Palm Tran

Transit Development Plan 2017 - 2026

Executive Summary

Approved November 22, 2016

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INTRODUCTION

The Florida Legislature enacted the State of Florida Public Transit Block Grant Program to provide a stable source of funding for public transit. The Block Grant Program requires public transit service providers, such as Palm Tran (operating as a division of Palm Beach County), to develop, adopt, and annually update a 10-Year Transit Development Plan (TDP). This process helps to ensure that the provision of public transportation is consistent with the mobility needs of the local communities. Under legislation that became effective February 20, 2007, the TDP must undergo a major update every five years.

Major TDP updates involve more substantial reporting requirements than annual progress reports. Development of the TDP includes a review of planning and policy documents, a documentation of study area conditions, gathering of demographic characteristics, analysis of current transit services, creation of a financial plan, and incorporation of public input through public involvement efforts.

The Palm Beach County Board of County Commissioners approved the 2017-2026 TDP Major Update for Palm Tran on November 22, 2016.

In addition to this Introduction, this document includes the following sections:

Alternatives

Provides a description of the study, capital, technology, and service alternatives developed for this 10-year TDP.

Alternatives Evaluation

Provides a description of the evaluation process used to prioritize the identified service alternatives and presents the 10-year implementation plan.

Finance Plan

Provides a financial plan for the continued operation of current services as well as the service alternatives identified for implementation within the 10-year timeframe.

ALTERNATIVES

Based on the results of extensive public involvement, analysis of demographic trends, a review of previously identified needs in other planning documents, development of Palm Tran's goals and objectives, and discussions with staff, alternatives were developed and evaluated. This section provides an overview of the alternatives developed and evaluated in the 10-year TDP. Alternatives were grouped into four categories: study, technology, capital and service.

Study Alternatives

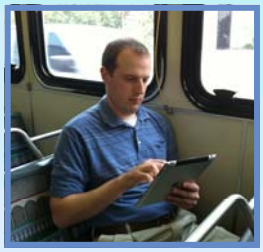
There were several studies identified by Palm Tran staff as either being required or needed over the 10-year TDP timeframe. The studies identified are specialized and large in scale such that staff will need outside consultant assistance to complete them.

- **Transit Development Plan – Major Update**: As required by Florida Statutes, this TDP will need to undergo a major update in 2021 and 2026. In the interim years, the Annual Progress report will be completed by staff.
- **Route Performance Maximization (RPM)**: In 2017, staff intends to undertake a major study to review the operations of and develop recommendations for re-envisioning the entire system. It is anticipated that many of the current routes will undergo changes through this study. The changes will focus on keeping the alignments along the main roadway and removing deviations into retail and residential complexes. The changes will also focus on improving frequency, span of service, as well as consolidating bus stops.

  With this in mind, the service alternatives developed for the TDP were based on corridors as opposed to routes. While the actual alignment of the route may change from its current alignment, staff is certain that these corridors will continue to be served by transit in the future.
- **Corridor Studies**: In partnership with the Palm Beach Metropolitan Planning Organization (MPO), Palm Tran will participate in several multimodal corridor studies. The studies are intended to examine pedestrian access to transit by identifying sidewalk gaps, Americans with Disabilities Act (ADA) compliance issues, and safety concerns around high-ridership stops. The first corridor to be examined will be the US 1 corridor through a multimodal study with emphasis on complete streets. Another study will be the Countywide Transit Access Study, which will prioritize connectivity to transit stops on major roads with ADA compliance, and help identify high-ridership stops. Other corridors likely to be studied include Okeechobee Boulevard, Lake Worth Road, Congress Avenue, and Military Trail.

Technology Alternatives

The following technology improvements will be evaluated for implementation in the 10-year TDP timeframe. Technology improvements focus on making the customer experience more expedient and pleasant.



- **Wireless Internet on Entire Fleet**: One alternative being examined is bringing wireless internet (i.e., Wi-Fi) onto the entire bus fleet by 2021. By providing wireless internet, passengers can access web-based programs while they use the system.
- **Mobile Ticketing**: The implementation of mobile ticketing to allow riders the option of using a smartphone or a mobile device for fare payment is being examined. Mobile ticketing would allow for lower fare collection costs for Palm Tran, and is anticipated to be operational on the entire Palm Tran fleet by 2021.

- **Interoperable Fare Management System**: Palm Tran will implement an electronic fare payment system that will be interoperable with the other regional providers. This interoperable fare payment system would allow patrons to more easily move between Palm Tran, Broward County Transit (BCT), Miami-Dade Transit (MDT), and South Florida Regional Transit Authority (SFRTA) services. It is anticipated that the electronic fare payment system will be operational on the entire Palm Tran fleet by 2021.
- **Real-Time Displays at Major Bus Stops:** Palm Tran will deploy real-time bus displays at major bus stops along high-ridership corridors. This will allow passengers to be informed of route information while waiting at these transit stops. It is anticipated that the real-time displays will be deployed by 2021.

Capital Alternatives

The following capital alternatives were developed for evaluation.

- **Delray Beach Operational Facility**: Slated for completion in September 2018, the Delray Beach Operational Facility will provide administrative space, a maintenance garage, and increased parking/overlay vehicle capacity. The additional 2.6 acres will be located next to the existing South County Facility near NE 1st Street.
- **Environmentally Sustainable Vehicles**: As vehicles reach the end of their useful lives, Palm Tran is interested in replacing its current fleet with vehicles that reduce emissions. Palm Tran already has several diesel-electric hybrid vehicles as part of its fleet. Currently, Palm Tran is trying to determine which fuel is the best option for its long-term needs.
- **New Bus Shelters**: Focusing on its highest ridership bus stops, this alternative includes the installation of 50 new or replacement shelters per year. Shelters will include bench seating, solar lighting, route signs, and ADA-compliant landing pads. To the extent feasible, the shelter will be connected to the sidewalk serving the corridor on the same side of the street.
- **Bus Rapid Transit (BRT) Enhancements (vehicles and transit amenities) for US1**: There are plans to procure grants through the Palm Beach MPO to acquire branded buses and transit stop amenities including mobile displays and kiosks for major transit stops along the US 1 corridor. Palm Tran will be able to apply for funding through the Palm Beach MPO's Local Initiatives program for intersection treatments like queue jumps along the corridor.

Service Alternatives

The following service improvements were identified. They focus on corridors as many of the actual route alignments may change after the RPM to be undertaken in 2017.

- **Limited-Stop Service on Military Trail (SR 809) Corridor**: The Military Trail Corridor, from the Gardens Mall in Palm Beach Gardens to Boca Raton, is currently served by Route 3, which has the second highest ridership in the system behind Route 1 and the US 1 Bolt. The Bolt offers higher frequency, limited-stop overlay service during the peak morning and evening hours. This limited-stop service alternative would provide 20-minute

frequency service for four peak service hours each weekday for the entire length of the current Route 3 alignment.

- **Limited-Stop Service on Congress Avenue (SR 807) Corridor**: The Congress Avenue Corridor is served by Route 2 from Riviera Beach to Boca Raton. This route has ridership levels just under those of the Route 3 and, as such, is also a good candidate for limited-stop service. This alternative includes 20-minute frequency service for four peak service hours each weekday for the entire length of the current Route 2 alignment.

- **Transit Signal Priority (TSP) on Okeechobee Boulevard (SR 704):** An enhanced bus alternative could be developed for Okeechobee Boulevard given its high ridership and the soon-to-be implemented Transit Signal Priority (TSP) technology on this corridor. Currently served by traditional fixed-route service through the Route 43, this corridor is being upgraded with an adaptive traffic control system (ATCS) at the major intersections which will be managed through the Regional Transportation Management Center (RTMC). ATCS allows for real-time adjustments to traffic signals to prevent or reduce traffic congestion.

By implementing TSP on this corridor, the transit vehicles are able to communicate with traffic signals in real time to adjust the length of the green light cycle as a bus approaches the signal to ensure it does not have to sit at a red light. TSP improves on-time performance for transit vehicles and travel times for riders. It is anticipated that TSP improvements will be complete in 2017.

- **Transit Signal Priority (TSP) on Lake Worth Road (SR 802):** The Lake Worth Road corridor is also slated to receive TSP improvements at the major intersections in 2017, which will be managed through the RTMC. Palm Tran may implement enhanced bus service on this corridor in the next few years. The corridor is currently served by Route 62.

Figure 1: Transit Signal Priority

- **Express Service on** I-95, Florida Turnpike, and SR-7/441: Palm Tran will look into implementing express bus services on I-95 after the Florida Department of Transportation (FDOT) Express Lanes Phase 3B-2 open to Linton Boulevard in 2020. This service has the potential to be connected to the park-and-ride on Congress Avenue. Other express bus services to be considered are along the Florida Turnpike and along SR-7/441.

- **Span of Service Improvements**: Alternatives included span of service improvements to many routes across all days of the week. The span of service improvements are shown in Table 1.

- **Frequency Improvements**: Alternatives included frequency improvements to many routes across all days of the week. The frequency improvements are shown in Table 2.

Table 1: Span of Service Improvements

Route	Span of Service Improvement
Weekday	
Routes 1, Bolt, 3, 43, 52, 71	1 hour earlier in the AM and 1 hour later in the PM
Routes 2, 31, 33, 46, 61, 63, 81	1 hour earlier in the AM
Route 62	1 hour earlier in the AM and 2 hours later in the PM
Route 63	2 hours later in the PM
Saturday	
Routes 1, 2, 3, 31, 43, 63	1 hour earlier in the AM and 1 hour later in the PM
Route 62	1 hour earlier in the AM and 2 hours later in the PM
Sunday	
Routes 1, 2, 3, 31,43, 62	1 hour earlier in the AM and 1 hour later in the PM

Table 2: Frequency Improvements

Route	Frequency Improvement
Weekday	
Route 43	From 30 to 20 minutes
Routes 61, 63, 64	From 60 to 30 minutes
Saturday	
Routes 2, 43, 62	From 60 to 30 minutes
Sunday	
Routes 2, 3, 43, 62	From 60 to 30 minutes

ALTERNATIVES EVALUATION

Methodology

This section summarizes the evaluation process for service alternatives developed for the 2017-2026 TDP timeframe. Because many service alternatives were identified, ranging from improvements of existing routes to implementation of new routes, it is important for Palm Tran to prioritize these improvements to effectively plan and implement them within the next 10 years using existing and/or new funding sources.

A methodology was developed to evaluate and prioritize the transit alternatives presented previously. To prioritize and program these service improvements, it is important to weigh the benefits of each service improvement against the others. By conducting an alternatives evaluation, Palm Tran can better prioritize projects and allocate funding using an objective service implementation process. The remainder of this section identifies and defines the evaluation criteria to be used in prioritizing the service improvements developed for the TDP and the methodology by which those criteria are applied.

Three evaluation categories were used for the evaluation:

- Public Outreach
- Transit Markets
- Productivity and Efficiency

Table 3 lists these evaluation categories, each category's corresponding criteria, the associated measure of effectiveness, and the assigned weighting for each criterion.

Table 3: Alternative Evaluation Measures

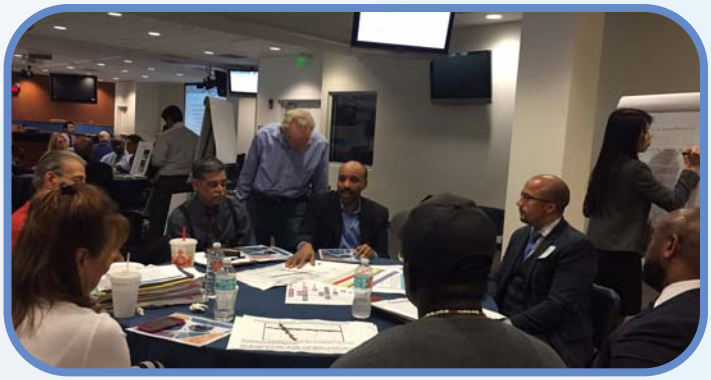
Category	Criteria	Measure of Effectiveness	Relative Weighting	Overall Category Weight
Public Outreach	Public Input	Level of interest in specific alternatives (High, Moderate, Low)	25%	25%
Transit Markets	Traditional Market	Percent of route that serves areas with "High" or "Very High" transit orientation	20%	40%
	Discretionary Market	Percent of route that serves areas with high population and/or employment density	10%	
	Regional Market	Connectivity to adjacent counties	10%	
Productivity & Efficiency	Productivity	Trips per hour (model generated trips and revenue hours of service)	20%	35%
	Cost Efficiency	Cost per trip	15%	
Total			100%	100%

Public Involvement

The public involvement process gathered opinions about improvements to transit service. In addition, the public outreach process also included discussions with policy leaders and the Palm Tran Service Board to understand their views on transit services. Based on an in-depth review of input from this public involvement effort, interest in a particular improvement or type of service was categorized as "None," "Moderate," "High," or "Very High" in the alternatives evaluation process.

Transit Markets

For the evaluation of alternatives, three transit markets were identified:



- **Traditional Market**, which uses Transit Orientation Index data, refers to existing population segments that historically have a higher propensity to use transit and/or are dependent on public transit for their transportation needs. Individuals who are older, younger, live under the poverty level, or do not have access to an automobile are considered to have a higher propensity to use transit. Areas with higher concentrations of individuals with these characteristics are considered to have a higher transit orientation. For the alternatives evaluation, the proportion of each route operating within a "High" or "Very High" TOI area was calculated;
- **Discretionary Market**, which uses Density Threshold Assessment (DTA) data, refers to potential riders living in higher-density areas of the county that may choose to use transit as a commuting or transportation alternative. The proportion of each corridor meeting at least the "Minimum" dwelling unit or employment density threshold in the DTA was calculated and used for the alternatives evaluation; and
- **Regional Market** assesses each route's potential to contribute to regional connectivity. Inter-county routes having connections to adjacent counties were scored higher than those limited to serving just Palm Beach County. Based on conclusions drawn from public involvement input and a review of other planning documents, regional service to adjacent counties is a much-desired attribute for Palm Tran routes.

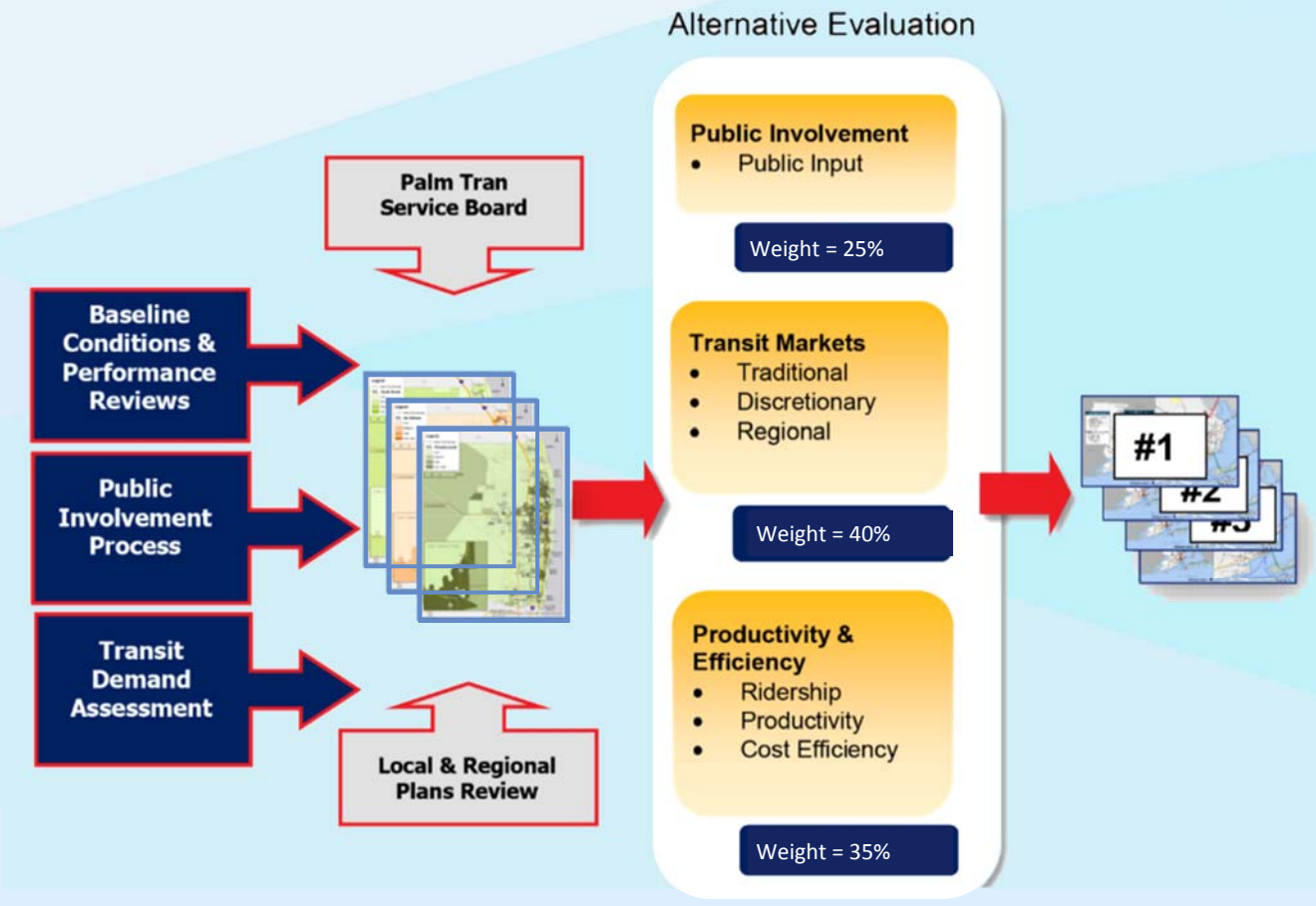
Productivity and Efficiency

Productivity is generally measured in terms of ridership. Service efficiency is used by transit agencies to gauge how well they are using their existing resources. Each measure is critical to the success of the agency, and services performing well in terms of their productivity and efficiency should receive a higher priority. Forecast ridership, revenue hours, and operating cost figures for each individual alternative are used in this measure.

- **Ridership productivity** is measured in terms of annual passenger trips per revenue hour of service. To provide for an equal comparison between alternatives, passenger trips and revenue hours of service were generated using the Transit Boardings Estimation and Simulation Tool (TBEST) 2026 ridership projections.
- **Cost efficiency** is evaluated for each alternative using a standard transit industry efficiency measure, operating cost per passenger trip. Operating costs used are calculated using operating cost per trip based on Palm Tran performance data and TBEST 2026 ridership data.

Figure 2 shows the TDP 10-year transit service alternatives evaluation process, including criteria, measures, and weights used for each category. A summary of the evaluation results are presented in the remainder of this section.

Figure 2: Alternatives Evaluation Process



Results of Alternatives Evaluation

Each alternative was evaluated, scored, and ranked using the process summarized. The next step was to develop an implementation plan based on the ranking inputs, budgetary constraints, an understanding of how the network works as a system, and professional judgment. Figures 3 and 4 provide a visual representation of the planned improvements for the first five years (i.e., FY 2017-2021) and the second five years (i.e., FY 2022-2026), respectively.

The implementation plan, displayed in Table 4, was also influenced by three over-arching considerations:

1) The public repeatedly requesting greater frequency and spans of service on the existing system.

2) Palm Tran will be undertaking the RPM study in FY 2017. The RPM will focus on an in-depth analysis of the current route network to improve efficiency. Once the current system is operating at maximum efficiency, the planned TDP improvements are to begin in FY 2018.

Table 4: Implementation Plan (FY 2017-2026)

Year	Days of Service	Type of Improvement	Routes	Annual Cost (2016$)
2018	Weekday	Frequency - 30 to 20 minutes	43	$415,000
2018	Weekday	Span of service - one AM hour/two PM hours	62	$500,000
2018	Saturday	Span of service - one AM hour/two PM hours	62	$68,000
2019	Weekday	Span of service - three AM hours/three PM hours	Bolt 1	$500,000
2021	Weekday	New service - Route 2 Limited Stop (Bolt)	New Bolt 2	$2,300,000
2021	Weekday	New service - Route 3 Limited Stop (Bolt)	New Bolt 3	$3,200,000
2021	Weekday	Span of service - one AM hour earlier	2, 31, 33, 46, 61, 63, 81	$860,000
2021	Sunday	Frequency - 60 to 30 minutes	2, 3, 43, 62	$590,000
2022	Weekday	Span of service - one AM hour/one PM hour	1, 3, 43, 52, 62, 71	$1,995,000
2022	Weekday	Span of service - two PM hours	63	$55,000
2022	Saturday	Span of service - one AM hour/one PM hour	1, 2, 3, 31, 43, 63	$365,000
2022	Sunday	Span of service - one AM hour/one PM hour	1, 2, 3, 31, 43, 62	$305,000
2022	Saturday	Frequency - 60 to 30 minutes	2, 43, 62	$1,520,000
2023	Weekday	Frequency - 60 to 30 minutes	61, 63, 64	$1,455,000
2024	Weekday	Span of service - one PM hour	92	$55,000

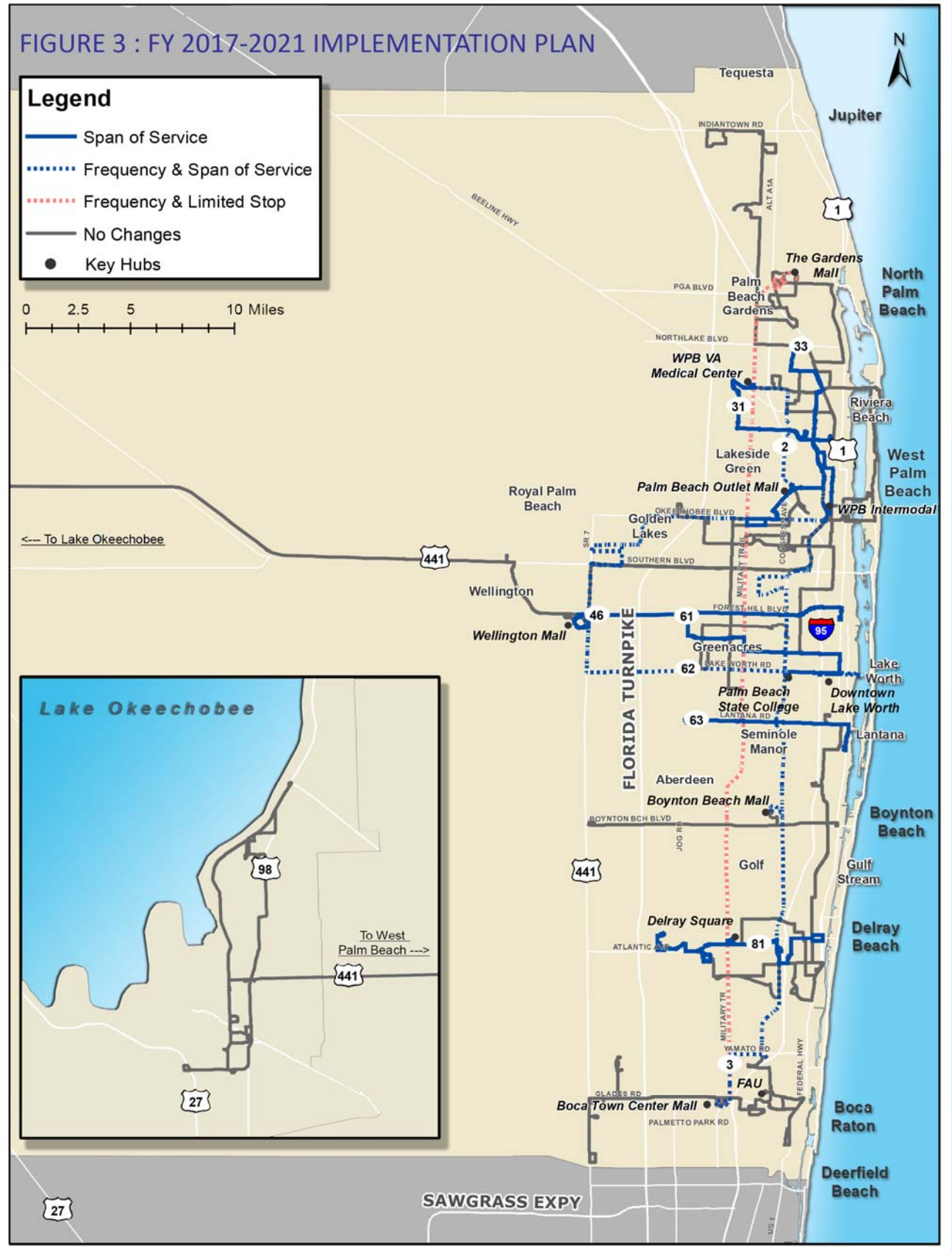
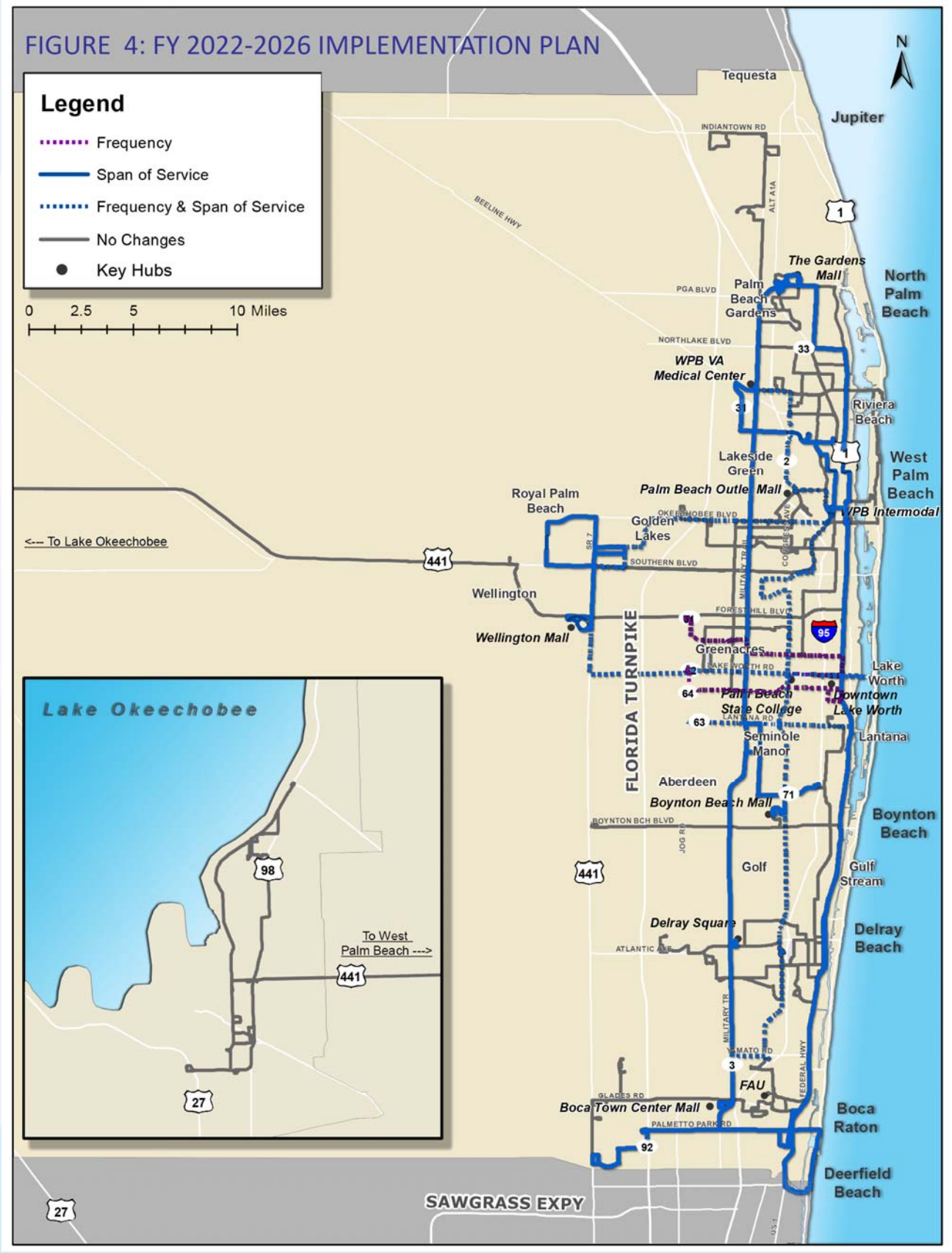


FIGURE 3 : FY 2017-2021 IMPLEMENTATION PLAN
Legend
Span of Service
Frequency & Span of Service
Frequency & Limited Stop
No Changes
Key Hubs
0 2.5 5 10 Miles
N
Tequesta
Jupiter
INDIANTOWN RD
BEELINE HWY
ALT A1A
1
The Gardens Mall
North Palm Beach
PGA BLVD
Palm Beach Gardens
NORTHLAKE BLVD
33
WPB VA Medical Center
31
Riviera Beach
2
1
West Palm Beach
Lakeside Green
Palm Beach Outlet Mall
WPB Intermodal
Royal Palm Beach
OKEECHOBEE BLVD
Golden Lakes
<--- To Lake Okeechobee
441
SR 7
SOUTHERN BLVD
MILITARY TRAIL
CONGRESS AVE
Wellington
FOREST HILL BLVD
46
61
95
Wellington Mall
Greenacres
LAKE WORTH RD
62
Lake Worth
Palm Beach State College
Downtown Lake Worth
LANTANA RD
63
Seminole Manor
Lantana
FLORIDA TURNPIKE
Aberdeen
Boynton Beach Mall
BOYNTON BCH BLVD
Boynton Beach
JOG RD
441
Golf
Gulf Stream
Delray Square
ATLANTIC AVE
81
Delray Beach
MILITARY TR
YAMATO RD
3
FAU
FEDERAL HWY
GLADES RD
Boca Town Center Mall
PALMETTO PARK RD
Boca Raton
Deerfield Beach
SAWGRASS EXPY
US 1
27
Lake Okeechobee
98
To West Palm Beach --->
441
27

FIGURE 4: FY 2022-2026 IMPLEMENTATION PLAN



The RPM process will include a workshop with the Board of County Commissioners to gather input and direction as to potential service to the western and central communities, including the City of Belle Glade. The evolving nature of transit and technology has led to a greater number of choices when it comes to serving these areas such that Palm Tran staff requires direction with regard to policy on these matters from the Commissioners.

3) Staff is interested in improving the customer experience in order to encourage ridership. On the capital side, improvements include a focus on adding Wi-Fi and charging stations to buses, updating the bus design and driver uniforms, as well as working toward fare interoperability between Palm Tran and other providers.

In addition to the 10-year implementation plan, some improvements were assumed to be implemented beyond the 10-year timeframe. These improvements included the express bus improvements displayed in Table 5 and Figure 5.

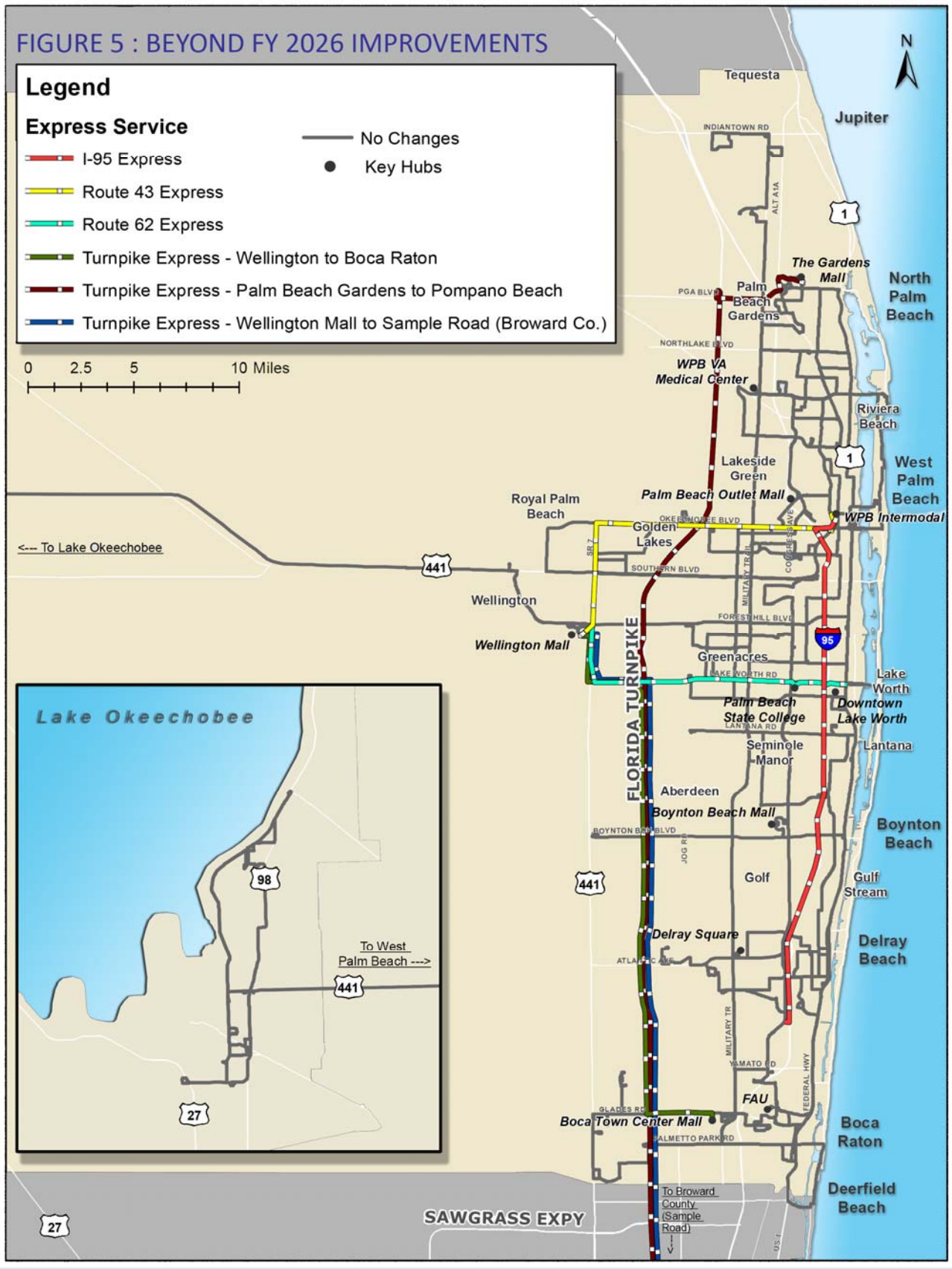
Table 5: Implementation Plan (Beyond FY 2026)

Days of Service	Type of Improvement	Routes	Annual Cost (2016$)
Weekday	Express - Lake Worth Road to US 1/Wellington Green Mall	62 Express	$665,000
Weekday	Express - Congress Ave To West Palm Beach Intermodal Center	New I-95 Express	$885,000
Weekday	Express - Okeechobee / Wellington Mall to West Palm Beach Intermodal Center	43 Express	$665,000
Weekday	Express - Palm Beach Gardens to Pompano Beach Tri-Rail Broward County	New Turnpike Express	$2,000,000
Weekday	Express - Wellington to Boca Raton	New Turnpike Express	$1,105,000
Weekday	Express - Wellington Green Mall to Sample Road	New Turnpike Express	$1,107,000

Capital Improvements

For capital improvements, the plan focuses on bus stop upgrades, the expansion of the South County Administrative facility, fare interoperability, vehicle replacement, and vehicles for new services as provided for in the implementation plan.

FIGURE 5 : BEYOND FY 2026 IMPROVEMENTS



FINANCE PLAN

The finance plan provides projected costs for maintaining current services as well as adding the new services as indicated in the implementation plan. The first five years of the plan are relatively balanced between revenues and expenses while the latter five years are more visionary in nature and therefore a larger gap between costs and revenues is projected. Additional revenues would have to be identified to implement all of the improvements shown in the 10-year TDP.

It should be noted that approval of the TDP by the Board of County Commissioners is not an approval of the funds necessary to implement the plan. In order to implement the projects, the Commissioners must approve individual fiscal year budgets and include funding for the improvements in those budgets.

Figure 5: Annual Operating Costs and Revenues (millions)

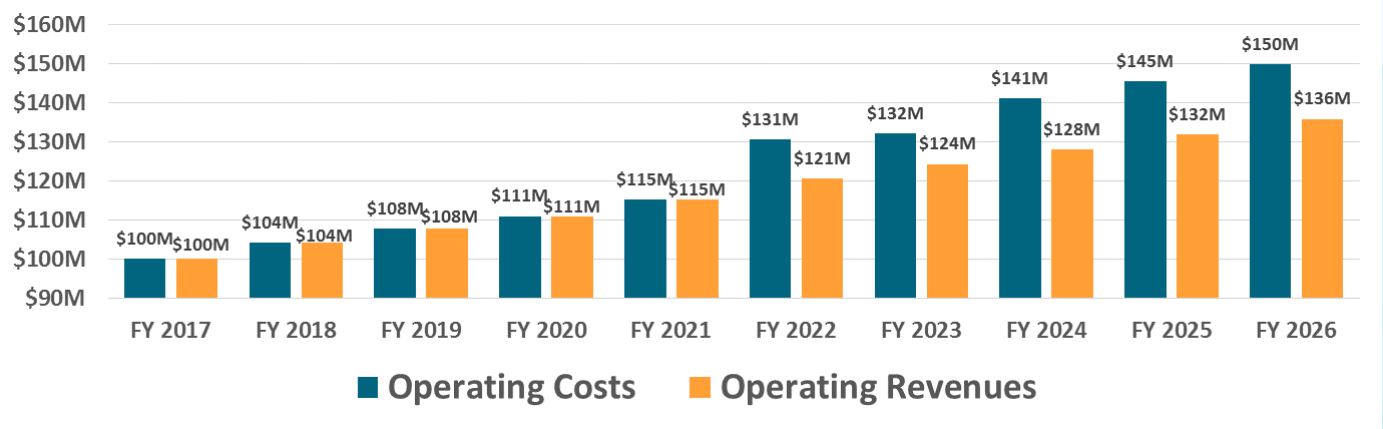
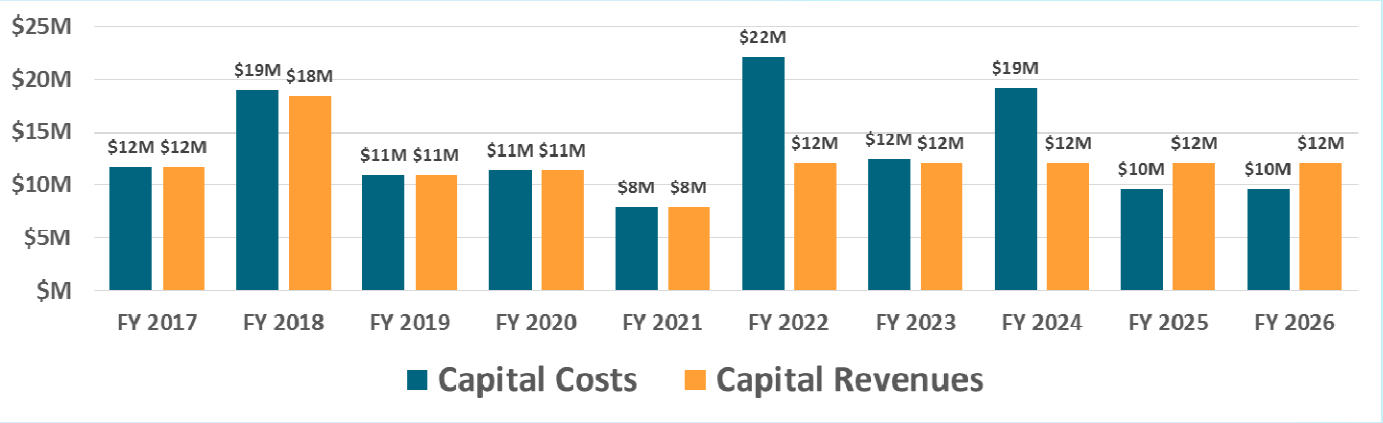


Figure 6: Annual Capital Costs and Revenues (millions)



For more information about the *2017-2026 Transit Development Plan,* please visit ***www.pbcgov.com/palmtran/bus/transdev.htm***

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1203
Welcome Aboard


Tindale
Oliver

Palm Tran

Transit Development Plan 2017-2026

Final Report

Approved November 22, 2016

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Palm Tran
Transit Development Plan
FY 2017-2026

Adopted November 22, 2016

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1.0 Introduction

The State of Florida Public Transit Block Grant Program was enacted by the Florida Legislature to provide a stable source of funding for public transit. The Block Grant Program requires public transit service providers, such as Palm Tran (operating as a division of Palm Beach County), to develop, adopt, and annually update a 10-Year Transit Development Plan (TDP). This process helps to ensure that the provision of public transportation is consistent with the mobility needs of the local communities. Under legislation that became effective February 20, 2007, the TDP must undergo a major update every five years.

Major TDP updates involve more substantial reporting requirements than annual updates. Development of the TDP includes a review of planning and policy documents, a documentation of study area conditions, demographic characteristics, current transit services, creation of a financial plan, and incorporation of public input through public involvement efforts.

This document, in combination with the four Technical Memoranda included as appendices, constitute the TDP Major Update for Palm Tran and covers FY 2017-2026. The TDP was approved by the Palm Beach Board of County Commissioners on November 22, 2016.

This document includes the following sections:

- **Section 2** contains a review of the public outreach undertaken in the latter half of the TDP development.
- **Section 3** contains the situation appraisal which examines how forces outside of Palm Tran's control affect its operations.
- **Section 4** reviews the alternatives developed in Technical Memorandum Number 4 and evaluates them in order to prioritize their implementation.
- **Section 5** provides a financial plan for the continued operation of current services as well as the alternatives identified for implementation in the 10-year timeframe.

The following checklist provides a summary of the TDP requirements under Florida Statute and the location where they can be found within the TDP documentation.

Table 1 TDP Checklist

Requirement	Document	Page
Public Involvement Process		
Public Involvement Plan (PIP)	Appendix A	
PIP approved by FDOT	✓	
TDP includes description of Public Involvement Process	Appendix A	
Provide notification to FDOT	✓	
Provide notification to Regional Workforce Board	✓	
Situation Appraisal		
Land use	TDP	3-6
State and local transportation plans	TDP	3-4
Other governmental actions and policies	TDP	3-4
Socioeconomic trends	TDP	3-1
Organizational issues	TDP	3-9
Technology	TDP	3-9
10-year projections of transit ridership using approved model	TDP	4-5
Assessment of land use support/hindrance of transit service	TDP	3-6
Calculate farebox recovery	Appendix F	
Mission and Goals		
Provider's vision	Appendix C	
Provider's mission	Appendix C	
Provider's goals	Appendix C	
Provider's objectives	Appendix C	
Alternative Courses of Action		
Develop and evaluate alternative strategies and actions	TDP	Section 4
Benefits and costs of each alternative	TDP	4-8
Financial alternatives examined	TDP	4-8
Implementation Program		
10-year implementation program	TDP	4-10
Maps indicating areas to be served	TDP	4-11 to 4-13
Maps indicating types and levels of service	TDP	4-11 to 4-13
Monitoring program to track performance measures	Appendix D	3-1
10-year financial plan listing operating and capital expenses	TDP	5-4
Capital acquisition or construction schedule	TDP	5-4
Anticipated revenues by source	TDP	5-4
Relationship to Other Plans		
Consistent with Florida Transportation Plan	✓	
Consistent with local government comprehensive plan	✓	
Consistent with Florida-Alabama TPO long-range transportation plan	✓	
Consistent with regional transportation goals and objectives	✓	
Submission		
Adopted by Palm Beach County Board of County Commissioners	✓	
Submitted to FDOT	✓	

2.0 Public Outreach

In addition to the public outreach undertaken in the beginning of the TDP process (see Technical Memorandum Number 1), a continuous process of public outreach was also undertaken throughout the TDP development process.

2.1 Presentations

Throughout the TDP process, presentations were made to public bodies to ensure the document was in alignment with directives from these groups. The following is a list of the organizations and dates when presentations were made:

- Palm Beach Metropolitan Planning Organization Technical Advisory Committee, July 6, 2016
- Palm Beach Metropolitan Planning Organization Technical Advisory Committee, September 7, 2016
- Palm Tran Service Board, September 22, 2016
- Palm Beach Metropolitan Planning Organization Technical Advisory Committee, October 18, 2016
- Palm Beach Metropolitan Planning Organization Board, October 20, 2016
- Palm Tran Service Board, October 27, 2016
- Palm Beach Board of County Commissioners, November 22, 2016 (Board approved TDP)
- League of Cities, November 23, 2016
- South Florida Regional Transportation Authority Planning Technical Advisory Committee, December 14, 2016 (scheduled)

2.2 On-Site Meetings

Once a draft document was produced, two on-site meetings were conducted in order to get feedback from riders and non-riders:

- West Palm Beach Intermodal Center, November 9, 2016
- Boca Raton GreenMarket, November 12, 2016

Feedback was generally positive about the improvements provided for in the TDP. Many commenters requested improvements such as later hours and increased frequencies on particular routes. Many of these improvements are provided for in the TDP implementation plan. Many comments were beyond the scope of the TDP; these have been provided to staff for consideration in other improvement efforts.

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3.0 Situation Appraisal

A situation appraisal is a TDP requirement, which provides an evaluation of the local environment and critical issues in which the transit agency operates. The appraisal examines the strengths and weaknesses of the system as well as any existing challenges to the provision of service in the county and key opportunities for addressing those threats and/or enhancing the transit-friendliness of the operating environment. The following elements will be reviewed:

- Socioeconomic trends
- Travel behavior
- Regional transit issues
- Land use
- Public involvement
- Organizational attributes
- Technology

The assessment of these elements resulted in the identification of possible implications for Palm Tran. The assessment and resulting implications are drawn from the following sources:

- Review of relevant plans, studies, and programs prepared at all levels of government
- Results of technical evaluations performed as part of the TDP process
- Input gathered through public involvement activities

The trends, issues, and implications are summarized in the remainder of this report for each of the major elements.

3.1 Socioeconomic Trends

To better assess the impact of population growth on public transportation needs, it is important to understand the trends and markets that could be impacted or may benefit from public transportation services. Key findings from an assessment of socioeconomic trends are summarized as follows:

- The traditional transit market identifies the population segments that historically have a higher propensity to use transit or depend on transit for their transportation needs, including youth, the elderly, households below poverty level, and households with no vehicles. Areas determined to have higher concentrations of people with these demographic characteristics are considered to have a greater transit orientation. High transit orientation areas are found in Boynton Beach, Delray Beach, Greenacres, the Lake Okeechobee area, Lake Worth, West Palm Beach, and other areas throughout unincorporated Palm Beach County. The existing bus routes align relatively well throughout most of the highest transit orientation areas in the County.

- Public transportation usage is slightly lower in Palm Beach County (1.9%) than the state average (2.1%). The 2010-2014 American Community Survey (ACS) indicated that 42% of Palm Beach County workers who use transit for commute purposes are adults between the ages of 25 to 44. At 17.3% of commuters using transit, the second largest group are older adults from 45 to 54 years of age. ACS data indicates that over 69% of Palm Beach County commuters who use transit as a means of getting to work as considered “low-income” as they make less than $25,000 annually.

- The average age in Palm Beach County (43.9 years) is older than the state average (41.2 years). Higher concentration of younger persons, defined as under the age of 15, reside within unincorporated Palm Beach County generally west of Boca Raton; with segments located in west Wellington along SR-441, Greenacres, Jupiter, Palm Beach Gardens, and West Palm Beach. Higher concentrations of older people, defined as above 60 years of age, reside in unincorporated Palm Beach County generally in the Lake Okeechobee area and west of Delray Beach, with segments located in Delray Beach, Greenacres, Jupiter, Palm Beach Gardens, Riviera Beach, and West Palm Beach.

- Projections prepared by the Bureau of Economics and Business Research (BEBR) at the University of Florida indicate a county population increase of 176,485 persons (13%) from 2015 to 2025, and an increase of 129,513 persons (8%) from 2025 to 2035. The older adult population is projected to increase from 22.7% to 26.2% between 2015 and 2025.

- The Hispanic population has increased from 12.4% to 20.0% between 2000 and 2015, according to ACS.

- Households with no vehicles have decreased from 7.9% to 6.6% between 2000 and 2014. This may be due in part to an overall increase in household incomes within the County with a median income of $52,878 in 2014 compared to $45,062 in 2000.

- The largest employers within the County are the School Board, the Palm Beach County government located in West Palm Beach, and healthcare (Tenet Healthcare Corporations and Hospital Corporation of America have facilities in Delray Beach, Palm Beach Gardens, Boca Raton, West Palm Beach and Loxahatchee).

- The main industries within Palm Beach County are tourism, construction, and agriculture. The tourism industry in Palm Beach County employs approximately 19,500 persons in the arts, entertainment, and recreation industry and nearly 52,000 persons in the accommodation and food services industry. Palm Beach County is the largest producer of domestic sugar and sweet corn in the nation, representing 18% of all sugar produced within the United States. The median earnings for persons working in the tourism industry was reported as $20,068; agriculture was $23,198, and the construction industry median at the higher end with $31,240.

- With respect to occupation, the majority of the commuters who took transit were in service occupations (36%) and sales and office occupations (26%).

- Approximately 15% of the County's population lives below the poverty level. Concentrations of individuals below poverty level are disbursed throughout the County, with the highest levels of poverty generally located between I-95 and US-1, between I-95 and the Florida Turnpike from Boynton Beach to North Palm Beach, and in the Lake Okeechobee area.

- The discretionary transit market is based on residential and employment density. In reviewing the Density Threshold Analysis (DTA), dense residential growth is expected in unincorporated Palm Beach County, generally between the Florida Turnpike and I-95. Employment density is generally expected to increase near the I-95 and US-1 corridors.

Implications *– It is anticipated that Palm Tran will continue to fill a need for the traditional transit market. Groups such as older residents, those working in the service industry, and those living in poverty will*

continue to rely on the service. Growth in the discretionary market may also be possible as population and employment densities are projected to increase. It will be difficult to balance the competing needs of these groups as their needs are not similar in nature. The elderly require more paratransit service or greater transit coverage to reduce travel distances to transit stops. Workers in the service industry need later evening service. Discretionary riders typically demand higher frequencies. Palm Tran will need to balance resource allocation between these needs.

3.2 Travel Behavior

An assessment of trends in travel behavior for Palm Beach County indicated the following:

- Based on 2014 ACS data, Palm Beach County had 591,057 employed residents, of which over 88% lived and worked within the County, indicating a high demand for local employment-based trips.

- At 28.7%, the largest percentage of commuters depart for work between 7:00 AM to 7:59 AM. The second most popular departure time (25.2%) is between 9:00 AM and 11:59 AM. The average commute trip is 24.7 minutes.

- Congested corridors include US-1 (SR 5), Congress Avenue (SR 807), Glades Road (SR 808), PGA Boulevard (SR 786), Military Trail (SR 809), Okeechobee Boulevard (SR 704), US 441/ SR 7, the Florida Turnpike, and Interstate 95.

- Palm Tran offers 18 park-and-ride facilities: six of which are at Tri-Rail stations and three along the Turnpike.

- Tourism attracts more than two million people per year to the County, with the Loxahatchee Wildlife Preserve and the beaches as prime attractors. These areas are not served particularly well by existing Palm Tran service.

- The Florida Department of Transportation (FDOT) District 4 is implementing Phase 3 of its I-95 managed lane project by adding 29 miles from Stirling Road in Broward County to Linton Boulevard in Palm Beach County. The segment from south of SW 10th Street in Broward County extending to south of Glades Road in Palm Beach County is set to open in FY 2018. The segment from south of Glades Road to Linton Boulevard is set to open in FY 2020. The purpose of the managed lanes is to improve mobility, relieve congestion, accommodate future growth and development, and improve highway system connectivity throughout the Southeast Florida region.

- Other transportation providers include Tri-Rail and its corresponding shuttle system, City of Boca Raton Shuttle and the Boca Corporate Center Shuttle, City of Delray Trolley System, Good Wheels, Inc. in Belle Glade, Molly's Trolleys in West Palm Beach, Water Taxi, Uber, and Lyft.

- Like many transit agencies across the nation, the first mile/last mile connections are a pressing concern for public transit in Palm Beach County. Ridesourcing platforms, similar to Uber and Lyft, have recently begun partnering with other agencies across the state to address this issue, like Hillsborough Area Regional Transit Authority (HART) and Pinellas Suncoast Transit Authority (PSTA). The American Public Transportation Association (APTA) reported that Uber and Lyft users were more likely to use public transit more frequently.

- As of June 21, 2016, Uber has an agreement with the Board of County Commissioners to operate at Palm Beach International Airport (PBIA) to pick up and drop off passengers. At PBIA, Uber drivers operate with the "First-In, First-Out" policy. The drivers wait in a designated staging area, set-up from 7 AM to midnight daily on the west side of 5th Street north of Belvedere Avenue. The most requested hours during the week are during the morning and evening commutes from 7 AM to 10 AM and 4 PM to 7 PM, respectively. The weekends, especially during the evenings, are the highest demand times. Figure 1 shows Uber's hot spot map which indicates areas of high activity.

Implications *– Due to the high number of congested corridors, bus routes with Transit Signal Priority (TSP) during congested periods could decrease travel times for commuters and appeal to more discretionary riders. Providing park-and-ride lots along these congested corridors may also attract more riders.*

The full effect of the emergence of TNCs on transit has not yet been determined. At present, many communities are exploring ways to forge partnerships with TNCs, but data are not yet available to determine how successful these partnerships may be. Palm Tran staff should continue to monitor developments.

3.3 Regional Transit Issues

A review of regional transit findings are detailed below:

- The Southeast Florida 2040 Regional Transportation Plan and the 2040 Palm Beach County Desires Plan identify several roadway expansion projects, interchange improvements, rail capacity projects, five new Tri-Rail stations, Tri-Rail service extension on the Florida East Coast (FEC) and CSX corridors, I-95 managed lanes extension, three new parking garages, 11 new express bus routes, all electronic tolling conversion along the Turnpike, a proposed new US 27 Freight Rail Corridor Service, and two proposed passenger intermodal centers.

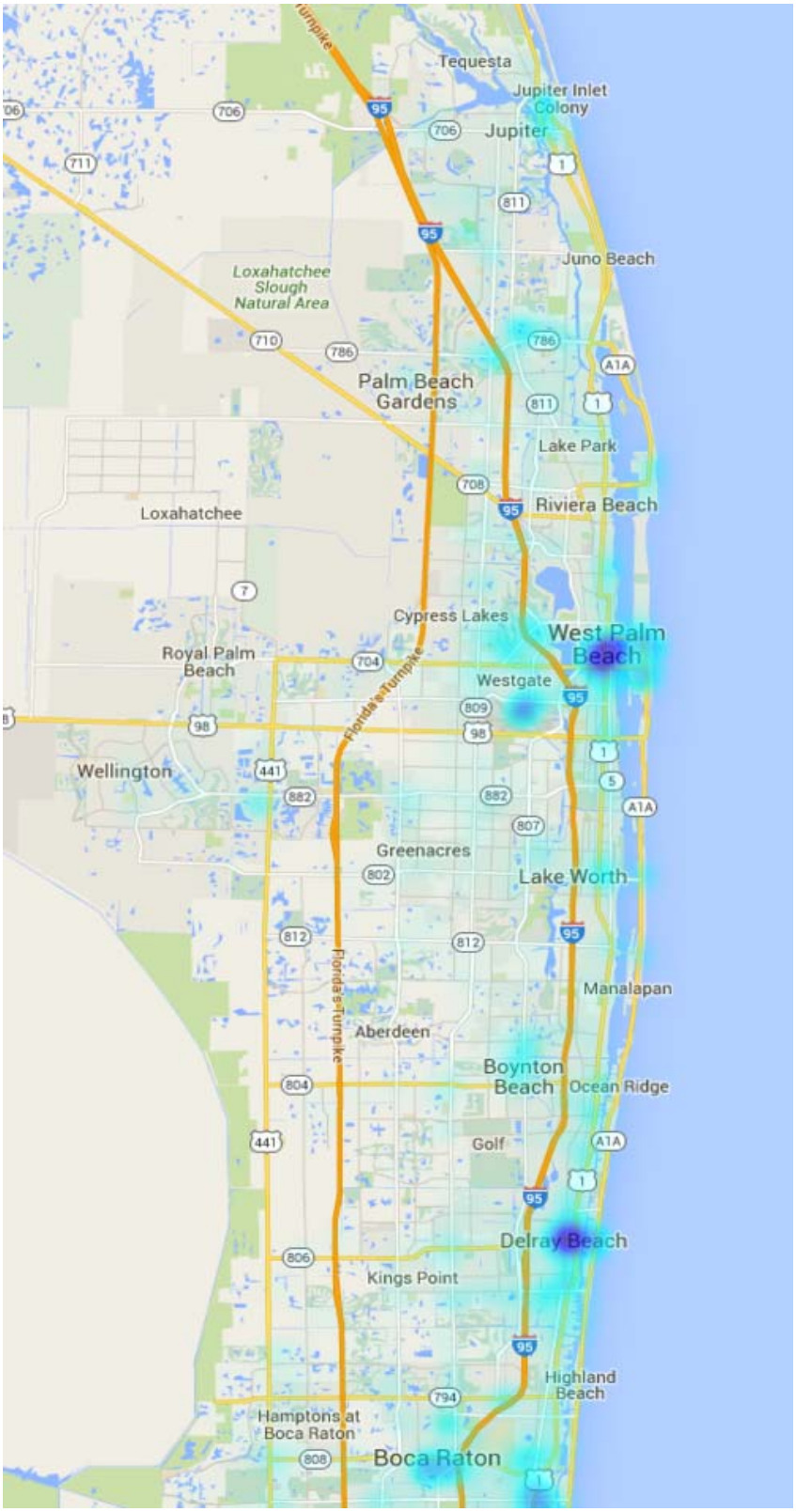
  - The express bus routes identified include:

    - Express bus via I-95
    - Express bus via Turnpike
    - Express bus via SR 7/ Okeechobee Boulevard
    - Express bus via Seminole Pratt Whitney Road/ Northlake Boulevard/ Military Trail
    - Express bus via Military Trail
    - Express bus via Glades Road
    - Express bus via SR 7
    - Express bus via SR 7/ Lake Worth Road on US 1
    - Express bus via US 1
    - Express bus via SR 80/ Australian Avenue
    - Express bus via Persimmons Boulevard/ SR 7/ Okeechobee Boulevard

- As discussed previously, FDOT is implementing Phase 3 of the I-95 managed lanes project.

- The 2040 Palm Beach County Long Range Transportation Plan (LRTP) identifies several roadway expansion projects, interchange improvement projects, all electronic conversion along the Turnpike, two new Tri-Rail stations (one at Palm Beach International Airport (PBIA)/Southern Boulevard and one at Glades Road and Military Trail in Boca Raton); and rail capacity improvement projects.

Figure 1 Uber Hotspot Demand Analysis



Source: Uber South Florida

- The All Aboard Florida (AAF) Brightline's West Palm Beach Intermodal Station (see Figure 2) is currently under construction, with service set to begin by the end of 2017 for the segment between West Palm Beach and Miami. The station will be located between S. Rosemary Avenue and S. Quadrille Boulevard in downtown.

- The Tri-Rail Coastal Link is scheduled to open in FY 2021 with 10 proposed stations within Palm Beach County.

Implications *– Many agencies are planning new regional transportation options to come online by 2040. Palm Tran should continue to engage its regional partners in discussions to promote seamless multimodal connectivity and transfers between its existing Palm Tran services and the planned services.*

Figure 2 Planned and Existing Intermodal Centers in West Palm Beach

Planned West Palm Beach AAF Station

Image Source: All Aboard Florida

West Palm Beach Intermodal Center (Existing)

Image Source: Palm Tran

3.4 Land Use

Effective land use planning can support public transit by implementing strategies to reshape land use to increase mobility, accessibility, and quality of life for the community. Coordination between land use and transportation is essential to create an efficient, effective, and balanced multimodal transportation system and living environment. An analysis of land use is provided below:

- According to the South Florida Climate Change Vulnerability Assessment and Adaptation Pilot Project, sea level rise and storm surge flooding are some of the most predominant challenges facing the barrier islands and areas around the Intracoastal Waterway within Palm Beach County in the future. Proper planning is important to prevent disruptions within the transportation system and to maintain transportation options for those coastal and inland areas which may be severely impacted during heavy rain or surge events.

- The majority of unincorporated Palm Beach County is zoned as conservation, agricultural production/ reserve, or conservation within the Future Land Use (see Figure 16 in Technical Memorandum Number 1). Large segments of Belle Glade is zoned for industrial and residential high density. Unincorporated land between I-95 and the Florida Turnpike are zoned primarily residential low and

medium density, with pockets of residential high density dispersed throughout. There are several industrial developments planned adjacent to PBIA.

- In early 2016, the Palm Beach County Commission approved comprehensive plan changes to the Agricultural Reserve land use category, which will allow more residential and commercial development in the area west of Boynton Beach and Delray Beach.

- There are mixed land use and commercial zones throughout most of the municipalities in Palm Beach County.

- There are several studies and initiatives to coordinate land use and transportation in Palm Beach County.
  - The City of West Palm Beach is developing a Mobility Plan to assess the City's existing conditions, projected growth and future demand, mobility fees, and will develop an implementation plan.
  - The City of Delray Beach is planning to implement a bike-share program, which would be coordinated with the "Delray's Next Great Street" initiative. A task force is studying ways to revitalize a 4.1-mile segment of the Congress Avenue corridor.
  - FDOT has completed a Project Development and Environment (PD&E) Study to extend SR 7 from Okeechobee Boulevard to Northlake Boulevard. The study includes road widening, bicycle lanes, sidewalks, and roundabouts.
  - FDOT is conducting a corridor study along SR 80, a 45-mile segment in Palm Beach County. The study will provide recommendations to FDOT, local governments, and other stakeholders on enhancements and improvements along the roadway, which is a regionally significant corridor for economic competitiveness, as well as part of the Strategic Intermodal System (SIS).
  - The Palm Beach Metropolitan Planning Organization (MPO) has plans to conduct a Countywide Transit Access Study to examine transit stops that need accessibility improvements.

- There are large mixed-use developments in Boca Raton, Boynton Beach, Delray Beach, Jupiter, Palm Beach Gardens, and West Palm Beach, with plans for expansion.
  - In Boca Raton, there are plans for residential development in western Boca Raton, a mixed-use development in downtown called the Palmetto Promenade, and plans for expansion in Mizner Park.
  - In Boynton Beach, there are plans for three major developments in the downtown: a gated waterfront community, a mixed-use luxury rental and retail complex, and a residential village and town center planned off of Congress Avenue.
  - In Delray Beach, there are plans for more retail and commercial development near Delray Marketplace off Atlantic Avenue, redevelopment around the Delray Beach Tri-Rail station, and plans to revitalize Congress Avenue as the "Next Great Street" with mixed-use and sustainable development.
  - In Jupiter, there are five new developments planned near downtown and around the beach. They include a mixed-use development called Love Street, a rejuvenated center planned for Suni Sands, a $70 million medical center, renovation along Indiantown Road, and a planned development called Sonoma Isles.
  - In Palm Beach Gardens, there are plans for a mixed-use development, a medical facility, and two large office developments.
  - In West Palm Beach, there are plans for expansion of City Place downtown, a planned transit-oriented and mixed use development called Transit Village which will be constructed over the

WPB Intermodal Center, and a new development called One West Palm, a planned restaurant/retail/office/condo/hotel project on the north side of downtown.

Implications *– Land use and transportation, when planned for concurrently, lead to more efficient land use and transportation networks, which can promote accessibility and walkability. There are a lot of opportunities for Palm Tran to coordinate with the local municipalities and provide input on future development.*

3.5 Public Involvement

Feedback from current users and non-users of transit services provided valuable input for deciding how to enhance existing transit service in Palm Beach County. In coordination with the Palm Beach MPO and FDOT, Palm Tran obtained input from Palm Tran personnel interviews, from stakeholder interviews, and from fixed route riders for the TDP. The Palm Tran Service Board and the TDP Review Committee, consisting of Palm Tran and Palm Beach MPO staff, also provided input.

Stakeholder Input

- **Routes and Service Hours** – Feedback indicated the need for more direct routes, better coverage for workers and students, more service during peak hour periods, and consolidation of transit stops.
- **Service Improvements** – Feedback indicated a need to reestablish service for areas previously served like Jog Road and to better serve newly planned developments throughout the County. It was also recommended to provide increased frequency of service in higher density areas. Stakeholders mentioned a need for increased connectivity regionally and within the County by coordinating more closely with Tri-Rail train schedules, increasing east-west connections, and first/last mile connectivity.
- **Customer Amenities** – Adding amenities like shelters, more fare payment options, and transit technologies were mentioned.
- **Paratransit** – Feedback was positive about recent Palm Tran improvements. Suggested improvements included new technology solutions for scheduling and payment and considerations of flexible service offerings to meet the needs of the riders.
- **Intergovernmental Coordination** – With regard to service, respondents indicated a need for more coordination between Palm Tran routes and the other transit providers including Tri-Rail and the local community shuttles/trolleys. With regard to other agencies, more coordination was encouraged with local governments especially concerning transit shelter programs and planned development.

2015 Attitudinal Survey Overview (November 9, 2015)

- The majority of respondents were found to be Palm Tran users for over a year, rode the buses at least four days a week, generally lacked access to a vehicle, and were satisfied overall with Palm Tran service. Respondents indicated weekend service and the transit stop infrastructure condition and comfort as areas for improvement.

Palm Tran Service Board Workshop (April 28, 2016)

- **Coverage and frequency** – Overall, Board members indicated more need for frequency over coverage, as higher frequency would likely bring more ridership and is more attractive to riders. There is still a need to balance transit coverage so that riders can access the system.

- **Transit infrastructure and safety** – Board members indicated a preference for more shelters and ADA compliant transit stops. With regard to safety, Board members mentioned coordination with local police and the sheriff's department, solar lighting at transit stops, and public announcements as safety measures for riders' benefit.
- **Service span and holidays** – Board members generally expressed a desire for longer service hours including transit dependent areas, core communities along the east coast, and the Glades area. They also indicated that holiday service is needed.
- **Marketing initiatives** – Board members generally indicated a need for more marketing endeavors and outreach by Palm Tran.
- **Financial sustainability** – Board members expressed a need for a direct source of funding for capital and operations.

Palm Tran Employee Survey (April 8-17, 2016)

- Palm Tran employees generally indicated that customer service is good with room for improvement. Respondents rated the following service factors highly: safety, ability to find schedule and route information, and seat availability. Top complaints included concerns about on-time arrivals, hours of service, and frequency.

Implications *– Common recommendations heard during the public involvement process included the need for increased frequency, expanding night and weekend hours, adding more routes to underserved and dense areas, improving regional and east/west connections, and improving the customer experience through the addition of amenities.*

3.6 Organizational Attributes

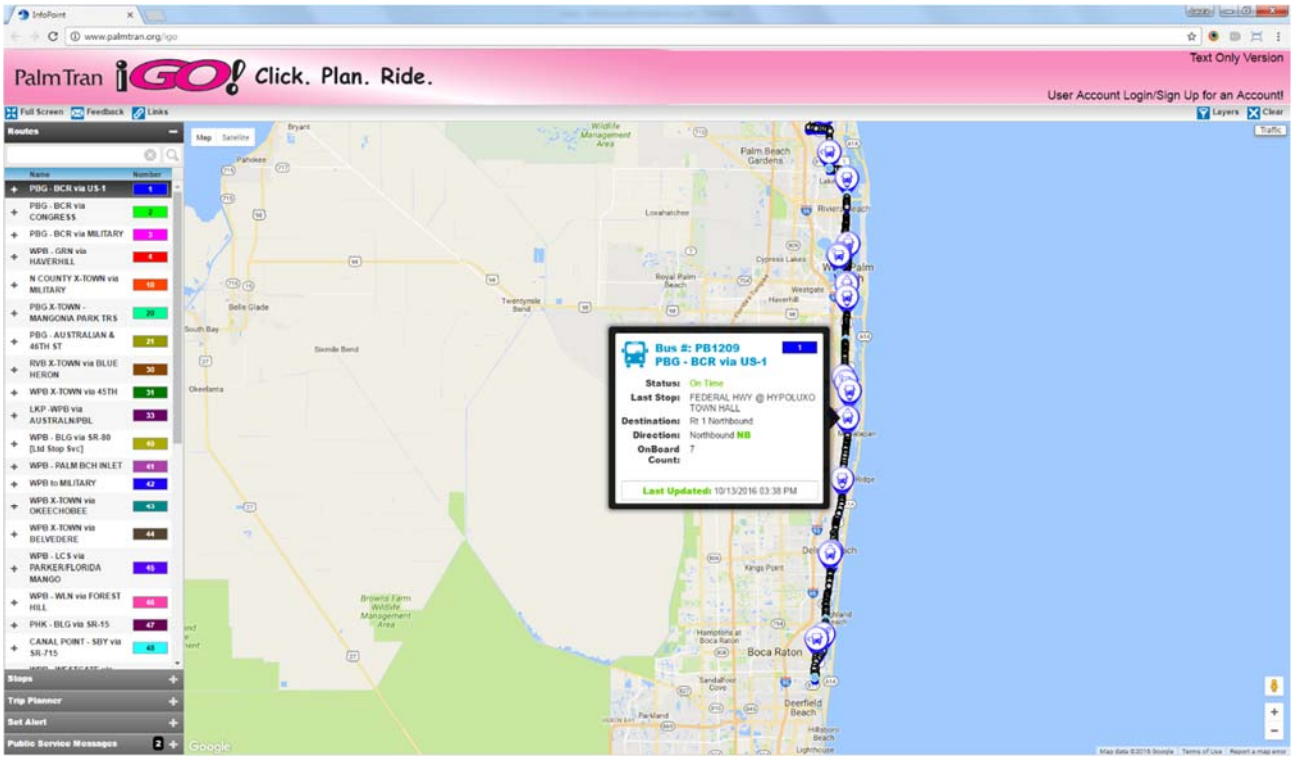
Palm Tran operates as part of the Palm Beach County Government, which oversees a number of other services, including planning, engineering, community services, and administration. Palm Tran operates the fixed-route services while contracting out the Palm Tran Connection paratransit service to three providers; First Transit, Inc., Maruti Transit Group, and MV Transportation; private, for-profit companies. The Palm Tran Service Board advises the Board of County Commissioners on public transit issues within the County to help make Palm Tran more efficient and to facilitate community participation in the development, implementation, and assessment of Palm Tran fixed route and paratransit services.

