north on Lemon Avenue, west on 2nd Street, north on Central Avenue, and then west on Boulevard of the Arts to the GWIZ Science Center (GWIZ).

From GWIZ, the alignment heads east to near US 41, then south within the Quay Property, and then east on 2nd Street where it connects a loop. In whole, the alignment for Circulator C is approximately 1.7 miles long.

This conceptual alignment was designed to connect many of the tourist destinations (including the larger hotels on the west side of US 41) with the core of Downtown and the Burns Court area. The alignment design also takes into account important future development/redevelopment areas in the Downtown along Pineapple Avenue (particularly the area south of Main Street and north of Ringling Boulevard), the Quay Property on the west side of US 41, and the Rosemary District, which contains a number of vacant parcels that will be prime for infill and redevelopment activities.

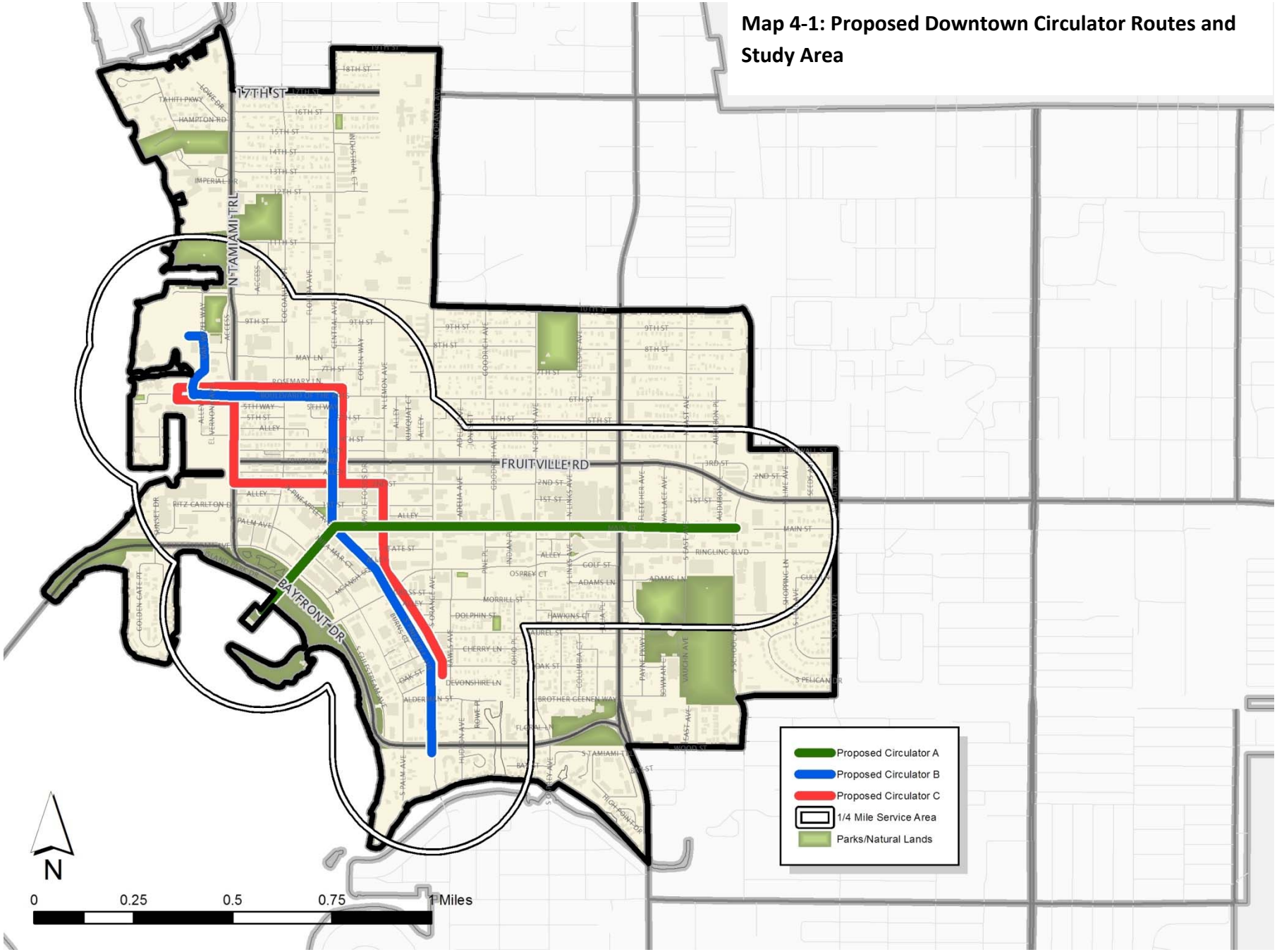
For each of the three alternatives, vacant land and previously entitled but unbuilt projects are identified in the next section, particularly those within one-quarter mile of each alignment. In general, those properties may be considered as future development opportunities.

Analysis Approach

The remaining parts of this section address the engineering challenges and cost and benefits of different technology and mode options being considered for a circulator service. For each of the three conceptual alignments, the following analyses were completed:

- Preliminary Engineering Assessment – includes a cursory review of existing utilities and potential obstructions within the proposed circulator alignments.

Map 4-1: Proposed Downtown Circulator Routes and Study Area



- Rolling Stock Recommendations – includes a general review of potential costs and benefits of several examples of transit rolling stock (both circulator and streetcar vehicles) that could be used for the circulator.
- Conceptual Cross Sections – includes a series of four cross-sections that conceptually illustrate how circulator vehicles might fit within the proposed alignments and potential challenges to implementation.
- Travel Time Estimates – discusses the general travel time characteristics for the potential circulator.
- Capital and Operating Costs – includes a discussion on potential capital and operating costs for a potential circulator system.

Through these different assessments/analyses, a better understanding will be gained of the physical possibilities and potential costs of implementing a circulator system.

4.2: ENGINEERING ASSESSMENT

Underground Utilities

Conflicts caused by the placement of underground utility systems are a challenge primarily faced by many streetcar systems versus other transit modes. The proximity of buried utilities, such as water, wastewater, stormwater, electricity, gas, and communications lines, can greatly affect the design, construction, and capital budget of streetcar tracks and other streetcar-related infrastructure. The development of underground utility systems typically occurs over time in every community and in center city areas, often over many decades, with multiple layers of utilities buried beneath heavily-used public rights-of-way. Often, the precise location of different service area lines is not well documented, so the challenge of constructing a rail line on the surface of such roadways can be significantly complicated. After identifying the horizontal and vertical locations of every underground utility, most of which vary from place to place within any given right-of-way, the implications of proximity to a proposed steel rail line must be evaluated and resolved for each utility present.

The owners of these utility assets often have physical and fiscal concerns about such a surface installation, which include the following considerations:

- The utilities are located directly in the area required for the track structure.
- The weight of the streetcar track structure may damage any buried assets directly below.
- The location of the track structure may restrict access to utility assets for their repair or replacement.
- The use of 600 VDC (volts direct current electricity) to power the streetcars may cause damage to buried assets through a chemical reaction called electrolysis.

A related concern for the entity constructing the streetcar line is the tendency by some utility owners to see the streetcar project as an opportunity to obtain funding from the agency/organization constructing the streetcar to replace aging assets in the vicinity of the streetcar track structure. This is often the case in center cities.

Unless dealt with in a practical and informed way, utility relocation can, and often does, add many millions of dollars to the budget of a streetcar project.

The following may help control the financial risk associated with utilities:

- Most municipalities have franchise agreements between the City and the utility owners. Typically, these agreements require the utility owner to move utilities at its own expense to facilitate projects conducted by City. If another body is to construct the streetcar system, such as the local transit agency, it will not have the advantage of protection that municipalities can employ with the franchise agreement.
- Flexibility should be considered with the routing and location of tracks to minimize utility conflicts. If this is not a practical solution, it may be possible to change, or vary, the location of the track in the street.
- Recent advances in the development and use of lower-profile rails have reduced the size and depth of the required concrete slab that supports the track. This series of techniques has been developed relatively recently in the United States and has been used successfully in cities such as Portland and Seattle to significantly reduce construction costs and the need for massive utility relocation.
- Assertive negotiations with utility providers are critical. The use of knowledgeable and experienced design consultants and graphic and other technical information from other streetcar properties that have solved similar challenges (often by documenting minimized impacts resulting from physical closeness of utilities) has solved many potentially costly issues and should lead to the use of cooperative working arrangements.

Utility Locations

The Sarasota Public Work Department provided records of public utilities buried in and around the three conceptual alignments within the downtown area. The information provided included the type of utility (water, wastewater, stormwater, and reuse water), the size of the pipe, and the general location within the right-of-way (e.g., north vs. south side of street). However, the depths (vertical location) of each utility were not specified in the data. Additionally, location records of the private utilities providing service to the community, such as electricity and telephone/data, were unavailable. However, verbal advice gleaned from interviews with City staff suggests that utilities are plentiful throughout the downtown area, particularly within the Main Street right-of-way.

While the utility location records are not fully inclusive, they are sufficient for the level of analysis required for this study, which is intended to identify the potential challenges inherent in the City's current and future deliberations regarding a downtown circulator.

A mixed-traffic rubber-tire circulator should not be affected by underground utilities. A dedicated-lane rubber tire circulator could be somewhat affected, depending on the roadway and infrastructure reconstruction required. A fixed-guideway streetcar system could have major implications to underground utilities, depending on the preferred alignment selected. The next stage of evaluation for this alternative (rail) will require significant further analysis, including a comprehensive utility survey for all the utilities provided in the study area and extensive interaction with all affected utility operators.

Aboveground Utilities

Few aboveground obstructions were observed during fieldwork. There are no overpasses or road or pedestrian bridges in the study area. There were many power and streetlight poles and trees located within the public rights-of-way for the three alignments, as well as a number of mast arms for signalized intersections. In no case was there an observed situation that presented an obvious barrier to the development of an

overhead power system, beyond the engineering challenges normally associated with such installations. Detailed analysis of a specific preferred alignment in the future will identify the need for adjustment relocations or replacement of some power poles, streetlights, and trees and plant material.

Alignment Utility Observations

Information was provided for City potable water, sanitary sewer, reuse water mains and service lines, stormwater pipes, and open storm drainage channels. It is clear that the City has a well-developed utility system in the downtown area. This brief description of potential utility conflicts is accompanied by utility location maps (in Appendix A) for the City utilities identified, with the three alignments overlaid to provide a clearer indication of both locations and potential conflicts.

Circulator A

Circulator A, running on Main Street from Marina Jack to School Avenue, has many utilities within the right-of-way and a number of potential conflicts. There are locations where the track structure may have to cross major utility lines. Main Street has at least two utility crossings at most intersections, and the water mains branch out to the center of the roadway five times. Between East Avenue and School Avenue, the water main is located in the center of the roadway for half of the block. In this street, all power cables have also been buried. The water, stormwater, and sanitary sewer systems are complicated and have multiple sections running in the street, as well as multiple crossings. In general, every City utility is represented along this alignment, and a streetcar alignment along Main Street will require careful and detailed future study to effectively identify the potential costs associated with utility relocation.

In addition to the public utilities, Main Street also has a significant number of private utilities present. The right-of-way contains underground power lines and telecommunication lines, the locations of which are not known. Sarasota Public Works staff provided anecdotal information regarding their recent experience working to build the Five Points roundabout and to install a new water main. During these projects, it became clear that there is a particular issue with phone/telecommunication lines within that right-of-way, including the presence of several vaults owned by Verizon.

Circulator B

Circulator B follows a more circuitous route, beginning near the Van Wezel, then following the Boulevard of the Arts across US 41, to Central Avenue, down to Pineapple Avenue, to Orange Avenue, south to its terminus near Selby Gardens. While this alignment is somewhat less congested with utility lines, there are potential conflicts from Van Wezel Way through to Central Avenue, including multiple utility crossings and utilities that are likely to be running under the streetcar track structure in parts of Van Wezel Way, Boulevard of the Arts (east of US 41), and for four blocks in Central Avenue.

After turning from Central Avenue to South Pineapple Avenue, potential conflicts exist crossing South Lemon Avenue and Ringling Boulevard. Utility installations continue down Orange Avenue to the terminus. Although there are significantly fewer utilities directly in the right-of-way in this area, there are a number of crossings and proximity issues to consider. While somewhat less complicated than Circulator A, Circulator B has many utilities traversing and crossing the potential alignment.

Circulator C

Utility placements along Circulator C are very similar to Circulator B. In the area where a loop has been shown in the Rosemary District, there

are relatively few utility conflicts apparent at this level of analysis. However, as the alignment crosses US 41 at 2nd Street, the utilities pervading the downtown core do occur in this area. One of the advantages to this alignment is that it crosses Main Street instead of traversing it, minimizing the potential for utility conflicts there. As the alignment moves south on Lemon, there are stormwater and other facilities that occur through the area. Like Circulator A and Circulator B, Circulator C is located in the same general downtown area and would face similar challenges regarding underground utilities.

4.3: IDENTIFICATION OF ALTERNATIVE ROUTES

The intent of this preliminary study is to examine the three conceptual alignments, (Circulators A, B, and C), as identified and described in Section 4.1. This analysis examined only these initial alignments and did not specifically address any other alternatives. If the City of Sarasota chooses to move forward with further analysis related to a potential circulator system, part of the process will require a detailed analysis of a larger number of potential routes within the downtown area. This additional future analysis will identify a preferred route based on engineering constraints, potential costs, and system performance. Upon more detailed analysis, the preferred initial alignment could eventually be any of the three examined within this report, sections or segments of one or more of them, or a completely different alignment.

4.4: ROLLING STOCK OPTIONS

This section discusses some of the variety of potential rolling stock options that exist for use with a downtown circulator. Included is information on both streetcar rolling stock and potential rubber-tire circulators. The primary focus is on streetcar technology, however, because of the lack of familiarity with this technology by many local transit agencies and the rapidly evolving nature of the industry itself, as described in further detail in this section. For rubber-tire circulators, there have been some evolutionary changes in rolling stock related to new BRT-style alignments, which often use vehicles with aesthetic and other treatments to differentiate them from typical bus services.

Streetcar Rolling Stock

The trend over the last 15 years has been the use of genuine or replica historic streetcars or trolleys. Now (with the exception of St. Louis, Missouri), most new streetcar systems in the United States are using European tram-style cars. United Streetcar, LLC, in Portland, Oregon, has produced the first new streetcar in the U.S. for more than 50 years and has confirmed orders with Portland Streetcar, the City of Tucson, and Washington, DC.

The latest development in the streetcar circulator industry has been the introduction of overhead wire-free or wireless operation. Streetcars that no longer require the installation of overhead conductor wire or catenary have been operating in Europe for several years. It is the intention to operate a similar system in visually-sensitive areas of Washington, DC and in Seattle.

Streetcars, for local purposes, denote an urban transit system technology featuring electrically-propelled, modern, articulated, full or partial low-floor vehicles that ride on steel wheels and run on steel rails. They typically use power drawn from an overhead wire, with or without off-wire capabilities, and travel along city streets, often in mixed-traffic.

Streetcars in the U.S. generally operate as single-car operations and cannot be considered high-capacity transit except at very high frequency. Although there is a range of streetcar types operating today, the most common streetcars generally have capacities in the range of an articulated bus—around 40–70 seated passengers with a maximum of 110 total passengers (seated and standing). Unlike LRT service,

streetcars are generally not strung together in "trains" with a single operator, but rather operate as single cars on the track.

Track Layout

Early streetcar systems used single track with short sections of passing tracks (capable of passing two cars) to minimize construction costs and fit into an urban environment that had insufficient road width for long lengths of double track. This style has been used in contemporary times, most notably the system in Tampa. In Europe, this design of track is having resurgence as cities are faced with the age-old issues of lack of funding for construction and narrow, well-established streets and associated neighborhoods. The style of single track with short passing track has been, and is again, the practical alternative to a fully double-tracked route.

Maintenance

A single streetcar maintenance and operation facility would be necessary. The administration, dispatching, storage, maintenance and monitoring of streetcar operations will occur at the maintenance and storage facility. Storage track capacity should be sufficient to store the fleet of streetcars overnight. A shop would provide preventive and unscheduled maintenance functions. The shop also may include parts storage, maintenance bays, a wash area, and ancillary tools and equipment. Modern streetcars may be stored on outside tracks, but a covered and secure maintenance building with enough space for at least one car would be required.

Right-of-Way

Right-of-way would be required for up to three electrical substations, each about the size of a typical vehicular parking stall. Substation sites may require ROW acquisition, or may be located in existing street ROW.

Streetcar Vehicles

Heritage and replica heritage streetcars are losing popularity for use in new streetcar systems because of better accessibility, higher capacity, improved performance, and the sleek contemporary look and feel of modern vehicles. The demand now is for a modern streetcar, which is resulting in an increase in the number and type of street cars available to the North American market. The following are promising entrants to the market and two of the more commonly-used heritage and replica streetcars.

Bombardier Flexity Outlook

Bombardier streetcars are some of the most widely used in the world today. The Toronto Transit Commission has confirmed the selection of Bombardier's Flexity Outlook low-floor design as the base model for its next generation fleet. Toronto is planning to purchase 204 articulated trams to replace its current aging fleet of streetcars.

With a width of 2.65 m (8 ft. 8 in.) and length of 30 m (98.4 ft.), the Flexity Outlook cars will have almost double the capacity of the existing Toronto articulated streetcar. The 100 percent low-floor cars will be customized for Toronto and assembled at Bombardier's Thunder Bay plant. The delivery schedule calls for prototype testing to begin in 2011 and revenue service by 2012. Once completed, this will be the largest fleet of streetcars in North America, and it is likely that similar versions for the U.S. will be manufactured in Bombardier's Pittsburgh plant.

Bombardier Flexity Outlook: Exterior View

Bombardier Flexity Outlook: Interior View

United Streetcar USC 100

United Streetcar, LLC, is a wholly-owned subsidiary of Oregon Iron Works, Inc. (OIW) based in Portland. OIW is a specialized fabrication and manufacturing company founded in Oregon in 1944. Streetcar fabrication aligns with OIW's long-term manufacturing capability as well as OIW's team of personnel.

United Streetcar has produced the first new streetcar in the U.S. for over 50 years and has confirmed orders with Portland Streetcar, the City of Tucson, and Washington, DC. United Streetcar has replicated the Skoda and Inekon design of streetcars as used on the Portland Streetcar System. A demonstrator car was manufactured in July 2009. The car has not passed all operational trials and cannot yet be used for the carriage of passengers. United Streetcar received an additional 14 orders from Portland, Tucson, and Washington, DC. The company is now behind schedule for delivery of cars to Portland Streetcar for the opening of the new Eastside Extension in September of this year.

The United Streetcar USC 100 streetcar is 50 percent low floor, 2.46 m (8 ft. 0 in.) wide, and 20.13 m (66 ft.) in length.

United Streetcar USC 100: Exterior View

United Streetcar USC 100: Interior View

Brookville Equipment Corporation Liberty Streetcar

Brookville Equipment Corporation in Brookville, Pennsylvania, has been in the mining and railroad vehicle manufacturing business for more than 100 years. With a history of manufacturing electric mining locomotives with hybrid and off-wire capabilities, combined with the remanufacture of over 50 streetcars, Brookville entered the new streetcar market in 2011 with the design of the Liberty.

With engineering for the car beginning in 2010, the Liberty Car uses industry-proven systems, subsystems, and components from around the world and packaged for the North American market.

The Liberty Car is 60 percent low floor to increase accessibility and decrease dwell time for loading and unloading of passengers. It is 20.24 m (66 ft. 4 in.) long, available in two body widths of 2.46 m (8 ft. 0 in.) and 2.65 m (8 ft. 8 in.), and can have different door and various seating configurations and body trim and paint schemes as a regular package. Advanced features that are also being incorporated into this design include off-wire operation for periods of time.

Brookville has designed and is currently testing a completely wireless streetcar that is operated by batteries and charged through non-contact charging. The batteries are periodically charged through induction coils that are located in critical areas along the route.

Brookville Equipment Corporation Liberty Streetcar: Exterior View

Brookville Equipment Corporation Liberty Streetcar: Interior View

CAF USA Streetcar

CAF USA is a subsidiary of CAF (Construcciones y Auxiliar de Ferrocarriles, S.A.), an international market leader in the design, manufacture, maintenance, and supply of equipment and components for railway systems. CAF has experience producing vehicles for high speed rail, commuter rail, light rail, and streetcar applications worldwide.

CAF has produced light rail vehicles for Pittsburgh, Sacramento, and Houston and streetcar vehicles for the international market such as Besançon and Nantes (France), Belgrade (Serbia), Antalya (Turkey), Stockholm (Sweden), Edinburgh (Scotland), and Zaragoza, Granada, Sevilla, Bilbao, and Vitoria (Spain).

The City of Cincinnati has selected CAF USA as the preferred vendor to provide up to five modern streetcar vehicles (with options of up to 25 more) to the first phase of the Cincinnati Streetcar. The vehicles produced by CAF USA for the Cincinnati Streetcar must comply with the Buy America program, which requires the vehicles be produced with at least 60 percent domestic content and that final assembly of the vehicles takes place in the U.S.

The Cincinnati vehicles will be assembled at CAF USA's facility in Elmira, New York. The vehicle offered by CAF USA is a conventionally-powered vehicle with a 100 percent low-floor design.

CAF USA Streetcar Exterior View

CAF USA Streetcar Interior View

Gomaco Trolley Company Double Truck Replica Birney Car

The Gomaco Trolley Company is a division of GOMACO Corporation, manufacturers of concrete construction equipment located in Ida Grove, Iowa. Gomaco manufactures authentic vintage trolley cars that match the precision and quality craftsmanship of older trolley cars but incorporate the engineering technology of today.

An aspect of American streetcar systems is the many new replica streetcars constructed using vintage designs. Building on the traditions of America's past, these new vehicles incorporate the classic looks of vintage streetcar designs with the reliability and durability of a new vehicle. More than 50 replica streetcars were built from 1997 to 2007; Gomaco manufactured 22 of these cars plus additional cars for display purposes only.

Sales of new replica cars have fallen off noticeably as market attention has turned to modern streetcar vehicles. Replica cars offered by Gomaco Trolley have the advantage of lower maintenance costs, higher reliability, a more predictable price and delivery schedule, and the ability to incorporate modern features such as air conditioning and ADA accommodations as compared to original vintage or heritage trolley vehicles.

