



Comprehensive Operations Analysis (COA) for the Sunshine Bus Company

**Prepared for
St. Johns County
(August 2017)**



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Prepared for:



**St. Johns County and the
Sunshine Bus Company**

Prepared by:



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Project Overview

The main purpose of a Comprehensive Operations Analysis (COA) is to identify comprehensive improvements that could be made to a transit system over a five-year implementation period. CUTR was tasked to evaluate the Sunshine Bus Company (the fixed route transit system in St. Johns County). The last comprehensive review of the Sunshine Bus Company's system was conducted over 10 years ago.

St. Johns County has experienced significant population growth over the past 16 years (almost doubling). The estimated total population of the county is shown in Table 1. The population growth, coupled with increased popularity of the beaches and historic attractions and very little change to the public transportation system over this time period, has led to the current situation of latent demand for increased transit service.

Year	Population
2000	123,134
2005	161,525
2010	190,039
2016	235,087 (estimate)

Table 1. St. John's County Population Growth 2000-2016

Source: US Census

Background Information

Sunshine Bus Routes

The current fixed route transit system consists of seven routes that serve St. Augustine, St. Augustine Beach, Hastings, and a connection to Southeast Duval County. Of these seven routes, one route serves St. Augustine Beach (Green), and three routes connect the Green route to the City of St. Augustine (Blue, Orange, and Red). Figure 1 shows the relative location of these routes.



Figure 1. Sunshine Bus Routes

Employment Travel Demand

Both the City of St. Augustine and the City of St. Augustine Beach are major employment and population centers in St. Johns County. With the close proximity of these two cities, many residents live in one city and work in the other. Figure 2 depicts the number of City of St. Augustine and the City of St. Augustine Beach residents working in the neighboring city.

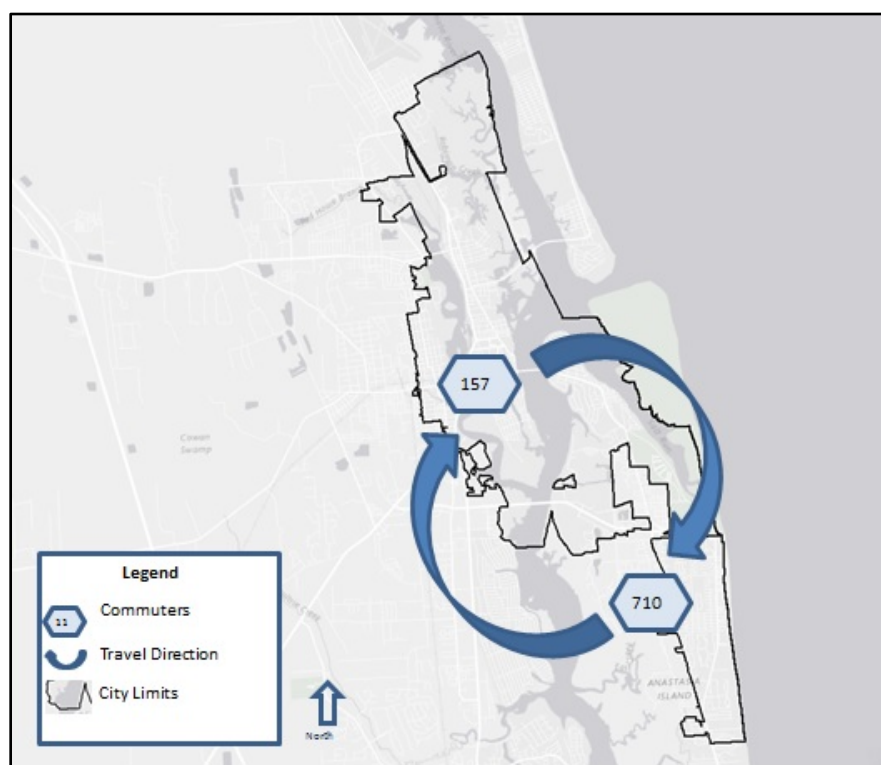


Figure 2. Number of Commuters Traveling between [Source: 2014 US Census: Longitudinal Employer-Household]

According to the U.S. Census, in 2014, 710 (4.1 percent) of all commute trips ending in the City of St. Augustine Beach originated in the City of St. Augustine. In that same year, 157 (7 percent) of all commute trips ending in the City of St. Augustine originated in the City of St. Augustine Beach.

Employment Distribution

Both the City of St. Augustine and the City of St. Augustine Beach have relatively high densities of employment. Figure 3 depicts the spatial distribution of employment in the two cities.

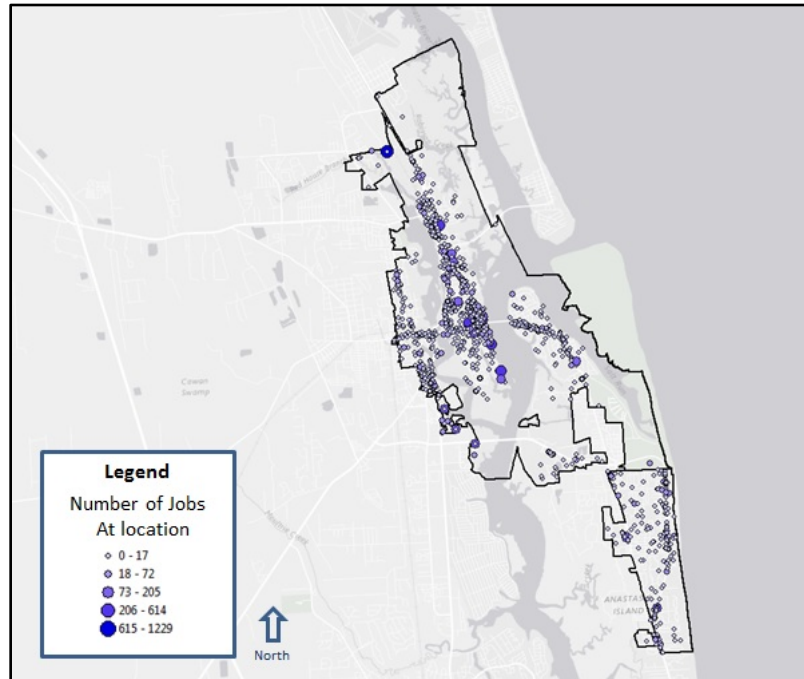


Figure 3. Location of Employers within the City of St. Augustine and the City of St. Augustine Beach [Source: InfoUSA 2014]

In the City of St. Augustine Beach, much of the employment is located along the Atlantic Coast. This can be attributed to resorts, hotels, and restaurants. The five largest employment sites are Coastal Realty & Property Management, Caldwell Bank Premier Properties, Coquina Beach Surf Club, Holiday Isle Oceanfront Resort, and Sunset Grille.

In the City of St. Augustine, most of the employment is located within the historic city and north along US Hwy 1. The five largest employment sites are St Johns County Personnel Board, Florida School for the Deaf and Blind, St John's Welfare Foundation, Flagler College, and Bayview-Samantha Wilson Care.

City of St. Augustine/St. Augustine Beach Feasibility Study

As an integral part of this COA, CUTR was tasked to specifically assess the feasibility of increased transit service between the City of St. Augustine and the City of St. Augustine Beach. The impetus for this task was due to strong interest from both St. Augustine and St. Augustine Beach officials. This strong interest in potential public transportation service improvements has several underlying factors including population growth of the County, increased traffic congestion, limited parking, and a lack of transportation options for residents, commuters, and tourists seeking access to/from the beach.

The goal of this task was a recommended routing alignment (including alternative route operational configurations) that would meet certain community and public transportation objectives as outlined below:

- Enhanced transit system design providing greater level of service in high demand locations
- Support for mobility needs of tourists
- Connectivity between parking and recreation, attractions, and housing destinations
- Reduction of traffic during the peak tourism season
- Reduction of the need for parking at high demand destinations
- Increased safety

Route Alignment Development

Stakeholders from the City of St. Augustine, St. Augustine Beach, St. Johns County, and the Sunshine Bus Company formed an advisory group to provide input and guidance during this COA task. Officials from both cities provided local expertise and potential objectives for increased transit service between the two areas.

Meetings were conducted with the advisory group and organized into the following topics:

- Overview of background information
- Identification of target markets
- Draft of route concept
- Development of operational scenarios to meet route objectives
- Analysis of operational scenarios using TBEST modeling
- Review of recommendations

Target Markets

The various potential target markets for increased service between the two cities were examined and discussed. The advisory group recognized the importance of all potential target markets, but chose to focus on the tourist market because they expected it would have the most impact on constrained parking and roadways during high tourism periods such as weekends and evenings.

Route Concept

The preferred service alignment included a “limited route” segment and two new “circulator” route segments (one segment servicing St. Augustine, the other St. Augustine Beach). During the development of this route concept, officials of the advisory group for each city developed their preferred routing and stop locations for their respective circulator segments. Figure 4 depicts the overall route concept:

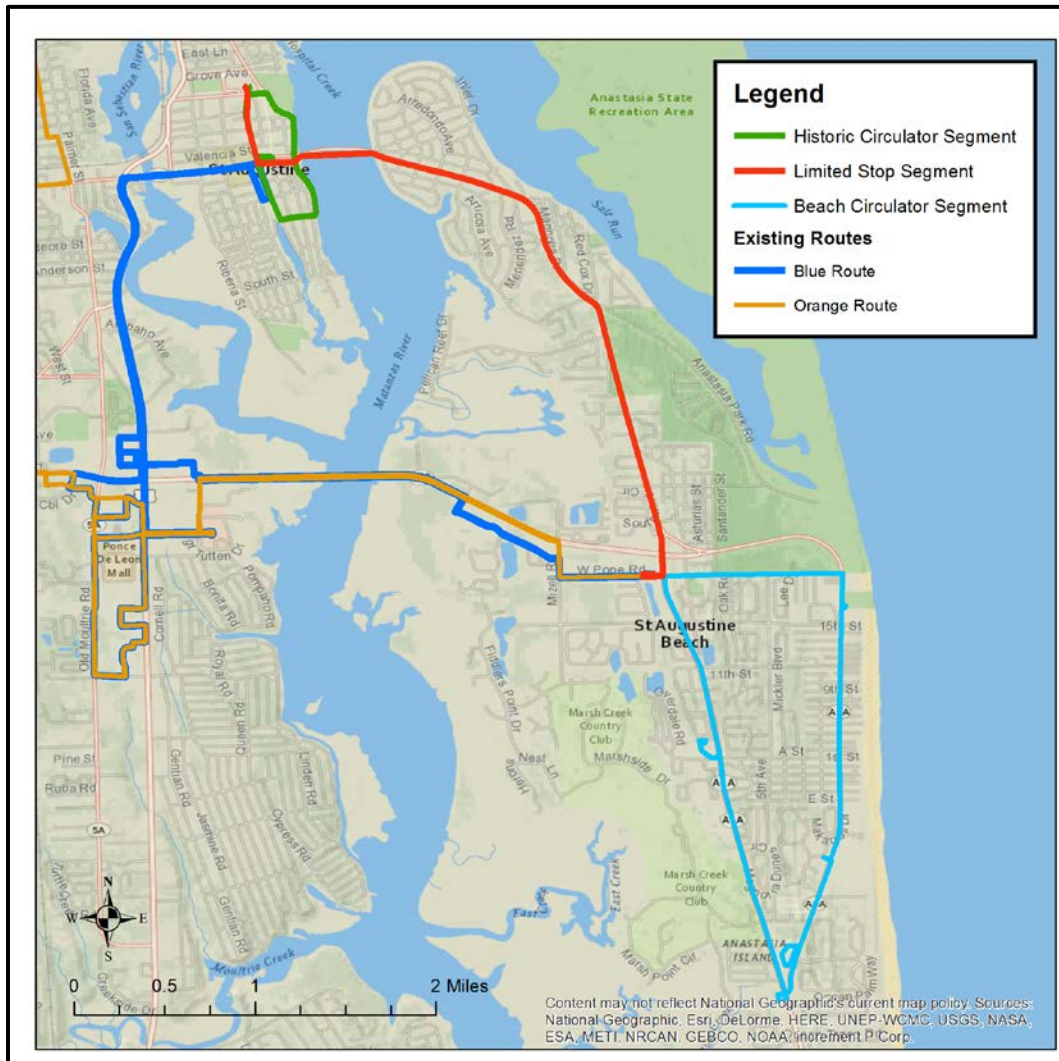


Figure 4. Overall Route Concept

Route Concept Descriptions

Limited Stop Segment (Figure 5): The length of the limited stop segment is approximately 4.1 miles in one direction. This segment would connect with each of the circulator segments at key locations. The limited stop segment would connect within the City of St. Augustine Beach circulator segment at the Depot transfer location on Pope Rd. and A1A. After leaving the Depot, it would travel north along A1A potentially stopping at major destinations, such as the Lighthouse or the Amphitheatre. The segment would continue northwest to the Bridge of Lions where it would cross the Matanzas River into the City of St. Augustine. Once in the Historic area, it would travel west along Cathedral Place and turn north at Cordova Street. The segment would continue north until it reaches its endpoint at the Visitor Information Center where it would connect with the City of St. Augustine Circulator. Plenty of parking is available in the historic downtown parking garage. Optionally, the segment may also stop at the Plaza de la Constitución closer to the Bridge of Lions. The return southbound trip would follow a nearly identical path except it would traverse King Street instead of Cathedral Place on the way to the Bridge of Lions.

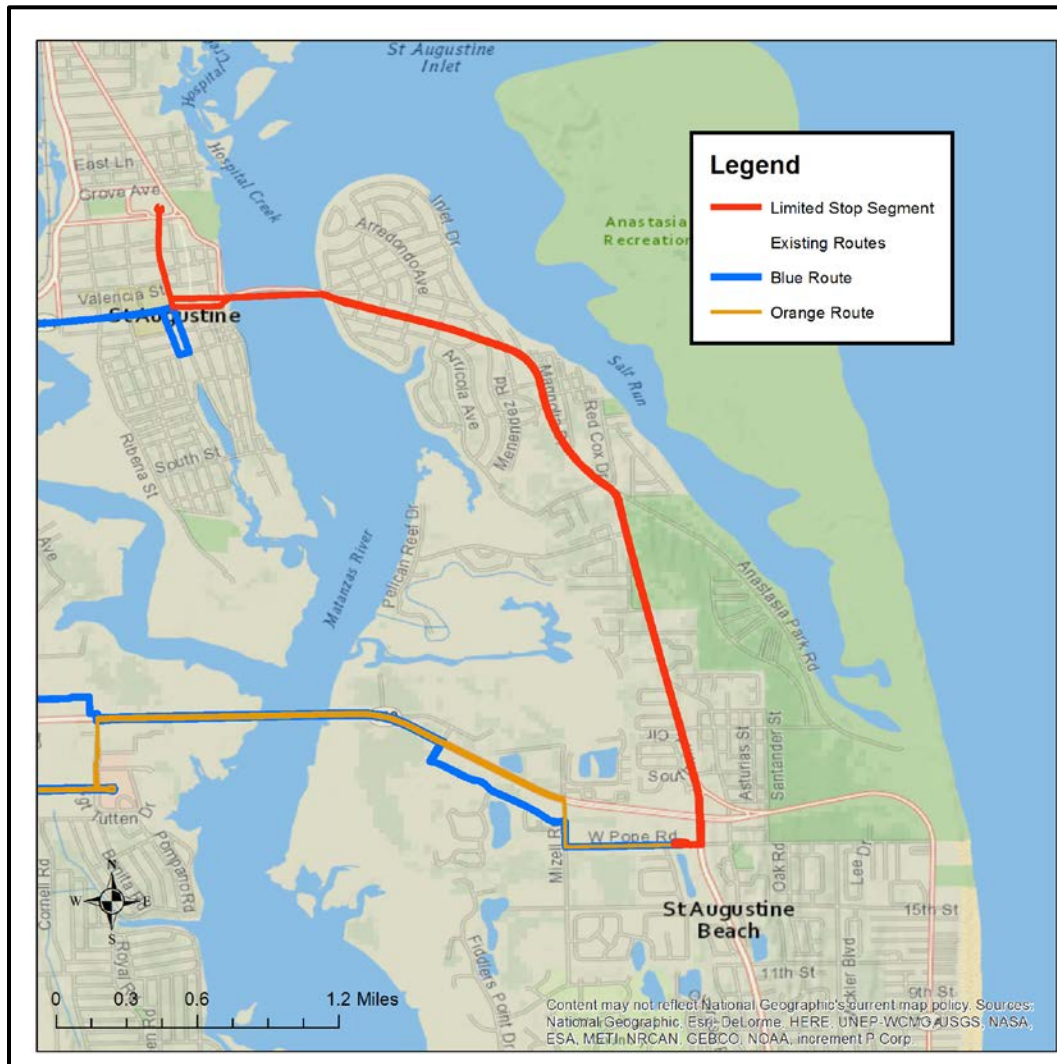


Figure 5. Limited Stop Route Segment

City of St. Augustine Historic Circulator Segment (Figure 6): This circulator segment is approximately 2 miles in length. The circulator segment would travel in a clockwise direction and was modeled with seven evenly spaced major stops. The bus could also stop at various locations in between the major stops to pick up passengers. Beginning at the Visitor Information Center, the circulator would travel east along Orange Street until reaching San Marco Avenue. There, it would head south on San Marco Avenue stopping at Hypolita Street, passing the Bridge of Lions, and stopping at King Street. The circulator segment would continue to St. Francis Street where it would turn west, stopping at the Oldest House Museum, until it reaches Cordova Street. It would head north on Cordova Street, stopping at the Lightner Museum and then continue on to King Street where it would turn east. It would turn north on St. George Street for one block, stopping at the Plaza de la Constitución. It would turn west on Cathedral Place for one block until turning north

onto Cordova Street. The circulator segment would continue along Cordova Street until it ends at the drop off circle at the Visitor Information Center.