Implications *– Palm Tran should continue to explore opportunities to manage operational efficiencies. Periodic efforts such as pursuing a Comprehensive Operational Analysis (COA) or an internal assessment can identify whether operational changes could enhance Palm Tran's efficiency.*

3.7 Technology

Transit Technology – Transit technology improvements have the potential to provide immediate benefits to riders through improved service operations and productivity, enhanced customer experience, and operational efficiencies. Palm Tran launched "iGo!" (see Figure 3) a real-time bus tracker available online and on smart phone devices through an application in 2012. Automated vehicle location (AVL) technology uses real-time data to identify the route, location, and direction of the bus. Riders can also use Google Transit to identify trip alternatives on a computer or mobile device. Google provides transfer instructions and estimated arrival/departure times based on user input.

Figure 3 Palm Tran Real-time Bus Tracker Website Interface



Source: http://www.palmtran.org/igo.

- **Signal Priority** – Palm Tran included transit signal priority (TSP) improvements in its capital plan for FY 2017. This project will allow enhanced bus operations on Routes 43 and 62.

- **Smart Card Application** – Palm Tran's capital plan includes upgrades for smart card technology which would allow payment with cash, transit pass, or mobile device.

- **Transit Technology Amenities** – Transit technology amenities can help positively impact the rider experience at the transit stop and on board. At the transit stop, customer-friendly amenities include dynamic messaging signs, lighting, emergency telephones, and video camera monitoring. On-board transit amenities include Wi-Fi and USB/power outlets.

Implications *– Technology improvements can significantly enhance the rider experience and should be considered for implementation.*

4.0 Alternatives Evaluation

This section summarizes the evaluation process for service alternatives developed for the FY 2017-2026 TDP timeframe. Because many alternatives are identified, ranging from improvements of existing routes to implementation of new routes, it is important for Palm Beach County to prioritize these improvements to effectively plan and implement them within the next 10 years using existing and/or new funding sources.

The evaluation process is one of many tools designed to assist Palm Tran in determining an implementation plan for the various alternatives being evaluated. The implementation plan is also influenced by budgeting needs, an understanding of how the network works as a system, and professional judgment.

4.1 Methodology

A methodology was developed to evaluate and prioritize the transit alternatives presented in Technical Memorandum Number 4. To prioritize and program these service improvements, it is important to weigh the benefits of each service improvement against the others. The remainder of this section identifies and defines the evaluation criteria to be used in prioritizing the service improvements developed for the TDP and the methodology by which those criteria are applied.

Three evaluation categories are identified for determining criteria for the evaluation:

- Public Involvement
- Transit Markets
- Productivity and Efficiency

Figure 4 shows the TDP 10-year transit service alternatives evaluation process, including criteria, measures, and weights used for each category. A summary of various criteria and measures used in each tier, as well as the evaluation results, are presented in the remainder of this section.

Table 2 lists these evaluation categories, each category's corresponding criteria, the associated measure of effectiveness, and the assigned weighting for each criterion.

4.1.1 Public Involvement

The public involvement process, detailed in Technical Memorandum Number 1, resulted in numerous opinions and suggestions on transit services from transit users, nonusers, operators, and transit advocates. In addition, the public involvement process also included discussions with policy leaders and the technical review committee to understand their perceptions on transit services. Based on an in-depth review of input from this public involvement effort, interest in a particular route or type of service was categorized as "None," "Moderate," "High," or "Very High" in the alternatives evaluation process.

Figure 4 Transit Service Alternatives Evaluation Process

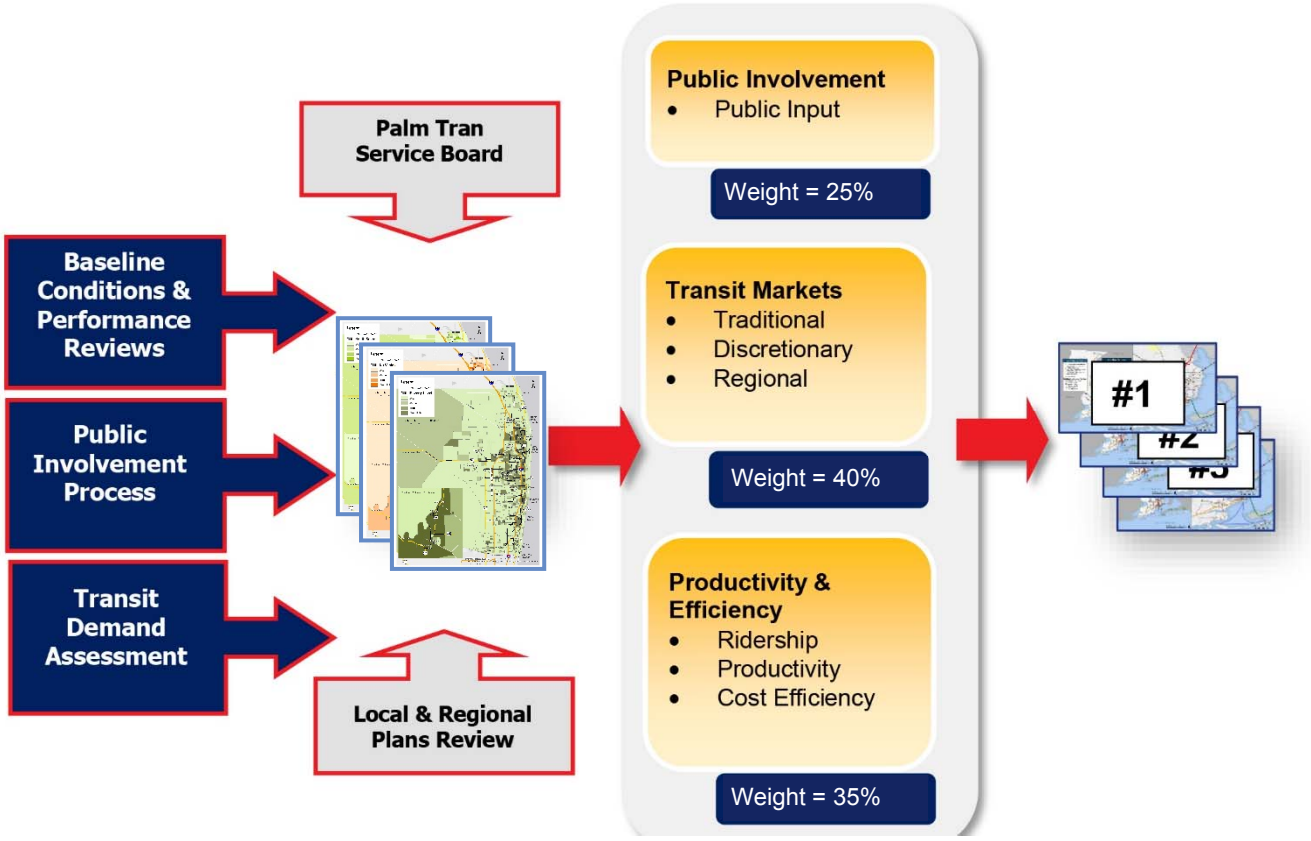


Table 2 Alternative Evaluation Measures

Category	Criteria	Measure of Effectiveness	Relative Weighting	Overall Category Weight
Public Outreach	Public Input	Level of interest in specific alternatives (High, Moderate, Low)	25%	25%
Transit Markets	Traditional Market	Percent of corridor in “High” or “Very High” Transit Orientation Index (TOI)	20%	40%
	Discretionary Market	Percent of corridor area that meet the “minimum” Density Threshold Assessment (DTA) tier for employment or dwelling unit density	10%	
	Regional Market	Connectivity to adjacent counties	10%	
Productivity & Efficiency	Productivity	Trips per hour (T-BEST generated trips and revenue hours of service)	20%	35%
	Cost Efficiency	Cost per trip (including new trips)	15%	
Total			100%	100%

4.1.2 Transit Markets

For the evaluation of alternatives, three transit markets were identified:

- **Traditional Market**, which uses Transit Orientation Index data analyzed in Technical Memorandum Number 4, refers to existing population segments that historically have a higher propensity to use transit and/or are dependent on public transit for their transportation needs. For the alternatives evaluation, the proportion of each corridor operating within an area considered to have a “High” or “Very High” transit orientation was calculated;

- **Discretionary Market**, which uses Density Threshold Assessment data analyzed in Technical Memorandum Number 4, refers to potential riders living in higher-density areas of the county that may choose to use transit as a commuting or transportation alternative. The proportion of each corridor meeting at least the “Minimum” dwelling unit or employment density threshold in the DTA was calculated and used for the alternatives evaluation; and

- **Regional Market** refers to each potential route being assessed for potential regional connectivity. Routes serving key areas outside of Palm Beach County were considered. Inter-county routes having connections to adjacent counties were scored higher than those limited to serving just Palm Beach County. Based on conclusions drawn from public involvement input, regional service to adjacent counties is a much-desired attribute for Palm Tran routes.

4.1.3 Productivity and Efficiency

Productivity is generally measured in terms of ridership. Service efficiency is used by transit agencies to gauge how well they are using their existing resources. Each measure is critical to the success of the agency, and services performing well in terms of their productivity and efficiency should receive a higher priority. Forecast ridership, revenue hours, and operating cost figures for each individual alternative are used in this measure.

- **Ridership productivity** is measured in terms of annual passenger trips per revenue hour of service. To provide for an equal comparison between alternatives, passenger trips and revenue hours of service were generated using output from TBEST 2026 ridership data. Ridership projections are shown in Table 3.

- **Cost efficiency** is evaluated for each alternative using a standard transit industry efficiency measure, operating cost per passenger trip. Operating costs are calculated using operating cost per trip based on Palm Tran performance data and TBEST 2026 ridership data. More cost information is provided in Section 4 of this report.

4.1.4 Alternatives Scoring Thresholds

As noted, each criterion is assigned a weight. Weighting the criteria affords the opportunity to measure the relative importance of each criterion among the group of criteria to be applied. For each transit alternative, a score was determined either through the computation of the selected measure of effectiveness or through the professional judgment of the analyst. Potential scores were assigned depending on the relative comparison of a given transit alternative with other transit alternatives as it relates to a given criterion. A higher score is consistent with a higher ranking for a given alternative for the criterion being evaluated.

The thresholds for computation-based criteria (traditional market, choice market, trips per hour, operating cost per trip) were determined using the average of the entire data set and one standard deviation above or below the average. Table 4 shows the thresholds and scoring for each criterion used in the alternatives evaluation.

4.1.5 Results of Alternatives Evaluation

Each alternative was evaluated using the process summarized above and the detailed results are presented in Table 5. From this process, each alternative received a score. The alternatives were then ranked based on their respective score. Table 6 presents the ranked list of improvements based on this process.

After ranking each of the alternatives, the next step was to develop an implementation plan based on the ranking inputs, budgetary constraints, an understanding of how the network works as a system, and professional judgment. The implementation plan, displayed in Table 7, was also influenced by three over-arching considerations:

- The public repeatedly requesting greater frequency and spans of service on the existing system.

- Palm Tran will be undertaking the Route Performance Maximization (RPM) study in FY 2017. The RPM will focus on an in-depth analysis of the current route network to improve the efficiency of the system. Once the current system is operating at maximum efficiency, the planned TDP improvements are to begin in FY 2018.

  The RPM process will include a workshop with the Board of County Commissioners to gather input and direction as to potential service to the western and central communities, including the City of Belle Glade. The evolving nature of transit and technology has led to a greater number of choices when it comes to serving these areas such that Palm Tran staff requires direction with regard to policy on these matters from the Commissioners.

- Staff is interested in improving the customer experience in order to encourage ridership. On the capital side, improvements include a focus on adding Wi-Fi and charging stations to buses, updating the bus design and driver uniforms, as well as working toward fare interoperability between Palm Tran and other providers.

Figures 5 and 6 provide a visual representation of the planned improvements for the first five years (i.e., FY 2017-2021) and the second five years (i.e., FY 2022-2026), respectively. In addition to the 10-year implementation plan, some improvements were assumed to be implemented beyond the 10-year timeframe. These improvements included the express bus improvements displayed in Figure 7.

Table 3 TBEST Ridership Projections – FY 2026

Route	FY 2017 Projections (No Change)			FY 2026 Projections (With Improvements)			Percent Change		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Route 1	7,954	5,149	2,642	8,955	5,488	2,820	13%	7%	7%
Route 2	4,498	1,916	769	5,208	2,766	1,211	16%	44%	57%
Route 3	4,432	2,478	832	9,124	2,989	2,132	106%	21%	156%
Route 4	165	79	N/A	203	91	0	23%	15%	N/A
Route 10	304	208	N/A	379	226	0	25%	9%	N/A
Route 20	325	166	N/A	381	183	0	17%	10%	N/A
Route 21	388	188	N/A	440	206	0	13%	10%	N/A
Route 30	306	139	74	360	153	83	18%	10%	12%
Route 31	1,408	483	212	1,678	554	255	19%	15%	20%
Route 33	748	403	202	848	445	225	13%	10%	11%
Route 40	708	397	213	835	426	225	18%	7%	6%
Route 41	69	26	N/A	77	29	0	12%	12%	N/A
Route 42	95	N/A	N/A	109	0	0	15%	N/A	N/A
Route 43	1,998	1,002	458	2,966	1,616	765	48%	61%	67%
Route 44	400	265	115	503	297	137	26%	12%	19%
Route 45	110	97	N/A	125	107	0	14%	10%	N/A
Route 46	862	470	210	1,089	534	253	26%	14%	20%
Route 47	717	356	199	788	383	216	10%	8%	9%
Route 48	449	260	140	497	279	152	11%	7%	9%
Route 49	230	197	84	273	229	101	19%	16%	20%
Route 52	191	120	N/A	227	138	0	19%	15%	N/A
Route 60	126	N/A	N/A	164	0	0	30%	N/A	N/A
Route 61	618	424	202	1,300	488	264	110%	15%	31%
Route 62	2,103	977	480	2,592	1,736	1,020	23%	78%	113%
Route 63	508	294	133	924	354	166	82%	20%	25%
Route 64	300	181	N/A	494	215	0	65%	19%	N/A
Route 70	958	370	115	1,072	405	126	12%	9%	10%
Route 71	244	146	N/A	298	178	0	22%	22%	N/A
Route 73	458	294	N/A	542	332	0	18%	13%	N/A
Route 80	337	2,484	125	383	2,760	147	14%	11%	18%
Route 81	495	238	N/A	607	263	0	23%	11%	N/A
Route 91	731	391	198	866	430	226	18%	10%	14%
Route 92	284	167	N/A	337	186	0	19%	11%	N/A
Route 94	738	N/A	N/A	809	0	0	10%	N/A	N/A
Route 2 Limited Stop	N/A	N/A	N/A	253			N/A	N/A	N/A
Route 3 Limited Stop	N/A	N/A	N/A	398			N/A	N/A	N/A
I-95 Express - Congress Ave to West Palm Beach Intermodal Center	N/A	N/A	N/A	242	N/A	N/A	N/A	N/A	N/A
Turnpike Express - Wellington to Boca Raton	N/A	N/A	N/A	432	N/A	N/A	N/A	N/A	N/A

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Route	FY 2017 Projections (No Change)			FY 2026 Projections (With Improvements)			Percent Change		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Turnpike Express - Palm Beach Gardens to Pompano Beach Tri-Rail Station	N/A	N/A	N/A	398	N/A	N/A	N/A	N/A	N/A
Turnpike Express - Wellington Green Mall to Sample Road	N/A	N/A	N/A	362	N/A	N/A	N/A	N/A	N/A
Route 43 Express - Okeechobee/Wellington Green Mall to West Palm Beach Intermodal Center	N/A	N/A	N/A	283	N/A	N/A	N/A	N/A	N/A
Route 62 Express - Lake Worth Road to US 1/Wellington Green Mall	N/A	N/A	N/A	426	N/A	N/A	N/A	N/A	N/A
Existing Services Total	34,257	20,365	7,403	45,453	24,486	10,524	33%	20%	42%
New Services Total				3,363	0	0			
Grand Total	34,257	20,365	7,403	48,816	24,486	10,524	42%	20%	42%

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Table 4 Alternative Evaluation – Scoring Thresholds

Criteria	Range		Score
	Low	High	
Public Input (Interest in Improvement)	None		1
	Moderate		3
	High		5
	Very High		7
Traditional Market Potential (% Serving Traditional Market)	<1 STDEV below Average		1
	≥1 STDEV below Average	<Average	3
	≥Average	≤1 STDEV above Average	5
	>1 STDEV above Average		7
Choice Market Potential (% Serving Discretionary Market)	<1 STDEV below Average		1
	≥1 STDEV below Average	<Average	3
	≥Average	≤1 STDEV above Average	5
	>1 STDEV above Average		7
Regional Market Connectivity	No		0
	Yes		5
Ridership (Trips per Hour)	<1 STDEV below Average		1
	≥1 STDEV below Average	<Average	3
	≥Average	≤1 STDEV above Average	5
	>1 STDEV above Average		7
Cost (Cost per Trip)	>1 STDEV above Average		1
	≥Average	≤1 STDEV above Average	3
	≥1 STDEV below Average	<Average	5
	<1 STDEV below Average		7

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Table 5 Alternative Evaluation – Scoring

Criteria (Weight)	Public Involvement (25%)		Traditional Markets (20%)		Discretionary Markets (10%)		Urban/Regional Market (10%)		Ridership (20%)*		Cost (15%)		Weighted Average Score	Rank
Alternative	Interest	Score	% in Market	Score	% in Market	Score	% in Market	Score	Trips per Hour	Score	Cost per Trip	Score		
Weekday Routes 1, Bolt, 3, 43, 52, 62, 71 - one AM hour/one PM hour	High	5	10.17%	7	10.95%	7	No	0	83.88	7	$1.30	7	5.45	2
Weekday Routes 2, 31, 33, 46, 61, 63, 81 - one AM hour earlier	High	5	10.74%	7	9.77%	7	No	0	54.23	5	$2.01	7	5.15	4
Weekday Route 62 - one AM hour/2 PM hours	Very High	7	1.25%	3	0.81%	3	No	0	27.17	3	$4.01	5	3.85	9
Weekday Route 63 - two PM hours	Very High	7	0.58%	3	10.95%	7	No	0	185.00	7	$0.59	7	5.35	3
Weekday Route 92 - one PM hour	High	5	0.59%	3	1.44%	3	Yes	5	11.50	3	$9.48	5	3.85	10
Saturday Routes 1, 2, 3, 31, 43, 63 - one AM hour/one PM hour	High	5	13.34%	7	13.19%	7	Yes	5	24.66	3	$4.42	5	5.05	5
Saturday Route 62 - one AM hour and 2 PM hours	High	5	1.25%	3	0.81%	3	No	0	54.33	5	$2.01	7	3.95	8
Sunday Routes 1, 2, 3, 31, 43, 62 - one AM hour/one PM hour	Very High	7	14.01%	7	13.77%	7	Yes	5	45.20	5	$2.41	7	6.15	1
Weekday Frequency Route 43 - 30 minutes to 20 minutes	Very High	7	1.74%	3	0.85%	3	No	0	53.40	5	$9.97	5	4.15	6
Weekday Frequency on Routes 61, 63, 64 - 60 to 30 minutes	Very High	7	3.51%	3	2.30%	3	Yes	5	21.90	3	$24.31	1	3.75	11
Saturday Frequency on Routes 2, 43, 62 - 60 to 30 minutes	Moderate	3	6.16%	5	5.67%	5	No	0	6.79	3	$16.04	3	3.15	13
Sunday Frequency on Routes 2, 3, 43, 62 - 60 to 30 minutes	Moderate	3	8.85%	7	8.53%	7	No	0	22.02	3	$4.95	5	4.05	7
Route 2 Limited Stop	Moderate	3	3.17%	3	4.01%	5	No	0	3.16	3	$24.13	1	2.55	18
Route 3 Limited Stop	Moderate	3	2.70%	3	2.86%	5	No	0	7.11	3	$21.91	1	2.55	18
TSP on Okeechobee Blvd (SR 704)	Low	1	1.74%	3	0.85%	3	Yes	5	NA	7	NA	1	2.85	14
TSP on Lake Worth Rd	Low	1	1.25%	3	0.81%	3	Yes	5	NA	7	NA	1	2.85	14
I-95 Express - Congress Ave to West Palm Beach Intermodal Center	Low	1	0.03%	3	0.37%	3	Yes	5	7.56	3	$14.41	3	2.55	18
Turnpike Express - Wellington to Boca Raton	Low	1	0.24%	3	0.24%	3	Yes	5	10.80	3	$10.09	5	2.85	16
Turnpike Express - Palm Beach Gardens to Pompano Beach Tri-Rail Broward County	Low	1	0.19%	3	0.54%	3	No	0	5.53	3	$19.72	3	2.05	21
Turnpike Express - Wellington Green Mall to Sample Road	Low	1	0.44%	3	0.18%	3	No	0	9.05	3	$12.04	3	2.05	21
Route 43 Express - Okeechobee/Wellington Mall to West Palm Beach Intermodal Center	Low	1	1.48%	3	0.85%	3	Yes	5	11.79	3	$9.24	5	2.85	16
Route 62 Express - Lake Worth Road to US 1/Wellington Green Mall	Low	1	1.21%	5	0.71%	3	Yes	5	17.75	5	$6.14	5	3.45	12

*Note: Trips per hour were calculated by dividing the incremental increase in ridership by the incremental increase in the number of hours of service. Due to the nature of the analysis, the impact on trips per hour could be separated out for multiple improvements to the same route. For instance, both span of service and frequency improvements were added for Route 63. When calculating trips per hour for increasing the span of service on Route 63, the increased ridership created by both frequency and span of service improvements were included in the trips per hour calculation, which results in a larger than expected trips per hour for the span of service improvement.

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Table 6 10-Year Transit Service Alternatives Ranking

Rank*	Alternative
1	Increase Sunday span of service one AM hour/one PM hour - Routes 1, 2, 3, 31, 43, 62
2	Increase weekday span of service one AM hour/one PM hour - Routes 1, Bolt, 3, 43, 52, 62, 71
3	Increase weekday span of service two PM hours - Route 63
4	Increase weekday span of service one AM hour earlier - Routes 2, 31, 33, 46, 61, 63, 81
5	Increase Saturday span of service one AM hour/one PM hour - Routes 1, 2, 3, 31, 43, 63
6	Increase weekday frequency from 30 minutes to 20 minutes - Route 43
7	Increase Sunday frequency from 60 to 30 minutes - Routes 2, 3, 43, 62
8	Increase Saturday span of service one AM hour/2 PM hours - Route 62
9	Increase weekday span of service one AM hour/2 PM hours - Route 62
10	Increase weekday span of service one PM hour - Route 92
11	Increase weekday frequency from 60 to 30 minutes - Routes 61, 63, 64
12	Add Route 62 Express - Lake Worth Road to US 1/Wellington Green Mall
13	Increase Saturday frequency from 60 to 30 minutes - Routes 2, 43, 62
14	Add transit signal priority on Okeechobee Blvd (SR 704)
14	Add transit signal priority on Lake Worth Rd
16	Add Turnpike Express - Wellington to Boca Raton
16	Add Route 43 Express - Okeechobee/Wellington Mall to West Palm Beach Intermodal Center
18	Route 2 “Bolt” Limited Stop
18	Route 3 “Bolt” Limited Stop
18	I-95 Express - Congress Ave to West Palm Beach Intermodal Center
21	Turnpike Express - Wellington Green Mall to Sample Road
21	Turnpike Express - Palm Beach Gardens to Pompano Beach Tri-Rail Broward County

*Alternatives may receive a tied ranking due to the alternative evaluation scoring process.

Table 7 10-Year Transit Service Implementation Plan

Year	Days of Service	Type of Improvement	Routes	Annual Cost (2016$)**
2018	Weekday	Frequency - 30 to 20 minutes	43	$415,000
2018	Weekday	Span of service - one AM hour/two PM hours	62	$500,000
2018	Saturday	Span of service - one AM hour/two PM hours	62	$68,000
2019	Weekday	Span of service - three AM hours/three PM hours	Bolt 1	$500,000
2021	Weekday	New service - Route 2 Limited Stop (Bolt)	New Bolt 2	$2,300,000
2021	Weekday	New service - Route 3 Limited Stop (Bolt)	New Bolt 3	$3,200,000
2021	Weekday	Span of service - one AM hour earlier	2, 31, 33, 46, 61, 63, 81	$860,000
2021	Sunday	Frequency - 60 to 30 minutes	2, 3, 43, 62	$590,000
2022	Weekday	Span of service - one AM hour/one PM hour	1, 3, 43, 52, 62, 71	$1,995,000
2022	Weekday	Span of service - two PM hours	63	$55,000
2022	Saturday	Span of service - one AM hour/one PM hour	1, 2, 3, 31, 43, 63	$365,000
2022	Sunday	Span of service - one AM hour/one PM hour	1, 2, 3, 31, 43, 62	$305,000
2022	Saturday	Frequency - 60 to 30 minutes	2, 43, 62	$1,520,000
2023	Weekday	Frequency - 60 to 30 minutes	61, 63, 64	$1,455,000
2024	Weekday	Span of service - one PM hour	92	$55,000
Beyond 2026	Weekday	Express - Lake Worth Road to US 1/Wellington Green Mall	62 Express	$665,000
Beyond 2026	Weekday	Express - Congress Ave To West Palm Beach Intermodal Center	New I-95 Express	$885,000
Beyond 2026	Weekday	Express - Okeechobee / Wellington Mall to West Palm Beach Intermodal Center	43 Express	$665,000
Beyond 2026	Weekday	Express - Palm Beach Gardens to Pompano Beach Tri-Rail Broward County	New Turnpike Express	$2,000,000
Beyond 2026	Weekday	Express - Wellington to Boca Raton	New Turnpike Express	$1,105,000
Beyond 2026	Weekday	Express - Wellington Green Mall to Sample Road	New Turnpike Express	$1,107,000

*In the evaluation process, improvements to the Bolt span of service were included with the span of service improvements for Routes 1, 3, 43, 52, 62, 71, but for the purposes of the implementation plan, the Bolt span of service improvements were separated out as a separate improvement.

**Costs are for planning purposes only and should not be used for budgeting purposes.

Figure 5 FY 2017-2021 Improvements

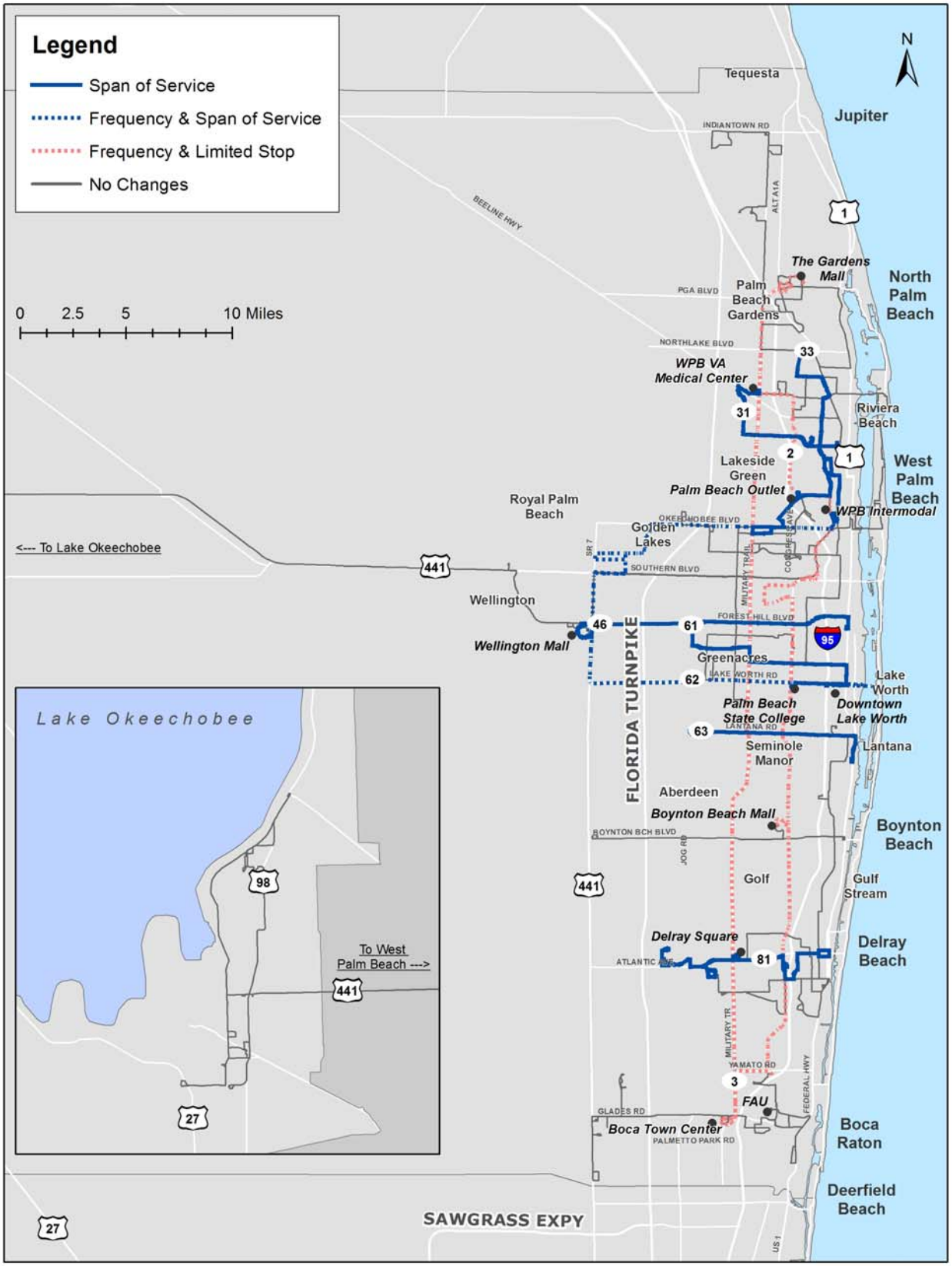


Figure 6 FY 2022-2026 Improvements

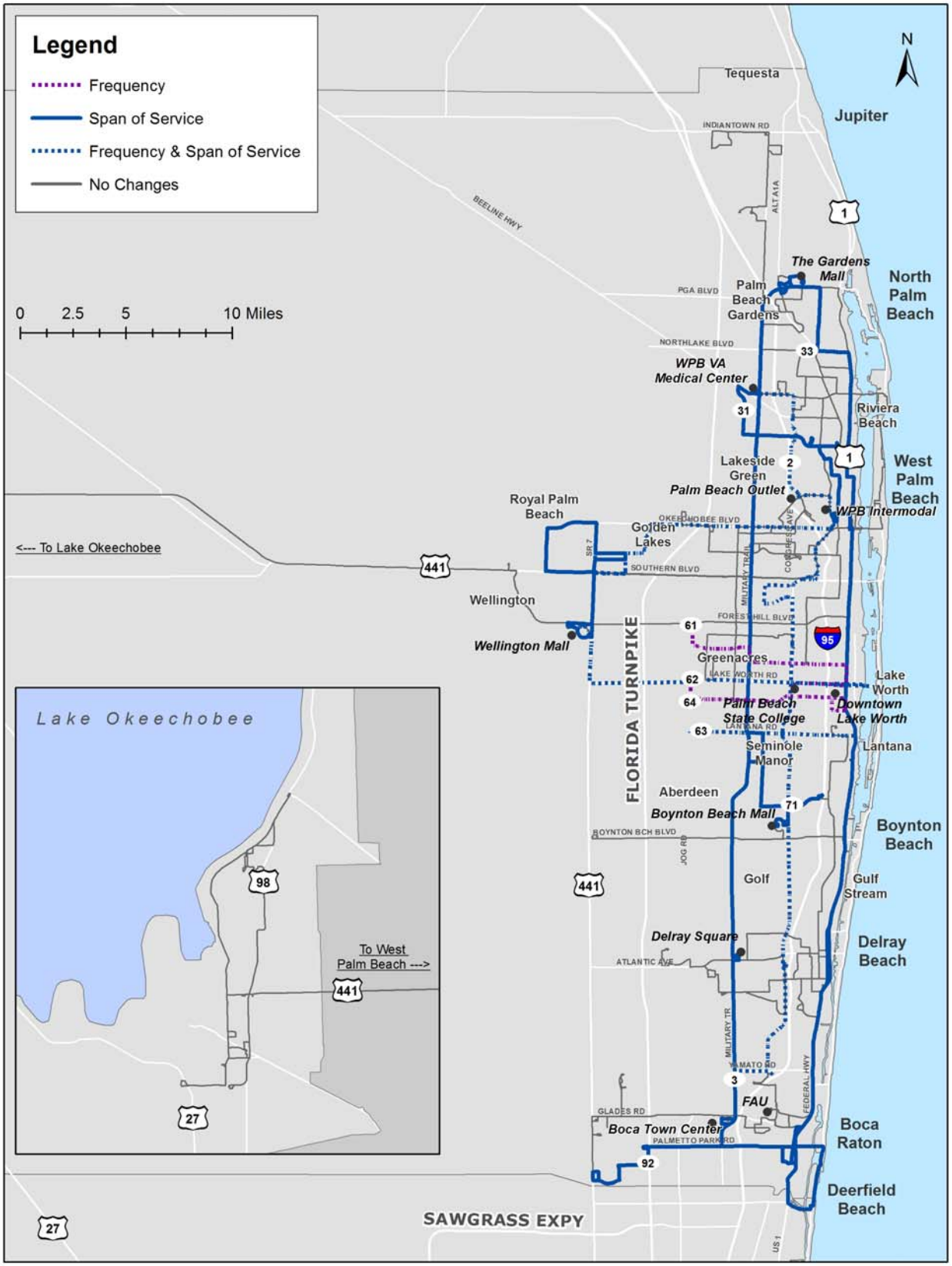
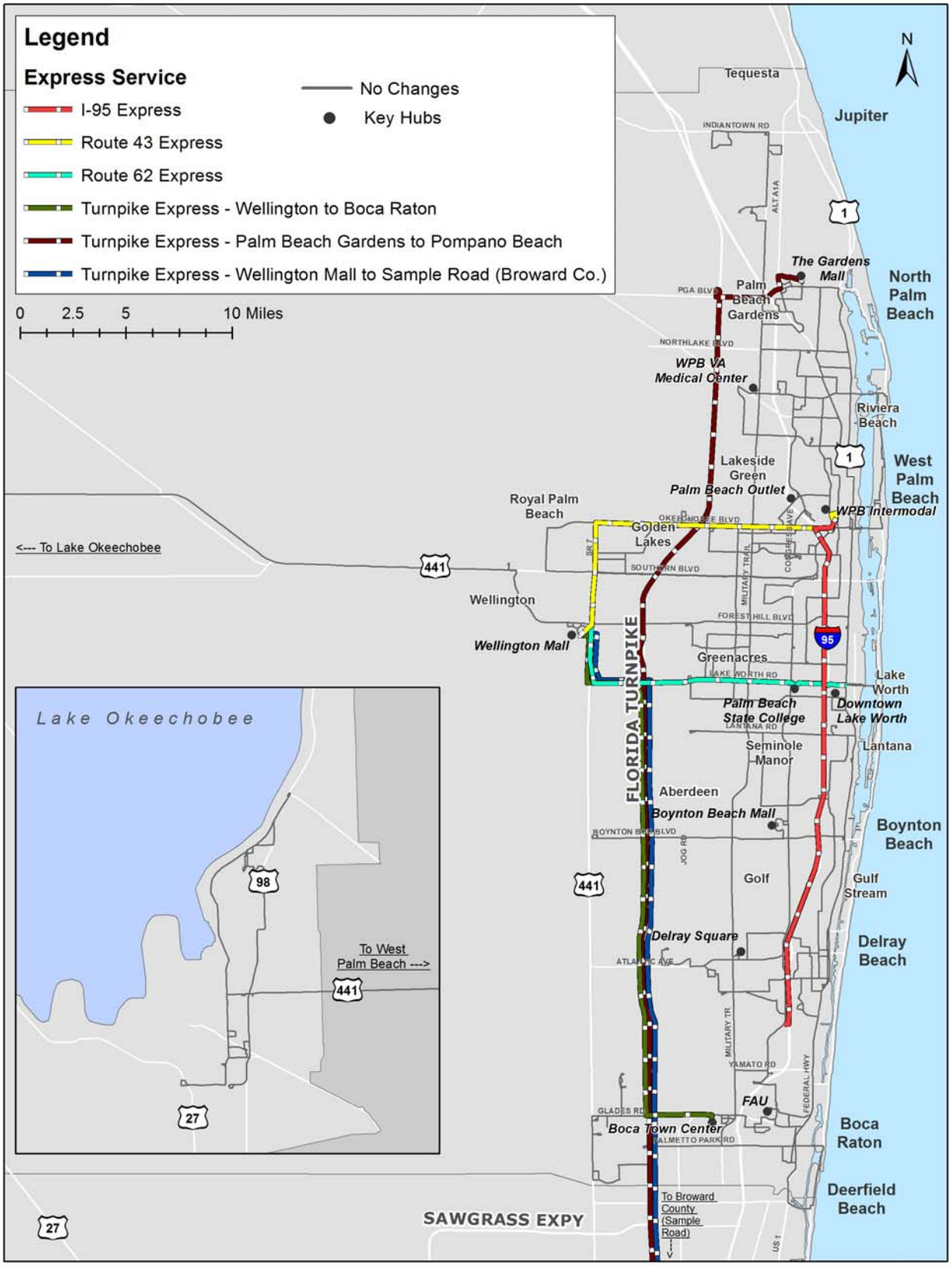


Figure 7 Beyond FY 2026 Improvements



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5.0 10-Year Finance Plan

This section outlines the recommended 10-year implementation plan developed for the FY 2017-2026 TDP. First, a summary of the assumptions for capital and operating costs used in developing the 10-year costs and revenues for the plan are presented. Then, the financial plan for the recommended 10-year period is presented.

5.1 Cost and Revenue Assumptions

This section presents the capital and operating cost assumptions, along with the costs and revenues associated with the 10-year implementation plan.

5.1.1 Operating Cost Assumptions

Numerous cost assumptions were made to forecast transit costs for the time period from FY 2017 through FY 2026. These operating cost assumptions are based on a variety of factors, including service performance data from Palm Tran and information from other recent Florida TDPs. These assumptions are summarized as follows:

- An average annual inflation rate of 3% was used for all operating cost projections.
- Annual operating costs for existing services are based on Palm Tran's FY 2016 budget with assumed 3% inflation for the base year of 2017 and inflated at 3% for each year thereafter.
- Annual operating costs for future service enhancements are based on the projected annual service hours and marginal cost per revenue hour of $109.00 for fixed-route service (in 2016$). The cost per hour was provided by Palm Tran staff. The operating cost per hours figures are inflated annually using the 3% factor.
- No increase in paratransit services were assumed because none of the improvements increased the paratransit service area. Only a 3% annual inflationary increase was assumed for paratransit services.

5.1.2 Capital Cost Assumptions

Several assumptions were developed to project the costs for capital needs identified previously. These capital cost assumptions are summarized as follows:

- The first five years of the capital portion of the finance plan are based on the Capital Improvement Plan (CIP) provided by Palm Tran staff. The only additions to the plan were vehicle purchases needed to implement planned service improvements during the first five years covered by the TDP.
- For the first five years of the plan, fixed-route replacement vehicle purchases were provided for in the CIP. Thereafter, replacement vehicle purchases were calculated by taking an average annual purchase amount from the CIP and applying it for years 2022-2026.

- Replacement administrative vehicles were provided for in the CIP for the first five years. No costs were assumed for replacement administrative vehicles were made beyond the first five years of the TDP.

- Vehicles purchased for new service were also included in the finance plan. New service includes both frequency improvements and new routes, such as express service, being implemented.

- Vehicles are assumed to cost $500,000 for a fixed-route bus and $700,000 for a premium fixed-route bus. The vehicle unit costs are based on information provided by Palm Tran staff.

- An annual growth rate of 3% was used for capital cost projections, based on the data available from recent transit plans in Florida and data published by FDOT.

Figure 6 illustrates the operating and capital costs included in the 10-year Cost Feasible Plan.

5.1.3 Revenue Assumptions

Revenues for fixed-route service are based on information provided by Palm Tran:

- Based on current farebox recovery ratios, farebox recovery was assumed to be 19% in 2017 and increase one percentage point every year thereafter until achieving Palm Tran's goal recovery rate of 23% in 2021. From there forward, the farebox recovery ratio is projected to be 23%.

- Annual revenues from federal, state, and local sources are based on Palm Tran's FY 2016 budget and discussions with Palm Tran staff. The distribution of 10-year revenues included in the 10-year plan are displayed in Figure 7.

- Due to the more restrained growth rate expected from federal and state revenue sources, an annual growth rate of 1% was used to increase all revenues except farebox recovery.

- No new sources of capital or operating revenues were assumed.

The detailed 10-year operating finance plan is presented in Table 8 with the 10-year capital plan being presented in Table 9. The first five years of the plan are relatively balanced between revenues and expenses while the latter five years are more visionary in nature and therefore a larger gap between costs and revenues is projected. Additional revenues would have to be identified to implement all of the improvements shown in the 10-year TDP.

It should be noted that approval of the TDP by the Board of County Commissioners is not an approval of the funds necessary to implement the plan. In order to implement the projects, the Commissioners must approve individual fiscal year budgets and include funding for the improvements in those budgets.

Figure 8 Annual Operating Costs and Revenues (millions)

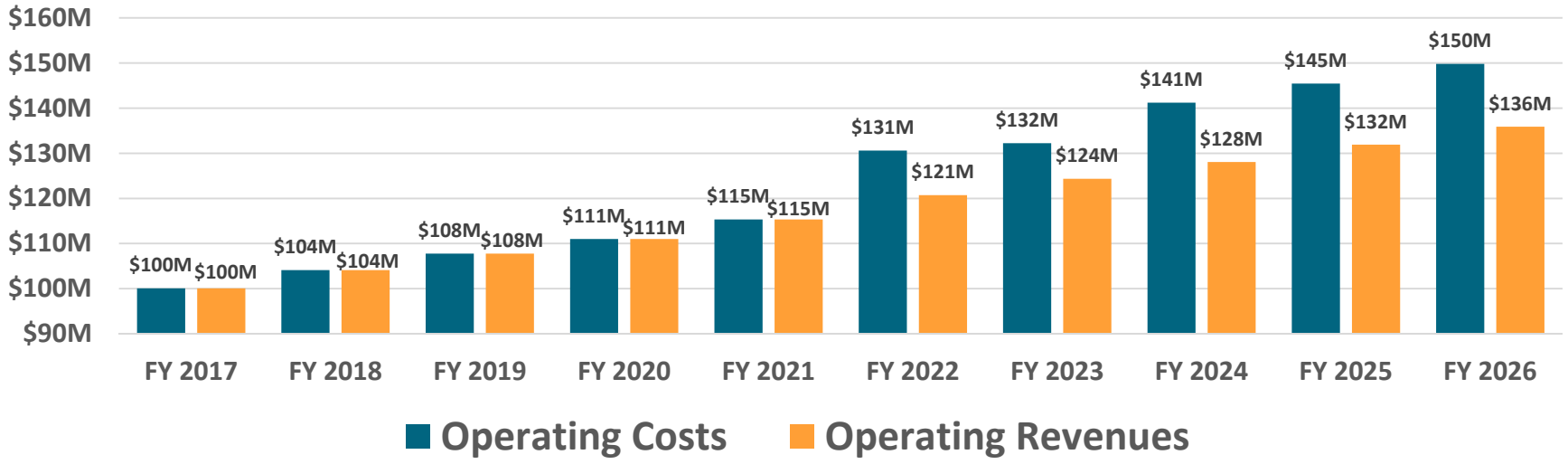

Figure 9 Annual Capital Costs and Revenues (millions)

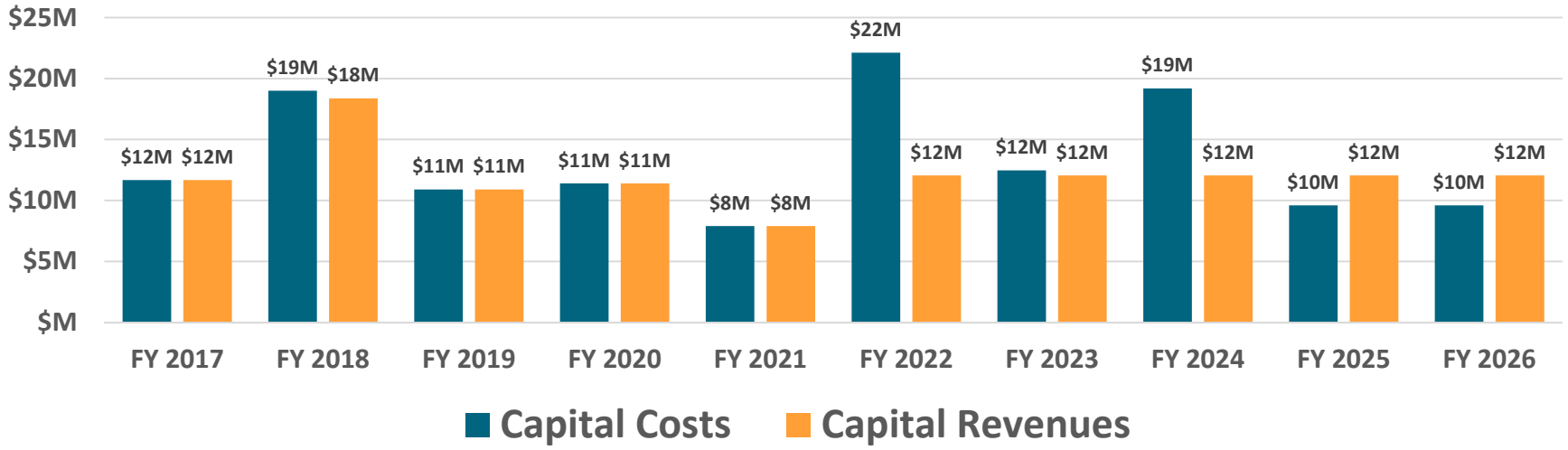

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Table 8 10-Year Transit Development Finance Plan - Operating

Cost/Revenue Category	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	10-Year Total
OPERATING COST											
Maintain Existing Fixed-Route Services	$70 M	$72 M	$74 M	$76 M	$78 M	$81 M	$83 M	$86 M	$88 M	$91 M	$798 M
Maintain Existing Paratransit Services	$30 M	$31 M	$32 M	$33 M	$34 M	$35 M	$36 M	$37 M	$39 M	$40 M	$349 M
Service/Frequency Improvements to Existing Services	$0 M	$1 M	$2 M	$2 M	$3 M	$8 M	$10 M	$11 M	$11 M	$12 M	$59 M
New Local/Express Service	$0 M	$0 M	$0 M	$0 M	$0 M	$7 M	$3 M	$7 M	$7 M	$8 M	$32 M
Total Operating Cost	$100 M	$104 M	$108 M	$111 M	$115 M	$131 M	$132 M	$141 M	$145 M	$150 M	$1,238 M
OPERATING REVENUES											
Federal Operating	$8 M	$9 M	$9 M	$9 M	$9 M	$10 M	$10 M	$10 M	$11 M	$11 M	$96 M
Federal Non-Capital	$11 M	$11 M	$12 M	$12 M	$12 M	$13 M	$13 M	$14 M	$14 M	$14 M	$126 M
State Operating	$9 M	$10 M	$10 M	$11 M	$11 M	$11 M	$12 M	$12 M	$12 M	$13 M	$111 M
Gas Taxes	$34 M	$35 M	$36 M	$36 M	$38 M	$39 M	$41 M	$42 M	$43 M	$44 M	$389 M
Ad Valorem	$21 M	$22 M	$23 M	$23 M	$23 M	$25 M	$26 M	$26 M	$27 M	$28 M	$245 M
Other	$.5 M	$.5 M	$.5 M	$.5 M	$.5 M	$.5 M	$.5 M	$.5 M	$.5 M	$.5 M	$5 M
Farebox: Fixed Route	$13 M	$14 M	$16 M	$17 M	$18 M	$19 M	$19 M	$20 M	$20 M	$21 M	$176 M
Farebox: Paratransit	$2 M	$2 M	$2 M	$2 M	$2 M	$3 M	$3 M	$3 M	$3 M	$3 M	$25 M
Advertising Revenue	$.5 M	$.5 M	$.5 M	$.5 M	$.5 M	$.5 M	$.5 M	$.5 M	$.5 M	$.5 M	$5 M
Total Operating Revenue	$100 M	$104 M	$108 M	$111 M	$115 M	$121 M	$124 M	$128 M	$132 M	$136 M	$1,179 M
Revenues Minus Costs	$0 M	$0 M	$0 M	$0 M	$0 M	-$10 M	-$8 M	-$13 M	-$14 M	-$14 M	-$51 M

Notes:

Costs and revenues are for planning purposes only.

Federal Operating includes items such as tire leases and scheduling software. Federal Non-Capital includes items such as preventative maintenance.

Summation differences may exist due to rounding.

Table 9 10-Year Transit Development Finance Plan - Capital

Cost/Revenue Category	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	10-Year Total
CAPITAL COST											
Replacement Vehicles for Existing Services	$6 M	$9 M	$10 M	$10 M	$7 M	$8 M	$8 M	$8 M	$8 M	$8 M	$83 M
New Vehicles for New Services (including spares)		$1 M				$13 M	$3 M	$10 M			$26 M
Operations Building	$4 M	$8 M									
Bus Stop Infrastructure	$1 M	$1 M	$1 M	$1 M	$1 M	$1 M	$1 M	$1 M	$1 M	$1 M	$14 M
Total Costs	$12 M	$19 M	$11 M	$11 M	$8 M	$22 M	$12 M	$19 M	$10 M	$10 M	$122 M
CAPITAL REVENUES											
Federal Capital	$12 M	$18 M	$11 M	$11 M	$8 M	$12 M	$12 M	$12 M	$12 M	$12 M	$188 M
Total Revenues	$12 M	$18 M	$11 M	$11 M	$8 M	$19 M	$19 M	$19 M	$19 M	$20 M	$188 M
Revenues Minus Costs	$0 M	-$1 M	$0 M	$0 M	$0 M	-$10 M	$ M	-$7 M	$2 M	$2 M	$66 M

Notes:

Costs and revenues are for planning purposes only.

Summation differences may exist due to rounding.

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APPENDIX A
Public Involvement Plan

- Objectives
- Regulations
- Stakeholders
- Activities
- Public Information Materials
- Public Outreach and Communications
- Media Relations
- Paid Media

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Palm Tran
Transit Development Plan
2017-2026

Public Involvement Plan

June 2016

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Public Involvement Plan Memorandum

The purpose of this Public Involvement Plan (PIP) is to define the strategy for providing information to and obtaining input from concerned citizens, agencies, private groups (residential and business), and governmental entities related to the Palm Tran Transit Development Plan (TDP) Major Update for 2016-2026. The overall goal of this PIP is to help ensure that the Plan reflects the values and needs of the communities it is designed to benefit.

The PIP has been prepared in compliance with Florida Department of Transportation (FDOT) guidelines for the development of public involvement plans for TDPs. The intent of both Palm Tran and the Palm Beach Metropolitan Planning Organization (MPO) is that the public have full and open access in the development of its transportation plans and programs. The preparation of the TDP will include efforts to engage the public and integrate public feedback into the decision-making process.

The success of any transportation improvement is dependent upon a successful public outreach effort. Palm Tran is committed to conducting a proactive public involvement program that focuses on soliciting community input throughout the process. The fundamental goal of public involvement for public transportation decision making is to ensure that decisions regarding public transportation incorporate public participation and feedback. The Palm Tran TDP Major Update includes the concerns of parties who may be affected directly or indirectly by proposed transit service changes and/or improvements.

This PIP memorandum outlines the various methods by which Palm Tran will disseminate project information and solicit input from the community regarding local values and concerns. It is meant to be a "living" document that will serve the project planners as the development of the TDP progresses. The PIP specifies the public involvement approach to be implemented for this project and the means that will be used to involve the public in the process. This PIP memorandum builds upon the MPO's Public Involvement Plan (PIP) by providing specific information related to the ways in which public involvement will occur for the Palm Tran TDP Major Update 2016 – 2026. The collection of public input will occur throughout the duration of the TDP.

Throughout the TDP process Palm Tran will solicit reviews from FDOT, the MPO, and the regional workforce board.

Objectives

Four objectives form the framework for the Palm Tran TDP Major Update 2016 – 2026 PIP.

- Educate and present information by promoting proactive and early public involvement.
- Solicit public input throughout the planning process by gathering full and complete information from the public.
- Integrate public feedback into the TDP.
- Monitor and improve the public involvement process.

Regulations

The PIP objectives meet the following federal and state regulations.

- 23 CFR 450, Section 316(b)(1)
- Title VI
- Executive Order 12898 on Environmental Justice (1994)
- Chapter 286, Florida Statutes
- Chapter 339, Florida Statutes
- Chapter 341, Florida Statutes
- Florida Administrative Code, Chapter 14-73

Stakeholders

- Palm Tran Customers
- Palm Tran Employees
- Palm Beach County Elected and Appointed Officials
- Local Agencies Elected and Appointed Officials
- Palm Tran Service Board (PTSB)
- Metropolitan Planning Organization (MPO) Board Members
- MPO Advisory Committees
- Florida Department of Transportation (FDOT)
- South Florida Regional Transportation Authority (SFRTA)
- Broward County Transit (BCT)
- Martin County Transit (Marty)
- Regional Workforce Board
- League of Cities
- Property Owners, Homeowners Associations, and other Interest Groups

Activities

Objective 1: Educate and present information by promoting proactive and early public involvement.

Stakeholder Interviews

- The Palm Tran TDP data gathering phase includes interviews with key local officials and community stakeholders regarding perceptions and issues related to public transportation. Palm Tran Service Board members are also interviewed as part of this process. The composition of the participants reflect the geographic, ethnic and demographic diversity of Palm Beach County. The interview participants specifically included a representative from the Glades area.

PTSB Workshop

- Palm Tran staff and consultants will facilitate a workshop for PTSB members to gather ideas on a wide variety of subjects including vision, goals, service enhancements (frequency, service span, geographic coverage), transit infrastructure, safety, marketing initiatives, and financial sustainability. The general public is invited to all PTSB meetings including the TDP Workshop.

Objective 2: Solicit public input throughout the planning process by gathering full and complete information from the public.

Transit On-Board Survey

- The Palm Tran TDP incorporates data collected by an FDOT research consultant from an onboard attitudinal survey of Palm Tran customers. The survey report includes a tabulation of results, weight data, trends analysis, and summary tables. The survey was designed to provide a representative cross-section of all routes and customers.

Personnel Survey

- The Palm Tran TDP utilizes an interactive web-based survey to solicit input from fixed-route operators, paratransit operators, and customer service personnel.

Presentations

- Palm Tran TDP representatives will make presentations to boards and committees such as the Palm Beach Board of County Commissioners, MPO Board, MPO advisory committees, South Florida Regional Transportation Authority (SFRTA) advisory committees, League of Cities, Workforce Board, and others to describe the project, identify information and perceptions related to public transportation in Palm Beach County from these stakeholders, and engage in discussions related to goals and service enhancements that will inform the TDP.

Needs Assessment Public Workshop

- During the Needs Assessment task, Palm Tran staff and consultants will conduct a formal public meeting to elicit comments on all deliverables prepared up to this point. Meritorious suggestions will be reflected in revisions to the goals and objectives and needs assessment.

Final Public Workshop

- After preparing the Draft TDP Major Update report and recommendations, Palm Tran staff and consultants will conduct an additional public workshop to present the draft Plan and engage the public regarding additional comments and feedback to incorporate into the Plan.

Objective 3: Integrate Public Feedback into the TDP.

Public involvement summary reporting

- The Palm Tran TDP Major Update 2016 – 2026 will include detailed documentation of the public engagement activities undertaken including comments and coordination reporting.
- Palm Tran staff and consultants will carefully consider and evaluate each comment for incorporation into Plan recommendations.

Objective 4: Monitor and improve the public involvement process.

Evaluation activities

- Public workshop participation.
- Online social media activity and engagement.
- Compilation of comments from public meetings.
- Survey results monitoring and updating.

Public Information Materials

- Informational website
- Social media outreach
- Flyers and brochures
- Fact sheets and Frequently Asked Questions (FAQ)
- Newsletters
- Informational display boards
- Presentation materials

Public Outreach and Communications

- Informational updates and notifications of public workshops
- Social media outreach

- Electronic communications

Media Relations (Earned Media)

- Press release development and distribution
- Media channels
  - Newspapers (print and online)
  - Radio
  - Television
  - Social media
  - Chambers of Commerce
  - E-blasts through government and other sources

Paid Media (Advertising)

- Print advertising
- Online advertising

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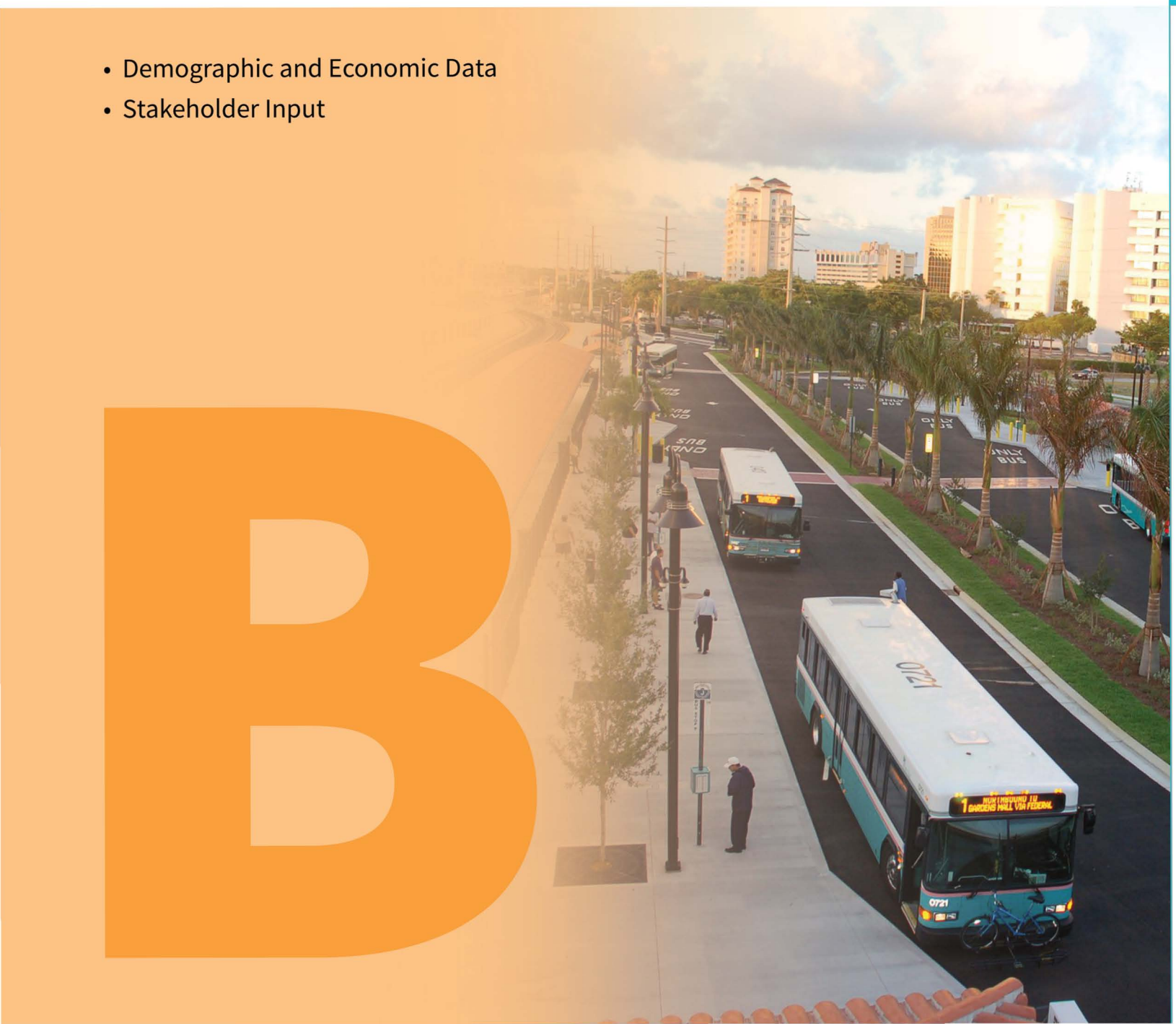
APPENDIX B
Baseline Conditions

- Demographic and Economic Data
- Stakeholder Input



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Palm Tran
Transit Development Plan
FY 2017-2026

Technical Memorandum Number 1
Baseline Conditions

June 2016

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1.0 Introduction

This Technical Memorandum's purpose is to provide demographic, economic, development, and transportation data to facilitate development of Palm Tran's Transit Development Plan (TDP) major update for fiscal years (FY) 2017 – 2026. It also includes the results of multiple stakeholder engagement activities. These are: employee and rider surveys; interviews of stakeholders throughout Palm Beach County, including Palm Tran Service Board (PTSB) members; and a workshop with PTSB members focused on the TDP. The information provided in this memorandum provides background data to foster creation of TDP goals and objectives, and identification of strategies and priorities for action for the next 10 years.

This memorandum consists of two main sections: technical data and stakeholder comments. Chapter 2, Demographic and Economic Data, provides information about Palm Beach County residents, their economic and automobile ownership situations, community development patterns, and transportation information such as roadway level of service, public transportation services, and walking/biking access to transit. There are several items of note:

- Palm Tran fixed route service and ridership have been fairly stable for several years. The three main north-south routes (the "trunk" routes) along US 1 (Route 1), Military Trail (Route 3), and Congress Avenue (Route 2) see major ridership. East-west routes in the center portion of the county, such as along/around Okeechobee Boulevard (Route 43), Lake Worth Road (Route 62), Lantana Road (Route 63), Forest Hill Boulevard (Route 46), and 45th Street to the VA Hospital (Route 31), also have large customer bases. Some of the routes are long or circuitous which can increase access to riders but also increase travel time.

- Palm Tran connects to Tri-Rail service at six stations in Palm Beach County, and connects to interregional transit services offered by Amtrak and Greyhound. Local circulator systems and Tri-Rail shuttles exist in numerous communities and are supported and operated by multiple partners. The communities are the Cities of Belle Glade, Boca Raton, Delray Beach, Lake Worth, and West Palm Beach.

- Large ridership in the central part of the county is consistent with the large amount of moderately priced housing and increased housing densities. Central county also has households with lower incomes. The Lake Okeechobee communities of Belle Glade, Pahokee, and South Bay have large percentages of households with lower incomes, too. These same areas also have a large amount of zero-car households.

- The major employment areas for the county are generally located in West Palm Beach, Boca Raton, Riviera Beach, Palm Beach Gardens, Jupiter, and Wellington. Headquarters locations and hospitals and schools throughout the county are the most frequent single sites with large concentrations of employees and students/visitors.

- There are the areas in the eastern urbanized portion of Palm Beach County where new development is occurring, mainly on the western edge). Whereas, infill development occurs primarily in the central section and redevelopment tends to occur in and around coastal downtowns. New residents are locating in these areas and may request Palm Tran service.

- Congestion levels on roads are expected to increase in the future, impacting automobile and bus drivers alike.

- Currently, 96 percent of the 25 stops with the highest boardings/alightings have sidewalks, with over half (56%) also having bike lanes. Three out of every four (72%) of these high ridership stops have been upgraded to comply with Americans with Disabilities Act (ADA) requirements.

The second section of this memorandum, Chapter 3, Stakeholder Input, summarizes the comments received from the various stakeholder engagement activities. The input consisted of targeted interviews, a Palm Tran employee survey, Palm Tran rider (on-board) survey undertaken by the Florida Department of Transportation (FDOT), and a workshop for the PTSB. Palm Tran and Palm Beach Metropolitan Planning Organization (MPO) staff and the public also participated in the workshop. Palm Tran is an agency in transition, looking to enhance a system that has not seen significant change in many years. Regardless of how stakeholder input was received, many of their recommendations asked Palm Tran consider adjustments in how it provides services in several ways:

- Revamp routes to be more direct and efficient. Consider splitting longer routes.

- Increase service, primarily frequency, span of service, and service on weekends and holidays. Consider providing longer evening hours for employees and students.

- Expand service, such as providing service to developing areas. Return service to corridors where it once was offered (e.g., Jog Road), and provide more premium services, like the Route 1 BOLT limited stop service, on other corridors.

- Increase ridership primarily by increasing frequency and service in denser parts of Palm Beach County. This recommendation was balanced by suggestions that Palm Tran focus on providing service to employment areas to enhance economic opportunities for residents.

- Connect to other systems and coordinate schedules. Palm Tran and Tri-Rail coordination was suggested most frequently to provide access to regional jobs. Community shuttles were noted as being important for providing for first/last mile service, particularly in areas ill-suited for Palm Tran buses.

- Provide customer conveniences such as safe and comfortable shelters, enhanced payment options – credit/debit/smart cards, real time traveler information, and Wi-Fi access on buses.

- Stakeholders familiar with Palm Tran Connection (paratransit) mentioned significant improvement in the service since the contractual changes. Stakeholders have heard positive comments from paratransit customers, such as on time performance has improved, the drivers are nice, riders like being escorted from the door, and enjoy cleaner and better maintained buses.

- Stakeholders mentioned that Palm Tran is very efficient with its existing resources, taking advantage of grants and leveraging revenue sources. It is a leader in adopting technology, such as Automatic Vehicle Location and Automatic Passenger Counting (AVL and APC) systems, and the iGo! app. Many suggested that Palm Tran provides a good service and more should be done to promote it.

2.0 Demographic and Economic Data

The following sections provide background about demographic and economic conditions in Palm Beach County. Information is analyzed and presented using the most recent available data from the U.S. Census Bureau American Community Survey (ACS), and the Bureau of Economic and Business Research (BEBR) of the University of Florida, Palm Beach County MPO, and Palm Tran. Density maps are shown at the census block group level for population, housing, employment, and other socioeconomic characteristics in Palm Beach County. Density data is provided as an average; individual sites or developments may have a very high or low value.

2.1 Service Area Description

Palm Beach County is located in southeast Florida. It is bordered to the north by Martin County, to the south by Broward County, and to the west by Hendry County. Palm Beach County stretches from Florida's urban Atlantic coast into the state's rural areas and includes conservation areas north of Everglades National Park. According to the U.S. Census Bureau, the county has a total area of 2,383 square miles, of which 83% is land and 17% is water. It is the second-largest county in Florida by land area (including conservation areas). Urban development is mainly concentrated in the eastern portion of the county within 10 miles of the coastline, where 35 of the total 38 municipalities are located. Rural, agriculture, and conservation areas make up most of the central and western part of the county. Lake Okeechobee sits in the northwest corner with three municipalities – Belle Glade, Pahokee, and South Bay, beside it.

2.2 Population

As shown in data from BEBR, the total population of Palm Beach County in 2015 was estimated at 1,378,417. Table 1 shows population growth from 2000 to 2015 in Palm Beach County, Broward County, and Miami-Dade County. Although the population growth in Palm Beach County was not as strong as that of Florida as a whole, Palm Beach County population increased 4% since 2010 and saw a steady growth of 22% over the past fifteen years.