Gomaco offers a range of replica trolleys, with the most popular car to date being the double truck Birney. Earlier this year, Gomaco began testing a wireless heritage streetcar for use by properties wishing to avoid overhead contact wires.

Gomaco Trolley Company Birney Replica Streetcar: Exterior View

Gomaco Trolley Company Birney Replica Streetcar: Interior View

PCC Streetcar – Various Suppliers

The most common heritage streetcar in operation and providing transit service in North America is the PCC car, with 55 still in active service, and the number is increasing.

The PCC streetcar design was first built in the U.S. in the 1930s. The design proved successful in its native country and after World War II was licensed for use elsewhere in the world. The PCC car has proved to be a long-lasting icon of streetcar design and remains in service around the world today.

The name PCC comes from the name of a design committee formed in 1929, the Presidents' Conference Committee, renamed the Electric Railway Presidents' Conference Committee (ERPCC) in 1931. This group's membership consisted mostly of representatives of some of the larger operators of urban electric street railways in the U.S.

The ERPCC was tasked with producing a new and modern type of streetcar that would better meet the needs of the street railways and their customers. The committee prepared a detailed research program, conducted extensive research, built and tested components, made necessary modifications, and produced a set of design specifications for a complete vehicle built with standard components as opposed to a custom designed car body with a variety of different parts added to it depending on the requirements of the individual customer. The standard car under the original 1935 specifications was 46 ft. (14.0 m) long and 100 in. (2.54 m) wide, with later models at 46.5 ft. (14.2 m) long and 108 in. (2.74 m) wide.

PCC cars were initially built in the U.S. by the St. Louis Car Company and Pullman Standard. PCC cars for Canadian cities were assembled in Montreal by Canadian Car and Foundry from bodies and trucks supplied by St. Louis Car. Westinghouse Electric, Westinghouse Air Brake Company, and General Electric supplied the electrical packages and brake components, which were designed and built in cooperation with the ERPCC.

Nearly 5,000 of these cars were built from the mid-1930s to the early 1950s, when the last traditional streetcars were built in the U.S.

PCC cars can be purchased in various conditions from rail museums or others dealing in secondhand heritage cars for as low a $15,000. The cost of rebuilding a PCC can be as low as $55,000 for a car in very good condition. For cars complete but that require a total rebuild, the cost ranges from $750,000 to $1 million and cars incomplete and in very poor condition can cost up to $1.5 million.

The Brookville Equipment Corporation in Brookville, Pennsylvania, has rebuilt in excess of 40 PCC cars for transit agencies.

PCC Streetcar: Exterior View

PCC Streetcar: Interior View

Rubber-Tire Circulator Vehicles

Much like electric streetcars, rubber-tire circulators can vary greatly, from fully-branded BRT buses, typical buses, or trolleys with heritage design elements. The final choice of vehicle type will depend on the type of service that is eventually being proposed.

There are a number of issues to consider when choosing an appropriate vehicle for an urban circulator service. Some of these are obvious, such as cost, reliability, serviceability, etc., while others are more related to the goals and intent of the system. As is discussed in Section 3.6, ridership can be affected significantly by vehicle type as well as operational characteristics.

There are a number of manufacturers that currently produce rubber-tire buses and circulator vehicles for use in the U.S. Three of the most common include Gillig, Nova, and Arboc Specialty Vehicles. There are also a number of manufacturers that custom-build vehicles for transit agencies around the country.

SCAT currently operates a fleet that uses Gillig buses almost exclusively. The agency has a variety of buses that currently serve the system, including some BRT-style, hybrid diesel-electric buses. Ultimately, if SCAT is the entity that will be responsible for operating the circulator system, the agency may wish to continue uszing Gillig rolling stock due to its familiarity and comfort level with the product.

The remainder of this section includes a summary of some common rolling stock options used by transit agencies for circulator and BRT services. This is not a comprehensive list, but rather an introduction to the most common typologies currently in use.

Low-Floor Buses (Diesel)

Many transit agencies use smaller versions of typical buses for providing circulator services. These buses often have characteristics similar to full-size buses, but are shorter, allowing for easier maneuverability and efficiency in crowded urban environments. These buses can retain the branding of the normal bus fleet or can have specialized branding package to differentiate them for the downtown circulator service.

LYNX, the transit agency serving Orange, Osceola, and Seminole counties in Florida, operates the highly-successful LYMMO service in Downtown Orlando using these types of buses. LYNX currently operates five 2005 Gillig diesel low-floor buses on the downtown LYMMO Route, primarily on a busway reserved for these vehicles.

Costs for low-floor diesel buses can vary greatly but generally fall between $285,000 and $350,000 each, depending on the brand and the size of bus being ordered. These buses are considered the "bread and butter" of most fleets and are therefore the most affordable of vehicle options. SCAT currently has several similar buses in service, although for new purchases, the agency is already focusing on hybrid diesel electric and BRT-style vehicles.

Trolley-Style Buses

The trolley style bus is a rubber-tire vehicle that is designed to be a replica of early trolleys while providing the reliability and serviceability of a modern fleet car. These types of vehicles have been popular with transit agencies and municipalities for circulator routes. These vehicles have specialized branding and other aesthetic features (including wooden seats and brass accents) that differentiate them from the typical bus rolling stock. They have been successfully used in many cities, in both downtown environments and in waterfront and beach communities across the country.

Hillsborough Area Regional Transit (HART) currently operates trolley style buses for its rubber-tire circulator system in Downtown Tampa. This system is designed to complement the TECOLine Streetcar system. The vehicle fleet is made up of five Gillig 30-ft. Trolley Bus Replica vehicles. These vehicles can be provided in two sizes, 30 feet and 35 feet, and share many of the same mechanical characteristics with the Gillig low-floor bus.

Costs for these vehicles can vary greatly, but generally they will fall between $400,000–$500,000 per vehicle.

Gillig Trolley-Style Bus: Exterior View
(Source: www.gillig.com)

Gillig Trolley-Style Bus: Interior View
(Source: www.gillig.com)

BRT-Styled Vehicles

The third and final vehicle type that is in common use for circulator systems are the BRT-styled vehicles. The greatest differentiator between these vehicles and typical buses are the stylized features that create a unique look and feel. These features are primarily cosmetic and can include sloping windshields, flush side windows, and a variety of headlight/taillight arrangements. The vehicles present a modern look and feel that is designed to attract choice transit riders, are typically branded, and often have specially-designed stops and stations and other amenities that are consistent with that brand.

The R-Line in Raleigh, North Carolina, is a good example of a circulator system using BRT-styled vehicles. They currently have three 40-ft. Gillig hybrid diesel-electric buses with the BRT design package and specialized branding.

SCAT has purchased several hybrid buses with BRT-style packages for use in its fleet. The first purchase of hybrid buses occurred in 2006, and the agency purchased several additional vehicles in 2009 and 2011 for use on its fixed-route system. The vehicles purchased in 2009 and 2011 were Gillig 30-ft. low-floor hybrid diesel-electric buses. The buses purchased in 2012 and cost $517,810 each, which is a significant premium (approximately $200,000) over diesel low-floor buses of the same size.

SCAT BRT-Styled Bus
(Source: www.yourobserver.com)

4.5: CONCEPTUAL CROSS SECTIONS

In addition to understanding the potential engineering challenges associated with existing utilities and other physical obstructions, the issue of the actual "fit" of a potential circulator on each of the three conceptual alignments was examined. This was not an in-depth examination of the potential layout of each section of the conceptual

alignments, but instead was an examination of potential changes and accommodations that might need to occur at certain locations if a circulator was implemented; they each represent a potential alignment solution at four selected locations, each showing a somewhat different design solution.

There were four cross-section locations selected for this examination: one cross section along the Circulator A alignment, one along the Circulator B alignment, and two along the Circulator C alignment. Both existing conditions and proposed design sections are provided for each location, which illustrate the potential changes with the implementation of a fixed guideway circulator. Since there is still a lack of complete survey and as-built information, much like the Engineering Assessment in Section 4.2, this analysis uses a streetcar vehicle in the proposed sections as the standard for clearances. With its height and width requirements, the envelope for a streetcar would allow for most bus and BRT vehicles as well. In this section, each cross-section location is discussed in more detail in both the existing and proposed condition.

Main Street Cross-Section

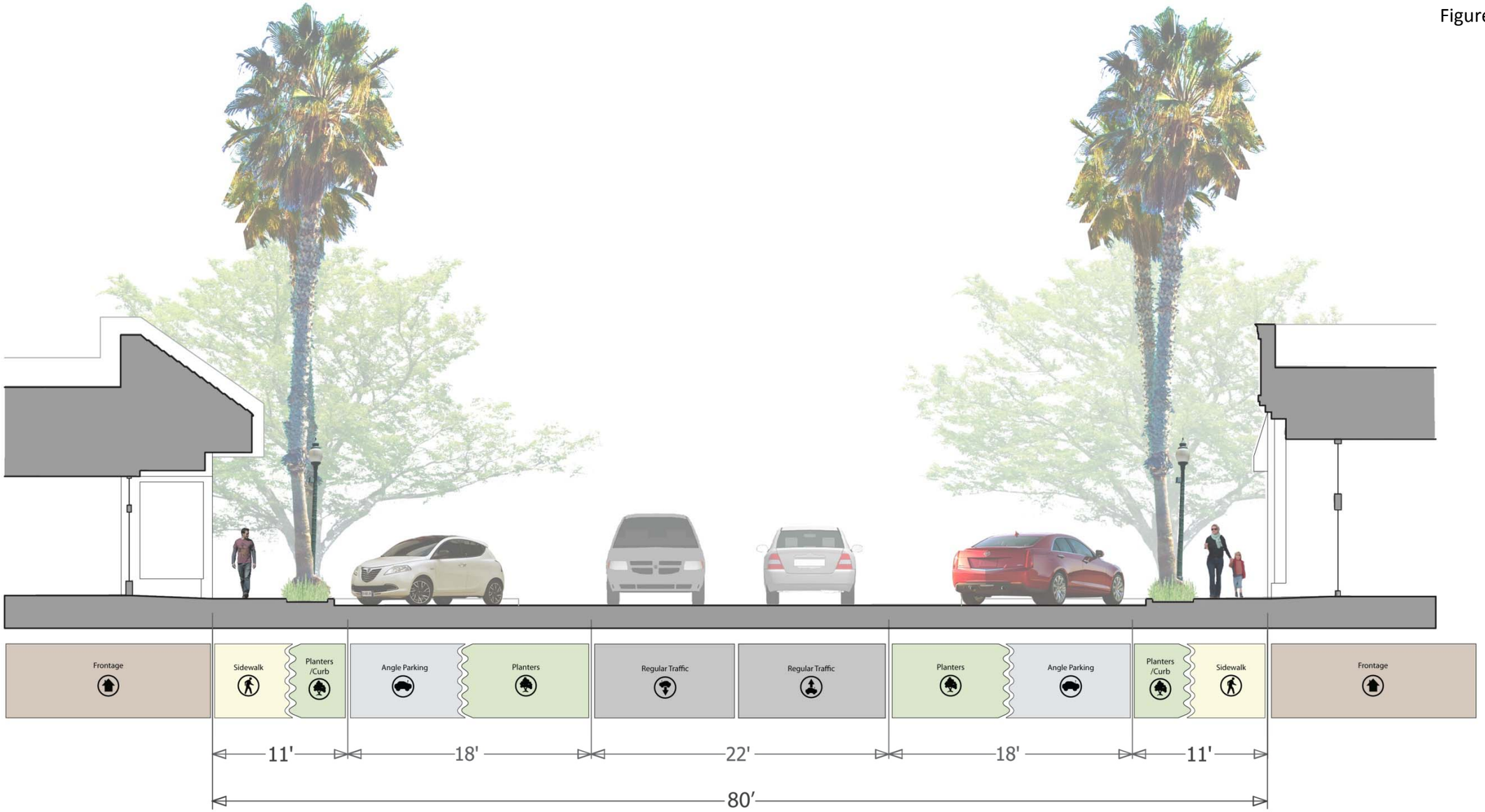
Main Street is the retail/commercial core of Downtown Sarasota. It is the most developed roadway downtown, the central corridor for downtown employment generally, and home to many restaurants and other retail establishments in the urban core. Main Street is always evolving and has undergone a number of design changes over the years to encourage urban redevelopment and a thriving pedestrian environment that is supportive to local businesses. The Main Street cross-section that was chosen for this examination is located between Pineapple Avenue and Lemon Avenue. Within this area, Main Street is an 80-foot-wide right-of-way, including sidewalks, parking, and travel lanes. The existing cross-section (shown in Figure 4-1) shows dimensions that were scaled from aerial imagery for the improvements within Main Street. The sidewalks on both the north and south sides of the road are estimated at 11 ft. (more in some areas), the angled parking spaces are estimated at 18 ft. perpendicular to the curb, and the travel lanes are estimated at 11 ft. each. This configuration leaves approximately 58 ft. across from curb to curb. While this condition can vary somewhat from west to east along the block, and the configuration changes from block to block as well, it appears to be a good standard for the purposes of illustration.

When identifying a potential configuration for a circulator within this cross-section, a number of factors were included. The first was to consider whether the circulator would run in mixed traffic or be located within a dedicated lane. A dedicated lane solution was selected to illustrate because a mixed-traffic solution would have a longer travel time over a dedicated lane and, in the case of a streetcar, mixed traffic would require the consideration of either double tracks (westbound/eastbound) within Main Street corridor or the consideration of a one-way loop using a second roadway, which was beyond the level of analysis conducted within this study. There were also concerns about running a streetcar in mixed traffic with angled parking, as it is a safety concern, particularly for a streetcar that cannot maneuver around a car pulling out of an angled space. Further, Main Street has more underground utilities than the other streets reviewed and more street-edge infrastructure (sidewalks, trees, landscaping, bulb-outs), so this solution would create the least disruption to those improvements. Further, the proposed improvements designed for the Downtown Improvement District were evaluated and attempts were made to minimize conflicts with those plans. Finally, the study is mindful of cost in every respect, and this solution minimizes the financial impact of rail and infrastructure relocation and/or replacement.

The proposed cross-section reconfigures the pavement area while attempting to minimize the impacts to the existing curb line and existing improvements (shown in Figure 4-2). The proposed cross-section changes all angled parking to parallel parking for both space and safety considerations, which allows for the creation of an approximately 20 ft. dedicated transit lane envelope in the middle of the roadway with a small platform station along one side of the streetcar or BRT vehicle at boarding locations. This envelope would allow for bi-directional travel for either BRT or streetcar, and because of its location in the middle of the roadway, it would greatly reduce conflicts with the streetcar wiring and trees along the right-of-way. This approach would require several passing tracks, located either at each end of the line or spaced appropriately, or a combination of those solutions. However, the center lane approach requires an urban solution for loading/unloading. The design would allow for a rider to enter the station platform by walking out to the transit line at signalized intersections using pre-existing safety crosswalks. This layout, coupled with signal priority for the streetcar when necessary, would allow for easy boarding from the pedestrian crosswalks and both sides of the street. This solution assumes meeting ADA accessibility and safety standards, as well as level ingress and egress to the streetcar.

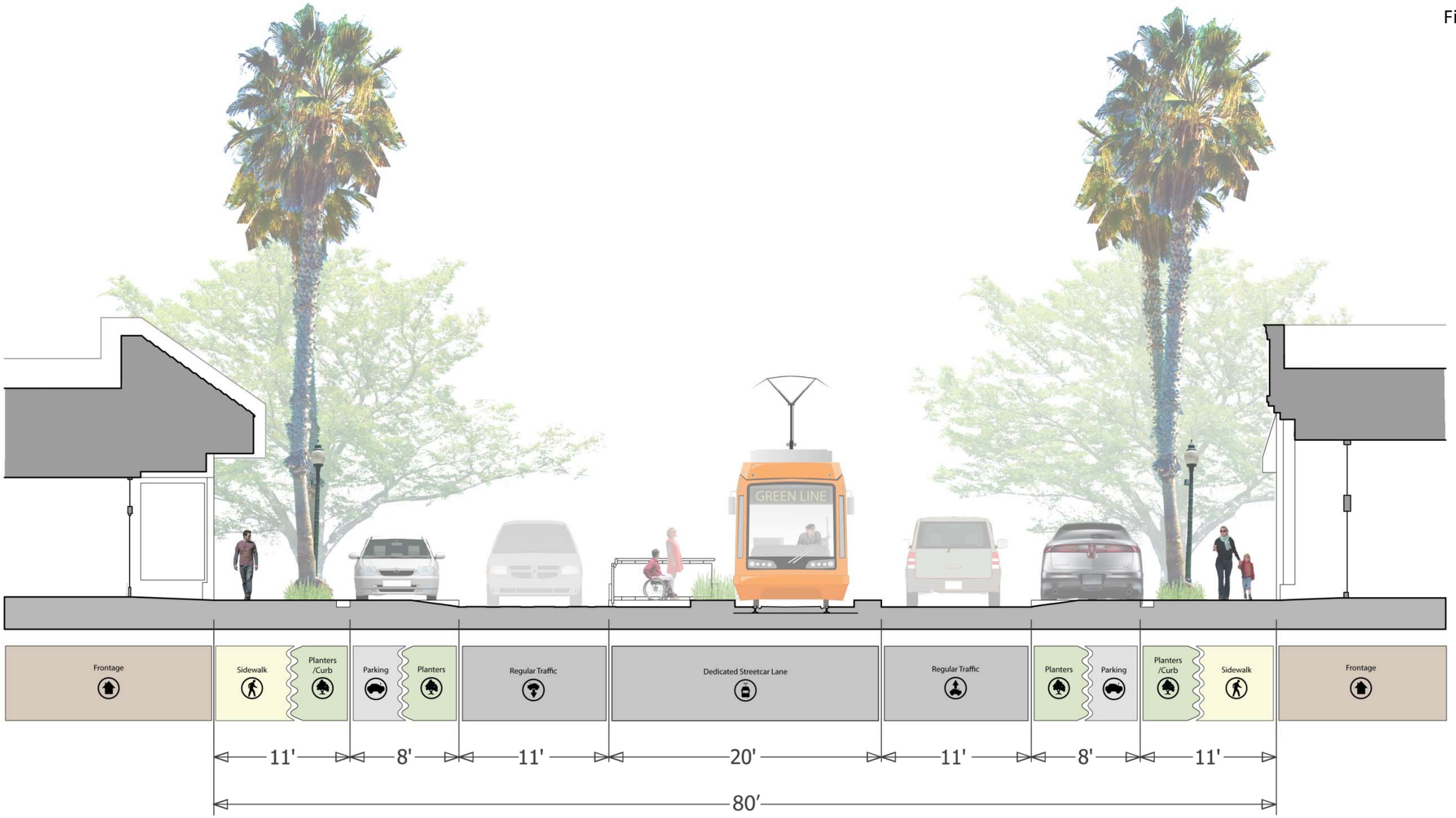
Main Street - Existing Condition

Figure 4-1



Main Street - Proposed Condition

Figure 4-2



Central Avenue Cross-Section

The second section included in this examination was a section along Central Avenue in the Rosemary District. This potential section is used in both the Circulator B (Blue) conceptual alignment and the Circulator C (Red) conceptual alignment. The right-of- way for Central Avenue in this area is 60 ft. The existing cross section includes two 11-ft. sidewalks with planters, two 8-ft. parallel parking spaces, and two 11-ft. travel lanes. The existing cross section is illustrated in Figure 4-3.

Due to the street's narrow width and the goal of minimizing impacts to the curb line, a mixed-traffic solution was shown for the circulator (shown in Figure 4-4). In this solution, the proposed circulator shown is a streetcar, but it could also be a rubber-tire bus or BRT vehicle. The circulator, whether a streetcar or other vehicle, would travel in the normal travel lane, running with automobile traffic. For a streetcar or BRT vehicle, this proposed solution would be a one-way line heading north, requiring a second track to return south, thereby creating a one-way loop within part of the scenario. This loop is proposed in the Circulator C scenario. For a mixed-traffic BRT or rubber-tire trolley, this proposed section could be designed to allow for return traffic along the same road, or it could be a one-way loop to serve other locations.

Central Avenue was selected to illustrate a circulator running with the traffic primarily because of the right-of-way constraints.