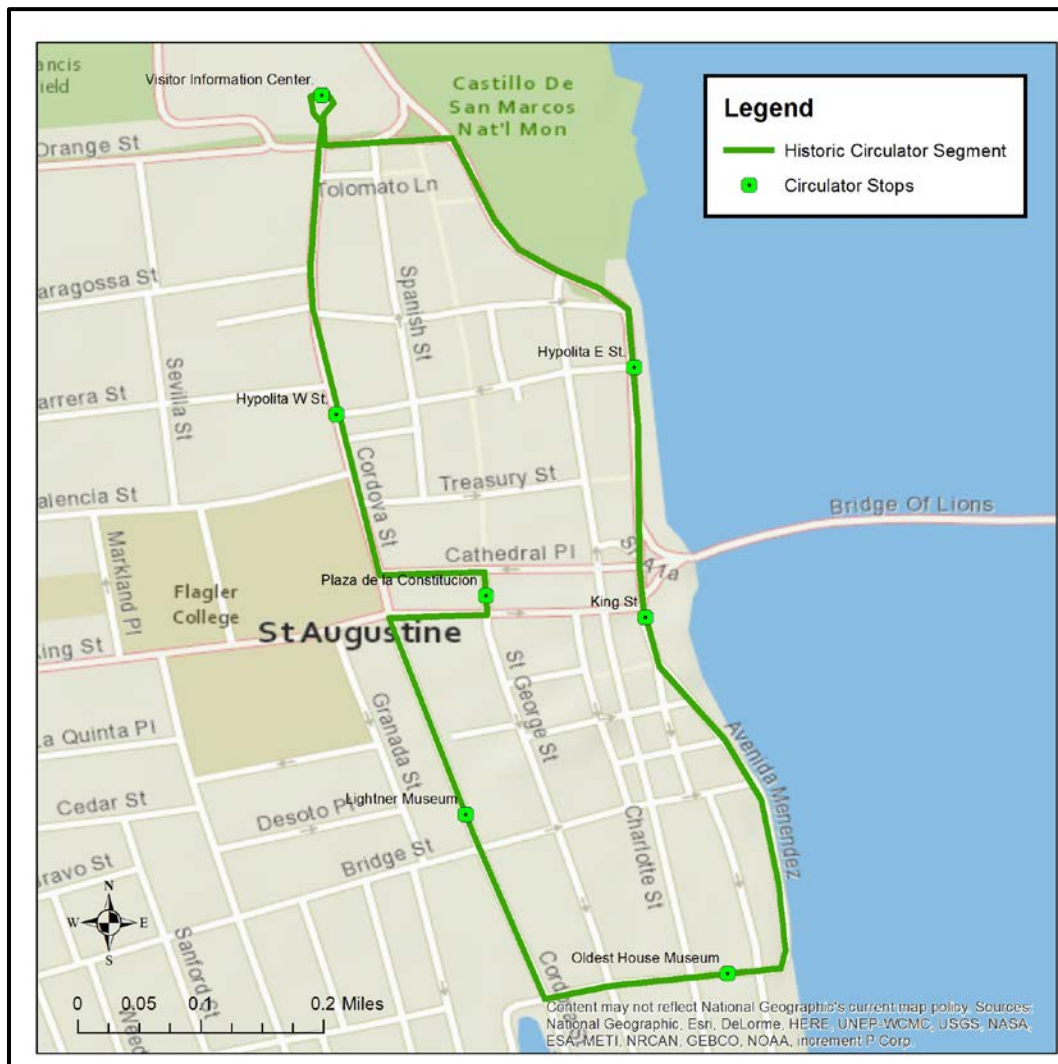


Figure 6. City of St. Augustine Historic Circulator Segment

St. Augustine Beach Circulator Segment (Figure 7): This segment is approximately 6.7 miles in length. It could travel either clockwise or counterclockwise. If clockwise, it would travel along Pope Road to A1A stopping at: Ron Parker Road, Lakeshore Drive, Lee Drive, and St. Augustine Power House along the south side of Pope Road. It would turn south on A1A Beach Boulevard, serving the Pier and several hotels and restaurants on the eastside including: Hilton Garden, Sunburst Trading, Cafe Eleven, Best Western, Sunshine Shop, Dune's Cracker House, Jack's BBQ, and Quality Inn Suites. The segment would also serve F Street, Ocean Walk Drive, and Anastasia Plaza (Publix) and continue through the intersection of A1A Beach Boulevard and SR A1A into the Winn Dixie shopping

center. After leaving the Winn Dixie shopping center, the clockwise Circulator would turn north along SR A1A stopping at Madrid Street, Magnolia Dunes, Seagrove Town Center (Post Office and Library), Florida Avenue, and the City of St. Augustine Beach City Hall (Police Department). The segment would continue along SR A1A until reaching Pope Road where it would turn west and return to the Depot where it began.

If designed counterclockwise, the circulator segment would begin at the Depot and head east on Pope Road until reaching the intersection with SR A1A. From that intersection, it would turn south along SR A1A, stopping at several businesses, government services, and residential neighborhoods, including: City Hall (Police Department), Cedar Ridge Circle, Unitarian Church, Seagrove Town Center (Post Office and Library), Ace Hardware, Anastasia Lane, Marsh Creek, Sunset Drive Southbound, and the Winn Dixie shopping center. After leaving the Winn Dixie shopping center, the circulator segment would cross SR A1A onto A1A Beach Boulevard and turn left into Anastasia Plaza (Publix). After leaving Anastasia Plaza, it would stop at Ocean Hammock Park, which offers public beach access. The circulator segment could serve several hotels and restaurants on the east side of A1A Beach Blvd, including St. Augustine Ocean & Racquet Club, Ocean Villas, La Fiesta, Mango Mangos, Castillo Real, and the Hampton Inn. The segment's last stop on A1A Beach Boulevard (before reaching Pope Road) would be the Pier. Once at Pope Road, the Circulator would turn west until it turns in to the Family YMCA. After exiting the Family YMCA, the segment would return to the Depot where it began.

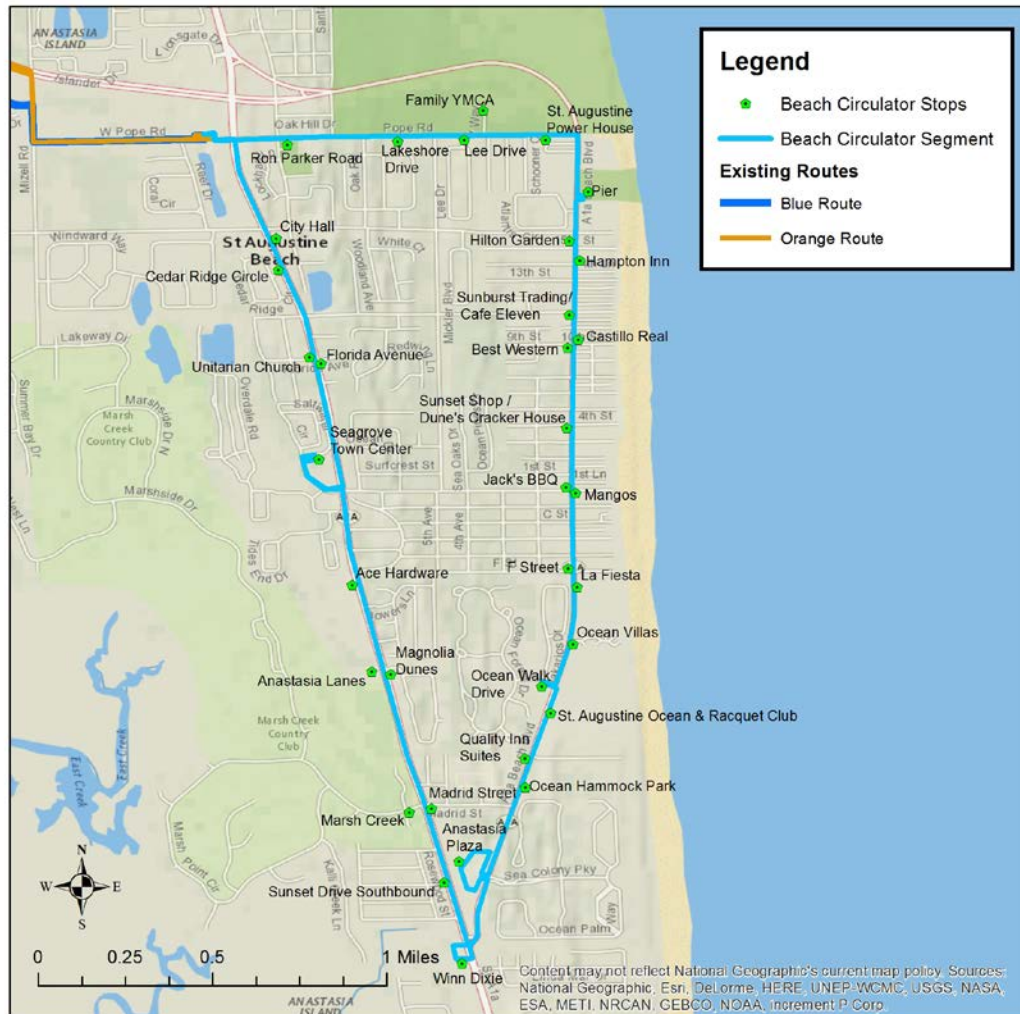


Figure 7. Beach Circulator Segment

TBEST Route Analysis

The preferred route alignment (which included all segments) was analyzed in TBEST to compare the estimated cost, frequency, and ridership productivity. TBEST, or Transit Boardings Estimation and Simulation Tool, is a comprehensive transit analysis and ridership-forecasting software that is capable of simulating travel demand at the individual stop-level while accounting for network connectivity, spatial and temporal accessibility, time-of-day variations, and route competition and complementarity. TBEST provides various maps and reports of ridership and cost data based on demographics and route and stop characteristics such as service span, length of route, frequency, and accessibility. TBEST was utilized to determine service feasibility and determine alternative operational scenarios for the proposed service between the cities. TBEST performs well with inputs of data previously discussed in the background section of this report, specifically socio-economic data

(population, employment, land-use, etc.) and operational variables (route design, mileage, frequency, span of service, etc.)

The first set of TBEST runs treated each route segment as an individual route in order to provide an understanding of characteristics, ridership estimates and cost for each segment.

At the request of the advisory group, three operational scenarios with varying spans of service were evaluated to provide alternative operational characteristics and costs. Each of these scenarios were modeled as three segments (a circulator segment in St. Augustine, a circulator segment in St. Augustine beach, and a limited stop segment that connected the two circulator segments) requiring transfers between each segment. Each of the scenarios would require four buses to operate (one on each circulator, and two for the limited stop). A fourth scenario was developed after the meetings with the advisory group had concluded. The parameters of the four scenarios were as follows:

- Scenario 1: Service operating six days a week - 6 a.m. to 8 p.m. Mon-Sat (14 hours per day)
- Scenario 2: Service operating six days a week - 10 a.m. to 6 p.m. Mon-Sat (8 hours per day)
- Scenario 3: Service operating three days a week - 3 p.m. to 11 a.m. Friday (8 hours) and 10 a.m. to 11 p.m. Saturday and Sunday (13 hours each) – to operate as a limited service that would focus on tourists as the main target market.
- Scenario 4: Same service span as Scenario 1. The limited stop segment and the St. Augustine Beach Circulator were combined and modeled as one continuous route.

Each operational scenario assumed 30-minute headways consistent with the advisory group's target of 20-30 minutes. This level of service is widely accepted in the transit service industry as the minimum of quality service as 30 minute headways make it fairly easy for customers to plan their trips. The estimated run times for each route segment ranged from 20-25 minutes based on actual test runs, so factoring in layover time, 30 minutes is a reasonable headway for these operational scenarios. The operating cost rate was assumed to be \$44 per hour based on current costs of the Sunshine Bus Company fixed route service.

Table 2 displays Operational Scenario 1, which represents complete compatible coverage of the current Sunshine Bus schedule (six days of the week and 14 hours a day). Its annual cost would be approximately \$644,000. Scenario 1 has an estimated annual ridership of 112,300.

Table 2. St. Augustine Historic and Beach Transit Operational Scenario 1

Route Name	Daily Boardings (Weekday)	Daily Boardings (Sat)	Annual Revenue Hours	Annual Revenue Miles	Annual Boardings	Boardings / Revenue Hour	Annual Cost
St. Augustine Circulator	156	94	3,380.9	16,509	45,449	13.4	\$148,760
Beach Circulator	122	83	4,182.2	55,462	36,045	8.6	\$184,017
Limited stop	108	52	7,072.2	70,946	30,806	4.4	\$311,177
Totals	386	229	14,635.3	142,917	112,300	7.7	\$643,954
Avg. Sunshine Route	131	118	4,027.6	79,437	50,753	12.6	\$152,870

Note: 6 a.m. to 8 p.m. Mon-Sat (14 hours per day)

Table 3 displays Operational Scenario 2. Like Scenario 1, this service would also span six days a week. However, it would operate for eight hours a day instead of fourteen. Its total cost is 42.8 percent less. The estimated annual ridership for Scenario 2 is 33.5 percent less than Scenario 1, while boardings per revenue hour increased 19.4 percent.

Table 3. St. Augustine Historic and Beach Transit Operational Scenario 2

Route Name	Daily Boardings (Weekday)	Daily Boardings (Sat)	Annual Revenue Hours	Annual Revenue Miles	Annual Boardings	Boardings/ Revenue Hour	Annual Cost
St. Augustine Circulator	101	79	1,709.1	9,434	30,390	15.7	\$85,008
Beach Circulator	80	70	2,389.9	31,692	24,303	10.2	\$105,156
Limited stop	68	44	4,041.2	40,541	20,003	4.9	\$177,813
Totals	249	193	8,140.2	81,667	74,696	9.2	\$367,977
Avg. Sunshine Route	131	118	4,027.6	79,437	50,753	12.6	\$152,870

Note: 10 a.m. to 6 p.m. Mon-Sat (8 hours per day)

Table 4 displays Operational Scenario 3. This scenario focused exclusively on the tourist market by shifting the span of service to Friday evenings and weekends only. This reduced the cost of the service to approximately \$273,000. Note that the estimated ridership is lower in this scenario, as catering specifically to evening hours results in fewer potential local resident riders for employment and shopping trips during the day. As a result, the overall projected boardings per revenue hour of Scenario 4 was 7.6.