Table 1 Population Growth

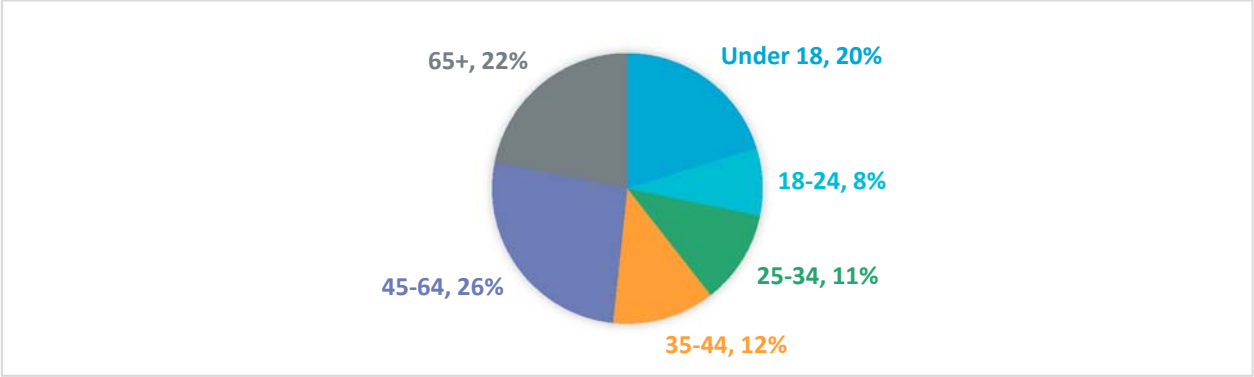
	2000	2010	2015	%Change (2000 to 2015)	%Change (2010 to 2015)
Palm Beach	1,131,191	1,320,134	1,378,417	22%	4%
Broward	1,623,018	1,748,066	1,827,367	13%	5%
Miami-Dade	2,253,779	2,496,435	2,653,934	18%	6%
Florida	15,982,824	18,801,310	19,815,183	24%	5%

Source: Decennial Census and University of Florida, Bureau of Economic and Business Research, Florida Population Studies

2.2.1 Age

Figure 1 illustrates all population age groups of residents of Palm Beach County. The largest group consists of people of age 45 to 64, followed by those of age 65 and older. Younger people of age under 18 account for 20% of Palm Beach County's population.

Figure 1 Palm Beach County Population Age



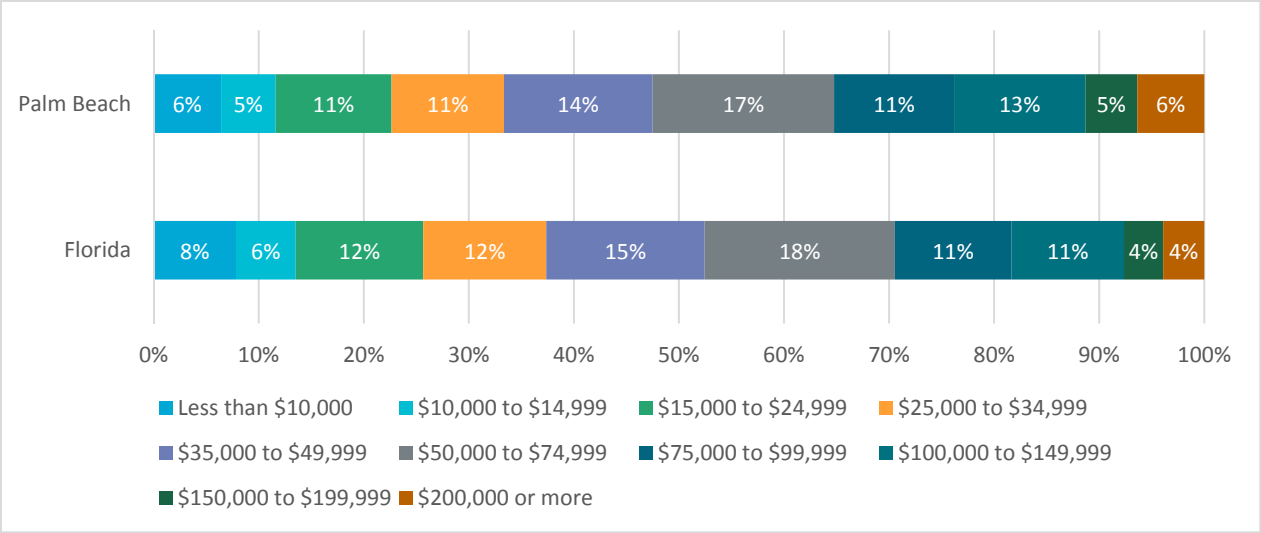
Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimate

2.2.2 Income

Palm Beach County households generally have higher incomes than others in Florida. There also is a smaller share of households living below poverty level[1] when compared to Florida as a whole. As shown in Figure 2 and Table 2, the median household income in Palm Beach County is $52,878. The average annual earning for Palm Beach County workers is $29,844. About 15% of people and 10% of families live below the poverty level, including 22% of those under age 18 and 9% of those aged 65 and over.

[1] The Census Bureau uses a set of income thresholds that vary by family size and composition to determine who is in poverty. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. The official poverty thresholds do not vary geographically, but they are updated for inflation using Consumer Price Index (CPI-U). The official poverty definition uses income before taxes and does not include capital gains or noncash benefits, such as public housing, Medicaid, and food stamps. (https://www.census.gov/hhes/www/poverty/about/overview/measure.html).

Figure 2 Palm Beach County Household Income



Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

Table 2 Palm Beach County Household Income

	Palm Beach	Florida
Total households	529,729	7,217,508
Median household income	$52,878	$47,212
Average household income	$80,961	$67,143
Families below Poverty Level	10.5%	12.2%
People below Poverty Level	14.6%	16.7%

Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

2.2.3 Population and Housing Density

Population in Palm Beach County is mainly concentrated in the urbanized eastern area adjacent to the coast. Figure 3 and Figure 4 show density of population and housing units by census block group. Both population and housing density are higher in eastern areas along the U.S. 1 and Military Trail corridors. High population density also occurs in the central eastern part (Greenacres, Lake Worth, and Boynton Beach) and the southern part (Boca Raton) of the county. Housing density has a similar pattern as population density; however, there are fewer clusters of higher density than for population. Housing units are located along highways and arterials between the coastline and Florida's Turnpike.

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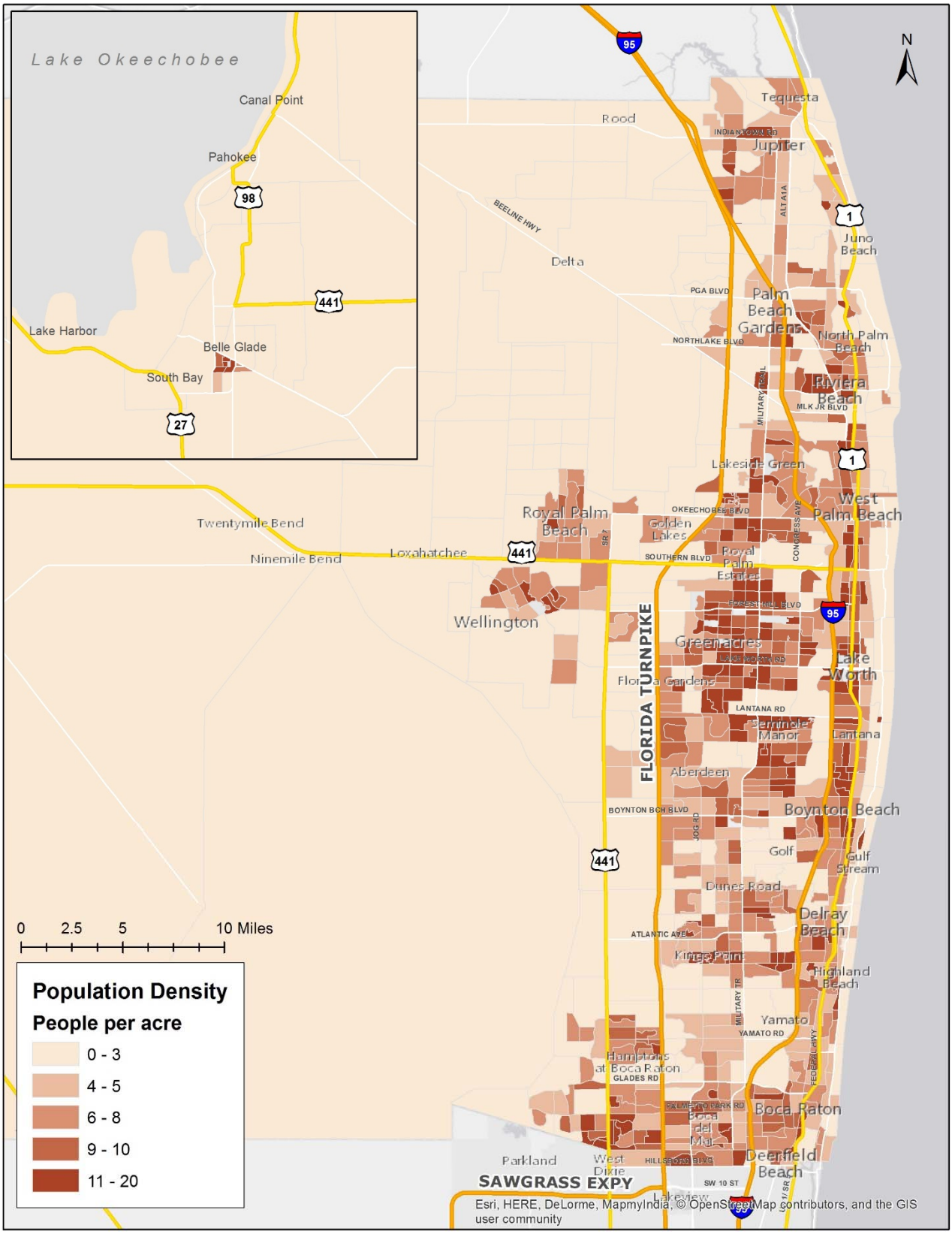
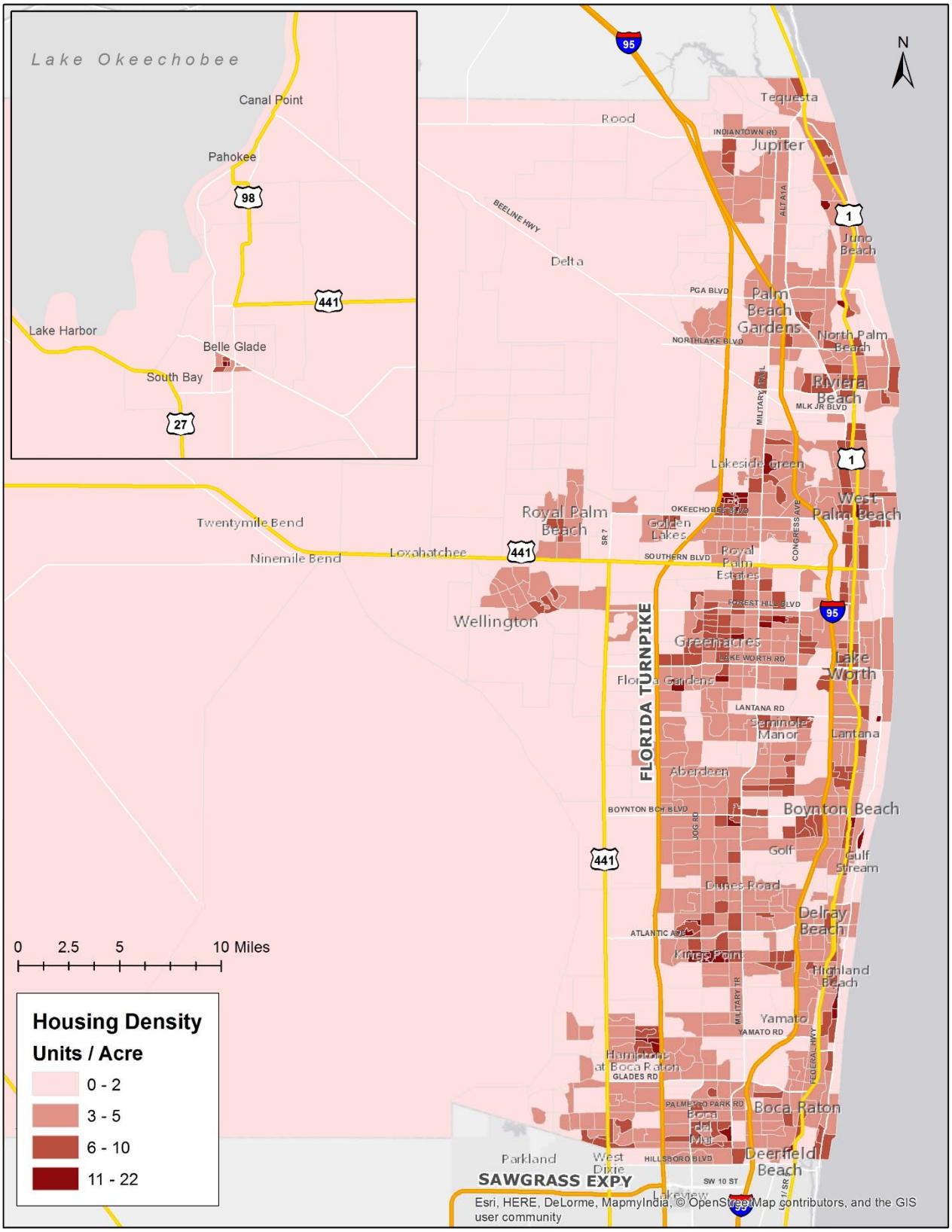
Figure 3 Palm Beach County Population Density



Source: Census Transportation Planning Products based on 2010 – 2014 5-year American Community Survey (ACS)

Figure 4 Palm Beach County Housing Density



Source: Census Transportation Planning Products based on 2010 – 2014 5-year American Community Survey (ACS)

2.3 Employment and Labor Force

2.3.1 Employment

There were 834,555 jobs in Palm Beach County in 2014. As shown in Table 3, employment in Palm Beach County increased by 14% from 2010 to 2014, which is a higher growth rate than for Broward and Miami-Dade Counties and the State of Florida.

Table 3 Employment Growth

	2010	2014	%Change
Palm Beach	732,849	834,555	14%
Broward	986279	1105622	12%
Miami-Dade	1422572	1613940	13%
Florida	9,877,353	10,911,330	10%

Source: Bureau of Economic Analysis (BEA) 2014

Figure 5 shows density of employment in Palm Beach County – where jobs are located. Employment densities are high in West Palm Beach and Boca Raton as they both have clusters of governmental, office, hospital, university, or commercial uses. Jupiter, Palm Beach Gardens, and Wellington are emerging areas with relatively high densities of employment.

2.3.2 Labor Force

There were more than one million people age 16 and older living in Palm Beach County in 2014, with approximately 60% in the labor force (working or seeking employment) and 54% of people in this age group are employed.

Table 4 shows labor force characteristics and Table 5 provides a breakdown by industry. One in five (21%) of workers were employed in educational, health care and social services. Professional, scientific, management, and administration is the second largest industry, with about 15% of Palm Beach County workers, followed by retail or trade businesses with 13% of the labor force. Figure 6 shows labor force density – where workers live – in Palm Beach County. Areas near Lake Worth, Boynton Beach, and Greenacres have the highest density.

Table 4 Labor Force Characteristics

	Palm Beach	Share
Population 16 years and over	1,120,841	100%
In labor force	675,048	60.23%
Civilian labor force	674,589	60.19%
Employed	601,783	53.69%
Unemployed	72,806	6.50%
Armed Forces	459	0.04%
Not in labor force	445,793	39.77%

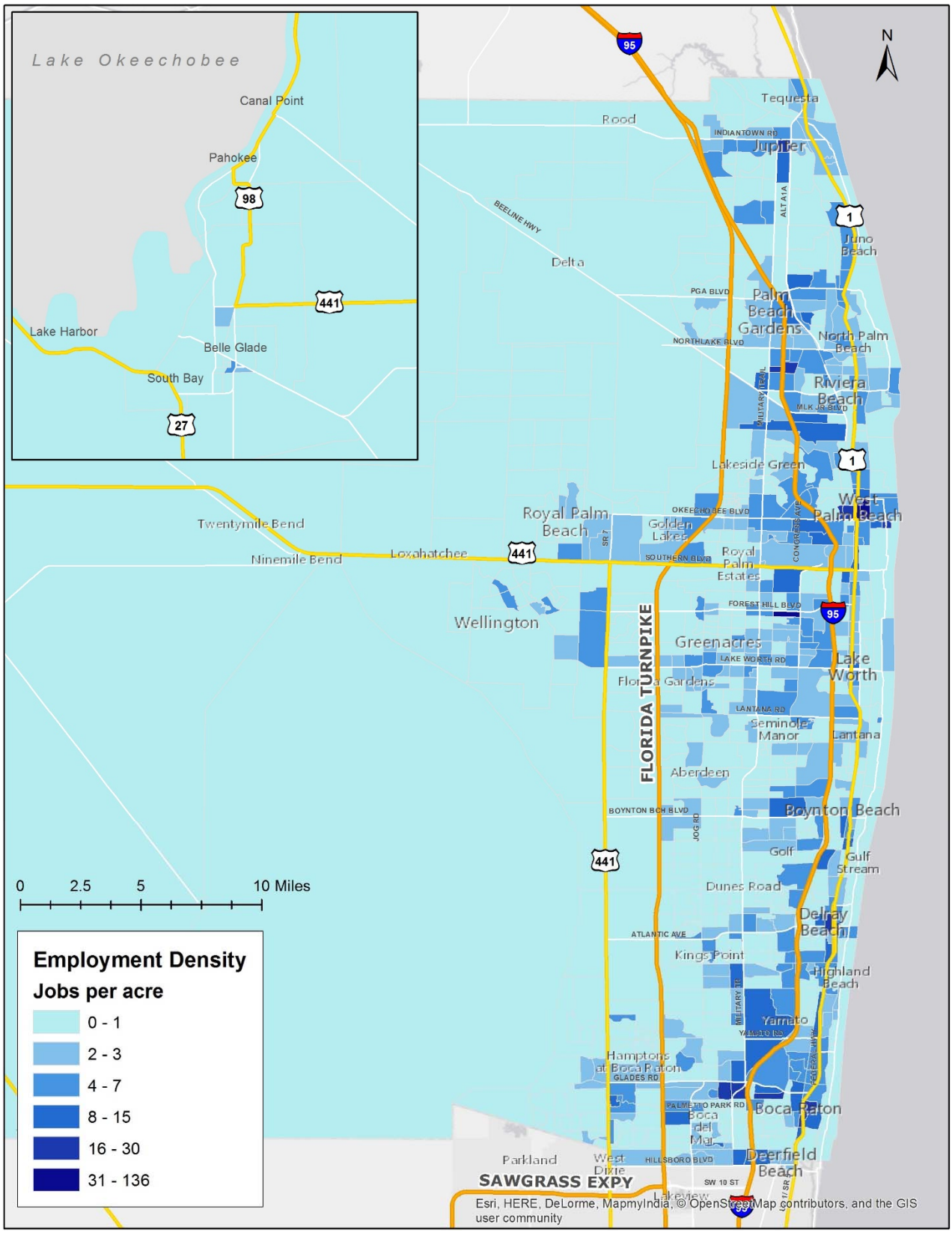
Source: 2010-2014 American Community Survey 5-Year Estimates

Table 5 Labor Force by Industries

Industry	Workers	Percentage
Agriculture, forestry, fishing and hunting, and mining	7,208	1.2%
Construction	41,033	6.8%
Manufacturing	26,866	4.5%
Wholesale trade	16,460	2.7%
Retail trade	79,716	13.2%
Transportation and warehousing, and utilities	24,999	4.2%
Information	12,402	2.1%
Finance and insurance, and real estate and rental and leasing	48,626	8.1%
Professional, scientific, management, and administrative	88,624	14.7%
Educational services, health care, and social assistance	126,094	21.0%
Arts, entertainment, and recreation, and accommodation and food services	71,346	11.9%
Other services, except public administration	36,019	6.0%
Public administration	22,390	3.7%

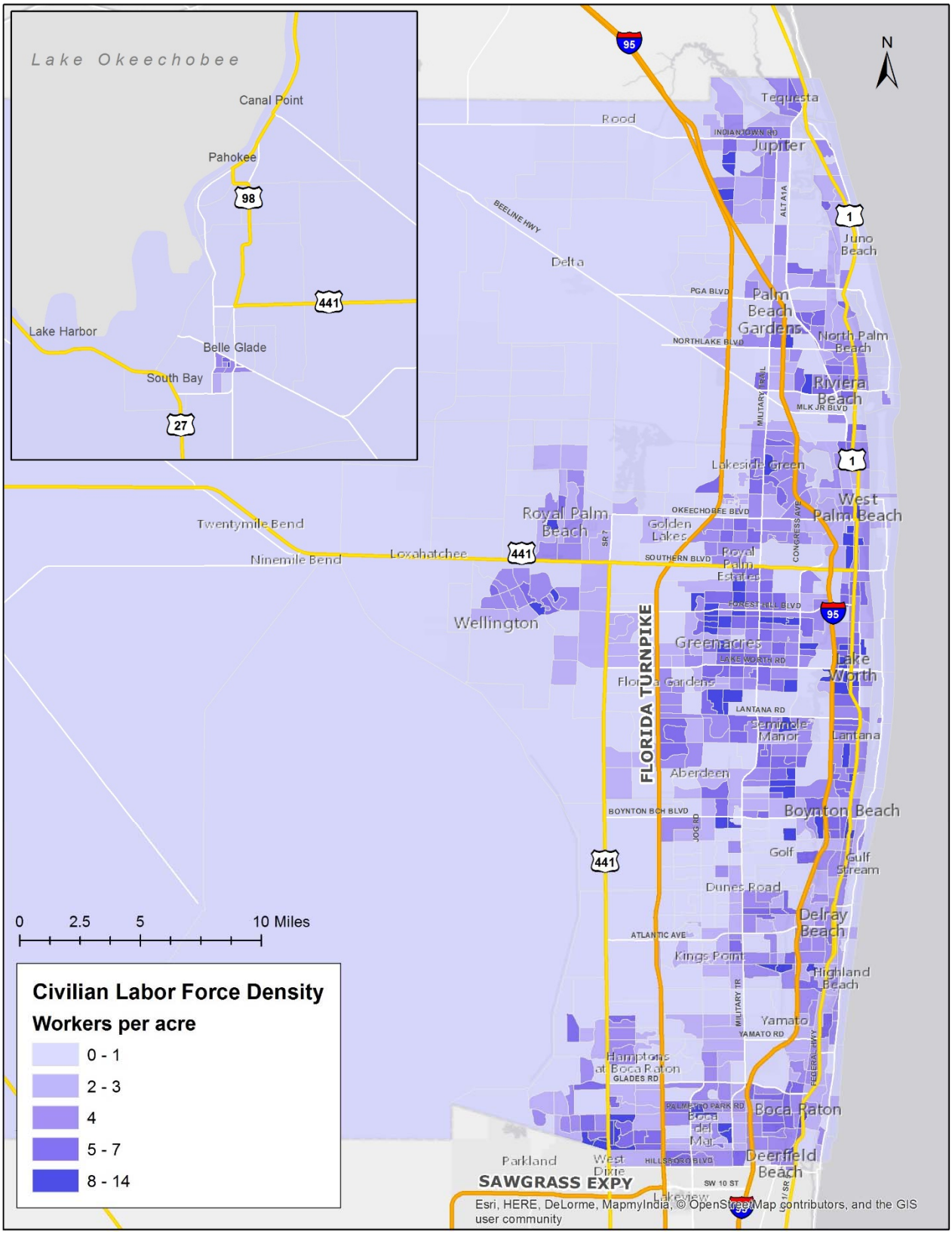
Source: 2010-2014 American Community Survey 5-Year Estimate

Figure 5 Palm Beach County Employment Density



Source: Census Transportation Planning Products based on 2010 – 2014 5-year American Community Survey (ACS)

Figure 6 Palm Beach County Labor Force Density

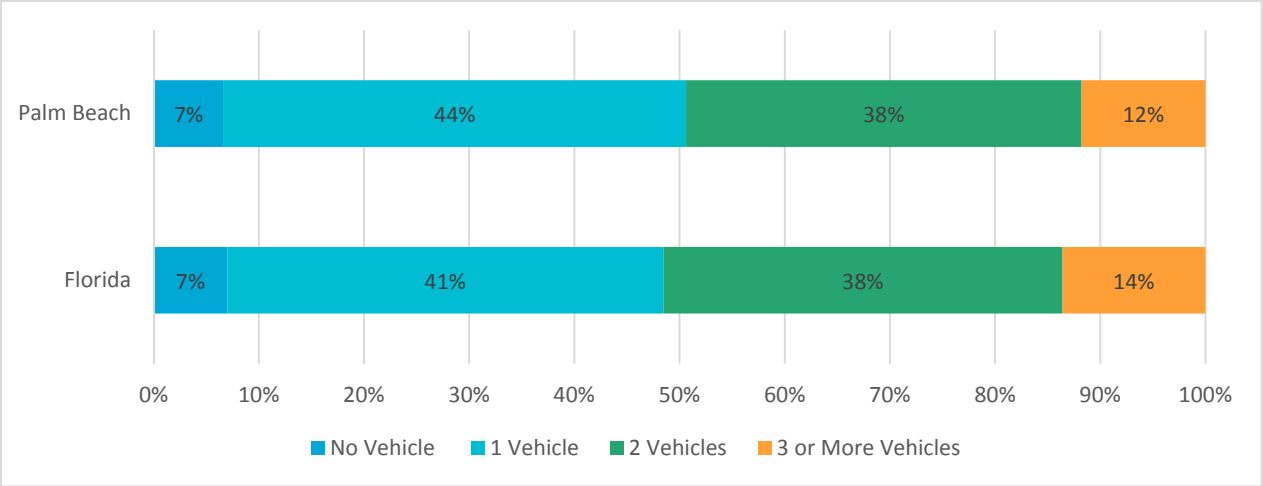


Source: Census Transportation Planning Products based on 2010 – 2014 5-year American Community Survey (ACS)

2.4 Auto Ownership and Commute Patterns

As shown in Figure 7, about 7% of households in Palm Beach County do not have a vehicle, 44% of households have one vehicle, 38% of them have two vehicles, and 12% of them have three or more vehicles.

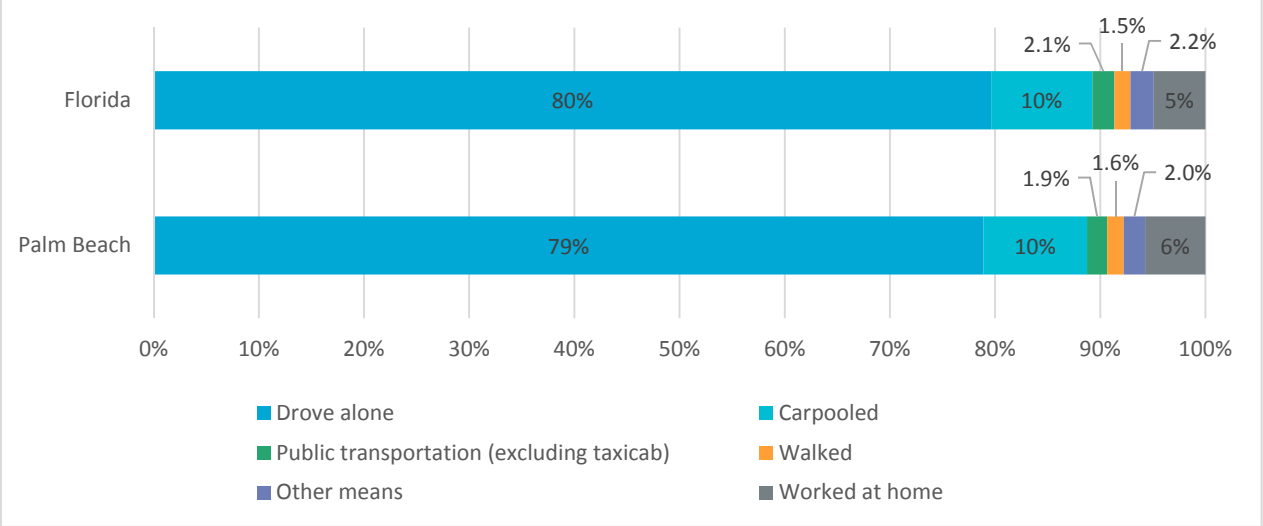
Figure 7 Palm Beach County Auto Ownership



Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

The average travel time to work in Palm Beach County is 24.7 minutes, 1.4 minutes shorter that the average for Florida. Figure 8 illustrates the share of transportation modes used by Palm Beach County residents to commute to work. About 79% of commuters drove alone to work, 10% carpooled, and 6% worked at home. People who took public transportation, walked, and used other means each accounted for 2% of the total.

Figure 8 Means of Commute

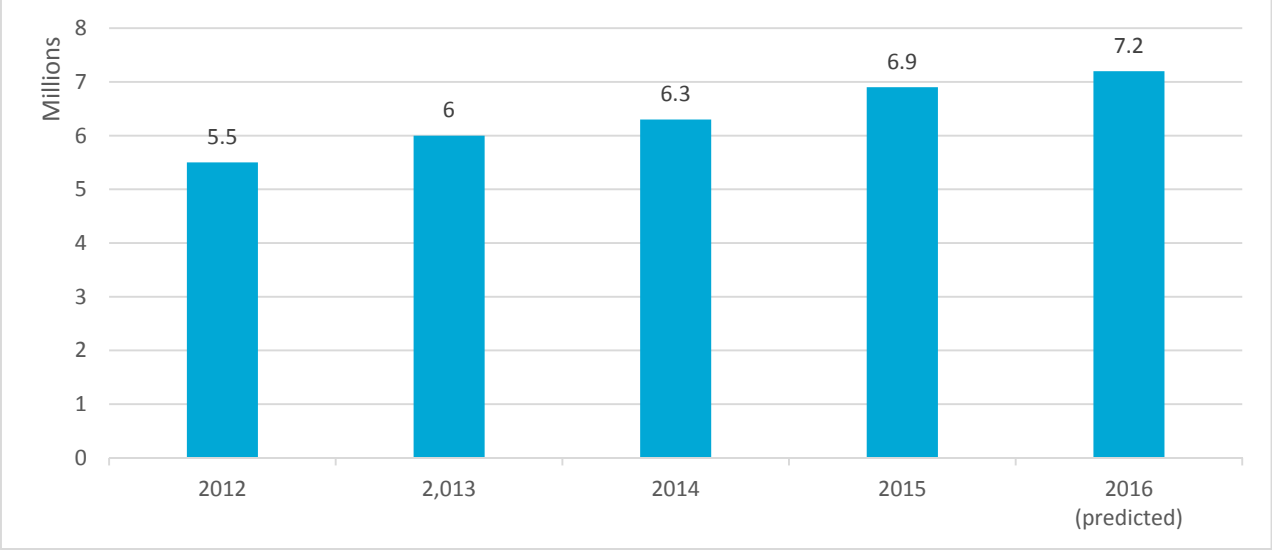


Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimate

2.5 Tourists and Visitor Levels

Palm Beach County attracts numerous tourists every year and the number of annual visitors has increased steadily from 5.5 million in 2012 to 6.9 million in 2015. As shown in Figure 9, visitors are predicted to grow to 7.2 million in 2016.

Figure 9 Visitation to Palm Beach County



Source: TNS TravelsAmerica, estimates extrapolated from aggregate card usage data provided by VisaVue® Travel and data from other independent research sources, forecasts based on DTPB research and other 3rd party sources such as PKF, STR and PwC

2.6 Transportation Disadvantaged Populations

Per Florida Statutes, “Transportation disadvantaged population” refers to people who because of physical or mental disability, income status, or age are unable to transport themselves or to purchase transportation and are, therefore, dependent upon others to obtain access to healthcare, employment, education, shopping, social activities, or other life-sustaining activities, or children who are handicapped, high-risk or at-risk. For this purpose, age, income, vehicle availability, and disability status are reported.

2.6.1 Senior and Young Population

Figure 10 shows the percentage of the Palm Beach County population aged 65 and older by census block groups. Western areas near Boynton Beach and Delray Beach, and areas near the coast have high percentages of people aged 65 and above. Figure 11 shows areas that have high percentages of population whose ages are below 25. These areas are distributed throughout the county, yet tend to not occur in areas with higher densities of people aged 65 or older.

2.6.2 Low-Income Households

Figure 12 shows the percentage of low-income households[2] in each census block group. Western areas near the Lake Okeechobee and the central east area of the county – near Riviera Beach, West Palm Beach, and along the Okeechobee Boulevard corridor – have higher shares of low-income households.

2.6.3 Zero-Vehicle Households

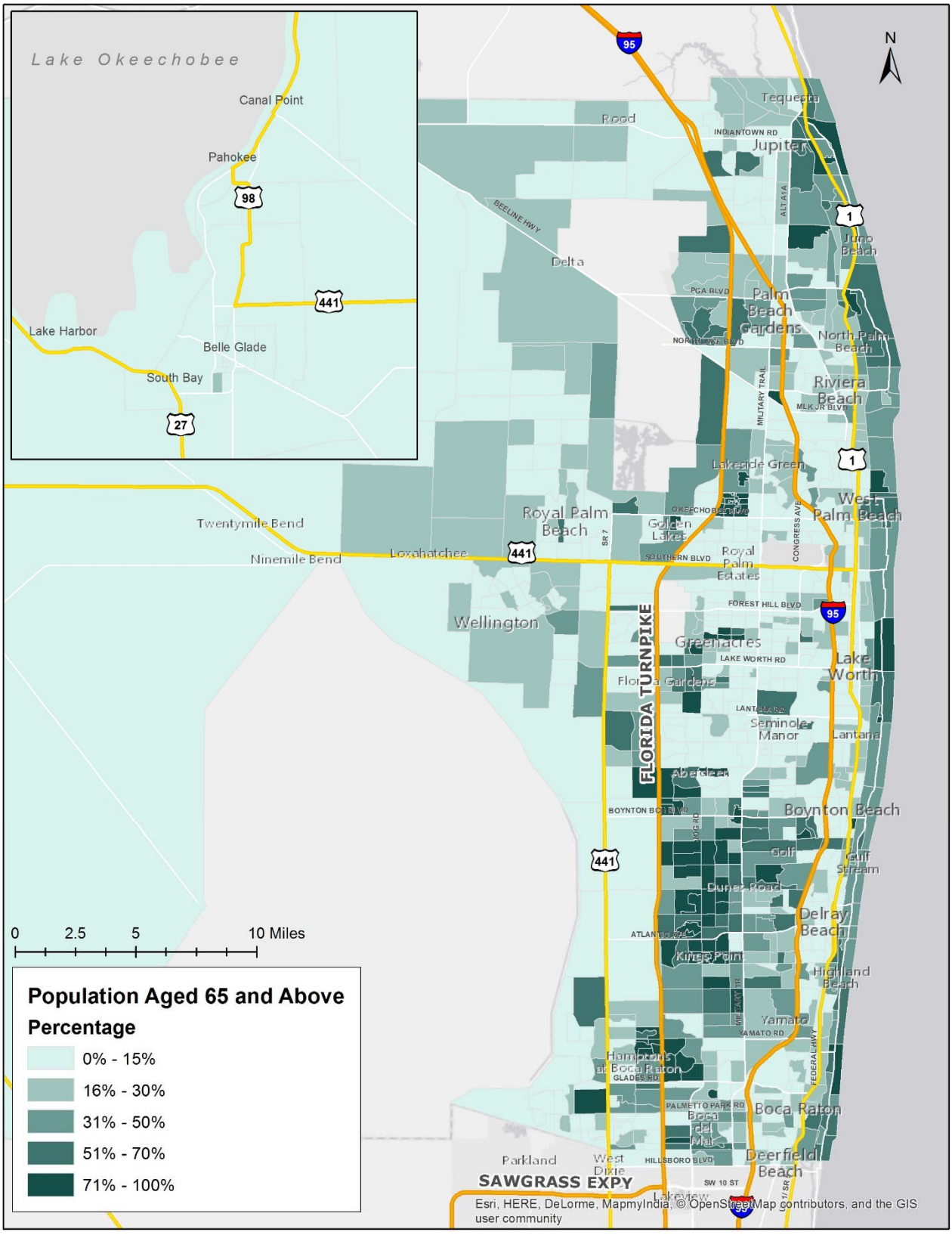
Figure 13 illustrates percentage of zero-vehicle households by census block group. Western areas near the Lake Okeechobee and central east area – near Riviera Beach, West Palm Beach, Lake Worth, and along the Okeechobee Boulevard corridor – have significantly higher percentage of zero-vehicle households. This figure is similar to that for low-income households reflecting the costs associated with owning a car.

2.6.4 Population with Disability

Figure 14 shows the percentage of population with a disability in each census block group. Block groups with high percentages are distributed across Palm Beach County. Of particular note is that areas with an older population generally appear to have low percentages of people with disabilities, indicative of an able-bodied senior population residing in the county.

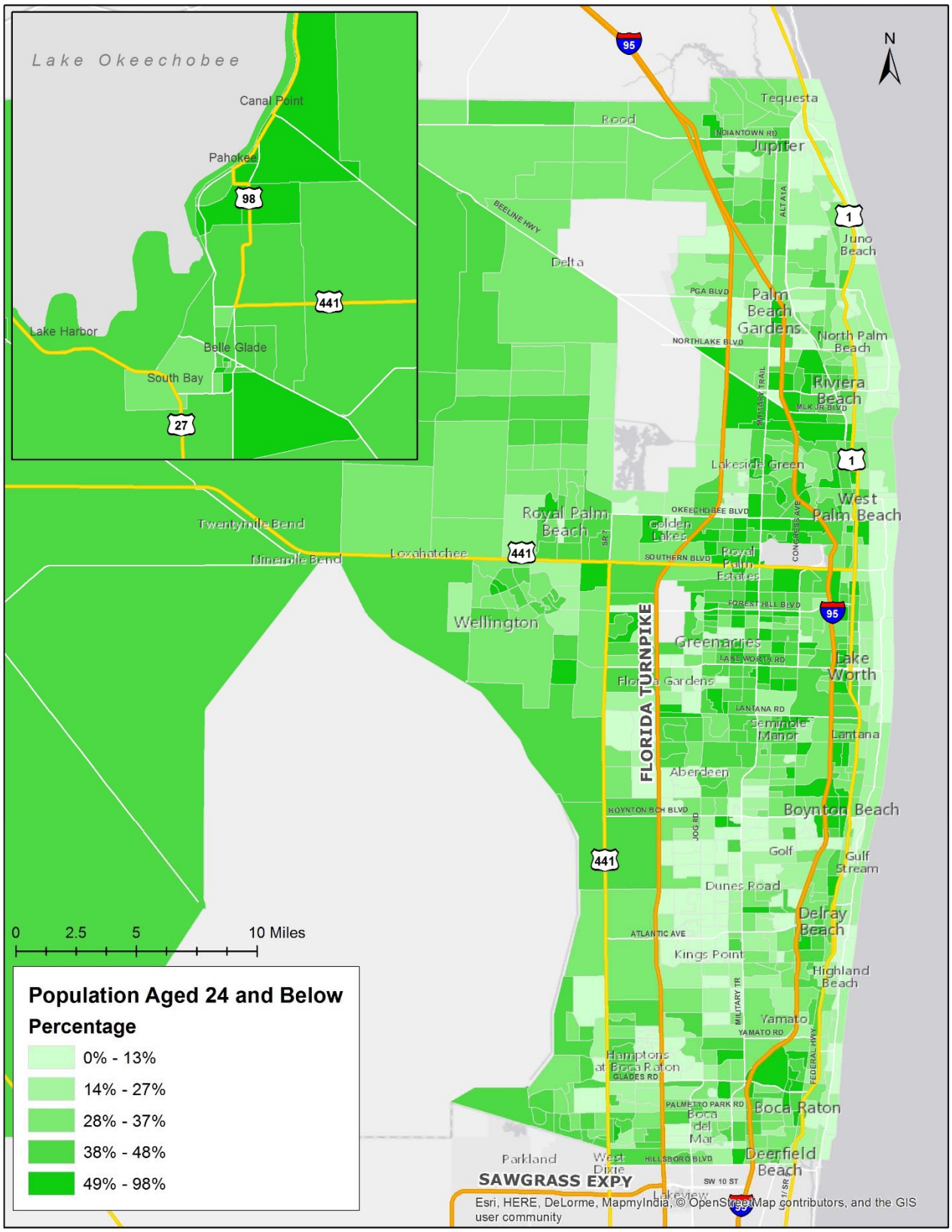
[2] Following the Office of Management and Budget's (OMB) Statistical Policy Directive 14, the Census Bureau uses a set of money income thresholds that vary by family size and composition to determine who is in poverty. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty. The official poverty thresholds do not vary geographically, but they are updated for inflation using Consumer Price Index (CPI-U). The official poverty definition uses money income before taxes and does not include capital gains or noncash benefits, such as public housing, Medicaid, and food stamps (https://www.census.gov/hhes/www/poverty/about/overview/measure.html).

Figure 10 Percentage of Population Age 65 and Above



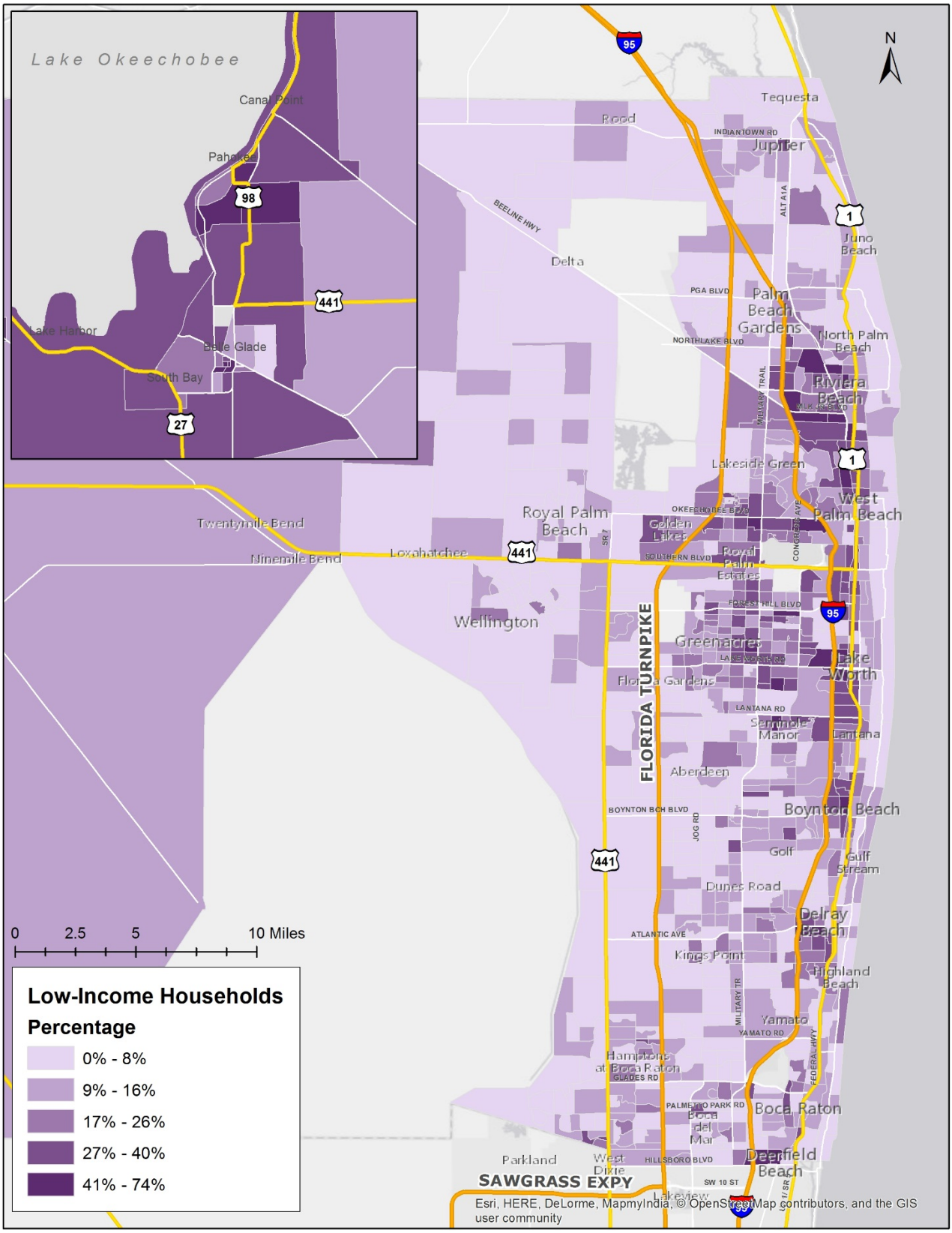
Source: Census Transportation Planning Products based on 2010 – 2014 5-year American Community Survey (ACS)

Figure 11 Percentage of Population Age 24 and Below



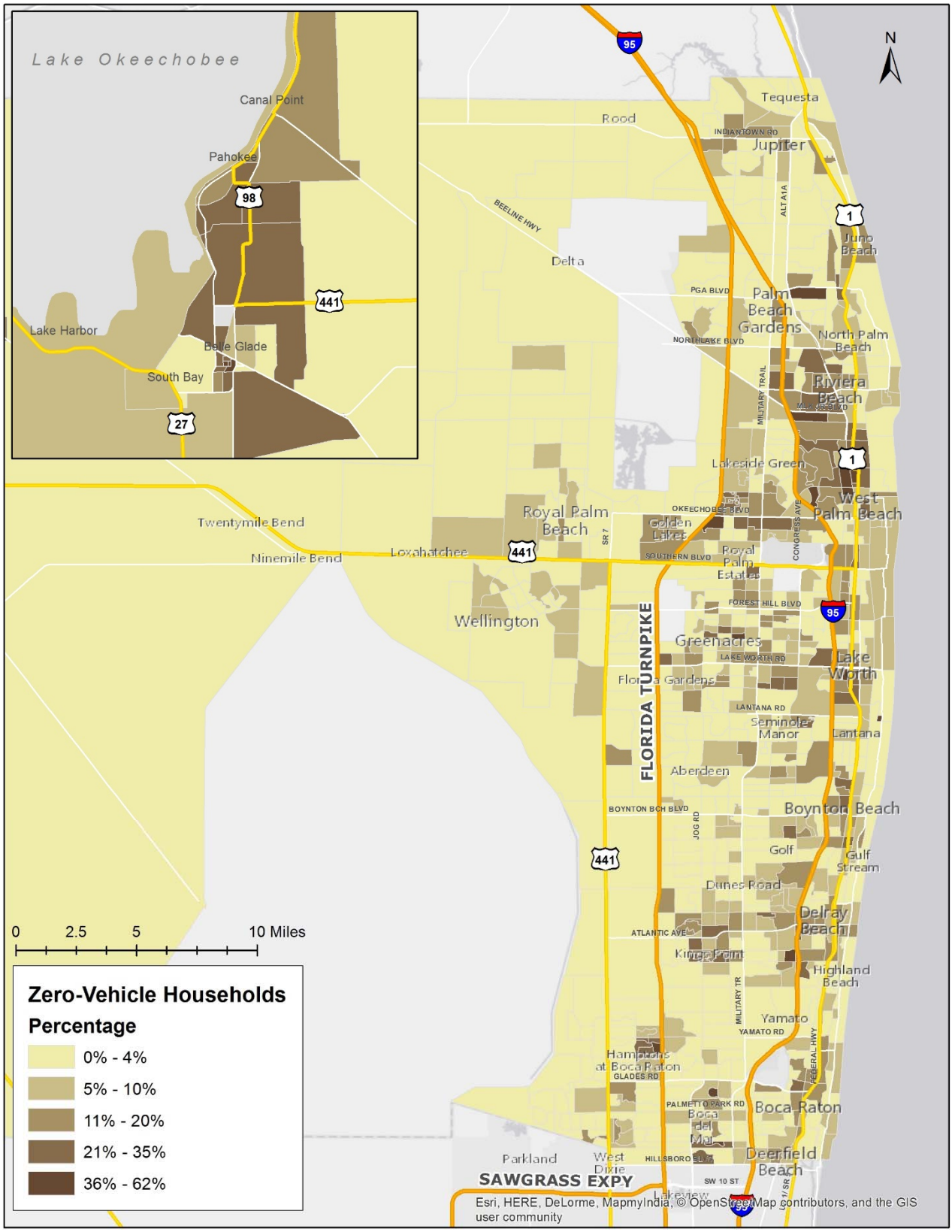
Source: Census Transportation Planning Products based on 2010 – 2014 5-year American Community Survey (ACS)

Figure 12 Percentage of Low-Income Households



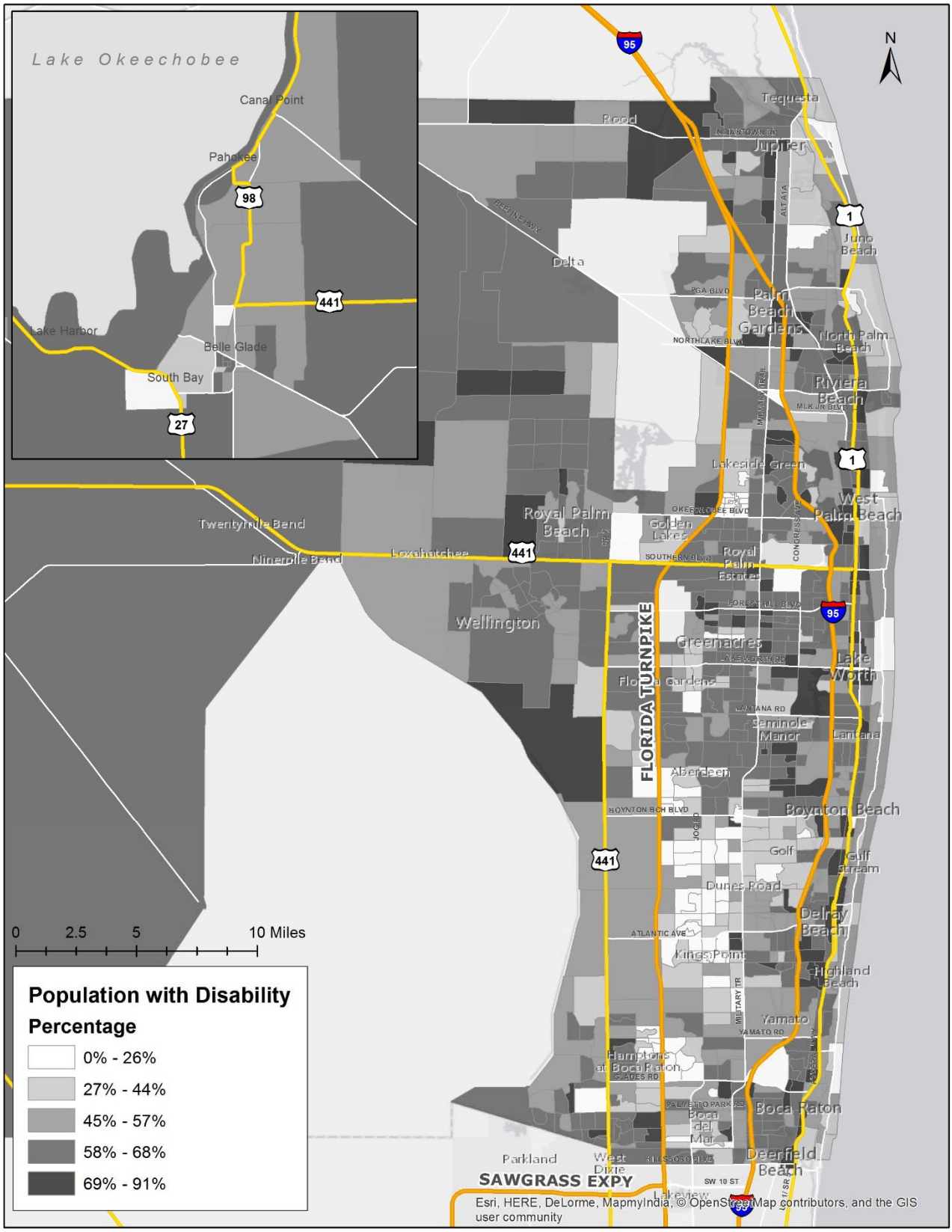
Source: Census Transportation Planning Products based on 2010 – 2014 5-year American Community Survey (ACS)

Figure 13 Percentage of Zero-Vehicle Households



Source: Census Transportation Planning Products based on 2010 – 2014 5-year American Community Survey (ACS)

Figure 14 Percentage of Population with Disability



Source: Census Transportation Planning Products based on 2010 – 2014 5-year American Community Survey (ACS)

2.7 Land Uses and Density

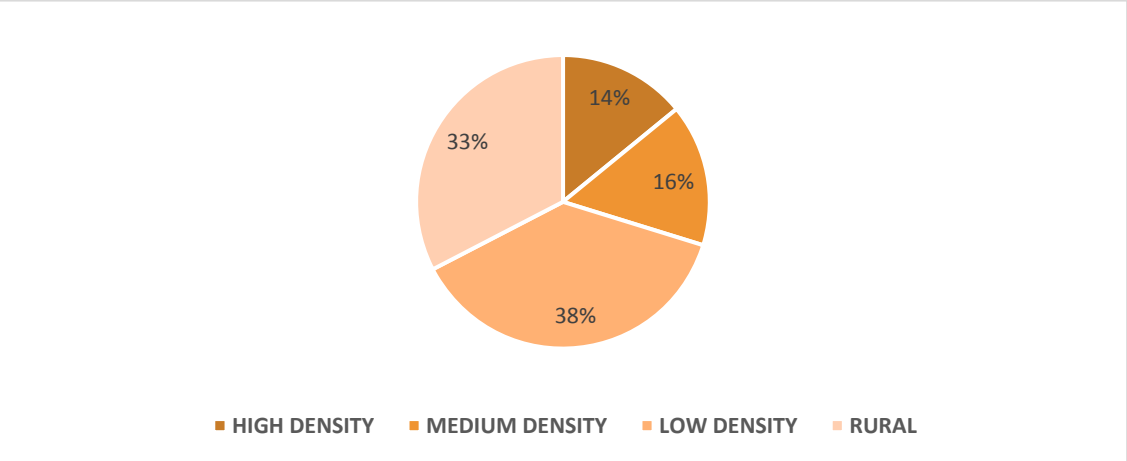
Table 6, Figure 15, and Figure 16 show land use information for Palm Beach County. Agricultural lands account for 36% of the total land area in Palm Beach County, and these are located in the western part of the county, south of Lake Okeechobee. About 28% of county land is designated as conservation areas, including water and wildlife management areas and sloughs. Residential land accounts for about 19% of the County's total, with 14% of it designated high density (more than 8 units per acre), 16% medium density (4 to 8 units per acre), 38% low density (1 to 3 units per acre), and 32% rural residential.

Table 6 Land Uses

Land Use	Acres	Percentage
Agriculture	499,899	35.9%
Commercial	16,015	1.1%
Conservation	392,361	28.2%
Residential	265,382	19.1%
Industrial	20,870	1.5%
Institutional	13,919	1.0%
Mixed Use	8,085	0.6%
Recreation	18,010	1.3%
Utility/Transportation	8,214	0.6%
Others	150,046	10.8%
Total	1,392,799	100.0%

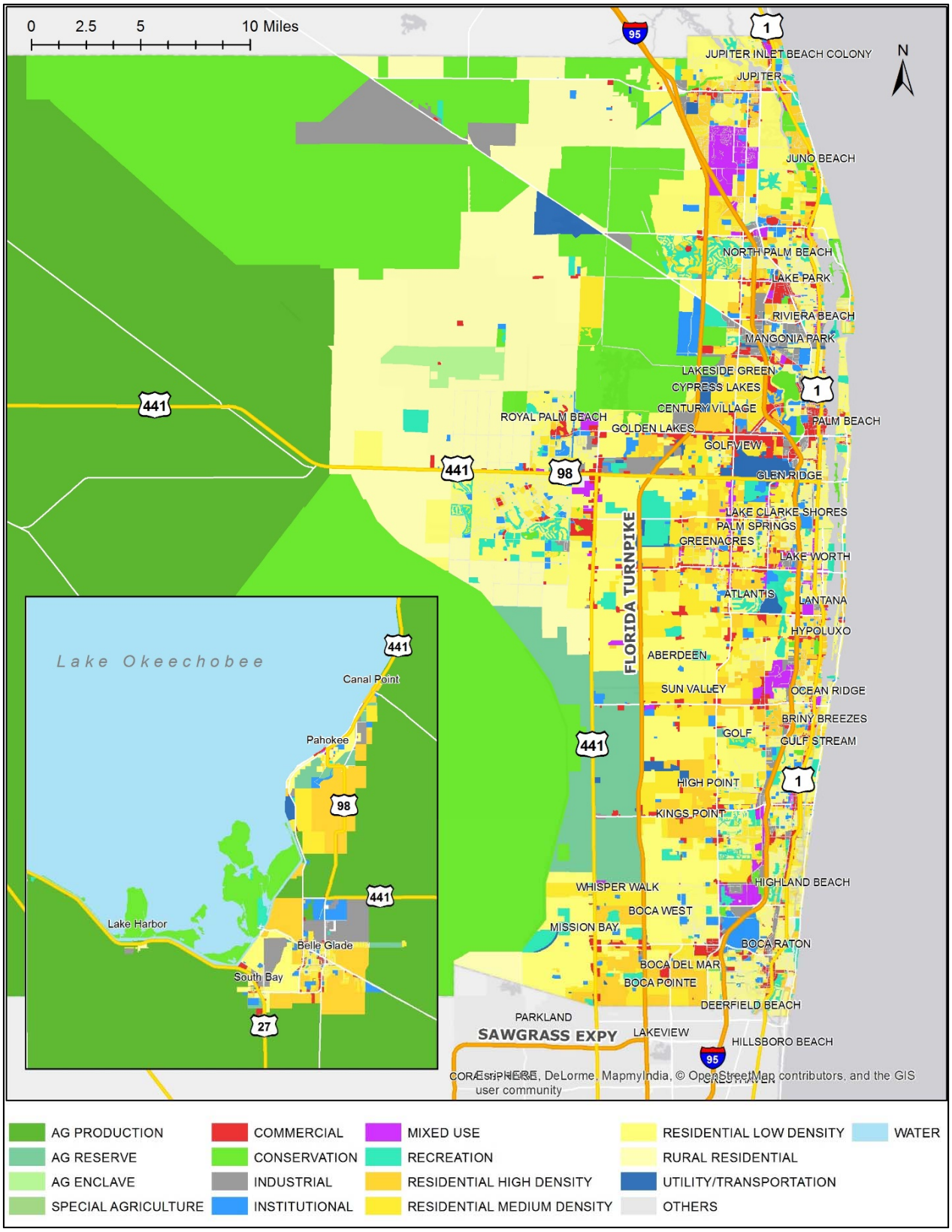
Source: Palm Beach County Planning, Zoning, and Building Department, 2015

Figure 15 Residential Land Uses by Density



Source: Palm Beach County Planning, Zoning, and Building Department, 2015

Figure 16 Palm Beach County Future Land Use



Source: Palm Beach County Planning, Zoning, and Building Department, 2015

2.8 Major Trip Generators

Major employers are generally considered major trip generators for a region. The most prevalent major employers by industry in Palm Beach County are: communications and information technology; aerospace and engineering; agriculture and food processing; business and financial services and medical and pharmaceutical products. There are roughly 52,315 companies in Palm Beach County that supply products and services. In the services producing sector of the economy, a strong cluster of companies is found in business and financial services. This cluster represents more than 19,158 companies. Table 7 shows the major public and private employers in Palm Beach County.

Figure 17 shows major trip generators in Palm Beach County. Employment centers were determined by selecting the census tracts with highest commuting trip destinations. They reflect the employers identified in Table 7. In addition, shopping malls, hospitals, universities and schools were included.

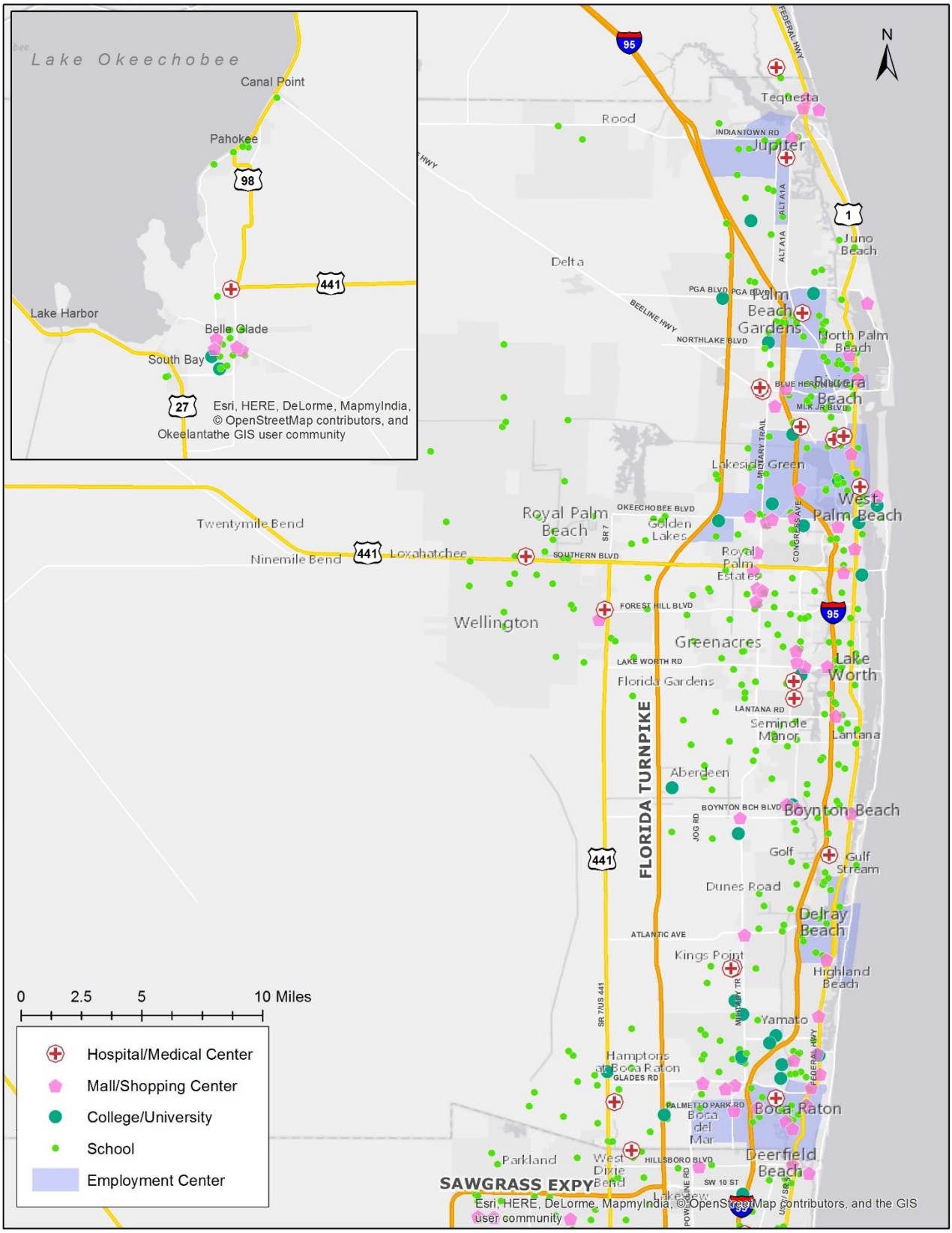
Table 7 Major Public/Private Employers

#	Company	Employees	Industry	Location
1	Palm Beach County School District	22,000	Education	County Wide
2	Tenet Healthcare Corp.	6,100	Healthcare	County Wide
3	Palm Beach County Board of Commissioners	5,507	County Government	West Palm
4	NextEra Energy, Inc.	3,854	Utilities	Juno Beach
5	Hospital Corporation of America	2,714	Healthcare	County Wide
6	Florida Atlantic University	2,655	Higher Education	Boca Raton
7	Bethesda Memorial Hospital	2,600	Health Care	Boynton Beach
8	Boca Raton Regional Hospital	2,500	Health Care	Boca Raton
9	Veterans Health Administration	2,500	Health Care	West Palm
10	Jupiter Medical Center	2,000	Health Care	Jupiter
11	The Breakers	2,000	Hotel	Palm Beach
12	Office Depot	2,000	Office Supplies	Boca Raton
13	Florida Crystals	1,700	Agriculture	West Palm
14	Wells Fargo	1,367	Financial Services	County Wide
15	City of West Palm Beach	1,326	City Government	West Palm
16	Boca Raton Resort & Club	1,292	Hotel	Boca Raton
17	City of Boca Raton	1,228	City Government	Boca Raton
18	Sikorsky Aircraft Corporation	1,181	Helicopters	West Palm
19	Palm Beach State College	1,155	Higher Education	Lake Worth
20	G4S Secure Solutions, USA	1,100	Security Services	Palm Beach Gardens

#	Company	Employees	Industry	Location
21	Bank of America	1,000	Banking	County Wide
22	South Florida Water Management District	978	Regional Government	County Wide
23	U.S. Sugar Corporation	900	Agriculture	Belle Glade
24	Tyco	850	Manufacturing	Boca Raton /West Palm
25	TBC Corporation	807	Tire Distribution	Palm Beach Gardens
26	Walgreens Distribution	715	Pharmaceutical Distribution	Jupiter
27	Pratt & Whitney	675	Jet Engine Manufacturing	West Palm
28	Cheney Brothers	660	Food Distribution	Riviera Beach
29	ADT Security Services	600	Security System Manufacturing	Boca Raton /West Palm
30	IBM Corp.	600	Electronics R&D	Boca Raton
31	PSM, An Alstom Company	500	Turbine Parts Manufacturing	Jupiter
32	US Foods	500	Food Distribution	Boca Raton
33	TKM Farms, Inc.	500	Agriculture	Belle Glade
34	BIOMET 3i, Inc.	471	Dental Implants	Palm Beach Gardens
35	Pepsi Cola Bottling Co.	450	Bottled Soft Drinks	Riviera Beach
36	Belcan Engineering Group	420	Aerospace Engineering	Palm Beach Gardens
37	Lockheed Martin Corporation	406	Aerospace Engineering	Riviera Beach
38	Aerojet Rocketdyne	400	Aerospace Engineering	West Palm
39	Sugar Cane Growers Cooperative	370	Agriculture	Belle Glade
40	Biotest Pharmaceuticals Corporation	328	Pharmaceuticals	Boca Raton
41	Cemex / Rinker Materials	300	Concrete Manufacturing	West Palm

Source: Palm Beach County Business Development Board 2015

Figure 17 Major Trip Generators



Source: Palm Beach County and SERPM 7.0 Model.

2.9 Roadway and Traffic Conditions

Palm Beach County's roadway network is formed by I-95, Florida's Turnpike, SR 80, US 27 and SR 710 which traverse the county and provide connections to Broward, Martin and Hendry Counties. These facilities are the backbone of what the Florida Department of Transportation describes as the Strategic Intermodal System (SIS). The network is supported by a grid system of numerous arterials, collector streets and local roadways.

Interstate 95 is the main north-south highway on the East Coast of the United States, running parallel to the Atlantic Ocean. I-95 serves regional and local traffic through a coordinated system of higher speed mainline lanes and strategically located interchanges with ramps designed to coordinate traffic accessing and departing the interstate.