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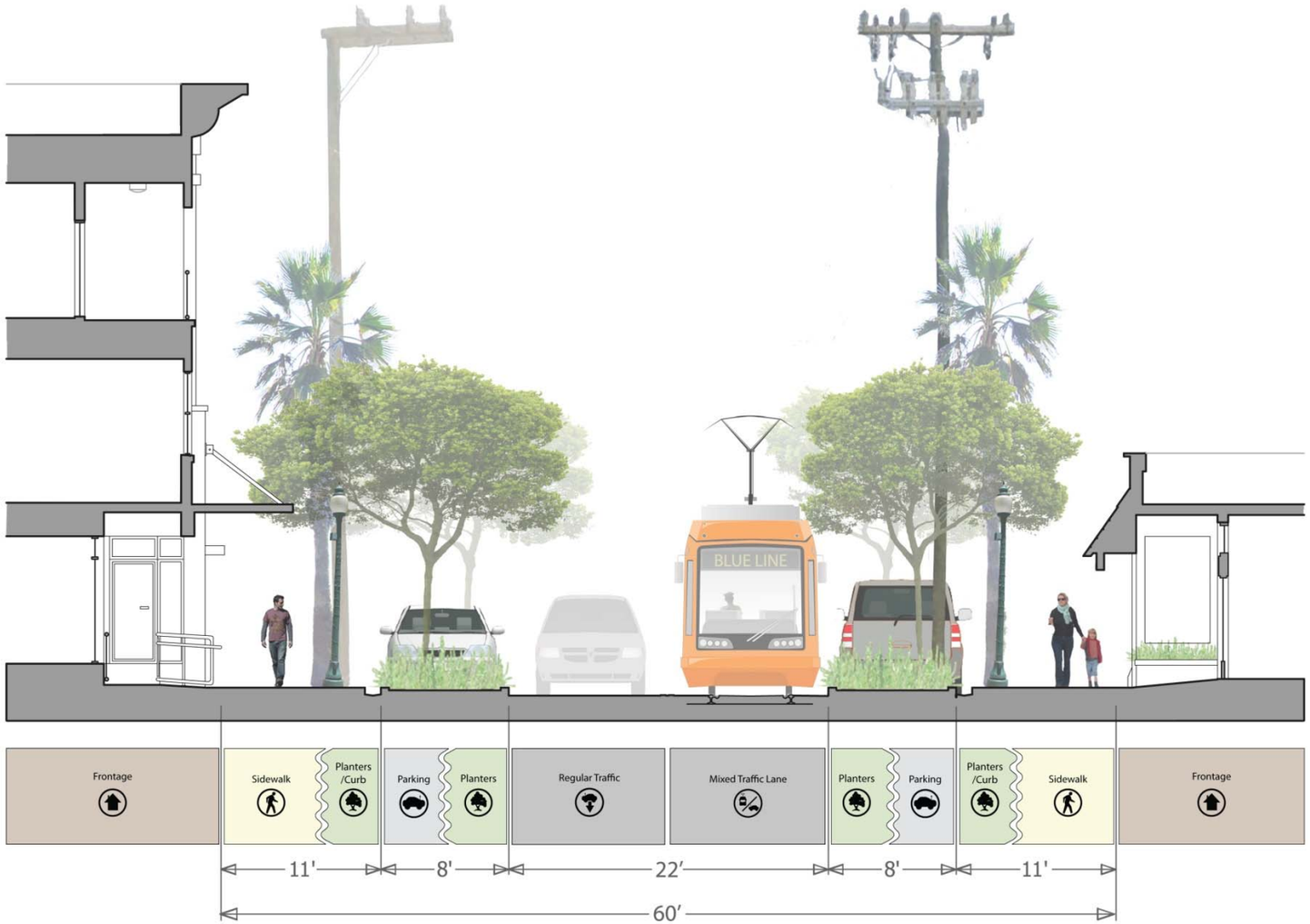
Central Avenue - Existing Condition

Figure 4-3

Central Avenue - Proposed Condition

Figure 4-4



US 41 (Tamiami Trail) Cross-Section

The US 41 cross-section is a proposed section exclusive to the Circulator C (Red) conceptual alignment. This alternative is proposed to cross US 41 at Boulevard of the Arts on its way to terminate near the GWIZ Science Center, slightly before the terminus of Circulator B (Blue). The alignment then runs east to near the US 41 intersection and then south down the western edge of US 41. The design of this alignment will allow for a dedicated lane circulator to serve the major hotels along the west side of US 41, and The Quay Property, which would connect hotel visitors and those using the cultural arts district facilities to the downtown core.

As can be seen in the existing cross-section (shown in Figure 4-5), the US 41 right-of-way is between 70 and 75 ft., which offers little opportunity for anything other than the existing sidewalks and five traffic lanes. To accommodate a potential dedicated lane circulator, property acquisition (or the granting of an easement) would need to occur along the western edge of the roadway, which is currently part of The Quay Property ownership. The proposed section (shown in Figure 4-6) illustrates the way a dedicated lane circulator (whether streetcar or BRT) could operate if an additional 30–32 ft. was made available along the west side of US 41. This illustration uses a turf bed for the streetcar, a less expensive and more environmentally-friendly construction technique for streetcar system design. By placing the circulator in this area, easy connections could be made to all the existing and anticipated development occurring along the west side of US 41, providing a safe and very accessible connection to Downtown. This could be an opportune time to pursue such an arrangement, as The Quay Property is currently undergoing changes in ownership. It is possible that a future owner/developer could benefit greatly by the provision of an appropriate easement for the circulator, in order to optimize the property's appeal and development potential.

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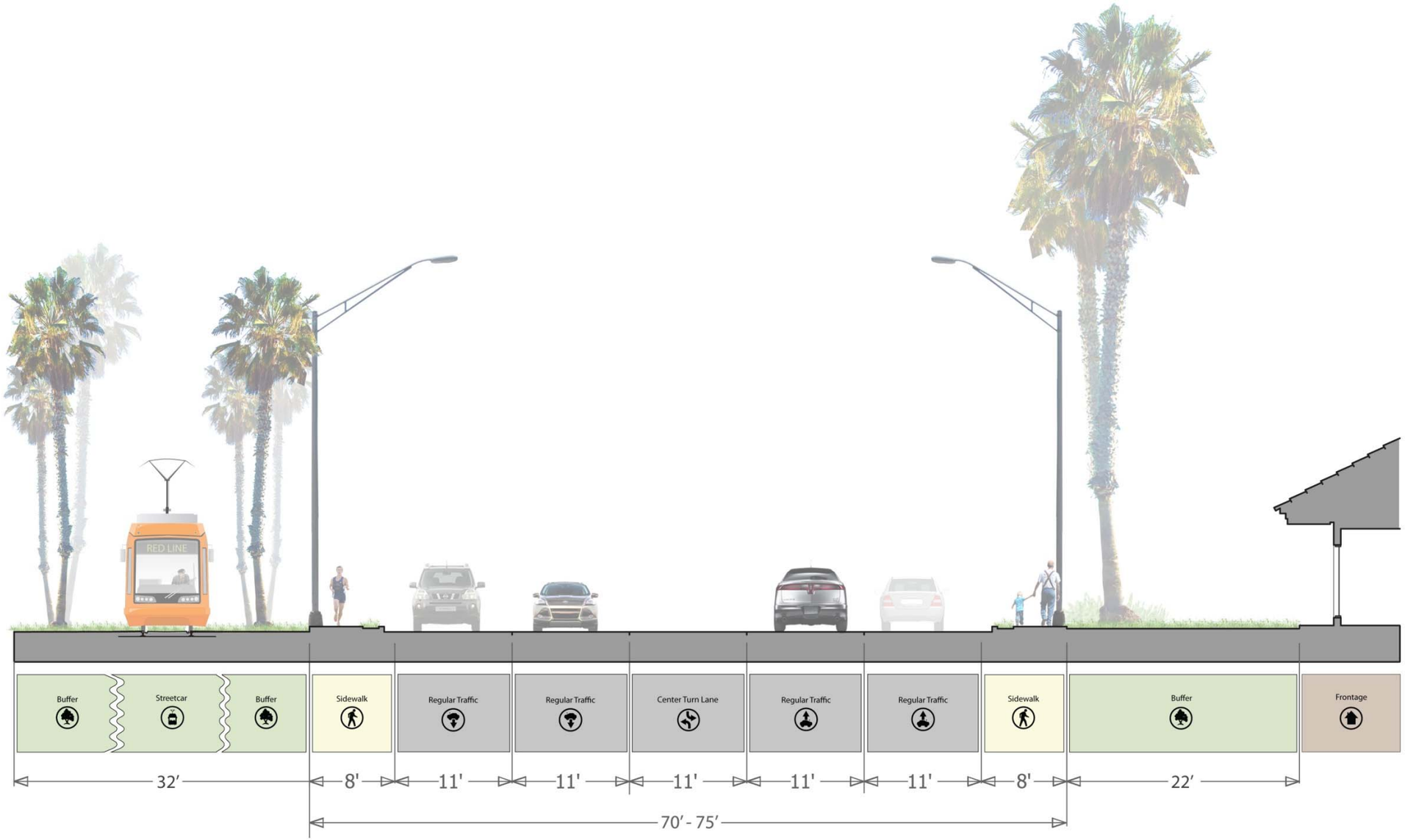
US-41 - Existing Condition

Figure 4-5

US-41 - Proposed Condition

Figure 4-6



Pineapple Park Passing Track

The fourth and final section examined was selected to illustrate a potential passing track option for a streetcar or a BRT vehicle. This example is located in Pineapple Park at the south end of Lemon Avenue just south of State Street. As is shown in Figure 4-7, the existing conditions include Pineapple Park, the fountain, and the former Lemon Avenue right-of-way located on the east side of the property. This location would be served by the Circulator C (Red) conceptual alignment. The passing track configuration would be located on the eastern edge of the park property in a dedicated double track.

In the proposed cross section (shown in Figure 4-8), the remnant Lemon Avenue right-of-way on the eastern edge of the park would be used for a streetcar stop and passing track configuration. This would allow for northbound and southbound streetcars to pass each other and continue on a single track out of the park. This passing track arrangement in the park would be another opportunity, similar to the US 41 cross section to use an environmentally-friendly turf track design, which would minimize cost and improve visual appeal by creating a grass layer that covers most of the track bed.

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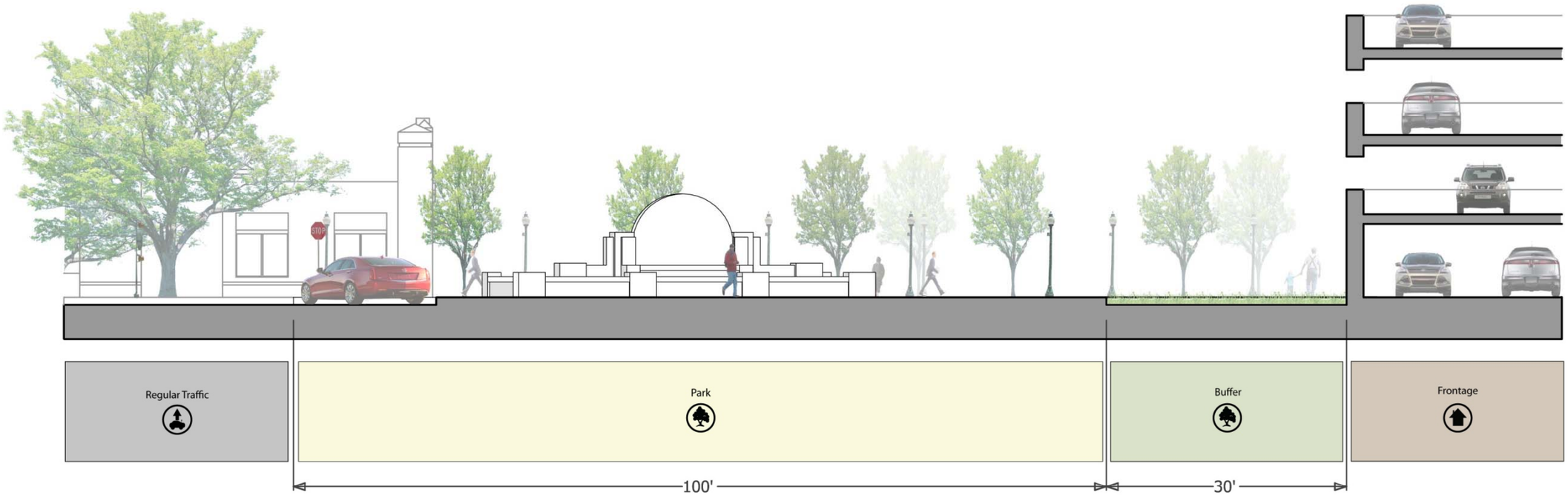
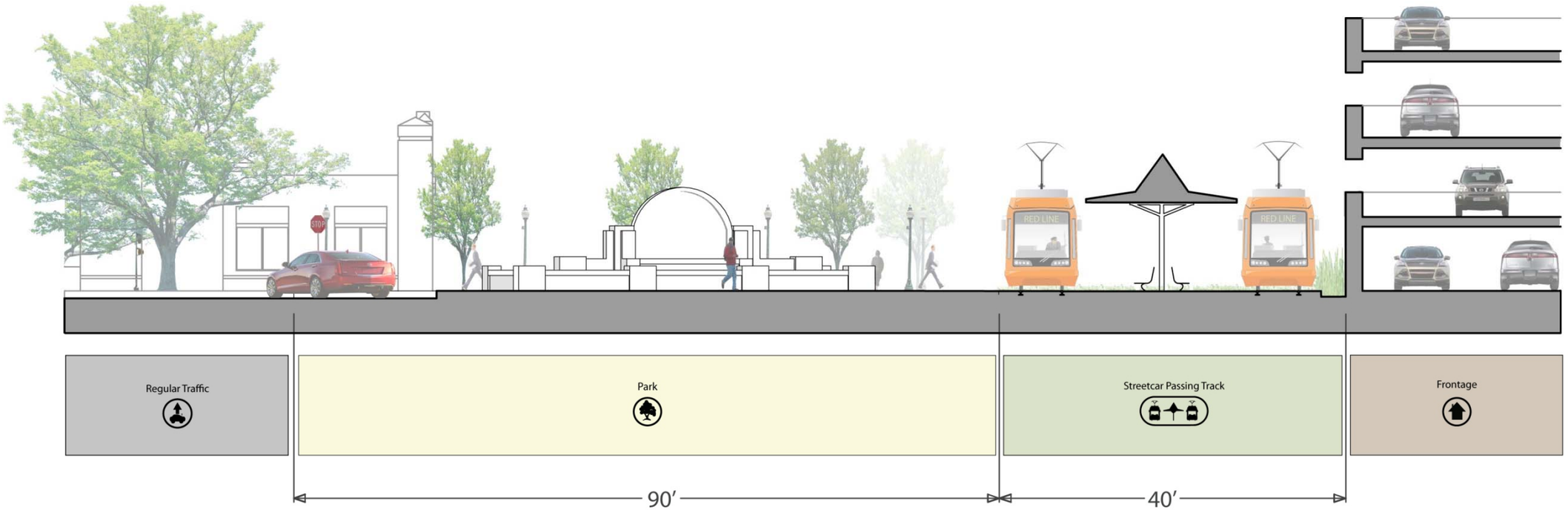
Pineapple Park - Existing Condition

Figure 4-7



Pineapple Park - Proposed Condition

Figure 4-8



4.6 TRAVEL TIME AND NUMBER OF VEHICLES

Travel Time Estimates

Estimating travel times for a potential downtown circulator is largely a function of the length of the route and the average speed of the transit mode. The length of time that it takes a circulator to complete a run is known as the run time. In addition, there is layover time that allows for driver breaks and to mitigate for delays that can occur during normal operation. Together, the run time and the layover time are what is known as cycle time or the amount of time it takes for a transit driver to complete a single round trip.

The particular transit mode does not necessarily affect the travel times. It is, in fact, the average speed, which is the overall average including required stops and layover time, which has a greater bearing on travel times. Circulators in urban environments make many stops, and regardless of the mode chosen, that would be the case in Sarasota. For the purposes of understanding the amount of time a typical route would take from end-to-end (with a return back), a cycle time calculation was completed for each of the three proposed alignments under consideration, as follows:

- Circulator A
  - Length = ±1.31 miles
  - Average speed = 12 mph
  - Estimated run time = 13.1 minutes
  - Layover time (typically 15% of run time) = 2 minutes
  - Estimated cycle time = 15.1 minutes
- Circulator B
  - Length = ±1.50 miles
  - Average speed = 12 mph
  - Estimated run time = 15 minutes
  - Layover time (typically 15% of run time) = 2.25 minutes
  - Estimated cycle time = 17.25 minutes
- Circulator C
  - Length = ±1.87 miles
  - Average speed = 12 mph
  - Estimated run time = 18.7 minutes
  - Layover time (typically 15% of run time) = 2.8 minutes
  - Estimated cycle time = 21.5 minutes

Number of Vehicles Required

Developing a general estimate of the number of vehicles required for a circulator service is a function of estimated cycle time and the proposed headways for the service. In addition to the proposed number of vehicles needed to ensure that headways are maintained, it is typically recommended that a spare vehicle also be maintained to allow for regular servicing without affecting system performance.

For each of the three potential alignments, a number of vehicles have been estimated using 15-minute headways and the cycle times calculated above.

- Circulator A
  - Length = ±1.31 miles
  - Average speed = 12 mph
  - Estimated cycle time = 15.1 minutes
  - Headways = 15 minutes
  - Estimated vehicle needs (including spare) = 2
- Circulator B
  - Length = ±1.50 miles
  - Average speed = 12 mph
  - Estimated cycle time = 18.70 minutes

- Headways = 15 minutes
- Estimated vehicle needs (including spare) = 3

- Circulator C
  - Length = ±1.87 miles
  - Average speed = 12mph
  - Estimated cycle time = 21.5 minutes
  - Headways = 15 minutes
  - Estimated vehicle needs (including spare) = 3

It is important to note that these are only basic estimates for discussion and general guidance purposes only. A specific operational analysis will need to be completed as part of any future, more in-depth studies to obtain a specific timing estimates and vehicle needs.

Section 5: System Costs and Potential Revenues

5.1: INTRODUCTION

The potential capital and operating costs for a new circulator system will vary greatly depending on the final alignment, chosen transit mode, and specific vehicle type/technology chosen. This section includes a cursory review of potential capital and operating costs based on the experience of other peer circulator systems and industry standards.

This section includes capital/operating cost estimates for two modes, the streetcar and the mixed-traffic rubber tire circulator. These two modes represent the high and low ends of the cost spectrum and serve as a good guide to potential cost range.

5.2.: CAPITAL COSTS

Streetcar Systems

Capital costs for streetcar typically are significantly higher than for bus systems but substantially lower than for light rail. The typical cost for streetcar construction is approximately $25–$50 million per track mile as an all-in project range, including vehicles and construction. For Sarasota, with an average single alignment length of about 1.8 miles, this represents a broad range of $45–$90 million. A summary of the potential capital cost range based on the potential circulator routes is shown in Table 5-1. This is inclusive of the typical $2.5–6.5 million cost for the modern streetcar vehicle, depending on the specific equipment, number of cars ordered, cost for a maintenance facility, track and catenary design, and manufacturer negotiations. There are many ways to reduce those costs as a locally preferred alternative is chosen and refined in the future. If vintage or vintage replica cars are considered a viable alternative, the cost is typically around $900,000 for an air-conditioned, double-truck vehicle (using rebuilt vintage running gear and modern control equipment) and up to $1.2 million for a replica car with wireless operational capability. Vintage cars may cost even less. Table 5-2 shows the range of streetcar vehicle cost.

Table 5-1: Streetcar Systems Capital Cost Range Estimate*

Potential Route	Capital Cost Range (in miions)	
	Low	High
Circulator A - 1.3 miles	$32.50	$65.00
Circulator B - 1.5 miles	$37.50	$75.00
Circulator C - 1.7 miles	$42.50	$85.00

* Based on an expected cost range of $25-$50 million per track mile.

Table 5-2: Streetcar Vehicle Cost Range Estimate

Car Type	Cost Range Per Vehicle		
	Average	High	Low
Vintage*	$500,000	$1,000,000	$200,000
Replica (used)*	$1,000,000	$1,500,000	$200,000
Replica (new)**	$900,000	$1,500,000	$800,000
Modern Car	$3,500,000	$4,500,000	$3,000,000

* Condition at purchase is an important consideration.

** Potential Issues: maintenance, parts, less capacity than modern cars.

Determining the detailed cost of an initial streetcar line will require additional study based on specific alignments, technology and construction issues. The choices of rolling stock can impact cost significantly, in terms of both capital cost and eventual maintenance. Track design and utility conflicts also have a great influence on capital costs. Avoiding major utility relocations is, perhaps, the highest priority in controlling costs; track costs can be minimized with careful use of track alternatives. Technology also plays an increasingly important role, and can potentially eliminate the need for catenary and the electrical substations required by overhead electric power. There will be a need for a maintenance facility, but the size, location, and cost of fitting it out will vary depending on the type of rolling stock selected.

As the case studies in Section 8 document, there is a broad range of potential capital costs depending on the design and location of the system and the will of the community. The actual costs of any streetcar system will depend on many factors, but perhaps most importantly on the specific goals, needs, and budget of the community, all of which must consider ridership, connectivity to activity centers, economic development and funding sources available. The case studies include systems at both ends of the cost range.

The streetcar system's fixed facilities (structures and buildings) should be designed for continued operation over a minimum period of 50 years before complete refurbishment and renovations are necessary because of wear and tear and obsolescence.

Major fixed system equipment; such as substation gear, shop machinery, and streetcar vehicles should be designed to last for a minimum of 30 years before complete replacement becomes necessary, assuming that approved maintenance policies are followed.

Track Design

The types of trackway materials generally available for use include concrete slab (shallow bed & deep bed), unit paver, and turf/grass.

The selection of trackway material will be dependent on site context and community requirements which will influence cost. Concrete slab is generally used where shared roadway conditions exist and can be used with varying depths of slab. Unit pavers are often used in special streetscape areas. Turf or grass tracks can be used adjacent to park areas and are now a heavily-favored method of construction due to aesthetics, environmental compatibility, drainage, and cost. Recent track costs for low-cost construction are running at $400 per foot for embedded track and $186 for turf track. The cost of stations also may vary widely, depending upon the rolling stock selected, to comply with federal ADA requirements.

As noted previously, assessing specific capital costs for a streetcar system will ultimately require a much more detailed analysis that identifies a specific alignment, vehicle technology, track type, utility issues, and other expenses related to the specific Sarasota context. Table 5-3 is a summary of capital cost variances that have the potential to affect the overall project budget.

Table 5-3 Streetcar Systems - Capital Cost Variances by Component

System Element	Cost Level Variances			
	Very Low	Low	Medium	High
Rolling Stock	Replica (used)	Vintage	Replica (new)	Modern
Track Design	Turf	Shallow Bed	Mixed Types	Deep Bed
Utility Issues	None	Minimal	Moderate	Major
Length of System	Equal Effect			
Cost of Maintenance Facility	None	Minimal	Moderate	Major

Rubber Tire Circulator Systems

The development of a mixed-traffic rubber tire circulator system requires much less capital investment than that of a dedicated lane streetcar or even a BRT system. This is primarily due to the relatively minimal amount of new infrastructure required to get the system operational. Generally speaking, the capital costs will include the purchase of new vehicles (which, for the proposed alignments, will be 2–3 vehicles each) and the construction of new bus stops along the route.

Vehicle Costs

Vehicle costs can vary greatly depending on the brand, model, and vehicle type that is ultimately chosen. In addition, manufacturers often negotiate prices based on the size of the order and the relationship with the client.

The vehicle type could vary significantly in size and design, from a heritage trolley replica to a full-size hybrid bus with specialized styling. For the purposes of this analysis, a range of vehicle costs was assumed to be from $300,000–$500,000 per vehicle. The other primary capital cost item for a rubber tire circulator is the construction of new stops. Since Sarasota's circulator will be in an urban environment, it is assumed that many of the stops, particularly for Circulator A, will be a bench and signage, which typically will run $15,000–$18,000 each. For those areas where a full shelter is desired, the cost will be approximately $25,000–$30,000 per stop.