Table 4. St. Augustine Historic and Beach Transit Operational Scenario 3

Route Name	Daily Boardings (Weekday)	Daily Boardings (Sat)	Daily Boardings (Sunday)	Annual Revenue Hours	Annual Revenue Miles	Annual Boardings	Boardings/Revenue Hour	Annual Cost
St. Augustine Circulator	62	93	69	1,430	6,420	19,300	13.5	\$62,920
Beach Circulator	44	82	62	1,780	21,590	16,600	9.3	\$78,335
Limited stop	43	52	41	3,005	27,615	11,450	3.8	\$132,220
Totals	149	227	172	6,215	55,625	47,350	7.6	\$273,475
Avg. Sunshine Route	131	118	n/a	4,027.6	79,437	50,753	12.6	\$152,870

Note: 3 p.m. to 11 p.m. Friday (8 hours) and 10 a.m. to 11 p.m. Saturday and Sunday (13 hours each)

Table 5 displays Operational Scenario 4, which represents the same service span as Operational Scenario 1. This scenario consists of two distinct routes instead of three (by combining the limited stop segment and the St. Augustine Beach Circulator segment into one route). The total annual cost for this service alternative would be approximately \$558,000, which represents a savings of about \$85,000 versus Scenario 1. Estimated ridership for Scenario 4 is 109,769, which represents a small 2.2 percent decrease from Scenario 1. Another benefit of combining routes is to prevent the need for customers to transfer buses.

Table 5. St. Augustine Historic and Beach Transit Operational Scenario 4

Route Name	Daily Boardings (Weekday)	Daily Boardings (Sat)	Annual Revenue Hours	Annual Revenue Miles	Annual Boardings	Boardings/Revenue Hour	Annual Cost
St. Augustine Circulator	138	103	3,501.6	17,099	41,252	11.8	\$154,070
Beach Circulator/Limited stop	228	180	9,193.8	133,743	68,517	7.5	\$404,527
Totals	366	283	12,695.4	150,842	109,769	8.6	\$558,597
Avg. Sunshine Route	131	118	4,027.6	79,437	50,753	12.6	\$152,870

Note: 6 a.m. to 8 p.m. Mon-Sat (14 hours per day)

Partnerships

During the various advisory committee meetings there was much discussion about community partnerships along with potential local government investments to develop this new public transportation service.

Some preliminary potential partners identified are community organizations and businesses that have complimentary transportation-related missions or have members who stand to benefit from additional transit service. Three such entities are:

- St. Johns Convention Bureau (St. Augustine, Ponte Vedra, and the Beaches)
- Flagler College
- Florida School for the Deaf and Blind

Three types of businesses within the community that could potentially benefit from increased transit service in the City of St. Augustine and St. Augustine Beach and may be approached as potential partners include:

- Hotels as an added service benefit to their guests
- Restaurants and shops located along the route would get more exposure
- Attractions (e.g. lighthouse, Ripley's museum, amphitheater, Castillo de San Marcos, etc.)

Recommendations

Operational Scenarios

Scenario 4 of the analysis of improved public transportation service within and between the cities of St. Augustine and St. Augustine Beach represents the most comprehensive and effective solution. It is preferred to Scenario 1 as it would require fewer transfers and would cost almost \$100,000 less. This alternative maximizes the opportunity for ridership and attracts various trip purpose markets (work, home, shopping, tourist, etc.). This scenario also offers the best span of service and correlates with Sunshine Bus service times affording attractive countywide connectivity. The St. Augustine Circulator performs above the average of most performance measures when compared to the system wide averages of service throughout the County. The Beach Circulator/Limited stop provides a more frequent and direct connection between the City of St. Augustine and St. Augustine Beach with 30-minute headways, which is a vastly superior service level compared to the current Red route that operates on 120-minute intervals and is not as direct. In addition, the Beach Circulator serves a new area on A1A not currently served. While the ridership estimates for this route would not currently outperform the system average, with buy-in from the community and employing marketing strategies, the route should far outperform its estimates in the future.

Scenario 2 is simply a modified scenario 1 operating fewer hours each day. This scenario was examined to test another operating option that would require less service at a lower cost.

Scenario 3 was developed to address the advisory group's interest in a route focused on the tourist market. It again maintained the same routing configuration but provided alternative operational parameters. Scenario 3 was preferred by the advisory group as a strong consideration for a pilot service with a lower operating cost than scenario 2 (although scenario 2 captured more boardings per hour thus being more productive per dollar invested).

Scenario 4 is the recommended alternative as it can be considered as part of the overall Comprehensive Operational Analysis to be implemented in phases over a 5-year period by adjusting coverage, span of service and frequency. Cost savings and/or redistribution of services that will increase ridership in other areas can be achieved by implementing Scenario 4 as it operates during the same service span as the current system.

Implementation Strategies

After the review of the preferred routing and various feasibility operational scenarios, the advisory committee was interested in pursuing a path toward implementation. The following section provides some observations and strategies that could be considered for defining a specific implementation program.

The St. Johns Board of County Commissioners (BoCC) is the governing Board of Public Transportation services provided by utilizing Federal Transit Administration (FTA) Section 5307 Urban Area formula funds and Florida State Block Grant funds. The BoCC contracts with the St. Johns Council on Aging (COA) which serves as the Community Transportation Coordinator (CTC), administrator of FTA Section 5311 Rural Funding, and recipient of FTA Section 5310 Senior and Persons with Disabilities transportation funding. The COA is the operator of public transportation services in St. Johns County. These institutional relationships are briefly explained here to set the foundation for possible partnerships with the local municipalities and perhaps local interest groups in developing and implementing the new services presented in this feasibility analysis.

A simple organizational approach would be the BoCC and COA coordinating their overall responsibilities and transportation resources in partnership with the cities of St. Augustine and St. Augustine Beach, to establish an Advisory Board charged with the responsibility of developing necessary implementation activities and proposing local agreements to establish the new services discussed herein.

Step 1: Establish a focus group to develop the feasibility scenarios into a refined program

- A diverse representation of local government, business and community representation should be considered for the composition of this group

-
- This group would regularly meet to coordinate implementation activities and provide outreach for community partnerships and support.
 - This would require adequate resources to conduct further analysis, studies and professional services.

Step 2: Refine a service operational plan and associated capital needs plan

- Specific routing, access stops, customer amenities, signage, scheduling and capital needs would need to be developed including more refined total costs
- There are two private companies that operate a tram service in historic St. Augustine: Red Train Tours and Old Town Trolley Tours. The primary purpose of the tram service is historic interpretation of points of interest in St. Augustine through a narrated tour. Outreach and coordination with these services should be considered, as new public transportation services can be mutually beneficial to maximize visitor accessibility.
- The operational scenarios presented would require either the purchase of three or four additional buses in order to meet the desired headways of 30 minutes. Sunshine Bus Company would have to acquire these vehicles because their current fleet size will not accommodate any new service. A cost of a new bus could range from \$75,000 to \$125,000 depending on the size and type of the vehicle as well as the vehicle amenities desired.
- Existing public transportation infrastructure should be considered, recognizing additional capital requirements such as specific vehicles for the new service. Federal and State eligibility and compliance issues must be addressed.

Step 3: Developing professional marketing and branding elements to create awareness and promote utilization of the service

- A marketing plan is recommended to raise awareness in the community of the new service and to target visitors. This would require informational support from the visitor's bureau, hotels, restaurants, and attractions through display and distribution of print materials and orientation of visitors to the service. Social media and other online advertising is also a component to spread the word about the new service.
- Special branding of transit service has several benefits. It raises awareness of the service and guides customers to easily recognize and use the service. Some examples of special branding include:
 - The Riverside Avondale Night Trolley (JTA) runs the first full weekend of each month at 15 to 20 minute frequency from 6 p.m. to midnight and every 40 minutes midnight to 2 a.m.



-
- Ft. Myers Beach Trolley (Lee County) is a Monday-Sunday service (6:00 a.m. to 9:00 p.m.) that provides rides along Estero Island in Ft. Myers.



Step 4: Refining a financial plan that incorporates a local funding partnership and contractual arrangements for the operator of the service.

- Existing public transportation infrastructure and institutional arrangement previously mentioned provides an opportunity for efficient and coordinated use of resources.
- Establishment of a multi-year budget will appropriately allow adequate time for new services to mature and adjust to market demands.
- Fare structure and policy and procedures will need to be established to consider attracting ridership and perhaps sponsoring support of service by local partners (restaurants, hotels, employers, etc.).

Step 5: Procurement of identified capital needs

- As part of an overall implementation program, capital components may need a specific lead-time for acquisition and/or installation. A refined capital improvement program will be required.
- Assuming procurements will be conducted under the BoCC auspices; local policies and procedures will be required along with Federal and State requirements.

Step 6: Service Start-up will need special attention to operating requirements and community awareness

- A detailed schedule of activities will be necessary for labor and equipment to be in place in conformance with the Operations Plan for service initiation.
- Branding and Marketing is a crucial element for public awareness and a service kick off with activities could include ribbon cutting, promotions, community activities, etc.

Review of Existing System

Historical Ridership Trends

Annual ridership and average monthly ridership trends are shown in Figures 8 and 9. Since 2005, ridership has increased every year. The increases between 2006 and 2008 are primarily due to the addition of the Connector and Teal routes as well as extension of the Purple route to the Avenues Mall in Jacksonville. Over the past several years, ridership increases have slowed to less than 10 percent per year. From FY 2015 to FY 2016, the increase was just 1.4 percent. So far, in FY 2017, the ridership is tracking at a decrease from FY 2016. This is par for the course for transit agencies across the country, as national ridership has been down this year.

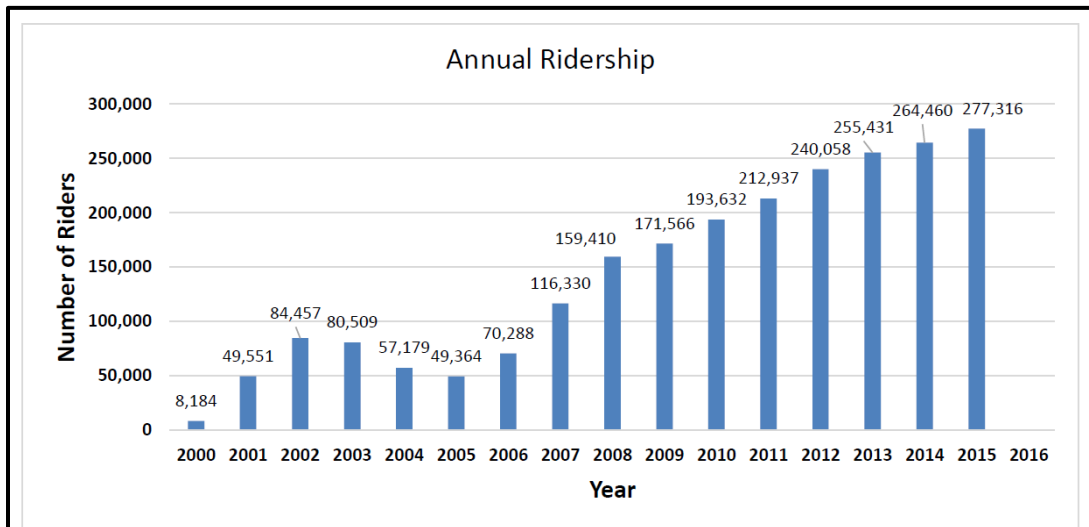


Figure 8. Sunshine Bus Annual Ridership, 2000-2016

Based on the average monthly ridership data from 2011 to 2015, February is the lowest ridership month, while October and August are the highest ridership months. In 2016, the highest ridership month was March with a record 26,169 passengers. The low of 19,897 passengers was actually in October 2016. This month is normally a high ridership month, but ridership was low because the Sunshine Bus was forced to close due to the damage caused by Hurricane Matthew.

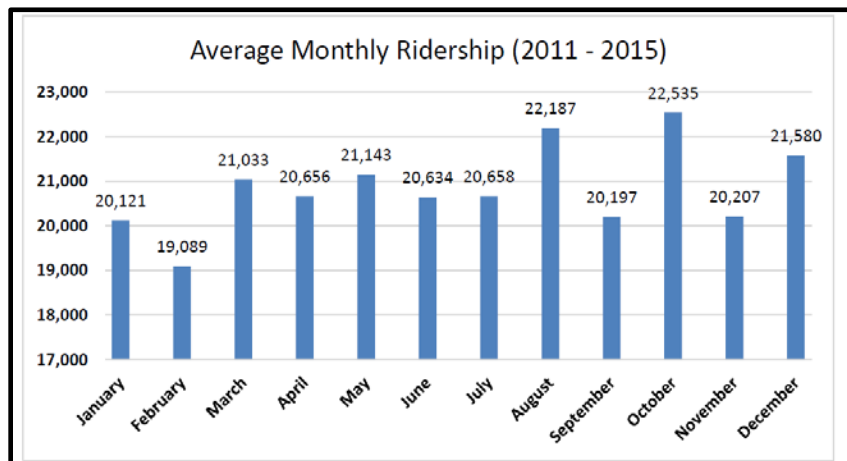


Figure 9. Average Monthly Ridership, 2011-2015

Table 6 shows the average monthly and daily ridership of Sunshine Bus routes from October 2015 through January 2016. Excluding the Connector, which is a North-South route serving US1; the routes that provide access to the Depot which connects to the Green Route that serves St. Augustine Beach (indicated by the red box) have the highest average daily ridership.

Table 6. Sunshine Bus Ridership

October 2015-January 2016 Avg. Ridership			
	Monthly	Daily Average	
Route	4-Month	Weekday	Saturday
Connector	4,754	187.9	167.0
Orange	3,713	151.1	111.0
Blue	3,444	138.9	108.3
Green	3,349	132.6	116.8
Red	3,298	129.8	118.8
Purple	2,733	106.1	106.2
Teal	2,349	98.9	54.7

Sunshine Bus Riders

As part of the St. Johns County 2016 Transit Development Plan, an onboard survey was conducted. Below are several key characteristics that can be identified to form a profile of current transit customers based on the 2016 Onboard Survey (total number of completed surveys was 84):

- 76.8% walk to the bus stop
- 27.3% of trip purposes were shopping/errands
- 15.8% of trip purposes were work/school
- 7.8% of trip purposes were doctor/dentist
- 5.2% of trip purposes were visiting/recreation
- 66.7% ride Sunshine Line 3+ days a week
- 19.0% ride 1-2 days a week
- 72.4% have a household income of less than \$20,000 a year
- 54.7% pay a reduced fare

Table 7 displays the number of years that surveyed customers reported riding transit. Nearly half of the customers surveyed reported that they had ridden transit for more than three years. About 75 percent of riders reported that they had ridden for one year or more.

Table 7. Number of Years Riding Sunshine Bus

Years Riding	Population
More than 3 years	48.8%
1 to 3 years	25.6%
Less than 1 year	24.4%
First time	1.2%

Source: St. Johns County TDP 2016 Major Update

Table 8 displays the age distribution of customers surveyed. Note that customers are close to evenly distributed among the various age groups.

Table 8. Average Age of Surveyed Riders

Rider Age	Population
65+	20.5%
60-64	9.6%
55-59	18.1%
45-54	16.9%
35-44	15.7%
25-34	10.8%
18-24	8.4%

Source: St. Johns County TDP
2016 Major Update

Route Profiles

The following pages provide a one-page snapshot of each route in the Sunshine Bus System providing key data such as locations served, transfer locations, major destinations, operations and service requirements, and service productivity and rankings.