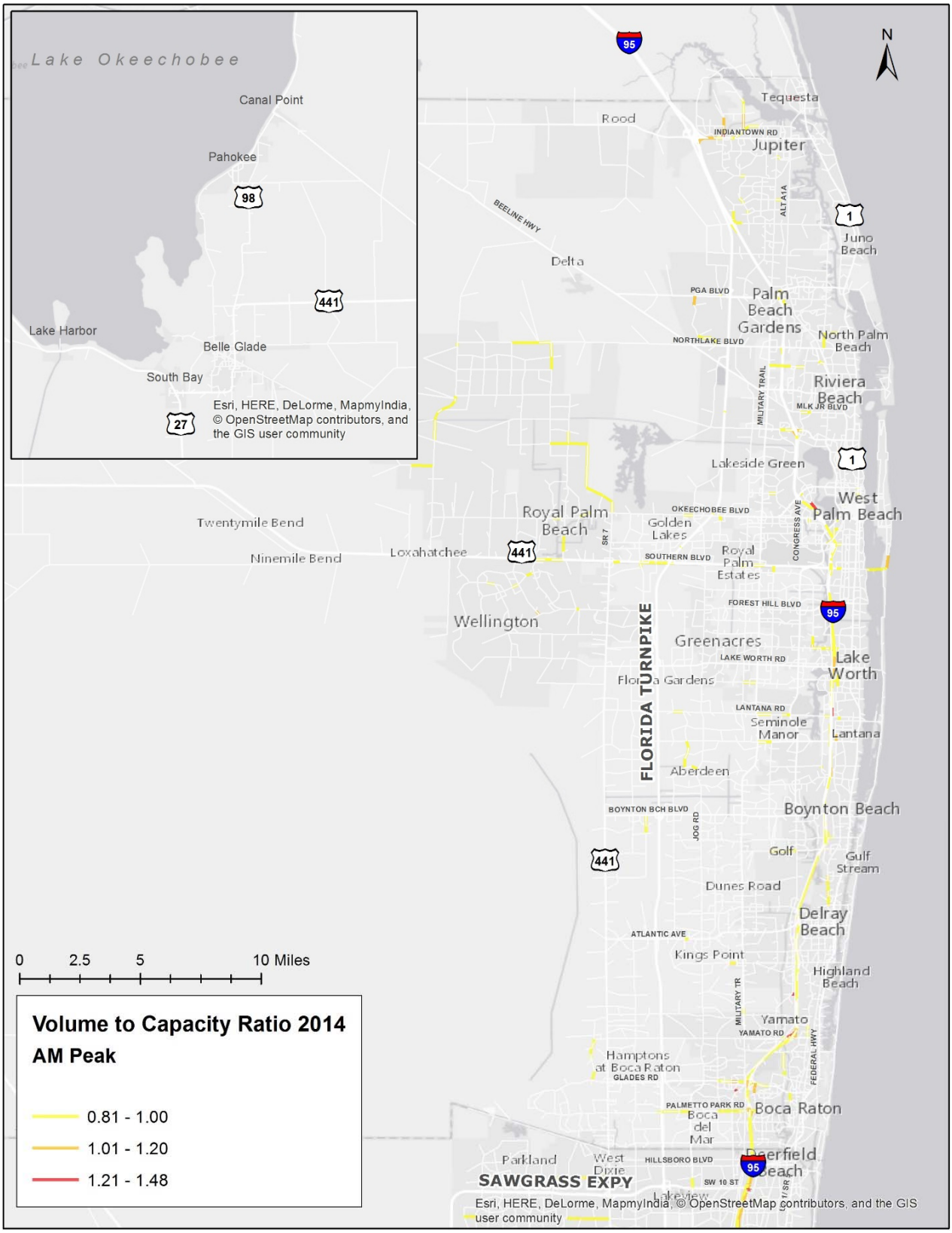
Florida's Turnpike (SR 91) is another major north-south highway in Palm Beach County. It is a western parallel to I-95 and offers automobile and truck drivers an alternate route to I-95, by charging a toll for using its facility with the incentive of avoiding traffic congestion on the nearby interstate. It too serves regional and local traffic and has limited access points in the form of interchange ramps.

The remaining thoroughfare network is comprised of arterial and collector roads. Examples of primary arterial facilities within Palm Beach County include US 27, Beeline Highway, SR 7, Powerline/Jog Road, Military Trail, US 1, A1A, Glades Rd, Okeechobee Boulevard, and 45th Street. Local roads provide connections to neighborhoods and community destinations.

A vast majority of the arterial network in Palm Beach County is expected to be congested in 2040, particularly in the peak evening commuting period

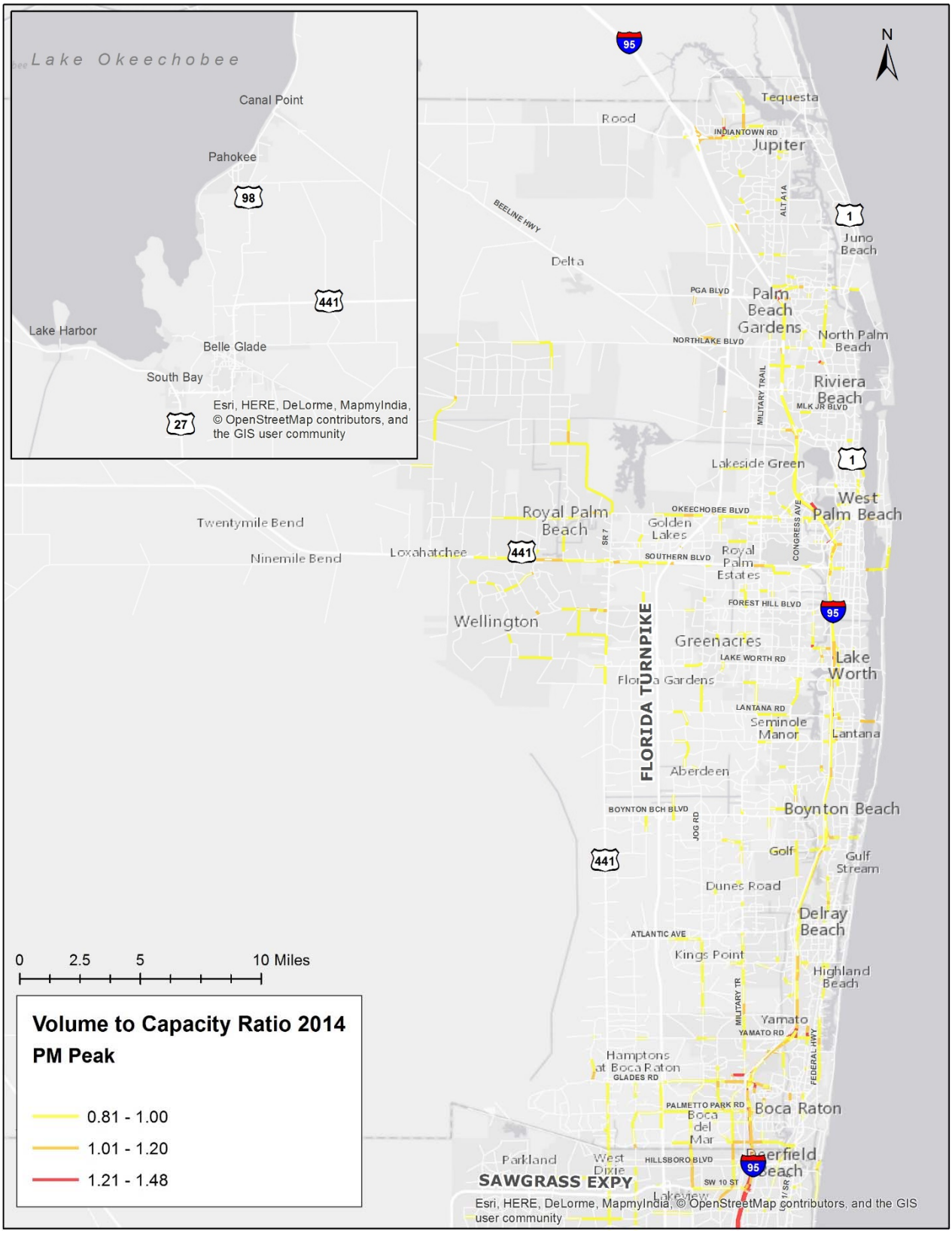
Figure 18 though Figure 21 illustrate current and projected roadway peak-hour capacity deficiencies by volume to capacity ratio for roadway links. The data was obtained from the working version of the 2040 Southeast Florida Regional Planning Model (SERPM 7.0), a transportation forecasting model. The LOS E capacity values were used as the roadway capacity figures to determine the ratios. Level of Service (LOS) values range from A to F, reflecting little or no traffic to severe congestion. Projections for 2040 are that a vast majority of the arterial network in Palm Beach County will be approaching or exceeding capacity, indicating congestion, particularly in the peak evening commuting period. Links with travel at 80% or more of their capacity (highlighted in yellow in the figures) are congested, with those exceeding capacity (highlighted in orange and red) are projected to be heavily congested. Because congestion is becoming prevalent, transportation planners are looking at other measures to evaluate travel performance. Reliability, or the consistency with which a person is able to make the same trip, is an emerging measure being used to evaluate urban roads, especially those experiencing congestion. It is important to people to know they can make a trip in approximately the same amount of time all the time – that is that there is a reliable time frame in which the trip can be completed, regardless if it is in free-flowing or heavily congested traffic.

Figure 18 Roadway Volume to Capacity Ratio 2014 – AM Peak



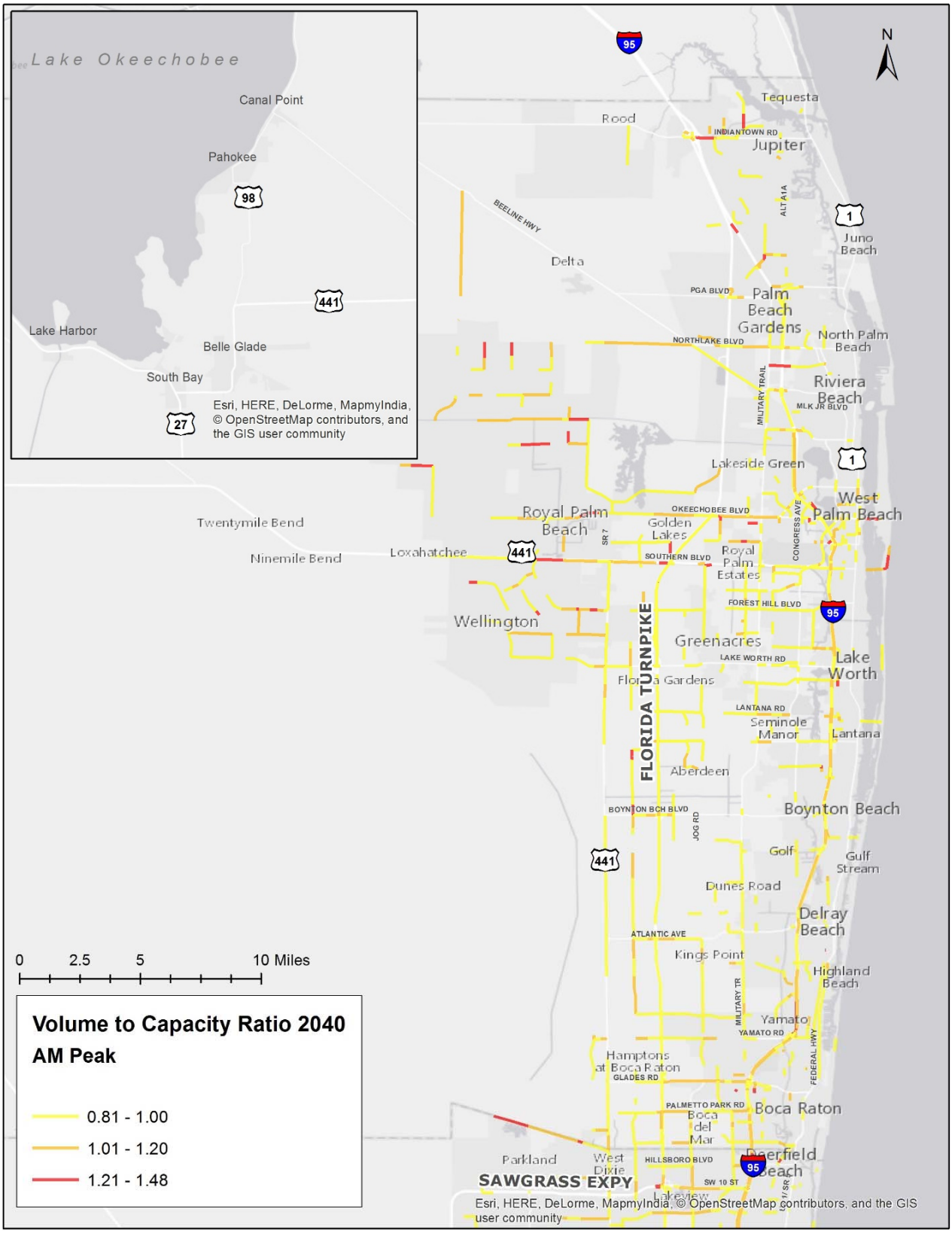
Source: SERPM 7.0 – Engineers working version

Figure 19 Roadway Volume to Capacity Ratio 2014 – PM Peak



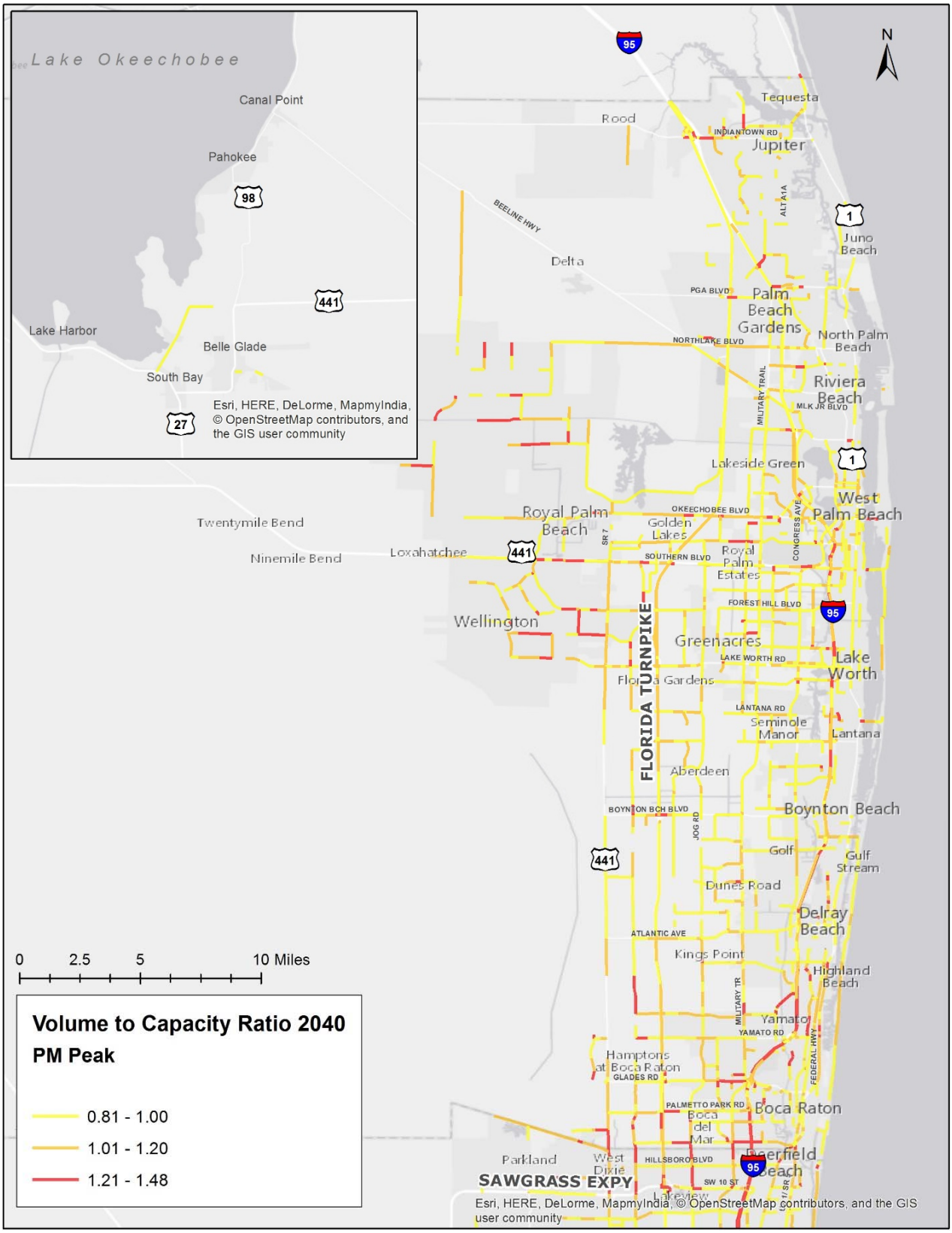
Source: SERPM 7.0 – Engineers working version

Figure 20 Roadway Volume to Capacity Ratio 2040 – AM Peak



Source: SERPM 7.0 – Engineers working version

Figure 21 Roadway Volume to Capacity Ratio 2040 – PM Peak



Source: SERPM 7.0 – Engineers working version

2.10 Transit Service

Public transportation services in Palm Beach County consist of Palm Tran fixed route service, Tri-Rail regional commuter service, and various local trolleys, shuttles, and circulator systems provided at the municipal level. In addition, Palm Tran Connection provides paratransit services for eligible transportation disadvantaged individuals. Amtrak and Greyhound provide interregional train and bus services from sites within the county.

2.10.1 Palm Tran

Palm Tran has provided public transportation in Palm Beach County since 1971. Palm Tran currently operates over 150 buses and serves over 3200 bus stops. As shown in Figure 22, there are 34 bus routes strategically situated within the area serving Jupiter to Boca Raton, and West Palm Beach to Belle Glade.

Palm Tran provides service to the Palm Beach International Airport, and routes connect with service at each of the six Tri-Rail Stations within the county. This includes service at the two Amtrak stations (West Palm Beach and Delray Beach) and connections to the Greyhound Terminal at the West Palm Beach Intermodal Center.

2.10.2 Tri-Rail

The Tri-Rail commuter rail service began operating in 1989 through a tri-county commuter rail provider created by Miami-Dade, Broward, and Palm Beach Counties. The Tri-Rail service operates on the South Florida Rail Corridor (formerly the CSXT/Seaboard rail line). The South Florida Regional Transportation Authority (SFRTA) now provides oversight of the tri-county commuter rail and operates the Tri-Rail service. SFRTA was created by Florida Statute in 2003 to expand cooperation with the local transit operators and planning agencies in Palm Beach, Broward, and Miami-Dade Counties.

Tri-Rail service currently extends 72 miles from the Miami International Airport in Miami-Dade County to the Mangonia Park station in Palm Beach County and has over 16,000 passengers on an average weekday. There are currently six Tri-Rail stations in Palm Beach County: Boca Raton, Delray Beach, Boynton Beach, Lake Worth, West Palm Beach, and Mangonia Park. See Figure 23 for the location and associated shuttle routes.

2.10.3 Local Circulators

Local circulator systems exist in numerous communities within the county:

- The City of West Palm Beach and Community Redevelopment Agency offer three trolley routes within the downtown area. The Yellow Line travels between Cityplace and Clematis Street. The Green Line travels from the Tri Rail Station to Downtown. The Blue Line travels between Downtown, Northwood Village, and the Palm Beach Outlets.

- The City of Delray Beach Downtown Roundabout Shuttle is a free service between the Delray Beach Tri-Rail station and Ocean Boulevard and is partially funded by the Community Redevelopment Agency.

- The City of Boca Raton provides a free shuttle service traveling between the Boca Tri-Rail station and the Arvida Park of Commerce (APOC), referred to as the APOC East/West Shuttle.

- The Boca Corporate Center Shuttle, also known as the T-REX shuttle, is operated by the Brea Property Management. It is a free service operated between the Boca Raton Tri- Rail Station and the Boca Corporate Center.

- The Belle Glade Express (BGE), is a local community bus system operated by the City of Belle Glade and funded by a grant from FDOT. The BGE bus network consists of five routes providing weekday service in the City of Belle Glade.

- As part of a regional transit network, the Lake Region Commuter Route, operated by Good Wheels, Inc., provides bus service between the City of Clewiston, located in Hendry County, and the City of Belle Glade. Tri-Rail, through SFRTA funding, operates several free shuttles from its stations for the convenience of its passengers. These Tri-Rail funded shuttles are located at the Boca Raton, Delray Beach, and Lake Worth stations and are in addition to any locally operated shuttles.

These circulators provide first/last-mile connections to Tri-Rail and Palm Tran fixed route service. Funding local circulator service is a challenge for many operators.

2.10.4 Paratransit Service

Palm Tran Connection serves as the Community Transportation Coordinator to meet the paratransit needs in Palm Beach County. Palm Tran Connection is a shared ride, door-to-door paratransit service that provides transportation for disabled residents and visitors in Palm Beach County under the following programs:

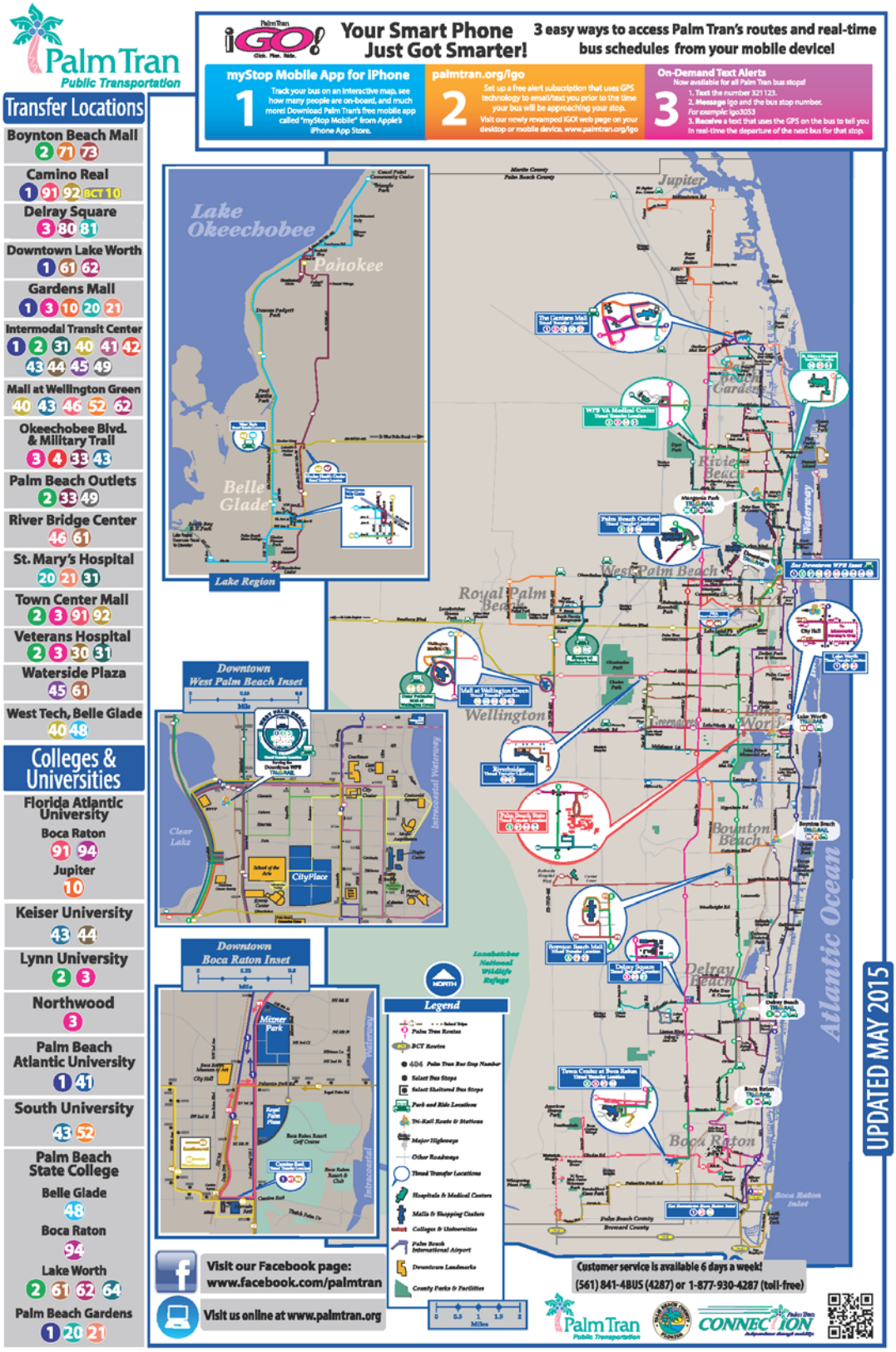
- Americans with Disabilities Act (ADA) Program

- Division of Senior Services (DOSS) Program

- Transportation Disadvantaged (TD) Program

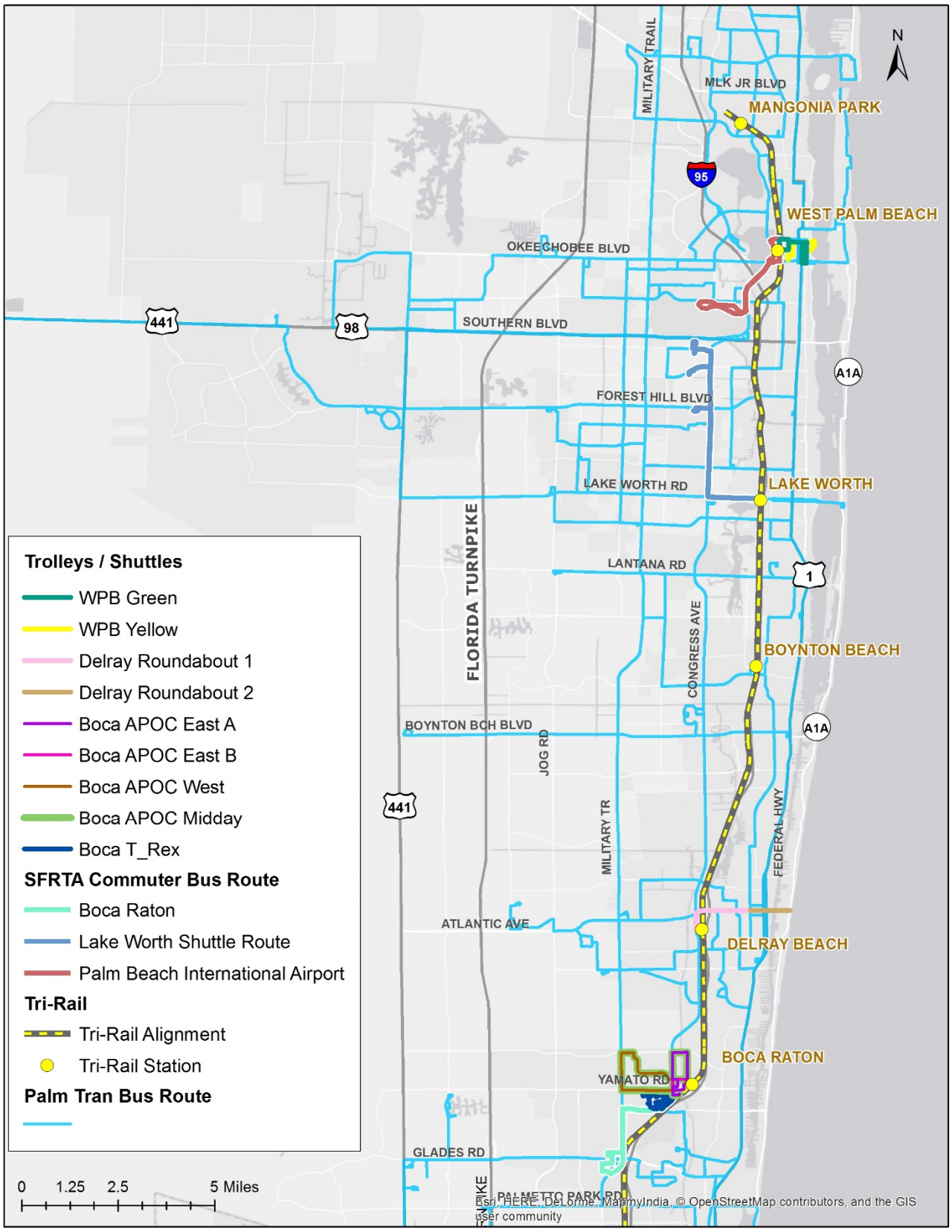
Connection travels in Palm Beach County from Jupiter to Boca Raton and from Palm Beach to South Bay. The Americans with Disabilities Act (ADA) core service area covers the following: East of the Florida Turnpike in Palm Beach County from the South County Line to Donald Ross Road. ADA Service continues to the 3/4-mile buffer around fixed routes located outside the ADA core service area.

Figure 22 Existing Transit Service



Source: Palm Tran

Figure 23 Tri-Rail and Tri-Rail Commuter Bus/Shuttles



Source: Palm Tran, SFRTA, U.S. Department of Transportation, Federal Railroad Administration

2.11 Access to High Ridership Stops

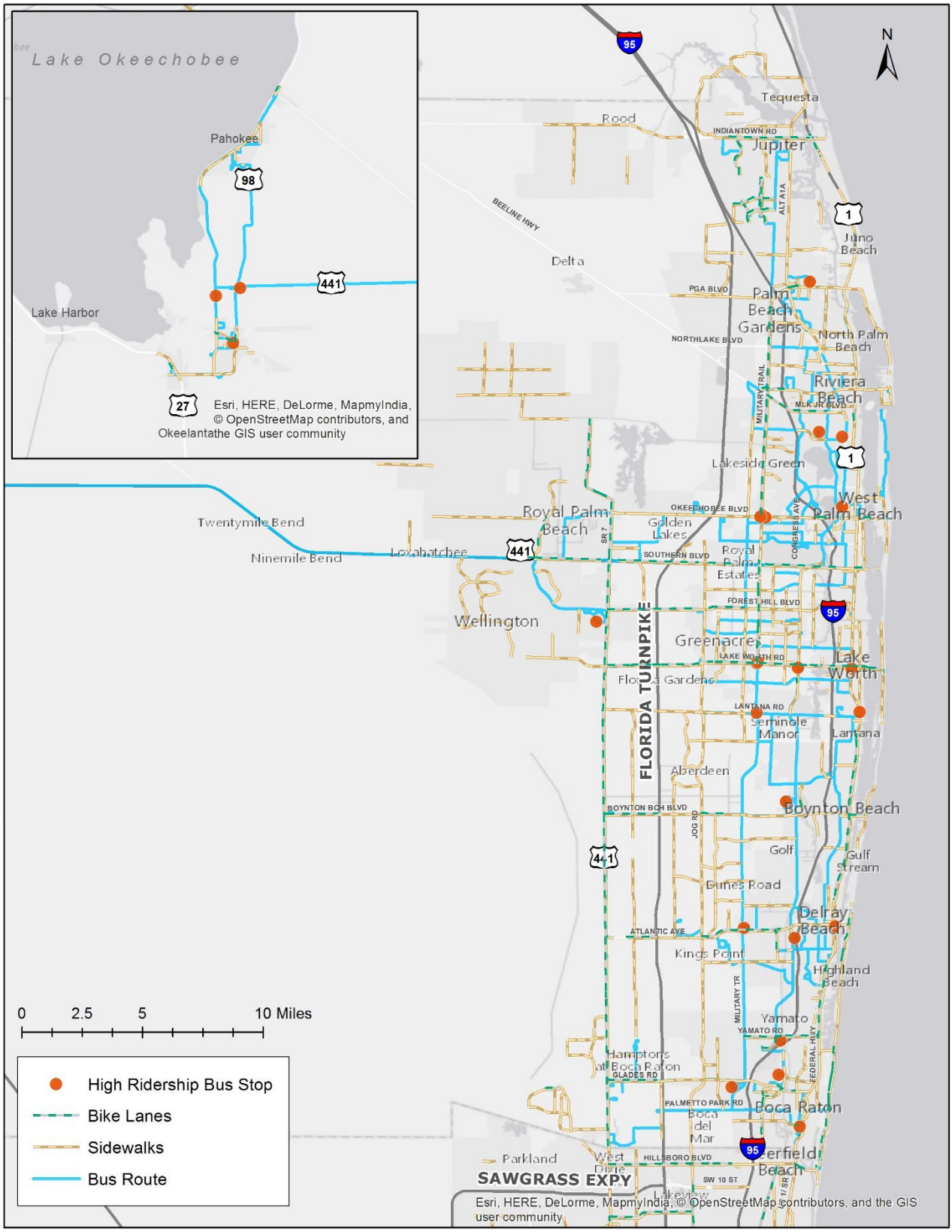
There are about 3,552 miles of bike lanes and 10,839 miles of sidewalks in Palm Beach County. Table 8 and Figure 24 show coverage of sidewalks and bike lanes at selected high ridership stops, based on visual inspection via Google maps. Data in Figure 24 are shown for FDOT maintained roads only. Palm Beach County and local roads also support bicycle and pedestrian access to transit. Table 8 also identifies the high ridership stops that meet Americans with Disabilities Act accessibility requirements ("ADA facilities")

Table 8 Access to High Ridership Stops

Stop Number	Stop Location	Sidewalk	Bike Lane	ADA
687	Belle Glade HRS @ SR-80	Yes	No	Yes
729	Boca Raton Tri-Rail	Yes	Yes	Yes
3253	Boynton Beach Mall	Yes	No	Yes
746	Butts Rd @ Town Center Rd	Yes	No	Yes
650	Congress Ave @ Lake Worth Rd	Yes	Yes	No
1110	Delray Beach Tri-Rail	Yes	No	Yes
167	Delray Square @ Military Trail	Yes	Yes	No
706	Dixie Hwy & Lakeview Ave	Yes	No	No
251	E Camino Real @ Dixie Hwy	Yes	Yes	No
7681	Federal Hwy/Ne 6th Ave @ SE 1st St	Yes	No	Yes
37	Gardens Mall	Yes	Yes	Yes
5364	Lake Ave @ Dixie Hwy	Yes	Yes	Yes
1194	Mangonia Park Tri-Rail	No	No	Yes
1064	Military Trail @ Lake Worth Rd	Yes	Yes	Yes
1201	Military Trail @ Lantana Rd	Yes	No	Yes
1232	Military Trail @ Okeechobee Blvd.	Yes	Yes	No
3075	Military Trail@ Lake Worth Rd	Yes	Yes	Yes
3254	NW 16th St	Yes	No	Yes
4854	NW 3rd St @ SW 3rd St	Yes	Yes	No
3289	Okeechobee Blvd @ Military Trail	Yes	Yes	Yes
3212	Okeechobee Blvd @ Military Trail	Yes	Yes	No
1134	Palm Beach Plaza	Yes	Yes	Yes
3742	St Mary's Hospital	Yes	No	Yes
2274	State Road 7 @ Forest Hill Blvd	Yes	Yes	Yes
60210	West Palm Beach Intermodal Center	Yes	No	Yes
Percentage of Coverage		96%	56%	72%

Source: Palm Tran, Florida Department of Transportation, Cambridge Systematics.

Figure 24 Access to High Ridership Stops



Source: Florida Department of Transportation, Palm Tran

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3.0 Stakeholder Input

This section summarizes the comments received from various stakeholder engagement activities. The input consisted of targeted interviews of interested parties from across Palm Beach County, a Palm Tran employee survey, Palm Tran rider (on-board) survey, and a workshop for the PTSB. Information obtained from each of these four methods is described below.

As described in the Executive Summary, regardless of the engagement technique, there was an overlap on items raised. These address such topics as route adjustments, expanded or additional service, more connectivity, increasing ridership, providing more shelters and customer amenities like diverse and mobile payment options, Wi-Fi and power access, embracing technology, and marketing Palm Tran services.

3.1 Stakeholder Interviews

Stakeholder interviews were held to obtain input from interested parties throughout Palm Beach County. The Palm Tran Service Board (PTSB) was the main audience and additional interviews were conducted based on suggestions from Palm Tran and Palm Beach MPO staff. The following subsection lists those interviewed and the subsection afterward summarizes comments received.

3.1.1 Interviewees

Palm Tran Service Board Members

- Dwight Mattingly (Chair)[3] – Fixed Route Bus Operator
- Myra Goldick (Vice Chair) – Disability Advocate
- Martin Rothman – Certified Paratransit User
- Beverly Scott – Resident of Glades/Lake Region of Palm Beach County
- Bob Templeton – Business Community Representative

Palm Tran Staff – two interviews

- Clinton Forbes, Executive Director
- Charles Frazier, Deputy Executive Director
- Fred Stubbs, Planning Manager
- Steve Anderson, Senior Planner

Palm Beach MPO

- Nick Uhren, Executive Director
- Valerie Neilson, Transit Coordinator

[3] Ellsworth Gibson, Vice President of ATU 1577, also participated in this interview.

Florida Department of Transportation – three separate interviews

- Khalilah Ffrench – Project Manager, Office of Modal Development
- Marjorie Hilare – Project Manager, Office of Modal Development
- Jayne Pietrowski – Senior Transit Coordinator, Office of Modal Development

South Florida Regional Transportation Authority – one interview

- Joe Quinty – Transportation Planning Manager
- Natalie Yesbeck Pustizzi – Planning Project Manager
- Barbara Handrahan – Program Development
- Anna Bielawska – Transportation Planner
- Vicki Gatanis – Transportation Planner

Local Government Representatives

- Commissioner Hal Valeche – Vice Mayor, Palm Beach County Board of County Commissioners
- Alex Hansen – Senior Planner, City of West Palm Beach
- Jeff Costello – Executive Director, Delray Beach Community Redevelopment Agency
- Tom Lanahan – Assistant City Manager, City of Greenacres
- Natalie Crowley –Director of Planning and Zoning, City of Palm Beach Gardens

Others

- Stanley Voice – transit advocate

All members of the PTSB were offered opportunities to be interviewed. Similarly, consultant staff reached out to several elected officials serving on the MPO and also requested interviews with staff from the Cities of Riviera Beach, Lake Worth, and Boca Raton. Other agencies contacted, sometimes through multiple means, include: the School District of Palm Beach County, Palm Beach State College, Florida Atlantic University, El Sol Resource Center, and the Children's Services Council of Palm Beach County.

3.1.2 Interview Comments

People interviewed were asked the same basic questions, with follow up as appropriate:

- What are your perceptions of Palm Tran and Palm Tran Connection? What are your constituents (customers, clients, employee, etc.) perceptions?

- What needs or opportunities are there for Palm Tran (fixed route and paratransit)? This was asked both generally and for specific routes, and locations.

- What do you think the priorities should be for Palm Tran (fixed route and paratransit)?

Responses from interviewees tended to fall in several different categories shown below.

Routes and Service Hours

- Clear routes – Many interviewees indicated straight line, or easy to understand, routes should be considered. Providing service on the grid network was recommended instead of entering subdivisions. Riders can be confused and concerned when a bus deviates from a major corridor to enter a subdivision or make a circuitous route. It also makes the route longer, impacting not only the customer but also bus operator issues.

- Coverage for workers/students – Several interviewees recommended Palm Tran make it a priority to ensure workers and students can get to and from their places of employment or school. Recommendations mainly focused on longer evening service hours; however, recommendations that weekend/holiday services be provided also were made. Some interviewees recommended looking at housing/employment travel patterns to ensure the appropriate destinations are being served.

- Vary schedule throughout day – It was noted that the Palm Tran schedules are the same regardless of the time of day. This is problematic for on-time performance during peak travel periods. Also, high frequency during peak transit periods could be considered.

- Stop placement – To improve efficiencies and travel times, recommendations were offered to consider establishing policies regarding stop placement and minimum distances between stops. Several interviewees suggested removing or consolidating stops to improve travel times.

Increase Ridership – Frequent, New, and Express Services

- New service - In addition to longer hours, and weekend/holiday service, many interviewees suggested a need for new services.

  - One recommendation is to reestablish service to areas previously served; Jog Road was a frequent example.

  - Another suggestion was to offer more limited stop services, like the BOLT. Adding limited stop services to the major north-south and east-west routes as suggested, as was connecting with existing and new park-and-ride lots.

- Serve dense areas - Many interviewees recommended increasing ridership by enhancing service in the denser parts of Palm Beach County, where more riders and jobs are located.

- Frequent service - As a companion to the previous suggestion, many thought the service needed to be frequent enough to avoid the need to check schedules, and customer amenities expanded and enhanced (see below).

- Serve new development – Another recommendation heard multiple times is to have a future service plan that considers where greenfield development is happening, such as in Jupiter, Palm Beach Gardens, West Palm Beach, and western Boynton Beach and Delray Beach. Local governments are able to coordinate with developers during plan approval for stops, bus bays, and shelters, which is easier than retrofitting later.

- Premium services - There were occasional remarks by interviewees to consider premium transit services as part of a longer term strategy. Light rail service was frequently cited, and the Okeechobee Boulevard corridor was a frequently mentioned location for enhanced services.

Customer Amenities

- More shelters – Most interviewees indicated a need for more shelters. (See related text under Intergovernmental Coordination) The shelters should provide weather protection and shade, allow bus drivers to see customers, and be comfortable (clean and with seats), safe (well lit and absent of loiterers), and accessible (sidewalks and ADA compliant). They also noted that larger stops, particularly intermodal centers, should consider restroom facilities.

- Fare payment options – The second most frequently suggestions for improvement concerned fares. Requiring cash only payment was seen as a burden for occasional riders or riders with other travel options. Fewer people carry cash. Providing easy payment options (credit/debit/smart card) should be provided. In addition, Palm Tran should investigate options to purchases passes on-line.

- Technology – Technology recommendations included providing Wi-Fi on buses and real time information at stops. Except for the PTSB, most interviewees were not aware of the iGo! app.

Connectivity

- Regional interconnections – Interviewees mentioned the need to connect residents to areas throughout Palm Beach County and beyond the county borders. Providing services to Tri-Rail was often mentioned, sometimes with the added recommendation that schedules between the two operations be coordinated (similar to Palm Tran only timed transfers.) Several stakeholders suggested east-west routes should provide connections to Tri-Rail. Interviewees also suggested coordinating with the transit agencies in Martin and Broward Counties to ensure resident access to those counties.

- Connect to destinations – Another connectivity recommendation was to make sure service is provided to major employment areas. Palm Tran should consider looking at residential-employment trip patterns and consider adjusting routes, if appropriate.

- First/last mile connectivity – There also were comments on first/last mile connectivity provided by circulator systems. Like Palm Tran, the organizations operating and funding these services are finding it to be expensive and are looking for ways to continue to provide service. They are looking to Palm Tran, a well-established and funded (from their perspective) agency for guidance and support about how to continue to provide service.

Palm Tran Connection - Paratransit

Interviewees familiar with the paratransit service indicated that the change to the three new contracts has significantly improved the service offered to paratransit customers. Riders that previously had long delays for pickups have seen improvements.

Some interviewed questioned the extent of the paratransit service and asked about opportunities to make it more efficient. A few offered specific suggestions:

- Encourage use of fixed route for new and existing users, by making it easier or incentivizing riders.
- Evaluate technology solutions to complete some (back office) tasks, such as scheduling software enhancements and on-line payment.
- Investigate circulator services, flexible services, or mini-fixed routes to meet some of the needs.

Intergovernmental Coordination

Many of the agencies that coordinate with Palm Tran noted respect for Palm Tran staff. While coordination is ongoing, several interviewees indicated more coordination would be helpful. The recommendations relate to coordination among transit services such as fixed route Palm Tran service and Tri-Rail or local community shuttles/trolleys. Palm Tran mainly runs on major corridors leaving the last mile service to shuttle service. All providers are experiencing operating funding pressures and are looking to partners for assistance. This was emphasized for the Lake Okeechobee communities that rely on the community shuttle for every day travel within the communities.

Another area mentioned the need for plans for future transit routes and service to support affordable housing decisions and the placement of bus bays and bus stop shelters. The local governments like their shelter programs and work with developers to obtain easements and maintenance agreements for shelters. They expressed an ability to do an even better job of providing needed bus shelters if locations where future transit service might be provided was identified. Similarly, local governments are seeking workforce housing opportunities and the affordable housing tax credit requires the development to be near a current or planned transit stop.

It should be mentioned that FDOT stated that Palm Tran staff is one of the more responsive agencies with which they interact, and commended staff on their coordination.

Other

Interviewees were not shy about making recommendations in a variety of areas. The TDP, marketing and technology are some of the topics touched on below.

- Many felt Palm Tran has a positive story about what Palm Tran offers and more marketing should be considered to increase ridership and customer satisfaction.

- Palm Tran has had more success with AVL and APC and other technologies. Its management structure and coordination with Palm Beach County Engineering has been instrumental in planning deployment of a transit signal priority pilot.

- Palm Tran needs a new direction with this TDP. It should take advantage of the vision laid out in the MPO's long range transportation plan and leverage the ideas in it. Stakeholders recommended Palm Tran think bigger picture and longer term regarding services offered.

- Palm Tran has found ways to operate efficiently, more efficiently than other systems in the region. It is a relatively small enough system that it could take some risks and implement pilots to try new services.

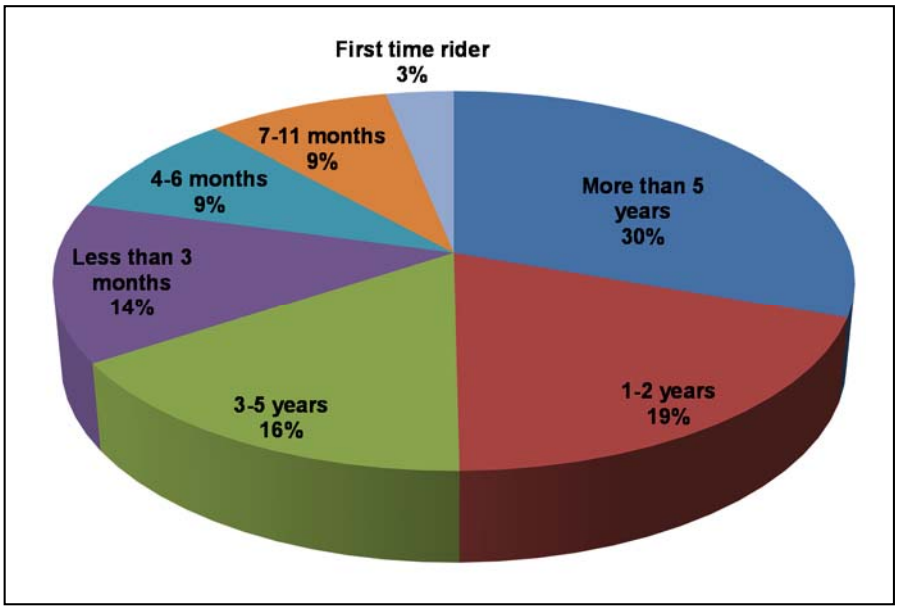
3.2 2015 Attitudinal Survey Overview

FDOT conducted the 2015 Attitudinal Survey on all Palm Tran fixed route buses. The survey asked 9 questions about people's perspectives about Palm Tran service. Survey questionnaires were available in three languages – English, Spanish, and Creole. A total of 1,306 survey records were collected and analyzed. Questions on the survey asked about frequency of use and length of time being a Palm Tran Rider. The survey asked riders why they used Palm Tran and about any obstacles accessing the bus. The last set of questions asked riders how they receive Palm Tran Information and how satisfied they are with Palm Tran service.

3.2.1 Palm Tran Ridership

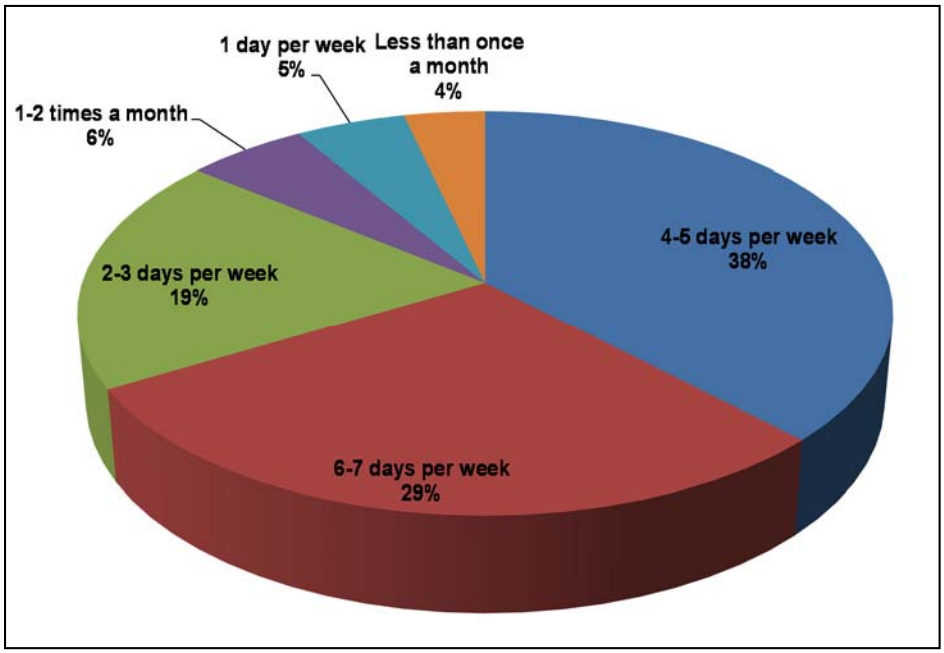
Two-thirds of the riders have been riding Palm Tran for over more than a year. One fifth (19%) have used Palm Tran between one and two years; 16% have used it from three to five years; and nearly one in three people (30%) have used Palm Tran service more than five years. Figure 25 provides a break down, which is in similar proportion to the 2011 survey. Figure 26 shows how frequently people use Palm Tran. Two-thirds of the riders use Palm Tran buses at least 4 days a week, while only 4% use it less than once per month.

Figure 25 How Long Have You Been Riding Palm Tran?



Source: Florida Department of Transportation (AECOM), Palm Tran 2015 Attitudinal Survey Findings, November 9, 2015

Figure 26 How Often Do You Ride Palm Tran?

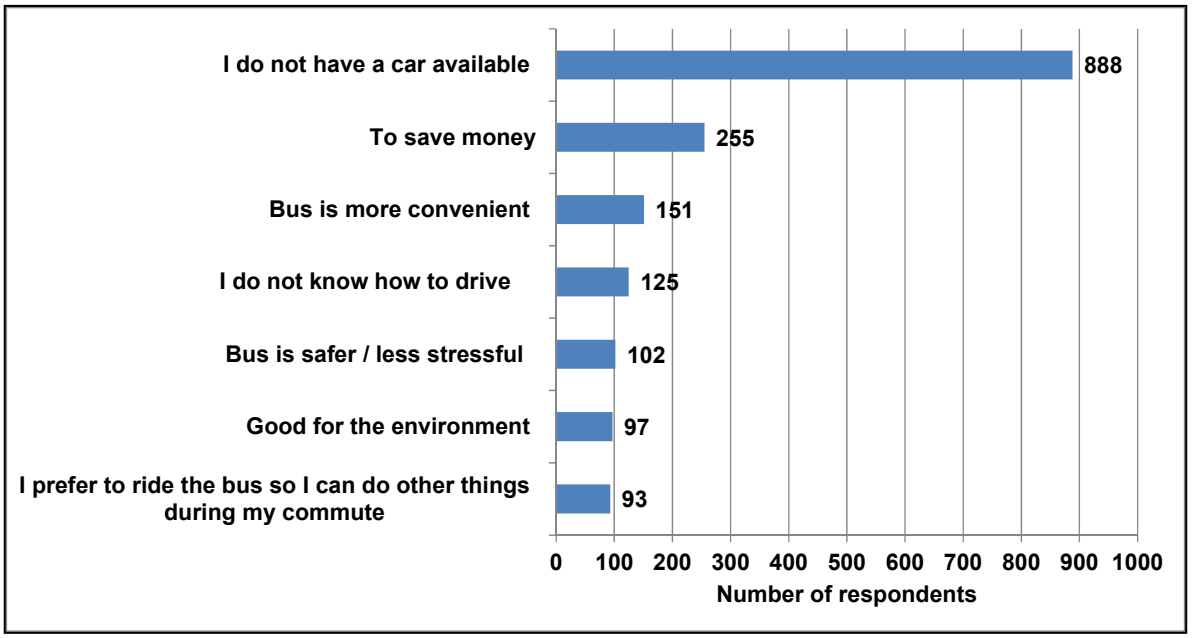


Source: Florida Department of Transportation (AECOM), Palm Tran 2015 Attitudinal Survey Findings, November 9, 2015

3.2.2 Access to Palm Tran Services

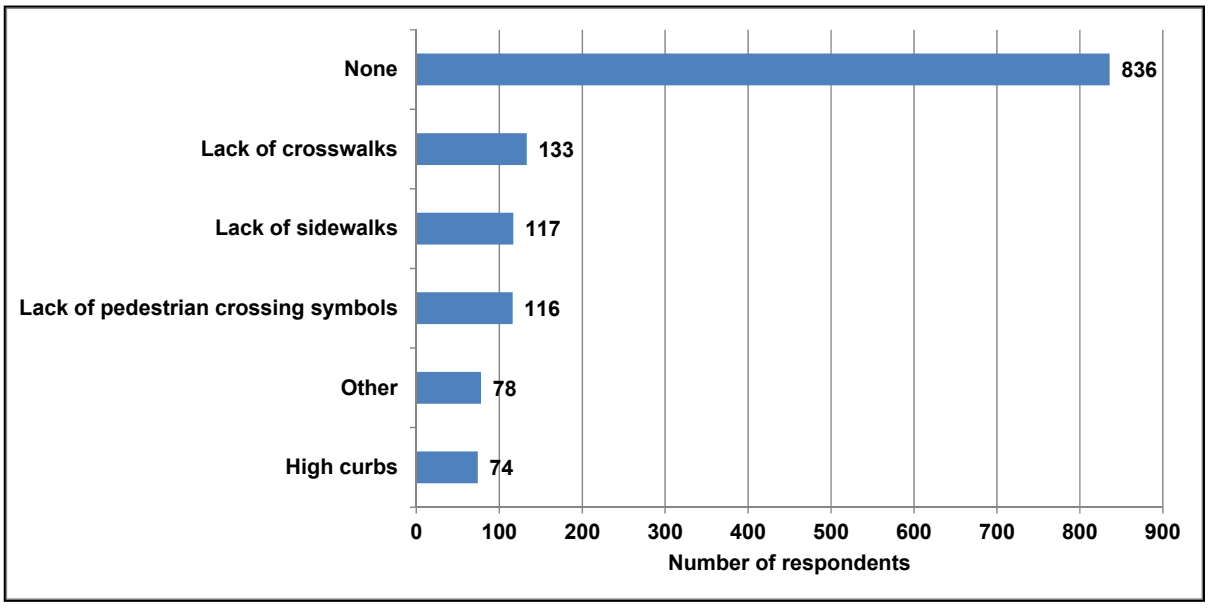
The overwhelming number one reason that people ride Palm Tran is the lack of access to an automobile. Saving money was the second most prevalent response. Other reasons are shown in Figure 27 and include convenience, comfort, and environmental motivations. Most of the riders did not find a lack of crosswalks, sidewalks, high curbs, or other pedestrian obstacles affected their ability to access the Palm Tran stop, see Figure 28.

Figure 27 Why Do You Ride Palm Tran (Check All That Apply)?



Source: Florida Department of Transportation (AECOM), Palm Tran 2015 Attitudinal Survey Findings, November 9, 2015

Figure 28 Do Any Of The Following Affect Your Ability To Get To The Bus Stop (Check All That Apply)?

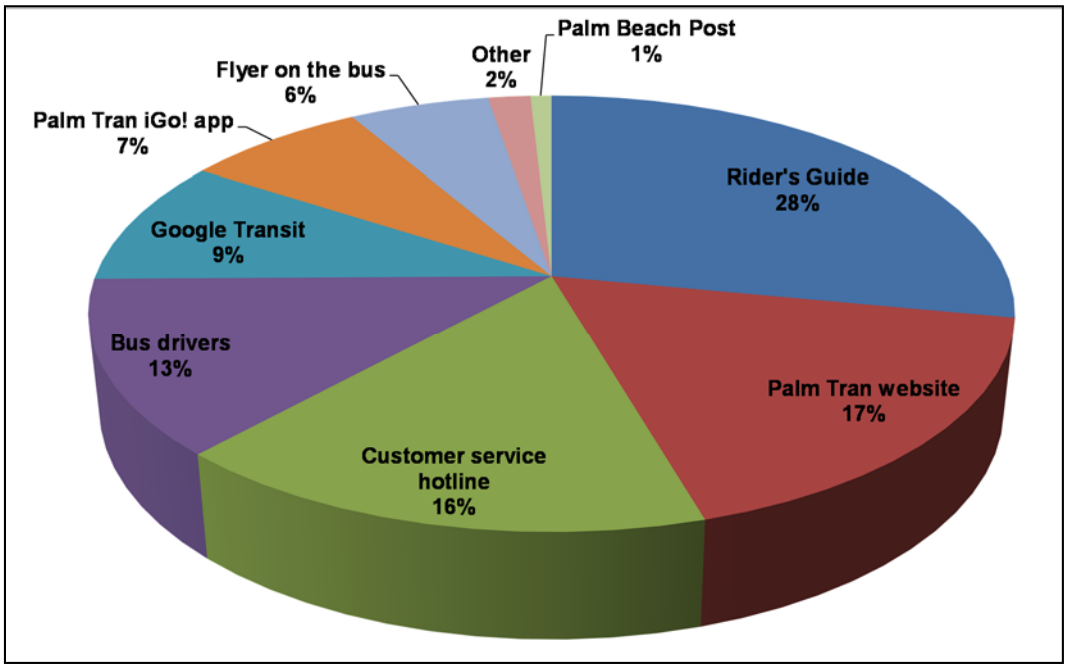


Source: Florida Department of Transportation (AECOM), Palm Tran 2015 Attitudinal Survey Findings, November 9, 2015

3.2.3 Palm Tran Information

The Rider's Guide (28%) is the most widely used single option to obtain information about Palm Tran service. A third of riders use technology to obtain information, from the Palm Tran website (17%), Google Transit (9%), or the iGo! App (7%). Another set of riders (29%) spoke with people to get their information, talking to bus drivers (13%) or making a call to customer services (16%).

Figure 29 "Best Way" To Get Information About Palm Tran (Select Only One)?

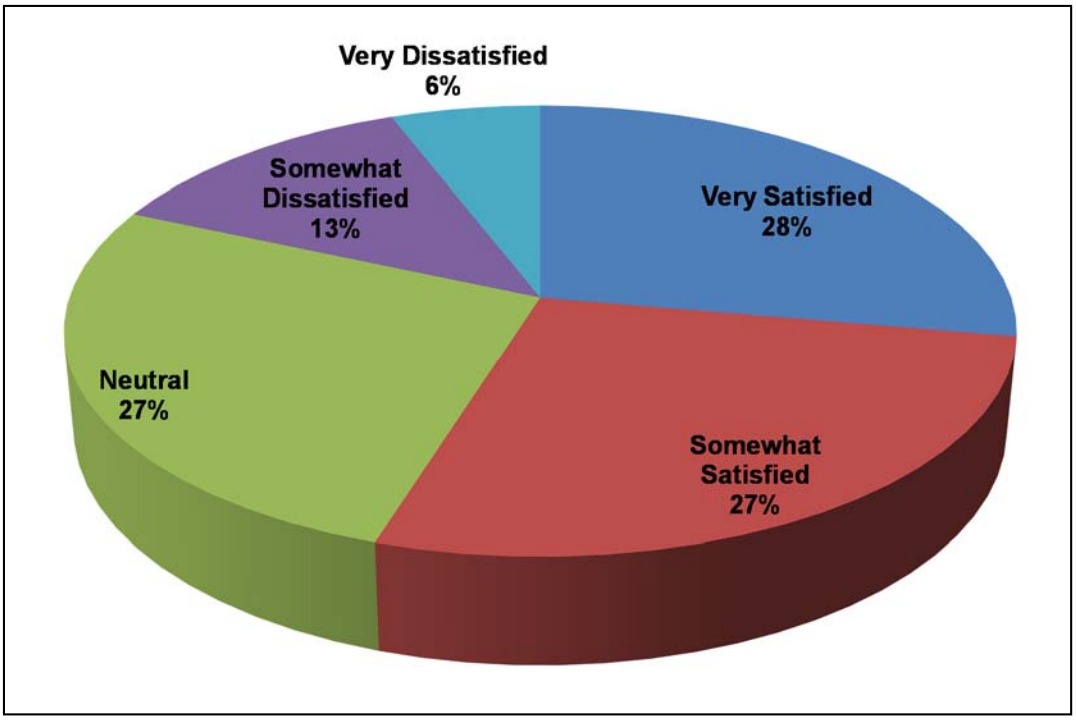


Source: Florida Department of Transportation (AECOM), Palm Tran 2015 Attitudinal Survey Findings, November 9, 2015

3.2.4 Palm Tran Customer Satisfaction

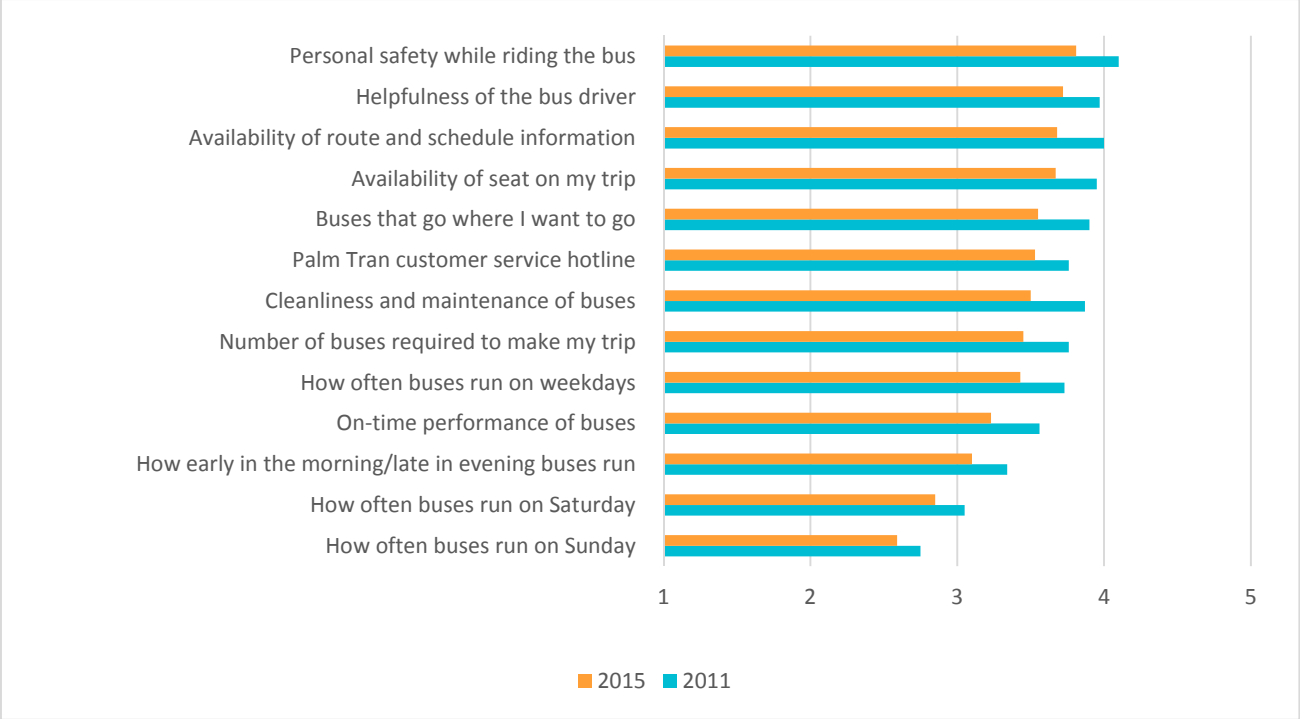
The percentage of riders indicating a level of satisfaction with Palm Tran was 55%, a decrease from 70% in the 2011 survey. One in five riders were dissatisfied, see Figure 30 for details. Rider satisfaction for a variety of conditions is shown in Figure 31. In all areas, satisfaction has decreased since the 2011 survey. Service span, frequency, weekend service, and on-time performance are the weakest areas of satisfaction, while safety, driver helpfulness, and schedule/route information are the areas where riders are most satisfied. When asked which areas riders would most like to see improved, they generally would like to see more bus service on the weekends, and more shelters, stops, and benches. Figure 32 shows the responses.

Figure 30 Overall, How Satisfied Are You With Palm Tran?



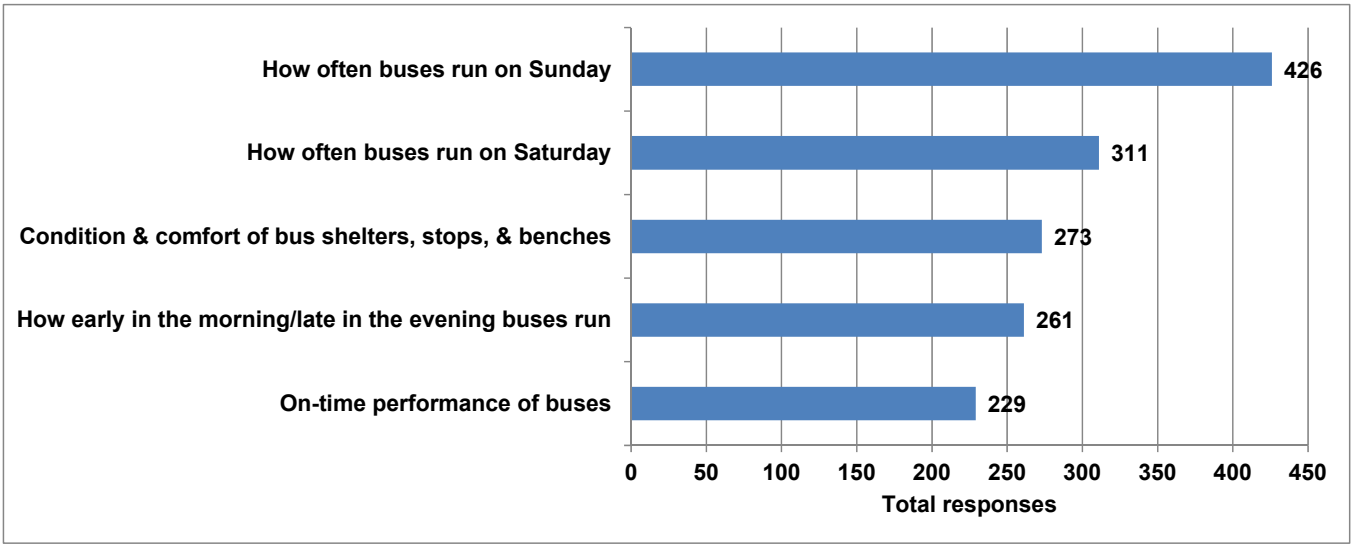
Source: Florida Department of Transportation (AECOM), Palm Tran 2015 Attitudinal Survey Findings, November 9, 2015

Figure 31 Satisfaction With Different Aspects Of Service (Scale 1-5, with 5 most satisfied)



Source: Florida Department of Transportation (AECOM), Palm Tran 2015 Attitudinal Survey Findings, November 9, 2015

Figure 32 Aspects Of Service That Riders Would Most Like To See Palm Tran Improve (List Three Items)



Source: Florida Department of Transportation (AECOM), Palm Tran 2015 Attitudinal Survey Findings, November 9, 2015

3.3 Palm Tran Service Board Workshop

A TDP workshop with the Palm Tran Service Board was held on April 28, 2016. The purpose of the workshop was to inform and solicit input of the service board members to set the direction and vision for Palm Tran transit development for the next 10 years. Service board members, Palm Tran staff, Palm Beach MPO staff, and the public participated in this workshop. Presentations were given on the role of the TDP, the current TDP's goals and objectives, and performance on achieving those goals and objectives. After the presentation, participants rotated among five tables. At each, Palm Tran staff provided a brief overview of the table's discussion topic and then led a discussion about ideas. The following sections summarize discussions at the five tables. The agenda, workshop presentations, table materials, photos of flip charts, and sign-in sheet can be found in Appendix A.

3.3.1 Workshop Table 1 – Coverage vs. Frequency

The group session in Workshop Table 1 discussed whether Palm Tran's future service should emphasize improving service coverage or improving frequency, given the limited funding resources. Advantages and disadvantages of both approaches were explained by Palm Tran staff to service board members. Transit service focusing on improving service coverage means to service everyone in Palm Beach County, even those in expensive-to-serve places. On the other hand, improving transit frequency is to provide high frequency service only in certain corridors where ridership can be maximized, while removing transit routes from area where transit "markets" are relatively weak. The first approach will build a transit network that has larger service area, more transit routes, but lower frequency in each route. The second approach will provide transit service in a smaller overall area, with less transit routes, but higher frequency in those routes. It was also explained that transit service becomes more attractive to "choice" users when frequency is increased. A comparison of peak frequency of regular fixed routes transit in peer agencies were also shown to the service board – Palm Tran currently has less routes running with 30 minutes or less frequency compared to its peers. The following are notes of opinions from the service board members.

In favor of frequency:

- Higher frequency transit service is likely to bring higher ridership. More efficient and convenient service also is likely to increase ridership.
- Large coverage of low frequency transit service is not cost-effective, and is not attractive to people.
- Transportation options are one of the important factors when choosing where to live. In a long-term vision, potential transit users will be attracted to locate near transit.

Neutral:

- Before choosing transit corridors, research should be done to find transit markets where people are more likely to use transit.
- Accessibility to bus stops is also important for attracting riders.
- The coverage and frequency approaches could be combined by building high frequency bus service in major corridors, facilitated by other transportation connectors to cover broader areas.

- Palm Tran should encourage cities and MPO to participate in the process of transit development.

In favor of coverage:

- If routes are removed, current transit passengers could lose access to transit.
- Palm Beach County has a sprawl development pattern – it is difficult to ensure that a selected high frequency transit corridor will actually bring high transit ridership.

At the end of the discussion, four board members also gave their opinions about the percentage of resources that should be allocated to ensure transit coverage and improve frequency. Two board members said that the "split" of total resources for coverage versus frequency should be 40% to 60%; one board member said it should be 20% vs. 80%; and the other board member said it should be 50% vs. 50%.

