

Chapter Seven – Assessment of Transit Demand and Needs

This chapter provides an assessment of the demand for transit services in St. Johns County, as well as factors that may affect potential demand. The chapter also includes recommendations on potential transit enhancements along with a proposed staging plan for implementation.

Ridership Trends

Ridership data provided by St. Johns County and the St. Johns County COA showed significant increases in ridership on the fixed route system. The increase is 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. These additions were made between 2006 and 2008. Over the past two years, ridership increases have slowed to a more reasonable level (less than 10% per year). This is also in direct correlation to the economic slowdown that has led to little population growth in St. Johns County and the state of Florida as a whole. Because of these issues, it is expected that ridership gains between 2010 and the base year for the TDP of 2012 will continue to be minimal.

As mentioned previously, a concerted effort has been made to shift able-bodied riders from the demand response service to the fixed route service. As a result, ridership on the demand response system has declined by 1/3 since 2004, although it has leveled off some over the past few years. It is expected that any decreases in ridership due to enhancements to the fixed route system will be offset by the aging of baby boomers, so ridership estimates for the 2012 base year remained constant with 2010 levels.

Table 7-1 summarizes the historical ridership trends and baseline forecasts for 2012.

Table 7-1: Ridership Trends

Year	Fixed-Route Ridership	Demand Response Ridership
2004	57,000	130,000
2010	186,000	87,000
2012 (est.)	198,000	87,000

Fare Elasticity

The Sunshine Bus fixed route service was established in 2002 with a base fare of \$1.00. Fares have not been increased since then, but potential fare increases were considered in this TDP. One way of evaluating the potential effects of fare changes on ridership is to use elasticities. Elasticities measure the sensitivity of a dependent variable (in this case ridership) to changes in an independent variable (in this case fares). The American Public Transportation Association (APTA) has published a report on fare elasticities that reveals 10% increase in transit fares will yield a 4% decrease in ridership.

Based on the fact that fares have not been raised since the system was initiated almost ten years ago and the need for additional revenues, this TDP assumes two fare increases. The first is proposed for 2013 and will increase all fares by 25%, with the base fare increasing from \$1.00 to \$1.25. This fare increase would also be applied to the demand response system. A second fare increase, only to the fixed-route system, would follow five years later. That increase would be approximately 20%, with base fares rising from \$1.25 to \$1.50. It is assumed that any decrease in ridership attributed to the fare increase would be offset by gains in ridership due to additional service hours and routes detailed below.

Fixed Route System Enhancements

Enhancements to routes, service hours and headways, and amenities for the fixed-route system were evaluated as part of this TDP. They are detailed in the subsections below.