Connector Route – US 1 / Shores Village /Vilano Beach

The Connector Route operates from Seabridge Square north to Government Center and from Seabridge Square south to St. Augustine Shores. The Connector also serves several medical centers including the Florida Hospital, the VA Clinic, and the Health Department. It serves several Grocery Stores including, Publix, Winn Dixie, and Walmart as well as several shopping centers. It also serves the main St. Johns County library.



Transfer Locations and Routes

Seabridge Square	Blue, Purple and Teal
Government Center	Red, Purple and Teal
St. Augustine Shores	Green
On-street connections	Red and Orange

Current Operational Data (as of March 2016)

Days of Service	Weekday/Saturday
Hours of Operation	5:30 am- 8:05 pm
Frequency (Minutes)	60 (2 buses)
Layover Time	30 min (25%)
Total One-Way Trips	14
Daily Revenue Hours	27.5
Daily Revenue Miles	448
Peak Bus Requirement	2

Major Destinations

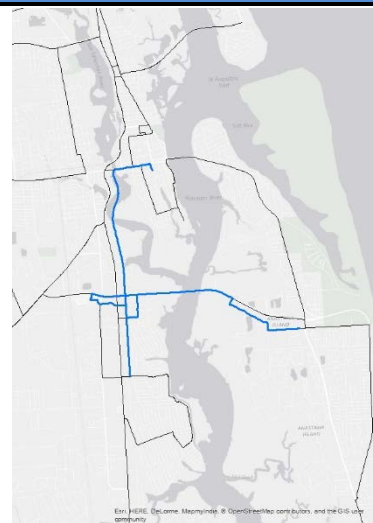
Flagler Hospital
Government Center
Lewis Point Plaza
Publix (2)
Seabridge Square
Riverside Center
St. Augustine South
St. Johns County Library
Walmart
Winn Dixie
V. A. Clinic

2015/2016 Route Service Productivity and Rankings

Average Daily Ridership	199	1 st
Avg. Passengers per Revenue Hour	8.9	5 th
Avg. Passengers per Revenue Mile	0.45	5 th
Avg. Passengers per Trip	17.1	1 st
Operating Cost per Revenue Hour	\$45.84	4 th

Blue Route – US 1 / Downtown Areas

The Blue Route operates from the Depot west to Seabridge Square and from Seabridge Square north to the Flagler Auditorium and Historic St. Augustine. The Blue Route also serves several medical centers including the Flagler Hospital and the VA Clinic. It serves several Grocery Stores including, Publix, Winn Dixie, and Walmart as well as several shopping centers.



Transfer Locations and Routes

Depot	Orange, Red and Green
Seabridge Square	Connector, Purple and Teal
On-street connections	Orange, Red, Purple, Teal and Connector

Current Operational Data (as of March 2016)

Days of Service	Weekday/Saturday
Hours of Operation	6:45 am- 7:25 pm
Frequency (Minutes)	130
Layover Time	40 min (31%)
Total One-Way Trips	12
Daily Revenue Hours	12.67
Daily Revenue Miles	123
Peak Bus Requirement	1

Major Destinations

Depot
 Flagler Hospital
 Flagler Auditorium
 Historic St. Augustine
 Lewis Point Plaza
 Publix
 Riverside Center
 Seabridge Square
 V. A. Clinic
 Walmart
 Winn Dixie

2015/2016 Route Service Productivity and Rankings

Average Daily Ridership	133	5 th
Avg. Passengers per Revenue Hour	13.6	4 th
Avg. Passengers per Revenue Mile	1.11	1 st
Avg. Passengers per Trip	10.5	7 th
Operating Cost per Revenue Hour	\$29.00	1 st

Green Route – A1A / US1 Areas

The Green Route operates from the Depot South along A1A serving many locations along the beach including the St. Johns County Ocean Pier, the St. Augustine Civic Center, several hotels and restaurants, and a Publix shopping center. After heading west on State Road 206, it serves the St. Johns County Public Library and the Sheriff's Office on South US1. The Green Route serves several Grocery Stores including Publix and Winn Dixie as well as several shopping centers.



Transfer Locations and Routes

Depot	Blue, Orange and Red
St. Augustine Shores	Connector

Current Operational Data (as of March 2016)

Days of Service	Weekday/Saturday
Hours of Operation	6:45 am- 7:25 pm
Frequency (Minutes)	130
Layover Time	40 min (31%)
Total One-Way Trips	12
Daily Revenue Hours	12.67
Daily Revenue Miles	241.5
Peak Bus Requirement	1

Major Destinations

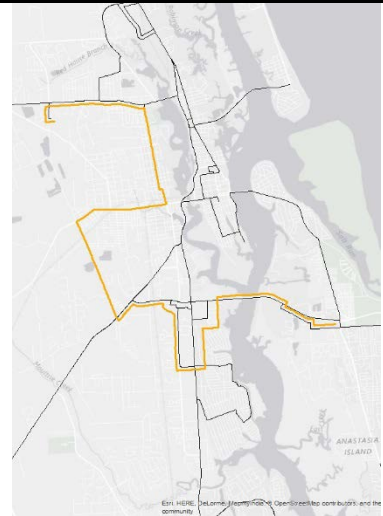
Depot
 Publix (2)
 Sheriff's Office
 St. Augustine Civic Center
 St. Augustine Shores
 St. Johns County Ocean Pier
 St. Johns County Public Library
 Winn Dixie

2015/2016 Route Service Productivity and Rankings

Average Daily Ridership	135	4 th
Avg. Passengers per Revenue Hour	13.8	2 nd
Avg. Passengers per Revenue Mile	0.57	4 th
Avg. Passengers per Trip	10.6	5 th
Operating Cost per Revenue Hour	\$56.84	5 th

Orange Route – West St. Augustine

The Orange Route operates from the Depot west to Flagler Hospital then south to Lewis Point Plaza and then north to St. Johns River State College. The Orange Route also serves several medical centers including Flagler Hospital and the VA Clinic. It serves several Grocery Stores including, Publix, Winn Dixie and Walmart as well as several shopping centers.



Transfer Locations and Routes

Depot	Blue, Green and Red
St. Johns River State College	Purple
On-street connections	Connector, Purple and Teal

Current Operational Data (as of March 2016)

Days of Service	Weekday/Saturday
Hours of Operation	6:45 am- 7:25 pm
Frequency (Minutes)	130
Layover Time	40 min (31%)
Total One-Way Trips	12
Daily Revenue Hours	12.67
Daily Revenue Miles	174.1
Peak Bus Requirement	1

Major Destinations

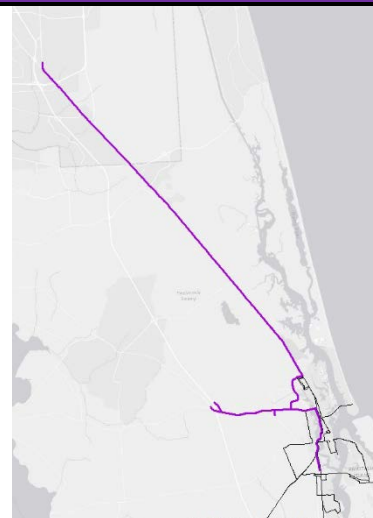
Depot
Flagler Hospital
Lewis Point Plaza
Publix (2)
St. Johns River State College
V. A. Clinic
Walmart
Winn Dixie

2015/2016 Route Service Productivity and Rankings

Average Daily Ridership	147	2 nd
Avg. Passengers per Revenue Hour	14.9	1 st
Avg. Passengers per Revenue Mile	0.85	3 rd
Avg. Passengers per Trip	11.5	4 th
Operating Cost per Revenue Hour	\$40.98	3 rd

Purple Route – SR 16 Outlet Malls / Avenues Mall

The Purple Route operates from Seabridge Square north to the Avenues Mall. It also serves SR 16 to the Outlet Mall area near I-95. The Purple Route serves several grocery stores including Publix and Winn Dixie as well as several shopping centers. It serves the St. Johns County main library and the Government Center.



Transfer Locations and Routes

Seabridge Square	Connector, Blue and Teal
Government Center	Red, Teal, Connector
St. Johns River State College	Orange
On-street connections	Red and Orange

Current Operational Data (as of March 2016)

Days of Service	Weekday/Saturday
Hours of Operation	5:30 am- 7:25 pm
Frequency (Minutes)	215
Layover Time	50 min (23%)
Total One-Way Trips	8
Daily Revenue Hours	13.92
Daily Revenue Miles	330.4
Peak Bus Requirement	1

Major Destinations

Avenues Mall
 Government Center
 Publix
 Seabridge Square
 Shoppes of Mission Trace
 St. Augustine Outlet Mall
 St. Augustine Premium Outlets
 St. Johns County Main Library
 St. Johns River State College
 Winn Dixie

2015/2016 Route Service Productivity and Rankings

Average Daily Ridership	108	6 th
Avg. Passengers per Revenue Hour	8.7	6 th
Avg. Passengers per Revenue Mile	0.34	6 th
Avg. Passengers per Trip	13.6	2 nd
Operating Cost per Revenue Hour	\$62.21	7 th

Red Route – SR 16 Outlet Malls / Avenues Mall

The Red Route operates from the Depot north to the Government Center through Historic St. Augustine. The Red Route also serves the COA Community Center and the San Marco Visitor Center. It serves Winn Dixie and the St. Johns County main library on US1.



Transfer Locations and Routes

Depot	Orange, Blue and Green
Government Center	Connector, Purple and Teal
On-street connections	Connector, Blue, Purple and Teal

Current Operational Data (as of March 2016)

Days of Service	Weekday/Saturday
Hours of Operation	6:45 am- 7:25 pm
Frequency (Minutes)	130
Layover Time	40 min (31%)
Total One-Way Trips	12
Daily Revenue Hours	12.67
Daily Revenue Miles	131.2
Peak Bus Requirement	1

Major Destinations

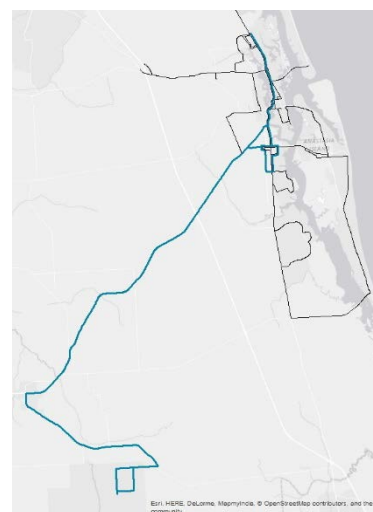
COA Community Center
 Depot
 Government Center
 Historic St. Augustine
 Main Library
 San Marco Visitor Center
 Winn Dixie

2015/2016 Route Service Productivity and Rankings

Average Daily Ridership	136	3 rd
Avg. Passengers per Revenue Hour	13.7	3 rd
Avg. Passengers per Revenue Mile	1.05	2 nd
Avg. Passengers per Trip	10.6	6 th
Operating Cost per Revenue Hour	\$30.87	2 nd

Teal Route – Hastings / Flagler Estates

The Teal Route operates from Seabridge Square north to the Government Center and from Seabridge Square south to Hastings and Flagler Estates. The Teal Route serves several medical centers including Flagler Hospital and the VA Clinic. It also serves several Grocery Stores including, Publix, Winn Dixie and Walmart as well as several shopping centers.



Transfer Locations and Routes

Seabridge Square	Connector, Purple and Blue
Government Center	Connector, Purple and Red
On-street connections	Orange

Current Operational Data (as of March 2016)

Days of Service	Weekday/Saturday
Hours of Operation	5:30 am- 7:05 pm
Frequency (Minutes)	235
Layover Time	30 min (13%)
Total One-Way Trips	8
Daily Revenue Hours	13.58
Daily Revenue Miles	296.2
Peak Bus Requirement	1

Major Destinations

Government Center
V. A. Clinic
Health Department
Flagler Hospital
Hastings City Hall
Flagler Estates
Main Library
Walmart
Winn Dixie
Publix
Riverside Center
Lewis Point Plaza

2015/2016 Route Service Productivity and Rankings

Average Daily Ridership	94	7 th
Avg. Passengers per Revenue Hour	8.0	7 th
Avg. Passengers per Revenue Mile	0.32	7 th
Avg. Passengers per Trip	11.6	3 rd
Operating Cost per Revenue Hour	\$60.20	6 th

Table 9 shows all of Sunshine Bus Routes performance in comparison with each other. This data is for a full year from October 2015 to September 2016.

Table 9. Sunshine Bus Performance Data - 2015/2016

ROUTE	TOTAL RIDERS	AVG. DAILY RIDERS	AVG. RIDERS/ HR	AVG. RIDERS/ MILE	AVG. RIDERS/ TRIP	COST/ REV HR
Connector	61615	199	8.9	0.45	17.1	\$45.84
Purple	33239	108	8.7	0.34	13.6	\$62.21
Green	41669	135	13.8	0.57	10.6	\$56.84
Red	42140	136	13.7	1.05	10.5	\$30.87
Blue	41235	133	13.6	1.11	10.5	\$29.00
Orange	45297	147	14.9	0.85	11.5	\$40.98
Teal	29088	94	8.0	0.32	11.6	\$60.20
Total	294283	952	10.9	0.55	12	\$46.76

Source: National Transit Database 2015/16

System Ride check

As part of the St. Johns County Transit Development Plan 2016 Major Update that was completed by England-Thims & Miller, Inc. (ETM), there was an onboard survey that was conducted of the Sunshine Bus deviated fixed-route system. This survey provided a wealth of data that was utilized in the decision making of route recommendation in this COA.

Furthermore, CUTR staff visited the system on several occasions and rode each of the routes to get a feel for each route's overall level of utilization, areas of higher utilization, transfer locations served, and the general structure and pattern. Observations were made that also factored into the route recommendations.

Finally, CUTR met with Sunshine Bus operations staff to get their input as to potential areas of interest for expanding service as well as areas of concern with the current route structure. Some specific areas of concern were keeping the buses running on schedule (especially some of the longer routes) and refueling needs (due to the length of the routes).

Transfer Analysis

As part of the larger COA study, a transfer analysis was conducted, sampling a weekday in September 2016. The observed route-to-route transfer movements are shown below in Table 10. Transfer activity on the Sunshine Bus system is very low compared to other transit systems for three reasons. First of all, the bus routes are very long in nature reducing the overall need to transfer. Secondly, there are relatively few locations where customers can transfer in the system and fewer still that are timed transfers (the routes arrive at the same time). Finally, transfers require a second fare unless a passenger is utilizing a day or monthly pass. The

greatest number of transfers occurred between the Red Route (Serving Historic St. Augustine) and the Green Route (Serving St. Augustine Beach), connecting at the Depot transfer center. This reinforces the idea that there is the greatest demand to travel between the historic area and the beach.

Table 10. Transfers between Sunshine Bus Routes

	From						
	Connector	Purple	Green	Red	Blue	Orange	Teal
Connector		0	3	0	0	0	0
Purple	2		0	2	2	0	0
Green	0	0		6	2	3	0
Red	1	0	7		3	3	0
Blue	1	0	3	3		5	0
Orange	0	0	1	1	1		1
Teal	1	0	0	0	1	0	

Transit Center/Facility Analysis

One area in which Sunshine Bus Company needs to address in the short term is the location of an additional transit facility as the current facility is at its maximum capacity. If any additional routes or buses are added to the system (as recommended in the alternatives/recommendations), an additional facility location would need to be secured. One potential strong candidate is the county owned property near the Depot transfer center. This location would provide the ability to utilize county owned facilities including a refueling station.

Demographic Analysis

A demographic analysis identifies particular population groups that represent potential transit markets. These markets represent opportunities for transit to connect workers, seniors, younger and impoverished populations to desirable and life sustaining destinations.