3.3.2 Workshop Table 2 – Transit Infrastructure and Safety

Infrastructure

Staff noted that 18% of Palm Tran stops have shelters. Attendees indicated a preference for more and better shelters and provided the following comments:

- Need a program to replace old shelters that have served their useful life.
- Existing bus stop design doesn't adequately protect riders from the elements. Design new criteria for shelters that considers position of sun, lighting, etc. Install solar lights on shelters.
- With a growing elderly population, shelters should be a priority, especially near assisted living facilities and retirement homes.
- Shelters should be prioritized over "on-bus" amenities, increased bus frequency, etc.
- Offer incentive to commercial private properties to provide Right-of-Way for shelters.
- Develop marketing plan that shows that bus stops and bus shelters provide a benefit to nearby businesses.
- Develop criteria (other than FDOT guidelines) for shelter location that takes into consideration the elements, location, etc. in addition to ridership.
- Need performance measures to report to public on expenditure of grant funds identified for shelter improvements.

ADA - Compliance

Many bus stops (61%) are not currently ADA compliant due to Right-of-Way restrictions limiting the possibility for an adequate 'landing' platform. Attendees offered suggestions below as ways to increase the ability to support ADA-compliant stops:

- Establish method to add new ADA-compliant stops (currently none exists).

- Develop marketing plan that shows that bus stops and bus shelters provide a benefit to nearby businesses.

- Also address ADA-compliant accessibility (sidewalks/crosswalks) to the bus stops through coordination with Palm Beach County, FDOT or other local governments.

- Look into bus stop consolidation program to reduce number of redundant and non-ADA compliant stops, or establish a minimum distance between ADA compliant stops policy.

Other/Funding

Attendees recognized the costs associated with providing safe and convenient shelters and suggested working with other departments (e.g., Solid Waste Authority), municipalities, businesses, developers, or others (e.g., health agencies or Citizens for Improved Transit) to put benches at (or near) all bus stops. Advertising is often used to pay for facilities, but many municipalities often have ordinances against advertising.

While mainline bus routes are unlikely to change much due to the geographic conditions in Palm Beach County, considerations should be made so that investment in new infrastructure reflects where new routes may be placed and old routes may be relocated. Palm Tran could coordinate with local governments to improve first/last mile connectivity by adding more bus stops to newly developed or redeveloped areas.

Safety

Palm Tran staff explained the various safety programs and training provided. Attendees recommended Community Education techniques to make the public aware of safety measures. These include TV and radio, Public Service Announcements, and establishing a community involvement program. It should be clear that community/rider participation is expected with regards to safety and security of riders and drivers. An Atlanta based mobile application to report suspicious activity to the policy was mentioned as a way to allow riders to provide direct feedback.

On a practical note, attendees said that solar lights should be placed on shelters to provide lighting at night-time. Palm Tran should continue to work with law enforcement to establish county-wide ‘trespass’ system to reduce loitering at shelters, coordinating with local police and the Palm Beach Sherriff’s Office. They suggested Palm Tran take advantage of the Law Enforcement Trust Fund (grants) for safety and security programs and improvements.

Attendees also noted that safety also includes safe access via walking, biking, etc. to bus stops.

3.3.3 Workshop Table 3 – Service Span and Holidays

The “Service Span and Holidays” discussion during table group sessions focused on the merits of investing in longer time durations of service, including both daily service span improvements and expanding the amount of holidays for which service is provided. The general discussion focused on whether investing in service span improvements during times of off-peak ridership to better serve the community of transit riders was a worthwhile investment. Attendees made the following comments:

- Investigate how peers (such as Broward County Transit) made the decision to provide service span improvements. For example, is the additional service span proportional to additional funding amounts?
- Service span improvements are good because they target existing users who have said (via surveys and comments) they want longer service hours.
- Almost all groups stated that service span improvements should focus on prioritizing improvements for specific land use types and the service should be tailored to the use. In particular:
  - Shopping malls (Gardens Mall and Wellington Mall were mentioned as examples for expanding hours of service after p.m. for employees that work until close)
  - Higher education sites (currently not served after 10:00 PM which makes it difficult for students and employees with late classes)
  - Dense areas where more potential riders may be concentrated.
- Many service providers offer holiday service and Palm Tran should do the same.
  - Start with a limited amount of additional service on certain holidays. Partner with local holiday events to obtain some operational funding for certain holiday service that will benefit the events.
- North County has no service on Sundays and holidays, which is a major service gap.
  - Development along U.S. 1 north of PGA Boulevard should have service.
- Service schedules can negatively impact ridership efficiency.
  - Look at farebox recovery ratio for service span improvements.
- The Glades area needs more funding for operations and longer hours.
- Look at the clientele and focus service improvements on the groups that most need it:
  - Transit dependent areas
  - Eastern core communities
  - Glades
- Consider “seasonal adjustments” in schedule to reflect dynamic travel conditions throughout the year.
- Paratransit - Fixed route schedule adjustments would need to be mirrored by paratransit service span improvements.
- Pilot project - Make service span improvements a pilot project. Service improvements take time to become successful. Don’t judge too early following implementation. Communicate to riders that the service is a pilot and if they don’t use it the service may be cut back.
- Service span reports should reflect when service ends, not the end of the route.

3.3.4 Workshop Table 4 – Marketing Initiatives

Palm Tran staff presented current marketing initiatives and asked attendees how Palm Tran should promote riding the bus to include and attract choice riders and keep existing riders. Attendees made the following comments:

- Public outreach to educational institutions and communities. Put Palm Tran 101 information at the libraries since these locations currently sell bus passes. In addition to libraries, other locations such as the DMV, grocery store, drug store locations could also be targeted to provide Palm Tran 101 information.
- Consider reaching out to business and other groups to create relationships with new potential clients and highlight benefits to businesses and employees, e.g., in some cities developers or businesses have provided free passes to new residents or employees.
- Embrace and use technology. Add WI-FI on buses. Setup a website like SunPass, PayByPhone, or ParkMobile to purchase and replenish fares. Work on obtaining instantaneous feedback/information from customers.
- Have clear, concise, short and friendly communications, the On Route Newsletter in particular.
- Have a color scheme and advertisements would follow the Palm Tran's color scheme. Should Palm Tran not sell advertisement space to keep the brand clean?
- Palm Tran should work with communities/private developers to expand bus routes.
- Consider validating bus passes when taking transit to destinations.

3.3.5 Workshop Table 5 – Financial Sustainability

Staff at this table provided an overview of Palm Tran's annual budget – revenues and expenses, and explained the various grants used to provide Palm Tran and Palm Tran Connection. Palm Tran Service Board Members asked a variety of questions related to the difference between capital and operations funding and the ability to leverage funding opportunities. They offered ideas, listed below, to expand funding or make operations more efficient, recommended enhancements to increase ridership (which in turn helps increase funding), and requested additional information.

Expand Funding or Be More Efficient

- Full fare policy;
- Reduce cash handling costs;
- A special taxing district;
- A sales tax;
- Working with developers and municipalities for bus bay and bus stop right-of-way;

- Alternate fuel vehicles (including supportive infrastructure);
- Paratransit changes;
- Change operator relief strategy, e.g., move away from one relief car per bus operator;
- Optimize routes; routes on corridors only (grid); and
- Seek new/enhanced funding (including fares) and grants.

Increase Ridership

- Provide Wi-Fi access and outlets on vehicles;
- Allow non-cash payment methods, particularly credit/debit cards, and mobile ticketing;
- Provide service to the trip generators; and
- Focusing on new markets (make attractive to millennials).

Additional Information Requests

- Break out fixed route service from paratransit for costs and revenues;
- Palm Tran comparison with similar agencies regarding revenue, fare box recovery, etc.;
- Other options (e.g., Uber) for the first/last mile to provide connections to fixed route to make routes more efficient and reduce paratransit needs;
- Spacing requirements/policy for stops and stops with shelters; and
- Gas tax trends for the future.

3.4 Palm Tran Employee Survey

An online survey of Palm Tran employees was conducted to gain feedback on the perception of customer satisfaction, ranked information on customer needs, components of quality of service, and recommendations on opportunities to improve service. The 10-question survey was open for input from April 8, 2016 through April 17, 2016 and is shown in Appendix B. The raw results also are in Appendix B and are summarized below. A total of 46 responses were received, and for many questions 44 responses were on received.

Of the responses, 46% of responses suggest that Palm Tran's customer service is either Excellent (11%) or Good (35%). Another 39% suggest that Palm Tran customer service needs improvement. Table 9 provides the number for each response category.

Table 9 How do you think the average Palm Tran customer would describe the quality of service provided?

Excellent	5
Good	16
Average	7
Needs Improvement	18
# of responses	46

Table 10 shows how employees rated the quality of service provided. Palm Tran's highest rated quality of service factors were Safety, Ability to Find Schedule and Route Information, and Seat Availability. Vehicle Cleanliness and Courtesy also ranked highly. Frequency, Hours of Service, and On-Time Arrivals were rated the lowest in terms of quality of service with On-Time Arrivals ranking the lowest.

Table 10 Please indicate the quality of service Palm Tran currently provides for the following services:

	Ability to Find Schedule and Route Information	Frequency	Safety	Vehicle Cleanliness	Seat Availability	Hours of Service	Courtesy	On-Time Arrivals
Excellent	12	8	14	12	13	10	10	7
Good	20	9	22	11	20	6	12	8
Average	9	11	6	12	7	9	12	11
Needs Improvement	3	16	2	9	4	19	10	18
# of responses	44							

Table 11 shows the types of complaints employees have heard, or heard about. On-Time Arrivals was by far the top complaint according to the survey. Courtesy, Frequency, and Hours of Service were also high on the list of customer complaints.

Table 11 Please indicate what you understand to be the top complaints from customers (check all that apply).

Complaint	Number of Complaints
Courtesy	18
Safety	5
On-Time Arrivals	35
Frequency	18
Hours of Service	19
Seat Availability	3
Vehicle Cleanliness	9
Other	2
# of responses	44

When it comes to the most important factor for quality transit service Safety was most commonly noted. Figure 33 shows the factors provided in the service and the rankings (1 is highest priority and 12 the lowest) for each. The survey required the “Other” category to be ranked, and was placed last if a respondent had no additional suggestions. On-Time Arrivals, Courtesy, and Hours of Service were also considered important. Seat Availability, Payment Options and Feasibility to Find Schedule and Route Information were among the least important factors.

Figure 33 Please rank what you consider to be most important for quality transit service.

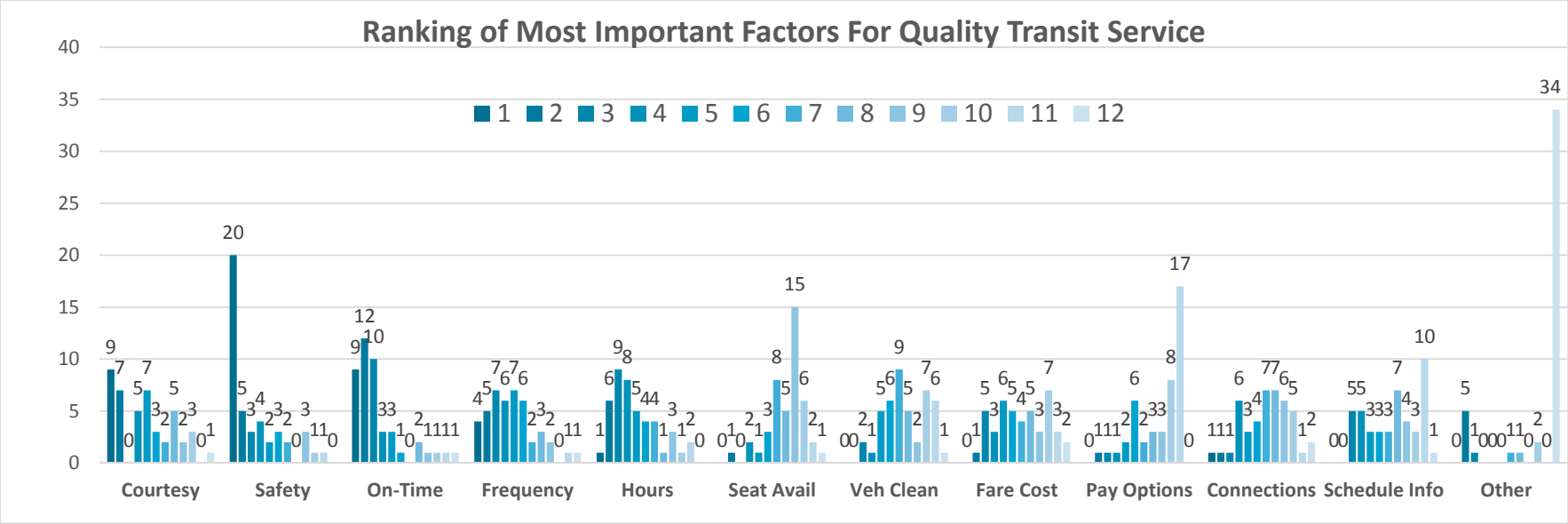


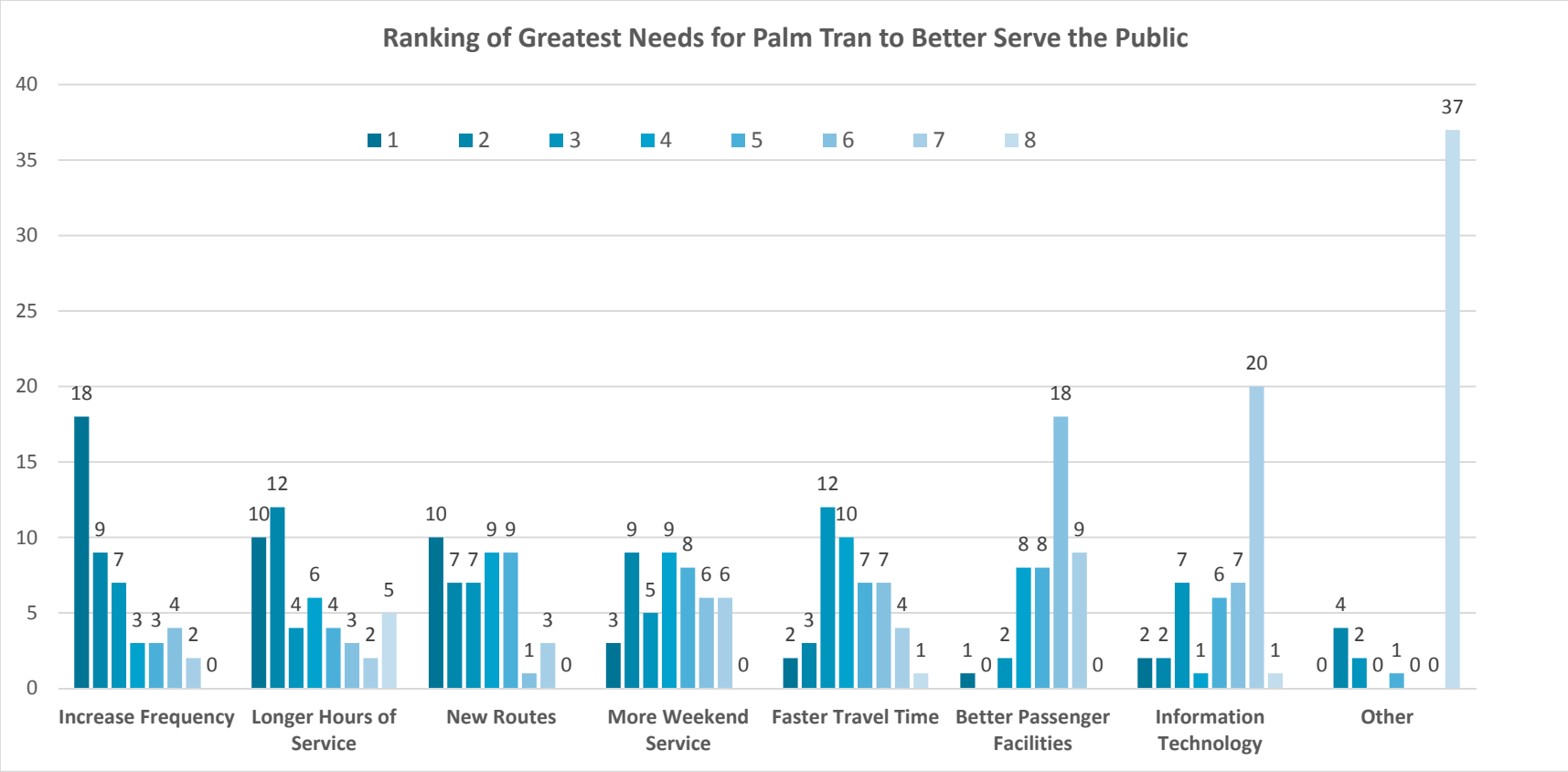
Figure 34 shows employees thoughts on the greatest needs for Palm Tran to improve service (1 is highest priority and 8 the lowest). The survey required the "Other" category to be ranked, and was placed last if a respondent had no additional suggestions. Increased Frequency was determined to be the greatest need for Palm Tran. Longer Hours of Service and New Routes were also considered to be great needs. Better Passenger Facilities and Information Technology were considered to be less important.

The next question asked employees to identify the best opportunities for Palm Tran to improve service. The full set of responses is in Appendix B. Representative answers are:

- Extend hours of operation
- Incorporate new services, such as express bus
- Review existing routes and make appropriate changes to improve efficiency, east-west connectivity, and add routes based on travel patterns and needs of Palm Tran users
- Improve customer service by hiring more customer service agents and extending business hours throughout the weekend
- Ensure on-time service
- Redesign routes to account for consumer driven service to better compete with on-demand ride sharing services such as Uber and Lyft
- Include more frequent service and more buses on Palm Tran's most popular routes
- Educate Operators, Supervisors, and Customers on IGO system
- Incorporate community circulars, i.e. senior shopper hopper service
- Provide rewards and incentives for frequent Palm Tran users
- Develop a mobile application and/or online application that can be used for ticketing, tracking, and payment; Implement smart card technology
- Increase the number of routes and design the systems to include more direct routes
- Increase service to rural areas
- Promote better coordination between Palm Tran and Tri-Rail; Bus and train schedule coordination
- Improve scheduling, especially at transfer points
- Offer Wi-Fi on buses
- Provide better service to malls and other economic centers
- Improve quality of bus stops and shelters

- Incorporate transit signal priority
- Make improvements to routes from Boca Raton to West Palm Beach along Highway 441
- Create more limited-stop service on Military Trail and Okeechobee Blvd. and extend the US 1 BOLT
- Break Routes 1, 2, and 3 into pieces
- Extend service to the Lake Worth Beach

Figure 34 Please rank what you believe to be the greatest needs for Palm Tran to better serve our public over the next 5 to 10 years.



The next two questions asked employees to identify routes that should be improved to meet customer needs, and routes needing different schedules. A large number of routes were recommended for both questions. A third question asked about routes needing safety improvements.

Routes (or areas) that should be improved to meet customer needs

- Route 1
- Route 2
- Route 3
- Route 4
- Route 31
- Route 43 - Okeechobee
- Route 45
- Route 52
- Route 62
- Route 80 – Delray Beach
- Route 81
- Jog Road North to Okeechobee Boulevard
- Create a new route on 441 from Boca to West Palm Beach
- Belle Glade
- Lake Worth
- Jog Road from Okeechobee Boulevard south to Lantana Road
- Route 4 on Haverhill needs service going south on 441 04 SR-7 from Okeechobee Boulevard to Boca Raton
- Route 62 should run later
- 441 and Jog Road need to be serviced better
- All of the Western Communities

Routes that should operate on a different schedule (days or hours)

- Route 1

- Route 2, especially on the weekends
- Route 3
- Route 4
- Route 10
- Route 40
- Route 41
- Route 43
- Route 44
- Route 60
- Route 61
- Route 62
- Route 70
- Route 80
- Route 91
- Route 92
- All Routes
- Wellington Mall Routes should run until 10 pm to catch employees that work until 9:30 pm
- Route 4 and other routes may not be needed on Saturdays but certainly longer service on weeknights and weekends
- Frequency on most frequently used routes
- All cross towns
- East and west routes in general should run longer; those are feeder buses to your north and south routes

Routes or locations that require safety improvements

- Route 1
- Route 4

- Route 10
- Route 40
- Route 41
- Route 44
- Route 45
- Glades Region
- Small city streets are unsafe for buses, especially at night. Cars parked on both sides of the road can cause major issues.
- Old Dixie Hwy. and West 33rd Street
- 45th Street in front of Walgreens
- Both routes 80 and 91 which service shopping centers with a lot of heavy foot traffic
- Southern Blvd is growing but cars travel too fast. Crossing is dangerous and traffic calming is needed.

The last questions asked employees to provide any additional comments that would be helpful in preparing the TDP. Many of the comments overlapped with issues addressed above, and the full set of responses is in Appendix B. Several comments not identified earlier are below.

- We need more Palm Tran Connection buses to improve our on-time performance, I'd say hire more reservationists but that wouldn't stop us from having hundreds of applications from clients and a shortage of routes. Invest in more buses. On top of that, these driver's GPS need to be fixed or upgraded; there times where a clients destination point is on the left and the GPS would say its 2 lights over on the right; other times clients would have specific notes on their file to help the driver find their location and the manifest would have a problem where the notes won't appear, this is a big issue being drivers rely on those notes to find the clients in a timely fashion to meet the on-time performance.
- Bus stop signs are not visible at night. A few years ago, new signs were introduced, then it was realized that they could not be seen. So, a yellow strip was added to the pole. But, the sign itself is not visible. Also, the bus numbers on the actual bus are NOT visible at night. If there is not a light shinning directly on the number, you cannot see it. I have mentioned this MANY times over the years.
- Change needs to happen more often to keep up with the dynamic atmosphere that our riders demand.
- Delete Route 42, return to service the beaches in Palm Beach County, take Route 1 and 3 out of Gardens Mall and send them to Jupiter

- The Jupiter area, Palm Tran needs to go back into. Especially on US 1
- Routes that go up into apartment complexes should be eliminated, time is lost when you have a one way in one way out, shopping centers that don't have bus stops along the outskirts where you aren't in jeopardy of being backed into or having an accident with a pedestrian
- CASE (copy and steal everything). Please refer to BCT's Major Update done in 2014 as a starting point for Palm Tran

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APPENDIX C
Goals and Objectives

- Palm Tran Vision and Mission
- Goals and Objectives

C

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Palm Tran
Transit Development Plan
FY 2017-2026

Technical Memorandum Number 2
Goals and Objectives

September 2016

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Table of Contents

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1.0 Introduction

The State of Florida Public Transit Block Grant Program was enacted by the Florida Legislature to provide a stable source of funding for public transit. The Block Grant Program requires public transit service providers, such as Palm Tran (operating as a division of Palm Beach County), to develop, adopt, and annually update a 10-Year Transit Development Plan (TDP). This process helps to ensure that the provision of public transportation is consistent with the mobility needs of the local communities. Under legislation that became effective February 20, 2007, the TDP must undergo a major update every five years.

Major TDP updates involve more substantial reporting requirements than annual minor updates. Development of the TDP includes a review of planning and policy documents, a documentation of study area conditions, demographic characteristics, current transit services, creation of a financial plan, and incorporation of public input through public involvement efforts.

Palm Tran is in the process of undertaking a major TDP update through a two-phase approach. Deliverables produced during Phase 1 include two technical memorandums that document the baseline conditions, summary of public involvement activities conducted, and development of updated goals, objectives, and policies for Palm Tran.

Under Phase 2, the draft and final 10-year TDP will be produced along with two supporting technical memorandums. These documents will summarize the remaining activities required of a major TDP update as required by Section 341.071, Florida Statutes (F.S.). The TDP Major Update will be presented to the Palm Beach County Board of County Commissioners for adoption and submitted to the Florida Department of Transportation (TDP) by the December 1, 2016, deadline.

This second technical memorandum is the last produced for Phase 1 of the TDP major update process and includes the following section in addition to this introduction:

- **Section 2** presents the **Goals and Objectives**, to serve as a policy guide for implementation of the 2017-2026 TDP.

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2.0 Goals and Objectives

Goals and objectives are an integral part of any transportation plan because they provide the policy direction to achieve the community's vision. The goals and objectives presented in this section were prepared based on the review and assessment of existing conditions, feedback received during the public involvement process, and the review of local transportation planning documents. This section presents the draft goals and objectives to support the community's vision for transit services over the next 10 years as documented in the Palm Tran FY 2017-2026 TDP.

Palm Tran is the top choice for mass transportation in Palm Beach County. The 2017-2026 TDP will serve as the agency's 10-year strategic plan as Palm Tran transforms itself into a world-class transit system. During this period, a major Palm Tran initiative, the Comprehensive Operational Assessment (COA) and transit system redesign, known as the Route Performance Maximization (RPM), will occur in which the entire Palm Tran transit system network will be revamped to maximize efficiency and ridership.

Palm Tran Vision and Mission

The FDOT *Guidance for Producing a Transit Development Plan* outlines content required for a TDP Major Update based on the requirements of Sections 339.135, and 339.155, Florida Statutes, as described in Chapter 14-73, (https://www.flrules.org/gateway/RuleNo.asp?id=14-73.001).

Agency vision, mission, and goals are required components of a TDP under this Rule and require a thorough understanding of the general public's expectations and desires for local transit services. Below is the version of the vision and mission recently developed by Palm Tran staff.

Vision: To enhance the quality of life for those who live, work and play in Palm Beach County.

Mission: To provide access to opportunity for everyone; safely, efficiently and courteously.

Goals and Objectives

Through coordination with Palm Tran staff and the Palm Beach Metropolitan Planning Organization staff, the draft goals and objectives recommended for the 10-year planning horizon are presented in Table 1. As the agency moves through the RPM process, further refinements to the goals and objectives may be made. Any changes will be updated in subsequent Annual Updates of the TDP.

Specific strategies were identified for each objective. The current value and target for each strategy were provided by Palm Tran staff.

Table 1 Palm Tran Draft Goals and Objectives

Goal 1:	Maximize the efficiency and capacity of the existing Palm Tran system.
Objective 1.1	**Increase annual fixed-route ridership consistently from 2016 to 2026.**
Strategy 1.1.1	Many of the strategies outlined in this section can and should increase fixed-route ridership. In the next few years, Palm Tran will develop and pursue a number of strategies to increase fixed-route ridership including, but not limited to, our pending Route Performance Maximization (RPM), marketing initiatives as well as multiple user-friendly improvements to the system and its infrastructure.
Current Value	10.7 million annual boardings (FY 2015)
Target	16 million annual boardings by 2026 (50% increase)
Objective 1.2	**Improve span and/or frequency of service on high-ridership routes to better serve existing ridership patterns.**
Strategy 1.2.1	Implement service span improvements on key routes
Current Value	15 of 33 (45%) of Palm Tran routes have a 14-hour service span; 6 of 33 (20%) Palm Tran routes have a 16-hour service span or greater
Target	80% of all Palm Tran routes have 14-hour or better service span by 2021; 40% of all routes have 16-hour or better service span by 2026
Strategy 1.2.2	Reduce percentage of Palm Tran routes with 60-minute or worse frequency
Current Value	17 of 33 (50%) Palm Tran routes have a 60-minute frequency or worse
Target	No greater than 25% of routes have frequencies of 60 minutes or worse by 2026
Strategy 1.2.3	Increase percentage of Palm Tran routes with 15-minute frequency or better
Current Value	1 of 33 routes (3%) have a 15-minute frequency or better
Target	No less than 20% of all Palm Tran routes with frequencies of 15 minutes or less by 2026.
Objective 1.3	**Increase overall Palm Tran productivity.**
Strategy 1.3.1	Establish a minimum threshold for fixed-route productivity; evaluate and modify routes that fall below 60% / 75% of that system standard
Current Value	As of Fiscal Year-to-Date 2016, fixed-route systemwide productivity is 19.4 passengers per hour (2016 Fiscal Year-to-Date); with no Palm Tran fixed-route standard for route productivity. Current paratransit productivity is 1.5 passengers per hour (2016 Fiscal Year-to-Date)
Target	As an annual goal, maintain a fixed-route systemwide productivity of twenty-five (25) passengers per hour
Target	As an annual goal, maintain a paratransit systemwide productivity of two (2) passengers per hour
Strategy 1.3.2	Evaluate implementation of time-of-day and/or time of year scheduling to best meet demand in varying traffic conditions
Current Value	As of date, no evaluation time-of-day and/or time-of-year scheduling

Target	100% of all Palm Tran fixed-routes evaluated by 2021
Objective 1.4	**Evaluate potential for high-capacity premium transit service.**
Strategy 1.4.1	Conduct premium transit corridor studies including express bus, BRT strategies, and light rail/streetcar technologies.
Current Value	As of date, no evaluation of premium transit corridor studies evaluated
Target	Lead or assist in at least five (5) premium transit corridor analyses by 2021
Objective 1.5	**Continue to explore improvements that reduce travel time such as stop consolidation and limited-stop service.**
Strategy 1.5.1	Consolidate all stops that are inconsistent with Palm Tran's 1/10 mile stop-distance threshold; evaluate feasibility of additional limited-stop service on key corridors
Current Value	As of Fiscal Year-to-Date 2016, one limited-stop/BOLT-style service in operation; approximately 10% of Palm Tran bus stops are closer than 528 feet to each other
Target	Three limited-stop/ BOLT-style services implemented by 2021; less than 1% of all Palm Tran stops closer than 528 feet (to each other) by 2021
Goal 2	**Deliver safe, reliable, and accessible transit that is environmentally friendly.**
Objective 2.1	**Provide safe service to Palm Tran customers.**
Strategy 2.1.1	Reduce fixed-route collisions (preventable and non-preventable) through annual operator safety training
Current Value	As of Fiscal Year-to-Date 2016, 0.8 preventable collisions per 100,000 fixed-route revenue miles; 2.7 non-preventable collisions per 100,000 fixed-route revenue miles
Target	As an annual goal, one (1) preventable collision per 100,000 fixed-route revenue miles
Target	As an annual goal, one (1) non-preventable collision per 100,000 fixed-route revenue miles
Strategy 2.1.2	Reduce paratransit preventable collisions (preventable and non-preventable) through oversight and operator testing
Current Value	As of Fiscal Year-to-Date 2016, 0.8 preventable collisions per 100,000 paratransit revenue miles; 2.4 non-preventable collisions per 100,000 paratransit revenue miles
Target	As an annual goal, one (1) preventable collision per 100,000 paratransit revenue miles
Target	As an annual goal, one (1) non-preventable collision per 100,000 paratransit revenue miles
Strategy 2.1.3	Pursue additional safety/security improvements including audio recording capability and/or enhanced security onboard buses and/or at bus stops
Current Value	As of date, there is no audio recording onboard buses and no off-duty law enforcement/ security on buses or at bus stops
Target	Enable audio recording onboard all Palm Tran buses by 2017
Target	Explore feasibility of contracted services with off-duty law enforcement to enhance system safety by 2021

Objective 2.2	**Maintain all vehicles and facilities in a state of good repair.**
Strategy 2.2.1	Manage the average age of vehicles within state and federal guidelines and replace vehicles according to established life cycles
Current Value	Average age of fixed-route rolling stock: 6.1 years; paratransit rolling stock: 1.5 years
Target	As an annual goal, maintain six (6) years average age of rolling stock for fixed-route fleet and five (5) years average age of rolling stock for paratransit fleet.
Strategy 2.2.2	Adhere to federal requirements regarding preventable maintenance inspections and ensure that critical inspection recommendations are completed in a timely manner
Current Value	As of Fiscal Year-to-Date 2016, 99.5% of all inspections completed within required mileage
Target	As an annual goal, 100% of all inspections completed within required mileage
Strategy 2.2.3	Improve mean distance between vehicle road failures/road calls
Current Value	As of Fiscal Year-to-Date 2016, mean distance between fixed-route vehicle road failures/road calls is 3,723 miles; mean distance between paratransit vehicle road failures/road calls is 27,849.
Target	As an annual goal, a minimum of 5,000 miles between fixed-route vehicle road calls/ service interruptions
Target	As an annual goal, a minimum of 12,500 miles between paratransit vehicle road calls/ service interruptions
Objective 2.3	**Provide timely Palm Tran service.**
Strategy 2.3.1	Establish on-time metrics consistent with fixed-route industry standards; conduct annual review of fixed-route on-time performance and compare to prior years.
Current Value	As of year-to-date FY 2016, fixed-route on-time percentage is 86%*
Target	As an annual goal, Palm Tran's monthly fixed-route systemwide on-time performance to be no lower than 75%
Strategy 2.3.2	Conduct annual review of paratransit on-time performance and compare to prior years.
Current Value	As of year-to-date FY 2016, paratransit on-time percentage is 93%
Target	As an annual goal, Palm Tran's monthly paratransit systemwide on-time performance to be no lower than 92%
Objective 2.4	**Implement improvements to ensure safety, ADA accessibility and connectivity across all Palm Tran facilities, including vehicles, bus stops and buildings.**
Strategy 2.4.1	Implement projects and leverage planned/existing construction projects to increase the number of ADA accessible bus stops.
Current Value	Approximately 40% (1,250 out of 3,200 bus stops) are ADA-accessible
Target	60% of all Palm Tran bus stops to be ADA-accessible by 2021**.**
Strategy 2.4.2	Work with partner agencies to implement crosswalks and/or connecting sidewalks to bus stops.

Current Value	Zero crosswalks and/or connective sidewalks implemented in FY 2016
Target	10 crosswalks and/or connective sidewalks constructed by 2021.
Objective 2.5	**Promote environmental sustainability by minimizing Palm Tran's carbon footprint.**
Strategy 2.5.1	Construct all new Palm Tran facilities to green/ LEED building standards for energy efficiency and sustainable design
Current Value	Zero new facilities constructed
Target	100% of all future Palm Tran facilities constructed to green/LEED building standards for energy efficiency and sustainable design
Strategy 2.5.2	Explore alternative energy sources for Palm Tran's fleet to minimize vehicle emissions.
Current Value	No alternative energy sources evaluated in FY 2016.
Target	By 2021, evaluate alternative fuel options for Palm Tran and begin process to transition technologies to best suit the agency and community.
Goal 3	**Provide user-friendly and innovative service that connects communities**
Objective 3.1	**Expand WiFi and introduce other passenger amenities on all buses and bus stops**
Strategy 3.1.1	Implement WiFi or similar technology onboard all key fixed-route and paratransit buses by 2021.
Current Value	As of Fiscal Year-to-Date 2016, no fixed-route buses or paratransit buses have onboard WiFi fully operational
Target	100% of fixed-route and paratransit fleet with WiFi or similar technology by 2021
Objective 3.2	**Provide service on holidays that Palm Tran does not currently operate.**
Strategy 3.2.1	Evaluate operational impacts of operating on the seven holidays Palm Tran does not currently operate
Current Value	Palm Tran does not provide service on seven (7) holidays
Target	Three (3) or fewer holidays without Palm Tran service by 2021.
Objective 3.3	**Assess and continually improve Palm Tran's integration in a multimodal mobility system.**
Strategy 3.3.1	Integrate service with SFRTA, BCT, and other transit providers by reducing average scheduled transfer time for key routes.
Target	As an annual goal, reduce average scheduled transfer time by 25% for key routes when feasible
Strategy 3.3.2	Implement a convenient electronic fare payment system that is interoperable with other regional providers to potentially include improvements such as mobile ticketing and/or offboard fare payment, etc.
Current Value	Currently Palm Tran does not have an interoperable fare card system
Target	Implementation of an interoperable fare card system by 2021.
Strategy 3.3.3	Work with first/last mile providers such as SkyBike and other potential providers, such as transportation network companies (TNCs) to improve connectivity challenges.

Current Value	Currently Palm Tran has five stops within 300 feet of a bicycle rental station. No current agreement with first/last mile providers (such as TNC's) to improve connectivity challenges
Target	10% of all Palm Tran bus stops within 300 feet of a bicycle rental station by 2021
Target	By 2021, conduct an evaluation of partnership with TNC's to determine feasibility for Palm Tran and the community
Objective 3.4	**Implement regional coordination and public involvement components in all relevant aspects to the transportation planning process including transit-oriented development (TOD).**
Strategy 3.4.1	Participate in regional initiatives to promote mixed-use development and TOD.
Current Value	Staff attends three meetings annually as part of TOD working group
Target	Attend four meetings annually and actively participate in thought process
Strategy 3.4.2	Develop criteria to identify transit stops and corridors with TOD potential.
Current Value	As of Fiscal Year-to-Date 2016, no TOD criteria developed
Target	Criteria for Palm Tran stops with TOD potential developed by 2021
Strategy 3.4.3	Encourage transit-supportive infill development and redevelopment near Palm Tran bus stops.
Current Value	As of Fiscal Year-to-Date 2016, zero private-sector meetings attended
Target	As an annual goal, attend four (4) private-sector meetings related to infill development and/or redevelopment and/or provide at least three (3) prescriptive reviews of local comprehensive plans annually
Objective 3.5	**Seek and introduce innovative technological improvements to enhance the user experience.**
Strategy 3.5.1	Implement ITS (Intelligent Transportation Systems) technologies such as transit signal priority (TSP) and queue jumping to key transit corridors
Current Value	Zero routes with transit signal priority or queue jumping
Target	Four routes with transit signal priority by 2021; two routes with queue jumping by 2021
Strategy 3.5.2	Implement amenities at high ridership locations such as automated ticket machines, USB charging stations, air-cooling technologies and/or WiFi at bus stops.
Current Value	Currently, zero stops with any of these amenities
Target	Five high ridership stops with any of these amenities by 2021
Goal 4	**Improve the public image of Palm Tran services**
Objective 4.1	**Develop a campaign to strengthen Palm Tran's visibility and image in the community.**
Strategy 4.1.1	Perform market research to assess the current Palm Tran public image and develop strategies to enhance the public image.
Current Value	As of date, no market research assessments completed
Target	Market research study completed and key recommendations initiated by 2021

Strategy 4.1.2	Conduct an annual attitudinal survey
Current Value	Most recent onboard Palm Tran attitudinal survey conducted in November 2015
Target	As an annual goal, conduct one survey per year
Strategy 4.1.3	Development of new Palm Tran website and/or brand/logo
Current Value	Current website has been in place for years, logo last changed in 1996
Target	Launch of new Palm Tran website and/or logo by 2026
Strategy 4.1.4	Engage community directly through community events and other types of public outreach
Current Value	As of Fiscal Year-to-Date 2016, five (5) community events attended by Executive Director and/or Executive Leadership Team
Target	As an annual goal, twenty (20) community events attended by Executive Director and/or Executive Leadership Team
Objective 4.2	**Provide proactive and effective customer service to all Palm Tran customers**
Strategy 4.2.1	Reduce total number of fixed-route complaints
Current Value	As of Fiscal Year-to-Date 2016, 3.7 complaints per 10,000 fixed-route passenger boardings
Target	As an annual goal, one (1) complaint per 10,000 fixed-route passenger boardings
Strategy 4.2.2	Reduce total number of paratransit complaints
Current Value	As of Fiscal Year-to-Date 2016, 2 complaints per 10,000 paratransit boardings
Target	As an annual goal, two (2) complaints per 1,000 passenger boardings
Strategy 4.2.3	Provide customer service anytime Palm Tran is in service
Current Value	Customer service is not provided on Sundays or holidays
Target	Customer service anytime that bus service is provided by 2021
Strategy 4.2.4	Provide travel training and outreach to break down barriers and promote fixed-route ridership
Current Value	Outreach and travel training is conducted per request
Target	As an annual goal, conduct eight travel training /outreach community events
Objective 4.3	**Enhance Palm Tran street infrastructure to meet customer demand.**
Strategy 4.3.1	Increase the percentage of Palm Tran bus stops with a bus shelter
Current Value	Approximately 19% bus stops have a bus shelter
Target	25% of bus stops with a bus shelter by 2021
Strategy 4.3.2	Increase the percentage of Palm Tran bus stops with a bus bench
Current Value	Approximately 36% bus stops have a bus bench
Target	50% of bus stops with a bus bench by 2021

Strategy 4.3.3	Conduct detailed reviews of private development projects and coordinate with County staff and/or other stakeholders to ensure that transit improvements are included
Current Value	As of Fiscal Year-to-Date, ten bus shelter easements secured
Target	As an annual goal, secure at least 20 transit infrastructure easements and/or other bus stop improvements (including bus bays) built by development projects.
Strategy 4.3.4	Enhance existing and provide new park and ride facilities to best meet customer demand.
Current Value	As of Fiscal Year-to-Date 2016, zero park and ride locations provided or enhanced
Target	Five (5) new and/or existing park and ride facilities constructed and/or enhanced by 2021
Goal 5	**Maximize Palm Tran resources**
Objective 5.1	**Work with community stakeholders to promote and establish a dedicated transit funding source.**
Strategy 5.1	Develop a plan to establish a dedicated transit funding source
Current Value	No current plan to establish a dedicated transit funding source
Target	Completed plan by 2021; establishment of a dedicated transit funding source by 2026.
Objective 5.2	**Actively pursue additional and sustainable sources of funding.**
Strategy 5.2.1	Apply for and receive more competitive state and federal service and capital grants
Current Value	As of Fiscal Year-to-Date 2016, no competitive grant applications submitted
Target	50% success rate of competitive grant applications annually
Strategy 5.2.2	Pursue additional funding agreements (either public-private and/or public-public partnerships)
Current Value	As of Fiscal Year-to-Date 2016, three funding agreements (Century Village, Lakes of Delray, Village of Wellington) under contract
Target	Eight (8) new agreements entered into by 2026
Strategy 5.2.3	Pursue additional sources of funds such as sales tax, increased percentage of local option gas tax and/or a mobility fee, etc.
Current Value	Currently no sales tax allocation or enactment of a mobility fee to support transit, current percentage of gas tax allocated to transit is 67%
Target	Imposition of a mobility fee and/or increased percentage of gas tax and/or county sales tax allocation to support transit by 2026.
Objective 5.3	**Effectively steward public resources**
Strategy 5.3.1	Improve fixed-route farebox recovery ratio by minimizing fare evasion and other operational improvements
Current Value	As of Fiscal Year-to-Date 2016, 18% fixed-route farebox recovery ratio
Target	23% fixed-route farebox ratio as an annual goal

Strategy 5.3.2	Develop an employer and/or college/university pass and/or discount program to attract new customers
Current Value	Zero employer and/or college/university discount program implemented
Target	Employer and/or college/university discount program implemented by 2021

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APPENDIX D
Existing Service Review

- Existing Transit Service Data Review and Profile
- Trend Analysis and Peer Review
- Existing Transportation Services Inventory

D

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Palm Tran
Transit Development Plan
FY 2017-2026

Technical Memorandum Number 3
Existing Service Review

September 2016

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1.0 Introduction

The State of Florida Public Transit Block Grant Program was enacted by the Florida Legislature to provide a stable source of funding for public transit. The Block Grant Program requires public transit service providers, such as Palm Tran (operating as a division of Palm Beach County), to develop, adopt, and annually update a 10-Year Transit Development Plan (TDP). This process helps to ensure that the provision of public transportation is consistent with the mobility needs of the local communities. Under legislation that became effective February 20, 2007, the TDP must undergo a major update every five years.

Major TDP updates involve more substantial reporting requirements than annual minor updates. Development of the TDP includes a review of planning and policy documents, a documentation of study area conditions, demographic characteristics, current transit services, creation of a financial plan, and incorporation of public input through public involvement efforts.

Palm Tran is in the process of undertaking a major TDP update through a two-phase approach. Deliverables produced during Phase 1 include two technical memorandums that document the baseline conditions, summary of public involvement activities conducted, and development of updated goals, objectives, and policies for Palm Tran.

Under Phase 2, the draft and final 10-year TDP will be produced along with two supporting technical memorandums. These documents will summarize the remaining activities required of a major TDP update as required by Section 341.071, Florida Statutes (F.S.). The TDP Major Update will be presented to the Palm Beach County Board of County Commissioners for adoption and submitted to the Florida Department of Transportation (TDP) by the December 1, 2016, deadline.

This third technical memorandum is the first produced for Phase 2 of the TDP major update process and includes the following sections in addition to this introduction:

- **Section 2** documents the **Existing Transit Service Data Review and Profile**, which describes in detail the existing fixed-route and paratransit services provided through Palm Tran.

- **Section 3** documents the **Trend Analysis and Peer Review** completed to assess how efficiently Palm Tran supplies fixed-route transit service and how effective those services meet the needs of the area, a trend analysis of critical performance indicators was conducted to examine the performance of its fixed-route and paratransit services. In conjunction with the trend analysis, a peer review was conducted to compare various Palm Tran fixed-route and paratransit performance characteristics to a group of transit peers.

- **Section 4** documents the **Existing Transportation Services Inventory**, which includes an inventory compiled of public and private transportation providers in Palm Tran's service area.

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2.0 Existing Transit Service Data Review and Profile

Transit services in Palm Beach County have been provided by Palm Tran through Palm Beach County since 1971. Palm Tran provides fixed-route bus service, Palm Tran Connection paratransit, and trolley service countywide. This section describes in detail the transit services provided by Palm Tran, followed by a data review and profile of existing services.

2.1 Existing Fixed-Route Service

Palm Tran operates 36 fixed-route routes throughout the urbanized areas of Palm Beach County, including routes along the main corridors, including Route 1, The Bolt Route 1, Route 2, Route 3, or Route 4. Service is concentrated in the eastern portion of the county due to the higher densities of residents and businesses found in those areas. The main transfer center is located at the Intermodal Transit Center in downtown West Palm Beach where passengers can connect to 10 Palm Tran routes or to Tri-Rail. Palm Tran also serves the remaining five Tri-Rail stations located within the county.

There are 14 timed transfer hubs throughout the county, including the Gardens Mall and the Mall at Wellington Green (each served by 5 Palm Tran routes), Town Center at Boca Raton, Veteran's Hospital, and Okeechobee Blvd/Military Trail (each served by 4 Palm Tran routes), Palm Beach Outlets, Downtown Lake Worth, Delray Square, Camino Real, and Boynton Beach Mall (each served by 3 Palm Tran routes), and River Bridge Center, Waterside Plaza, and West Tech/Belle Glade (each served by 2 Palm Tran Routes).

There are 19 free park-and-ride locations served by Palm Tran. Six of the park-and-ride lots are located at the Tri-Rail stations within the County in Boca Raton, Delray Beach, Boynton Beach, Lake Worth, and West Palm Beach. Three of the park-and-ride lots are located off the Florida Turnpike.

Many Palm Tran routes operate seven days a week. All buses are equipped with wheelchair ramps, automatics stop announcement systems, surveillance cameras, and bike racks. Weekday service is generally every 30 minutes during peak travel times and every 60 minutes off-peak, with timed-transfer points for efficient movement between north/south and east/west routes. Weekend service operates every 60 minutes.

2.1.1 Palm Tran Route Inventory and Characteristics

Palm Tran's existing fixed-route transit service is shown in Map 1. The map identifies the existing route structure, high ridership locations, transfer facilities, park-and-ride locations, and trip generators, including hospitals and medical centers, malls and shopping centers, colleges and universities, landmarks, and county parks and other facilities. Table 1 also provides a summary of the characteristics of each fixed-route operated by Palm Tran, including locations served and frequency/hours of service.

Map 1 Existing Transit Service

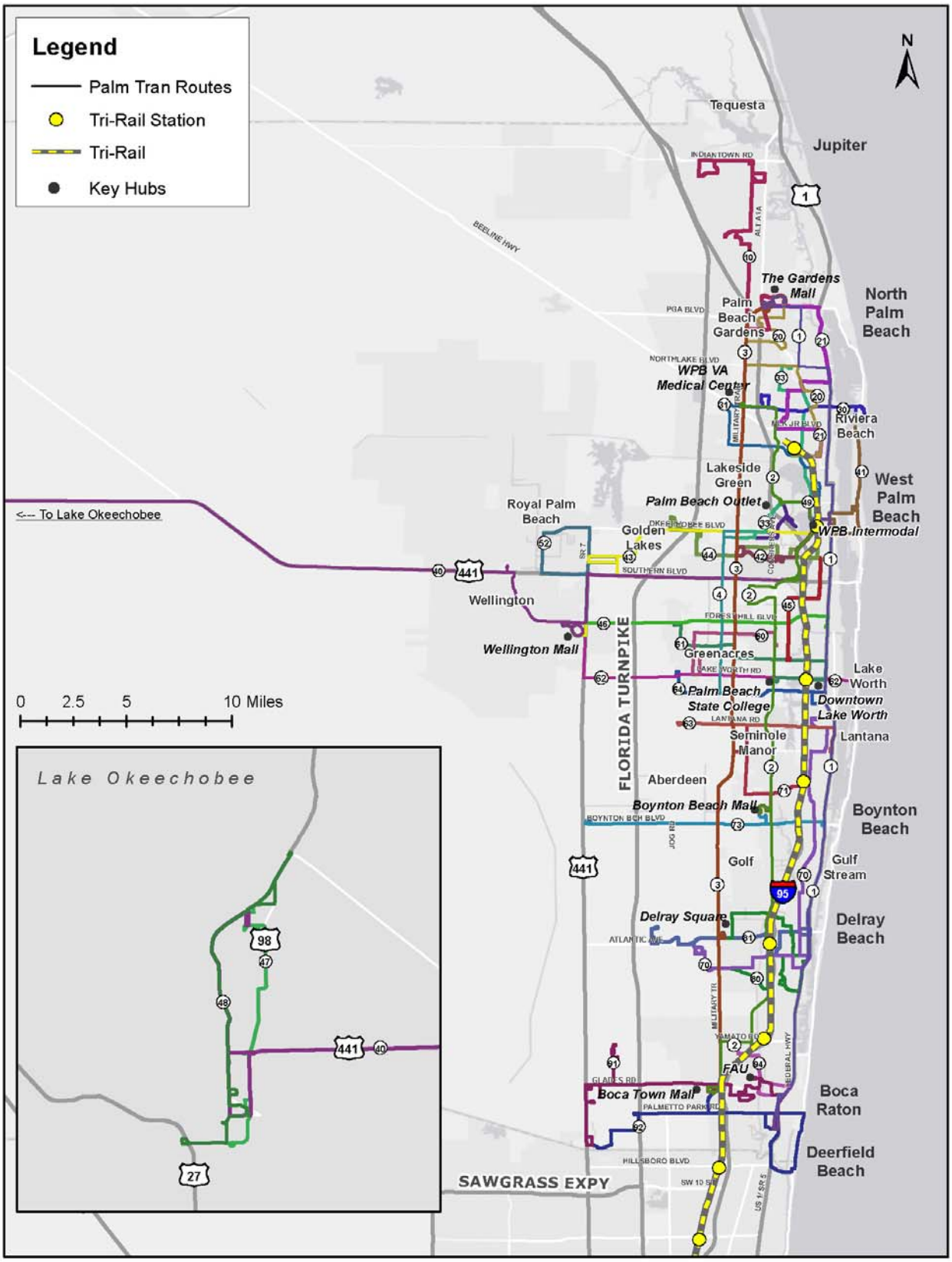


Table 1 Palm Tran Route Inventory and Characteristics

Route No.	Route	Key Location/Corridors Served	Weekday		Saturday		Sunday	
			Frequency (min)	Hours	Frequency (min)	Hours	Frequency (min)	Hours
1	Palm Beach Gardens to Boca Raton via US 1	Palm Beach Gardens, downtown West Palm Beach, Boynton Beach, West Palm Beach Tri-Rail Station	Peak: 20/min Off-peak: 30 min	16.5	30 min	15.5	30 min	10
1 "Bolt'	Limited-stop from Boca Raton to West Palm Beach	Gardens Mall/Palm Tran Park and Ride, West Palm Beach City Center, West Palm Beach Tri-Rail Station, Camino Square, Mizner Park	Peak only: 20 min (AM/PM)	4	-	-	-	-
2	VA Medical Center (Palm Beach Gardens) to Boca Raton via Congress Ave	Palm Beach Outlets, Palm Beach International Airport (PBIA), Boynton Beach Mall, Delray Tri-Rail Station, Boca Tri-Rail Station, Town Center Mall	30 min	16.5	30 min	15	60 min	9.5
3	Palm Beach Gardens to Boca Raton via Military Trail	Gardens Mall/Palm Tran Park and Ride, VA Medical Center, Rapids Waterpark, DMV, Lades Plaza	30 min	17	30 min	16	60 min	9.5
4	West Palm Beach to Greenacres via Haverhill Rd	Cross Country Plaza, Summit Pines, Palm Hill Apts, Military Crossing Shopping Center	90 min	11.5	60 min	9.5	-	-
10	North County Crosstown (Jupiter to Gardens Mall) via Military Trail	W. Jupiter Commerce Park/ Park and Ride, Florida Atlantic University (FAU), Nova Southeastern University	60 min	14	60 min	14	-	-
20	Gardens Mall to Mangonia Park Tri-Rail Station	Gardens Mall/Palm Tran Park and Ride, Palm Beach State College, Gardens Hospital, Mangonia Park Tri-Rail Station	Peak: 20 min Off-peak: 60 min	13.5	60 min	11	-	-
21	Gardens Mall to St. Mary's Hospital via US 1	Gardens Mall/Palm Tran Park and Ride, Palm Beach State College, North County Regional Library, St. Mary's Hospital	60 min	12.5	60 min	60 min	-	-
30	Riviera Beach Crosstown via Blue Heron Blvd	VA Medical Center, Seagull Industries, UPS Distribution Center, Phil Foster Park, Singer Island	Peak: 30 min Off-peak: 60 min	12.5	60 min	9	60 min	7
31	VA Medical Center to downtown West Palm Beach	VA Medical Center, Mangonia Park Tri-Rail Station, Blood Bank, West Palm Beach Tri-Rail Station, West Palm Beach Intermodal Transit Center	30 min	13.5	60 min	11	60 min	8

Route No.	Route	Key Location/Corridors Served	Weekday		Saturday		Sunday	
			Frequency (min)	Hours	Frequency (min)	Hours	Frequency (min)	Hours
33	Northlake to West Palm Beach via Australian and Palm Beach Lakes	Northlake Blvd, Kmart, Mangonia Tri-Rail Station, Palm Beach Outlets, Cross County Plaza	Peak: 30 min Off-peak: 60 min	14	60 min	11	60 min	8.5
40	West Palm Beach To Belle Glade via SR 80	West Palm Beach Intermodal Transit Center, West Palm Beach Tri-Rail Station, PBIA, Mall at Wellington Green, Palms West Hospital	60 min	17	60 min	15	60 min	9
41	Downtown West Palm Beach to Palm Beach Inlet	Palm Beach Town Hall, Palm Beach Atlantic University (PBAU), West Palm Beach City Hall, Judicial Center, West Palm Beach Tri-Rail Station, West Palm Beach Intermodal Transit Center	70-80 min	11	60 min	4	-	-
42	West Palm Beach to Military, Career Source Center	PBIA, CareerSource PBC, Centre Park, West Palm Beach Tri-Rail Station, West Palm Beach Transit Intermodal Transit Center	60 min	11				
43	West Palm Beach to Wellington via Okeechobee Blvd	Mall at Wellington Green, South Florida Fairgrounds, South University, Keiser University, Palm Beach County (PBC) Library, West Palm Beach Tri-Rail Station, West Palm Beach Intermodal Transit Center	30 min	16	60 min	13	60 min	9
44	West Palm Beach Crosstown via Belvedere Rd	Vista Center/ Keiser University, PBC Library, PBIA, West Palm Beach Tri-Rail Station, West Palm Beach Intermodal Transit Center, CityPlace	Peak: 30 min Off-peak: 60 min	13.5	60 min	12	60 min	8
45	West Palm Beach to Lake Clark Shores via Parker, Lake, and Florida Mango Road	West Palm Beach Tri-Rail Station, West Palm Beach Intermodal Transit Center, Kravis Center, PBC Convention Center, Howard Park, Science Museum, Palm Beach Zoo at Dreher Park	80 min	14	60 min	12		
46	West Palm Beach To Wellington via Forest Hill Blvd	Palm Coast Plaza, PBC School Board, Okeeheelee Park, Wellington Regional Medical Center, Mall at Wellington Green	Peak: 30 min Off-peak: 60 min	13	60 min	12	60 min	8
47	Pahokee to Belle Glade via SR 15	Pahokee City Hall, Padgett Village, Glades Health Center & Courthouse, Belle Glade Airport, PBC Library	30 min	16.5	60 min	13	60 min	10

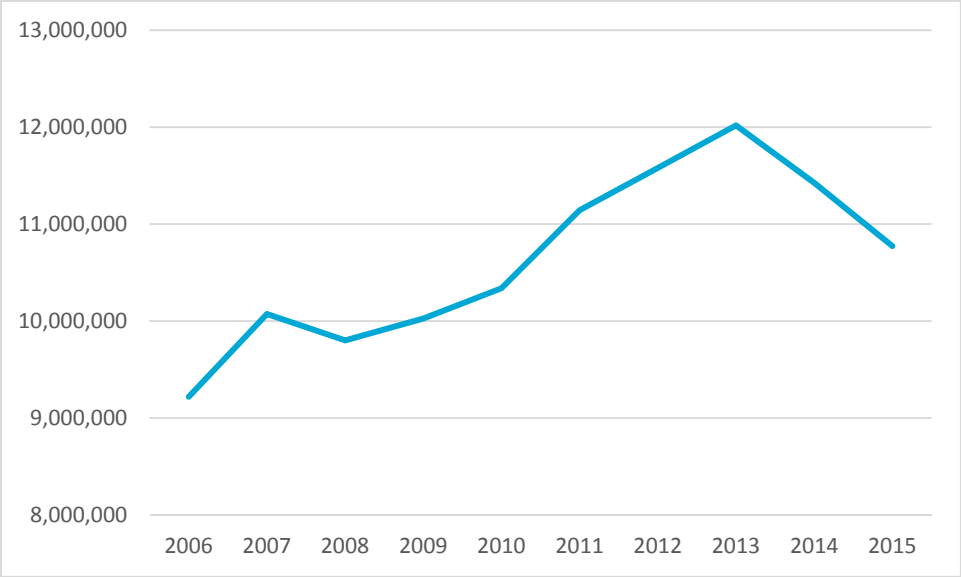
Route No.	Route	Key Location/Corridors Served	Weekday		Saturday		Sunday	
			Frequency (min)	Hours	Frequency (min)	Hours	Frequency (min)	Hours
48	Canal Point to South Bay vis SR 715	Canal Point, Pahokee City Hall, Pahokee Airport, West Tech/Palm Tran Park and Ride, Belle Glade Library, Palm Beach State College, Okeechobee Center	Peak: 30 min Off-peak: 60 min	16	60 min	14.5	60 min	10
49	West Palm Beach to Westgate via Palm Beach Lakes Blvd and Congress Ave	Social Security Office, Palm Beach Outlets, Home Depot, West Palm Beach Intermodal Transit Center	60 min	13.5	60 min	12.5	60 min	7.5
52	Royal Palm Beach Crosstown	Veterans Park, South University, South Florida Fairgrounds, Shoppes at Isla Verde, Wellington Regional Medical Center, Palm Tran Park and Ride	60 min	12	60 min	11	-	-
60	Greenacres to Palm Springs via Purdy Ln and 10th Ave N	Village of Palm Springs, Municipal Complex, Lakeside Village, YMCA, Greenacres WIC Center	69 min	9.5	-	-	-	-
61	Greenacres to Lake Worth via Cresthaven and 10th Ave N	River Bridge Center, Waterside Plaza, Lake Worth City Hall, Lake Worth Tri-Rail Station, Palm Beach State College	60 min	12	60 min	12	60 min	7
62	Wellington to Lake Worth via Lake Worth Rd	Mall at Wellington Green, Wellington Regional Medical Center, Greenacres Library, Palm Beach State College, Lake Worth Tri-Rail Station, Lake Worth City Hall	20-30 min	14	60 min	11	60 min	7
63	Lantana Crosstown	Pinewood Square, Lantana Airport, Lantana Public Health Unit (PHU)	60 min	12.5	60 min	10.5	60 min	6.5
64	Greenacres to Lake Worth via Melaleuca Ln/6th Ave S	Greenacres Plaza, Greenacres Post Office, Palm Beach State College, John Prince Park	60 min	14.5	60 min	12.5	-	-
70	Lantana to Delray Beach via Seacrest Blvd	Lantana/Lake Worth PHU, Boynton Beach Tri-Rail Station, Bethesda Hospital, Delray Tri-Rail Station	Peak: 30 min Off-peak: 60 min	13.5	60 min	11	90 min	8.5
71	Boynton Beach Crosstown via Lawrence Rd	Royal Palm School, Shoppes of Boynton, Boynton Tri-Rail Station, Boynton Beach Mall	70 min	13	60 min	10.5	-	-

Route No.	Route	Key Location/Corridors Served	Weekday		Saturday		Sunday	
			Frequency (min)	Hours	Frequency (min)	Hours	Frequency (min)	Hours
73	Boynton Beach Crosstown via Boynton Beach Blvd	Bethesda Hospital West, YMCA, Boynton Trail Centre, Boynton Beach Mall, Boynton Beach City Hall	50-60 min	15.5	60 min	11	-	-
80	Delray Beach Crosstown via Lake Ida Rd and Linton Blvd	Delray Square, Delray Beach City Hall, Delray Plaza, The Groves Shopping Center, Delray Medical Center	60 min	12	60 min	11	60 min	7.5
81	Delray Beach Crosstown via Atlantic Ave	PBC Library, Flea Market, Delray Health Dept., Delray Tri-Rail Station, South County Courthouse, City Library	60 min	12	60 min	11	-	-
91	Boca Raton Crosstown via Glades Rd	West Boca Medical Center, SW County Regional Library, Town Center Mall, Boca Community Hospital, FAU, Mizner Park, Camino Square, Mercado Real	45 min	13.75	60 min	12	60 min	7.5
92	Boca Raton Crosstown via Palmetto Park Rd	Garden Shops at Boca, Town Center Mall, Boca Raton City Hall, Camino Square, Mizner Park	60 min	12	60 min	10.5	-	-
94	Boca Tri-Rail Station to FAU and Palm Beach State College	Boca Raton Tri-Rail Station, Palm Beach State College, FAU, Boca Verde, Oaks Plaza, Conference Lakes Estate	Peak: 15 min Off-peak: 40 min	14.75	-	-	-	-

2.1.2 Fixed-Route Ridership

Figure 1 provides ridership figures for fiscal year (FY) 2006 and FY 2015 as reported to the National Transit Database (NTD) for FYs 2006 through 2014. FY 2015 data has not yet been validated by NTD, but the preliminary figures were provided by Palm Tran. Between FY 2014 and FY 2015, Palm Tran's ridership decreased by nearly 6%, from 11.4 million passenger trips in 2014 to nearly 10.8 million trips in 2015. The recent decline is tied to a significant decrease in gasoline prices. However, during this 10-year period, ridership increased by 16.8% overall, from 9.2 million passenger trips in 2006.

Figure 1 Palm Tran Fixed-Route Ridership Trends (2006-2015)



2.1.3 Route-level Performance Overview

Table 2 provides an overview of the ridership by route for the first eight months of the FY 2016. Route 1 has the highest ridership followed by Route 3 and 2, respectively. On an average weekday, Palm Tran carries an average of 34,000 trips. The average riders per revenue hour is approximately 23.

Table 2 Palm Tran Ridership by Route (October 2015 to May 2016)

Route	Oct '15	Nov '15	Dec '15	Jan '16	Feb '16	Mar '16	Apr '16	May '16	Ridership
1*	218,275	198,740	203,936	193,759	204,539	212,232	201,810	188,838	1,622,129
2	121,045	108,835	109,711	99,937	109,891	110,130	102,479	95,809	857,837
3	119,923	106,084	107,289	100,764	110,009	112,697	108,822	102,806	868,394
4	4,591	3,814	3,398	3,523	4,056	3,940	4,039	3,406	30,767
10	9,756	7,083	6,939	6,517	7,077	7,701	7,353	6,518	58,944
20	8,923	7,656	7,713	6,745	7,640	7,886	7,297	7,264	61,124
21	10,734	9,663	9,869	8,187	8,838	9,074	8,338	7,767	72,470
30	8,587	7,896	8,055	6,748	6,985	6,956	7,023	7,137	59,387
31	35,299	31,371	33,475	30,748	33,653	34,263	33,572	31,039	263,420
33	20,999	18,423	19,693	17,297	18,294	18,962	17,497	16,506	147,671
40	18,631	18,124	19,317	16,756	17,709	18,090	16,940	15,903	141,470
41	1,520	1,629	1,694	1,571	1,603	1,644	1,605	1,351	12,617
42	2,280	1,863	1,928	1,835	2,253	2,195	1,909	1,929	16,192
43	54,913	48,215	49,620	45,015	49,122	50,076	48,706	44,580	390,247
44	11,673	9,886	10,119	9,389	10,419	10,115	9,845	9,803	81,249
45	2,989	2,676	2,657	2,415	2,829	2,882	2,856	2,718	22,022
46	23,385	20,842	20,953	19,642	21,903	21,578	21,098	20,759	170,160
47	18,713	18,066	18,812	16,102	18,092	17,959	17,345	16,003	141,092
48	11,902	11,309	11,165	9,941	11,670	12,263	11,831	10,055	90,136
49	6,786	5,958	6,624	5,699	6,314	6,143	5,883	5,445	48,852
52	5,556	4,681	4,606	4,253	4,637	4,346	4,477	4,075	36,631
60	3,282	2,785	2,585	2,474	2,580	2,937	2,485	2,369	21,497
61	17,867	15,435	15,285	14,653	16,698	16,597	16,008	14,233	126,776
62	55,883	50,716	51,981	46,657	51,988	52,588	51,411	46,768	407,992
63	13,252	11,816	11,318	11,947	13,494	14,072	13,427	11,764	101,090
64	7,790	6,661	6,523	6,650	7,546	8,073	7,341	6,667	57,251
70	26,070	22,615	23,668	18,794	22,736	23,698	21,625	20,423	179,629
71	6,478	5,881	5,953	5,642	5,812	5,622	5,704	5,482	46,574
73	12,144	10,895	11,825	9,950	10,976	11,247	10,743	10,291	88,071
80	10,595	9,328	9,409	7,667	8,429	8,616	8,340	7,856	70,240
81	13,228	11,129	11,480	10,691	12,323	12,264	11,066	10,227	92,408
91	20,127	17,939	18,056	17,474	18,322	18,799	17,844	16,182	144,743
92	6,793	6,414	6,739	6,299	7,341	7,601	6,782	6,189	54,158
94	22,072	17,836	8,233	15,789	19,280	16,317	16,907	8,947	125,381
Total	932,061	832,264	840,628	781,530	855,058	869,563	830,408	767,109	6,708,621

Note: The ridership for Bolt 1 and Route 1 are recorded together in monthly ridership reports from Palm Tran

2.1.4 Fixed-Route Vehicle Inventory

Table 3 provides a summary of the Palm Tran Connection's fixed vehicle inventory. As shown, the entire fixed-route fleet consists of 156 vehicles.

Table 3 Fixed Vehicle Inventory

Year	Model	Description	No. of Vehicles
2003	Gillig	LOW FLOOR 29' BUS	2
2006	Gillig	G2D102N4 40' BUS	2
2006	Gillig	G21D102N4 40' BUS	2
2007	Gillig	G21D102N4 40' BUS	23
2008	Gillig	G21D102N4 40' BUS	8
2008	Gillig	G30D102N4 40' BUS	3
2009	Gillig	G27B102N4 35' BUS	10
2010	Gillig	G30D102N4 40' BUS	18
2011	Gillig	G27D102N 40' BUS	9
2011	Gillig	G27D102N4 40' BUS	16
2011	Gillig	G30D102N4 40' BUS	5
2012	New Flyer USA Inc.	D60LFR 60' BUS-ARTIC	6
2012	Gillig	G27D102N4 40' BUS	7
2012	Gillig	G27B102N4 35' BUS	7
2013	Gillig	G27D102N4 40' BUS	10
2014	Gillig	G30D102N4 40' BUS	9
2015	Gillig	G27D102N4 40' LOW FLOOR BUS	14
2015	Gillig	G30D102N4 40' LOW FLOOR BUS	5
Total	All Vehicles		156

2.2 Paratransit Service

Palm Tran Connection provides paratransit services to persons unable to use the fixed-route service due to disability or when fixed-route service is not available and that individual has no other means of transportation. The service provided is generally a curb-to-curb service which the rider can access through a trip-by-trip reservation system after being found eligible to use the service. Paratransit service is intended to serve a limited group of people under the following programs:

- **Americans with Disabilities Act (ADA)**: Those individuals who reside within ¾-mile of an established bus route, but cannot use Palm Tran regular fixed-route service because of a disability are eligible to use Palm Tran Connection during the same operating hours and days as regular fixed-route service. To become eligible for ADA service, an individual must complete an ADA application and be approved by Palm Tran for Palm Tran Connection services.

- **Transportation Disadvantaged (TD):** This program serves qualifying individuals located in areas where fixed-route service is not available and who have no other means of transportation. This program is sponsored by the State of Florida Transportation Disadvantaged Trust Fund. TD service is provided anywhere in Palm Beach County during the same hours and days as Palm Tran fixed-route bus service operates. To become eligible for TD service, the individual must submit proof of income or a physician completed medical verification form with their completed application. Eligible applicants may qualify for a discounted TD Bus Pass for half-fare for fixed-route ridership if they meet the household income guidelines of at or below 150% of the Federal Poverty Level.