Assuming that each of the alignments will have a mix of low-cost and high-cost bus shelters, the conceptual capital costs for the three circulator alignments will be as shown in Table 5-4.

Table 5-4: Rubber-Tire Circulator Capital Cost Range Estimate

Alignment	Low Cost**	High Cost**
Circulator A	$838,350	$1,347,800
Circulator B	$1,183,350	$1,922,800
Circulator C*	$1,183,350	$1,922,800

*Cost assumes use of existing roadways for providing service.**Cost includes vehicles and station costs.

5.3.: OPERATING COSTS

Streetcar Systems

Operating costs for streetcar systems also vary widely, depending on the type of equipment used and desires of the community. Staff salaries and benefits, maintenance costs, parts replacement, and related expenses must be initially budgeted and monitored for efficiency.

Operating costs will fluctuate depending on the selection of rolling stock, final hours of operation, and headways. Recent sample budgets for the TECOLine Streetcar System and the Little Rock River Rail are included in Appendix B and provide a clear illustration of a detailed operating budget with associated cost categories and cost allocations.

Table 5-5 lists several potential peer systems and a wide range of annual operating costs, including the operating cost per revenue hour, which when averaged is $156.75. This average cost is converted into an annual estimate for two scenarios later in this section.

Table 5-5: Case Study Operating Cost Comparison

City	System Length (miles)	Annual Ridership (2010)	Operating Cost (2010)	Operating Cost Per Revenue Hour (2010)
Little Rock, AR	3.4	107,088	$1,007,510	$85.04
Tacoma, WA	1.6	873,073	$3,364,000	$318.75
Tampa, FL	3.0	501,959	$1,993,427	$183.62
Kenosha, WI	1.9	53,396	$285,000	$120.46
Memphis, TN	8.3	1,154,848	$4,140,170	$75.88
Average	**3.6**	**538,073**	**$2,158,021**	**$156.75**

Rubber-Tire Circulators

Unlike the streetcar peer cities listed in Table 5-5, the operating costs for rubber-tire circulators are typically included with those for regular fixed-route bus service. Because of this, the easiest way to estimate costs is to use the operating expense per revenue hour for all fixed-route bus service. Since SCAT already operates buses in Sarasota it, their operating expenses were used for this cost estimate. According to the National Transit Database (NTD), SCAT has an average operating cost of $68.25 per revenue hours. This operating cost per hour is converted into an annual estimate for two scenarios in the next section.

Scenario Development and Operating Costs

To calculate a rough estimate of potential operating costs, the total number of revenue hours must be calculated. In order to calculate a range of potential operating costs, Scenario A and Scenario B were created to reflect the effects that hours of service can have on the overall operating costs. Table 5-6 summarizes the conceptual operating costs for both streetcar and rubber tire circulator systems.

Scenario A

This scenario assumes an operating schedule consistent with the one presented in Section 3.6 to calculate ridership. The proposed service in this scenario would run 18 hours per day, 365 days per year, equivalent to 6,570 revenue hours per year for a single vehicle. As calculated in Section 4.6, two of the three (B&C) potential circulator alignments would require two vehicles in operation to maintain the proposed headways, so for these conceptual estimates two vehicles were assumed in the estimate shown in Table 5-6, which would calculate to 13,140 total operating hours. Scenario A is a high estimate due to the very long daily schedule. A circulator service is not likely to run 18 hours a day every day of the year. Hours of operations will likely be much lower to respond to demand, decreasing overall operating costs.

Scenario B

Using the same methodology as Scenario A, a second estimate was created assuming a more limited schedule of hours as listed below:

- Monday-Friday - 7AM - 7PM

- Saturday - 12PM - 12AM
- Sunday - 12PM - 6PM

This weekly schedule would generate approximately 4,056 revenue hours per vehicle, or 8,112 for two vehicle operation annually.

Table 5-6 below summarizes the conceptual operating costs for both a streetcar system and a rubber tire circulator based on the two operational scenarios. These numbers are very preliminary and conceptual, and will fluctuate greatly based on the final routes, hours of operation, vehicles, and headways that are selected for the system.

Table 5-6: Summary of Conceptual Annual Operating Cost Estimates

Streetcar			
Scenario	**Cost Per Revenue Hour**	**Revenue Hours**	**Estimated Cost**
Scenario A	$156.75	13,140	$2,059,695
Scenario B	$156.75	8,112	$1,271,556
Rubber Tire Circulator			
Scenario	**Cost Per Revenue Hour**	**Revenue Hours**	**Estimated Cost**
Scenario A	$68.25	13,140	$896,805
Scenario B	$68.25	8,112	$553,644

5.4: POTENTIAL OPERATING REVENUES

Operating revenues are a challenge for every community and, for transit in particular, creativity in managing costs is important. As the discussions in Section 7, Organizational Business Models, and Section 8, Comparative Case Studies, illustrate, communities use a variety of revenue sources depending on availability, circumstance, and the interest of the community. The following is a summary of the funding sources the City of Sarasota should explore in more detail to create a viable Operating Revenue Plan for a minimum of 20 years, as required by the federal government if federal grants are used to procure capital equipment:

- *Farebox revenue* – on average, covers between 20–30% of an operating budget.
- *Operating revenue from the local transit agency* – particularly if the streetcar replaces a local bus service already in place.
- *Revenues from the City's General Fund* – the economic downturn over the past five years has made this a less likely source for new contribution to local transit.
- *Revenues from existing or proposed CRA districts* – Tax Increment Finance (TIF) trust funds associated with CRAs can contribute substantially to the operating budget. In Tampa, the three CRAs through which the streetcar runs collectively contribute about $450,000 (25%) to the streetcar budget per year.
- *Formation of a Special Assessment District along the streetcar alignment* – generally a voluntary assessment on private property, equal to a millage rate. It is calculated in a variety of ways, such as included assessed value, front foot, etc. In Tampa, the Special Assessment District contributes about $500,000 to the streetcar budget.
- *Establishment of an Endowment Fund* – this could be built through naming rights for the system, streetcars, and stations.

Tampa was very successful with this, raising more than $6 million, and several other cities have used this approach.

- *Advertising on streetcars and at stations* – not historically a large revenue contributor, but is a revenue source employed by nearly every streetcar system.
- *Private charters and special events* – charters are particularly attracted to vintage or replica cars. Gaining revenue from special events requires strong marketing.
- *Capital replacement and maintenance grants* (available to operators) – available to transit agencies that operate rail transit (SCAT officials will be familiar with them).
- *Grants for vehicle miles traveled* (available to operators) – also available to transit agencies that operate rail transit.
- *Federal grants* - may be available for "start-up" operating costs. Availability is dependent on current legislative circumstances.

Lessons Learned – Revenue Sources

- Most cities with urban streetcar systems use a variety of funding sources to meet the requirement of the operating budget.
- It is safe to assume that farebox revenue will cover 20–30% of operating costs, provided that start-up ridership is strong.
- Support from the business community, including property owners, institutions, companies with corporate headquarters in the City, financial institutions, developers, and leading merchants, is critical for most new streetcar systems. That support may take the form of naming rights, the establishment of an endowment fund, leadership in the formation of a special assessment district, or all of the above.
- There must be a strong partnership between the City, Sarasota County, and SCAT.
- Congressional support is important in the funding process for capital resources and often plays a key role in other financing requests.
- Editorial support from the press is helpful.
- There must be strong, sustainable community and political support for the streetcar system and a consensus about its purpose. This is a core issue, with implications throughout this study and any further analysis. Only with clearly-stated purpose and need is such consensus possible.
- The Federal Transit Administration (FTA) and FDOT require sound, 20-year business plans for operating budgets prior to providing financial support for capital construction and require those budgets and business plans to be updated regularly.

5.5: CAPITAL FUNDING SOURCES

Federal Transit Administration Funding Requirements

The recent federal transportation legislation, Moving Ahead for Progress in the 21st Century (MAP-21), enacted in July 2012, extends federal funding for transportation through Fiscal Year 2014, including funding for fixed-guideway transit. The legislation keeps in place the programs that have relevance to capital funding for fixed-guideway transit, in addition to investment to other transit alternatives.

Other federal grant funding sources are available as well, including from the U.S. Department of Transportation, the Economic Development Administration, the U.S. Department of Housing and Urban Development, the Environmental Protection Agency, and the U.S. Treasury Department.

Federal funding for an urban circulator in downtown Sarasota would be tied to other transit initiatives in Sarasota County and the Tampa Bay Region. The following summary discusses current activity in Sarasota County and potential funding for an urban circulator and includes preliminary recommendations related to the SCAT BRT and Smart Connect, which are ongoing projects and will play a major role in transit funding in Sarasota County in the future. The addition of an urban circulator to the mix will require careful consideration and coordination.

Since the recent passage of MAP-21, FTA has released only minimal guidance on the process for securing New Start and Small Start funding under this legislation. As more details become available, local decision makers will have a clearer idea of how to move a project through the funding process. This section provides an overview of what is understood and known about the New Starts program under MAP-21.

To date, FTA has defined the following as eligible projects under MAP-21's New Starts program:

- New fixed guideways or extensions to fixed guideways (projects that operate on a separate ROW exclusively for public transportation or that include a rail or a catenary system)
- Corridor-based bus rapid transit (BRT) projects operating in mixed traffic that represent a substantial investment in the corridor
- Projects that improve capacity on an existing fixed-guideway system (known as Core Capacity Improvement Projects)

The SMART Connect study's enhanced commuter express viable option (called SMART Commute) does not fall under the eligibility criteria, but the Rapid Connect (mixed-traffic BRT service) viable option could if the projects meet the definition of "substantial investment." MAP-21 indicates that "substantial investment" can be demonstrated "by features that emulate the services provided by rail fixed-guideway public transportation systems, including defined stations, traffic signal priority for public transportation vehicles, short headway bidirectional services for a substantial part of weekday and weekend days, and any other features" determined by the FTA Administrator. It is anticipated that FTA will clarify the term "substantial investment" in a future rule making.

To be eligible for funding, a project must be part of an approved transportation plan, and the applicant must have or will have the following:

- the legal, financial, and technical capacity to carry out the project, including safety and security aspects
- satisfactory continuing control over the use of the equipment or facilities
- the technical and financial capacity to maintain new and existing equipment or facilities

To enter into the Project Development phase, applicants must submit a letter to FTA. The letter should describe the project and request entry into the Project Development phase. The applicant must also initiate activities required to be carried out under the National Environmental

Policy Act (NEPA). During the Project Development phase, an applicant must develop sufficient information to enable FTA to make findings of project justification, policies, and land use patterns that promote public transportation and local financial commitment.

It is anticipated that FTA will release a Notice of Proposed Rulemaking (NPRM) followed by a rulemaking that will clarify details of this legislation. While it is impossible to predict what clarifications FTA will make, it may set out criteria regarding minimum headways, bidirectional service requirements, days of service requirements, etc. Depending upon these determinations, the proposed operating agency and local decision makers may need to consider refining certain aspects of the SMART Connect and/or SCAT BRT projects if federal funding is to be sought. To advance the project without the benefit of a full and complete understanding of MAP-21, it is recommended that the following steps be taken.

Given the various transit projects being considered by the region, including the proposed SCAT BRT, the SMART Connect viable options, and the possibility of a downtown circulator, the competition for limited local, state, and federal financial resources will be a consideration. Federal decision makers have indicated that they do not want local projects to compete against each other; projects should be prioritized through a cooperative process, and the federal funding process should be approached with that prioritization in mind. In light of these facts, it will be necessary to prioritize future transit investments within the appropriate TDP and LRTP update processes. It is recommended that regional stakeholders be identified for each potential transit corridor and that they meet to discuss strategies for prioritizing and selecting projects for the financially-constrained LRTP. MAP-21 requires that transit projects be included in the financially-constrained LRTP to advance.

This prioritization and planning should occur with public input and as part of the planning process to update the LRTP. As part of this regional prioritization, the stakeholders should review the identified transportation problems of the region and determine if one of the viable options is a potential regional solution. Because the New Starts funding process takes years, one strategy might be to begin with projects that can be implemented with only local, state, and federal formula funding (i.e., SMART Commute projects). The SMART Commute projects are also easier to implement, as they require less capital and operating funding to implement. While those projects are building ridership, the process of seeking New Starts funding can be started for other eligible projects (the Rapid Connect projects and an urban streetcar).

If the preferred alternative is not Small Starts-eligible, then the viable option might still qualify for funding with flexible highway funds such as through the Surface Transportation Program (STP). A local funding source would also need to be identified and endorsed by the project sponsors for capital project cost matching funds and to cover operating and maintenance costs. If pursuing this course of action, project sponsors and proponents may decide to pursue a dedicated funding source for transit.

If New Starts or Small Starts funding is being sought for the preferred alternative, then it will need to be added to the LRTP list of cost-feasible projects as well as to the TIP. Under MAP-21, projects could be added to the plan during the Project Development phase. As the projects are added to the LRTP, it is recommended that an Efficient Transportation

Decision Making (ETDM) Planning Screen be conducted. An ETDM Planning Screen could use the geospatial alignments and conceptual stop locations developed during feasibility analysis to conduct an official Environmental Technical Advisory Team (ETAT) review of the viable options. This type of formal assessment of impacts could help to shape transportation improvements by identifying areas to avoid and ways to minimize or mitigate impacts.

Map-21 redefined the Project Development phase during which project sponsors need to address NEPA requirements. It may be reasonable to anticipate that the NEPA class of action for a viable option could be a Categorical Exclusion. Earlier this year, FTA issued an NPRM inviting comment on a proposal to allow Categorical Exclusions for projects located within existing transportation ROW if they were not overly intrusive. However, the rulemaking has not been completed, and the requirements could change in response to NPRM comments and MAP-21 streamlining provisions. Technically, the streamlining provisions apply only to projects funded under Title 23, but this could change through rulemaking.

The preferred alternative should be refined to include additional project details during Project Development. For example, station locations would be finalized along with intersection locations that will have signal priority. Also, public involvement would continue through the Project Development phase.

While the other projects mentioned are in later stages of development, the urban circulator is at a conceptual stage and will be in position to respond to new rule changes as they are formulated and released.

A current fact sheet for Section 5309, New Starts, MAP-21 is located in Appendix C and is an abbreviated summary of MAP-21 legislation.

State funding for capital costs is also potentially available in Florida. Several FDOT grants were included in the capital funding plans for both Tampa and Fort Lauderdale and, to a very significant degree, the SunRail project in Central Florida.

Case study research has indicated that local capital funding from the private sector is possible, but only when there are very significant development opportunities available to adjacent property owners, as was the case in Seattle. It is more common to seek private sector contributions to the operating budget plan.

5.6: SUMMARY CONCLUSIONS

System capital and operating costs and revenues for a streetcar system are a moving target and a challenge for every community committed to developing and operating an urban circulator. This preliminary study identifies the major issues, all of which will require further study and refinement, if the City and the community choose to move forward with the concept.

Capital costs are controllable to a certain extent, with choices available for rolling stock, careful analysis of alignment location, and avoidance to the extent possible of costly utility relocations.

Operating budgets are also variable, with certain basic costs that are unavoidable. As noted in the review of comparable systems and the Tampa Streetcar operating budget, operating costs are generally in direct relation to service hours provided, beyond a core basic budget.

If the City chooses to undertake further analysis, detailed system planning will refine many choices and can further reduce both capital and operating costs. Additionally, the timing of further study is important, and may affect projected capital costs significantly. As of the

completion of this study, capital cost estimates for systems that have recently been planned, built, or expanded have typically been priced at the higher end of the $25-$50 million/mile range. However, with new technological advances in vehicles and construction technology, it is possible that prices could be expected to decrease somewhat over time.

The City could also consider phasing the design and construction of a system in order to reduce the initial capital expenditures that may be required. A phased approach to develop an overall master plan could help with managing capital cost expenditures, but it will still be important that the initial phase is well designed and operated as its success or failure will have a significant effect on future system expansions. The City must carefully examine the options for capital/operating funding and achieve consensus on committed revenue sources to achieve a balanced financial business plan.

Section 6: Economic Benefits of a Downtown Circulator

6.1: INTRODUCTION AND METHODOLOGY

This section of the study forecasts the market growth potential resulting from the introduction of a circulator transit system within the defined study area, generally encompassing downtown Sarasota and proximate adjacent urban areas. This section is a summary of the results of the complete methodology and analysis that is contained within Appendix D. The results of the analysis are inclusive of three components of growth in the assessed property values within the study area:

- Growth associated with general, and specific, community improvements and/or an increasingly stronger economic environment
- Growth associated with capital improvements to existing properties
- Growth associated with new residential and commercial development

The approach to the market analysis included the input of local stakeholders and potential system users to estimate potential future demand for new development and increases in property values.

The evaluation of incremental economic development within the study area is based on *two primary variables* – growth of the number of development units and growth of the value of each unit. The study team relied on historic growth rates experienced by other communities implementing streetcar systems and from local market knowledge collected during research and stakeholder input. These estimates were related to known local factors, including underlying growth rate and population change estimates. When taken together, these data enable the estimation of development potential and property value premiums for the proposed circulator alignments in Sarasota's urban center.

6.2: ECONOMIC DEVELOPMENT IMPACTS OF RUBBER-TIRE CIRCULATOR VS. STREETCAR

The review of existing studies and case study information conclude that the implementation of a streetcar system does generally influence development decisions and property values within the immediate impact area adjacent to the streetcar. Although there is some evidence that the implementation of a rubber-tire circulator can increase economic activity by better connecting the potential customers to commercial areas, there is little evidence of impacts to development activity and real estate values which are the focus of this analysis.

Appendix D of this report includes a summary of the existing research related to the real estate and economic development impacts of the implementation of streetcar/rail transit. This research augments the economic impact information summarized in the Case Study documentation in Section 8 of this report.

6.3: BASE CASE AND STREETCAR CASE SCENARIOS

The potential economic impact of the implementation of a streetcar system is a critical component in developing the Base Case and Streetcar Case scenarios for each of the three potential circulator routes.

The Base Case market growth potential is based on the expected growth trends with or without the implementation of a rubber tire circulator.

Such a system would be a desirable and beneficial public amenity, but it is not expected to stimulate economic development and/or attract private sector investment to the alignment impact areas.

However, a circulator route serviced by a streetcar system is expected to attract private sector investment and elevate the value of existing property within the alignment impact areas above and beyond the Base Case scenario. The Streetcar Case scenario reflects this expected difference in economic development potential as it relates to development activity and increases in property value.

6.4 STUDY AREA OVERVIEW

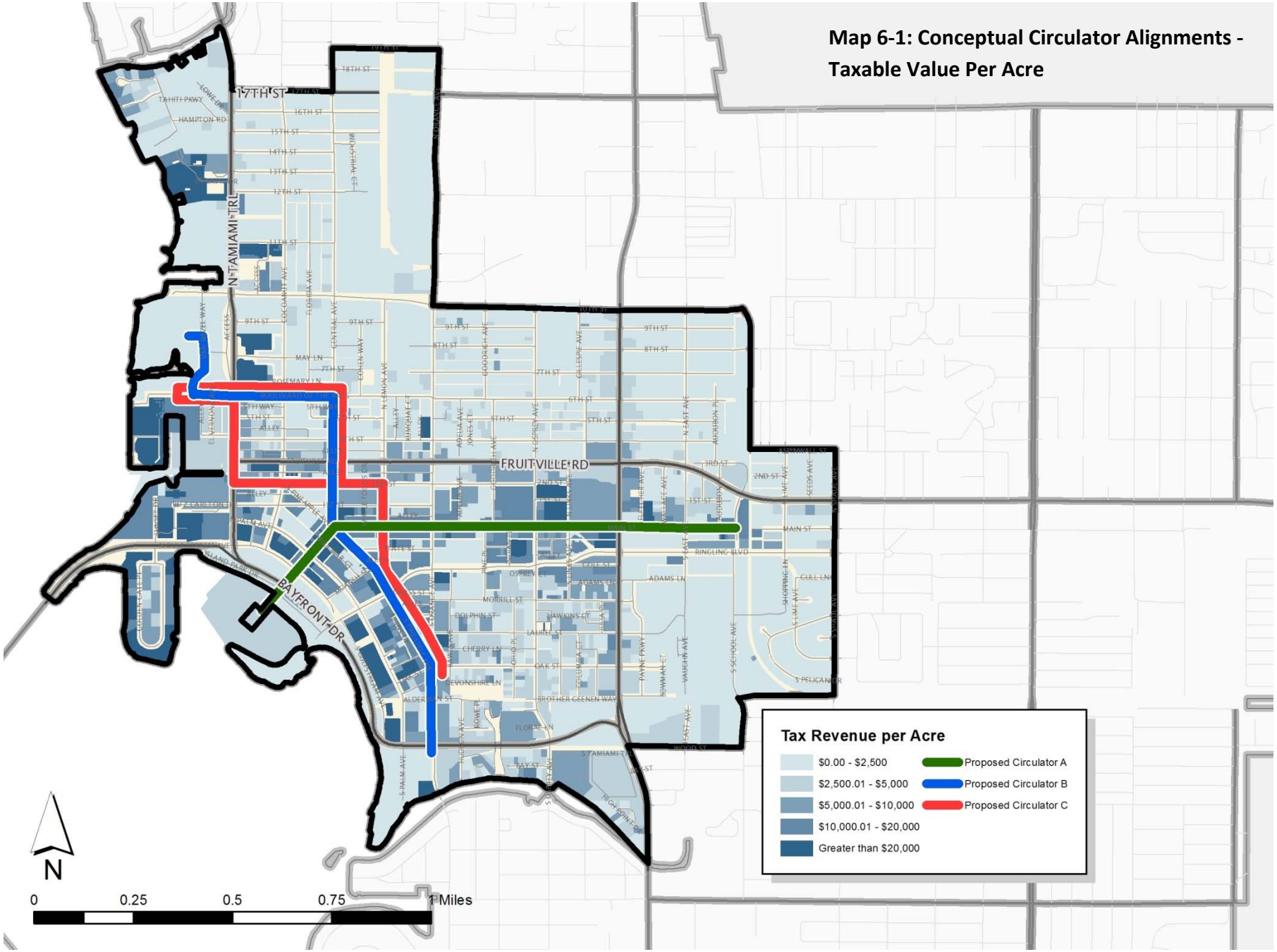
This section includes summary results of both the Base Case and Streetcar Case for each of the three potential circulator routes. The parcels included within the study area for each alignment include those within a ¼-mile radius catchment area. The general impact area is illustrated on maps for each of the three circulator routes. The ¼-mile radius was selected as direct economic and development impacts from transit systems are most prevalent within this distance. A variety of additional direct and indirect impacts could be realized citywide; However, this study does not attempt to quantify the wider areas impacts to tourist visitation, transit facilities, population growth or economic development. Population growth, development, investment, and property premium effects were focused upon and estimated for each alignment and its primary positive impact area.