Employment access crosscuts all of the targeted markets; accordingly public transit access to employment areas affects each demographic category. Identifying the location of employment opportunities helps ensure transportation options are available for many of these groups. St. John's County is home to over 60,000 jobs many of which are in Accommodation and Food services (22%). Other large employment categories include, Educational Services, (17.7%) and Health Care and Social assistance (17.1%). Figure 8 illustrates the distribution of the employment locations around the county. Transit services to these areas ensure workers may have access the jobs via public transportation. This access is acutely critical for workers making lower incomes. Twenty-five percent of the jobs located within St. John's County earn below \$1,250 per month.

The distribution and location of population segments may also represent opportunities for transit. St. John's county population is over 210,000 people. The county's median age (42.7) is slightly above the State's median age (41.1) and both are above the national median age of 37.6. The elderly population segment are a potential transit market due to physical and economic conditions that make transit an appealing option. More than 50,000 people in St. John's County are age sixty and above and the areas with higher percentages of over age 60 population are found in Figure 9.

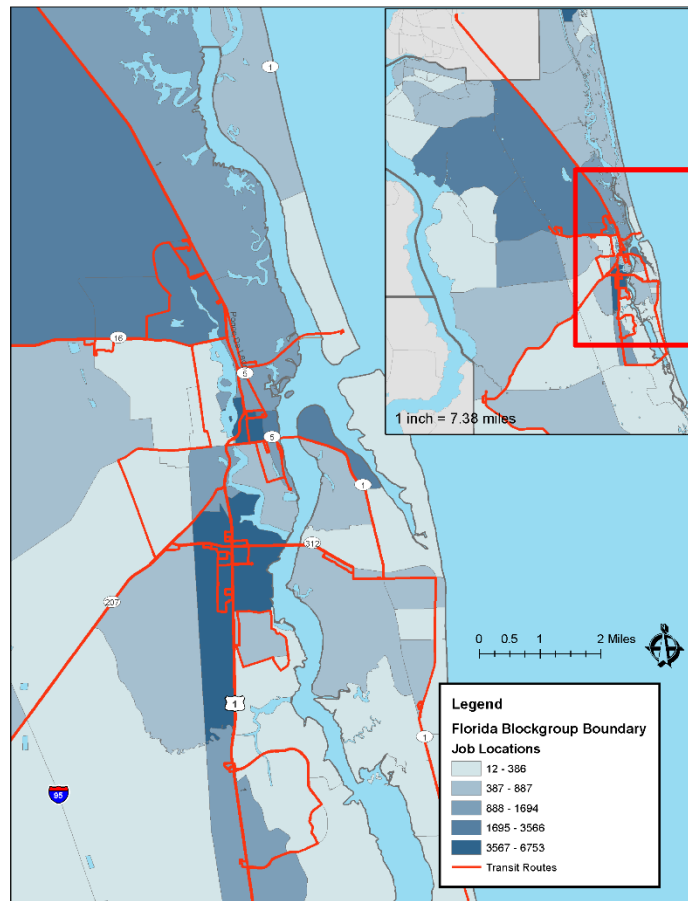


Figure 8. Job Locations

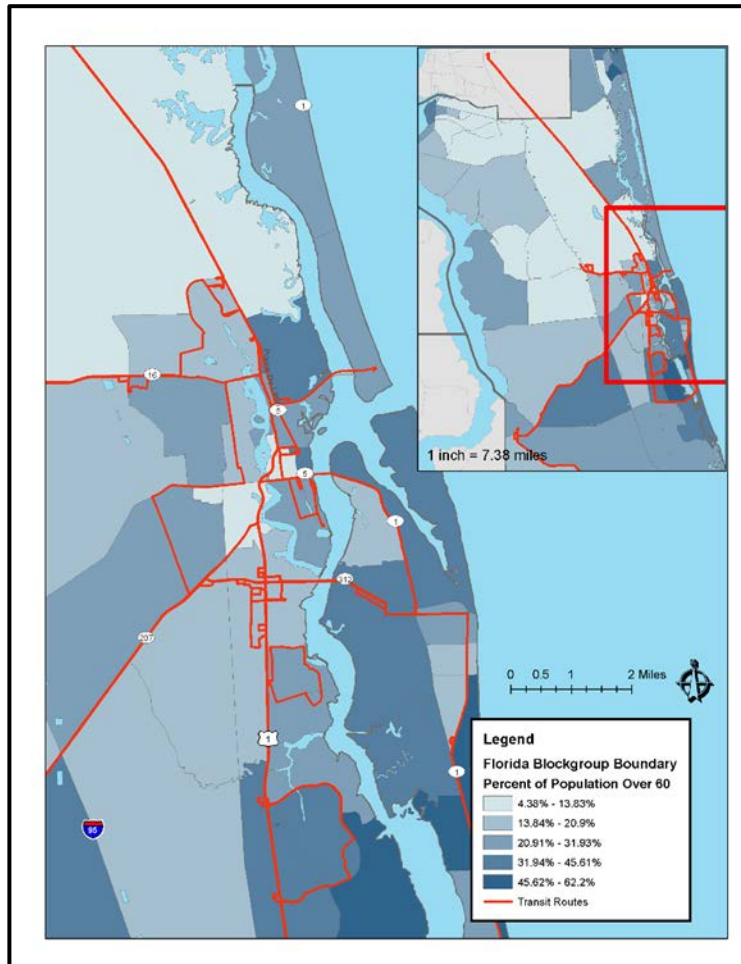


Figure 9. Percent of Population Over 60

Similar to the elderly population, the younger population segment potentially have economic circumstances that make public transportation an appealing option. The distribution of the under 18 population are illustrated in Figure 10.

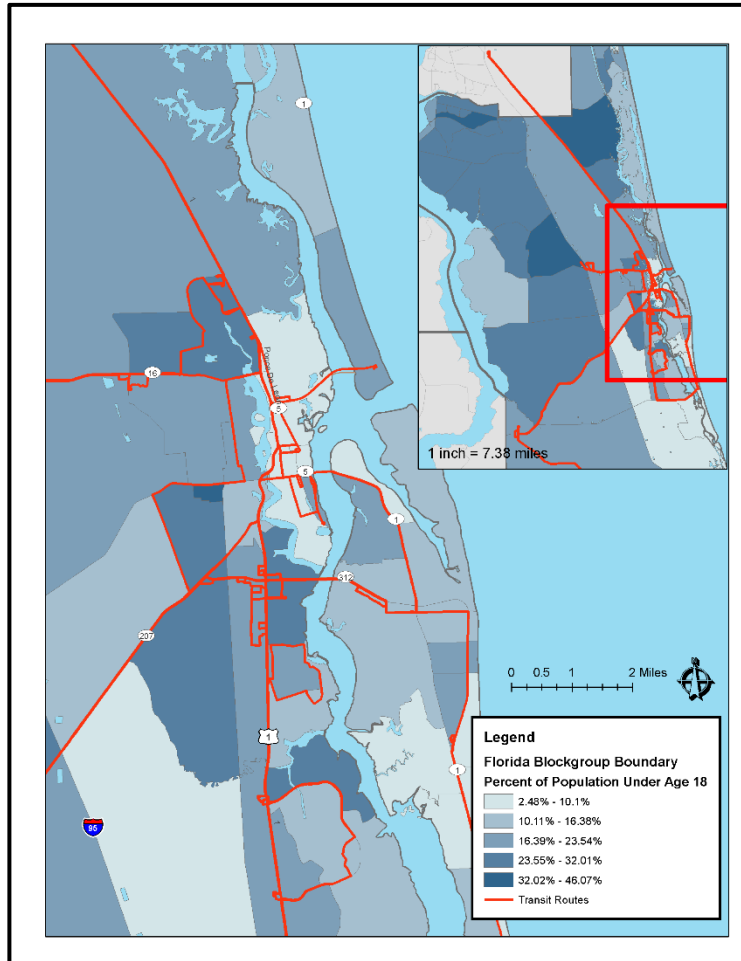


Figure 10. Percent of Population Under 18

The population segment that may rely most on public transportation are those living at or below the poverty line. Access to public transportation is more vital to this segment of the population since access to personal vehicle is less likely for those living in poverty. Consequently, transit service to these areas ensures that people living in poverty have some access to life sustaining activities such as healthcare, food and employment. St. John's County has 9.5% of its population living below the poverty level and 4.3% of the labor force are employed and live under the poverty line. The distribution and location of the persons living under poverty level offers a unique opportunity for transit to support this population and attract them as riders. Figure 11 illustrates the distribution of people living below the poverty line.

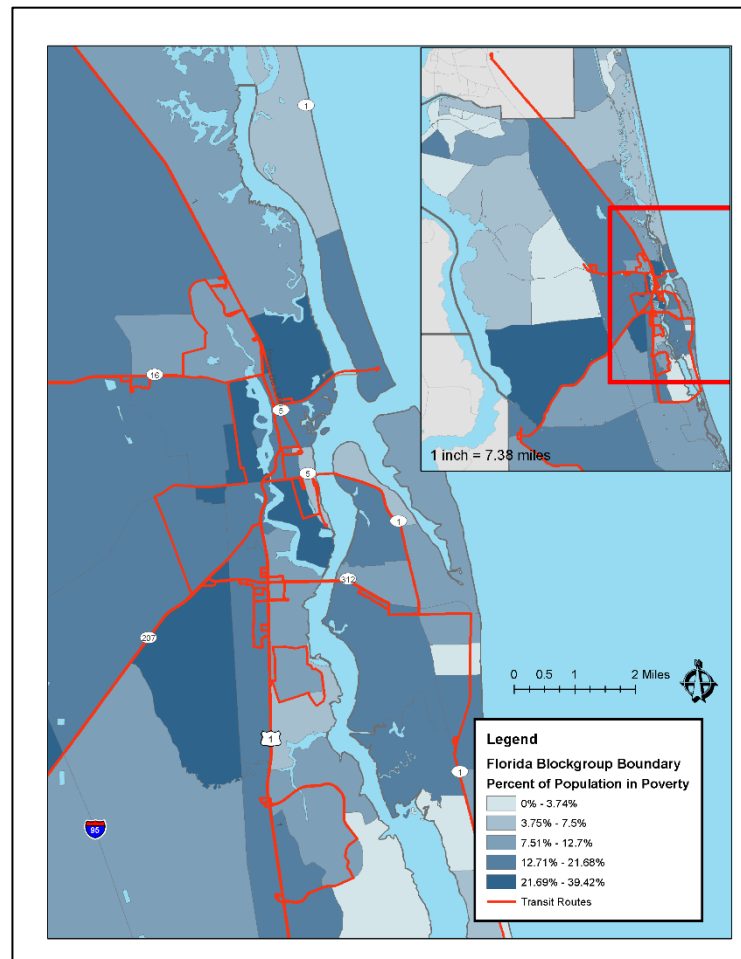


Figure 11. Percent of Population Living Below Poverty Level

Another demographic category includes household characteristics. Households without an available personal vehicle represent a potential transit market. These households may lack a vehicle for a variety of socio-economic reasons, from economic limitations, physical constraints or environmental (e.g. living in a dense areas). Regardless of the reason, households without personal vehicles are a

potential service market for public transportation services. The location of households with zero vehicles available is illustrated in Figure 12.

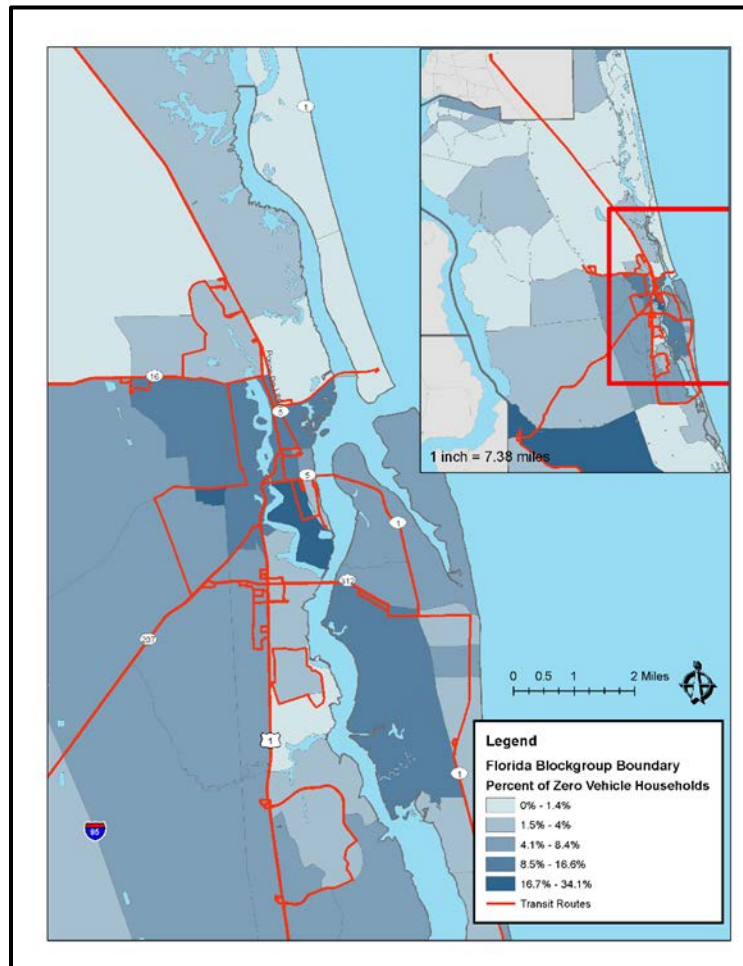


Figure 12. Percent of Households with Zero Vehicles

This analysis ensures that St. Johns County is able to identify demographic segments that serve as potential transit riders. Further, it helps identify population groups that public transportation serves as a vital piece to their access to a life sustaining activities.

Final Alternatives / Recommendations

Concept

The current route structure and frequency of the Sunshine Bus fixed route system is the equivalent of a bare-bones system. The service frequency of 2+ hours on all routes except for the Circulator caters only to customers that have no other choice but to ride the bus to get to their destination. The system values service coverage over service frequency, except there is also a great deal of duplication of service. Several routes overlap on the same roads, most notably US1 and State Road 312. Furthermore, there are certain areas, like Kings Estate, that are not currently served at all.

The overall recommendation of this COA is to convert the route structure from its current form to a “trunk and feeder” type system. This implies that a route (the Connector) is converted to the trunk of the system, and all other routes feed into it. This enables the Connector to be shortened in length, therefore increasing its frequency on the main corridor of US1.

St. Johns County staff recommended that the new Connector route be named the “Main Line” so it is consistent with the current naming scheme.

The following is a route by route explanation of the current routes and the recommended changes over the next 5 years.

2019 Changes

The first year that changes are recommended are for 2019. This enables the St. Johns COA ample time to identify funding sources and prepare for service changes.

Hastings Circulator/Teal Route

The new Hastings Circulator route and an adjustment to the Teal route has already been implemented this year (June 1, 2017). The new Hastings Circulator route provides service to Hastings, Flagler Estates, and to Eastern Palatka. It connects with the Teal route in Hastings. As a result, the Teal route has been shortened and the frequency has been improved slightly. A further service frequency improvement to the Teal is recommended as part of a 2019 change to reassign the duplication of service with the Connector on US1. Instead, the Teal Route will terminate at Seabridge square, which will serve as a major transfer location.