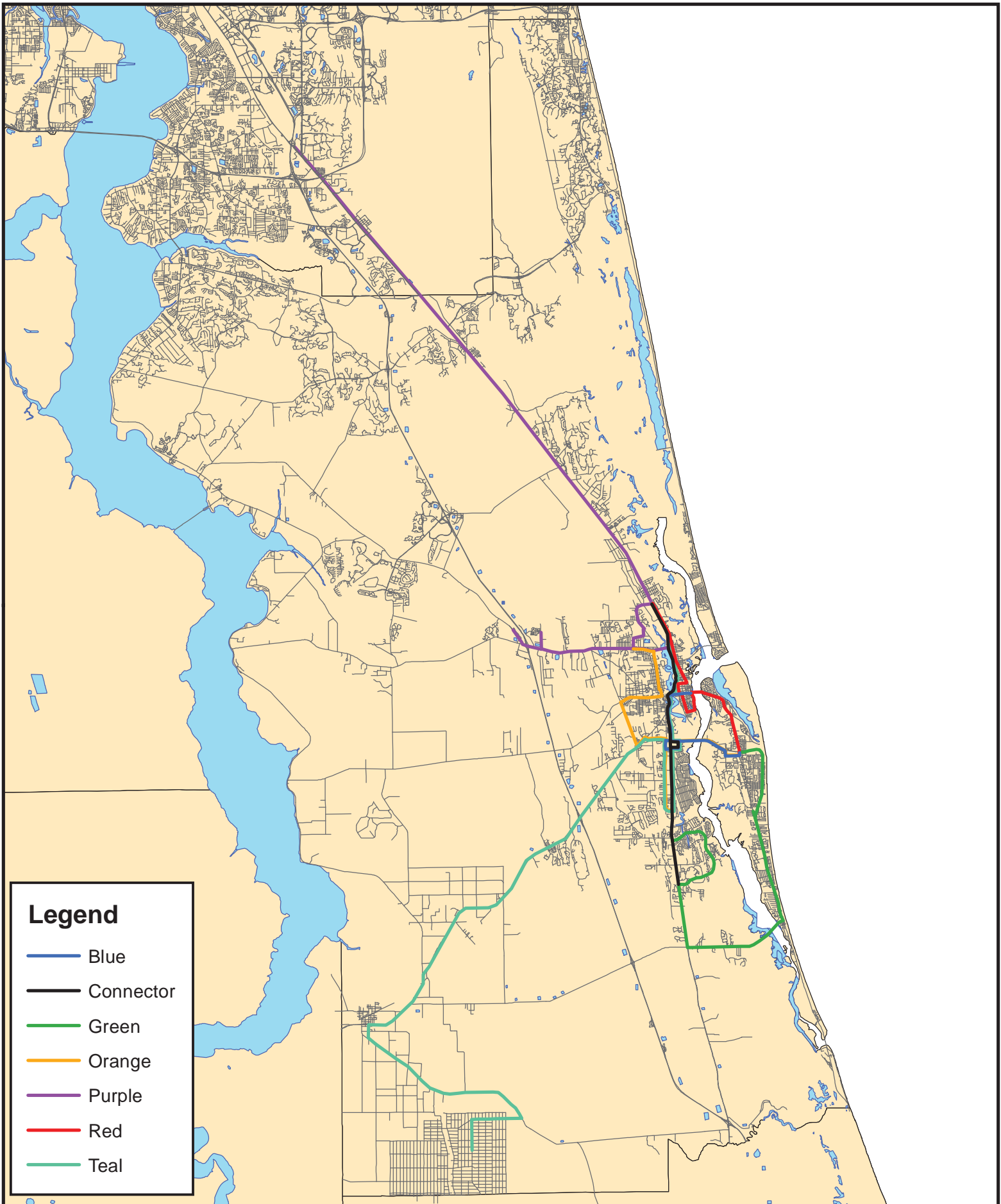
Fixed-Route System Expansion

As was described above, the last system expansion was several years ago with the addition of the Teal line serving Hastings and Flagler Estates. The current system is depicted on Figure 7.1. Based on discussions with passengers, bus operators, and local planners, there are several other areas of the County that could benefit from transit service. These include World Golf Village, Nocatee, South St. Augustine, and Vilano Beach.

At one time, the Purple route served the World Golf Village area, but ridership was light and the route was reconfigured. As the area continues to grow, extension of transit services should be attempted again. This is also the case with the Vilano Beach area, where a town center with a new Publix is under construction. The South St. Augustine area is currently served by routes along US 1, but additional service into the neighborhoods is desirable. Finally, as Nocatee begins to take shape, an extension of the Purple line into the community may be desirable.

Other areas looked at for potential expansions include northwest St. Johns and Ponte Vedra. While the northwestern portion of the County, including Julington Creek, is relatively dense, it may not be good candidates for transit service expansion as income and auto ownership levels are relatively high. It is also a good distance from the center of the system and would significantly add to the route miles of the system. The same issues also apply for the Ponte Vedra area.

After discussions and refinements, the TDP proposes that the Sunshine Bus fixed route system be expanded to create two new routes and to split one existing route into two. The proposed system is shown on Figure 7.2.