The evaluation of each of the three alignments considers the following:

- Current destination value
- Demographic characteristics of the impact area
- Market potential based on existing growth predictions and growth predictions with a circulator system investment
- Potential for transit-oriented development
- Input from Sarasota stakeholders, including leading real estate professionals
- Predicted ability of transit service to positively influence development opportunities
- Adopted neighborhood and city plans
- Known developer plans
- Zoning/land use regulations
- Comprehensive Plan policies
- Market trends and conditions

It should be noted that each impact area has some overlap and/or intersection with the other impact areas due to the close proximity of the three alignments. Therefore, the population growth and development investments (assessed value growth) projected in each impact area cannot be combined with the projections of other impact areas.

Map 6-1 shows the ad varloem property tax revenue per acre for each of the three conceptual circulator alignments that were assessed within this analysis.


Map 6-1: Conceptual Circulator Alignments - Taxable Value Per Acre
17TH ST
N TAMIAMI TRL
FRUITVILLE RD
BAYFRONT DR
Tax Revenue per Acre
$0.00 - $2,500
$2,500.01 - $5,000
$5,000.01 - $10,000
$10,000.01 - $20,000
Greater than $20,000
Proposed Circulator A
Proposed Circulator B
Proposed Circulator C
N
0
0.25
0.5
0.75
1 Miles

Circulator A Alignment

The Circulator A alignment starts at School Avenue and runs west along Main Street to Pineapple Avenue, where it follows the southwest bend of Main Street and terminates at Marina Plaza and the waterfront, a total of approximately 1.3 miles. This alignment transverses Downtown, connecting the retail and government centers along and near Main Street. The activity centers within the impact area include Marina Jack Restaurant and the Marina, Waterfront Park, Selby Library, Regal Hollywood Cinema, Whole Foods, many local merchants and restaurants, and Sarasota City and Sarasota County offices.

The most prominent development type contributing to taxable value in this impact area is commercial development, which equals approximately 53.1% of the total taxable value. Multi-family residential contributes the second-highest taxable value at 40% of the total. The ¼-mile radius also encompasses single-family residential development in established neighborhoods along the corridor. The taxable value of vacant properties for all use categories is 3.9% in the Circulator A impact area.

This impact area has a total of approximately 31.2 acres of vacant land, including single-family residential (6.99 acres), multi-family residential (0.69 acres), and commercial (22.76 acres); categorized totals include only parcels of 0.2 acres or larger. The most likely residential development through the future along this corridor will be multi-family properties. In recent years, there have been several zonings approved for multi-family projects totaling 989 dwelling units. Considering the citywide population decline from 2000 to 2010 and the heated marketplace at the time, it is unlikely that all of these projects would have been built, notwithstanding the economic downturn. However, there was considerable development success during that period, and it certainly established that a market for urban residential housing existed in Sarasota.

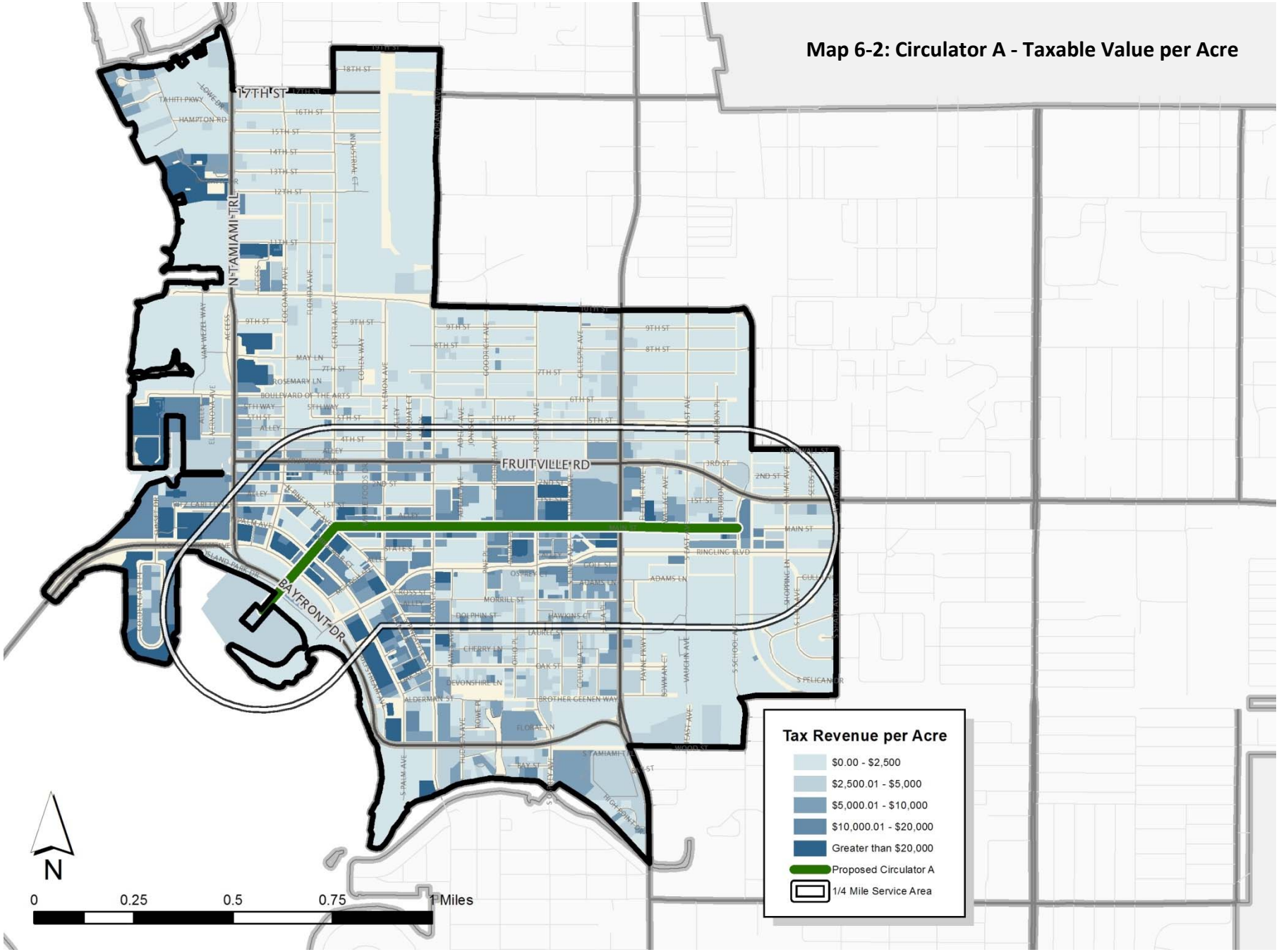
Table 6-1 provides the current profile of the Circulator A influence area land parcels, an overview of citywide land use, dwelling unit/building counts, and taxable assessed values by use category.

Map 6-2 illustrates the tax revenue per acre within the influence area surrounding the Circulator A alignment.

Table 6-1: Circulator A Influence Area Land Parcels Overview by Category

Category	Parcel Count	Land Area (acres)		Dwelling Units / Rooms			Taxable Value			Structure Area (sf)	
		Tot	Avg Parcel	Tot	Hx	% Hx	Total	% Tot	Avg / Acre	Total	% Tot
Single Family	166	23.89	0.144	166	63	38.0%	$17,644,095	1.7%	$738,653	268,093	2.5%
Single Family - Vacant	33	6.99	0.212	0	0	0.0%	$2,546,533	0.3%	$364,560	0	0.0%
Multi-Family	1,266	24.29	0.019	1,639	558	34.0%	$406,084,529	40.0%	$16,718,610	2,610,787	24.6%
Multi-Family - Vacant	9	0.69	0.077	0	0	0.0%	$458,886	0.0%	$664,663	0	0.0%
Industrial	8	4.37	0.546	0	0	0.0%	$3,260,800	0.3%	$746,933	91,439	0.9%
Industrial - Vacant	3	0.76	0.253	0	0	0.0%	$258,200	0.0%	$339,589	8,784	0.1%
Commercial	645	321.92	0.499	327	9	2.8%	$538,645,707	53.1%	$1,673,211	7,484,401	70.5%
Commercial - Vacant	60	22.76	0.379	31	0	0.0%	$36,075,482	3.6%	$1,585,062	0	0.0%
Other	38	81.08	2.134	0	0	0.0%	$9,306,510	0.9%	$114,775	147,368	1.4%
Other - Vacant	0	0.00	0.000	0	0	0.0%	$0	0.0%	$0	0	0.0%
Total	2,228	486.75	0.218	2,163	630	29.1%	$1,014,280,742	100.0%	$2,083,801	10,610,872	100.0%

Source: Sarasota County Property Appraiser. Categories and unit counts developed by grouping DOR Codes. "Other" includes government uses.


Map 6-2: Circulator A - Taxable Value per Acre
17TH ST
N TAMIAMI TRL
FRUITVILLE RD
BAYFRONT DR
Tax Revenue per Acre
$0.00 - $2,500
$2,500.01 - $5,000
$5,000.01 - $10,000
$10,000.01 - $20,000
Greater than $20,000
Proposed Circulator A
1/4 Mile Service Area
N
0
0.25
0.5
0.75
1 Miles

Circulator B Alignment

The Circulator B alignment starts at Van Wezel Way and the Performing Arts Center, runs south to Boulevard of the Arts, south on Central Avenue to Pineapple Avenue, continues south on Pineapple Avenue to Orange Avenue, and continues south to 150 feet south of Mound Street, terminating at Selby Gardens, a total of approximately 1.5 miles. This alignment runs south through downtown, crossing Main Street, and connects significant residential areas at each end. The activity centers within the impact area include Van Wezel Performing Arts Center, Selby Library, Burns Court Cinema, Hyatt Regency Hotel, Whole Foods, , and Selby Botanical Gardens.

The most prominent development contributing to taxable value in this impact area is multi-family residential which represents 62.7% of the total taxable value. Commercial development is also a significant component with 29.4% of the taxable value within the impact area. The ¼-mile radius also encompasses minor single-family residential development in established neighborhoods along the corridor. The taxable value of vacant properties for all use categories is 3.4% in the impact area.

This impact area has a total of approximately 46.9 acres of vacant land, including single-family residential (15.6 acres), multi-family residential (2.16 acres), and commercial (26.89 acres); categorized totals include only parcels of 0.2 acres or larger. The most likely residential development through the future in this area will be multi-family properties. Therefore, a re-evaluation of the land use regulations, particularly with a fixed guideway transit investment, is recommended in areas that may be able to accommodate greater intensity. In recent years, there have been several zonings approved for multi-family projects, totaling 1,799 dwelling units. While it is unlikely that all of these units will be built, it is an indicator of interest in the area for future residential development.

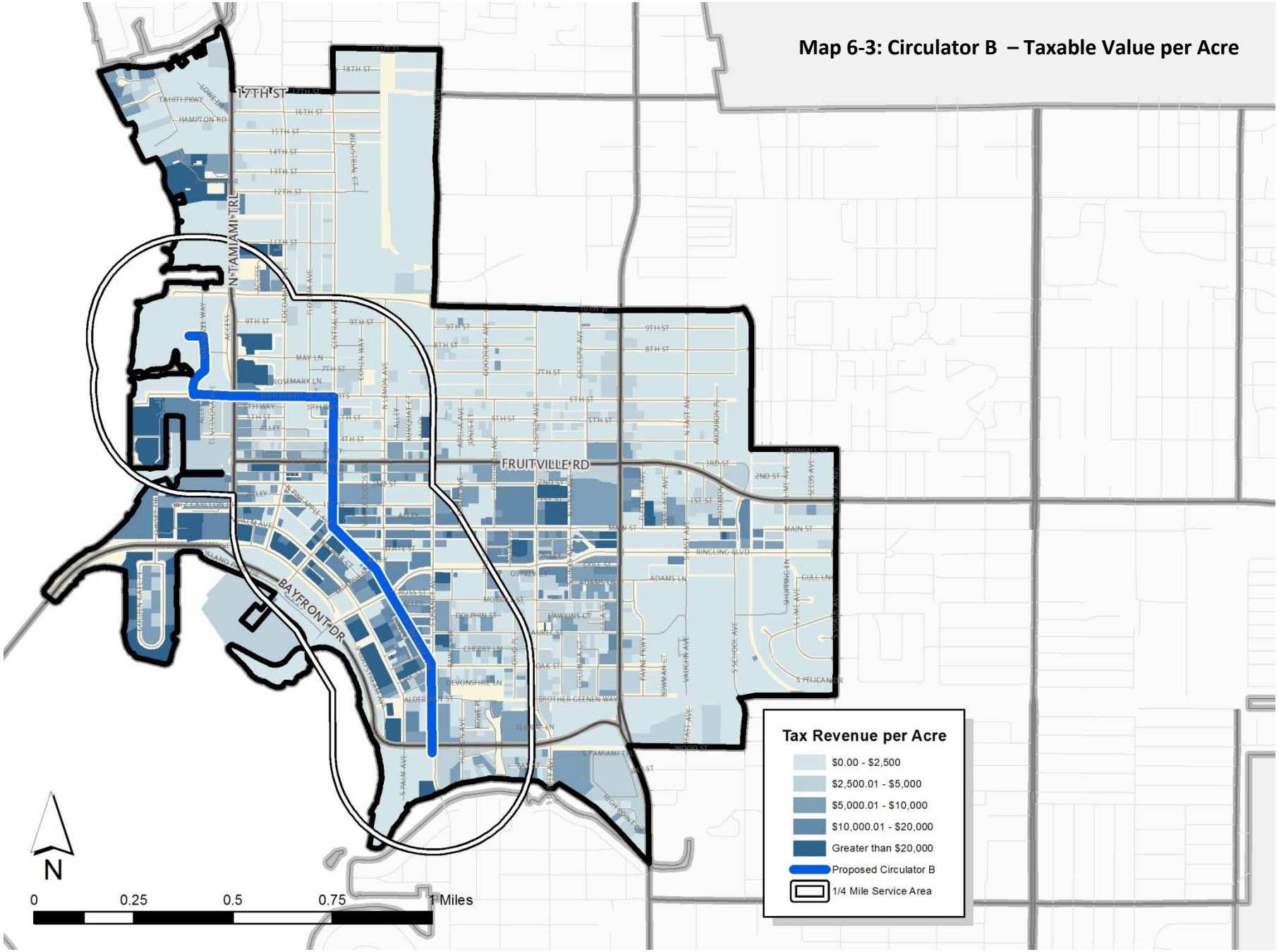
Table 6-2 provides the current profile of the Circulator B alignment impact area land parcels, an overview of citywide land use, dwelling unit/building counts, and taxable assessed values by use category.

Map 6-3 illustrates the tax revenue per acre within the influence area surrounding the Circulator B alignment.

Table 6-2: Circulator B Influence Area Land Parcels Overview by Category

Category	Parcel Count	Land Area (acres)		Dwelling Units / Rooms			Taxable Value			Structure Area (sf)	
		Tot	Avg Parcel	Tot	Hx	% Hx	Total	% Tot	Avg / Acre	Total	% Tot
Single Family	184	35.89	0.195	184	113	61.4%	$47,450,127	3.7%	$1,322,093	443,762	3.6%
Single Family - Vacant	78	15.60	0.200	0	0	0.0%	$7,724,484	0.6%	$495,186	0	0.0%
Multi-Family	2,531	31.89	0.013	3,544	1,073	30.3%	$804,677,448	62.7%	$25,231,789	5,232,280	42.0%
Multi-Family - Vacant	9	2.16	0.240	0	0	0.0%	$357,077	0.0%	$165,043	0	0.0%
Industrial	9	2.11	0.235	0	0	0.0%	$1,667,700	0.1%	$788,668	37,583	0.3%
Industrial - Vacant	1	0.28	0.281	0	0	0.0%	$203,100	0.0%	$722,207	0	0.0%
Commercial	467	274.09	0.587	827	7	0.8%	$376,388,890	29.3%	$1,373,207	6,411,436	51.5%
Commercial - Vacant	48	26.89	0.560	38	0	0.0%	$34,931,661	2.7%	$1,299,027	76,283	0.6%
Other	30	83.00	2.767	0	0	0.0%	$9,020,000	0.7%	$108,674	251,048	2.0%
Other - Vacant	6	1.94	0.000	0	0	0.0%	$0	0.0%	$0	0	0.0%
Total	3,363	473.87	0.141	4,593	1,193	26.0%	$1,282,420,487	100.0%	$2,706,271	12,452,392	100.0%

Source: Sarasota County Property Appraiser. Categories and unit counts developed by grouping DOR Codes. "Other" includes government uses.


Map 6-3: Circulator B – Taxable Value per Acre
17TH ST
N TAMIAMI TRL
FRUITVILLE RD
BAYFRONT DR
Tax Revenue per Acre
$0.00 - $2,500
$2,500.01 - $5,000
$5,000.01 - $10,000
$10,000.01 - $20,000
Greater than $20,000
Proposed Circulator B
1/4 Mile Service Area
N
0
0.25
0.5
0.75
1 Miles

Circulator C Alignment

The Circulator C alignment starts at the Hyatt Hotel and runs west to Boulevard of the Arts and Tamiami Trail, where it forms a loop around Tamiami Trail, Boulevard of the Arts, Central Avenue, and 2nd Street and continues west to Lemon Avenue, south on Lemon Avenue to Pineapple Avenue, and south on Pineapple Avenue to Orange Avenue, where it terminates at the apex, a total of approximately 1.7 miles. This alignment runs south through Downtown and connects significant residential areas at each end. There are numerous activity centers within the impact area, including Van Wezel Performing Arts Center, Selby Library, Burns Court Cinema, Hyatt Regency Hotel, Ritz-Carlton Hotel and Conference Center, Whole Foods, , and Selby Botanical Gardens.

The most prominent development type contributing to taxable value in this impact area is multi-family residential (66.8%). Commercial and Service development are also significant components and, when combined, represent a significant segment of taxable value (27.3%). The ¼-mile radius also encompasses minor single-family residential development in established neighborhoods along the corridor. The taxable value of vacant properties for all use categories is 4.2% in the impact area.

This impact area has a total of approximately 49.5 acres of vacant land, including single-family residential (7.6 acres), multi-family residential (1.6 acres), and commercial (27.3 acres); categorized totals include only parcels of 0.2 acres or larger. The most likely residential development through the future in this area will be multi-family properties. Therefore, a re-evaluation of the land use regulations, particularly with a fixed guideway transit investment, is recommended in areas that may be able to accommodate greater intensity. In recent years, there have been several zonings approved for multi-family projects, totaling 1,943 dwelling units.

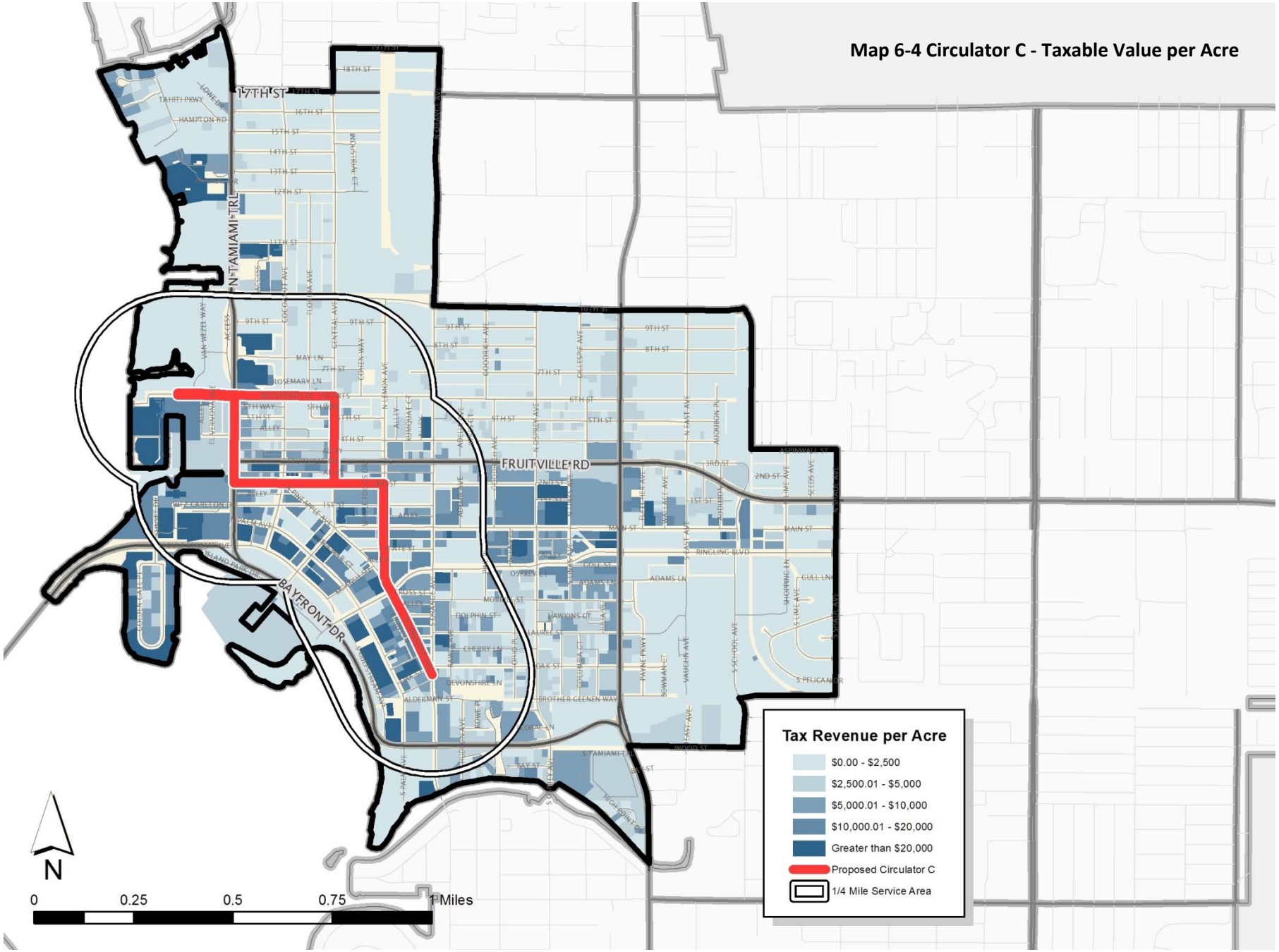
Table 6-3 provides the current profile of the Circulator C alignment impact area land parcels, an overview of citywide land use dwelling unit/building counts, and taxable assessed values by use category.