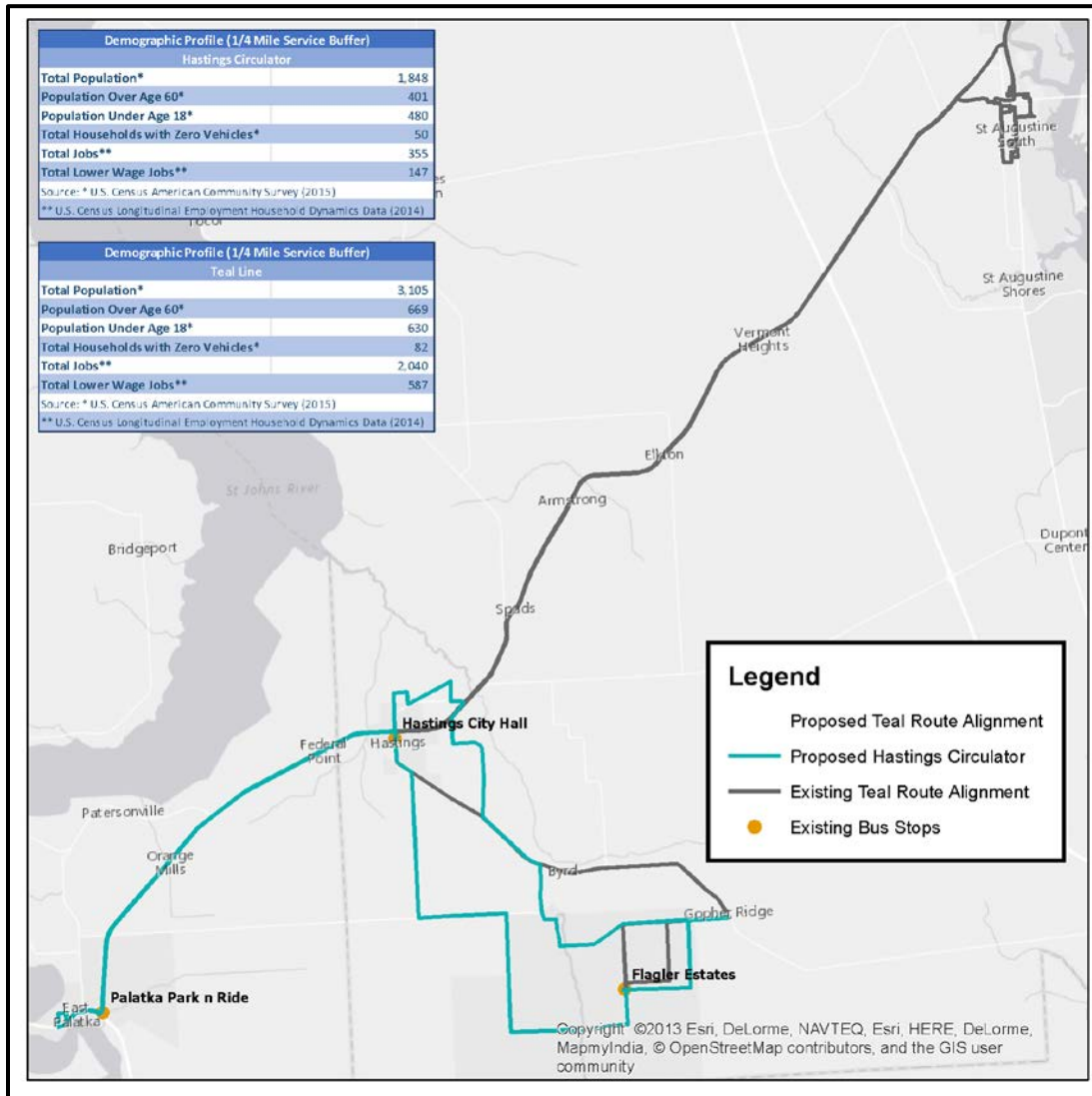


Figure 13. Hastings/Teal Route Existing and Proposed Alignments

Connector – North/South US 1 Corridor “Main Line”

The Connector will become the “Main Line” and offer service from the St. Johns Government Center in the north to the Moultrie Publix in the South. Service to Vilano Beach and St. Augustine South would be reassigned to other routes in the system. With one additional bus added to the route (for a total of three), the frequency would be increased to every 30 minutes. Key transfer locations will exist at Winn Dixie, Seabridge Square, and Lewis Point Plaza. A potential extension to Northrop GRUMMAN on US1 (2 miles north from St. Johns Government Center) has also been discussed, but the effect on the service frequency would need to be further evaluated. This change would be one of the changes recommended for 2019.

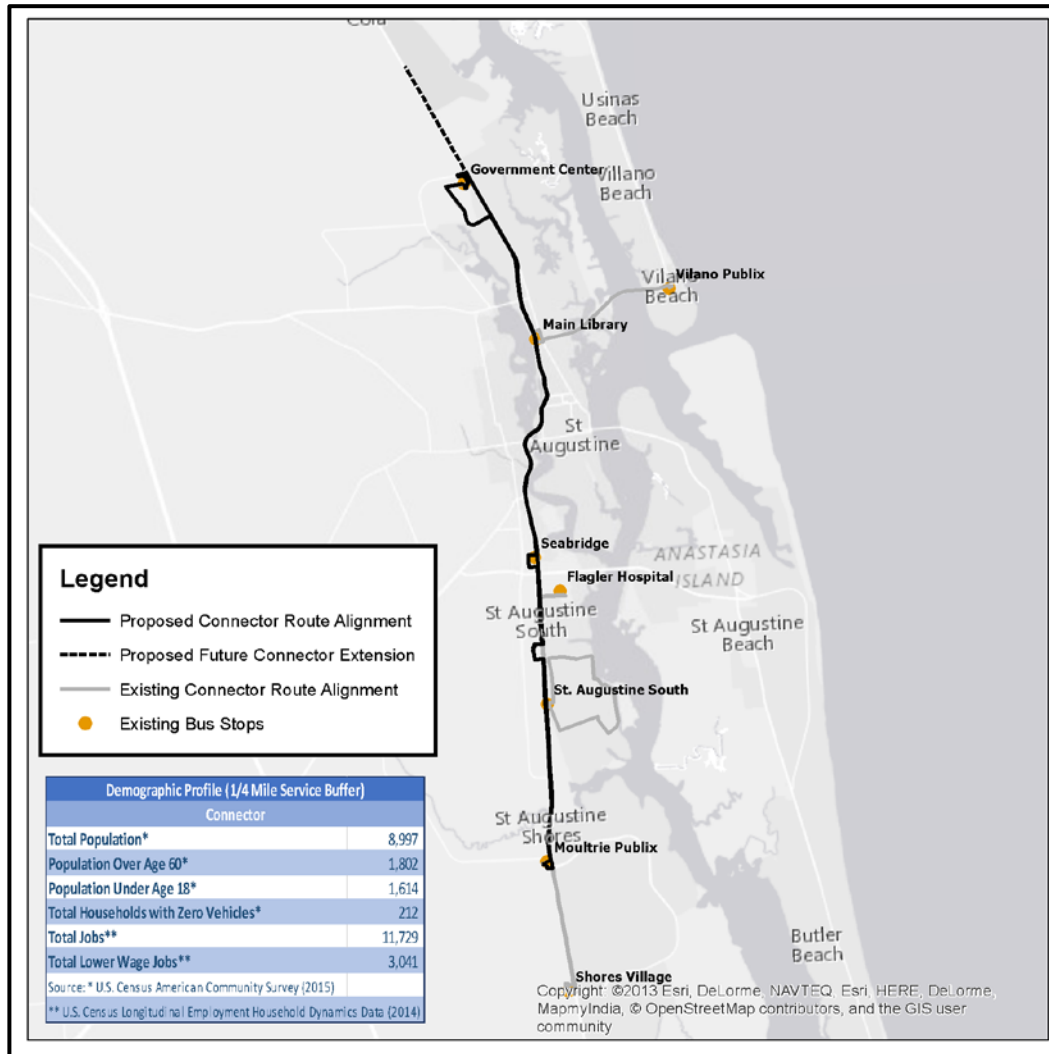


Figure 14. Connector Existing and Proposed Alignments

Blue Route – East/West Crosstown – Depot Transfer Center and retail areas on US1

Recommendations to the Blue Route entail shortening the route to terminate at Seabridge Square and focusing on serving the retail areas of St. Augustine in addition to the Flagler Hospital. This change would occur at the same time as the Connector change in 2019. The duplicative section on US1 would be removed, increasing the frequency to every 60 minutes. The section of the route serving Downtown St. Augustine would be reassigned to the new Orange route scheduled to come on line in 2021. Finally, the Blue route could be extended to serve a new facility located on the opposite side of A1A. This short distance would not likely require a change in frequency.



Figure 15. Blue Route Existing and Proposed Alignments

Purple Route 1 – Express Service to Avenues Mall in Jacksonville

The final change to be implemented in the initial series of changes in 2019 would be the splitting of the Purple Route into two distinct routes. The new “Purple 1” would start at Winn Dixie in St. Augustine in the South, serve the Government Center, and head north to the Avenues Mall in Jacksonville. This route would need to be evaluated for performance early on, as TBEST ridership projections were very low. Some other options to consider with this route is to make it an express route only or partner with JTA to move the connection location further South so that the route can be shortened.

Purple Route 2 – East/West Crosstown – Outlet Mall via SR 16

The second route, or “Purple 2”, would serve Vilano Beach (previously served by the Connector), and provide direct service along SR 16 to the Outlet Mall and S.J.R.S.C. The frequency on this route would be every 90 minutes. The transfer location with the new “Main Line” would occur at the Winn Dixie.

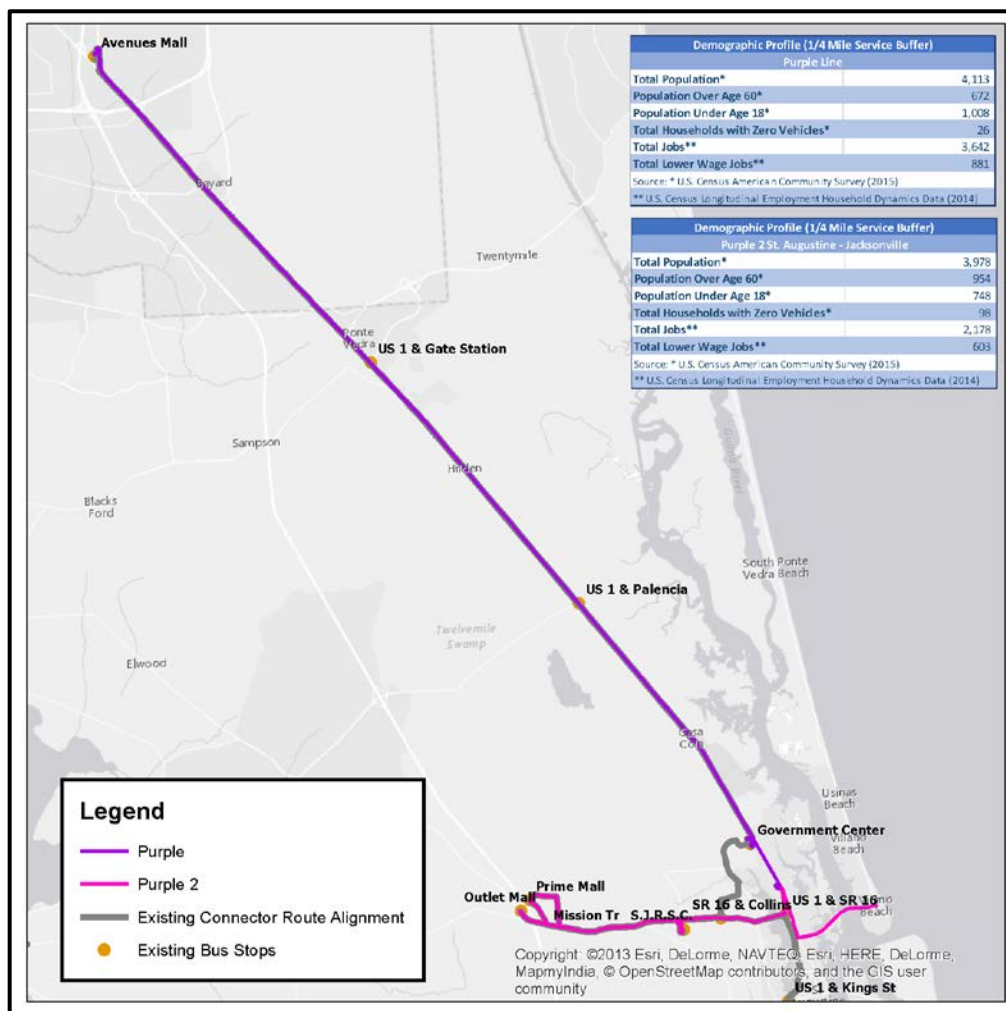


Figure 16. Purple 1 & 2 Routes Existing and Proposed Alignments

2020 Changes

The second set of changes, to occur in 2020, involve implementing the St. Augustine Beach Circulator/Limited stop and the St. Augustine Circulator routes that were recommended as part of the increased service frequency between the Cities task of the COA. In addition, adjustments to the Green and Red routes would be made as they provide direct connections with the proposed new service. These changes were pushed out to 2020 to provide ample time for the County to identify funding sources to include each of the City's participation. The City of St. Augustine and St. Augustine Beach Circulator/Limited stop changes are highlighting in an earlier section of this report.

Green Route – South US1 and Beach Connection

Changes to the Green Route include removing service along the beach (now served by the St. Augustine Beach Circulator) and terminating service at the Anastasia Publix where it would connect with the Beach Circulator. The other change to the route would occur on the other end. As the "Main Line" would be shortened in the South, the Green Line would provide service along US1 between the Moultrie Publix and Shores Blvd. The end of the route would operate as a loop, so that it could still serve the St. Augustine Shores area. With these changes, the service frequency could still be improved from 2 hours to 90 minutes.

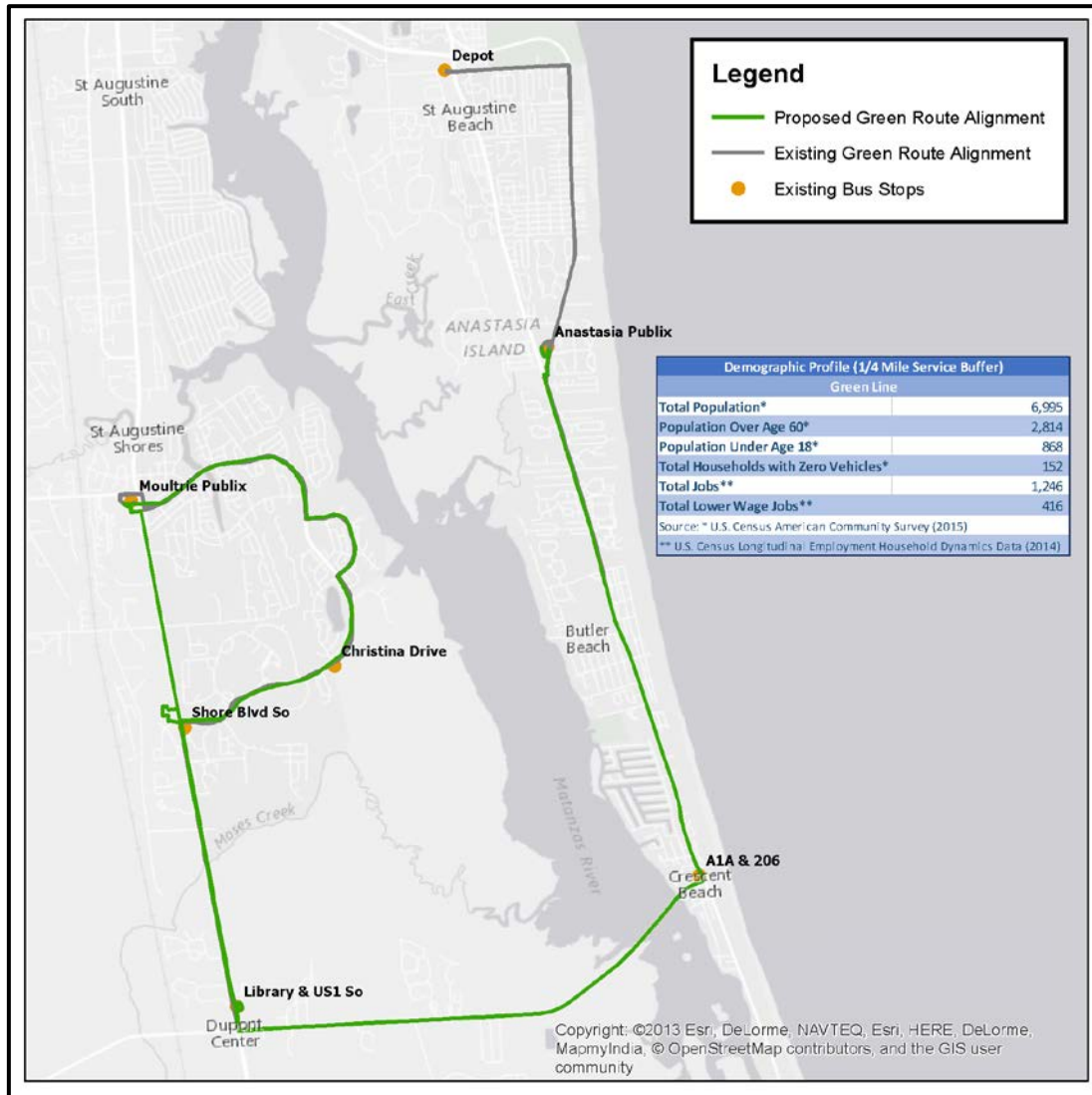


Figure 17. Green Route Existing and Proposed Alignments

Red Route – Historic St. Augustine/City Core

The new Red Route has the potential to benefit greatly from other changes made in the system. With the “Main Line” providing 30 minute service to the Government Center, it is recommended that the Red Line connect with it at the Winn Dixie in the North. The South terminus of the Red Line would take place at the Community Center in Downtown St. Augustine. The section currently operating on the Bridge of Lions would be reassigned to the Beach Circulator/Limited Stop Route. The Red Route can then focus on serving the Downtown and city core areas with a frequency of every 60 minutes.