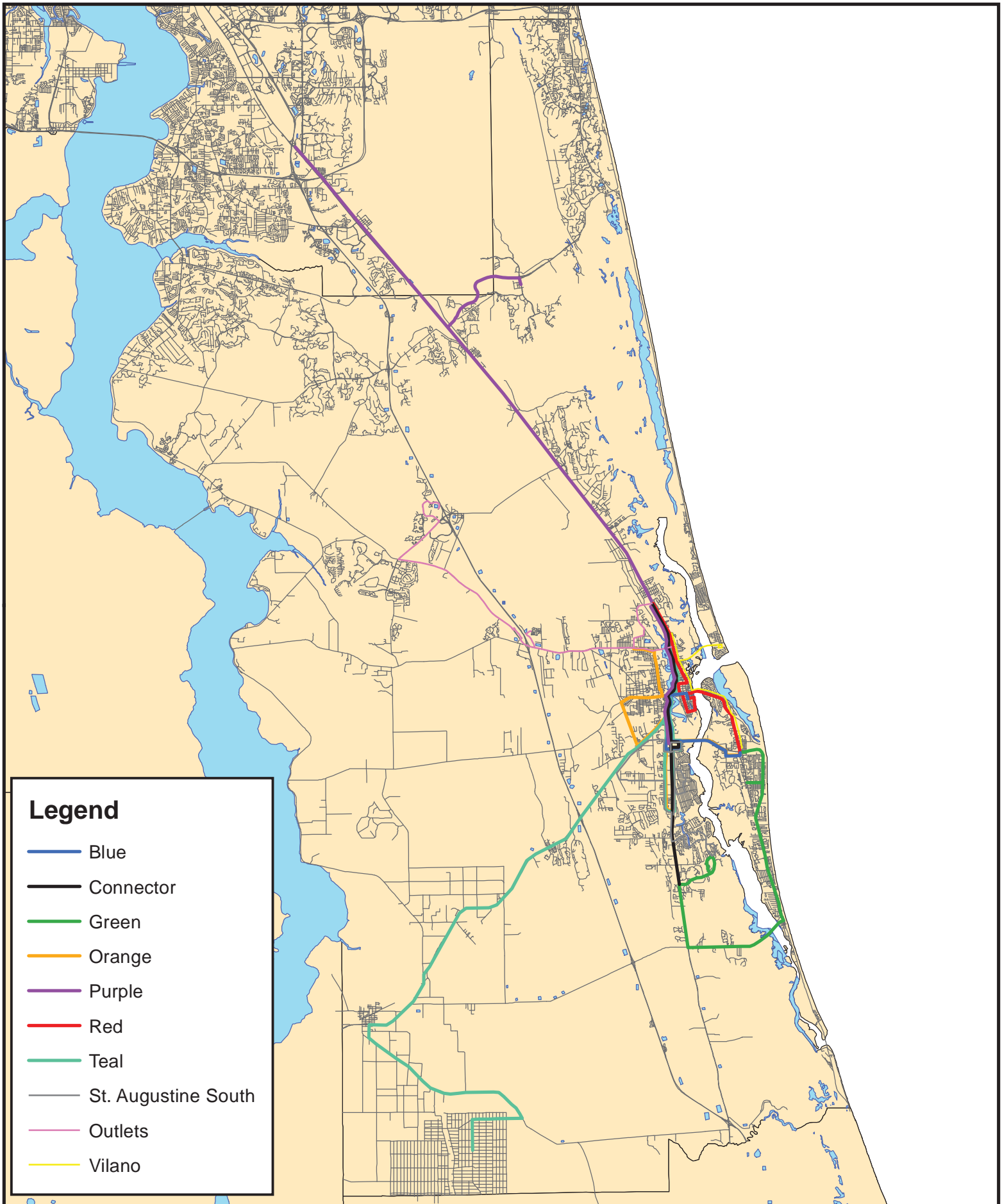


ATKINS

Current Route System

**St. Johns County
Transit Development Plan Update**

Figure 7.1



ATKINS

Proposed Route System

**St. Johns County
Transit Development Plan Update**

Figure 7.2

The first enhancement would be to reconfigure the Purple route to primarily serve the US 1 corridor. This would require the addition of a new route to serve the SR 16 corridor out to Outlet Malls. These two modifications are proposed to occur in 2012. Later, the Purple route would be extended into the Nocatee area and the Outlet Mall route would be extended out to World Golf Village. Both of these routes could run as frequently as every two hours, and after the extensions, every 2 1/2 hours. In 2013 a new route would be added serving the Vilano Beach area. This would then be followed in 2014 by a new route serving the South St. Augustine area.

In 2015, following installation of the new routes and amenities discussed below, all routes would be streamlined for improved headways Monday through Saturday. Currently, four of the seven routes run every 2 hours and 10 minutes. After streamlining, they would be able to run on 2 hour headways, as would the new Vilano Beach and South St. Augustine routes. Similarly, the Connector route would be streamlined to go from service every 70 minutes to service every hour. Finally, the Teal line would be restructured to minimize overlap, increasing its headways from every four hours to every three hours. More information on all the enhancements can be found in Chapter 8.