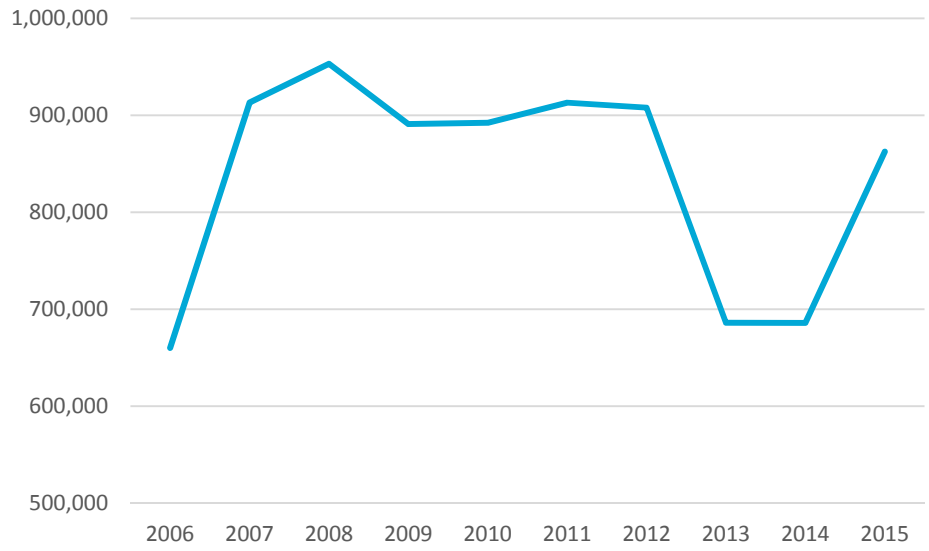
- **The Division of Senior Services (DOSS) Program**: This program provides additional mobility options for persons age 60 and older, per the eligibility guidelines established by the Older Americans Act (OAA), by allowing fare-free travel via Palm Tran Connection to designated senior centers during pre-assigned appointment times. Service is available Monday through Friday from 8:00 AM to 5:00 PM, excluding major holidays. This program is funded by the Palm Beach County Board of County Commissioners, the Area Agency on Aging, and the Florida Department of Elder Affairs. For ADA-eligible riders that wish to travel during times other than the specified times or to alternate senior centers/meal sites, transportation is provided, but passengers are required to pay the full fare of $3.50 per one-way trip.

2.2.1 Paratransit Ridership

Figure 2 provides the paratransit ridership figures for FY 2006 and FY 2015 as reported to NTD and provided by Palm Tran. Although fixed-route ridership declined between FY 2014 and FY 2015, Palm Tran Connection's ridership increased by nearly 26% during this same period, from 685,899 paratransit trips in 2014 to 862,498 paratransit trips in 2015. This fluctuation is likely correcting the reduction in paratransit trips experienced just prior between 2012 and 2013, when Palm Tran Connection saw a 25% decline in paratransit trips. This decline was caused by funding shortfalls as changes made in Medicare funding occurred statewide, reducing TD trips throughout Florida.

Palm Tran Connection's ridership increased by nearly 31% overall during this 10-year period. However, if the very low 2006 ridership levels are removed from the analysis, there was only a 6% decline in Palm Tran Connection ridership during the nine-year period.

Figure 2 Palm Tran Connection Paratransit Ridership Trends (2006-2015)



2.2.2 Paratransit Vehicle Inventory

Table 4 provides a summary of the Palm Tran Connection's paratransit vehicle inventory. As shown, the entire paratransit fleet consists of 240 vehicles.

Table 4 Paratransit Vehicle Inventory

Year	Model	Description	No. of Vehicles
2013	Ford E350	Starcraft Braun Lifts- MV	10
2014	Ford E450	Champion Creative Bus- Recon Lifts	25
2014	Ford E350	Turtle Top Alliance- Braun Lifts	2
2014	Dodge Grand Caravan	Dodge-Braun Mini Vans- Entrevan	40
2015	Ford E350	Champion Creative Bus- Recon Lifts	55
2015	Ford E450	Glaval Getaway	25
2015	Ford E350	Glaval Getaway	52
2015	Ford E350	Turtle Top Alliance- Braun Lifts	31
Total	All Vehicles		240

2.3 Palm Tran Operating Statistics

The following sections provides information on the current fares and revenue sources.

2.3.1 Fares

The base cash fare for most Palm Tran routes is $2.00. Discounts are available for seniors, Medicare cardholders, people with disabilities, students, and retired active military personnel with a military ID. Seniors over the age of 65, must provide photo identification issued by the Florida Department of Motor Vehicles to receive the reduced fare of $1.00. Medicare recipients must show their valid Medicare card to receive the reduced fare. Any person that is issued an American with Disabilities Act (ADA) pass by Palm Tran or Palm Tran Connection, receives the reduced fare. Students under the age of 21 must present a valid school ID to receive the student discount. Retired active military personnel must show their “Service Connected” Veterans Affairs card to receive the reduced fare. Daily and monthly passes are available for a discounted rate as well.

No fare is applied to customers with an ADA photo ID card issued by Palm Tran Connection for fixed-route services. Children age eight and under when accompanied by a fare paying passenger, and police officers in uniform or wearing a badge also ride free.

Transfers are given when making connections to and from Broward County Transit (BCT) and Tri-Rail. When transferring to BCT from Palm Tran the rider receives a free BCT transfer. When transferring to Palm Tran from BCT, the rider pays a $0.50 transfer fare. When transferring between Palm Tran and Tri-Rail the rider pays a $0.50 transfer fare with a valid Tri-Rail transfer ticket.

Table 5 lists the different fare categories for Palm Tran’s fixed-route service.

Table 5 Palm Tran Fare Structure

Category	Single Fare	Unlimited 1-Day Pass	Unlimited 31-Day Pass
Base fare	$2.00	$5.00	$70.00
Reduced fare	$1.00	$3.50	$55.00

2.3.2 Overview of Current Funding

Palm Tran's current FY 2016 operating budget was reviewed to understand the current distribution of funding and expenditures for transit services in Palm Beach County. As shown in Table 6, the actual revenue from FY 2015 is presented with the budgeted revenue for FY 2016 (which extends from October 1, 2015 to September 30, 2016). Of the FY 2016 budgeted amount, just under 29% of the revenue is generated from state and federal grants. Approximately 15% of the budget is from passenger revenues, and the remaining 56% is derived from local sources including gas taxes and ad valorem sources.

As shown in Table 7, the operating budget for FY 2016 was $118,178,231. The expenditures are comprised of total wages and benefits, operating expenditures, and capital expenditures. Wages and benefits comprise nearly 40% of the total budget. Operating expenditures, which include purchased transportation, fuel, repair and maintenance, among others, represent nearly 43% of the total budget. The remaining 18% is allocated for capital projects.

A breakdown of the current capital plan overview is provided in Table 8. The capital plan identifies the capital investments for Palm Tran committed in the existing year and the projected capital expenditures through FY 2021.

Table 6 Revenue Summary

Revenue Source	FY 2015 Actual	FY 2016 Current Budget
FAREBOX REVENUE		
Farebox - Fixed Route	$11,208,316	$11,589,253
Farebox - Paratransit	$2,433,920	$2,125,664
Advertising Revenue	$649,423	$649,133
TOTAL FAREBOX REVENUE	$14,291,659	$14,364,050
GRANT REVENUE		
Capital - Federal	$10,601,572	$21,022,172
Non-Capital - Federal	$3,223,960	$10,688,099
Operating - Federal	$6,500,386	$8,163,145
Operating - State	$8,357,793	$9,392,223
TOTAL GRANT REVENUE	$28,683,711	$49,265,639
OTHER REVENUE & SUBSIDIES		
Gas Taxes	$33,116,361	$33,045,000
Ad Valorem	$20,547,190	$20,838,356
Other	$1,709,679	$665,186
TOTAL OTHER REVENUE & SUBSIDIES	$55,373,230	$54,548,542
GRAND TOTAL	$98,348,600	$118,178,231

Notes: Capital - Federal includes traditional capital items such as vehicles. Non-Capital - Federal funds can be used for preventative maintenance on capital items. Operating - Federal funds are used for items such as Palm Tran's tire lease and scheduling software. Operating - State funds are used for traditional operating expenses.

Table 7 Expenditure Summary

Expenditure Type	FY 2015 Actual	FY 2016 Current Budget
WAGES & BENEFITS		
Operations	$27,062,626	$27,772,743
Paratransit	$4,926,034	$5,183,363
Maintenance	$8,944,620	$8,909,932
Administration	$3,610,553	$3,994,561
Information Technology	$504,546	$536,586
Marketing	$293,564	$245,508
TOTAL WAGES & BENEFITS	$45,341,943	$46,642,693
OPERATING		
Purchased Transportation	$24,884,227	$24,406,342
Contractual Services	$1,334,057	$4,194,218
Parts & Supplies	$3,934,705	$4,625,150
Fuel	$5,394,209	$8,254,173
Repairs & Maintenance	$839,359	$2,831,669
Software & Equipment	$2,164,820	$2,924,026
Insurance	$1,240,994	$1,113,831
Professional Services	$78,809	$162,105
Travel & Training	$130,974	$819,417
Rent	$98,368	$102,463
Utilities	$386,774	$447,501
Office Supplies	$187,576	$333,271
Printing & Promotional	$172,231	$258,753
Other	$39,724	$40,447
TOTAL OPERATING	$40,886,827	$50,513,366
TOTAL OPERATING/WAGES & BENEFITS	$86,228,770	$97,156,059
CAPITAL		
Capital	$10,601,572	$21,022,172
TOTAL CAPITAL	$10,601,572	$21,022,172
GRAND TOTAL	**$96,830,342**	**$118,178,231**

Notes: Purchased Transportation refers to the use of outside firms to provide paratransit services. Contractual services include items such as security and janitorial services. Professional services include items such as lawyers.

Table 8 DRAFT Capital Plan

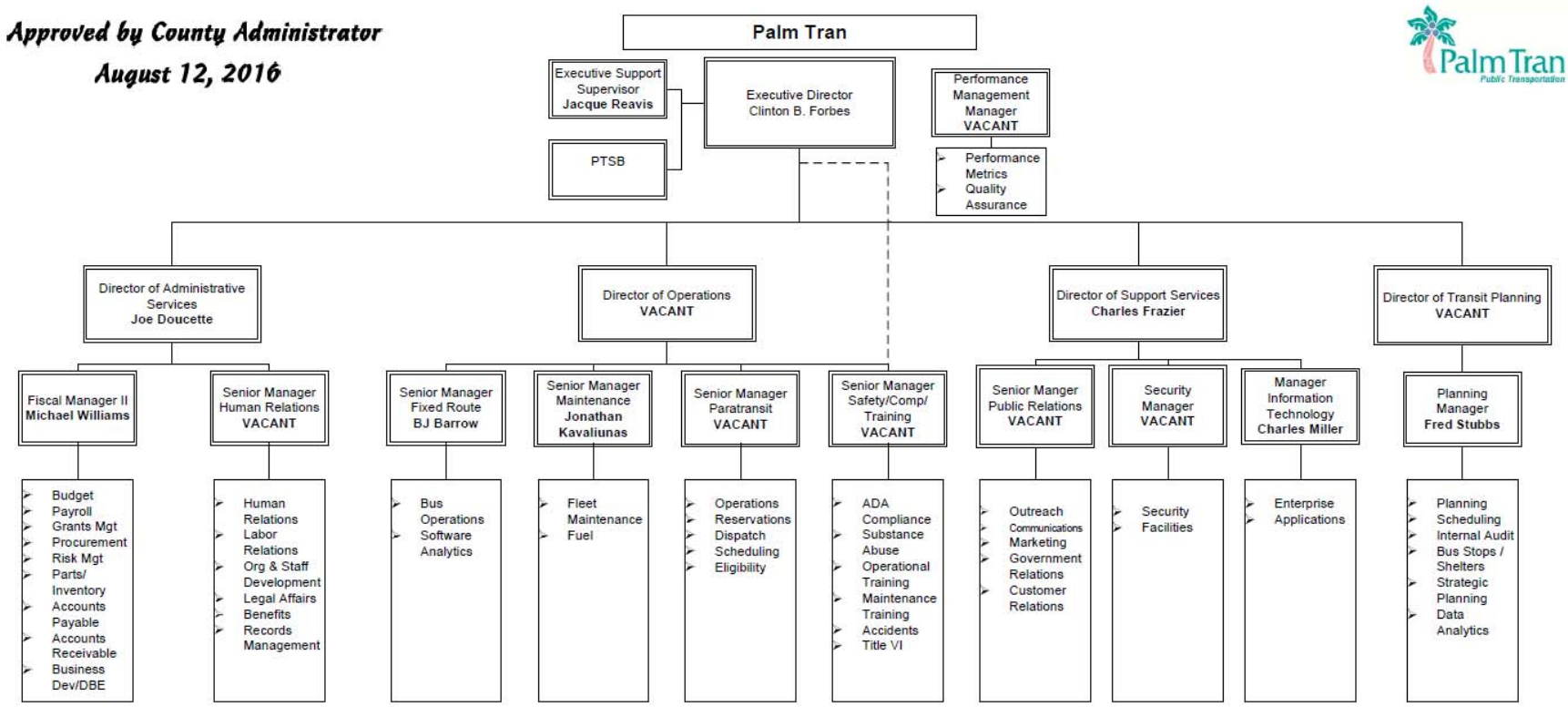
Category	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Fixed Route Buses	$16,570,425	$18,141,913	$6,000,000	$6,913,307	$8,500,000	$9,000,000	$7,500,000
Paratransit Buses	$0	$0	$1,820,000	$5,040,000	$6,020,000	$3,780,000	$1,260,000
Vehicles	$366,761	$5,000	$350,000	$183,000	$161,000	$139,000	$0
Equipment	$1,730,637	$260,062	$600,000	$465,000	$60,000	$30,000	$1,655,000
Software	$293,193	$155,706	$731,158	$758,065	$809,169	$839,599	$868,203
Data processing equip.	$350,000	$566,379	$3,035,100	$141,600	$86,600	$49,900	$82,000
IOTB	$2,154,116	$1,771,710	$2,009,783	$2,379,527	$1,977,230	$1,911,500	$2,031,796
Building / Facility	$550,000	$0	TBD	TBD	TBD	TBD	TBD
GRAND TOTAL	$22,015,132	$20,900,770	TBD	TBD	TBD	TBD	TBD

Note: IOTB stands for improvements other than buildings.

2.4 Organizational and Management Structure

Palm Tran is a division of the Palm Beach County government, and is overseen by the Palm Beach Board of County Commissioners. The Palm Tran organizational chart is shown in Figure 3.

Figure 3 Palm Tran Organizational Chart



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3.0 Trend Analysis and Peer Review

To assess how efficiently Palm Tran supplies fixed-route transit service and how effective those services meet the needs of the area, a trend analysis of critical performance indicators was conducted to examine the performance of its fixed-route and paratransit services over a seven-year period (2009-2015). To complete this peer and trend analysis, data from the Florida Transit Information System (FTIS) was used, which includes validated NTD data for FY 2009 through 2014. As previously noted, since FY 2015 data are not yet available on the NTD website, FY 2015 data reported to NTD was provided by Palm Tran and included in the trend analysis.

The performance measures are used to present the data that relate to overall system performance. Three categories of performance measures were analyzed for the trend analysis of the existing transit service:

- **General performance measures**, which indicate the quantity of service supplied, passenger and fare revenue generation, and resource input.

- **Effectiveness measures**, which indicate the extent to which the service is effectively provided. These measures can be used to implement goals towards improving the quality of service and customer satisfaction, and increasing the market share of transit.

- **Efficiency measures**, which indicate the extent to which cost efficiency is achieved, i.e., costs in relation to benefit. These measures can be used to implement goals towards long-term viability and stability of the service.

Table 9 lists the performance measures by category used in the peer and trend analysis for both fixed-route and paratransit services.

Table 9 Performance Measures by Category

General Performance	Effectiveness	Efficiency
Service Area Population	Vehicle Miles per Capita	Operating Expense per Capita
Passenger Trips	Passenger Trips per Capita	Operating Expense per Passenger Trip
Passenger Miles	Passenger Trips per Revenue Mile	Operating Expense per Passenger Mile
Vehicle Miles	Passenger Trips per Revenue Hour	Operating Expense per Revenue Mile
Revenue Miles	Vehicle System Failures	Farebox Recovery Ratio (%)
Total Operating Expense	Revenue Miles between Failures	Revenue Miles per Vehicle Mile
Vehicles Available in Maximum Service		Revenue Miles per Total Vehicle
Total Gallons Consumed		Vehicle Miles per Gallon
		Average Fare

In conjunction with the trend analysis, a peer review was conducted to compare various Palm Tran fixed-route and paratransit performance characteristics to a group of transit peers. The trend and peer review analyses are organized by the type of measure or indicator and include statistics, figures, and tables to illustrate Palm Tran's performance over the past seven years and how Palm Tran compares to selected peers. The peer and trend review for Palm Tran's fixed-route service is provided first, followed by a review for Palm Tran Connection's paratransit service. For each type of service, the selection process for the peer review is described first, followed by a presentation of highlights from the trend and peer review analyses. Summary results are provided at the conclusion of the discussion.

3.1 Fixed-Route Trend and Peer Review

3.1.1 Fixed-Route Peer System Selection

Two lists of peers were presented to the Project Review Committee, one list from the previous Palm Tran TDP and a second list used in a recent study conducted by the Center for Urban Transportation Research (CUTR). The Project Review Committee reviewed the two lists and elected to move forward with the more recently developed CUTR list. The final list of peers shown in Table 10 includes three Florida and six non-Florida transit agencies.

Table 10 Selected Fixed-Route Peer Systems

Peer System	Acronym	Area Served
Greater Richmond Transit Co.	GRTC	Richmond, VA
Pinellas Suncoast Transit Authority	PSTA	St. Petersburg, FL
City of Detroit Dept. of Transportation	DDOT	Detroit, MI
Fort Worth Transportation Authority	The T	Fort Worth, TX
Hillsborough Area Regional Transit	HART	Tampa, FL
Southwest Ohio Regional Transit Authority	SORTA	Cincinnati, OH
New Orleans Regional Transit Authority	NORTA	New Orleans, LA
Jacksonville Transportation Authority	JTA	Jacksonville, FL
Central Ohio Transit Authority	COTA	Columbus, OH

3.1.2 General Performance Measures

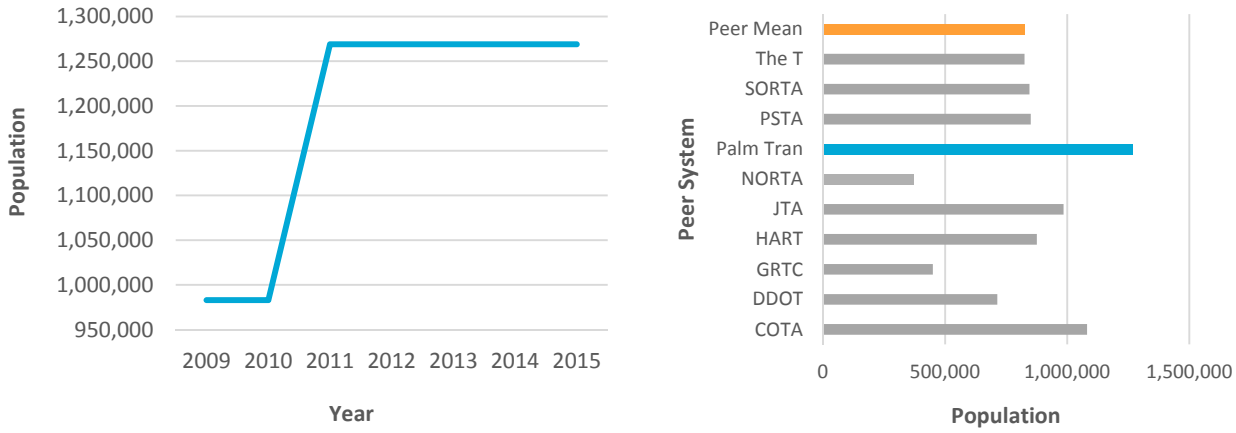
General performance indicators are used to gauge the overall system operating performance. Figure 4 through Figure 11 present the performance indicators of Palm Tran from FY 2009 through FY 2015 (trend analysis) as well as its FY 2014 performance relative to the selected peer systems (peer analysis).

Service Area Population

Service area population and density are a measure of potential demand for service. The NTD defines the service area as ¾ of a mile on each side of a fixed route. Most agencies do not update this figure on an annual basis and, therefore, it remains unchanged in Palm Beach County for certain fiscal years.

Palm Tran's service area population increased from 982,900 in 2009 to nearly 1.27 million in 2015, a 29% increase. Palm Tran's service area population is nearly 54% above the peer group mean. The population increase shown between 2010 and 2011 is attributed to the decennial Census figures.

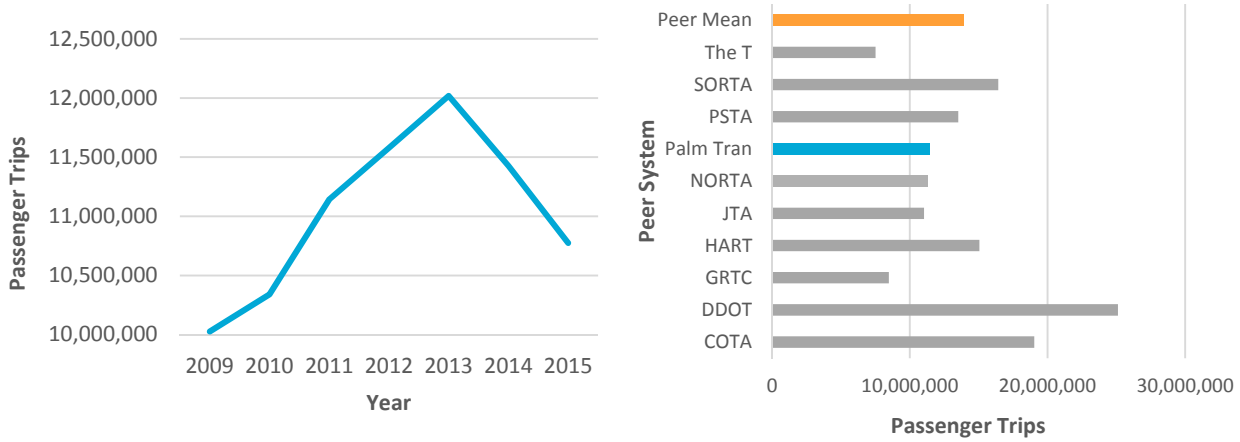
Figure 4 Palm Tran Trend and Peer Comparison for Service Area Population



Passenger Trips (Ridership)

Passenger trips, also known as ridership, is the number of passengers who board the public transit vehicles and is a measure of the market demands for the service. Passengers are counted each time they board the vehicles, no matter how many vehicles they transfer between. The total number of fixed-route passenger trips for Palm Tran increased from approximately 10.03 million in 2009 to 10.77 million in 2015, or 7.5%. Palm Tran's annual number of passenger trips is 17.8% below the peer mean of 13.9 million.

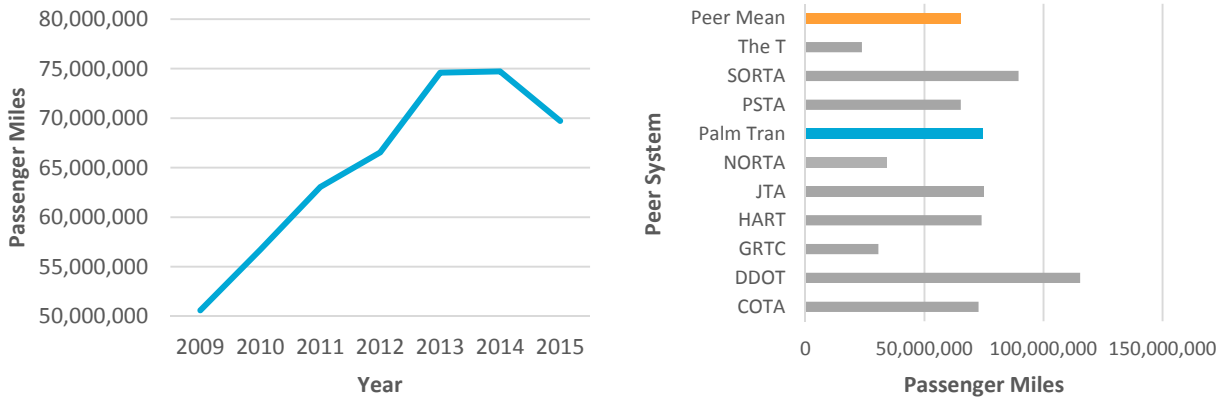
Figure 5 Palm Tran Trend and Peer Comparison for Passenger Trips



Passenger Miles

Passenger miles is a measure that multiplies the number of passenger trips by the average passenger trip length to estimate the total number of miles passengers traveled. The average passenger trip length is usually determined by survey sampling. For Palm Tran, passenger miles have continuously increased, from 50.6 million miles in 2009 to 69.7 million miles in 2015, or 37.8% overall. Palm Tran ranks the fourth highest among its peer systems at 14%.

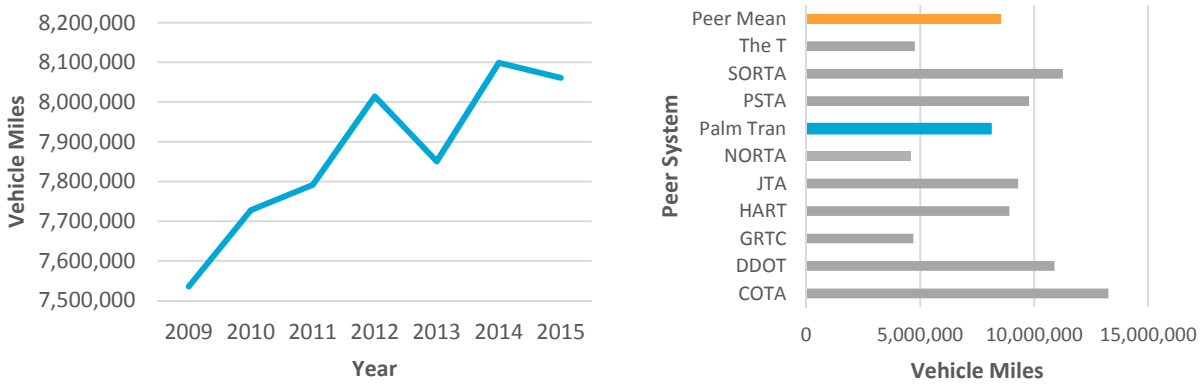
Figure 6 Palm Tran Trend and Peer Comparison for Passenger Miles



Vehicle Miles

Vehicle miles measure the miles that the transit vehicles travel while in revenue service plus miles traveled when passengers are not on board (deadhead miles). This is a measure of how much service coverage is provided or the supply of service. Palm Tran's total vehicle miles of service increased 7% overall, from 7.5 million miles in 2009 to 8.1 million miles in 2015. Despite this modest increase, Palm Tran ranked fourth lowest among its peer systems, at 5.3% below the peer mean.

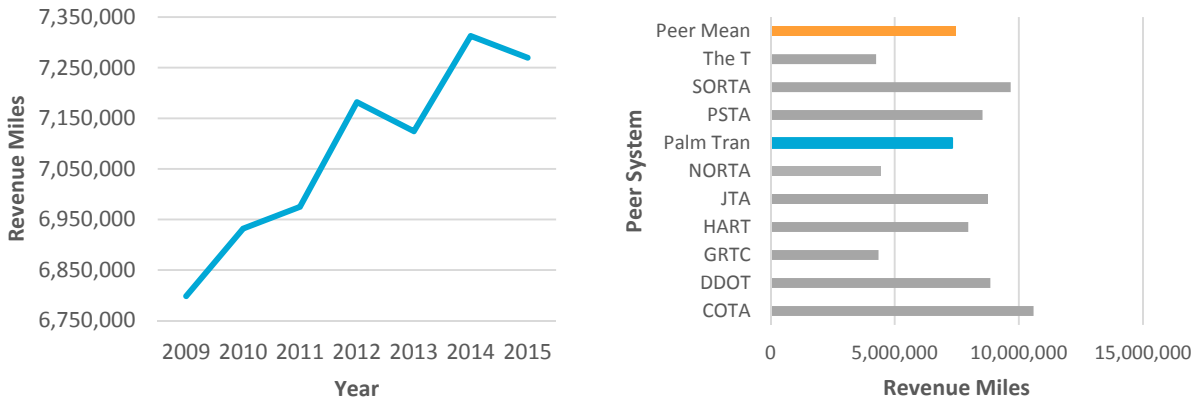
Figure 7 Palm Tran Trend and Peer Comparison for Vehicle Miles



Revenue Miles

Revenue miles measure the total number of miles that the public transit vehicle operates while in revenue service and excludes deadhead travel, training operations, and charter services. Revenue miles increasing faster than total vehicle miles generally indicates a positive operational trend and points to a decreasing proportion of deadhead miles over time relative to total miles. Palm Tran has increased its revenue miles and vehicle miles at roughly the same rate over the seven-year timeframe. Palm Tran experienced a continuous increase of revenue miles until 2014, then experienced a slight decrease in 2015; however, there was still an overall increase of 6.9% between 2009 and 2015. This positive trend has helped Palm Tran to be within 2.1% below the peer mean.

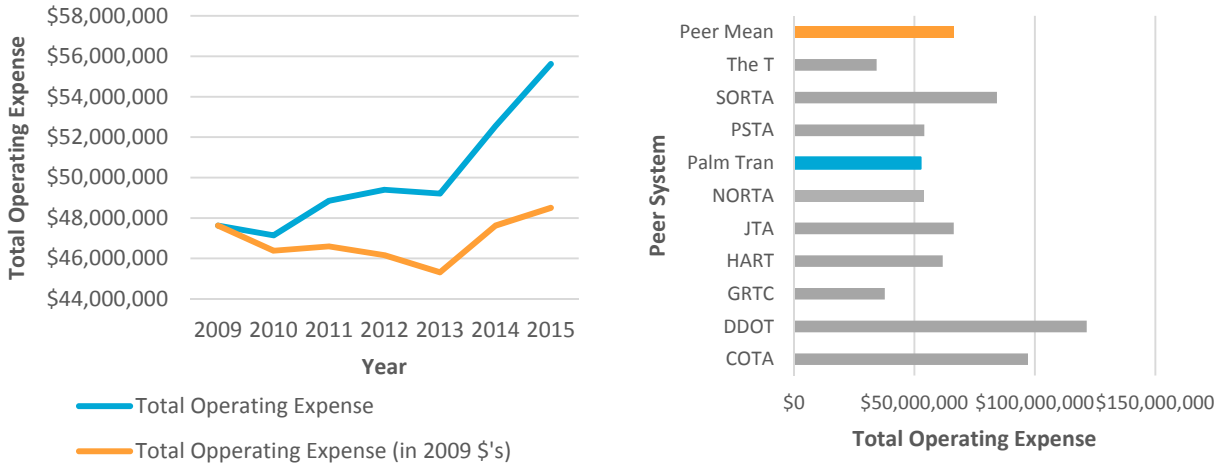
Figure 8 Palm Tran Trend and Peer Comparison for Revenue Miles



Total Operating Expense

Total operating expense includes all costs associated with operating the transit agency (i.e., vehicle operations, maintenance, and administrative costs). Palm Tran's total operating expense increased from $47.6 million in 2009 to $55.6 million in 2015 (17% overall). However, when taking into consideration inflation, the actual total operating expense measured in 2009 dollars increased by less than 1% during this period. This indicates that Palm Tran's overall fixed-route operating expenses have stayed relatively unchanged. The total operating expense for Palm Tran is approximately 21% less than the peer group mean.

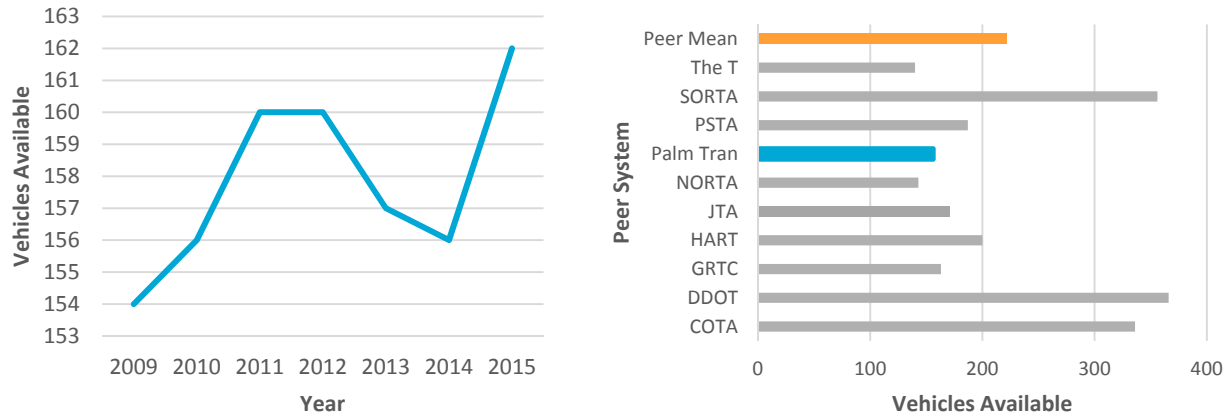
Figure 9 Palm Tran Trend and Peer Comparison for Total Operating Expense



Vehicles Available for Maximum Service

Vehicles available for maximum service is an indication of the the supply of service. Palm Tran has increased its supply of vehicles available for maximum service from 154 vehicles in 2009 to 162 vehicles in 2015, a 5.2% increase in fleet size. Palm Tran is 30% below the peer mean of 222 vehicles.

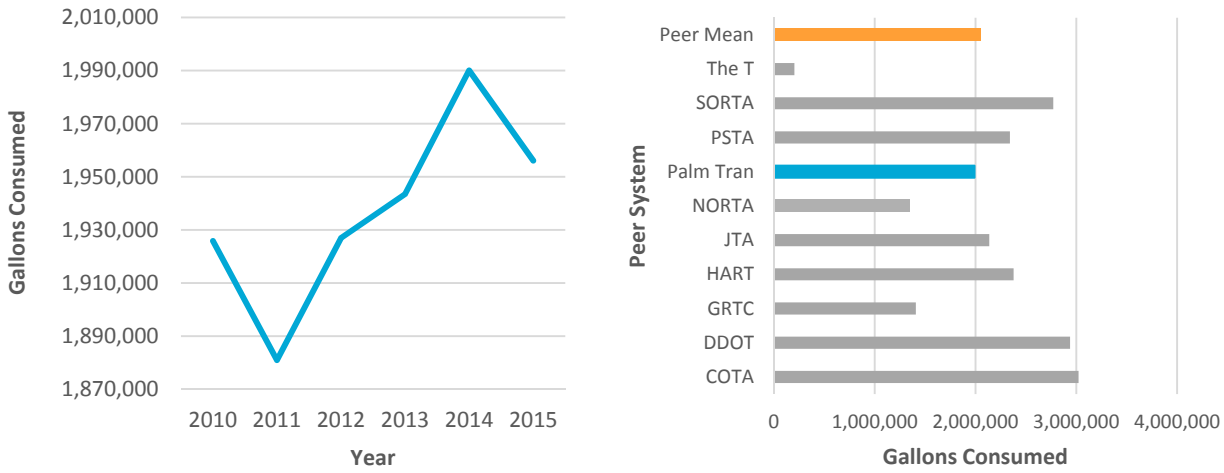
Figure 10 Palm Tran Trend and Peer Comparison for Vehicles Available for Maximum Service



Total Gallons Consumed

In 2010, Palm Tran consumed 1.9 million gallons of fuel compared to nearly 2.0 million gallons in 2015. That results in an increase in consumption since 2010 by 1.6% over the seven-year period. Palm Tran remains below the peer mean by approximately 3%. (Note: Gallons consumed data was not available for 2009.)

Figure 11 Palm Tran Trend and Peer Comparison for Total Gallons Consumed



3.1.3 Effectiveness Measures

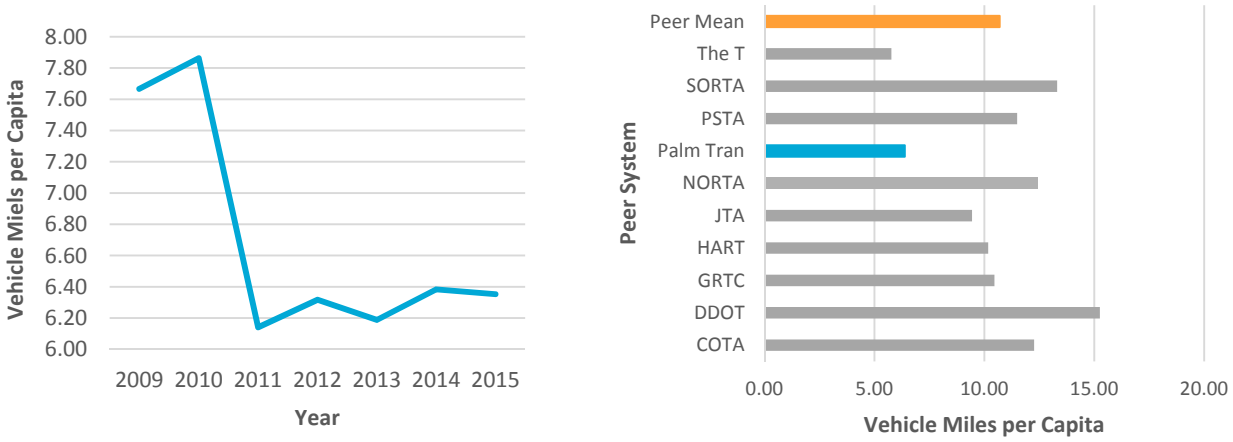
Effectiveness measures indicate the extent to which service-related goals are being met. Effectiveness measures include service supply, service consumption, and quality of service and are represented by variables such as vehicle miles per capita and passenger trips per revenue hour. Figures 12 through 17 present the trend and peer analysis for these effectiveness performance indicators.

Vehicle Miles per Capita

Vehicle miles per capita is derived from the total system vehicle miles and service area population. It measures the supply of service provided based on the demand within the service area. For Palm Tran, vehicle miles per capita experienced a decline between 2009 and 2015, from a high of 7.86 miles per capita in 2010 to 6.19 miles per capita in 2013. The drop between 2010 and 2011 is due to the population increase as measured in the decennial Census.

Overall during the seven-year period, the miles per capita decreased by 17.1%. On an annual basis, the miles per capita fluctuated, indicating an overall decreasing trend. When compared to its peers, Palm Tran falls 40.3% below the peer group mean, an indication that the supply of service is less than what is typically experienced by peer agencies.

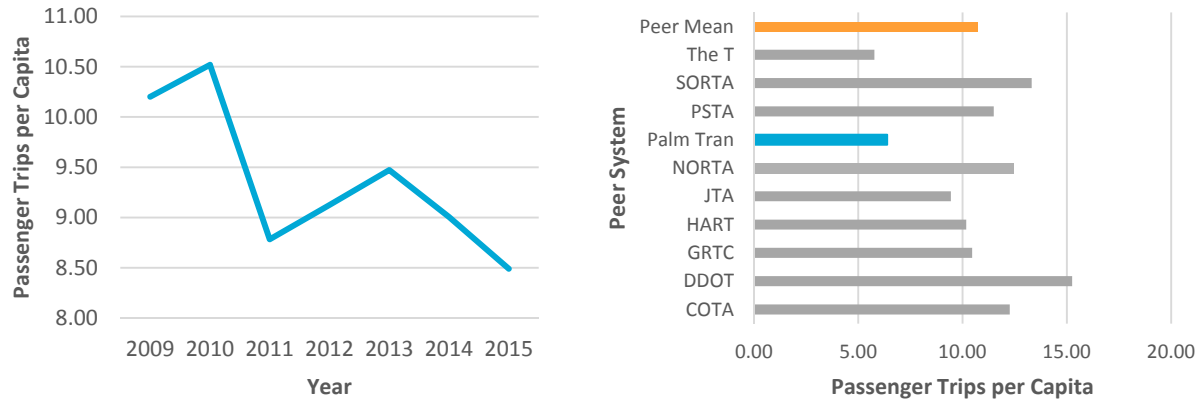
Figure 12 Palm Tran Trend and Peer Comparison for Vehicle Miles per Capita



Passenger Trips per Capita

Passenger trips per capita is calculated by dividing the total transit boardings by service area population. This measure of service effectiveness quantifies transit utilization within the service area. Palm Tran experience some fluctuation in passenger trips per capita between 2009 and 2015, though an overall decrease of 17% during the seven year period. Palm Tran has one of the lowest average passenger trips per capita figure when compared to its peer systems at 51% below the peer mean, indicating a potential to improve in this measure.

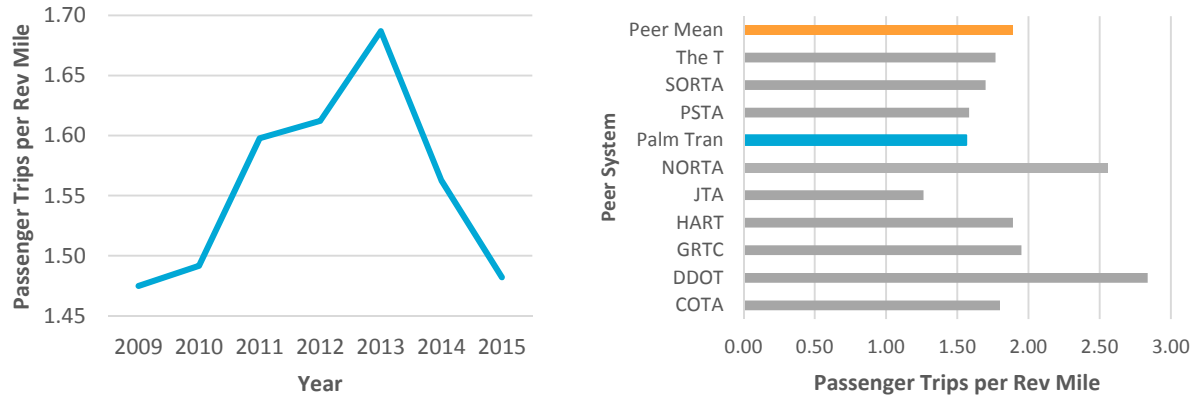
Figure 13 Palm Tran Trend and Peer Comparison for Passenger Trips per Capita



Passenger Trips per Revenue Mile

Passenger trips per revenue mile is calculated by dividing transit boardings by revenue miles. It is a measure of the supply of revenue service provided based on the level of demand. Palm Tran experienced an overall increase of 0.5% in passenger trips per revenue mile between 2009 and 2015, indicating that the system has overall achieved better ridership productivity during this period. However, when compared to its peer systems, Palm Tran places second to last at 17.4% below the peer mean.

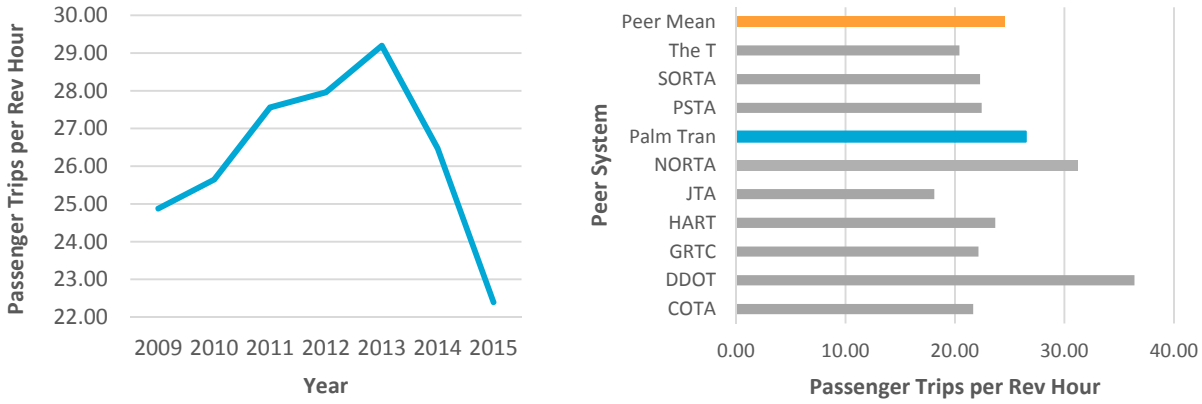
Figure 14 Palm Tran Trend and Peer Comparison for Passenger Trips per Revenue Mile



Passenger Trips per Revenue Hour

Passenger trips per revenue hour is a measure used to quantify service consumption and can help evaluate the amount of resources consumed in providing service. From 2009 to 2015, Palm Tran's passenger trips per revenue hour decreased 10% overall. This indicates the system has not achieved improved ridership productivity during this period. However, Palm Tran places 8.1% above the peer mean.

Figure 15 Palm Tran Trend and Peer Comparison for Passenger Trips per Revenue Hour

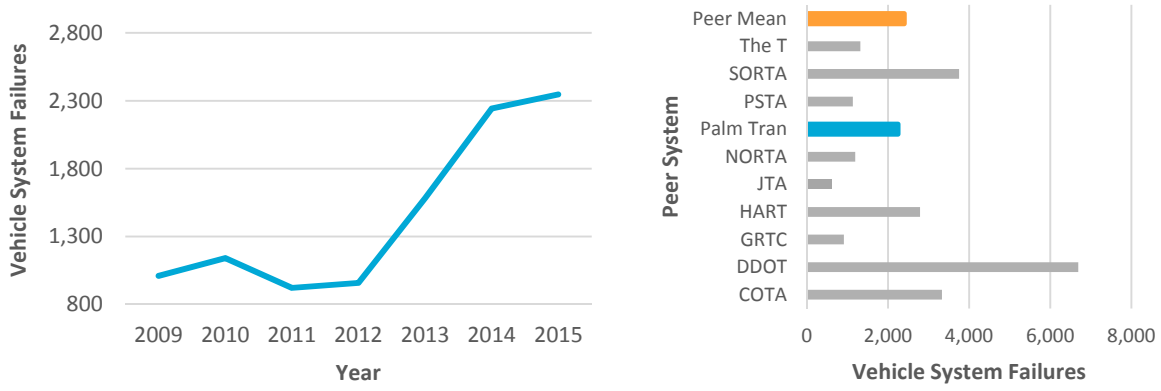


Vehicle System Failures

The number of vehicle system failures reflect immediate maintenance needs. A low number of vehicle system failures helps to ensure the long-term viability and stability of the service and reduces overall cost in terms of both maintenance and the number of spare vehicles required. Changes in the system failure rate may be related to changes in the service levels and/or the average age of the fleet. The number of system

failures increased 132.4% from 1,010 in 2009 to 2,347 in 2015. In comparison to the peer groups, Palm Tran ranked 6.4% below the peer group mean.

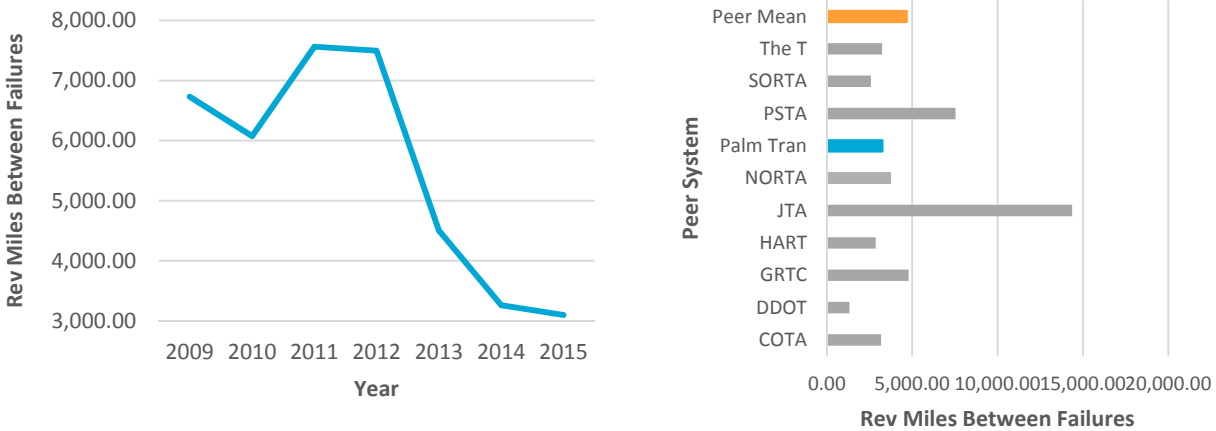
Figure 16 Palm Tran Trend and Peer Comparison for Vehicle System Failures



Revenue Miles between Vehicle Failures

Revenue miles between vehicle failures reflects quality of maintenance, as well as loss in revenue due to vehicle operational failures and service shortages. A higher number of revenue miles between system failures can indicate a higher quality of passenger experience. For Palm Tran, this effectiveness measure peaked to a value of 7,565 revenue miles per road call in 2011 and significantly declined afterwards to 3,098 miles per road call in 2015, suggesting a recent decline in effective services provided. Compared to the peer systems, Palm Tran's revenue miles between vehicle failures statistic places the agency at 6.4% below the peer mean.

Figure 17 Palm Tran Trend and Peer Comparison for Revenue Miles between Vehicle Failures



3.1.4 Efficiency Measures

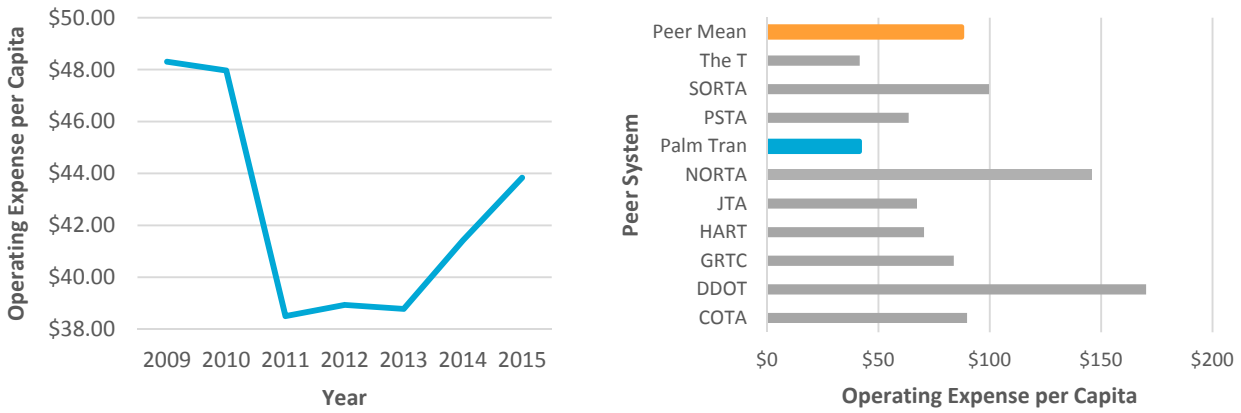
Efficiency measures are used to evaluate and monitor the use of resources and how the system is performing based on the cost. Efficiency measures include cost efficiency, operating ratios, vehicle

utilization, energy utilization, and fare. Figures 18 through 26 present the trend and peer analysis for these efficiency performance indicators.

Operating Expense per Capita

Operating expense per capita reflects the efficiency of the operating cost of the transit system per person within the service area. Operating expense per capita for Palm Tran decreased overall by 9% between 2009 and 2015. However, Palm Tran is 52.6% below the peer mean of $87.38 in terms of operating expense per capita, indicating efficient use of existing resources.

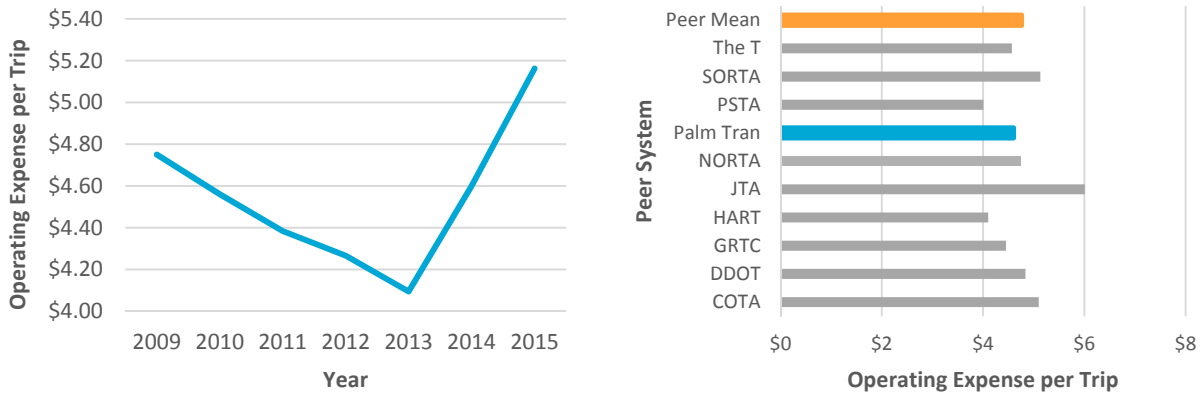
Figure 18 Palm Tran Trend and Peer Comparison for Operating Expense per Capita



Operating Expense per Passenger Trip

Operating expense per passenger trip measures the efficiency of transporting riders, both on how service is delivered and the market demands for the service. Palm Tran's operating expense per passenger trip decreased from $4.75 in 2009 to $4.60 in 2014, but increased to $5.16 in 2015 for an 8.7% increase overall. Compared to its peers, Palm Tran ranks 3.3% below the peer mean for this measure.

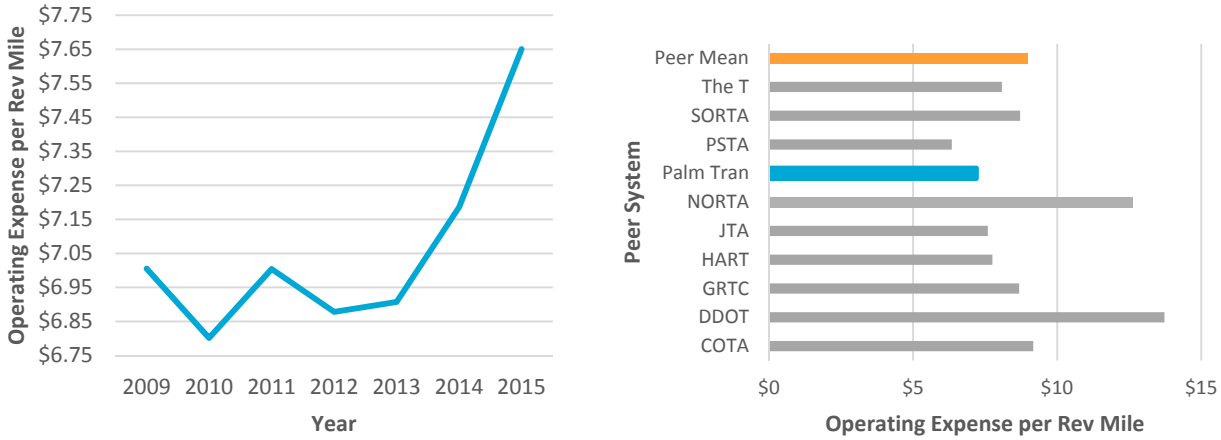
Figure 19 Palm Tran Trend and Peer Comparison for Operating Expense per Passenger Trip



Operating Expense per Passenger Mile

Operating expense per passenger mile measures the impact of trip length on the system's performance. Palm Tran's operating expense per passenger mile experienced a gradual decline of 15.3% between 2009 and 2015. Palm Tran is also 35% below the peer mean for this measure.

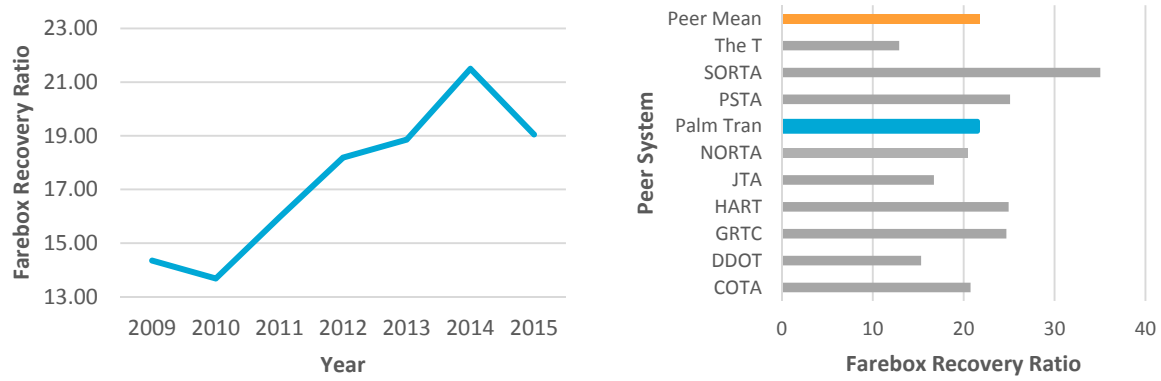
Figure 20 Palm Tran Trend and Peer Comparison for Operating Expense per Revenue Mile



Farebox Recovery Ratio

The farebox recovery ratio refers to the percent of the transit system's total operating expenses that are funded with fares paid by passengers and is calculated by dividing the total fare revenue collected by the total operating expenses. Palm Tran's farebox recovery ratio has improved from 14.35% in 2009 to 19.05% in 2015, for a total increase of 32.8%. The farebox recovery ratio for Palm Tran is in line with the peer agencies and is only approximately 1.1% below the peer group mean.

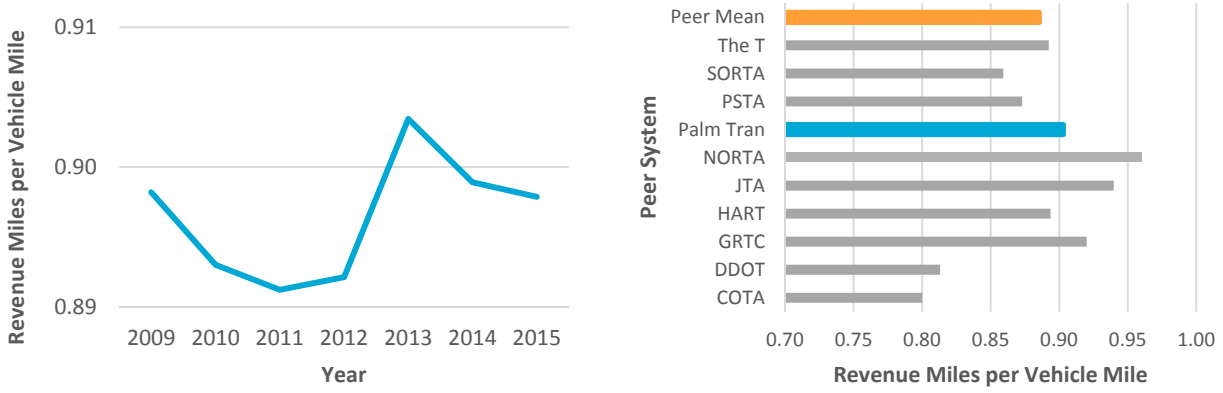
Figure 21 Palm Tran Trend and Peer Comparison for Farebox Recovery Ratio (%)



Revenue Miles per Vehicle Mile

Revenue miles per vehicle mile is a measure of vehicle utilization. A higher ratio of revenue miles traveled to total vehicle mile generally indicates higher system productivity. For Palm Tran, the revenue mile per vehicle mile remained relatively stable between 2009 and 2015 at 0.90. The exception to this was in 2013 when the revenue miles per vehicle mile increased to 0.91, but returned to 0.90 in 2014. Revenue miles per vehicle mile for Palm Tran is 2% above the peer group mean, which indicates a close to average use of fixed-route bus vehicles within the peer group mean.

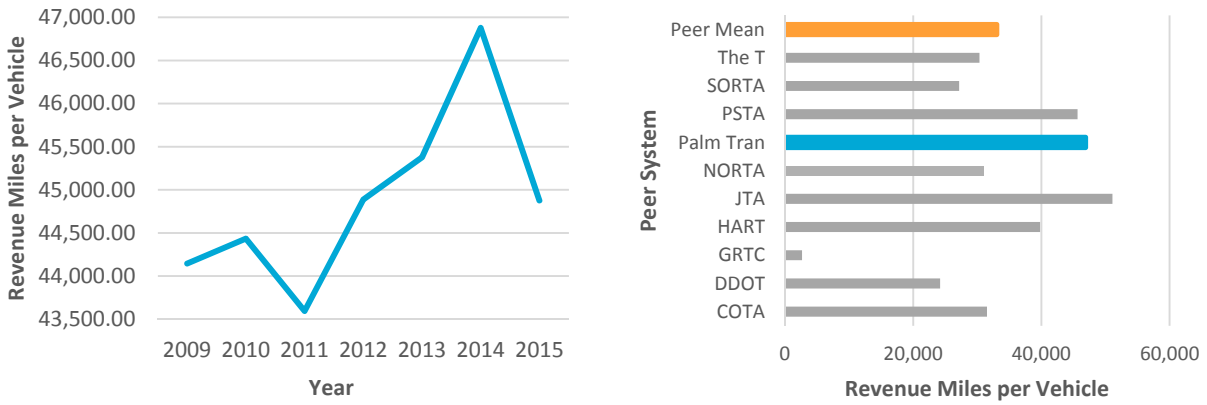
Figure 22 Palm Tran Trend and Peer Comparison for Revenue Miles per Vehicle Mile



Revenue Miles per Total Vehicles

Revenue miles per total vehicles is another measure of vehicle utilization. Palm Tran experienced an overall increase of 1.65% in revenue miles per total vehicles between 2009 and 2015. Palm Tran ranks 42% above the peer mean of 33,023 revenue miles per total vehicles.

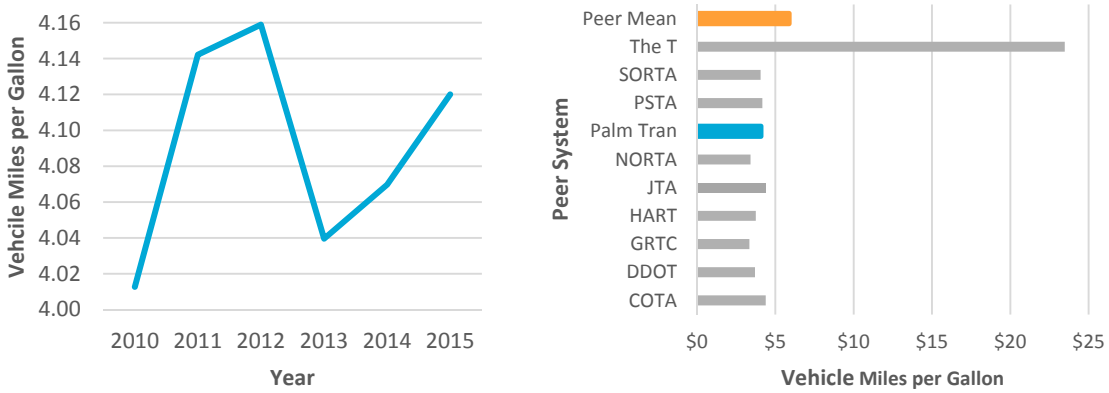
Figure 23 Palm Tran Trend and Peer Comparison for Revenue Miles per Total Vehicles



Vehicle Miles per Gallon

Vehicle miles per gallon, or the ratio between fuel consumed and distance traveled, is an indication of fuel efficiency and applies only to diesel- and gasoline-powered vehicles. For Palm Tran, vehicle miles per gallon increased from 4.01 in 2010 to 4.12 in 2015, or 2.7% overall. Palm Tran falls 30.7% below the peer mean of 5.87 vehicle miles per gallon. (Note: Vehicles miles per gallon data was not available for 2009.)

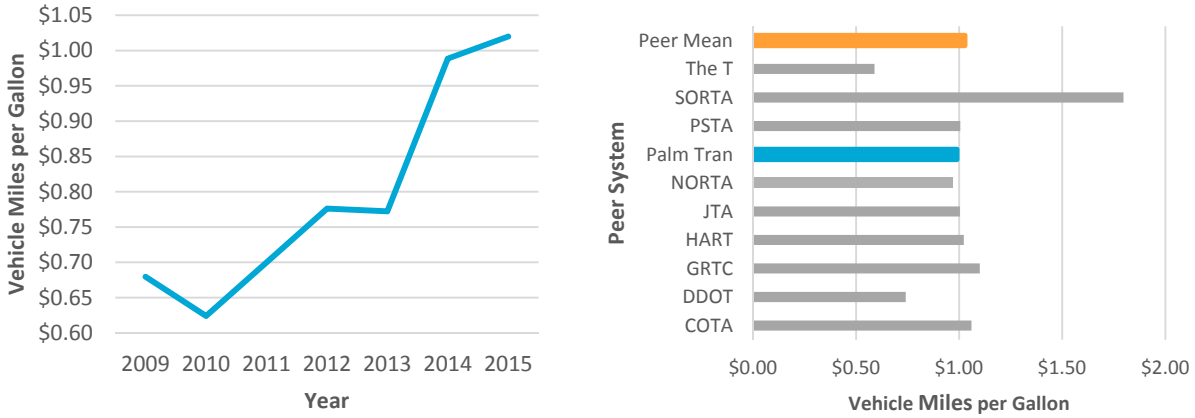
Figure 24 Palm Tran Trend and Peer Comparison for Vehicle Miles per Gallon



Average Fare

Average fare is calculated by dividing total passenger fare revenue collected by ridership. The average can be lowered by systems such as Palm Tran that offer free transfers or discounted/free rides. Palm Tran's average fare increased from $0.68 in 2009 to $1.02 in 2015, or 50.1% overall. A fare increase in 2014 is responsible for some of the increase in average fare. Palm Tran ranks almost 3.8% below the peer mean of $1.03 for the average fare.

Figure 25 Palm Tran Trend and Peer Comparison for Vehicle Miles per Gallon



3.1.5 Summary Results of the Fixed-Route Trend and Peer Analysis

As previously discussed, an analysis of Palm Tran's fixed-route bus service from 2009 through 2015 was conducted using the most recent seven-year NTD data available. Although the trend analysis is only one aspect of an overall transit performance evaluation, when combined with the peer review analysis, the results provide a starting point for understanding the efficiency and effectiveness of a transit system.

Fixed-Route Trend Analysis Summary

General Performance Indicators

- Over the seven-year period, the service area population for Palm Tran has increased by 29% from 982,900 in 2009.
- The total number of passenger trips, or ridership, have increased to 10.7 million in 2015, a nearly 8% increase since 2009.
- Passenger miles, vehicle miles, and revenue miles have all steadily increased over the seven-year period. This could indicate a positive operational trend.
- Palm Tran's total operating expense has had an overall increase of 17% over the seven-year period. However, when taking into inflation into consideration, the actual operating expense in 2009 dollars increased by less than 1%. This means the overall operating expense were effectively held constant.

Effectiveness Measures

- Vehicle miles per capita (service supply) decreased by 17%, indicating that Palm Tran services decreased during the analysis period.
- Passenger trips per capita has decreased nearly 17% between 2009 and 2015. Passenger trips per revenue mile and per revenue hour steadily increased from 2010 to 2014, though both saw a slight decrease in 2015. This trend indicates that revenue for Palm Tran has been improving in system effectiveness over the last seven years.
- Although the number of system vehicle failures increased over the seven-year period, the revenue miles between failures decreased. This indicates that the system's service quality has improved during this period.

Efficiency Measures

- Operating expense per capita and per passenger mile decreased by 9% and 15%, respectively, while operating costs per revenue mile increased by 9%. This indicates that Palm Tran may be experiencing overall increased operational costs.
- Between 2009 and 2015, Palm Tran's farebox recovery ratio increased by 19% while the average fare increased by approximately 50%.

Table 11 summarizes the trend analysis completed for Palm Tran's existing fixed-route system in terms of the percent that each performance measure changed between 2009 and 2015.

Fixed-Route Peer System Analysis Summary

The following summarizes key findings from the fixed-route peer review analysis prepared for Palm Tran.

General Performance Indicators

- Palm Tran placed below the peer mean for most general performance measures (passenger trips, vehicle miles, revenue miles, and vehicles available). However, its population size is 54% higher than the mean and its service area is 15% larger than the peer mean.
- Palm Tran also has the fourth highest passenger miles among its selected peers at 14% above the peer mean.
- Total operating expense for Palm Tran is less than the peer group mean by approximately 21%.
- Palm Tran's total gallons consumed sits below the peer mean by approximately 3%.

Effectiveness Measures

- Vehicle miles per capita for Palm Tran is approximately 40% below the peer group mean, indicating that the supply of service is less than typically experienced in other similar areas.
- Passenger trips per revenue mile is approximately 17% below the peer group mean, while passenger trips per revenue hour are above the mean by 8%, indicating that there may be room for improvement for ridership levels.
- The number of vehicle system failures that Palm Tran experienced was 6% below the peer group mean, however, the revenue miles between failures was below the peer mean by 30%, indicating a poor quality of service compared to the peer group.