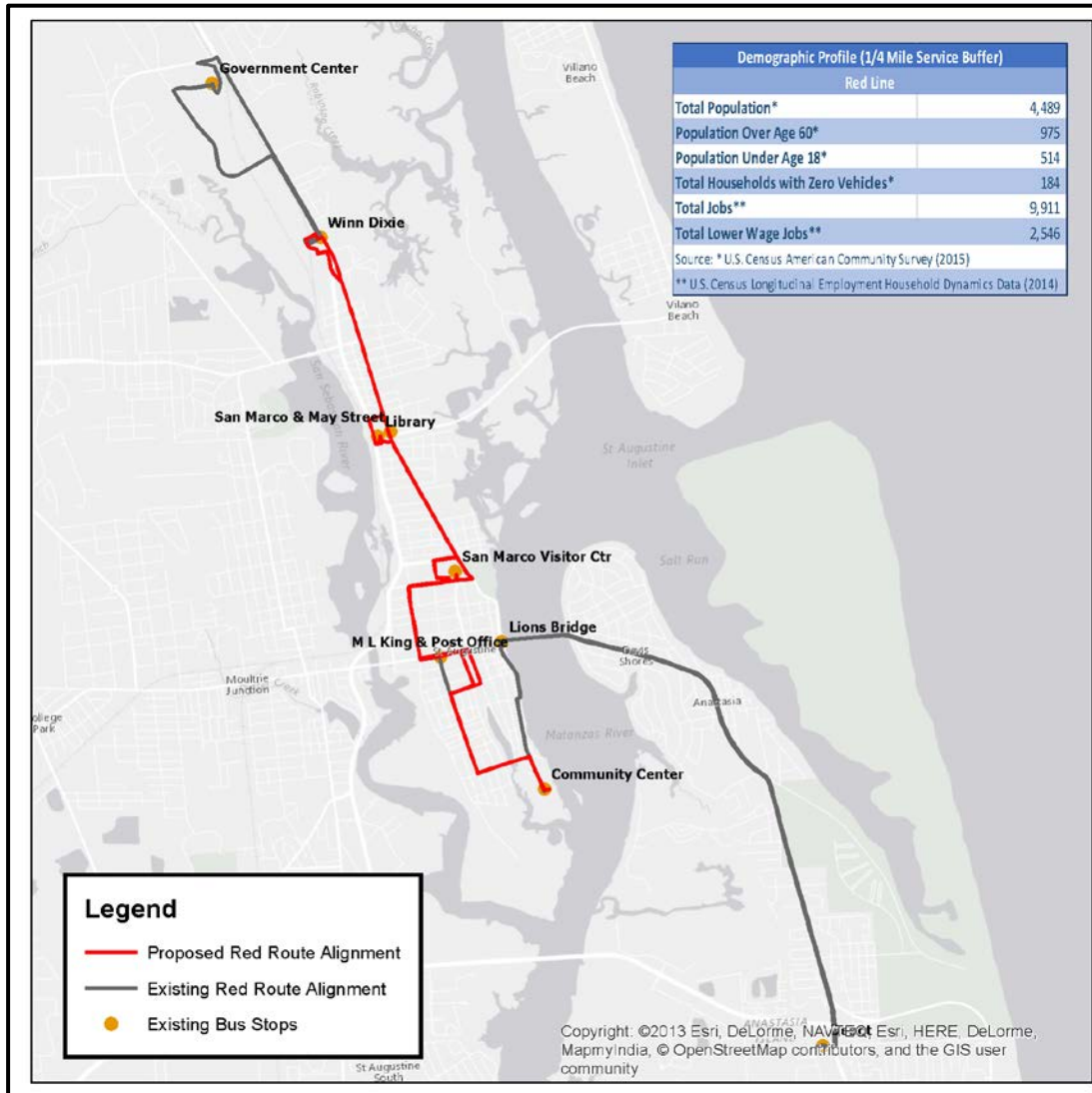


Figure 18. Red Route Existing and Proposed Alignments

2021 Changes

Changes in the 4th year of the COA involve splitting the Orange Route into two separate routes in order to provide more direct service to certain areas in St. Augustine.

Orange Route 1 – North/South Crosstown

Orange Route 1 would see a significant change to service. Firstly, duplicative service with the blue route would be removed. This would enable the route to start at Seabridge Square in the South and immediately head west. The route keeps its remaining structure until it reaches SR 16 (with a slight re-routing on Kings Street to avoid multiple stoppages from the railroad). On SR 16, it would head north to the Government Center (replacing the section that the Purple Route was operating on). This new structure would result in a service frequency of 90 minutes.

Orange Route 2 – East/West King St. to S.J.R.S.C

The Orange Route 2 would be a completely new route (although providing service along part of King St. that was originally provided by the Blue Route). It would provide a direct East-West route along Kings St and then head north to S.J.R.S.C and Mission Trace. This route would be one of the shortest in the system and could provide service frequencies of every 45 minutes with only one bus.

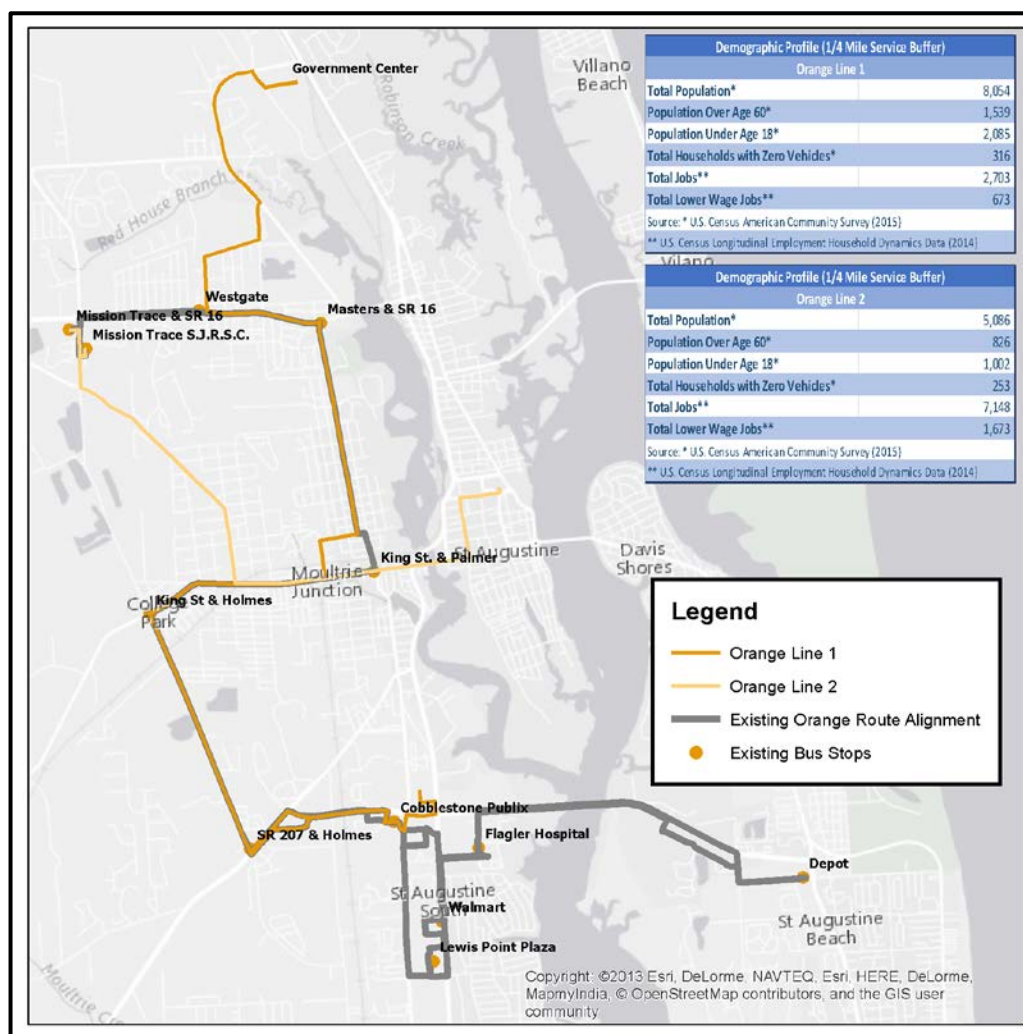


Figure 19. Orange 1 & 2 Routes Existing and Proposed Alignments

2022 Changes

New Route – Wildwood Dr./Kings Estate Road Route

The final recommendation would occur in the fifth and final year of the COA timeframe. This route would provide service to a new area along Wildwood Dr. as well as Kings Estate Road. It would start at the Moultrie Publix in the South to provide connections with the “Main Line” and the Green Route. It would serve the Wildwood and Kings Estate areas before heading north on US1. It would also serve St. Augustine South, which was reassigned from the “Main Line” so that it can provide more direct service. It would terminate in the North at Seabridge Square. This configuration would enable a frequency of every 90 minutes.

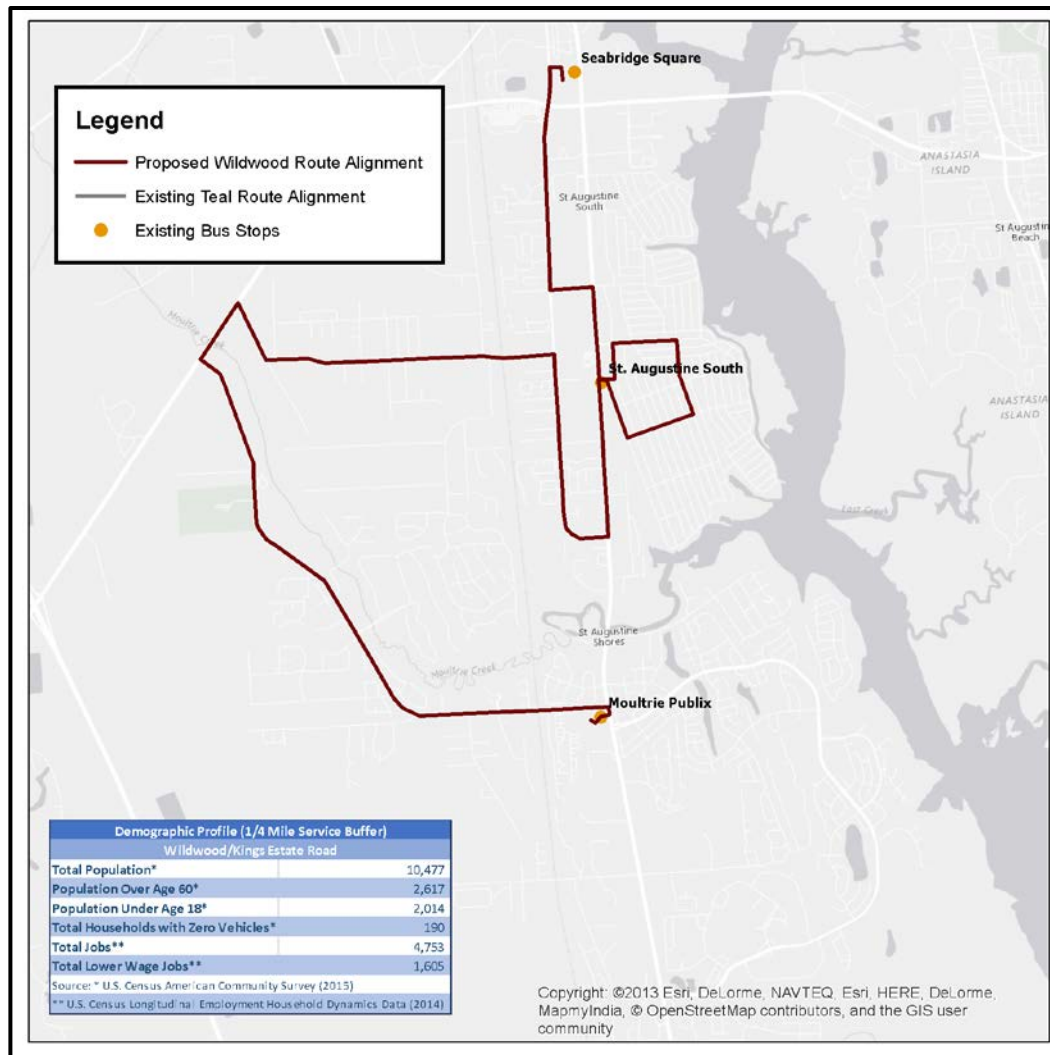


Figure 20. Wildwood/Kings Estate Route Existing and Proposed Alignments

TBEST Operational Data and Ridership Predictions

The recommended routes and operational data were input into the TBEST software. Reports were created to compare the existing service in 2016 with the recommended service five years out in 2021. Tables 15 through 18 show the changes that would occur to the operational data between the existing system (Scenario A) and the recommended system (Scenario B).

Below is a summary of the results:

- The number of buses operated in the system would increase from 8 to 17. *Note, it is currently at 9 with the June 1, 2017 implementation of the Hastings Circulator.*
- Even while the total number of buses more than doubles; the lengths of the routes get much shorter. The overall length of all routes is actually reduced from 363 miles to 284 miles. This is in large part due to reducing the duplication of services (multiple routes serving the same corridor), rather than any reduction to service coverage. In fact, the recommendations were specifically designed with the notion that current service coverage NOT be reduced.
- Service frequencies were improved on all routes, some more dramatically than others. A minimum headway goal of 90 minutes was set, which was only eclipsed by the remote routes (Teal/Hastings, and Purple 1 to Jacksonville). These routes will need to be closely monitored for performance and may need to be further altered in the future.
- Total system ridership was predicted to increase 136% by 2022 if the changes were implemented.
- The Blue, Teal, Orange and Purple 1 were predicted to have decreases in ridership. The Orange Line was projected at a modest 17 percent decrease. The Blue Line was projected at a 24 percent decrease, but this was also with 16 percent fewer service hours. The Purple Line (when combining both Purple 1 and Purple 2) actually was projected at an 60 percent increase. This further highlights that the Purple 1 segment to Jacksonville is the weaker performer by far. The Teal saw a major drop-off in projected ridership as it serves only as a connection from St. Augustine to Hastings. There is not much development occurring between the two cities hence the low ridership projection.
- The Red Line had a service mile and service hour reduction of roughly 20 percent, yet saw a significant ridership increase from 11.7 boardings per hour to 32.3 boardings per hour. This is likely due to the increased service frequency of 60 minutes and a focus in the City core and Historic St. Augustine areas.