Fixed-Route System Service Hours and Headways

One of the key components of the ridership surveys was to identify potential service enhancements to the transit system. While passengers said they were generally very pleased with the overall Sunshine Bus system (average score of 4.46 out of 5), there are some enhancements they would like to see. 60% expressed a desire for Sunday service as one of their top two choices, followed by 53% for more frequent service, and 42% for later evening service.

As such, the TDP focuses on the potential for adding more service. Since the time the survey was conducted, the Sunshine Bus schedules have been modified slightly, with buses now running as late as 7:30pm. No additional modifications to later evening service are proposed in the TDP.

Transit Facilities and Amenities

Designated Stops

Based on conversations with bus operators, the concern about passenger safety and schedule adherence related to the current flag-down system is palpable. Sunshine Bus and the COA have been planning to move away from the flag-down system, at least in part, for several years. This TDP recommends that official bus stops be designated in the more urbanized areas of the system as well as at other key locations. The TDP assumes funding for the purchase and installation of 50 signs at designated stops between 2012 and 2014. It is understood that some of these may require concrete pads as well. In addition, as noted below, some of these locations will also have benches installed.

Shelters

Following the 2011 plan to install up to 14 shelters at key locations throughout the system, this TDP proposes installation of 20 additional shelters. These shelters, which would also include bicycle racks, trash receptacles, and in some cases lighting, would be installed in the first five years of the plan.

Benches

In addition to the 30+ locations that will have shelters, the TDP proposes installation of 30 benches at other stops in the system. These would be installed between 2012 and 2015.

Intermodal Centers

Currently, Sunshine Bus routes are centered around two hubs: the Depot on SR A1A at the beach and the Kmart on US 1. An additional center had been proposed in the past at the St. Augustine Parking Garage/Visitor Center, but issues have prevented this from occurring. As part of this TDP, it is recommended that the third hub be moved just outside the historic district to the proposed new Amtrak station off US 1 north of San Marco Avenue. The TDP assumes funding for the construction of small intermodal centers, including shelters, restrooms, and information/sales kiosks, at these locations. These centers would be constructed in 2013 (Depot), 2015 (Kmart), and 2017 (Amtrak).

Park & Ride Lots

Currently, the Sunshine Bus system mainly serves a transit dependent population. However, there is potential to capture choice riders, especially those commuting to and from other counties. The TDP recommends that the St. Johns COA work with business owners along the system on shared-use parking agreements. Potential locations include the Kmart on US 1, the Food Lion on US 1 South, and the Baptist Church in Flagler Estates.

In addition, JTA has developed a regional park & ride plan. Within St. Johns County, they have identified designated lots along US 1 at the County Government Center and at Race Track Road. Both of these facilities would serve the existing Purple line as well as potential express service between St. Augustine and Jacksonville. The TDP includes funding for construction of these two facilities, one in 2015 and the other in 2018.

TBEST Ridership Forecasts

Over the last ten years, FDOT's Public Transportation Office has been leading an effort to develop transit demand forecasting tools for use in TDPs as well as in its broader Transit Model Improvement Program. The latest tool developed is the Transit Demand Estimating Tool (TBEST), which provides stop-level ridership forecasting with full GIS-based functionality and network coding capability. TBEST ridership estimates are sensitive to planning factors such as socio-economic characteristics,

including population, employment, income, household size, and auto ownership. TBEST is also sensitive to transit attributes such as network connectivity, stop locations, fares, travel time, waiting time, and frequency.

The latest version of TBEST was used for the St. Johns County TDP and included socioeconomic forecasts out to the horizon year of 2021. One of the first tests conducted for this TDP was to forecast ridership based on the provision of more frequent service. Surprisingly, TBEST predicted that ridership would only increase by about 5% with a corresponding doubling of service such that buses ran every hour. Due to the extensive costs in purchasing and operating additional buses, the benefit-cost ratio for this was very low, and the idea was not included in the plan.