Map 6-4 illustrates the tax revenue per acre within the influence area surrounding the Circulator C alignment.

Table 6-3: Circulator C Influence Area Land Parcels Overview by Category

Category	Parcel Count	Land Area (acres)		Dwelling Units / Rooms			Taxable Value			Structure Area (sf)	
		Tot	Avg Parcel	Tot	Hx	% Hx	Total	% Tot	Avg / Acre	Total	% Tot
Single Family	136	18.80	0.138	136	72	52.9%	$23,138,969	1.7%	$1,231,107	255,661	2.0%
Single Family - Vacant	75	14.70	0.196	0	0	0.0%	$5,878,084	0.4%	$399,958	0	0.0%
Multi-Family	2,628	32.64	0.012	3,627	1,174	32.4%	$911,531,683	66.3%	$27,924,951	5,644,499	44.4%
Multi-Family - Vacant	9	2.16	0.240	0	0	0.0%	$357,077	0.0%	$165,043	0	0.0%
Industrial	9	2.11	0.235	0	0	0.0%	$1,667,700	0.1%	$788,668	37,583	0.3%
Industrial - Vacant	0	0.00	0.000	0	0	0.0%	$0	0.0%	$0	0	0.0%
Commercial	469	276.10	0.589	816	7	0.9%	$371,778,390	27.1%	$1,346,538	6,428,604	50.6%
Commercial - Vacant	55	30.67	0.558	39	0	0.0%	$51,029,261	3.7%	$1,663,889	81,941	0.6%
Other	29	73.18	2.523	0	0	0.0%	$9,020,000	0.7%	$123,257	250,320	2.0%
Other - Vacant	6	1.94	0.000	0	0	0.0%	$0	0.0%	$0	0	0.0%
Total	3,416	452.30	0.132	4,618	1,253	27.1%	$1,374,401,164	100.0%	$3,038,661	12,698,608	100.0%

Source: Sarasota County Property Appraiser. Categories and unit counts developed by grouping DOR Codes. "Other" includes government uses.


Map 6-4 Circulator C - Taxable Value per Acre
17TH ST
N TAMIAMI TRL
FRUITVILLE RD
BAYFRONT DR
Tax Revenue per Acre
$0.00 - $2,500
$2,500.01 - $5,000
$5,000.01 - $10,000
$10,000.01 - $20,000
Greater than $20,000
Proposed Circulator C
1/4 Mile Service Area
N
0
0.25
0.5
0.75
1 Miles

SECTION 6.5: STUDY AREA RESULTS

This section contains a summary of the change in revenues expected for each of the three potential circulator routes for both the Base Case and Streetcar Case scenarios. The general conditions of the analyses are summarized below. Detailed calculation methodology and assumptions can be found in Appendix D.

General Conditions of Analyses:

- The assessed value of all improvements and new development are escalated by the appropriate rates specific to each impact area, starting from the year after its completion.
- Ad valorem taxes were calculated using the *incremental* assessed value of each analysis. The base year for calculating the increment was the 2010 taxable value. Sarasota's 2011/12 millage (2.9249) was used for the entire 20-year analysis period. This rate may change from year to year, potentially due to the impact of the 2007 "Rolled-Back Rate" legislation. However, those changes are applied citywide and are not specific to the impact areas of the proposed alignments. As all three proposed alignments fall entirely within the Downtown CRA, all ad valorem revenues reflected in the analyses will be captured by the TIF until it expires(currently scheduled for 2016).
- Revenue generated by a potential Transit Special Services District (SSD) was calculated for illustrative purposes. The base for the SSD is the entire taxable assessed value. The millage chosen for this illustration was 0.3333, which is the same as what is used in Tampa to support its streetcar. SSD revenue is not captured by the TIF. SSDs are established by the local jurisdiction (City Commission) and must be periodically renewed. This will require continued political will to tax affected properties to support astreetcar system.
- The estimated new development growth impacts associated with streetcar in these analyses are conservative in terms of the impacts realized in most cities with operating streetcar systems. The most relevant factors contributing to this conservatism is the current population in the Sarasota as well as the population growth trends of the city and county.

Section 6.5.1 Circulator A Alignment Summary

A comparison of the Base Case and Streetcar Case *incremental* revenues for the Circulator A Alignment are summarized in Table 6-4. The increment base is established by 2010 taxable assessed value. It should be noted that a new development takes three to four years from the issuance of a building permit to be included on the tax rolls. As to be expected, with multiple projects/improvements occurring over time, it takes 8–10 years for the gap between the Base Case incremental revenue and the Transit Case incremental revenue to have material impact on City revenues. SSD (Special Services District) revenue is based on the total taxable assessed value.

Table 6-4 provides a summary of each source of revenue in the Circulator A by cumulative totals for five-year periods. Establishing a Transit SSD is considered to be more likely to support a streetcar system, but one could also potentially be established to support a rubber-tired circulator. Because it is based on total taxable assessed value, the SSD incremental revenue keeps pace with the Base Case Incremental revenue for almost the first five years.

Table 6-4: Revenue Summary – Cumulative Values for Five-Year Periods - Circulator A

Cumulative Revenue Summary					
Green Alignment (A)	**Yrs 1 - 5**	**Yrs 6 - 10**	**Yrs 11 - 15**	**Yrs 16 - 20**	**Total**
Base Case					
Incremental Revenue	$2,293,321	$6,632,495	$12,076,719	$19,012,294	$40,014,828
Transit Case					
SSD Revenue	$2,161,325	$3,085,440	$4,351,165	$6,136,925	$15,734,855
Incremental Revenue	$4,133,528	$12,243,173	$23,350,634	$39,021,709	$78,749,043

Table 6-5 provides a summary of residential and commercial development in the Circulator A Alignment by cumulative totals for five-year periods resulting from both the Base Case and the Streetcar Case analyses. Residential unit counts and building areas (sf) existing 2010 are provided as a reference point.

Table 6-5: New Development Summary – Cumulative Values for Five-Year Periods - Circulator A

Cumulative New Development Summary									
Green Alignment	**Yrs 1 - 5**	**Yrs 6 - 10**	**Yrs 11 - 15**	**Yrs 16 - 20**	**Total**	**Existing In Area 2010**		**Existing In City 2010**	
						Units / SF	**% Growth**	**Units / SF**	**% Growth**
Base Case									
Residential (DU)	55	55	57	59	226	1,805	12.5%	28,583	0.8%
Commercial/Service (SF)	273,252	287,190	301,840	905,030	1,767,312	10,334,810	17.1%	29,118,056	6.1%
Transit Case									
Residential (DU)	258	266	273	278	1,075	1,805	59.6%	28,583	3.8%
Commercial/Service (SF)	413,997	445,992	480,460	517,592	1,858,040	10,334,810	18.0%	29,118,056	6.4%

Section 6.5.2: Circulator B Alignment Summary

A comparison of the Base Case and Streetcar Case *incremental* revenues for the Circulator B Alignment is reflected in Table 6-6. The increment base is established by 2010 taxable assessed value. It should be noted that a new development takes three to four years from the issuance of a building permit to be included on the tax role. As to be expected, with multiple projects/improvements occurring over time it takes 8–10 years for the gap between the Base Case incremental revenue and the Streetcar Case incremental revenue to have material impact on City revenues. SSD revenue is based on the total taxable assessed value.

Table 6-6 provides a summary of each source of revenue in the Circulator B alignment by cumulative totals for five-year periods. As in the Circulator A alignment, the SSD revenue in the Circulator B alignment keeps pace with the Base Case incremental revenue for almost the first five years.

Table 6-6: Revenue Summary – Cumulative Values for Five-Year Periods - Circulator B

Cumulative Revenue Summary					
Blue Alignment	**Yrs 1 - 5**	**Yrs 6 - 10**	**Yrs 11 - 15**	**Yrs 16 - 20**	**Total**
Base Case					
Incremental Revenue	$2,762,450	$7,845,542	$14,127,824	$22,037,606	$46,773,422
Transit Case					
SSD Revenue	$2,657,574	$3,677,157	$5,051,974	$6,970,544	$18,357,249
Incremental Revenue	$4,566,985	$13,514,419	$25,579,233	$42,415,793	$86,076,431

Table 6-7 provides a summary of residential and commercial development in the Circulator B Alignment by cumulative totals for five-years periods resulting from both the Base Case and the Streetcar Case analyses. Residential unit counts and building areas (sf) existing 2010 are provided as a reference point.

Table 6-7: New Development Summary – Cumulative Values for Five-Year Periods - Circulator B

Cumulative New Development Summary									
Blue Alignment	**Yrs 1 - 5**	**Yrs 6 - 10**	**Yrs 11 - 15**	**Yrs 16 - 20**	**Total**	**Existing In Area 2010**		**Existing In City 2010**	
						Units / SF	**% Growth**	**Units / SF**	**% Growth**
Base Case									
Residential (DU)	105	105	109	110	429	3,728	11.5%	28,583	1.5%
Commercial/Service (SF)	179,408	188,560	198,179	208,288	774,435	6,411,436	12.1%	29,118,056	2.7%
Transit Case									
Residential (DU)	301	306	311	321	1,239	3,728	33.2%	28,583	4.3%
Commercial/Service (SF)	413,887	462,592	517,029	577,871	1,971,378	6,411,436	30.7%	29,118,056	6.8%

Section 6.5.3: Circulator C Alignment Summary

A comparison of the Base Case and Streetcar Case *incremental* revenues for the Circulator C alignment is reflected in Table 6-8. The increment base is established by 2010 Taxable assessed value. It should be noted that a new development takes three to four years from the issuance of a building permit to be included on the tax role. As to be expected, with multiple projects/improvements occurring over time it takes 8–10 years for the gap between the Base Case incremental revenue and the Streetcar Case incremental revenue to have material impact on City revenues. SSD revenue is based on the total taxable assessed

Table 6-8 provides a summary of each source of revenue in the Circulator C Alignment by cumulative totals for five-year periods. As in the Circulator A & Circulator B Alignments, the SSD revenue in the Circulator C alignment keeps pace with the Base Case incremental revenue for almost the first five years.

Table 6-8: Revenue Summary – Cumulative Values for Five-Year Periods - Circulator C

Cumulative Revenue Summary					
Red Alignment	**Yrs 1 - 5**	**Yrs 6 - 10**	**Yrs 11 - 15**	**Yrs 16 - 20**	**Total**
Base Case					
Incremental Revenue	$3,054,616	$8,623,461	$15,506,098	$24,215,288	$51,399,462
Transit Case					
SSD Revenue	$2,886,941	$4,033,163	$5,583,791	$7,755,443	$20,259,338
Incremental Revenue	$5,234,644	$15,293,404	$28,901,062	$47,958,565	$97,387,675

Table 6-9 provides a summary of residential and commercial development in the Circulator C Alignment by cumulative totals for five-year periods resulting from both the Base Case and the Transit Case analyses. Residential unit counts and building areas (sf) existing 2010 are provided as a reference point.

Table 6-9: New Development Summary – Cumulative Values for Five-Year Periods - Circulator C

Cumulative New Development Summary									
Red Alignment	**Yrs 1 - 5**	**Yrs 6 - 10**	**Yrs 11 - 15**	**Yrs 16 - 20**	**Total**	**Existing In Area 2010**		**Existing In City 2010**	
						Units / SF	**% Growth**	**Units / SF**	**% Growth**
Base Case									
Residential (DU)	114	115	118	120	467	3,763	12.4%	28,583	1.6%
Commercial/Service (SF)	177,121	186,156	195,652	205,632	764,561	6,428,604	11.9%	29,118,056	2.6%
Transit Case									
Residential (DU)	328	332	343	348	1,351	3,763	35.9%	28,583	4.7%
Commercial/Service (SF)	408,610	456,694	510,437	570,504	1,946,244	6,428,604	30.3%	29,118,056	6.7%

Section 6.5.4: Cross-Comparison of the Alignments

Table 6-10 compares the cumulative revenue summaries of the three alignments. Side by side, it is more evident that the Circulator C alignment has a better potential for economic growth than the other two alignments. However, the gap between the Circulator C and Circulator B alignments is marginal. This is not surprising considering the high level of overlap between the two alignments that connect very similar existing residential densities, commercial densities, and activity centers, as is evident in Table 6-10. The market characteristics and values of the Circulator A alignment are quite different from the Circulator B and Circulator C alignments. The somewhat minor deviations between the alignments generated differences in the market characteristics and values of their respective impact areas, resulting in the marginal gap over the 20-year analysis period. It should be noted that the gap widens over time, even in this 20-year analysis period, and the impacts of a streetcar system do not end in 20 years. Another characteristic of the Circulator C alignment impact area versus the Circulator B alignment impact area is that the Circulator C alignment encompasses more vacant land to accommodate future growth.

Table 6-10: New Development Summary – Cumulative Values for Five-Year Periods - All Circulators

Cumulative Revenue Summary					
Alignment/Scenario	**Yrs 1 - 5**	**Yrs 6 - 10**	**Yrs 11 - 15**	**Yrs 16 - 20**	**Total**
Circulator A					
Base Case					
Incremental Revenue	$2,293,321	$6,632,495	$12,076,719	$19,012,294	$40,014,828
Transit Case					
SSD Revenue	$2,161,325	$3,085,440	$4,351,165	$6,136,925	$15,734,855
Incremental Revenue	$4,133,528	$12,243,173	$23,350,634	$39,021,709	$78,749,043
Circulator B					
Base Case					
Incremental Revenue	$2,762,450	$7,845,542	$14,127,824	$22,037,606	$46,773,422
Transit Case					
SSD Revenue	$2,657,574	$3,677,157	$5,051,974	$6,970,544	$18,357,249
Incremental Revenue	$4,566,985	$13,514,419	$25,579,233	$42,415,793	$86,076,431
Circulator C					
Base Case					
Incremental Revenue	$3,054,616	$8,623,461	$15,506,098	$24,215,288	$51,399,462
Transit Case					
SSD Revenue	$2,886,941	$4,033,163	$5,583,791	$7,755,443	$20,259,338
Incremental Revenue	$5,234,644	$15,293,404	$28,901,062	$47,958,565	$97,387,675

SECTION 6.6: ECONOMIC IMPACT SUMMARY RESULTS

As shown in the analysis on the previous pages, Downtown Sarasota is expected to continue to grow over the next twenty years regardless of the whether the community decides to implement a new streetcar system.

As summarized in Table 6-10 above, the economic growth potential, in terms of new development and increased property value, for each of the three alignments is much greater with the implementation of a streetcar system. However, the Circulator C alignment has the greatest ad valorem revenue potential of all three of the circulator alignments, with a 20-year cumulative total of $97.4 million for the Streetcar Casewith a total of $51.4 million for the Base Case. With the Streetcar Case, Circulator C could see approximately $46 million in net revenue over the 20 year study timeframe.

However, these potential revenues should be understood within the greater context of the long term financial requirements of maintenance and operations of a streetcar system as well as the general obligations of the City of Sarasota as a whole. It is beyond the scope of this study to undertake a detailed analysis of these costs and obligations, but at a very minimum, the following items should be considered before determining if implementing a streetcar is the right decision for the City.

- The annual cost of operating and maintaining a streetcar system will increase over the lifetime of the system as the initial equipment begins to age. Ageing equipment will require more regular maintenance, and eventually significant cost will be incurred for replacement. In addition increases in labor costs can be expected over time.
- When making a decision to invest in a significant capital improvement like streetcar, the City of Sarasota will need to fully understand the long term costs in operating a streetcar system and compare that to future needs in other obligation areas.
- The success of a streetcar system built on one of the three initial alignments may not be replicated if the system is expanded. This could be for a number of reasons including:
    - Lack of vacant land in close proximity to streetcar extensions.
    - Remaining market demand and developable land in close proximity to the existing streetcar lines.
    - The timing of construction for any extensions and the impacts of regular real estate cycles on property values.
- Although the SSD revenue shown for each of the three alignments in Table 6-10 has the potential to cover a significant portion of the operating costs of a streetcar system, it is likely that for at least the first ten years of operation, general funds will need to be used to cover these costs due to the time delay of bringing new development to the market. The City will need to keep this in mind in any financial planning for the system.
- As noted in the analysis, any increases in ad valorem revenue will be captured by the Downtown CRA as long as it remains active. The City and CRA will likely need to come to a revenue sharing agreement to ensure adequate money is available for streetcar operations.

Section 7: Organizational Business Model

7.1: INTRODUCTION

Business models for new urban circulator systems in the United States have been largely driven by the public sector and public funding, in keeping with most transportation facilities in the U.S. for the past 50 years.

With the exception of the rail trams operated by large entertainment venues, such as Universal and Disney, and the very few urban streetcar systems owned and operated by volunteers, such as those in Kennebunkport (Maine), McKinney Avenue in Dallas, and Issaquah (Washington), urban streetcar systems are considered public transit and are owned and generally operated by public entities.

Although there are exceptions, public sector leadership will remain as long as local, state, and federal funds are used to build and/or operate the system and rules of public accountability that safeguard the capital investment of public funds are in place.

Also, virtually without exception, the private sector has been an instrumental partner in the development and operation of urban circulators, much as it was with the original development of passenger and streetcar systems in the U.S. for more than a century.

There are several basic business models that address capital/ construction, ownership, and operating for the growing number of streetcar systems in the United States, including:

- Municipal
- Transit agency
- Non-profit
- Combination of all of the above

In each case, the entity (or entities) owning the system may contract out the operation of the system to a private vendor to save operating costs. It is important to note that the capital and operating funding scenarios for urban streetcar systems is in an ongoing state of creative flux, as federal funding availability changes; local city, county, and transit agency budgets rise and fall; and the interest of the private sector to participate in the funding for such systems changes, depending on the state of the economy. In many respects, the approach taken is most dependent upon the circumstances in each particular community in question. The following is a brief summary of business model types and permutations.

7.2: MUNICIPAL OPERATION

In this instance, the City takes a leadership role and owns all or part of the capital equipment and infrastructure. It may operate the system or contract its operations to the local transit agency or to a private vendor. Cities without a history of running a transit system generally do not choose the option of operating it themselves and will most often turn to the local or regional transit agency.

Tampa provided the local capital match for its system's construction and constructed the infrastructure (track and electric). It then contracted with Hillsborough Area Regional Transit (HART), the local transit agency, to purchase the rolling stock and operate the system, and inserted a not-for-profit board with appointees from both the City and HART to oversee the revenue and operating budgets and marketing and fundraising activities.

TECOLine Streetcar Route, Tampa

Portland Streetcar Map
(Source: www.apta.org)

Portland already had a regional light rail system in place, so the City provided the local match for the capital costs of its first streetcar line in 2001 and built the infrastructure. The regional transit agency, Tri-Met, operates the system for the City under contract to Portland Streetcar, Inc., a not-for-profit organization providing oversight management, operational and marketing services. It also has a not-for-profit board of engaged local business leaders and property owners who oversee the marketing, promotions, and consumer-oriented operation of the system. The City contributes to the operating budget, as does the transit agency. The success of the system, which has undergone multiple extensions, has made Portland a national model for urban streetcar systems.

The City of Seattle developed its first streetcar line in 1984 using a former freight rail line and vintage streetcars. It was shut down in 2005 due to a large public arts project in the area and the removal of the streetcar maintenance facility as well as some complications due to earthquake damage in the area. In 2007, the City opened the 1.3-mile South Lake Union Line, providing the local capital match for its first modern streetcar line and constructing the infrastructure, with property owners contributing 50% of those initial costs through a special local improvement tax district. The local transit agency, King County Metro, operates the system, and both the City and a special assessment on adjacent property owners contribute to the operating costs. There is an Advisory Board for the streetcar line, on which local property and development interests are represented.

Seattle Streetcar

Ft. Lauderdale Wave Streetcar

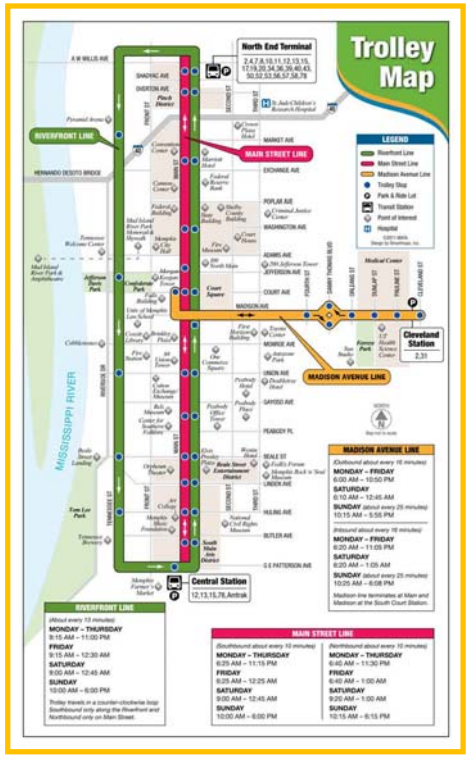
7.3: TRANSIT AGENCY

This model is also common, in which the local or regional transit agency provides the leadership, raises the required local capital in partnership with its central city, and, with the local MPO, secures capital financing from state and federal sources. The transit agency then constructs and operates the system as a functional part of a larger transit operation. Ownership of capital equipment remains with the transit agency, and operating funding comes from a variety of sources.

The City of Fort Lauderdale, in partnership with multiple local, state, and regional agencies, and the local business community, recently received a federal TIGER grant to complete the capital funding plan for a 2.7-mile urban circulator serving the downtown and urban center. Funding sources included federal, state, and local sources. The system will be constructed and operated by Broward County Transit, the local transit agency, and operating funding will come from a variety of sources, including local transit revenues and a special assessment district. The Wave is expected to begin operation in December 2015.