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- The Orange 2 also was a very strong performer at 26.5 boardings per hour, followed by Green (20.0), Purple 2 (14.2), and the Main Line (13.1)
 - Overall boardings per hour were projected to increase from 10.5 to 11.5 (9 percent increase).
 - The annual cost comparison of the COA recommendations versus current costs was \$2.58 million versus \$1.2 million (a difference of \$1.38 million). Note that a portion of this increase (\$184,000 for the Hastings Circulator) has already been funded.
 - The operating cost per passenger was projected to decrease from \$4.18 per passenger to \$3.82.

Table 11. TBEST Operational Data
Number of Buses, Length of Route, Running Times, Layover Times, Headways
Scenario A: Base Network, Scenario B: COA Recommendations 2021

Scenario Comparison Report										
Boardings, Service, Performance and Cost Variables										
Route Name	Number of Buses in Service		Length of Route (1 Round Trip)		Running Time (1 Round Trip)		Layover Time (1 Round Trip)		Headways	
	A	B	A	B	A	B	A	B	A	B
Main Line (Old Connector)	2	3	31.6	20.1	90	70	30	20	60	30
Blue Line	1	1	20.6	10.8	90	40	40	20	130	60
Green Line	1	1	37.2	30.1	90	70	40	20	130	90
Orange Line	1	1	28.1	20.2	90	70	40	20	130	90
Orange 2	0	1		9.4		30		15		45
Purple Line	1	1	83.0	48.2	165	90	50	90	215	180
Purple 2	0	1		20.6		70		20		90
Red Line	1	1	21.4	9.2	90	40	40	20	130	60
Teal Line	1	1	141.2	34.3	205	70	30	36	235	106
Hastings Circulator	0	1		39.6		86		20		106
Wildwood/Kings Estates Road	0	1		24.7		70		20		90
Beach Circulator/Connector	0	3		14.8		60		30		30
St. Augustine Circulator	0	1		1.9		20		10		30
Totals	8	17	363.1	283.9						

Table 12. TBEST Operational Data
Total Boardings, Additional Boardings, Direct vs Transfer Boardings
Scenario A: Base Network, Scenario B: COA Recommendations 2021

Scenario Comparison Report										
Boardings, Service, Performance and Cost Variables										
Route Name	Total Boardings			Additional Boardings (+/-)	Direct Boardings			Transfer Boardings		
	A	B	% Change		A	B	% Change	A	B	% Change
Main Line (Old Connector)	57,564	169,203	194%	111,639	48,446	151,167	212%	9,118	18,036	98%
Blue Line	41,756	31,710	-24%	-10,046	37,001	28,000	-24%	4,755	3,711	-22%
Green Line	40,664	74,692	84%	34,028	39,483	73,869	87%	1,181	823	-30%
Orange Line	45,032	37,411	-17%	-7,621	42,611	36,816	-14%	2,421	595	-75%
Orange 2	NA	81,234	100%	81,234	NA	70,831	100%	NA	10,403	100%
Purple Line	33,072	5,636	-83%	-27,436	30,179	5,177	-83%	2,893	459	-84%
Purple 2	NA	47,441	100%	47,441	NA	43,105	100%	NA	4,336	100%
Red Line	39,988	88,472	121%	48,484	38,197	79,885	109%	1,791	8,587	379%
Teal Line	28,600	4,047	-86%	-24,553	24,941	3,789	-85%	3,659	258	-93%
Hastings Circulator	NA	5,156	100%	5,156	NA	5,156	100%	NA	0	0%
Wildwood/Kings Estates Road	NA	21,272	100%	21,272	NA	19,622	100%	NA	1,650	100%
Beach Circulator/Connector	NA	68,517	100%	68,517	NA	64,351	100%	NA	4,165	100%
St. Augustine Circulator	NA	41,252	100%	41,252	NA	33,870	100%	NA	7,382	100%
Totals	286,676	676,043	136%	389,367	260,858	615,638	136%	25,818	60,405	134%

Table 13. TBEST Operational Data
Revenue Service Miles, Revenue Service Hours, Boardings per Service Hour
Scenario A: Base Network, Scenario B: COA Recommendations 2021

Scenario Comparison Report									
Boardings, Service, Performance and Cost Variables									
Route Name	Revenue Service Miles			Revenue Service Hours			Boardings Per Service Hour		
	A	B	% Change	A	B	% Change	A	B	% Change
Main Line (Old Connector)	138,181	181,426	31%	5,284	12,868	144%	10.9	13.1	21%
Blue Line	38,513	38,190	-1%	3,422	2,876	-16%	12.2	11.0	-10%
Green Line	69,708	78,990	13%	3,426	3,734	9%	11.9	20.0	69%
Orange Line	52,587	50,297	-4%	3,430	3,546	3%	13.1	10.5	-20%
Orange 2	NA	47,265	100%	NA	3,071	100%	NA	26.5	100%
Purple Line	103,605	86,431	-17%	3,933	3,283	-17%	8.4	1.7	-80%
Purple 2	NA	51,064	100%	NA	3,338	100%	NA	14.2	100%
Red Line	40,120	32,575	-19%	3,422	2,742	-20%	11.7	32.3	176%
Teal Line	92,480	74,923	-19%	4,291	3,108	-28%	6.7	1.3	-80%
Hastings Circulator	NA	98,900	100%	NA	4,181	100%	NA	1.2	100%
Wildwood/Kings Estates Road	NA	58,514	100%	NA	3,287	100%	NA	6.5	100%
Beach Circulator/Connector	NA	133,743	100%	NA	9,194	100%	NA	7.5	100%
St. Augustine Circulator	NA	17,099	100%	NA	3,502	100%	NA	11.8	100%
Totals	535,193	949,416	77%	27,207	58,730	116%	10.5	11.5	9%

Table 14. TBEST Operational Data
Route Cost, Cost per Passenger Trip

Scenario A: Base Network, Scenario B: COA Recommendations 2021

Scenario Comparison Report						
Boardings, Service, Performance and Cost Variables						
Route Name	Route Cost			Cost Per Passenger Trip		
	A	B	% Change	A	B	% Change
Main Line (Old Connector)	\$232,483	\$566,196	144%	\$4.04	\$3.35	-17%
Blue Line	\$150,568	\$126,531	-16%	\$3.61	\$3.99	11%
Green Line	\$150,735	\$164,305	9%	\$3.71	\$2.20	-41%
Orange Line	\$150,898	\$156,028	3%	\$3.35	\$4.17	24%
Orange 2	NA	\$135,106	100%	NA	\$1.66	100%
Purple Line	\$173,061	\$144,452	-17%	\$5.23	\$25.63	390%
Purple 2	NA	\$146,881	100%	NA	\$3.10	100%
Red Line	\$150,568	\$120,652	-20%	\$3.77	\$1.36	-64%
Teal Line	\$188,791	\$136,730	-28%	\$6.60	\$33.79	412%
Hastings Circulator	NA	\$183,982	100%	NA	\$35.68	100%
Wildwood/Kings Estates Road	NA	\$144,646	100%	NA	\$6.80	100%
Beach Circulator/Connector	NA	\$404,527	100%	NA	\$5.90	100%
St. Augustine Circulator	NA	\$154,070	100%	NA	\$3.73	100%
Totals	\$1,197,104	\$2,584,106	116%	\$4.18	\$3.82	-8%

Municipal Analysis – Route Coverage Increases by Municipality

To illustrate the impact the proposed changes will have on residents, businesses and visitors of St. John's County, an analysis of the of the daily revenue miles per municipality and unincorporated areas of the county was conducted for both the current service and the recommended service changes scenario. Using GIS, the daily revenue miles for each municipality including the unincorporated areas was calculated. Based on this analysis, the existing service provides approximately 2,070 daily revenue miles of service: 70 percent operating in the unincorporated parts of St. John's County, 24 percent operating in the City of St. Augustine, 2.3 percent operating in St. Augustine Beach and the remaining operating in the City of Jacksonville (2.8 percent). Table 15 illustrates the total daily revenue miles by municipality including the City of Jacksonville (located outside St. John's County). Table 16 details the total daily revenue miles calculated for the City of St. Augustine by route. Table 17 details the total daily revenue miles calculated for the unincorporated areas of St. John's County by route.

Table 155: Distribution of Daily Revenue Miles by Municipality

Existing Service	
Municipality	Daily Revenue Miles
St. Augustine	496.8
St. Augustine Beach	47.4
Unincorporated	1475.6
Jacksonville	57.8
Total	2077.6

Table 16: Existing Routes Servicing St. Augustine

Route	Daily Revenue Miles
Blue Line	43.7
Connector	165.6
Orange Line	40.0
Purple Line	28.8
Red Line	104.4
Teal Line	114.3
Total	496.8

Table 17: Existing Routes Servicing Unincorporated Areas

Route	Daily Revenue Miles
Blue Line	78.9
Connector	276.7
Orange Line	127.2
Green Line	176.5
Purple Line	234.0
Red Line	21.3
Teal Line	561.0
Total	1475.6

Using the same analytical approach, the distribution of daily revenue miles of the proposed service changes are illustrative of the impact of the proposed service enhancements. The proposed improvements and realignment results in a 42 percent increase of daily revenue miles throughout St. John's County. Similarly,

the City of St. Augustine would experience a 42 percent increase in daily revenue miles while the unincorporated areas would experience a 29 percent increase with an increase of 431.5 miles daily revenue miles. The City of St. Augustine Beach would experience a significant percentage growth of 407 percent with 240 additional daily miles of revenue service. Table 18 details the revenue mile increases for each municipality, unincorporated area, and the system total.

Table 18: Distribution of Revenue Mile Increases

Area	Existing Revenue Miles	Proposed Revenue Miles	Increase in Revenue Miles	Percentage Increase
St. Augustine	496.8	704.3	207.5	42%
St. Augustine Beach	47.4	240.2	192.8	407%
Unincorporated	1475.6	1907.1	431.5	29%
Jacksonville	57.8	89.1	31.3	54%
System Wide (total)	2077.6	2940.7	863.1	42%

The breakdown of routes serving each areas reveals the impact of the realignment and additions of service frequency and new routes. Table 19 details the routes and total revenue miles serving St. Augustine. Table 20 illustrates the routes serving unincorporated areas of St. John's County.

Table 19: Proposed Routes Serving St. Augustine

Route	Daily Revenue Miles
Blue Line	39.7
Connector	252.7
Purple Line 1	17.4
Purple Line 2	50.1
Beach Circulator/Limited Stop Route	202.9
Red Line	114.3
St. Augustine Circulator	27.2
Total	704.3

Table 20: Proposed Routes Serving Unincorporated Areas

Route	Daily Revenue Miles
Blue Line	89.2
Connector	308.2
Green Line	224.0
Hastings Circulator	164.4
Teal Line	238.0
Orange Line 1	161.1
Orange Line 2	131.2
Purple Line 1	181.5
Purple Line 2	116.3
Beach Circulator/Limited Stop Route	88.7
Wildwood/Kings Estate Road	204.5
Total	1907.1

Finance & Implementation Plan

Table 21 shows a phasing approach to implementing the recommended changes. The addition of the Hastings Circulator is shown in 2018, although it has already occurred as of June 1, 2017.

- In 2019, two additional buses would be required as well as \$375,887 in operating funding. The capital cost of the buses would range anywhere from \$75,000 to \$125,000 each.
- In 2020, four additional buses would be required as well as \$542,251 in operating funding.
- In 2021-22, two additional buses would be required as well as \$284,882 in operating funding.

Table 21. St. Johns COA Schedule of Improvements

					2017	2018	2019	2020	2021	2022
Name of Route	Buses Current	Buses COA	Current Headways (min)	COA Headways (min)	Buses Operating Costs	Buses Operating Costs	Buses Operating Costs	Buses Operating Costs	Buses Operating Costs	Buses Operating Costs
Hastings Circulator	-	1	-	106		1 \$183,982	1 \$183,982	1 \$183,982	1 \$183,982	1 \$183,982
Connector	2	3	60	30	2 \$232,483	2 \$232,483	3 \$566,196	3 \$566,196	3 \$566,196	3 \$566,196
Blue Line	1	1	130	60	1 \$150,568	1 \$150,568	1 \$126,531	1 \$126,531	1 \$126,531	1 \$126,531
Teal Line	1	1	235	106	1 \$188,791	1 \$188,791	1 \$136,730	1 \$136,730	1 \$136,730	1 \$136,730
Purple Line	1	1	215	180	1 \$173,061	1 \$173,061	1 \$144,452	1 \$144,452	1 \$144,452	1 \$144,452
Purple 2	-	1	-	90			1 \$146,881	1 \$146,881	1 \$146,881	1 \$146,881
Beach Circulator/Limited Stop Route	-	3	-	30				3 \$404,527	3 \$404,527	3 \$404,527
St. Augustine Circulator	-	1	-	30				1 \$154,070	1 \$154,070	1 \$154,070
Green Line	1	1	130	90	1 \$150,735	1 \$150,735	1 \$150,735	1 \$164,305	1 \$164,305	1 \$164,305
Red Line	1	1	130	60	1 \$150,568	1 \$150,568	1 \$150,568	1 \$120,652	1 \$120,652	1 \$120,652
Orange Line	1	1	130	90	1 \$150,898	1 \$150,898	1 \$150,898	1 \$150,898	1 \$156,028	1 \$156,028
Orange 2	-	1	-	45					1 \$135,106	1 \$135,106
Wildwood/Kings Estates Road	-	1	-	90						1 \$144,646
	8	17	Avg: 147 min	Avg: 77 min	8 \$1,197,104	9 \$1,381,086	11 \$1,756,973	15 \$2,299,224	16 \$2,439,460	17 \$2,584,106

Conclusions

The overall findings of this COA is that the Sunshine Bus Company is long overdue for some service improvements as the population and employment growth in St. Johns County has significantly increased while the Fixed Route system has remained stagnant. In 2017, The Sunshine Bus added its first new route in over 10 years by implementing the Hastings Circulator in the City of Hastings (also serving Flagler Estates and Palatka). This is a good first step to improving the system.

The 2016 Major TDP update also recommended service improvements (albeit over a longer time horizon – 10 years). Changes recommended in the first five years were very similar to the COA's recommendations in terms of the overall impact on the system. The TDP called for a projected total operating cost of \$2.6 million by 2022, which is very close to what the COA is recommending. What the COA was able to accomplish that went beyond the scope of the TDP is recommend very specific changes based on demographics, specific route observations, and route modeling using TBEST.

The recommendations in the financial and implementation plan provide a blueprint for phasing improvements over time, with the higher priority routes occurring first. Like the TDP, the COA is not a funded plan. Various methods of additional funding would need to be secured to implement the recommendations contained within this report. Federal funding in the form of Service Development Grants is something that the County could apply for which would provide a short-term source of operating funds. Discussions with the Cities of St. Augustine and St. Augustine Beach could lead to some financial support to the County, which to this date has not received any from the municipalities. Tourist development funds or local private entities such as businesses and educational institutions that would stand to benefit from increased transit service is another avenue of potential funding.

The current status quo of the Sunshine Bus System is providing lifeline service to residents that have no other alternative. At 2+ hour service frequencies on all routes except for one, there is zero incentive for residents to choose to ride the fixed route. While the Sunshine Bus has been able to grow their ridership over time, this is almost entirely the result of population and economic growth of the area. This year, ridership has actually started to level off and has even been down some months versus 2016 ridership. This trend could be seen as continuing without any additional service improvements.