Efficiency Measures

- The cost efficiency measures provide varying indications of improvements and declines, depending on the measure. For example:
    - Palm Tran's operating expense per capita is almost 53% below the peer group mean, which indicates a smaller community investment in transit than its peers.
    - Operating expense per passenger trip is only 3% below the group mean, which indicates spending on per trip is on par with its peers.
    - Operating expense per revenue mile is 20% below the peer group mean.
- Palm Tran's farebox recovery is approximately 1% below the peer group mean; the average fare charged is nearly 4% below the peer group mean.

Table 11 (following page) also summarizes the peer system analysis prepared for Palm Tran's fixed-route system and indicates the percent that Palm Tran is away from the peer group mean for each performance measure.

3.2 Paratransit Service Trend and Peer System Analyses

To assess how efficiently Palm Tran provides door-to-door demand response service, a trend and peer analysis of critical performance indicators was conducted to examine the performance of Palm Tran Connection over the same seven year period analyzed for fixed-route service. Similar to the fixed-route trend and peer review, FY 2009 through 2014 NTD data were used in this analysis supplemented with 2015 data provided by Palm Tran.

3.2.1 Paratransit Peer System Selection

The peer systems for the demand response peer review are for the most part, consistent with those used in the fixed-route peer review; however Richmond, New Orleans, and Cincinnati peers in the fixed-route analysis were replaced with Chicago, Oakland, and Phoenix for the paratransit analysis (see Table 12). Most of the demand response peers purchase transportation service from other providers, while HART directly operates its demand response service.

Table 11 Selected Paratransit Peer Systems

Peer System	Acronym	Area Served
Pace - Suburban Bus Division	PACE	Chicago, IL
Pinellas Suncoast Transit Authority	PSTA	St. Petersburg, FL
City of Detroit Dept. of Transportation	DDOT	Detroit, MI
Fort Worth Transportation Authority	The T	Fort Worth, TX
Hillsborough Area Regional Transit	HART	Tampa, FL
City of Phoenix Public Transit Dept.	Valley Metro	Phoenix, AZ
Alameda-Contra Costa Transit	AC Transit	Oakland, CA
Jacksonville Transportation Authority	JTA	Jacksonville, FL
Central Ohio Transit Authority	COTA	Columbus, OH

3.2.2 General Performance Measures

Figures 26 through 33 illustrate the paratransit trend and peer analysis completed for the general performance measures previously identified.

Service Area Population

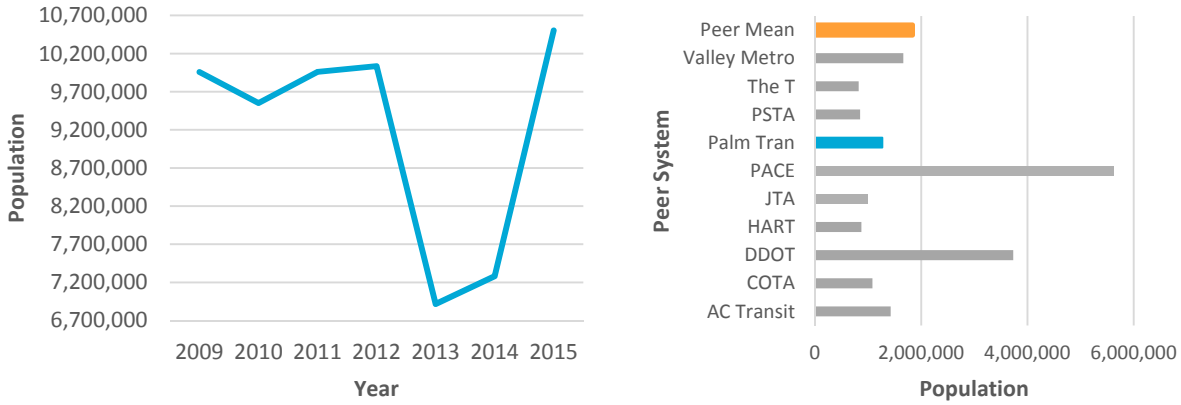
As previously noted in the fixed-route trend analysis, Palm Trans' service area population increased by 29% between 2009 and 2015. Since Palm Tran Connection provides paratransit service countywide, this figure is consistent for both fixed-route and paratransit trend analyses. The service area population for Palm Tran Connection, however, is 31% below the peer group mean, compared to 54% above the peer group mean for fixed-route service in Palm Beach County.

Table 12 Fixed-Route Trend and Peer System Analyses Summary

Indicators/Measures	2009	2015	% Change (2009 - 2015)	Peer Average	% Deviation from Peer Mean
GENERAL INDICATORS					
Service Area Population	982,900	1,268,782	29.10%	826,448	53.80%
Service Area Size (square miles)	365	365	0%	316	15.40%
Passenger Trips	10,026,046	10,773,438	7.50%	13,893,514	-17.80%
Passenger Miles	50,594,533	69,725,661	37.80%	65,555,434	14.00%
Vehicle Miles	7,535,471	8,060,845	7.00%	8,554,298	-5.30%
Revenue Miles	6,798,404	7,269,862	6.90%	7,467,812	-2.10%
Total Operating Expense	$47,622,673	$55,617,355	16.80%	$66,346,294	-20.80%
Vehicles Available for Maximum Service	154	162	5.20%	222	-29.70%
Total Gallons Consumed*	1,925,861	1,956,084	1.60%	2,053,138	-3.10%
EFFECTIVENESS MEASURES					
Vehicle Miles Per Capita	7.67	6.35	-17.13%	10.70	-40.30%
Passenger Trips Per Capita	10.20	8.49	-16.80%	18.42	-51.10%
Passenger Trips Per Revenue Mile	1.47	1.48	0.50%	1.89	-17.40%
Passenger Trips Per Revenue Hour	24.88	22.39	-10.00%	24.48	8.10%
Number of Vehicle System Failures	1,010	2,347	132.40%	2,395	-6.40%
Revenue Miles Between Failures	6,731.09	3,097.51	-54.00%	4,684.99	-30.40%
EFFICIENCY MEASURES					
Operating Expense Per Capita	$48.31	$43.84	-9.30%	$87.38	-52.6
Operating Expense Per Passenger Trip	$4.75	$5.16	8.70%	$4.75	-3.27%
Operating Expense Per Passenger Mile	$0.94	$0.80	-15.30%	$1.08	-35.00%
Operating Expense Per Revenue Mile	$7.01	$7.65	9.20%	$8.98	-20.00%
Farebox Recovery (%)	14.35	19.05	32.80%	21.74	-1.10%
Revenue Miles per Vehicle Mile	0.90	0.90	0.00%	0.89	1.98%
Revenue Miles Per Total Vehicles	44,145.48	44,875.69	1.65%	33,023.28	42.00%
Vehicle Miles Per Gallon*	4.01	4.12	2.68%	5.87	-30.70%
Average Fare	$0.68	$1.02	50.10%	$1.03	-3.80%

*Percent change only reflects change between 2010 and 2015.

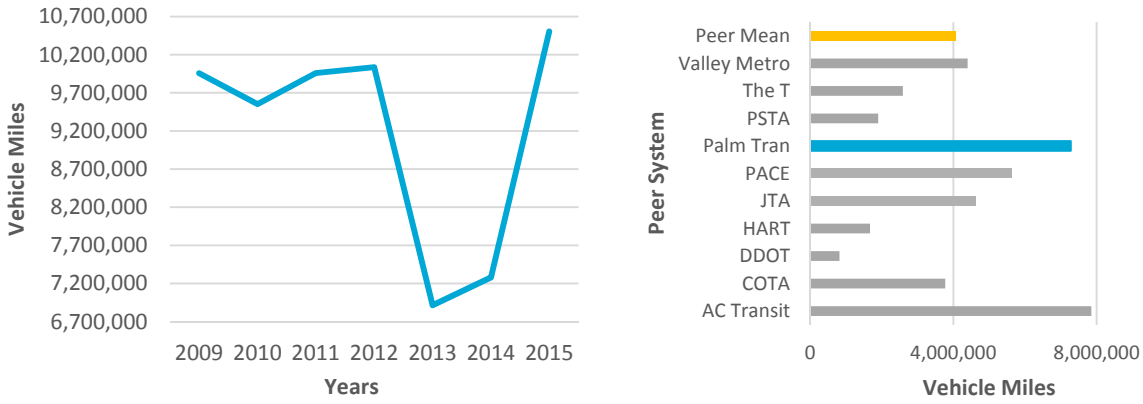
Figure 26 Palm Tran Connection Trend and Peer Comparison for Service Area Population



Vehicle Miles

Palm Tran Connection's total vehicle miles of service increased from nearly 10 million miles in 2009 to 10.5 million miles in 2015, representing a 5.5% increase. When compared to the peer group, Palm Tran Connection's vehicle miles are 80% above the peer mean.

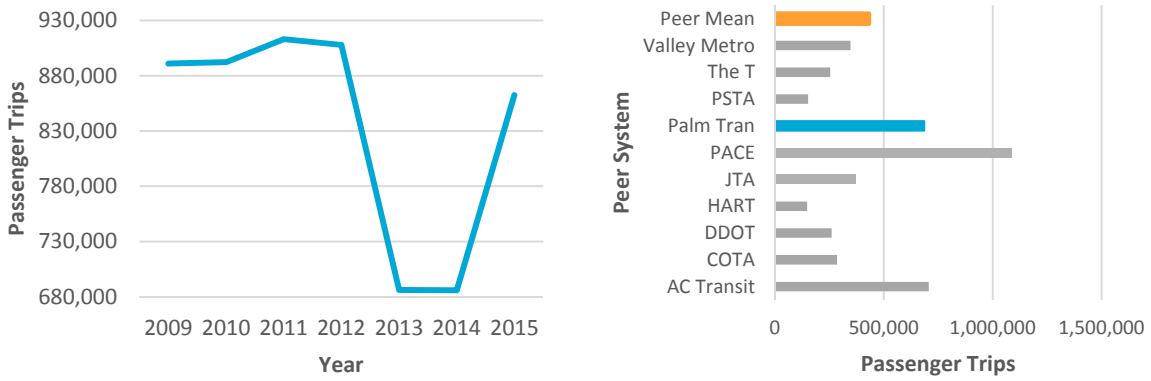
Figure 27 Palm Tran Connection Trend and Peer Comparison for Vehicle Miles



Passenger Trips (Ridership)

The total number of passenger trips for Palm Tran Connection decreased from 897,001 in 2009 to 862,498 in 2015, or 3% overall. When compared to its peers, passenger trips for Palm Tran is 60% above the mean for the selected peer group.

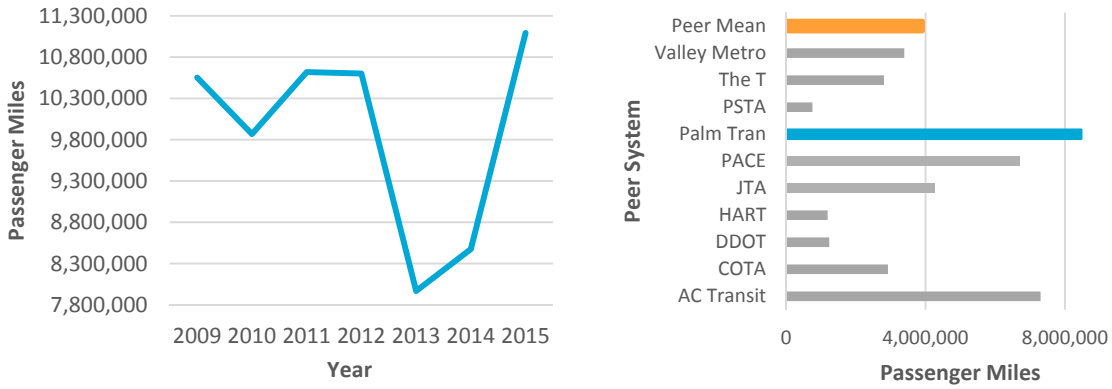
Figure 28 Palm Tran Connection Trend and Peer Comparison for Passenger Trips



Passenger Miles

Palm Tran Connection's demand response service realized a nearly 5% increase in passenger miles over the last seven years, from 10.6 passenger miles in 2009 to 11.1 passenger miles in 2015, though the system did experience a decline to approximately 8 million passenger miles in 2013. When compared to its peers, Palm Tran Connection's passenger miles are approximately 117% above the peer group mean.

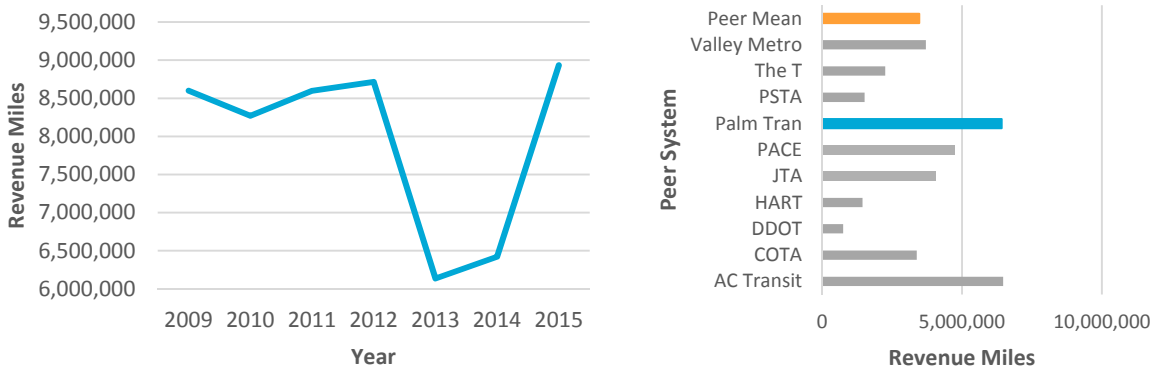
Figure 29 Palm Tran Connection Trend and Peer Comparison for Passenger Miles



Revenue Miles

Palm Tran Connection experienced an increase in revenue miles by approximately 3.9%. When compared to its peers, Palm Tran Connection's demand response revenue miles are approximately 85% above the peer group mean.

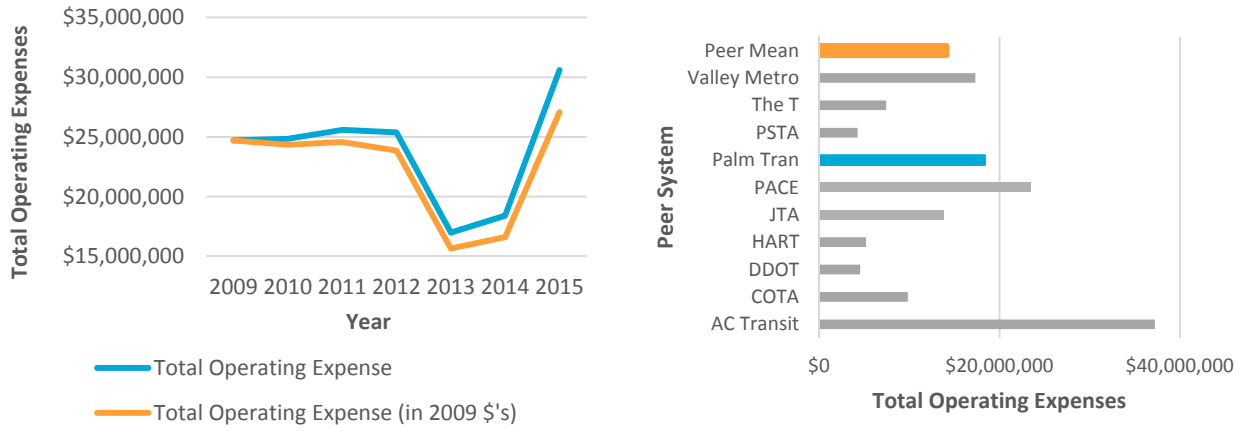
Figure 30 Palm Tran Connection Trend and Peer Comparison for Revenue Miles



Total Operating Expenses

Palm Tran Connection's total operating expense increased from $24.7 million in 2009 to $30.6 million in 2015, an increase of 23.9%. However, when taking into consideration inflation during this same period, the actual total operating expense increased by 9.6% when measured in 2009 dollars. The total operating expense for Palm Tran Connection is more than the peer group mean by approximately 30%.

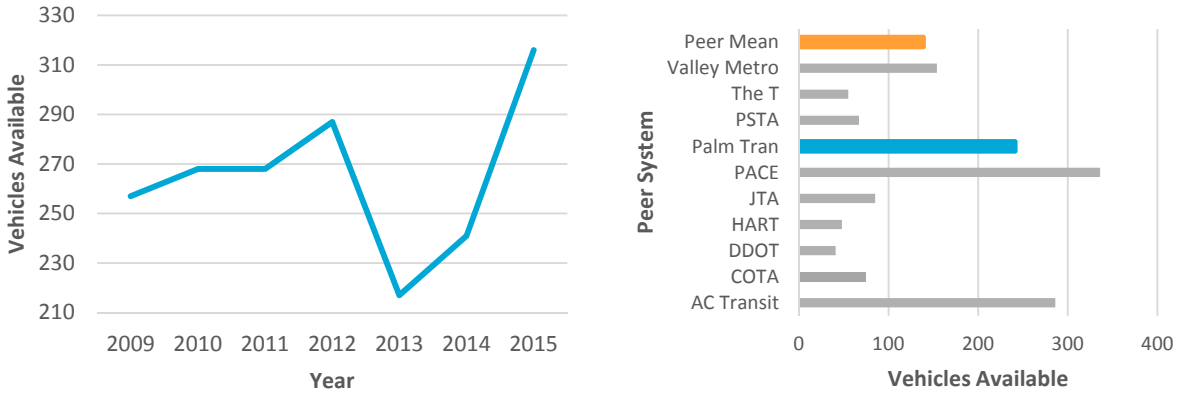
Figure 31 Palm Tran Connection Trend and Peer Comparison for Total Operating Expenses



Vehicles Available for Maximum Service

Palm Tran Connection's vehicles available for maximum service increased by nearly 23%, from 257 vehicles in 2009 to 316 vehicles in 2015. When compared to the peer group, Palm Tran Connection is approximately 74% above the peer mean for this measure.

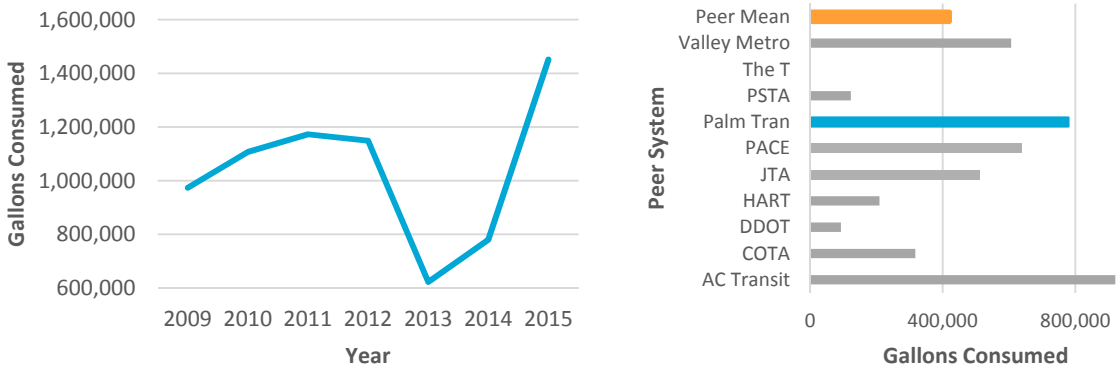
Figure 32 Palm Tran Connection Trend and Peer Comparison for Vehicles Available for Maximum Service



Total Gallons Consumed

In 2009, Palm Tran consumed 973,787 gallons of fuel compared to 1.45 million gallons in 2015, or a 49% overall increase in fuel consumption during this seven-year period. When compared to the peer group mean, Palm Tran is 85.6% above the mean. (Note: Fort Worth (The T) did not report this measure.)

Figure 33 Palm Tran Connection Trend and Peer Comparison for Total Gallons Consumed



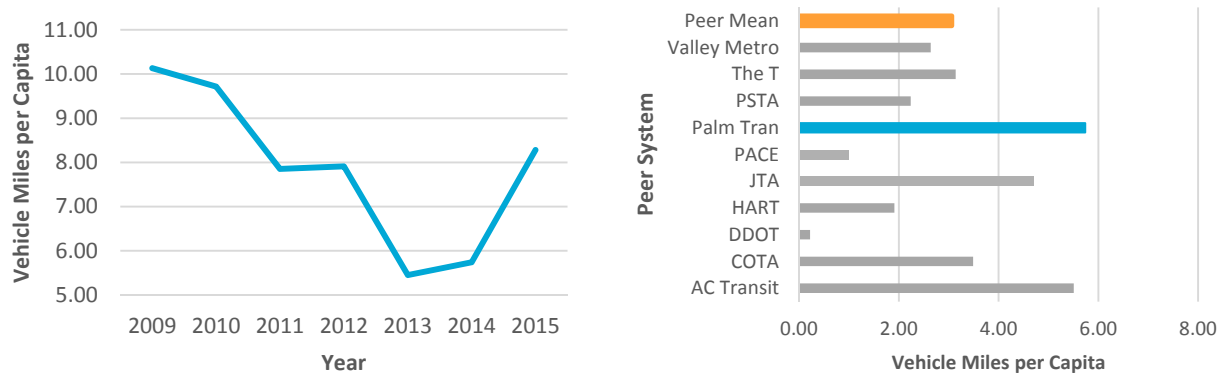
3.2.3 Effectiveness Measures

Figures 34 through 39 present the paratransit trend and peer analysis completed for these effectiveness performance measures previously identified.

Vehicle Miles per Capita

Vehicle miles per capita fluctuated on an annual basis, but overall experienced a decline of 18.3% between 2009 and 2015, ranging from a high of 10.13 miles per capita in 2009 to 8.3 miles per capita in 2015. When compared to its peers, Palm Tran Connection is 3.1% above the peer group mean, an indication that the supply of service is more than what is typically experienced by peer agencies.

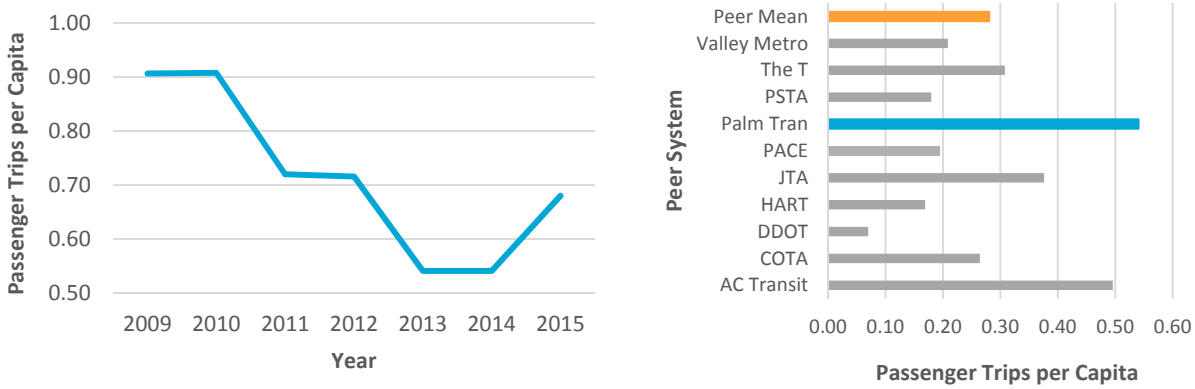
Figure 34 Palm Tran Connection Trend and Peer Comparison for Vehicle Miles per Capita



Passenger Trips per Capita

Passenger trips per capita for Palm Tran Connection decreased by 25% during this seven-year period, from 0.91 in 2009 to 0.68 in 2015. The peer review indicated that passenger trips per capita on the demand response system are nearly 93% above the peer group mean.

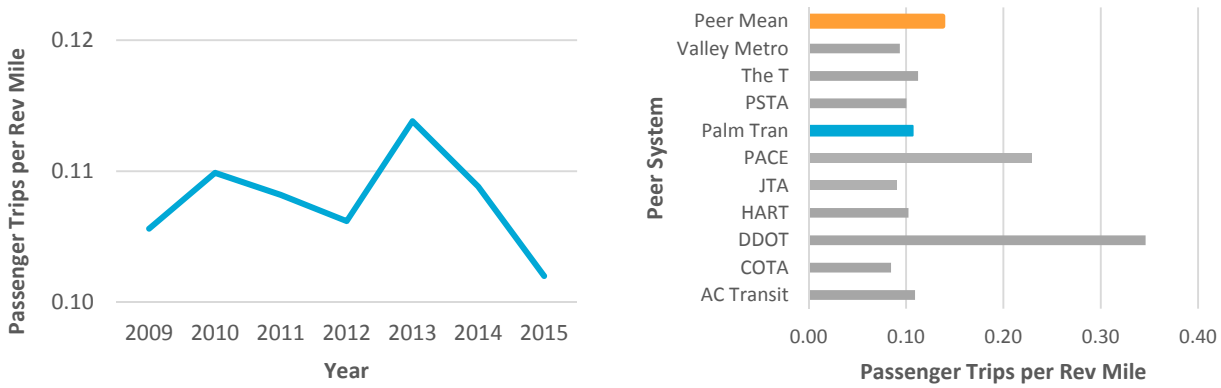
Figure 35 Palm Tran Connection Trend and Peer Comparison for Passenger Trips per Capita



Passenger Trips per Revenue Mile

Passenger trips per revenue mile experienced a decrease of 3.5% during this review period, indicating that passenger trips for the demand response system were not increasing at the same pace as revenue miles. When compared to its peer systems, Palm Tran is 22.4% below the peer mean.

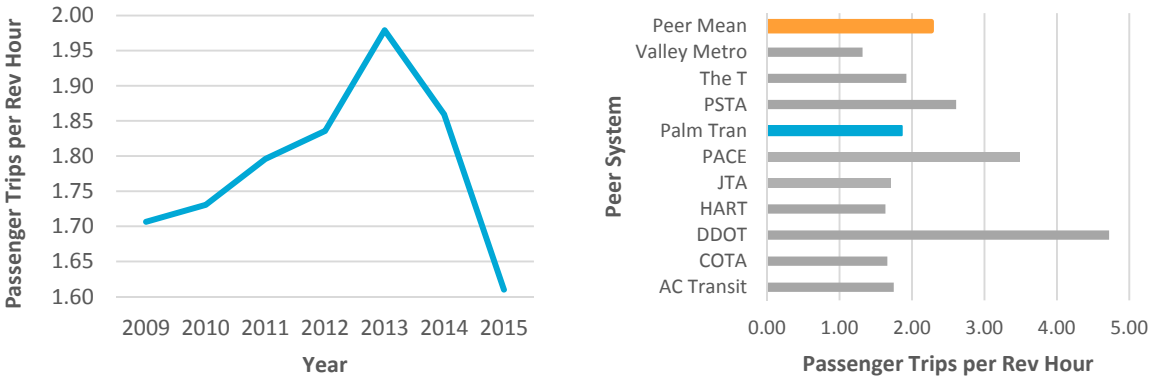
Figure 36 Palm Tran Connection Trend and Peer Comparison for Passenger Trips per Revenue Mile



Passenger Trips per Revenue Hour

From 2009 to 2015, Palm Tran Connection's passenger trips per revenue hour decreased by nearly 5.7%. In comparison to the peer systems, Palm Tran is nearly 18% below the mean for this measure.

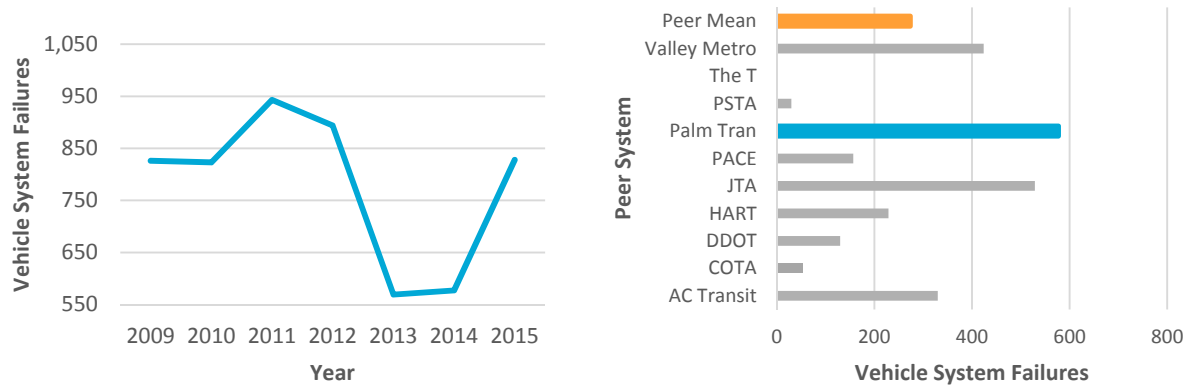
Figure 37 Palm Tran Connection Trend and Peer Comparison for Passenger Trips per Revenue Hour



Number of Vehicle System Failures

Changes in the system failure rate may be related to changes in the service levels and/or the average age of the fleet. For Palm Tran Connection, the number of system failures increased slightly by 0.2%, from 826 failures in 2009 to 828 failures in 2015. However, in comparison to the peer groups, Palm Tran had 111% more vehicle system failures than the peer group mean of 273 vehicle system failures. (Note: Fort Worth (The T) did not report this measure.)

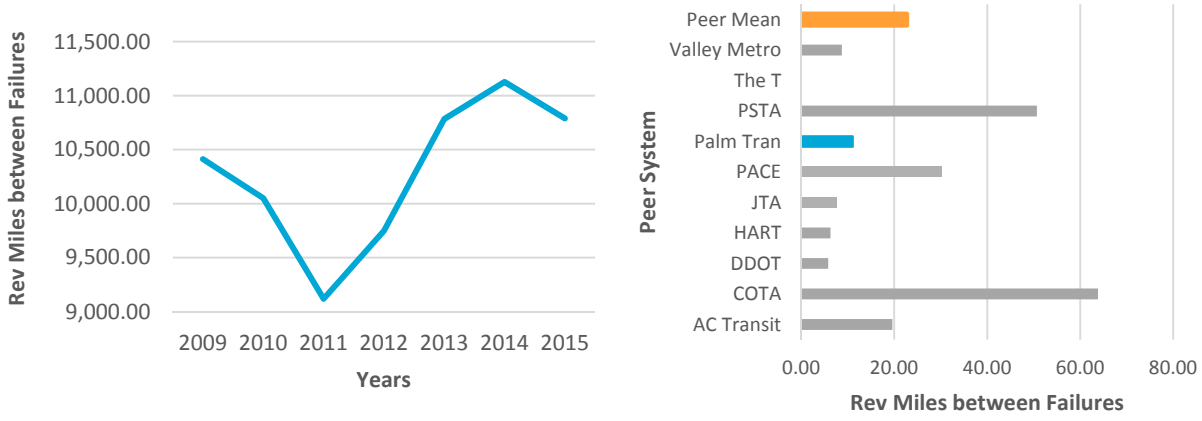
Figure 38 Palm Tran Connection Trend and Peer Comparison for Number of Vehicle System Failures



Revenue Miles between Failures

For Palm Tran Connection, the revenue miles between vehicle failures experienced a 3.6% increase from 10,412 in 2009 to 10,790 in 2015. However, Palm Tran Connection ranked 51% below the peer group mean for this measure. (Note: Fort Worth (The T) did not report revenue miles between failures.)

Figure 39 Palm Tran Connection Trend and Peer Comparison for Revenue Miles between Failures



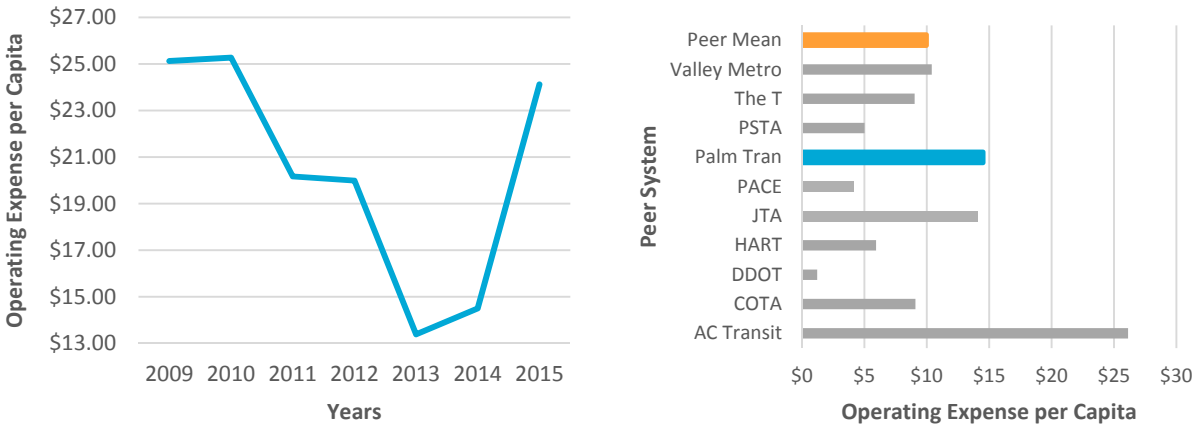
3.2.4 Efficiency Measures

Figures 40 through 44 present the trend and peer analysis for these efficiency performance indicators.

Operating Expense per Capita

Palm Tran Connection's operating expense per capita decreased from $25.13 in 2009 to $24.12 in 2015, an overall decrease of 4%. Compared to the peer systems, the Palm Tran Connection's operating expense per capita of $14.50 is 45.6% above the peer group mean.

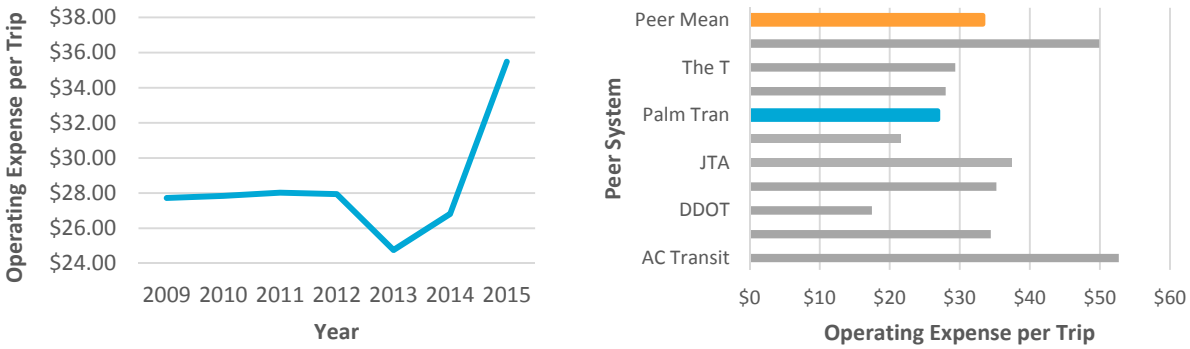
Figure 40 Palm Tran Connection Trend and Peer Comparison for Operating Expense per Capita



Operating Expense per Passenger Trip

Palm Tran Connection's operating expense per passenger trip increased by 28%, from $27.72 in 2009 to $35.48 in 2015, suggesting that efficiency of transporting riders may need improving. However, Palm Tran Connection ranked 19.4% below the peer group mean for this measure, indicating better efficiency than the peer system average.

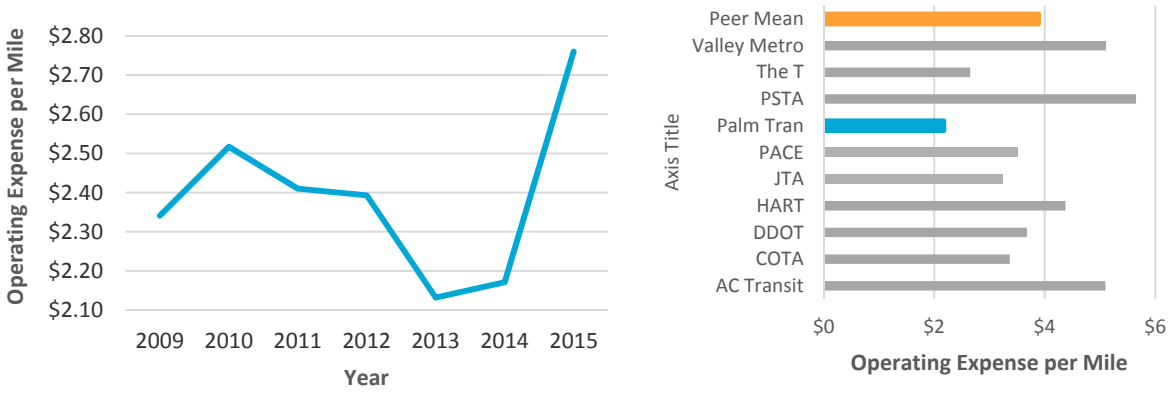
Figure 41 Palm Tran Connection Trend and Peer Comparison for Operating Expense per Passenger Trip



Operating Expense per Passenger Mile

Palm Tran Connection's operating expense per passenger mile increased slightly over the seven-year analysis period, with an overall increase of 2.8%. However, Palm Tran Connection is 44% below the peer mean of $3.88 per passenger mile, indicating efficiency in terms of the operating cost per passenger mile.

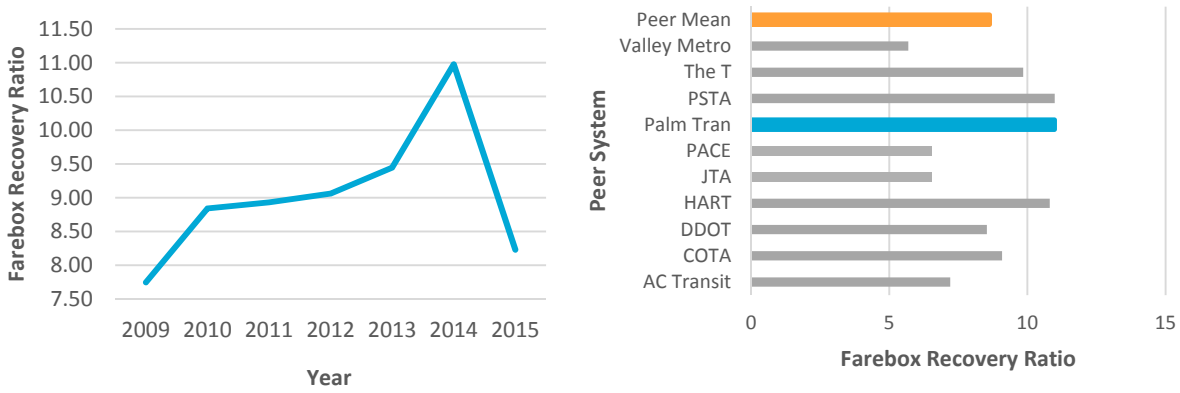
Figure 42 Palm Tran Connection Trend and Peer Comparison for Operating Expense per Passenger Mile



Farebox Recovery Ratio

Palm Tran Connection's farebox recovery ratio increased from 7.75% in 2009 to 8.23% in 2015, an overall increase of 6.2% for the seven-year period. In comparison to the peer group, Palm Tran Connection's farebox recovery is 27.3% above the mean.

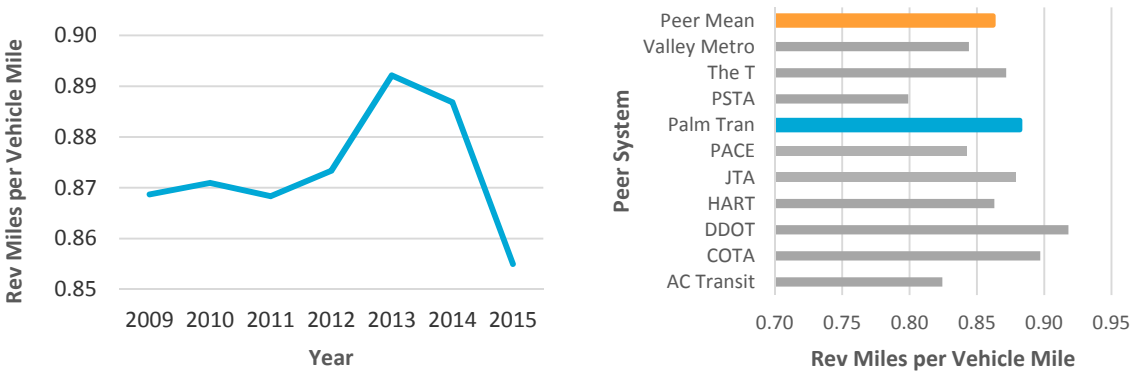
Figure 43 Palm Tran Connection Trend and Peer Comparison Farebox Recovery Ratio (%)



Revenue Miles per Vehicle Mile

The revenue mile per vehicle mile steadily increased annually until it peaked in 2013 at 0.89, but experienced an overall decrease of 1.6% between 2009 and 2015. Revenue miles per vehicle mile for Palm Tran Connection is very close (+2.3%) to the peer group mean, which indicates it aligns closely with the use of paratransit vehicles consistent with its peer systems.

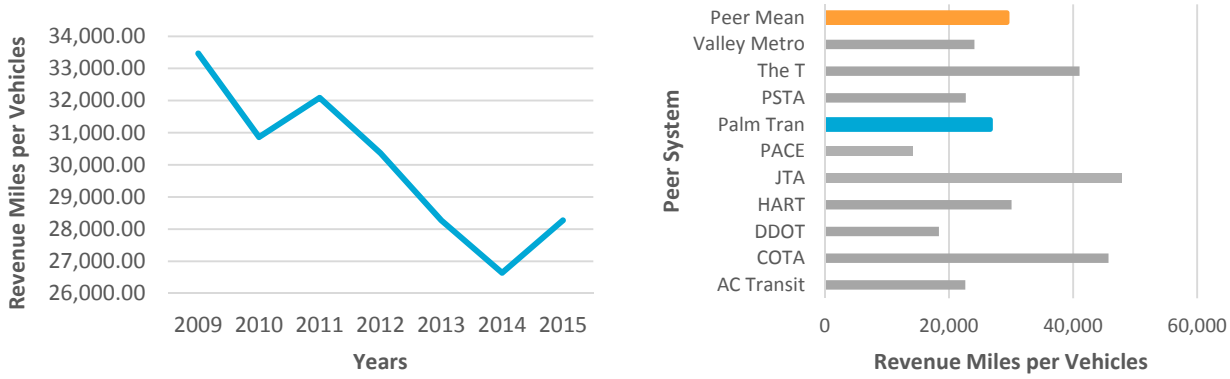
Figure 44 Palm Tran Connection Trend and Peer Comparison Revenue Miles per Vehicle Mile



Revenue Miles per Total Vehicles

Palm Tran Connection experienced an overall decrease of 15.5% in terms of revenue miles per total vehicles, and ranks 9.1% below the peer mean of 29,323 revenue miles per total vehicles.

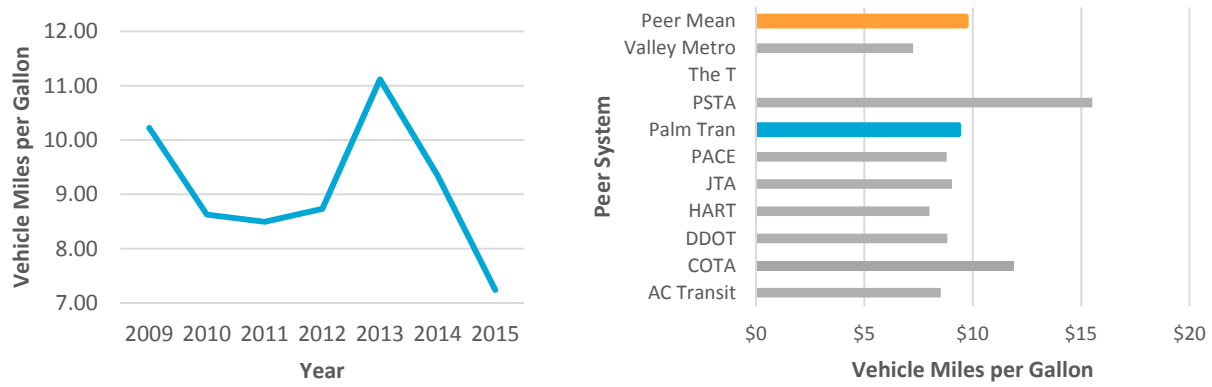
Figure 45 Palm Tran Connection Trend and Peer Comparison Revenue Miles per Total Vehicles



Vehicle Miles per Gallon

For Palm Tran Connection, vehicle miles per gallon (or fuel efficiency) decreased from 10.23 in 2009 to 7.24 in 2015, or 29% overall. Compared to the peer group, Palm Tran Connection's vehicle miles per gallon is 3.6% below the mean. (Note: Fort Worth (The T) did not report this measure.)

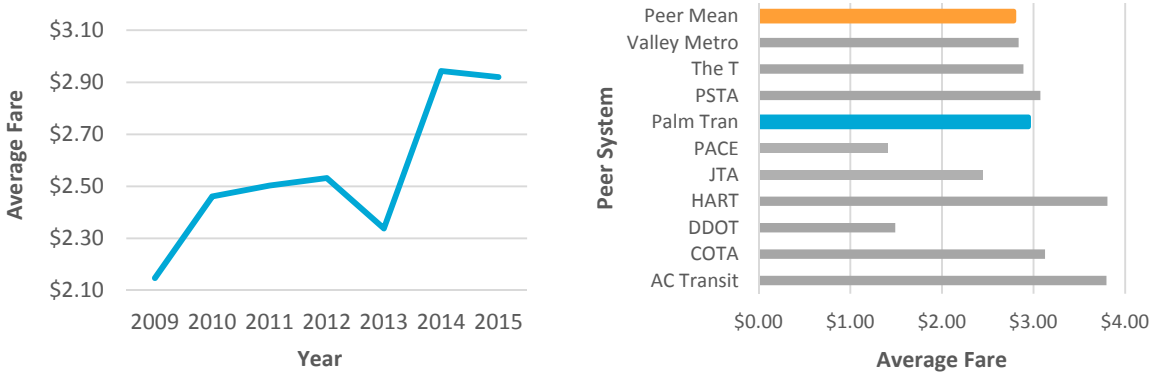
Figure 46 Palm Tran Connection Trend and Peer Comparison Vehicle Miles per Gallon



Average Fare

Palm Tran Connection's average fare increased 36%, from $2.15 in 2009 to $2.92 in 2015. The mean average fare for the peer systems is $2.84, which places Palm Tran Connection's average fare 5.8% above the peer mean.

Figure 47 Palm Tran Connection Trend and Peer Comparison Average Fare



3.2.5 Summary Results of Paratransit Services Trend and Peer System Analyses

As previously mentioned, the trend analysis is only one aspect of an overall performance evaluation, but when combined with the peer review analysis, the results provide a starting point for understanding the efficiency and effectiveness of the transit system. This section describes the results of the demand response trend analysis and peer review completed for Palm Tran Connection.

Paratransit Trend Analysis Summary

General Performance Indicators

- Over the seven-year period, the service area population for Palm Tran has increased by 29% from

982,900 in 2009.

- The total number of passenger trips, or ridership, have increased to 897,001 in 2015, a nearly 3% increase since 2009.
- Passenger miles, vehicle miles, and revenue miles have all slightly increased over the seven-year period.
- Palm Tran's total operating expense has had an overall increase of 24% over the seven-year period. However, when taking into inflation into consideration, the actual operating expense in 2009 dollars increased by less 24%.

Effectiveness Measures

- Vehicle miles per capita (service supply) decreased by 18%, indicating that Palm Tran Connection's service decreased during the analysis period.
- Passenger trips per capita has decreased 25% between 2009 and 2015. Passenger trips per revenue mile and per revenue hour also saw a slight overall decrease. This indicates that, overall in terms of a trend, service consumption is declining.
- The number of system vehicle failures and revenue miles between vehicle failures trended positively over the seven-year period. This indicates that Palm Tran Connection's service quality improved overall during this period.

Effectiveness Measures

- When taking inflation into consideration, the operating expense per capita decreased. However, operating expense per passenger trip and operating expense per revenue mile have both increased by almost 20% since 2009, indicating that Palm Tran Connection may be experiencing overall increased costs in operation.
- Between 2009 and 2015, Palm Tran's farebox recovery ratio increased by 19% while the average fare increased by approximately 50%.

Table 13 summarizes the trend analysis of the Palm Tran Connection demand response system in terms of the percent that each performance measure changed between 2009 and 2015.

Paratransit Peer Analysis Summary

The following summarizes the peer review analysis of performance indicators prepared for Palm Tran Connection.

General Performance

- In comparison to the peer group, Palm Tran Connection provided 4% more revenue miles than the peer group average; however, the total operating expense for the demand response service is also above the peer group mean by 24%.
- The amount of service provided in terms of passenger trips is below the peer group mean by 3%.
- Palm Tran Connection's total gallons consumed sits above the peer mean by approximately 49%.

Effectiveness Measures

- Vehicle miles per capita for Palm Tran is approximately 88% above the peer group mean, indicating

that the supply of service is more than typically experienced in other similar areas.

- Passenger trips per revenue mile and revenue hour are trending below the peer group mean, indicating that the service consumption is lower than the service supplied.
- Palm Tran Connection is also performing below its peers in terms of quality of service. The number of vehicle system failures is 111% above the peer group mean, while revenue miles between failures is 51% below the peer group mean.

Efficiency Measures

- Palm Tran Connection is performing well in comparison to the peer group for efficiency. Operating expense per capita is above the mean by 46%, however, Palm Tran Connection is performing below the peer group mean for operating expense per passenger trip and revenue mile.
- Compared to the peer group, Palm Tran Connection's farebox recovery ratio is 6% above the peer group mean; the average fare charged is 36% above the peer group mean.

Table 13 also summarizes the peer review analysis of the Palm Tran Connection demand response system.

Table 13 Paratransit Trend and Peer System Analyses Summary

Indicators/Measures	2009	2015	% Change (2009 - 2015)	Peer Average	% Deviation from Peer Mean
GENERAL INDICATORS					
Service Area Population	982,900	1,268,782	29.10%	1,834,150	-30.80%
Service Area Size (square miles)	365	365	0%	809	-54.90%
Passenger Trips	891,001	862,498	-3.20%	429,928	59.50%
Passenger Miles	10,550,733	11,091,761	5.30%	3,904,119	117.10%
Vehicle Miles	9,957,279	10,503,918	5.50%	4,053,839	79.60%
Revenue Miles	8,599,976	8,933,822	3.90%	3,476,575	84.70%
Total Operating Expense	$24,699,241	$30,600,637	23.90%	$14,155,033	30.00%
Vehicles Available for Maximum	257	316	23.00%	139	73.80%
Total Gallons Consumed	973,787	1,451,474	49.00%	419,976	85.60%
EFFECTIVENESS MEASURES					
Vehicle Miles Per Capita	10.13	8.28	-18.30%	3.06	87.70%
Passenger Trips Per Capita	0.91	0.68	-25.00%	0.28	92.80%
Passenger Trips Per Revenue Mile	0.10	0.10	-3.50%	0.14	-22.40%
Passenger Trips Per Revenue Hour	1.71	1.61	-5.70%	2.27	-18.00%
Number of Vehicle System Failures	826	828	0.20%	246.20	134.40%
Revenue Miles Between Failures	10,411.59	10,789.64	3.60%	20,397.05	-88.40%
EFFICIENCY MEASURES					
Operating Expense Per Capita	$25.13	$24.12	-4.00%	$9.95	45.7
Operating Expense Per Passenger Trip	$27.72	$35.48	28.00%	$33.27	-19.40%
Operating Expense Per Passenger Mile	$2.34	$2.76	18.00%	$3.88	-44.10%
Operating Expense Per Revenue Mile	$2.87	$3.43	19.40%	$4.03	-73.00%
Farebox Recovery (%)	7.75	8.23	6.20%	$8.62	27.30%
Revenue Miles per Vehicle Mile	0.86	0.85	-1.58%	0.86	2.30%
Revenue Miles Per Total Vehicles	33,462.94	28,271.59	-15.50%	29,323.39	-9.10%
Vehicle Miles Per Gallon	10.23	7.24	-29.20%	9.69	-3.60%
Average Fare	$2.15	$2.92	36.00%	$2.78	5.80%

3.3 Fixed-Route Services Regional Peer Review

A regional peer review was also conducted to assess how efficiently Palm Tran provides its fixed-route service compared to other agencies in relative proximity to Palm Beach County. This peer review was conducted to better understand how Palm Tran is operating in comparison to its neighboring systems. These peers were selected solely based on proximity and therefore only metrics that measured ratios (e.g., passenger trips per revenue mile) were compared as indicators only measuring a single metric (e.g., passenger trips) are inappropriate given the vastly different operating conditions of the localities.

Table 14 summarizes the regional peer systems selected for this comparison.

Table 14 Selected Peer Systems, Regional Systems

Peer System	Acronym	Area Served
Broward County Transit	BCT	Broward County, FL
Miami-Dade Transit	MDT	Miami-Dade County, FL
Central Florida Regional Transportation Authority	LYNX	Orange, Seminole and Osceola, FL

3.3.1 Selected Regional Peer Evaluation Performance Measures

To allow the peers to be assessed at the same scale, only the performance measures with normalized values were used to compare the peer systems. These measures are presented in Table 15.

Table 15 Selected Regional Peer Performance Measures by Category

General Performance	Effectiveness	Efficiency
Service Area Population	Vehicle Miles per Capita	Operating Expense per Capita
Service Area Size	Passenger Trips per Capita	Operating Expense per Passenger Trip
	Passenger Trips per Rev Mile	Operating Expense per Passenger Mile
	Passenger Trips per Rev Hour	Operating Expense per Rev Mile
		Farebox Recovery Ratio (%)
		Revenue Miles per Vehicle Mile
		Revenue Miles per Total Vehicle
		Vehicle Miles per Gallon
		Average Fare

3.3.2 General Performance Measures

Figures 48 and 49 summarize the general performance measures for the regional peer analysis.

Service Area Population and Size

The service area population and size in terms of square miles were assessed to show how Palm Beach County differs in size and population to the selected regional peers. Palm Tran's service area population is

nearly 33% below the peer group mean. Additionally, Palm Tran's service area of 365 square miles is nearly 60% below the peer group mean. LYNX is a regional transportation authority that spans three counties, resulting in a significantly larger service area than the other peer systems.

Figure 48 Palm Tran Regional Peer Comparison for Service Area Population

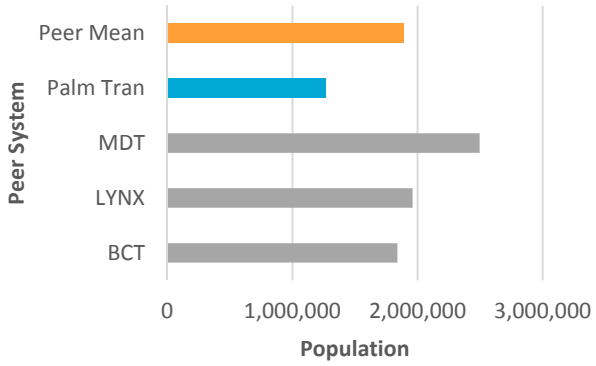
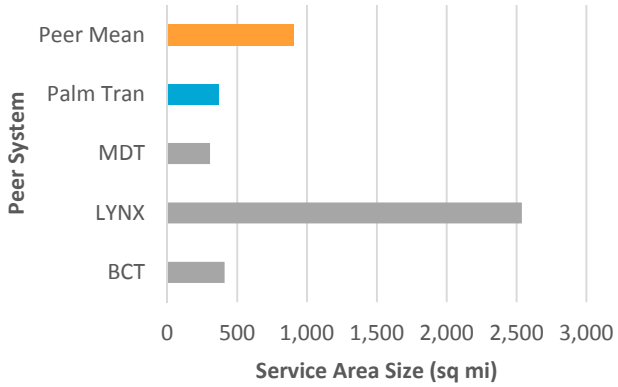


Figure 49 Palm Tran Regional Peer Comparison for Service Area Size



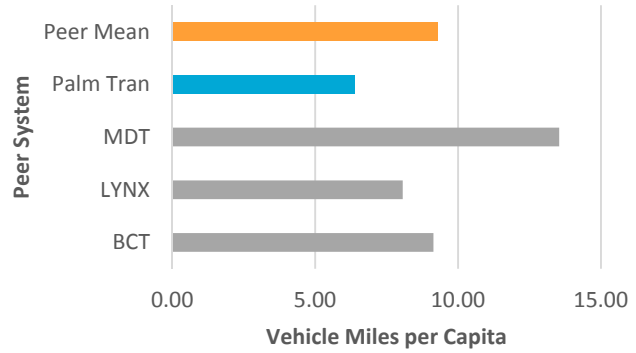
3.3.3 Effectiveness Measures

Figures 50 through 53 summarize the effectiveness performance measures for the regional peer analysis.

Vehicle Miles per Capita

When compared to its regional peers, Palm Tran is 31.2% below the peer group mean, an indication that the supply of service is less than what is experienced by other regional transit agencies.

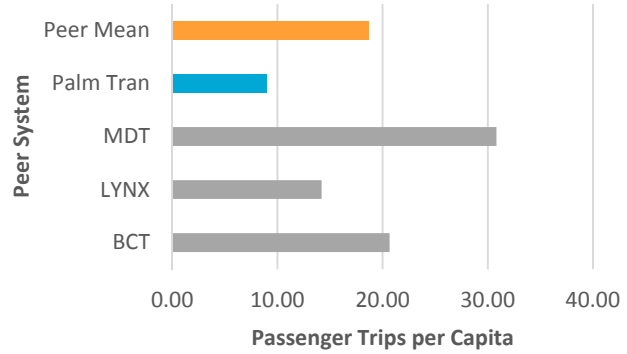
Figure 50 Palm Tran Regional Peer Comparison for Vehicle Miles per Capita



Passenger Trips per Capita

The peer review indicates that Palm Tran has the lowest passenger trips per capita, nearly 52% below the peer group mean of 18.67.

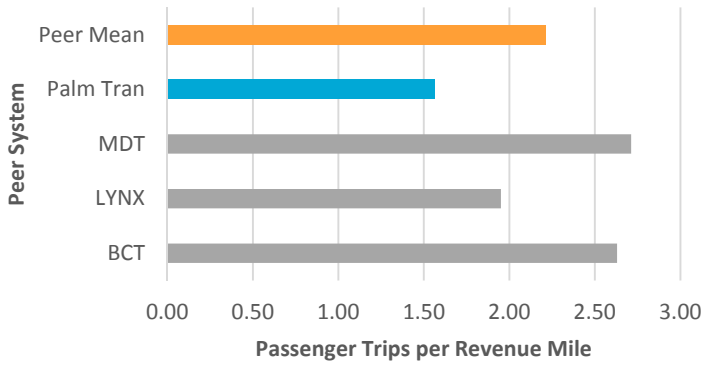
Figure 51 Palm Tran Regional Peer Comparison for Passenger Trips per Capita



Passenger Trips per Revenue Mile

When compared to its regional peer systems, Palm Tran's passenger trips per revenue miles is 29.4% below the peer mean, indicating that Palm Tran has the lowest ridership productivity of this peer group.

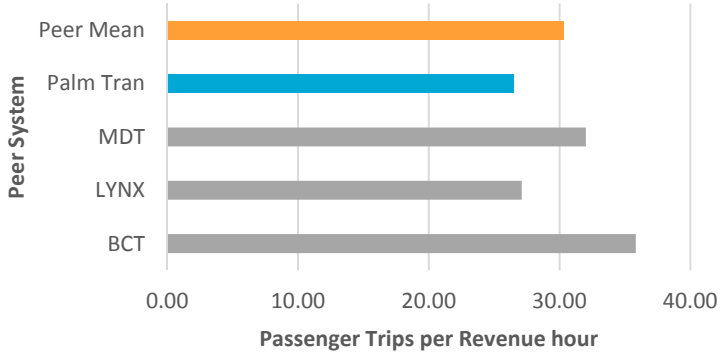
Figure 52 Palm Tran Regional Peer Comparison for Passenger Trips per Revenue Mile



Passenger Trips per Revenue Hour

When passenger trips per revenue hour are compared, Palm Tran is nearly 13% below the peer group mean. This indicates the regional peers' ridership productivity is slightly higher than Palm Tran's.

Figure 53 Palm Tran Regional Peer Comparison for Passenger Trips per Revenue Hour



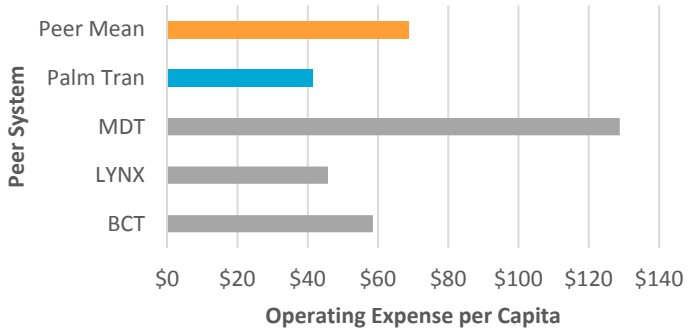
3.3.4 Efficiency Measures

Figures 54 through 62 summarize the efficiency performance measures for the regional peer analysis.

Operating Expense per Capita

In terms of operating expenses per capita, Palm Tran is nearly 40% lower than the regional peer group mean of $68.62.

Figure 54 Palm Tran Regional Peer Comparison for Operating Expense per Capita



Operating Expense per Passenger Trip, per Passenger Mile, and per Revenue Mile

In terms of operating expense per passenger trip, Palm Tran is 24% above the peer group mean for this measure, indicating a higher operating cost than other regional transit systems. However, in terms of the operating expense per passenger mile, Palm Tran only ranks nearly 5% above the peer group mean and nearly 11% below the peer group mean for operating cost per revenue mile, indicating that Palm Tran is providing efficient delivery of transit service compared to its regional peers.

Figure 55 Palm Tran Regional Peer Comparison for Operating Expense per Passenger Trip

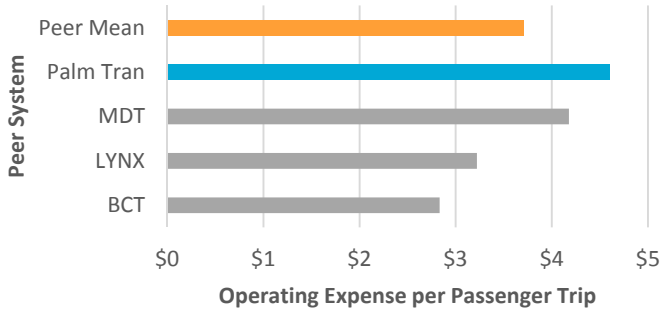


Figure 56 Palm Tran Regional Peer Comparison for Operating Expense per Passenger Mile

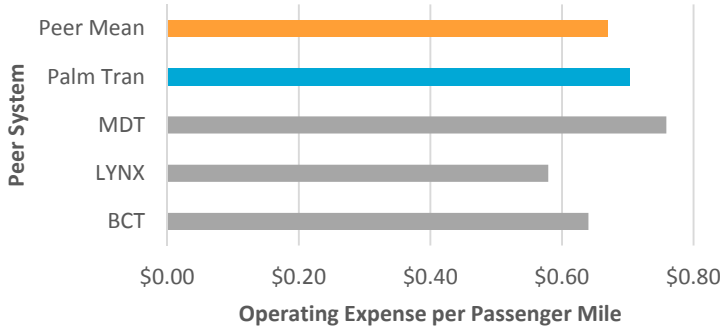
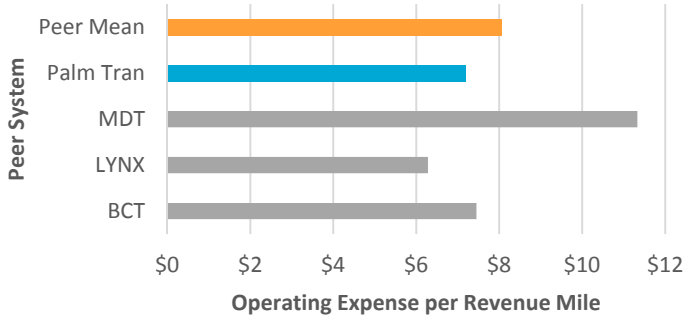


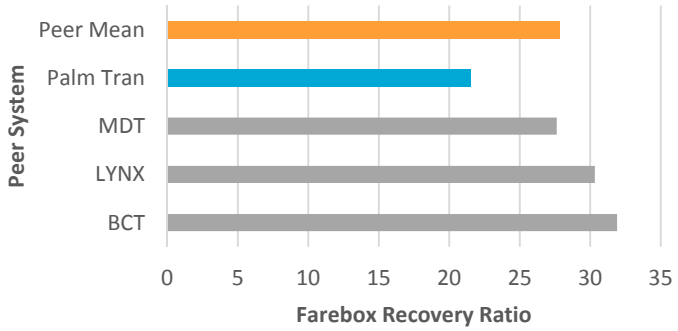
Figure 57 Palm Tran Regional Peer Comparison for Operating Expense per Revenue Mile



Farebox Recovery Ratio (%)

The farebox recovery ratio for Palm Tran is approximately 23% below the peer group mean indicating that Palm Tran must rely on a greater proportion of non-fare revenue as for operating revenue compared to these regional systems.

Figure 58 Palm Tran Regional Peer Comparison for Farebox Recovery Ratio (%)



Revenue Miles per Vehicle Mile and per Total Vehicles

In terms of revenue miles per vehicle mile, Palm Tran is at 3% above the peer group mean, indicating a slightly higher system productivity than the selected regional peer systems. Palm Tran is also 6% above the peer group mean for revenue miles per total vehicles.

Figure 59 Palm Tran Regional Peer Comparison for Revenue Miles per Vehicle Mile

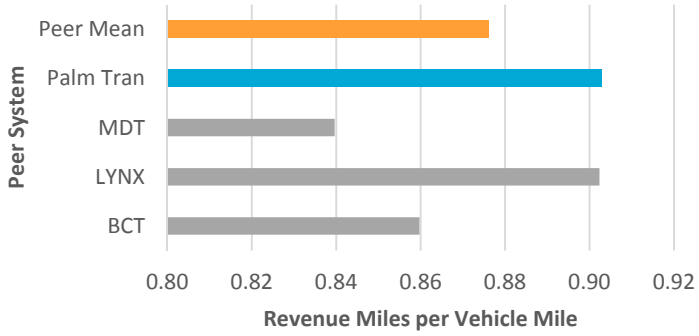
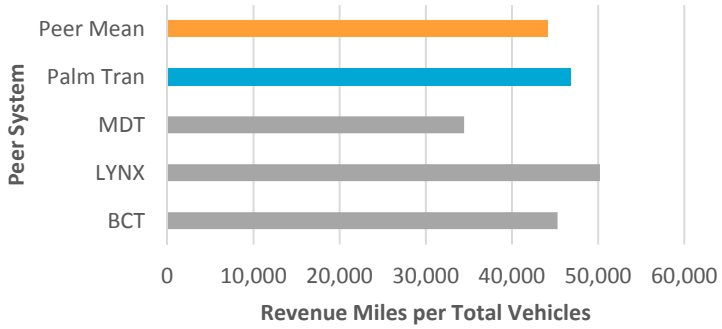


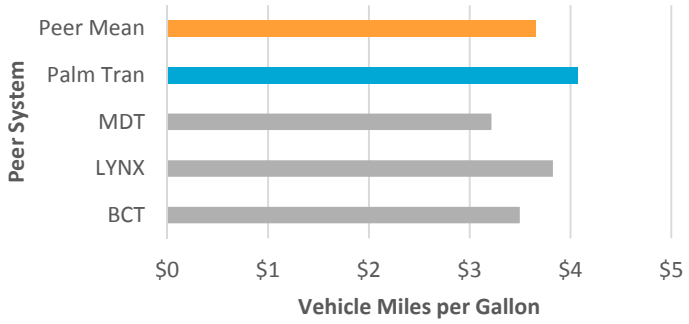
Figure 60 Palm Tran Regional Peer Comparison for Revenue Miles per Total Vehicles



Vehicle Miles per Gallon

Palm Tran ranks 11% above the peer mean of 3.65 miles per gallon, indicating better fuel efficiency when compared to the selected regional transit systems.

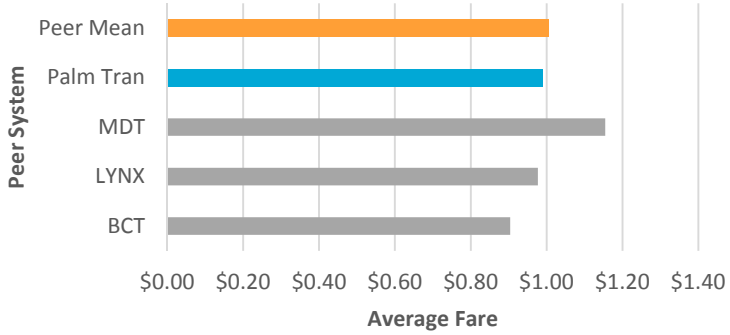
Figure 61 Palm Tran Regional Comparison for Vehicle Miles per Gallon



Average Fare, Regional Peers

When average fares were compared, Palm Tran ranks almost 2% below the peer group mean of $1.01 indicating that Palm Tran's fares are generally in line with the regional peer systems.