TBEST was also used to forecast potential ridership on the new routes described above and for potential Sunday service. Table 7-2 depicts the results of the TBEST model for 2012 and 2021. A review of these forecasts revealed that the model seemed to be overestimating potential ridership on Saturday routes serving area shopping malls (Purple and Outlets) while at the same time underestimating potential ridership on Sunday. Therefore, manual adjustments were made to the TBEST forecasts prior to their use in the financial calculations. The adjusted forecasts are depicted on Table 7-3.

Demand Response Service Enhancements

It is important to note that the St. Johns COA has been successfully migrating able-bodied passengers from the demand response system to the fixed route system over the past five years. This trend is expected to continue, albeit at a much smaller rate, for a few more years. As such, there was some discussion regarding the potential for savings by reducing service on the demand response system. However, it was noted that the aging of the baby boom population may offset this decline in the later years of the plan, so no service modifications to the demand response system are proposed.

Other Proposed Changes

In addition to the route/schedule modifications and new amenities, the TDP proposes that new and replacement vehicles will be purchased over the ten year period. Since the buses used on the fixed-route system are relatively new, it is assumed that no replacement buses will be needed for several years. Over the life of the plan, nine replacement buses are purchased, along with six new buses to serve the three additional routes. When these are purchased, consideration should be given to procuring larger buses (up to 28 passengers) to accommodate continued growth of the system. The TDP also assumes that twenty replacement buses and ten vans will be purchased for the demand response service, along with six cars that will be used as support vehicles. The plan also sets aside

Table 7-2: TBEST Ridership Projections

Route	Sunshine Bus Ridership Projections												
	Base Ridership (2012)			Base Ridership (2021)			Alternatives Ridership (2021)			Base Percent Increase		Alternatives Percent Increase	
	Weekday	Saturday	Weekday	Weekday	Saturday	Weekday	Saturday	Sunday	Weekday	Weekday	Saturday	Weekday	Saturday
Blue Line	104	78	113	83	123	175	17	8.7%	18.3%	6.4%	124.4%		
Connector	98	73	103	73	106	64	4	5.1%	8.2%	0.0%	-12.3%		
Green Line	97	81	99	81	133	217	20	2.1%	37.1%	0.0%	167.9%		
Orange Line	118	91	123	115	129	192	19	4.2%	9.3%	26.4%	111.0%		
Purple Line	99	85	101	89				2.0%		4.7%			
Purple Line - Avenues					179	425	7						
Purple Line - Outlets					170	367	6						
St Augustine South					77	60	2						
Red Line	111	93	116	101	140	198	19	4.5%	26.1%	8.6%	112.9%		
Teal Line	31	14	32	14	50	2	2	3.2%	61.3%	0.0%	-85.7%		
Villano Beach					147	143	3						
Total	658	515	687	556	1254	1843	99	4.4%	90.6%	8.0%	257.9%		

Table 7-3: Adjusted Ridership Projections

Route	Sunshine Bus Ridership Projections												
	Base Ridership (2012)			Base Ridership (2021)			Alternatives Ridership (2021)			Base Percent Increase		Alternatives Percent Increase	
	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday	Sunday	Weekday	Saturday	Weekday	Saturday
Blue Line	104	78	113	83	125	85	40	8.7%	6.4%	20.2%	9.0%		
Connector	98	73	103	73	105	80	40	5.1%	0.0%	7.1%	9.6%		
Green Line	97	81	99	81	135	100	60	2.1%	0.0%	39.2%	23.5%		
Orange Line	118	91	123	115	130	120	70	4.2%	26.4%	10.2%	31.9%		
Purple Line	99	85	101	89				2.0%	4.7%				
Purple Line - Avenues					180	150	50						
Purple Line - Outlets					170	150	50						
St Augustine South					75	60	30						
Red Line	111	93	116	101	130	115	50	4.5%	8.6%	17.1%	23.7%		
Teal Line	31	14	32	14	50	15	10	3.2%	0.0%	61.3%	7.1%		
Villano Beach					150	125	50						
Total	658	515	687	556	1250	1000	450	4.4%	8.0%	90.0%	94.2%		

funding for new software, bus equipment, and preventive maintenance. Finally, the TDP allocates funding for administrative expenses, which includes a portion of the salary and benefits for the local transit planner.

More information on the funding and implementation for the proposed enhancements can be found in Chapter 8.