In 2003, the City of Tacoma, Washington, described in Section 8 of this report, worked closely with the regional transit agency to develop a 1.6-mile urban streetcar line that is connected to the regional rail system. Securing capital funding required regional partnerships, and the system is operated by the regional transit agency, Sound Transit. Operating costs are borne by the regional transit agency and the system is free to riders. A Tacoma Streetcar Stakeholders Group has been formed to consider extensions to the current system.

Tacoma Link Streetcar



Memphis Streetcar Map (Source: www.apta.org)

The City of Memphis, Tennessee, developed its first streetcar line in 1993, and subsequent extensions have created an 8-mile system, in close partnership with state and county government and MATA, the regional transit agency. That first line, and subsequent extensions, has been operated by the transit agency but by contract to a private vendor. Operating funding for the system comes from local municipal and regional transit funding.

7.4: NOT-FOR-PROFIT

The McKinney Avenue Trolley in Dallas began as a private venture, where old streetcar tracks were revived and the capital equipment was contributed by antique collectors. Operations were maintained by farebox revenue, local contributions, and volunteer conductors and mechanics. The system has evolved into a part of the City and regional rail system and now receives significant public support for both capital and operating expenses.

In general, this operating model has not been viewed as a feasible approach to developing a new streetcar system when federal and state funding is involved.

However, The Loop, the new 2.2-mile St. Louis Streetcar project, planned to begin operation in 2014, is being led by a not-for-profit organization in partnership with the City, the local transit agency, and the local MPO. While the process is still underway, and federal funding is not yet guaranteed, it is a promising concept. Planning for the system began in 1997 by interested citizens and business interests.

7.5: SUMMARY CONCLUSIONS

Business Model Lessons Learned

- Local government leadership is always critical, from either the principal city or local transit agency.
- Community interest, leadership, and involvement are always very important to the decision making process.
- Capital funding always needs local, state, and federal public funding sources.
- Operating funding, where extensive transit facilities are not present and ridership and public support are not in place to help underwrite those costs, requires creativity and private sector commitment.
- Not-for-profit boards, representing broad interests, are often necessary to support and promote ridership, oversee operating funding and future planning.
- Private-sector interest and involvement is always very important and generally is focused on economic development opportunity.
- Urban streetcar systems are proliferating to encourage urban redevelopment, economic development, quality of life transportation options, and visitor interest.
- The business model selected is dependent upon the circumstances in the community considering a streetcar.

The business model for a rubber-tire circulator is a somewhat less complicated matter; however, the City, local transit agency, and business community, particularly merchants and attraction operators, are all important partners. The process of successfully choosing equipment, circulation routes, and hours of operation are important to success, which is generally judged by both ridership and improved retail activity along the route. Operating funding for special service trolleys, addressed in more detail in the case study section of this report, is often provided by a combination of public- and private-sector contributions. The local business community will be interested in monitoring the success of the circulator, particularly if it is providing some operational funding.

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Section 8: Comparative Case Studies

8.1: INTRODUCTION

Urban life in America is making a strong resurgence. This has led to a revival of interest not only in the preservation of downtowns, historic districts, and neighborhoods, but also in a classic technology, the urban streetcar, which research shows can serve as a major catalyst for urban revival. As traditional neighborhoods in cities become the location of choice for more Americans—singles, young couples, families, and empty-nesters—there is an emerging a need to provide good and attractive transit service to these areas.

Interest in urban circulator systems, whether using vintage streetcars, replicas of vintage stock, or modern trams, is growing and continuing to receive financial support from federal, state, and local funding sources. Perhaps most interestingly for this study, the permutations for mixing, matching, and connecting modes of transportation are also becoming more creative and sophisticated.

Many communities prefer the cost/benefit of a rubber-tire circulator, and their goals and aspirations for their urban centers and downtowns are well-served by that solution. Others, perhaps more motivated by the economic and urban redevelopment benefits of a fixed-guideway solution, are willing to undertake the cost—and risk—of investing in such systems. Many cities are using a combination of both general alternatives to achieve their goals.

Increasingly, many of these same communities are engaged in the pursuit of regional solutions to mobility, including express bus, BRT, light rail, and commuter rail, and are leveraging the value of all this investment in improving mobility for citizens by connecting these systems to create more seamless mobility without the use of the personal automobile. The City of Sarasota and Sarasota County fall into that category, with their investment in the proposed BRT project and commitment to the TBARTA master plan.

To understand the recent experiences of other cities around the U.S. with urban circulator systems, a series of cursory case studies were completed to illustrate the variety and mix of funding sources, design parameters, and operating revenues that various systems have used to build and operate a circulator system. This section contains a summary of the case studies selected and includes examples of both streetcar and rubber-tire circulators.

Table 8-1 shows streetcar systems in the United States in various stages of advance planning/completion to provide a sense of the activity underway.

From this list, four streetcar systems were selected to provide brief case studies of general characteristics, based upon the fact that they have some analogous application to Sarasota; however, there are many other stories to tell that may have relevance to the City's deliberations in the future.

Following the streetcar case studies, two rubber-tire circulators are described that operate very successfully in cities similar to Sarasota.

Table 8-1: Streetcar Systems in the U.S.

Operating	
Seattle*	New Orleans*
Portland*	Kenosha*
Tacoma	Tampa*
San Francisco	Philadelphia
Dallas*	Lowell, MA*
Memphis	Boston*
Little Rock	Toronto
Under Construction	
Tucson	Cincinnati
Salt Lake City	St. Louis
Atlanta	Washington DC
Charlotte	
Planned, Committed	
San Antonio	Toronto
Ft. Lauderdale	Los Angeles
Miami	Milwaukee
Vancouver, BC	

*Expansion under way

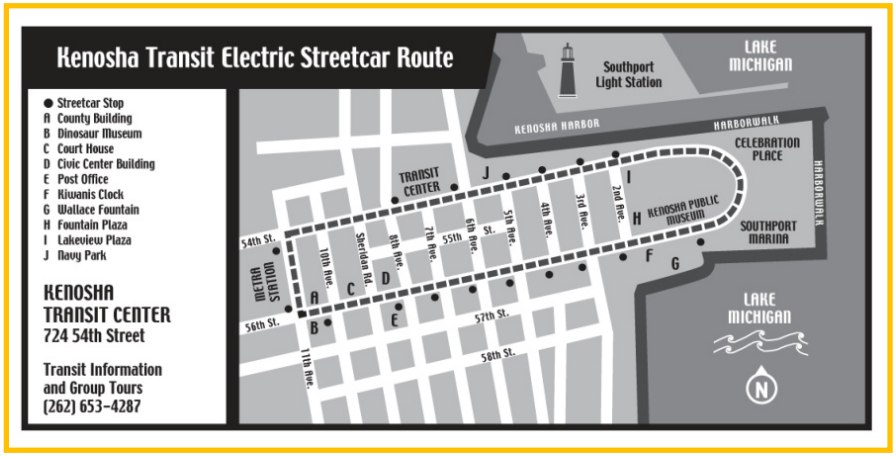
8.2: KENOSHA, WISCONSIN

Introduction to the System

Kenosha, Wisconsin (Census 2010 population 99,210), like many cities throughout the United States, had a significant streetcar system that operated from approximately 1903 to 1932. The current streetcar system, the Kenosha Transit Electric Streetcar, began service in 2000. The system is operated by the City of Kenosha and operates on a loop in Downtown Kenosha.

The system was built to connect many important current/planned attractions and reaches from the core of Downtown to the lakefront of Lake Michigan. Several of the attractions that the system helps connect include the following:

- Dinosaur Discovery Museum
- Civil War Museum
- Southport Marina
- Kenosha Public Library Administrative Offices
- Harbor Park
- McCarthy Transit Center
- Rhode Opera House
- Harbor Park Apartments



Kenosha Streetcar Route Map

(Source: Kenosha Convention and Visitors Bureau)

The system has 17 stops that are served every 15 minutes. It also connects to the regional bus system and area commuter rail. The route

runs in a single-direction loop that connects the east and west parts of the community. The operating hours for the system vary by season:

- Winter hours (January 3–February 28): Monday–Friday, closed Saturday and Sunday; 10:05 AM–5:35 PM
- Winter hours (March 1–March 31): Monday–Friday, 10:05 AM–2:05 PM; Saturday and Sunday, 10:05 AM–5:35 PM
- Summer hours (April 1–January 2): Monday–Friday, 11:05 AM–6:35 PM; Saturday and Sunday, 10:05 AM–5:35 PM

The fare structure is as follows:

- $1.00 – Adult
- 50¢ – Children 12 & under
- $2.50 – All day pass

Design Features/Rolling Stock

The Kenosha Electric Streetcar system uses a single-track design, with no passing track. The 1.9-mile track forms a single loop that connects Downtown Kenosha to Harbor Park on the shores of Lake Michigan. About one-half of the system was built using an environmentally-friendly grass turf track that runs in a large median in the center of the road.

The system operates with five rebuilt historic Toronto PCC cars, painted in the livery colors of the cities that once used the cars:

- 4606 (Chicago Surface Lines "Green Hornet")
- 4609 (Pittsburgh Railways Company)
- 4610 (Toronto Transit Commission "Red Rocket")
- 4615 (Johnstown Traction Company)
- 4616 (Cincinnati Street Railway)

Each car has a capacity of 100, with 45–55 seats.

Kenosha Streetcar with Turf Track

(www.railwaypreservation.com)

Specific Design Challenges

There were no particular design challenges for the system, other than the community's goal of doing the project very economically, which was accomplished. High ridership was never anticipated; the focus was on encouraging economic development.

Capital and Operating Costs

The initial capital costs to construct the system were $5.2 million, and the system was funded with federal funds including Congestion Management and Air Quality Funds (CMAQ) and 5309 funds. According to information from APTA's Heritage Trolley and Streetcar website, the entire project, including a new maintenance building, was completed for the astonishingly low cost of about $5 million—amounting to $3

million per mile (2000), or about $3.5 million per mile ($2.2 million/km) in 2005 dollars. The cost of in-street track was reduced by using steel ties where track is embedded in pavement. OCS costs were reduced by standardizing four typical pole designs. As of 2010, the annual operating cost for the system was $285,000 (2010), which is funded by system revenue and local government contributions.

Ridership

Ridership for the Kenosha Streetcar has averaged around 60,000 riders per year. The ridership totals for the last several years are as follows:

- 2005 – 60,386
- 2006 – 52,936
- 2007 – 62,643
- 2008 – 65,759
- 2009 – 56,149
- 2010 – 53,396

Ridership has decreased in recent years, and transit staff believe that this has been caused by changes in system operations more than a lack of interest in the system. Staff noted that the fare had been doubled in recent years (from $0.50 to $1.00), and that service hours have been reduced during the winter (the system now closes during the week), which has reduced ridership. Staff also noted that because the system is focused on the Downtown area, ridership can fluctuate depending on the number of events that occur during the year. Since the number of events fluctuates every year, ridership will vary.

Economic Impacts Realized

The Kenosha Streetcar System has seen significant public and private investment along the line since opening in 2000. The system was designed to connect existing transit assets (bus system and commuter rail) with large areas of vacant and underused properties east of Downtown, which have attracted investment. The private sector has responded with the $150 million Harbor Park apartment development (350 units), which is located in the middle of the loop. In addition, the City invested in the development of Harbor Park, a large park on the shores of Lake Michigan.

This case study was selected to show a smaller city that has mobility and urban redevelopment goals at a different scale than some of the other case study examples. The apparent success of Kenosha's system in fulfilling its mobility and urban development goals seems to suggest that workable streetcar systems can be installed with a minimalist design approach and strict cost containment—making a heritage type of streetcar an affordable option for smaller cities and towns.

Organizational Business Model

The Kenosha Streetcar System is operated by the City of Kenosha Transportation Department, which is also responsible for the operation of the City's bus system.

8.3: LITTLE ROCK, ARKANSAS

Introduction to the System

The first phase of the River Rail Streetcar system is operated by the Central Arkansas Transit Authority (CAT) in Little Rock. It began operating on November 1, 2004, and an expansion opened in 2007, which extended the line to the Clinton Presidential Library and the Heifer International Headquarters. The system serves the cities of Little Rock (Census 2010 population 193,524) and North Little Rock (Census 2010 population 62,304), which are located in Pulaski County (Census

2010 population of 382,748) in Central Arkansas. The River Rail connects the communities of Little Rock and North Little Rock via the Main Street Bridge, where a track has been constructed outside of automobile travel lanes.

The streetcar connects a number of the region's most significant points of interest, all located on or within a short distance of the streetcar line, including:

- Statehouse Convention Center
- River Market
- Verizon Arena
- Historic Argenta Neighborhood
- Dickey Stevens Ballpark
- Historic Arkansas Museum
- Museum of Discovery
- Main Branch of the Central Arkansas Library
- Robinson Auditorium Concert Hall
- State and Local Government Buildings
- Numerous hotels, including the Little Rock Peabody Hotel

There are a total of 15 stops on the 3.4-mile route, and there are 2 lines that operate, the Blue Line and the Green Line. The Blue Line crosses the Arkansas River and completes the loop in both Little Rock and North Little Rock. The Green Line is the Little Rock Loop and operates only on the Little Rock side of the river. The system runs on 25-minute headways from 8:30 AM–10 PM on Monday, Tuesday, and Wednesday; 8:30 AM–12:00 AM on Thursday, Friday, and Saturday; and 11:00 AM–5:00 PM on Sunday.

The fare structure is as follows:

- Persons age 4 & under – free
- Persons age 5–11 – $0.50 per boarding
- Persons age 12–64 – $1.00 per boarding
- Persons age 65 & above – $0.50 per boarding
- Persons with disabilities – $0.50 per boarding
- Day Pass – $2.00 (unlimited rides for one calendar day and are available on the streetcar)
- 3-Day Pass – $5.00 (unlimited rides for 3 consecutive calendar days)
- 20-Ride Card – $15.00

The system connects with the regional CAT Bus System.

Design Features/Rolling Stock

The River Rail Streetcar System primarily uses a single-track design, with two loops, one in Downtown Little Rock and the other in Downtown North Little Rock. The system also includes an extension that became operational in 2007, which connects the Downtown Little Rock loop with the Clinton Presidential Library and the Heifer International Headquarters.

River Rail Route Map
(source: www.cat.org/rail)

Like the Tampa streetcar, the system operates with five replica Birney Style streetcars that were built by the Gomaco Trolley Company in Iowa. The streetcars are numbered #408, #409, #410, #411, and #412, which continues the numbering scheme of the previous streetcar system of many years ago that ended in #407. The streetcars can carry a maximum of 88 people (44 seated).

***Specific* Design Challenges**

The specific design challenge for this project was the technical solution for the streetcar crossing the bridge to connect the cities. A special control system was used to accomplish the appropriate technical solution.

Capital & Operating Costs

The initial capital cost to construct Phase I of the system was $20.5 million. With the Phase II extension to the Clinton Presidential Library and Heifer International, the total capital cost was $28 million. The capital funding for the system was raised from a number of sources, including federal grants and earmarks, the FTA New Starts Program, State Transportation funds, and the City of Little Rock and North Little Rock. In general, Little Rock and Tampa are considered relatively expensive projects, in part because of the technical approach selected for design at the point in time the projects were planned, more than a decade ago.

Operating costs for the system have averaged between $850,000 and $1,000,000 per year. The operating costs for 2009, 2010, and 2011 are as follows:

- 2009 – $898,104
- 2010 – $1,007,510
- 2011 – $928,882

The Peabody Hotel and New Redevelopment along River Rail (Source: www.apta.org*)*

A portion of the operating costs are covered by revenues raised through merchandise sales, fare box revenue, car rental, and advertising income, which covers about 10 percent of total operating costs. The remaining costs are covered by the cities of Little Rock and North Little Rock from general funds. The system does have programs for naming rights of streetcars and stops, and a streetcar sponsorship program.

Ridership

The ridership for the system started strongly, with nearly 200,000 riders in its opening year. However, since 2008, the numbers have been slowly declining, with an overall reduction from 2005–2010 is 31 percent. The cause of the ridership drop is uncertain, but it seems to follow the economic downturn that has affected the country since 2008. Like most medium-size cities with regional and/or national attractions, ridership is

a combination of visitors, local residents and workers. Ridership for each year from 2005–2010 is as follows:

- 2005 – 154,745
- 2006 – 154,432
- 2007 – 154,644
- 2008 – 134,204
- 2009 – 119,758
- 2010 – 107,088

Ridership has fallen in recent years, though staff note that there have been increases in 2011 and 2012 (these numbers were not yet available from the NTD), which they largely attribute to an increasing number of events, and an improving economy. Like Kenosha, the River Rail is heavily dependent on tourist and other activity Downtown, the increasing number of events has boosted ridership. Staff noted that following the economic crash that activity in Downtown dropped but believed that the trend is changing.

Economic Impacts Realized

In 2011–2012, CAT compiled data on economic growth and development that has occurred within four blocks (¼–½mile) of the River Rail Streetcar Line. This analysis looked generally at the changes that have occurred within the area immediately surrounding the system from the years 2000–2010. It concluded that there had been substantial investment and development within the area including the following:

- 1,084 new residential units
- $883 million in new capital investment (new construction & rehabilitations)
- 56% increase in residential property value
- 44% increase in retail property value
- 21% population growth

River Rail descending on Main Street Bridge

(Source: www.apta.org)

In addition to these numbers, staff also noted that there currently is a new marketplace being constructed on the route as well as a hotel which will likely increase ridership. The degree to which the streetcar system influenced the growth in Little Rock is debatable as in every city; however, it was disproportionately significant compared to development outside that area of proximity during the same period.

Organizational Business Model

The River Rail Streetcar System is operated by CAT, which provides transit throughout the Central Arkansas Region. As noted previously,

most of the operating funding comes from the municipalities of Little Rock and North Little Rock. There is no special board of directors or advisory board serving the streetcar system, but it does function as a special component of CAT.

8.4: TACOMA, WASHINGTON

Introduction to the System

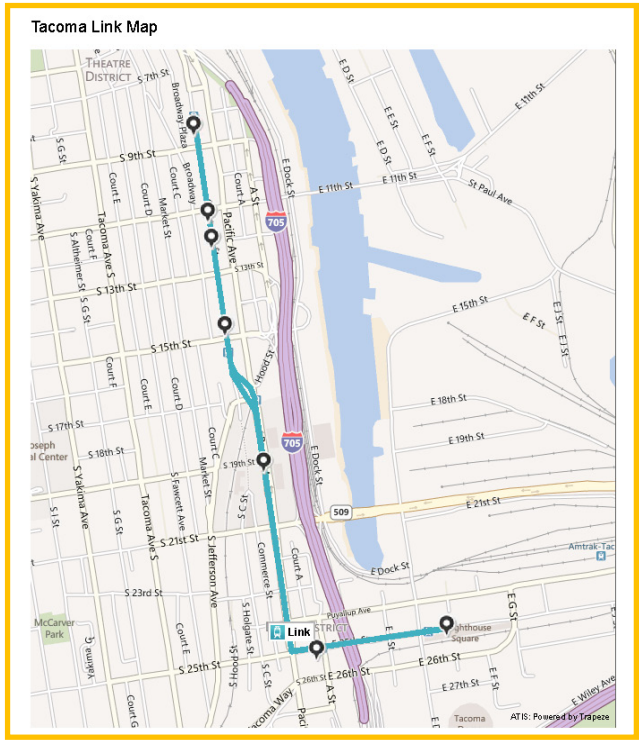
The Tacoma Link Streetcar System began operation in 2003, serving the Downtown Tacoma Area. It was designed to be an urban link connecting to the larger Sound Transit system, allowing for an easy connection from one end of Tacoma's linear Downtown to the other. The system operates with modern Skoda cars and serves the major attractions of Downtown, including the following:

- University of Washington, Tacoma
- Tacoma Convention Center
- Theatre District
- Museum of Glass
- Washington State History Museum
- Tacoma Dome Station (multimodal connections to regional systems)

The system is 1.6 miles long and contains a total of 6 stops downtown. The southernmost stop on the route is the Tacoma Dome Station, which provides connections to the Pierce Transit and Sound Transit regional systems. The operating hours for the system are as follows:

- Northbound – from Tacoma Dome Station to Theatre District
  - Monday–Friday – 5:30 AM–10:00 PM
  - Saturday – 8:00 AM–10:00 PM
  - Sunday – 10:00 AM–6:00 PM
- Southbound – from Theatre District to Tacoma Dome Station
  - Monday–Friday – 5:30 AM–10:00 PM
  - Saturday – 8:00 AM–10:00 PM
  - Sunday – 10:00 AM - 6:00 PM

Headways on the system are 12 minutes during peak times and 25 minutes during early morning/late evening. The system currently operates for free along its entire length. It connects with Pierce Transit and Sound Transit at the Tacoma Dome Station.



Tacoma Link System Map

(Source: www.soundtransit.org)

Design Features/Rolling Stock

The system is designed primarily using double track and operates primarily in mixed-traffic. Tacoma uses modern Skoda-Inekon cars, which have a capacity of 140, with 30 seats. There are currently three of these cars in the fleet. Given the significant hours of operation and length of the line, the use of only three streetcars is indicative of the durability and modern maintenance requirements of the Skoda-Inekon and similar modern urban circulators.

Specific Design Challenges

There were no specific design problems encountered. The system was designed by the same group who developed the Portland and Seattle lines, and the system was constructed by Sound Transit.

Capital & Operating Costs

The initial capital cost to construct the system was $78.2 million, funded through Sound Transit. In 1996, voters in a three-county area approved a transit referendum (Sound Moves) to fund the expansion of the Sound Transit system, which raised $3.9 billion for regional bus and rail. The construction of the Tacoma Link System was funded through this initiative. Annual operating costs were $3,364,000 for 2010, also funded through Sound Transit's operating budget.

Ridership

The Tacoma Link system has significantly higher ridership than the other case study systems reviewed. This is likely due to the fact that the area it serves is in an area of the Pacific Northwest where transit is more accepted, is located in a more urban area than the other case studies, is connected to a larger regional transit system, and does not require a fare. Ridership has continued to exceed expectations throughout its operation. Ridership for the last several years is as follows:

- 2005 – 884,895
- 2006 – 885,397
- 2007 – 919,013
- 2008 – 930,632
- 2009 – 889,320
- 2010 – 871,793
- 2011 – 972,429

Tacoma Link

(Source: www.apta.org)

Economic Impacts Realized

There has been a significant amount of public and private development along the Tacoma Link Route since its opening in 2003, with more than 2,000 new residential units permitted within the immediate influence area of the system. The system also links the Museum of Glass, the

Tacoma Convention Center, and the adjacent Hotel Murano. Reportedly, Tacoma has enjoyed a significant increase in tourist visitation since the opening of the Tacoma Link and its connection with regional rail.

Organizational Business Model

The Tacoma Link is operated and funded by Sound Transit, which is a three-county agency serving King, Pierce, and Snohomish counties.

8.5: TAMPA, FLORIDA

Introduction to the System

Tampa was once the location of a substantial streetcar system that contained more than 50 miles of at its peak, serving the entire City of Tampa. The original system ceased operation in 1946, but for many in the City, the streetcar represented an important part of the City's history. Starting in the 1980s, a group of local enthusiasts created the Tampa and Ybor City Street Railway Society and began advocating for the reintroduction of the streetcar system. This organization educated the public about the benefits of streetcars, and eventually was able to raise enough money restore one of system's original Birney streetcars.

Design Features/Rolling Stock

Starting in the 1990s, the City of Tampa, the Tampa/Hillsborough County MPO, and Hillsborough Area Regional Transit (HART) began working on developing the system and were eventually able to identify a route and funding/ownership structure to build and operate the initial system. The system began operation of its first route in 2002 on a 2.4-mile route that connected the southern end of the Central Business District and the Channel District to Ybor City, in the urban core of the City. The streetcar line was named the TECOLine Streetcar System after one of its largest sponsors, Tampa Electric, which endowed the system with $1 million for the system naming rights. The system is operated by Tampa Historic Streetcar, Inc. (THS), a public, not-for-profit corporation formed by interlocal agreement by the City and HART. THS was formed to oversee the marketing, revenue generation, and general operation of the streetcar system. HART operates the system under contract to THS.

Specific Design Challenges

The system serves the urban core of the City of Tampa (Census 2010 population of 335,709). When it was first opened in 2002, the line connected the redeveloping southern Central Business District (CBD) with the Channel District, once a vital marine-related industrial district that was just beginning to experience redevelopment, and Ybor City, a National Landmark Historic District, entertainment district, and mixed-use neighborhood. An extension in 2010 took the line 3/8-mile north into the southern core of Downtown Tampa, allowing access to the nearly 8 million square feet of office space located there and many more of downtown's 40,000+ employees.

As it now operates, the system links a series of important attractions in the urban core of Tampa:

- Florida Aquarium
- Multiple hotels, including Headquarters Marriott Waterside, Downtown Hyatt, and Embassy Suites
- Three cruise ship terminals operated by the Tampa Port Authority
- Two major urban retail centers, Centro Ybor and Channelside
- Tampa Convention Center
- Tampa Bay History Center

- USF Center for Advanced Medical Simulation (CAMLS)
- Tampa Bay Times Forum
- Historic 7th Avenue in Ybor City

The system currently has 11 stops on the 3.0-mile route. Hours of operation are Monday–Thursday, 12:00 PM–10:00 PM; Friday–Saturday 11:00 AM–2:00 AM; and Sunday, 12:00 PM–8:00 PM.

The fare structure for the system is:

- One-Way Fare – $2.50
- Youths and Seniors – $1.25
- 1-Day Unlimited – $5.00
- Family All-Day – $12.50
- 3-Day Unlimited – $11.00
- 20 Ride (for residents/business employees within the Assessment District) – $25.00
- Annual Streetcar Pass – $200.00

The system connects with the regional HART bus system at multiple locations, and a rubber-tire trolley system connects with the Streetcar at the Southern Transportation Plaza in the Channel District.

TECOLine System Map
(Source: www.tecolinestreetcar.org)

Design Features/Rolling Stock

The TECOLine Streetcar System primarily uses a single-track design, with passing tracks spread through the system to allow for bi-directional operation. The system's primary station is located at the Southern Transportation Plaza in the Channel District and operates in a dedicated lane separated from traffic. Headways are 15 minutes during peak periods and 20 minutes otherwise.

The system operates with nine replica Birney Style streetcars that are built by the Gomaco Trolley Company in Iowa. The streetcars are numbered #428–#436, which continues the numbering scheme of the previous streetcar system. The cars can carry a maximum of 88 people (44 seated). The original Birney car restored by the Streetcar Society is also in the fleet and runs for special events.

Specific Design Challenges

While the system encountered no specific design problems, by current standards it is considered to have been somewhat over-designed, which influenced the cost of the track bed and the need for more utility relocation than anticipated.

Capital & Operating Costs

The capital cost for the initial system was approximately $48 million, which was raised from a number of sources including HART, FDOT, the City of Tampa, FTA, and other sources. The operating cost for the system in 2010 was $1,993,427, which is covered through a number of sources, including farebox revenues, special event and charter revenues, a special assessment district, an endowment fund, local contributions from the City of Tampa's three CRA districts located within the Streetcar's alignment, and state and federal grants.

Ridership

The annual ridership for the TECOLine System has been strong, although in recent years there have been a decline, possibly because of reductions in service due to budget cuts and the general decline in the local economy. These cuts have kept the system from operating during peak morning commute hours, which has greatly limited its use by local commuters within the urban core. Ridership for the last several fiscal years is as follows:

- 2003 – 420,038
- 2004 – 425,614
- 2005 – 434,498
- 2006 – 389,771
- 2007 – 437,612
- 2008 – 440,738
- 2009 – 462,524
- 2010 – 407,011

The observed reduction in ridership has been an ongoing conversation since 2009. The system has been reducing service hours and increasing fares in an attempt to increase revenues, but the consensus has been that these changes have greatly reduced ridership numbers.

Economic Impacts Realized

The intent of the TECOLine Streetcar System was twofold. First, it was designed to connect existing/future attractions, and parking garages in the City's urban center where visitor attraction and redevelopment was a priority. However, it was equally important to use the system to help spur economic development in areas of the core that had long needed a boost. While the initial alignment was selected to capitalize on urban visitors and local attendance at special events, the system was also intended to eventually serve a significant influx of new residents in the urban core over time.

It is also important to note that, much like other cities in the United States that either have operating systems or are contemplating them, Tampa has made broad, concerted commitments to many pubic investments in its urban center to stimulate urban revitalization in which an urban circulator is a key component. In Tampa's case, this has included the Tampa Bay Times Forum, South Regional Parking Garage, and Florida Aquarium, to name a few.

Redevelopment along TECOLine Streetcar Route

More than $1 billion in private development investment has occurred within the Special Assessment District since it opened in 2002, and while not all of this development can be directly attributed to the presence of the streetcar, the system has contributed to the creation of an urban environment unparalleled in the city, which has been attractive for developers and new urban residents. While the recession stopped new

development for several years throughout the community, additional residential and commercial development has recently re-emerged in the area serviced by the streetcar system.

Together with the significant public investment commitment by the City, the Port Authority, Hillsborough County, the University of South Florida, and other public institutions, private-sector investment has significantly transformed the urban core of Tampa. The system's potential to continue to spur economic growth is significant as it is expanded further north into the urban core of the City, and eventually, into other urban neighborhoods.

Organizational Business Model

The TECOLine Streetcar is administered by Tampa Historic Streetcar, Inc. (THS), a non-profit organization that includes board members from the City, HART, and other public and private entities. THS contracts with HART to operate and maintain the system as part of its overall operations. The arrangement is similar to other cities such as Portland, which uses an Advisory Board comprised mainly of business owners in the area. In Tampa's case, the real purpose of the Board was to provide a citizen-based marketing perspective, manage the endowment fund, and raise additional private-sector funding for the system.

8.6: ORLANDO, FLORIDA

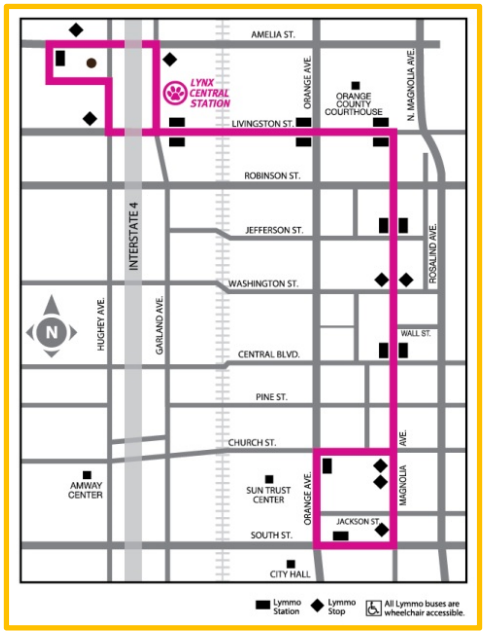
Introduction to the System

In 1997, the Central Florida Regional Transportation Authority (LYNX) LYMMO service was developed to provide free public transportation in the downtown business, entertainment, and shopping district. LYMMO currently operates along a 2.5-mile corridor through Downtown Orlando. LYMMO was one of the first bus-based premium downtown circulators operating in an exclusive running way in a major city in the U.S. LYMMO service features enhanced stations, real-time passenger information, on-board transit TV, and transit signal priority.

As it now operates, the system links a series of important attractions in the urban core of Orlando:

- Bob Carr Performing Arts Center
- Former Amway Arena
- Orange County School Board offices
- Orange County Courthouse
- Office and residential development in the downtown area
- LYNX Central Station

LYMMO operates Monday–Thursday, 6:00 AM–10:00 PM; Friday, 6:00 AM–12:00 AM; Saturday, 10:00 AM–12:00 AM; and Sundays and holidays, 10:00 AM–10:00 PM. Frequency is every 4–5 minutes between 7 AM–6 PM on weekdays and 10 minutes at all other times. The fare is free.



LYMMO Route Map
(Source: www.golnyx.com)

Design Features/Rolling Stock

LYMMO uses 35-foot low-floor hybrid electric/diesel Gillig buses fueled by Compressed Natural Gas (CNG). The buses cost $655,000 each and feature cloth seats, Automatic Passenger Counter (APC) systems, and other upgrades.

Specific Design Challenges

The original construction process of the dedicated lanes took 16 months. To alleviate the potential of a negative impact on downtown businesses during construction, the project was carried out in phases. Each phase consisted of several blocks and was scheduled for a three-to-four-month duration. Right-of-way was all City- or publicly-owned.

LYNX recently completed an Alternatives Analysis (AA) for expansion of LYMMO service. The agency is currently addressing several challenges, including dealing with various City departments that were resistant to proposed routes. During design, LYNX also struggled to meet the FTA requirement to achieve 50 percent exclusive lanes on the route. Another challenge has been addressing the poor condition of existing roadways that require extensive drainage or stabilization improvements.

Capital & Operating Costs

Capital for the existing LYMMO was a combination of federal, state, and local funds. The $21-million project was funded jointly by FTA, the City of Orlando Downtown Development Board, LYNX, the Community Redevelopment Agency (CRA), and the City parking system. The source of FTA funding was the New Starts program. The original 2.5-mile fixed guideway cost $17 million in 1997. LYNX is currently adding two new expansion lines that are 6.2 miles in length and consist of both mixed and exclusive lanes. Total construction cost for the expansion project is $23 million, derived from a combination of federal and local funds.

LYMMO Exclusive Lane

Ridership

LYMMO averages about 4,500 riders on an average weekday and approximately 1 million riders per year. Ridership has recently decreased due to some changes in Downtown Orlando. Juror parking is no longer located at a parking garage served by LYMMO. Additionally, the previous Amway Arena was closed, and the new Amway Center was constructed in a different location.

Ridership for the last several years is as follows:

- 2003 – 1,118,268
- 2004 – 1,041,093

- 2005 – 1,184,090
- 2006 – 1,198,417
- 2007 – 1,170,189
- 2008 – 1,152,670
- 2009 – 1,256,074
- 2010 – 1,190,029
- 2011 – 950,941

Economic Impacts Realized

Several of Downtown Orlando's new major developments are directly served by LYMMO, including the Grand Bohemian Hotel and LYNX Central Station. LYMMO also serves two mixed-use high rises, the KEL Building and Plaza/Solaire. The Dr. Phillips Performing Arts Center is currently under construction and will be served by LYMMO.

Organizational Business Model

As mentioned previously, LYMMO is operated by LYNX.

8.7: CHATTANOOGA, TENNESSEE

Introduction to the System

The Chattanooga Area Regional Transportation Authority's (CARTA) use of electric vehicles started in 1990 when it decided to use electric, battery-operated buses for Chattanooga's Downtown Shuttle. The Downtown Shuttle provides convenient access to attractions, shopping, hotels, and employment sites in the Downtown Chattanooga area.

The system links a series of important attractions in the urban core of Chattanooga:

- Chattanooga Choo Choo
- Tennessee Aquarium
- Chattanooga Convention Center

CARTA Downtown Shuttle

(Source: www.downtownchattanooga.org)

Shuttle buses run about every 5 minutes Monday–Friday, 6:30 AM–11:00 PM; Saturday, 9:30 AM–11:00 PM; and Sunday, 9:30 AM–8:30 PM. The fare is free.

Design Features/Rolling Stock

CARTA uses zero-emission, battery-operated vehicles on the Downtown Shuttle circulator. The buses seat 22 passengers and cost $150,000 each in 1992.

Specific Design Challenges

The system encountered no specific design problems or construction issues.

Capital & Operating Costs

Total construction costs for the Downtown Shuttle amounted to $20 million. CARTA was awarded a $20 million grant to fund a downtown circulator system that covered the cost of 26 bus stops, the electric vehicles, batteries, 2 parking garages that anchor the circulator route, and a maintenance facility. A total of 80 percent of the grant came from the federal government, 10 percent from the Tennessee Department of Transportation, and 10 percent from the City of Chattanooga. The revenue collected from the two parking garages pays for operating expenses. CARTA attributes the success of the shuttle to its high frequency and free fare.

Ridership

In its first year of operation, the Downtown Shuttle carried about 500,000 riders. Presently, the shuttle carries approximately 1 million passengers annually. Over the last 20 years, more than 16 million riders have used the Downtown Shuttle more than 2.6 million miles.

Economic Impacts Realized

The Downtown Shuttle began operating in 1992 in conjunction with the opening of $30 million Tennessee Aquarium. The Aquarium initially anchored the north end of the circulator route, and the simultaneous opening of the Aquarium and the circulator was planned with the Aquarium's private investor. Since the implementation of the Downtown Shuttle in 1992, economic development has exploded in the downtown area. New construction has included a baseball stadium, four hotels, at least a dozen restaurants, and several condominiums. Many businesses that are not on the circulator route are clamoring for a shuttle that serves their area.

Organizational Business Model

The Downtown Shuttle is operated by CARTA.

Section 9: Public Involvement Summary

SECTION 9.1: INTRODUCTION

The Downtown Circulator study included an interactive public involvement with both Downtown stakeholders and the general public. The cost and benefit considerations of circulator services make it necessary and essential to have a sound community understanding and stakeholder buy-in for each phase of planning, development, marketing, and ongoing operations of any new circulator system.

The study's examination of the costs and opportunities of both rubber-tire circulator buses and fixed-guideway streetcars in serving the needs of the community in the Downtown Sarasota area requires consensus about the purpose, need, and goals of the circulator if the community and its elected officials are to make sound decisions about moving forward with either alternative.

SECTION 9.2: STAKEHOLDER MEETINGS

To understand the perspectives of local businesses, organizations, and other Downtown stakeholders, a series of stakeholder interviews was held. In all, nine interviews were conducted.

The stakeholders expressed a variety of perspectives on the issue of mobility and circulation in Downtown Sarasota. Many expressed an interest in improved transit services to major attractors in and concerned about the potential cost of a new system and where that funding might come from.

SECTION 9.3: PUBLIC WORKSHOP

In November 2012, a workshop was held at Sarasota City Hall where the consultant's findings were presented to the general public. The presentation was in seven parts, the first explaining how the Downtown Circulator Feasibility Study was based on the City's commitment to quality growth through a variety of planning efforts. In addition, the presentation addressed the three potential alignments, the choices for vehicle types and modes, ridership estimates, potential funding sources, and funding case studies, followed by an interactive polling session of the public in attendance.

SECTION 9.4: PUBLIC INVOLVEMENT SUMMARY

The results of the public involvement process completed during the study indicated an interest in developing a circulator system, but skepticism and concern about the potential capital and ongoing operating costs that such a system would require. As is discussed more in the following section, it will be important for the City to work with the public, and particularly Downtown stakeholders, to ensure that clear common goals and objectives for a circulator system are developed and serve as the guiding framework moving forward.

One of the most interesting things that emerged from the public involvement process was a fourth alignment proposal, which was formulated to capture the best advantages of the first three. While the fourth alignment was not evaluated in the same manner as the two original alignments (client selected) and the third alternative (consultant selected), it is an important concept warranting further study. This alternative captures the development potential of the Rosemary District, the current activity and infill potential along Main Street and the development potential at the East end of the line, near Payne Park. The originators of the alignment, all local residents and business persons, also stressed the need for a low capital cost system, able to be upgraded in the future, and a new special assessment district to support operations.

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Section 10: Conclusions and Next Steps

10.1: BACKGROUND

This study included an evaluation of key components of both a fixed-guideway streetcar and a rubber-tire circulator on three alternative conceptual alignments in Downtown Sarasota. These study components included the following:

- Transit Demand Assessment - This section included an examination of existing land use conditions, including densities/intensities and local activity centers that have the potential to generate ridership..
- Engineering and Technology Assessment - This included a cursory examination of potential utility issues, vehicle options for the circulator, and travel time estimates for both a rubber-tire circulator and a fixed-guideway streetcar.
- System Costs - This analysis included a summary of potential capital and operating costs for the system.
- Economic Benefits - This analysis that examined the projected economic growth expected under both a base case (no circulator or a rubber-tire circulator) or a transit case (streetcar).
- Case Study Review - This section included a summary of both fixed-guideway streetcar systems and rubber-tire circulator systems around the U.S.

The purpose of this study was expressly not intended to make a recommendation to pursue a rubber-tire circulator or a streetcar, nor to select a particular alignment for further study. Rather, it was designed to develop enough new information to allow the community and City leadership to make a decision on whether to move forward with a more detailed analysis of either alternative transit mode. If the City decides to move forward with further analysis on either transit mode, a series of recommended next steps should be considered. These are described in more detail below. In the short-term, the key will be to undertake additional community outreach to better define the desired routes and goals and objectives for the system. These goals and objectives will help to define the specific mode and vehicle types, as well as whether the service will be a mixed-traffic service or in a dedicated lane. The potential next steps identified below are for both streetcar and rubber-tire circulator modes.

10.2: STREETCAR NEXT STEPS

- A more detailed land use analysis should be conducted within the study area for either a preferred alignment or the alternative alignments. This study should evaluate specific redevelopment and development opportunities, and the potential for providing greater density and intensity potential for the development of transit oriented projects.

- Additional economic analysis should be completed that will include specific land development potential and tax revenues generated. In addition the potential revenues should be compared against not only the long term operating costs, as well as other City liabilities. This analysis will result in a clearer understanding of economic benefits to the community.

- A more detailed ridership analysis should be generated using specific projections of additional residents and development in the area, identified stop locations, In addition to the projection of current local and visitor ridership. This analysis should also

include a more comprehensive assessment of how the introduction of a new circulator service might affect ridership on other SCAT Routes that currently pass through Downtown.

- A more in-depth engineering analysis of underground utilities should be conducted to determine with more specificity the potential need for utility relocations and the associated effects on construction costs. This analysis will be important to establish an alignment and a capital budget to carry forward with any discussions with potential funding partners.
- In conjunction with the engineering analysis, a more detailed technology assessment will be needed, including track and track bed requirements, specific rolling stock choices and costs, the need for overhead catenary and a maintenance facility, etc. This will result in a more concise and detailed capital cost estimate for system construction and outfitting, tailored to the system costs appropriate for Sarasota.
- A funding source analysis for capital costs and identification of funding partners should be conducted. This analysis could be accompanied by initial discussions with potential funding partners. The Wave, Fort Lauderdale's new streetcar system, is fully funded for both capital and operating costs and represents a very current Florida model for funding. Atlanta and Tucson also are currently building new streetcar systems and are current funding models that should be examined.
- A revenue and operations analysis and preliminary operating plan for operating costs should be conducted. Based on a reasonable estimate of the operating protocol (hours of operation, headways, maintenance requirements, staffing costs), potential funding sources should be specifically identified, analyzed, and discussed with community funding partners.
- A governance plan and system partners should become a part of the discussion, along with the potential for an oversight Board of Directors.
- A consensus-building process to include all key stakeholders that includes the Sarasota County Commission, SCAT, the MPO, the Florida Department of Transportation, state and federal elected officials, the Federal Transit Administration (FTA), the City Commission, the Sarasota Downtown Improvement District (DID), the Sarasota Streetcar Initiative, affected property owners, downtown area developers, and area residents.
- Discussions and preliminary consensus should be conducted on an organizational model, including system governance, financial responsibilities for any federal grants, and system operator.
- Fact-finding trips for interested parties should be made to at least two cities with operating streetcar systems. Interviews with City and transit officials and facility tours are an invaluable source of information and reality-testing for communities considering a streetcar system.
- Initial contact should be made with FTA, congressional and state representatives, and FDOT officials, and the development of support for the concept.

10.3: RUBBER-TIRE CIRCULATOR NEXT STEPS

- A funding source analysis for capital costs, including a capital cost formula, and identification of funding partners should be conducted. This analysis could be accompanied by initial discussions with potential funding partners.
- A revenue and operations analysis and preliminary operating plan for operating costs should be conducted. Based on a reasonable estimate of the operating protocol (hours of operation, headways, maintenance requirements, staffing costs), potential funding sources for operating should be specifically identified, analyzed, and discussed with the system's community funding partners.
- A preliminary consensus on an organizational model should be developed, including system governance, financial responsibilities for any grants, and system operator.
- A governance plan and system partners should become a part of the discussion, along with the potential for an oversight Board of Directors.

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