Figure 62 Palm Tran Regional Peer Comparison for Average Fare



3.3.5 Regional Peer System Analysis Summary

The following summarizes the regional peer review analysis of selected performance indicators prepared for Palm Tran.

General Performance

- Palm Tran's service area population ranks the lowest of the peer group at 33% below the group mean, and sits below the peer group mean by 60% in terms of service area size.

Effectiveness Measures

- Palm Tran consistently ranked below the regional peer mean for all of the effectiveness measures.
- Vehicle miles per capita for Palm Tran are approximately 52% below the peer group mean, indicating that the supply of service is less than typically experienced in the neighboring systems.
- Passenger trips per revenue mile is below the peer group mean by 29% while passenger trips per revenue hour are below by 13%, indicating that there may be room for improvement for ridership levels.

Efficiency Measures

- The cost efficiency measures provide varying indications of benchmarks compared to its regional peer systems, depending on the measure. For example:
    - Palm Tran's operating expense per service area capita is almost 40% below the peer group mean, and its operating expense per passenger trip is 24% above the group mean.
    - The operating expense per revenue mile is nearly 11% below the peer group mean, while the operating expense per passenger mile is 5% above the peer group mean.
- Palm Tran's farebox recovery is approximately 23% below the peer group mean, but it's average fare is generally in line with the peer mean, and revenue miles per vehicle mile for Palm Tran is only 3% above the peer group mean, which indicates Palm Tran is in line with the regional average for these efficiency measures.

Table 16 summarizes the peer review analysis of the Palm Tran regional peers. Palm Tran's performance is shown in comparison to the peer group average.

Table 16 Fixed-Route Regional Peer System Analyses Summary

Indicators/Measures	Peer Average	% Deviation from Peer Mean
GENERAL INDICATORS		
Service Area Population	1,890,968	-32.90%
Service Area Size (square miles)	905	-59.66%
EFFECTIVENESS MEASURES		
Vehicle Miles Per Capita	9.28	-31.23%
Passenger Trips Per Capita	18.67	-51.77%
Passenger Trips Per Revenue Mile	2.21	-29.41%
Passenger Trips Per Revenue Hour	30.35	-12.80%
EFFICIENCY MEASURES		
Operating Expense Per Capita	$68.62	-39.64%
Operating Expense Per Passenger Trip	$3.71	24.04%
Operating Expense Per Passenger Mile	$0.67	4.91%
Operating Expense Per Revenue Mile	$8.06	-10.87%
Farebox Recovery (%)	27.84	-22.78%
Revenue Miles per Vehicle Mile	0.88	3.06%
Revenue Miles Per Total Vehicles	44,209.29	6.03%
Vehicle Miles Per Gallon	3.65	11.44%
Average Fare	1.01	-1.72%

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3.4 Staffing Review

In addition to the peer and trend review, a staffing review was completed. A staffing review uses NTD data to compare the level of staff each agency has in a variety of employee categories. This review can be useful to understand how efficiently a system is using staff. Large differentials between staffing levels at the reviewed agency and the peer mean might indicate a need for a more in-depth review of staffing levels. Palm Tran generally has fewer staff members per category than its peers, which would suggest it is operating on an efficient basis with regards to staffing levels.

Table 17 Staffing Review

	SORTA	COTA	DDOT	The T	HART	JTA	PSTA	Palm Tran	Peer Average	% Deviation from Peer Mean
Revenue Hours	736,720	879,037	690,023	368,495	635,946	609,595	602,329	431,696	619,230	-30.29%
Operating Employee FTEs	523.60	561.14	558.70	223.37	410.36	417.17	382.23	313.95	423.82	-25.92%
Revenue Hours per Operating Employee FTEs	1,407.03	1,566.52	1,235.05	1,649.71	1,549.73	1,461.26	1,575.83	1,375	1,478	-6.94%
Revenue Miles	9,669,391	10,590,852	8,854,204	4,249,336	7,961,047	8,736,870	8,535,339	7,312,791	8,238,729	-11.24%
Maintenance Employee FTEs	195.51	145.80	276.33	102.45	132.44	111.15	78.01	80.52	140.28	-42.60%
Revenue Miles per Maintenance Employee FTEs	49,457	72,640	32,042	41,477	60,111	78,604	109,413	90,820	66,821	35.92%
Vehicles Operated in Maximum Service	297	275	229	126	162	158	160	130	192	-32.34%
Administrative Employee FTEs	77.00	83.81	34.61	39.33	64.74	107.25	66.97	45.97	64.96	-29.23%
Vehicles per Administrative Employee FTE	3.86	3.28	6.62	3.20	2.50	1.47	2.39	2.83	3.27	-13.49%

Note: Although identified as a peer previously, New Orleans Regional Transit Authority was not included in this analysis as its staffing data was not available in NTD. The resulting peer mean for Revenue Miles is different than the peer mean found in Figure 8 due to the removal of NORTA.

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3.5 Performance Measure Review

The Transit Cooperative Research Program (TCRP) Report 88, *A Guidebook for Developing a Transit Performance-Measurement System*, developed guidelines for reviewing performance of transit agencies. The peer and trend reviews presented in this section apply many of these principles. Some of the analysis also took place in the TOI and DTA. Table 18 provides an index to understand which of the measures falls into which of the TCRP report's performance measurement categories:

- Capacity,
- Community impact of transit,
- Economic or ridership,
- Maintenance and construction,
- Service availability,
- Service delivery, and
- Travel time.

Table 18 Performance Measure Index

Performance Measure Category	Trend and Peer Review References		
	Fixed-Route	Paratransit	Regional
Capacity	10	32	n/a
Community Impact of Transit	TOI, DTA, Table 2	TOI, Table 2	n/a
Economic or Ridership	Figures 5, 6, 9, 11, 14, 15, 18, 19, 20, 21, 22, 24, 25	Figures 28, 29, 31, 33, 36, 37, 40, 41, 42, 43, 44, 46, 47	Figures 52, 53, 54, 55, 56, 57, 58, 59, 61, 62
Maintenance and Construction	Figures 16, 17	Figures 38, 39	n/a
Service Availability	Table 2, Figures 12, 13	Table 2, Figures 30, 34, 35	n/a
Service Delivery	Table 2, Figures 16, 17, 23	Table 2, Figures 38, 39, 45	60

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4.0 Existing Transportation Services Inventory

In August 2016, an inventory of other major providers of transportation services were compiled. Information on the providers was gathered through internet research and a survey sent via mail or electronic mail to each provider. If a provider did not complete a survey, the data provided below was gathered from internet research and/or prior provider inventories.

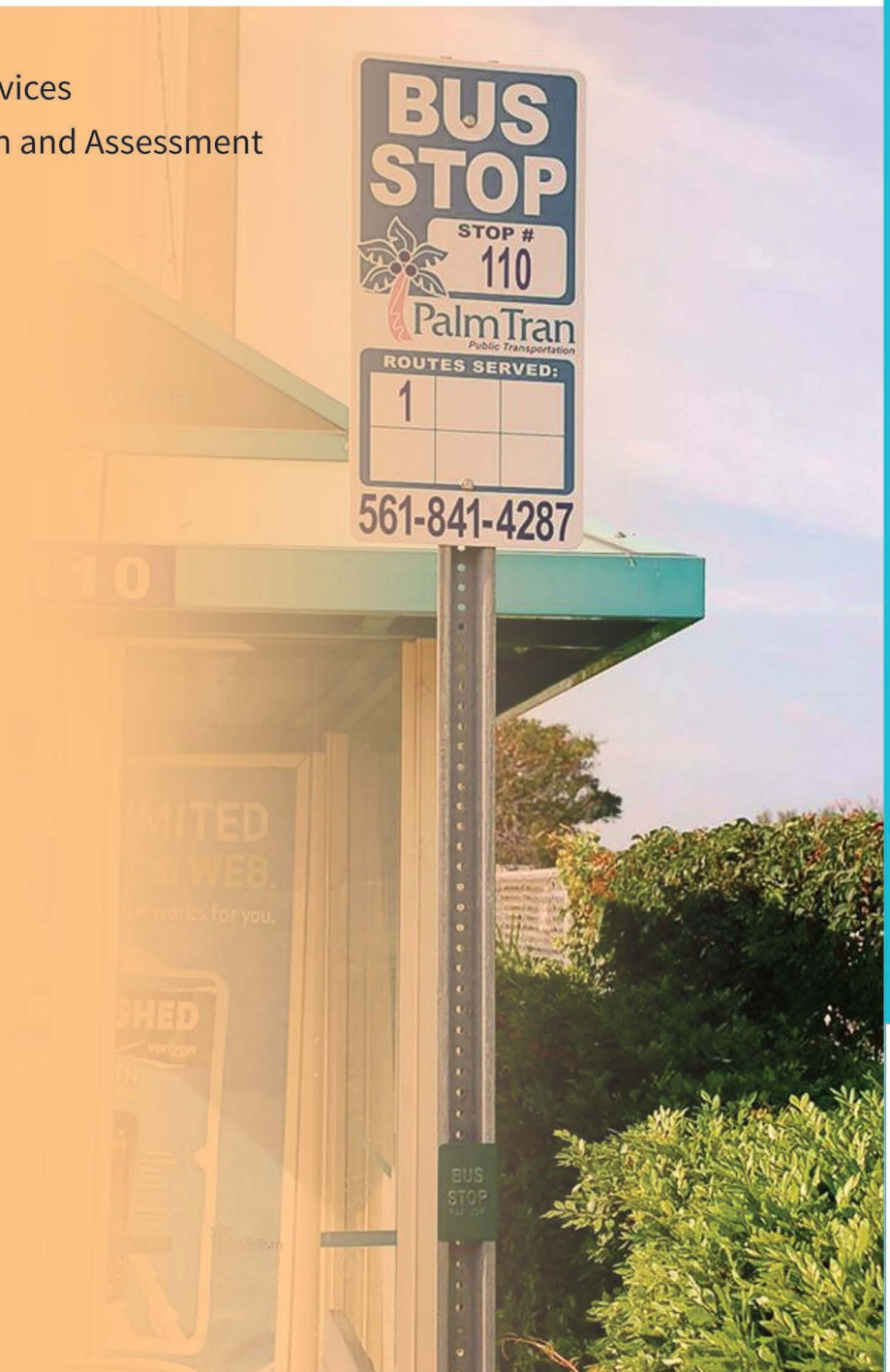
Table 19 Inventory of Existing Providers

Abe's Limousine Service Corp. 6701 Garden Road West Palm Beach, FL 33404 561-547-7773 888-547-7773 www.abeslimousineservice.com # of vehicles - 15	Aristy Enterprise, Inc. dba Diamond Coach Limousine 5030 Champion Blvd. Suite G11128 Boca Raton, FL 33496 561-218-1887 diamondcoachlimousine@gmail.com # of vehicles - 18	American Medical Response 1105 Barnett Drive, Suite D Lake Worth, FL 33461 561-533-5633 # of vehicles - 20 non-emergency medical transportation
Boca Raton Transportation, Inc. 1450 NW 1st Avenue Boca Raton, FL 33432 561-368-8333 561-750-7800 www.bocatrans.com # of vehicles - 44	Boyce Trans, Inc. dba A1A Limo 1990 NW Boca Raton Blvd Boca Raton, FL 33432 561-391-4762 561-622-2222 www.A1ALimo.com # of vehicles – 47	CARLEX LLC S 2393 Congress Ave West Palm Beach, FL 33406 561-506-6965 www.carlexflorida.com # of vehicles - 2 24/7
Coastal Car Worldwide 271 SW 33rd Court Ft. Lauderdale, FL 33315 800-488-5466 www.coastalcar.com # of vehicles - 22	DAVEL of Palm Beach, Inc. 2188 N. Military Trail West Palm Beach, FL 33462 561-687-9454 www.davel.com # of vehicles – 30	E & R Transportation, Inc. 416 45th Street West Palm Beach, FL 33407 561-506-9499 561-541-4025 www.erlimo.com # of vehicles - 11
Express Taxi & Limousine, Inc. 964 Service Street #28 West Palm Beach, FL 33407 561-689-9999 # of vehicles - 10	First Transit 1220 West Industrial Avenue #4 Boynton Beach, FL 33426 561 738-6008 19296 Lyons Road Boca Raton, FL 33434 561-488-5942 # of vehicles - 79	Florida Gulf Coast Transportation 1000 Palm Beach Int'l Airport West Palm Beach, FL 33406 (561) 616-2800 561-668-1272 www.yellowcabflorida.com
Gardens Transportation, Inc. 1616 N Florida Mango Rd C2 West Palm Beach, FL 33409 561-799-4994 # of vehicles - 15	Global Taxi 1616 N. Florida Mango West Palm Beach, FL 33409 561-408-0888 24/7 Handicap transportation vehicles available	Golden Cab Corporation 2525 Old Okeechobee Rd., Ste #1 West Palm Beach, FL 33405 561-588-8988 561-655-3715 office # of vehicles – 33

Imperial Transit (Millennium Transportation Group LLC) 3114 45th Street, Suite #10 West Palm Beach, FL 33407 561-689-3663 www.imperialtrips.com # of vehicles – 28	J & J Car & Taxi, Inc. 7230 Georgia Avenue West Palm Beach, FL 33405 # of vehicles – 16	King Cab Inc. 11256 Orange Grove Blvd. West Palm Beach, FL 33411 561-275-7777 # of vehicles - 10
Maruti Fleet & Management, LLC 1701 W 10th St West Palm Beach, FL 33404 561-841-5052 www.marutitransit.com # of vehicles - 48	MV Transportation 3301 Electronics Way West Palm Beach, FL 33407 Jeanie Chrisman, contact 561-870-7080 # of vehicles – 103	Metro Taxi 1587 SW 4th Avenue Delray Beach, FL 33444 561-444-9999 www.metrotaxifl.com
NP Yellow Cab 4010 Georgia Avenue Suite 1 & 2 West Palm Beach, FL 33405 561-833-6666 or 561-577-9392 www.taxiservicepalmbeach.com	Palm Beach Tours & Transportation, Inc. 5900 Georgia Avenue West Palm Beach, FL 33405 561-655-5515 561-203-0404 www.pbtt.com # of vehicles - 17	Palm Beach Transportation Group, LLC 1700 N. Florida Mango Road West Palm Beach, FL 33409 561-689-4222 # of vehicles - 221
Park Limousine 139 N. County Road Suite 23 Palm Beach, FL 33480 561-832-2222 www.parklimo.net # of vehicles – 60+	Personal Limousine Service of Boca Raton, Inc. dba All Points Limo 199 NW 28th St. Bay 12 Boca Raton, FL 33431 561-393-7003 www.allpointslimo.com # of vehicles – 15	ProMed Transportation Corp. 5599 Dewberry Way West Palm Beach, FL 33415 561-649-1611 www.promedmanagement.net # of vehicles - 11
SMT Transportation dba Captain's Airport, Seaport & Car Service 11230 Alligator Trail Lake Worth, FL 33449 561-798-2180 561-747-1363 www.captainsairport.com # of vehicles - 10	Southeastern Florida Transportation Group 1700 N. Florida Mango Rd West Palm Beach, FL 33409 561-777-7777 561-299-9999 www.yellowcabflorida.com/southeastern-florida-transportation	South Florida Transportation Inc. 76 Wood Rose Ct Royal Palm Beach, FL 33411 561-792-1068 561-586-2600 www.SouthFloridaTransportation.com # of vehicles - 17
Statewide Dispatch, Inc. 3700 Georgia Avenue #13 West Palm Beach, FL 33405 561-655-0644 # of vehicles - 23	Super Yellow Cab Corporation 3700 Georgia Avenue West Palm Beach, FL 33405 561-838-8888 # of vehicles - 10	Transportation Service System, Inc. 1587 SW 4th Avenue Delray Beach, FL 33487 561-276-2230 # of vehicles - 17
Tropical Non-Medical Transportation, LLC. 2200 N. Florida Mango Rd Suite 402 West Palm Beach, FL 33409 561-615-7255 # of vehicles - 13	VIP Transport Express 801 Northpoint Pkwy West Palm Beach, FL 33407 561-792-2940 www.viptransportexpress.com # of vehicles - 4 24/7 special needs transportation ADA	Vitalcare Connection, Inc. 1891 Old Okeechobee Road West Palm Beach, FL 33409 561-328-6050 # of vehicles - 15

APPENDIX E
Needs and Alternatives Identification

- Demand Estimation for Transit Services
- Transit Service Needs Identification and Assessment
- Alternative Identification



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Palm Tran
Transit Development Plan
FY 2017-2026

Technical Memorandum Number 4
Needs and Alternatives Identification

August 2016

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1.0 Introduction

The State of Florida Public Transit Block Grant Program was enacted by the Florida Legislature to provide a stable source of funding for public transit. The Block Grant Program requires public transit service providers, such as Palm Tran (operating as a division of Palm Beach County), to develop, adopt, and annually update a 10-Year Transit Development Plan (TDP). This process helps to ensure that the provision of public transportation is consistent with the mobility needs of the local communities. Under legislation that became effective February 20, 2007, the TDP must undergo a major update every five years.

Major TDP updates involve more substantial reporting requirements than annual minor updates. Development of the TDP includes a review of planning and policy documents, a documentation of study area conditions, demographic characteristics, current transit services, creation of a financial plan, and incorporation of public input through public involvement efforts.

Palm Tran is in the process of undertaking a major TDP update through a two-phase approach. Deliverables produced during Phase 1 include two technical memorandums that document the baseline conditions, summary of public involvement activities conducted, and development of updated goals, objectives, and policies for Palm Tran.

Under Phase 2, the draft and final 10-year TDP will be produced along with two supporting technical memorandums. These documents will summarize the remaining activities required of a major TDP update as required by Section 341.071, Florida Statutes (F.S.). The TDP Major Update will be presented to the Palm Beach County Board of County Commissioners for adoption and submitted to the Florida Department of Transportation (TDP) by the December 1, 2016, deadline.

This fourth technical memorandum is the second produced for Phase 2 of the TDP major update process and includes the following sections in addition to this introduction:

- **Section 2** documents the **Demand Estimation for Transit services**, which describes the 10-year fixed-route ridership estimation process using the FDOT-approved modeling tool. This section provides ridership projections for 2026 if no changes were undertaken to Palm Tran services. This section also include the Paratransit Service 10-Year Ridership Projection.

- **Section 3** documents the **Transit Service Need Identification and Assessment**, which contains a market analysis for discretionary and traditional transit riders.

- **Section 4** provides an overview of the **Alternatives Identified** for inclusion in the evaluation process.

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2.0 Demand Estimation for Transit Services

One of the many components of a TDP is forecasting demand for transit services within the agency's jurisdiction. These estimates are necessary for both fixed-route and paratransit trips within the Palm Tran service area.

2.1 Fixed-Route 10-Year Ridership Estimation

Estimating transit demand is a key component of a TDP, accomplished through estimating ridership. Estimating the fixed-route ridership of transit systems is done using the FDOT-approved ridership forecasting model Transit Boarding Estimation and Simulation Tool (TBEST). Two sets of forecasts were developed to inform and subsequently guide decision making about the allocation of existing resources, and consider how to best use potential future resources. The first ridership forecast is a baseline of maintaining existing service levels over the next 10-years (no-build or status quo). The second ridership forecast (to be included in the draft TDP) is based on operating existing services plus the alternatives developed during the TDP process. The ridership forecast results will be used to evaluate, compare, and prioritize the recommended improvements. The 10-year baseline forecasts are summarized in this section.

2.1.1 The TBEST Model

TBEST was developed by FDOT to standardize ridership modeling for transit demand across the state by providing a comprehensive transit analysis and forecasting model that simulates travel demand at the individual route level. The software provides near-and mid-term forecasts of transit ridership that are consistent with the needs of operational planning and TDP development. This tool provides a statewide standard tool that enables a comparison across the state between transit agencies varying in size and complexity in a consistent manner. The model is best suited to compare alternatives on concurrent networks against each other, and are not suggested for use in an investment-grade study of a major capital project or a realistic approximation of future ridership levels.

In producing model outputs, TBEST considers the following factors:

- Transit network connectivity – the level of connectivity relates to the number of transfers that are possible between routes within the transit network.
- Spatial and temporal accessibility – service frequency and the distance between stops; the larger the physical distance between potential bus riders and bus stops, the lower the level of service utilization; similarly, less frequent service has a perception of unreliability and therefore utilized less.
- Time-of-day variations – accommodates peak travel patterns with greater service utilization forecasts.
- Route competition and route complementarities – accounts for competition between routes, like routes that connect to the same destinations or that travel on common corridors; conversely, routes that are synchronized and support each other in terms of schedule and service to major destinations or transfer locations benefit from a complementary relationship.

Data required to update the Palm Tran network included the following:

- Palm Tran bus schedules with time points and route map;
- Broward County Transit (BCT) and South Florida Regional Transportation Authority (SFRTA) Tri-Rail bus and rail schedules with time points and route map;
- Operating characteristics for transit routes, including route type, headways, route length, days of service, service span, and fares; and
- Observed average daily ridership by route.

2.1.2 Model Inputs, Assumptions, and Limitations

The inputs and the assumptions made in modeling the Palm Tran system in TBEST are presented below. Whereas there is flexibility in several parameters, some are fixed. For example, the model is not interactive with roadway network conditions. Therefore, ridership forecasts will not show direct sensitivity to future changes in roadway traffic conditions or speeds. Additionally, coefficients that direct the propensity of boardings and transfers on a specific route are coded into the programming language of TBEST and cannot be adjusted.

For current demographic data used as a base input for the TBEST model, data were derived from the Census 2010 geography and population characteristics, 2010 Info USA employment data, and 2011 parcel-level and land use data from the Florida Department of Revenue (FDOR). Based on these data inputs, the model captures market demand (population, employment, and land use characteristics) within ¼ mile of each stop.

For future demographic data, TBEST uses the American Community Survey (ACS) data for population and employment that have been projected into a future year based on growth rate projections. The annual population (1.78%) and total employment (1.23%) growth rates were derived from ACS and the Bureau of Labor Statistics, respectively.

2.1.3 Results for Maintaining Existing Service

This section includes a description of the TBEST model run and summarizes the ridership forecasts produced by TBEST. The TBEST method of model calibration is referred to as a ‘validation’ and is required before creating a ridership estimate. Validation uses current daily ridership averages for the baseline model to automatically adjust model coefficients so that modeled ridership more closely approximates existing observed behavior. In this way, ridership figures generated by TBEST for the base year will be similar to the observed ridership.

Observed FY 2016 ridership data from Palm Tran was used for validation to create the 2017 base year. Using the 2017 base year, a future scenario for 2026 was created. The 2026 Status Quo Scenario provides ridership projections for the existing fixed-route system without any assumed modifications. Based on the TBEST results shown in Table 1, maintaining the status quo will result in a moderate ridership increase in Palm Tran ridership from the base year of 2017 to the 2026 horizon year of the TDP.

Table 1 provides annual ridership projections by route for the 2017 base year and 2026 projection year. Tables 2, 3, and 4 provides average weekday ridership, average Saturday ridership, and average Sunday ridership, respectively. Table 5 provides a summary of annual and weekday ridership.

Table 1: Status Quo Scenario Annual Ridership Projection by Route (FY 2017-2026)

Route	Annual Ridership			
	FY 2017	FY 2026	Absolute Change, FY 2017-2026	Percent Change, FY 2017-2026
Route 1	2,473,172	2,638,779	165,607	6.7%
Route 2	1,309,100	1,424,314	115,214	8.8%
Route 3	1,324,440	1,452,001	127,561	9.6%
Route 4	47,008	51,478	4,470	9.5%
Route 10	89,856	97,749	7,893	8.8%
Route 20	93,132	101,815	8,683	9.3%
Route 21	110,656	121,335	10,679	9.7%
Route 30	90,636	98,899	8,263	9.1%
Route 31	402,220	441,830	39,610	9.8%
Route 33	225,940	247,956	22,016	9.7%
Route 40	215,800	233,529	17,729	8.2%
Route 41	19,292	21,176	1,884	9.8%
Route 42	24,700	26,542	1,842	7.5%
Route 43	595,400	645,964	50,564	8.5%
Route 44	123,760	134,276	10,516	8.5%
Route 45	33,644	36,707	3,063	9.1%
Route 46	259,480	284,076	24,596	9.5%
Route 47	215,280	236,296	21,016	9.8%
Route 48	137,540	151,700	14,160	10.3%
Route 49	74,412	83,661	9,249	12.4%
Route 52	55,900	60,253	4,353	7.8%
Route 60	32,760	36,072	3,312	10.1%
Route 61	193,232	214,079	20,847	10.8%
Route 62	622,544	670,664	48,120	7.7%
Route 63	154,284	168,644	14,360	9.3%
Route 64	87,412	96,092	8,680	9.9%
Route 70	274,300	299,892	25,592	9.3%
Route 71	71,032	77,470	6,438	9.1%
Route 73	134,368	145,858	11,490	8.6%
Route 80	223,288	244,450	21,162	9.5%
Route 81	141,076	154,075	12,999	9.2%
Route 91	220,688	241,672	20,984	9.5%
Route 92	82,524	91,121	8,597	10.4%
Route 94	191,880	206,399	14,519	7.6%
TOTAL	10,350,756	11,236,824	886,068	8.6%

Table 2: Status Quo Scenario Average Weekday Ridership Projection by Route (FY 2017-2026)

Route	Average Weekday Ridership			
	FY 2017	FY 2026	Absolute Change, FY 2017-2026	Percent Change, FY 2017-2026
Route 1	7,954	8,544	590	7.4%
Route 2	4,498	4,882	384	8.5%
Route 3	4,432	4,839	407	9.2%
Route 4	165	181	16	9.7%
Route 10	304	331	27	8.9%
Route 20	325	355	30	9.2%
Route 21	388	425	37	9.5%
Route 30	306	334	28	9.2%
Route 31	1,408	1,548	140	9.9%
Route 33	748	822	74	9.9%
Route 40	708	768	60	8.5%
Route 41	69	76	7	10.1%
Route 42	95	102	7	7.4%
Route 43	1,998	2,165	167	8.4%
Route 44	400	434	34	8.5%
Route 45	110	120	10	9.1%
Route 46	862	943	81	9.4%
Route 47	717	789	72	10.0%
Route 48	449	497	48	10.7%
Route 49	230	259	29	12.6%
Route 52	191	206	15	7.9%
Route 60	126	139	13	10.3%
Route 61	618	684	66	10.7%
Route 62	2,103	2,254	151	7.2%
Route 63	508	554	46	9.1%
Route 64	300	330	30	10.0%
Route 70	958	1,047	89	9.3%
Route 71	244	266	22	9.0%
Route 73	458	497	39	8.5%
Route 80	337	367	30	8.9%
Route 81	495	540	45	9.1%
Route 91	731	800	69	9.4%
Route 92	284	314	30	10.6%
Route 94	738	794	56	7.6%
TOTAL	39,669	43,159	3,490	8.8%

Table 3: Status Quo Scenario Average Saturday Ridership Change by Route (FY 2017-2026)

Route	Average Saturday Ridership			
	FY 2017	FY 2026	Absolute Change, FY 2017-2026	Percent Change, FY 2017-2026
Route 1	5,149	5,320	171	3.3%
Route 2	1,916	2,115	199	10.4%
Route 3	2,478	2,807	329	13.3%
Route 4	79	87	8	10.1%
Route 10	208	226	18	8.7%
Route 20	166	183	17	10.2%
Route 21	188	206	18	9.6%
Route 30	139	151	12	8.6%
Route 31	483	525	42	8.7%
Route 33	403	438	35	8.7%
Route 40	397	424	27	6.8%
Route 41	26	29	3	11.5%
Route 43	1,002	1,098	96	9.6%
Route 44	265	286	21	7.9%
Route 45	97	106	9	9.3%
Route 46	470	514	44	9.4%
Route 47	356	383	27	7.6%
Route 48	260	279	19	7.3%
Route 49	197	218	21	10.7%
Route 52	120	130	10	8.3%
Route 61	424	467	43	10.1%
Route 62	977	1,084	107	11.0%
Route 63	294	324	30	10.2%
Route 64	181	198	17	9.4%
Route 70	370	405	35	9.5%
Route 71	146	160	14	9.6%
Route 73	294	322	28	9.5%
Route 80	2,484	2,728	244	9.8%
Route 81	238	261	23	9.7%
Route 91	391	428	37	9.5%
Route 92	167	185	18	10.8%
TOTAL	20,365	22,087	1,722	8.5%

Note: If a route is not shown, it does not operate on Saturdays.

Table 4: Status Quo Scenario Average Sunday Ridership Change by Route (FY 2017-2026)

Route	Average Sunday Ridership			
	FY 2017	FY 2026	Absolute Change, FY 2017-2026	Percent Change, FY 2017-2026
Route 1	2,642	2,703	61	2.3%
Route 2	769	864	95	12.4%
Route 3	832	920	88	10.6%
Route 30	74	82	8	10.8%
Route 31	212	232	20	9.4%
Route 33	202	220	18	8.9%
Route 40	213	225	12	5.6%
Route 43	458	499	41	9.0%
Route 44	115	125	10	8.7%
Route 46	210	232	22	10.5%
Route 47	199	216	17	8.5%
Route 48	140	152	12	8.6%
Route 49	84	96	12	14.3%
Route 61	202	227	25	12.4%
Route 62	480	544	64	13.3%
Route 63	133	147	14	10.5%
Route 70	115	126	11	9.6%
Route 80	125	138	13	10.4%
Route 91	198	218	20	10.1%
TOTAL	7,403	7,966	563	7.6%

Note: If a route is not shown, it does not operate on Sundays.

Table 5: Status Quo Scenario Ridership Summary (FY 2017-2026)

	Average Ridership, FY 2017	Average Ridership, FY 2026	Absolute Change, FY 2017-2026	Percent Change, FY 2017-2026
Weekday	39,669	43,159	3,490	8.8%
Saturday	20,365	22,087	1,722	8.5%
Sunday	7,403	7,966	563	7.6%
Annual	10,350,756	11,236,824	886,068	8.6%

2.2 Paratransit Service 10-Year Ridership Estimate

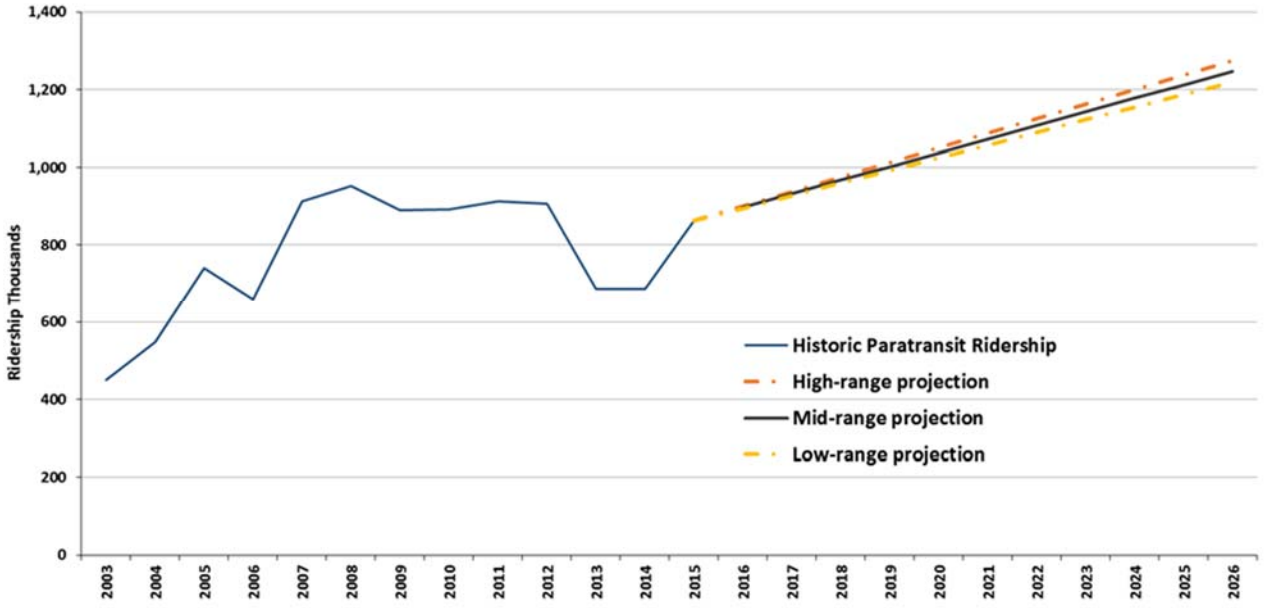
Paratransit ridership demand is influenced by the percentage of the total population who qualify for the service and their accessibility to fixed-route transit infrastructure. Removing barriers, whether real or perceived, to transit can reduce the number of individuals who rely on paratransit mobility by increasing their likelihood of using the fixed-route service. Even if some of those barriers are removed, Palm Tran should

assume that demand will increase considering that 23% of the population was estimated to be over the age of 65 in 2015 (up 1.4% from 2010) compared to a national average of 14.9% according to the US Census Bureau.

To account for uncertainties in predicting paratransit ridership, a range of projections was created that includes high-, mid-, and low-range estimates. Currently, there is no existing TBEST model for paratransit ridership projections, so a different methodology from that used for the fixed-route ridership estimate was developed. Figure 1 displays historic paratransit ridership levels and was used to predict future ridership levels, which are also displayed. Paratransit ridership has varied over the years, but overall has seen a steady increase between 2003 and 2015. During that timeframe, paratransit ridership saw an increase of 92%.

The low-range projection was calculated using the current ratio of paratransit trips per capita (0.68) and applying that rate to the 2026 projected population. The high-range projection was calculated using a linear growth rate of approximately 47,650 additional trips per year. The mid-range projection is an average of these two projections. The paratransit projections range between 1.22 and 1.27 million trips per year in 2026, as shown in Figure 1.

Figure 1: Historic and Projected Paratransit Ridership



Source: National Transit Database

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3.0 Transit Service Need Identification and Assessment

This section is dedicated to identifying the existing system needs based on traditional and discretionary rider markets. Two analyses were undertaken to measure these population densities and characteristics.

3.1 Market Profile

To assist in understanding the community in which Palm Tran operates, a profile of the population was created to identify characteristics that are useful for consideration with respect to public transportation. Various attributes of a community can influence the use of transit, how and where it operates, and its effectiveness. Understanding these various characteristics and if they have changed over time is useful in considering the implications of how resources are used.

The first part of the market profile is a density assessment of both dwelling units and employment by micro analysis zone (MAZ). The Density Threshold Assessment (DTA) provides insight into the relationship between employment density, population density (i.e. measured by dwelling units), and where public transit is or is not operating. Understanding the density of these populations and how transit operates within the area is important for decisions about how to use existing and future resources.

The Transit Orientation Index (TOI) is the second tool employed. It focuses on identifying populations with demographic characteristics historically associated with transit ridership. It is also useful in showing where population characteristics may indicate transit is more important as an option. Several variables are used to develop a composite TOI score. The variables that were included were households below the poverty level, youth population, older Americans, and households with no vehicle. These particular characteristics are common indicators of an increased propensity to use transit service, and are valuable metrics that can assist in understanding communities and their unique environments.

3.1.1 Density Threshold Assessment

The DTA is based on industry standards developed to measure the relationship between an area's existing density and its ability to support transit services. Density and transit are interrelated through the number of persons attempting to access jobs, housing, and services in a given area. The relationship between jobs and housing is indicative of the proportion of persons who will use public transit to access locations regularly via public transit. Traditionally, the higher the density, the higher probability that a certain number of persons will access the location by transit.

Other factors also have significant impact, such as the cost/availability of parking or travel time advantages, particularly in very dense urban areas. For more rural and low-density regions, like much of the southeast, lower minimum density thresholds are appropriate. The DTA therefore identifies areas where the most optimal conditions are present for transit based on population and employment densities.

Table 6 displays the minimum density thresholds typically found to justify fixed-route transit operations. Depending on the goals of the transit agency, different minimum densities may be required. The descriptions of the ascribed transit goals are included below:

- **Coverage Services** – Areas in which coverage is the primary goal of transit service, and low ridership can be expected/tolerated.

- **Connecting Services** – Reflects minimum population or employment densities where basic fixed-route transit services (i.e., fixed-route bus service) may expect higher ridership with a given frequency, but also to connect these areas to other areas.

- **Balanced Services** – Reflects higher population or employment densities that may be able to support higher levels of transit investment than areas that meet only the minimum density threshold (i.e., increased frequencies, express bus). Transit service in these areas can usually be justified based on combined ridership and coverage goals, but may not be able to justify service based on ridership alone.

- **Ridership Services** – Reflects very high population or employment densities that may be able to support higher levels of transit investment than areas that meet the minimum or high density thresholds (i.e., premium transit services) based on ridership goals.

Table 6: Density Threshold Levels

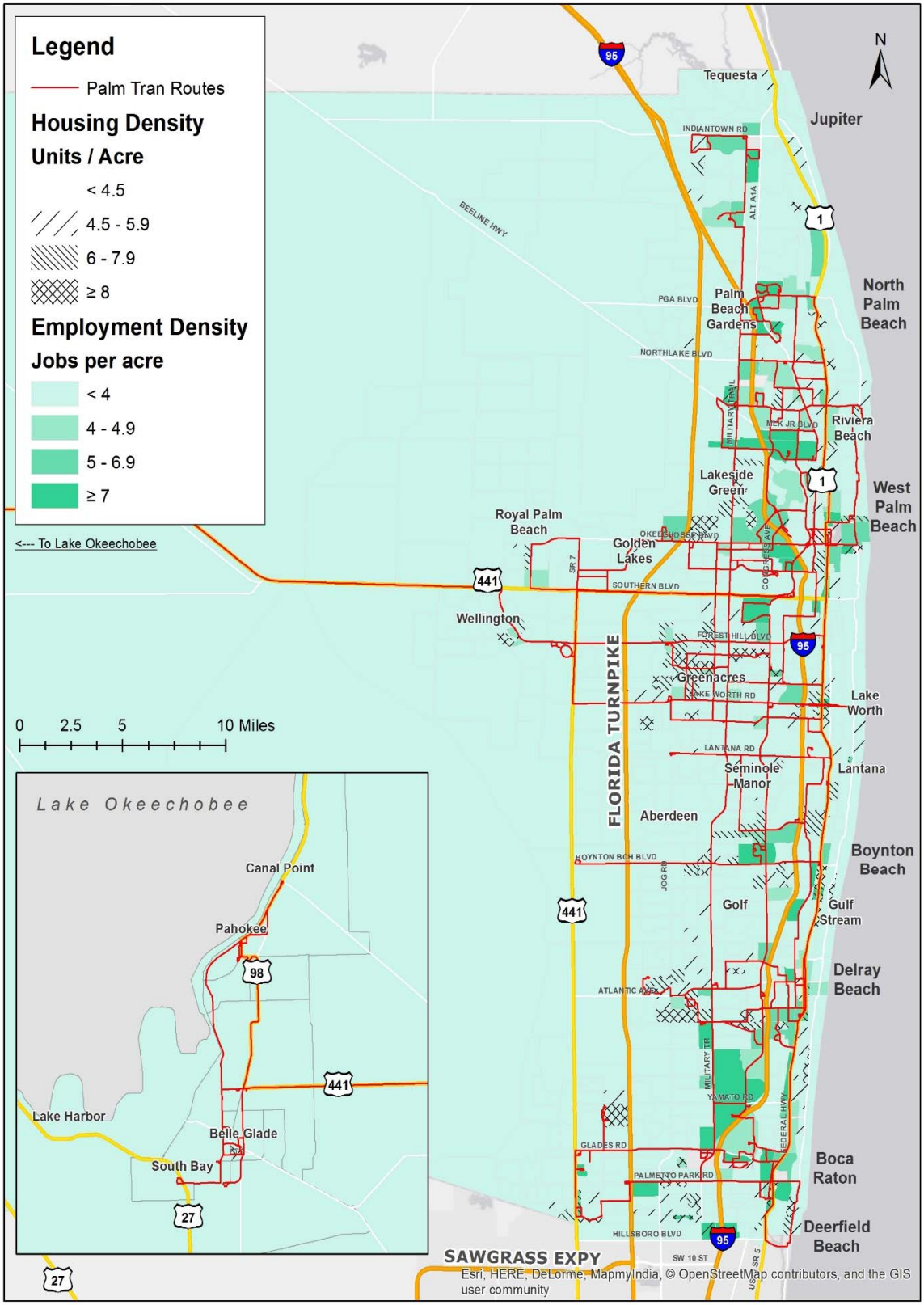
Transit Service Level	Population[1]	Employment Density Threshold[2]
Coverage	< 4.5 dwelling unit/acre	<4.0 employees/acre
Connecting	4.5 – 5.9 dwelling units/acre	4.0 – 4.9 employees/acre
Balanced	6 – 7.9 dwelling units/acre	5.0 – 6.9 employees/acre
Ridership	≥ 8.0 dwelling units/acre	≥ 7 employees/acre

As shown in Figure 2, there are several small areas that show elevated levels of both dwelling unit and employment densities. The areas that show higher concentrations for both employment and dwelling units in close proximity include areas in West Palm Beach, Lakeside Green, and Boca Raton. These areas are served by numerous Palm Tran fixed routes. When taking a larger view of Palm Beach County, many of the highest employment densities are located near the I-95 and US 1 corridors. Generally, the housing densities spread from the US 1 corridor toward the Florida Turnpike. To the west of the Florida Turnpike, both housing and employment densities are low.

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

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

Figure 2: Density Threshold Analysis



Source: Census Transportation Planning Products based on 2010 – 2014 5-year American Community Survey (ACS)

3.1.2 Transit Orientation Index

The traditional transit market refers to specific population segments that have demonstrated a higher propensity to use transit service even at lower densities. Using the most recently available ACS five-year estimates, a TOI was developed for the Palm Tran service area that categorizes each Census block group according to its relative ability to support transit based on the prevalence of specific demographic characteristics. The block groups for the various characteristics are rated as “Very High,” “High,” “Medium,” or “Low” in their respective levels of transit orientation. For this analysis, four population and demographic characteristics were used to develop the TOI. Each characteristic is traditionally conducive to transit use and, therefore, equally weighted. The four characteristics that were used to produce the index include the following:

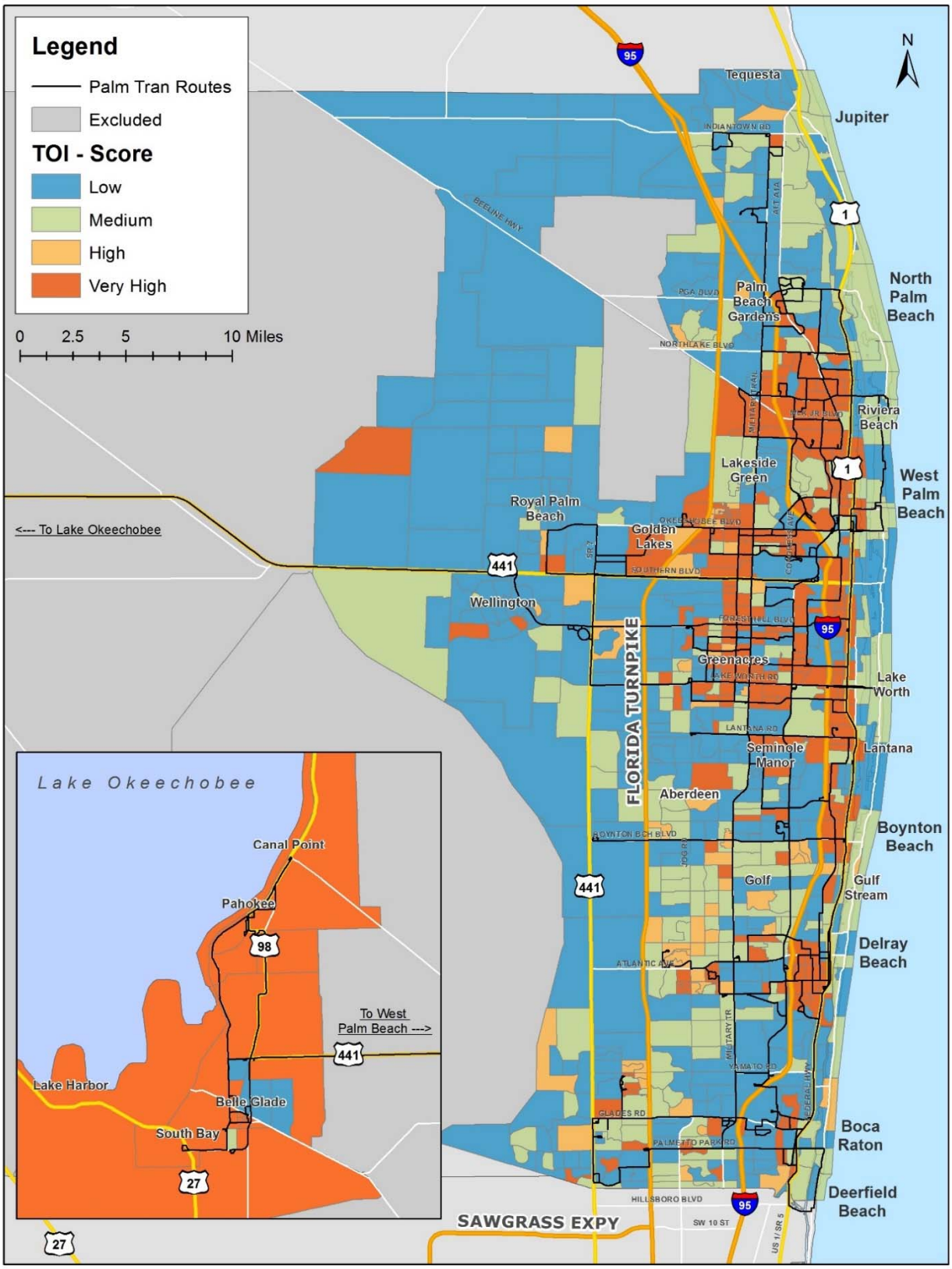
- Proportion of the population below the poverty level
- Proportion of households with no vehicle (zero-vehicle households)
- Proportion of youth ages 10-14 (youth)
- Proportion of the population age 60 and over (older adults)

The results of the TOI analysis are displayed in Figure 3. The TOI analysis shows a composite score of all the attributes to give a more rounded picture of the block groups in Palm Beach County.

The analysis of different TOI characteristics are useful independently and in conjunction with the others. Figure 12 in Technical Memorandum 1 shows low-income households, which closely correspond with higher levels of poverty. These block groups were clustered between I-95 and US 1, between I-95 and the Florida Turnpike from Boynton Beach to North Palm Beach, and in the Belle Glade area. It is important to note that some parcels that register as low income and/or high in poverty, may be due to large numbers of retirees who report no income, or homes that are not the primary residence of their owners. The area of Wellington that is shown as low income is a good example of this occurrence, as the block group is largely made up of large single-family residential properties.

As shown in Figure 13 of Technical Memorandum 1, zero-vehicle households are similarly located in areas that had higher levels of poverty. Figures 10 and 11 in Technical Memorandum 1 display population densities over age 65 and under age 24, respectively. These two maps are distinct in their opposite representation, indicative of the large older population in Palm Beach County, an average of 43.9 years old according to the 2014 ACS 5-year estimate. As shown in Figure 3, the TOI composite score shows areas with higher transit-supportive scores generally between US 1 and I-95 from Delray Beach to North Palm Beach. Between I-95 and the Florida Turnpike, the higher levels were clustered primarily between the Lantana/Lake Worth area to Riviera Beach. Overall, the ‘Very High’ TOI composite score areas are well-covered by the existing Palm Tran fixed-route system.

Figure 3: Transit Orientation Index Analysis



Source: Census Transportation Planning Products based on 2010 – 2014 5-year American Community Survey (ACS)
Note: Excluded block groups include the agricultural and preservation lands south and east of Lake Okeechobee.

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4.0 Alternative Identification

Based on the results of extensive public involvement, analysis of demographic trends, a review of previously identified needs in other planning documents, development of Palm Tran's goals and objectives, and discussions with staff, alternatives were developed to be evaluated. This section provides an overview of the alternatives developed and to be evaluated in the 10-year TDP. Alternatives were grouped into four categories: study, technology, capital and service.

4.1 Study Alternatives

There were several studies identified by staff as either being required or needed over the 10-year TDP timeframe. The studies identified are specialized and large in scale such that staff would need outside consultant assistance to complete them.

- **Transit Development Plan – Major Update**: As required by Florida State Statute, this TDP will need to undergo a major update in 2021 and 2026. In the interim years, the Annual Progress report will be completed by staff.

- **Route Performance Maximization (RPM) Study**: In 2017, staff intends to undertake a major study that will review the operations of the entire system and develop recommendations for re-envisioning the system. It is anticipated that many of the current routes will undergo changes through this study. The changes will focus on keeping the alignments along the main roadway and removing deviations into retail and residential complexes. The changes will also focus on improving frequency, span of service, as well as consolidating bus stops.

  With this in mind, the service alternatives developed for the TDP were based on corridors as opposed to routes. While the actual alignment of the route may change from its current alignment, staff is certain that these corridors will still be served by transit in the future.

- **Corridor Studies**: In partnership with the Palm Beach Metropolitan Planning Organization (MPO), Palm Tran will participate in several multimodal corridor studies. The studies are intended to examine pedestrian access to transit by identifying sidewalk gaps, Americans with Disabilities Act (ADA) compliance issues, and safety concerns around high ridership stops. The first corridor to be examined will be the US 1 corridor, a multimodal study with complete streets. Another study will be the Countywide Transit Access Study, a study which will prioritize connectivity to transit stops on federal roads with ADA compliance, and help identify high-ridership stops. Other likely corridor studies include Okeechobee Boulevard, Lake Worth Road, Congress Avenue, and Military Trail.

4.2 Technology Alternatives

The following technology improvements will be evaluated for implementation in the 10-year TDP timeframe. Technology improvements focus on making the customer experience more expedient and pleasant.

- **Wireless Internet on Entire Fleet**: One alternative being examined is bringing wireless internet (i.e., Wi-Fi) onto the entire bus fleet by 2021. By providing wireless internet, passengers can access web-based programs while they use the system.

- **Mobile Ticketing**: One technology improvement being examined is the implementation of mobile ticketing, which would allow riders the option of using a smartphone, or a mobile device for fare payment. Mobile ticketing would allow for lower fare collection costs for Palm Tran, and is anticipated to be operational on the entire Palm Tran fleet by 2021.

- **Interoperable Fare Management System**: Palm Tran will implement an electronic fare payment system that will be interoperable with the other regional providers. This interoperable fare payment system would allow patrons to more easily move between Palm Tran, BCT, Miami-Dade Transit (MDT), and SFRTA services. It is anticipated that the electronic fare payment system will be operational on the entire Palm Tran fleet by 2021.

- **Real-Time Displays at Major Bus Stops:** Palm Tran will deploy real-time bus displays at major bus stops along high-ridership corridors. This will allow passengers to be informed of route information while waiting at these transit stops. It is anticipated that the real-time displays will be deployed by 2021.

4.3 Capital Alternatives

The following capital alternatives were developed for evaluation.

- **Delray Beach Operational Facility**: Slated for completion in September 2018, the Delray Beach Operational Facility will provide administrative space, a maintenance garage, and increased parking/overlay vehicle capacity. The additional 2.6 acres will be located next to the existing South County facility near Northeast 1st Street.

- **Environmentally Sustainable Vehicles**: As vehicles reach the end of their useful lives, Palm Tran is interested in replacing its current fleet with vehicles that reduce emissions. Palm Tran already has several diesel-electric hybrid vehicles as part of its fleet. Currently, Palm Tran is trying to determine which fuel is the best option for its long-term needs.

- **New Bus Shelters**: Focusing on its highest ridership bus stops, this alternative includes the installation of 50 new or replacement shelters per year. Shelters will include bench seating, solar lighting, route signs, and ADA-compliant landing pads. To the extent feasible, the shelter will be connected to the sidewalk serving the corridor on the same side of the street.

- **BRT Enhancements (vehicles and transit amenities) for US-1**: There are plans to procure grants through the Palm Beach MPO to acquire branded buses and transit stop amenities including mobile displays and kiosks for major transit stops along the US-1 corridor. Palm Tran will be able to apply for funding through the Palm Beach MPO's Local Initiatives program for intersection treatment like queue jumpers along the corridor.

4.4 Service Alternatives

The following service improvements were identified. They focus on corridors as many of the actual route alignments may change after the RPM to be undertaken in 2017.

- **Limited-Stop Service on Military Trail (SR 809) Corridor**: The Military Trail Corridor, from the Gardens Mall in Palm Beach Gardens down to Boca Raton, is currently served by Route 3, which

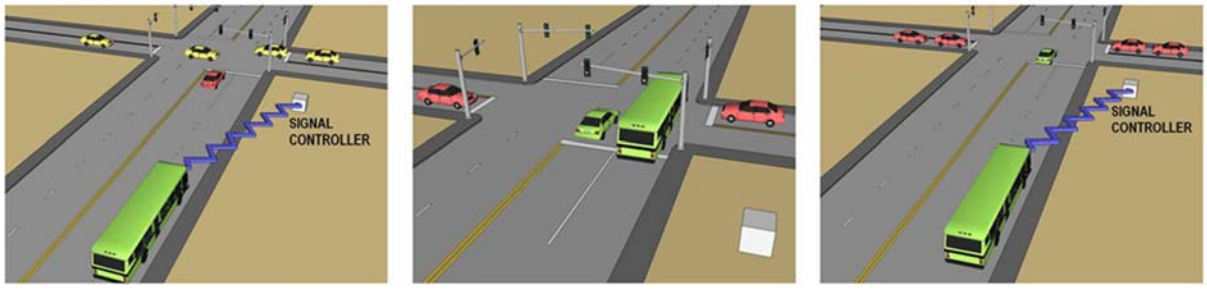
has the second highest ridership in the system behind Route 1 and the US-1 Bolt. The Bolt offers higher frequency, limited-stop overlay service during the peak morning and evening hours. This limited-stop service alternative would provide 20-minute frequency service for four peak service hours each weekday for the entire length of the current Route 3 alignment.

- **Limited-Stop Service on Congress Avenue (SR 807) Corridor**: The Congress Avenue Corridor is served by Route 2 from Riviera Beach to Boca Raton. This route has ridership levels just under those of the Route 3 and, as such, is also ripe for limited-stop service. This alternative includes 20-minute frequency service for four peak service hours each weekday for the entire length of the current Route 2 alignment.

- **Transit Signal Priority (TSP) on Okeechobee Boulevard (SR 704):** An enhanced bus alternative could be developed for Okeechobee Boulevard given its high ridership and the soon-to-be implemented Transit Signal Priority (TSP) technology on this corridor. Currently served by traditional fixed-route service through the Route 43, this corridor is being upgraded with an adaptive traffic control system (ATCS) at the major intersections which will be managed through the Regional Transportation Management Center (RTMC). ATCS allows for real-time adjustments to traffic signals to prevent or reduce traffic congestion.

  By implementing enhanced bus service on this corridor, the transit vehicles are able to communicate with these real-time traffic signals to adjust the length of the green light cycle as a bus approaches the signal to ensure it does not have to sit at a red light. TSP improves on-time performance for transit vehicles and travel times for riders. It is anticipated that TSP improvements will be complete in 2017.

Figure 4: Transit Signal Priority



- **Transit Signal Priority (TSP) on Lake Worth Road (SR 802):** The Lake Worth Road corridor is also slated to receive TSP improvements at the major intersections in 2017, which will be managed through the RTMC. Palm Tran may implement enhanced bus service on this corridor in the next few years. The corridor is currently served by Route 62.

- **Express Service on** I-95, Florida Turnpike, and SR-7/441: Palm Tran will look into implementing express bus services on I-95 after the FDOT Express Lanes Phase 3B-2 open to Linton Boulevard in 2020. This service has the potential to be connected to the park-and-ride on Congress Avenue. Other express bus services to be considered are along the Florida Turnpike and along SR-7/441.

- **Span of Service Improvements**: The following span of service improvements are being considered as alternatives.

Table 7: Span of Service Improvements

Weekday	Saturday	Sunday
Routes 1, 3, 43, 52, 71 - 1 hour earlier in the AM and 1 hour later in the PM	Routes 1, 2, 3, 31, 43, 63 - 1 hour earlier in the AM and 1 hour later in the PM	Routes 1, 2, 3, 31,43, 62 - 1 hour earlier in the AM and 1 hour later in the PM
Routes 2, 31, 33, 46, 61, 63, 81 - 1 hour earlier in the AM	Route 62 - 1 hour earlier in the AM and 2 hours later in the PM	
Route 62 - 1 hour earlier in the AM and 2 hours later in the PM		
Route 63 - 2 hours later in the PM		

- **Frequency Improvements**: The following frequency improvements are being considered as alternatives.

Table 8: Frequency Improvements

Weekday Headways	Saturday Headways	Sunday Headways
Route 43 - From 30 minutes to 20 minutes	Routes 2, 43, 62 - From 60 minutes to 30 minutes	Routes 2, 3, 43, 62 - From 60 minutes to 30 minutes
Routes 61, 63, 64 - From 60 to 30 minutes		

Figures 5 through 8 display the limited stop service improvements, express service improvements, span of service improvements, and frequency improvements, respectively.

Figure 5: Limited Stop Service Improvements

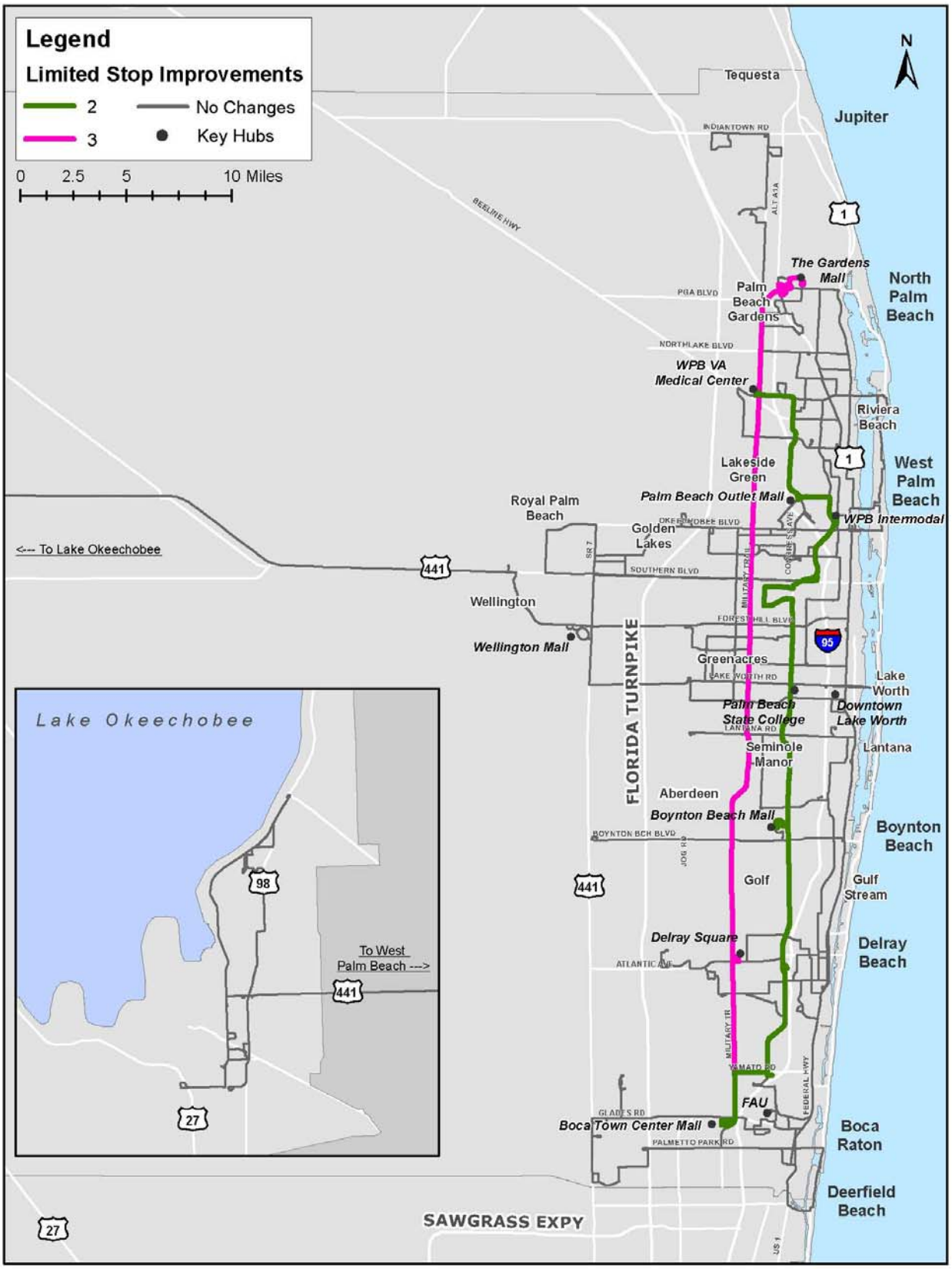


Figure 6 Express Service Improvements

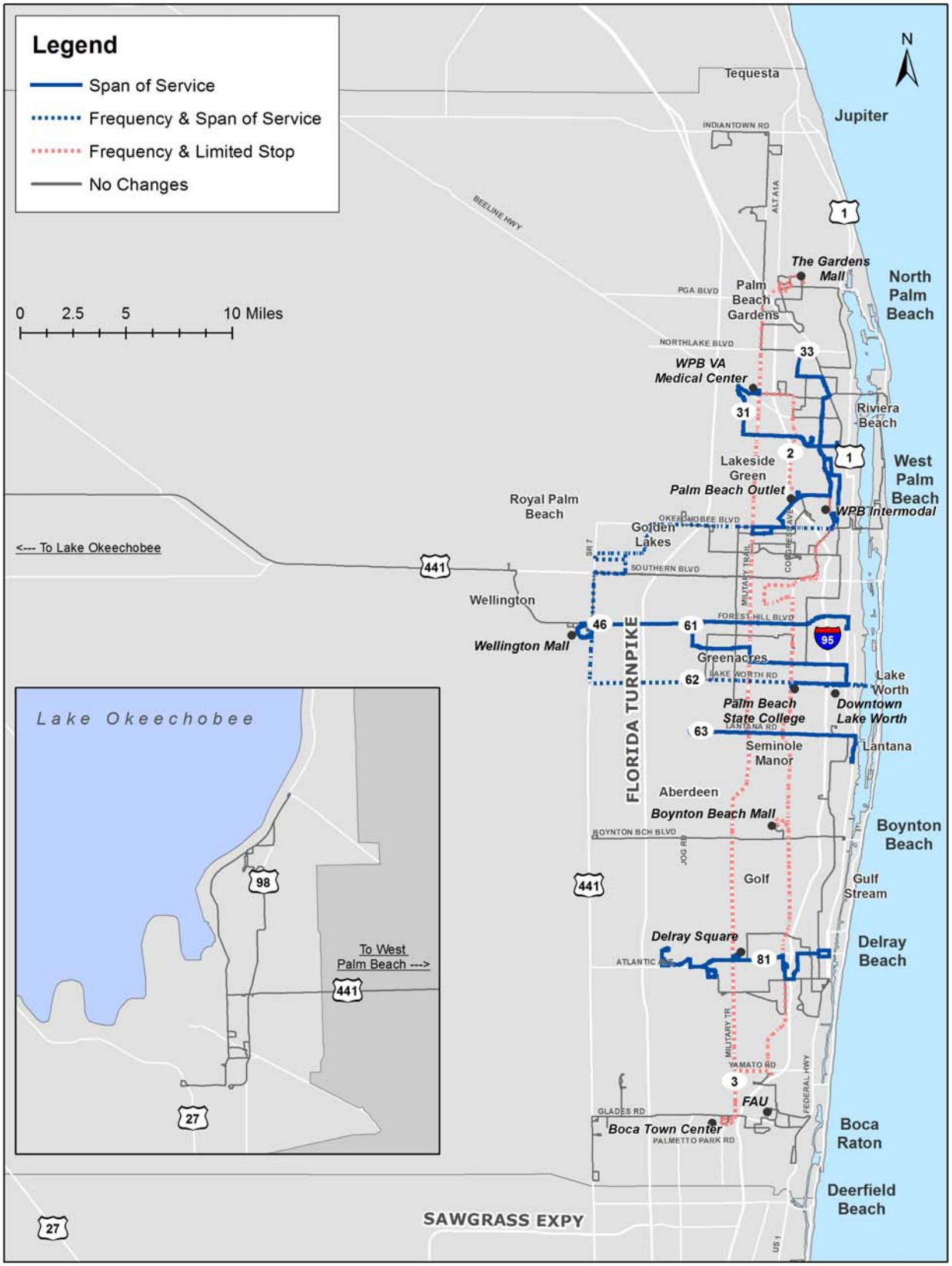


Figure 7 Span of Service Improvements

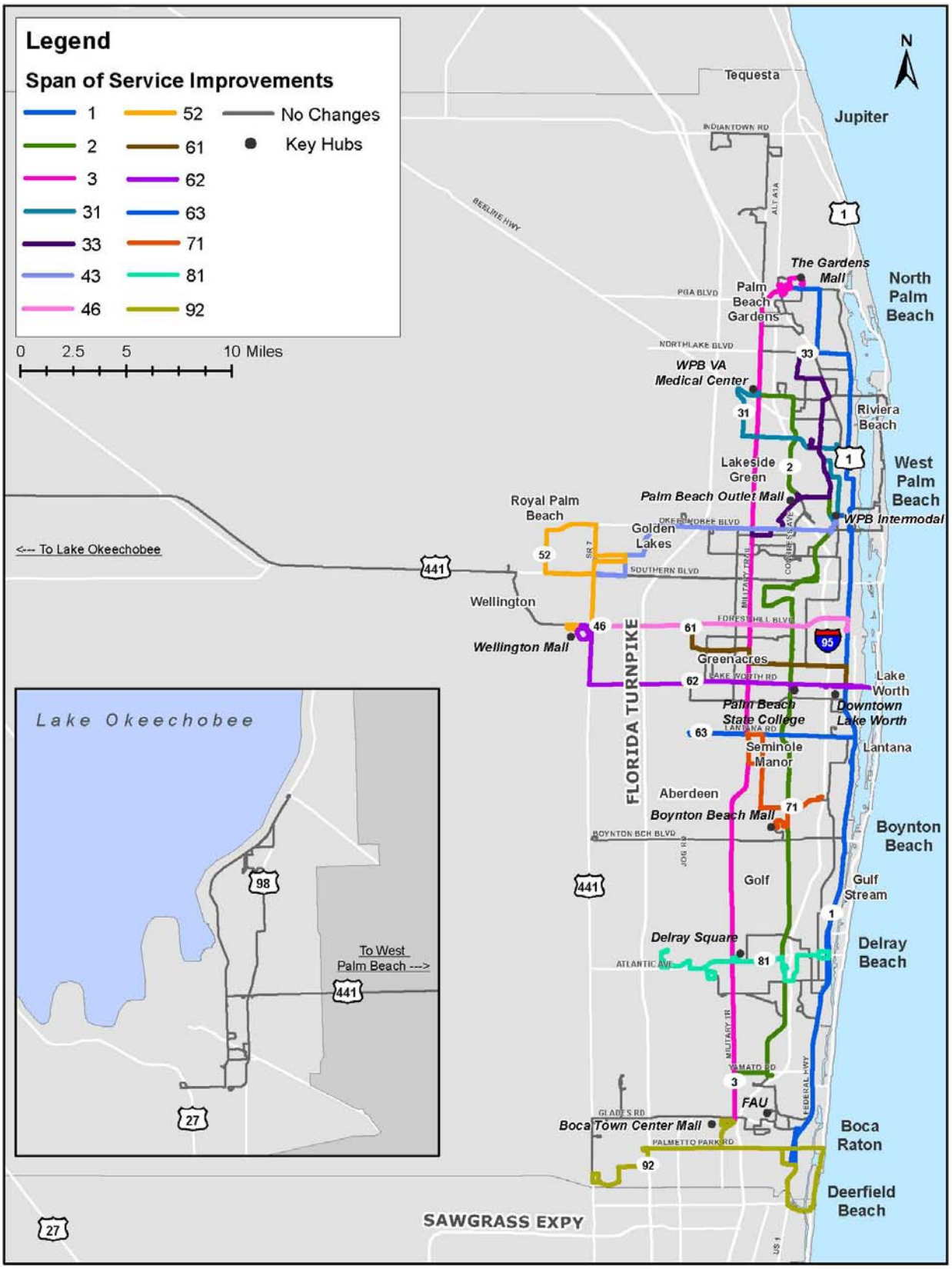
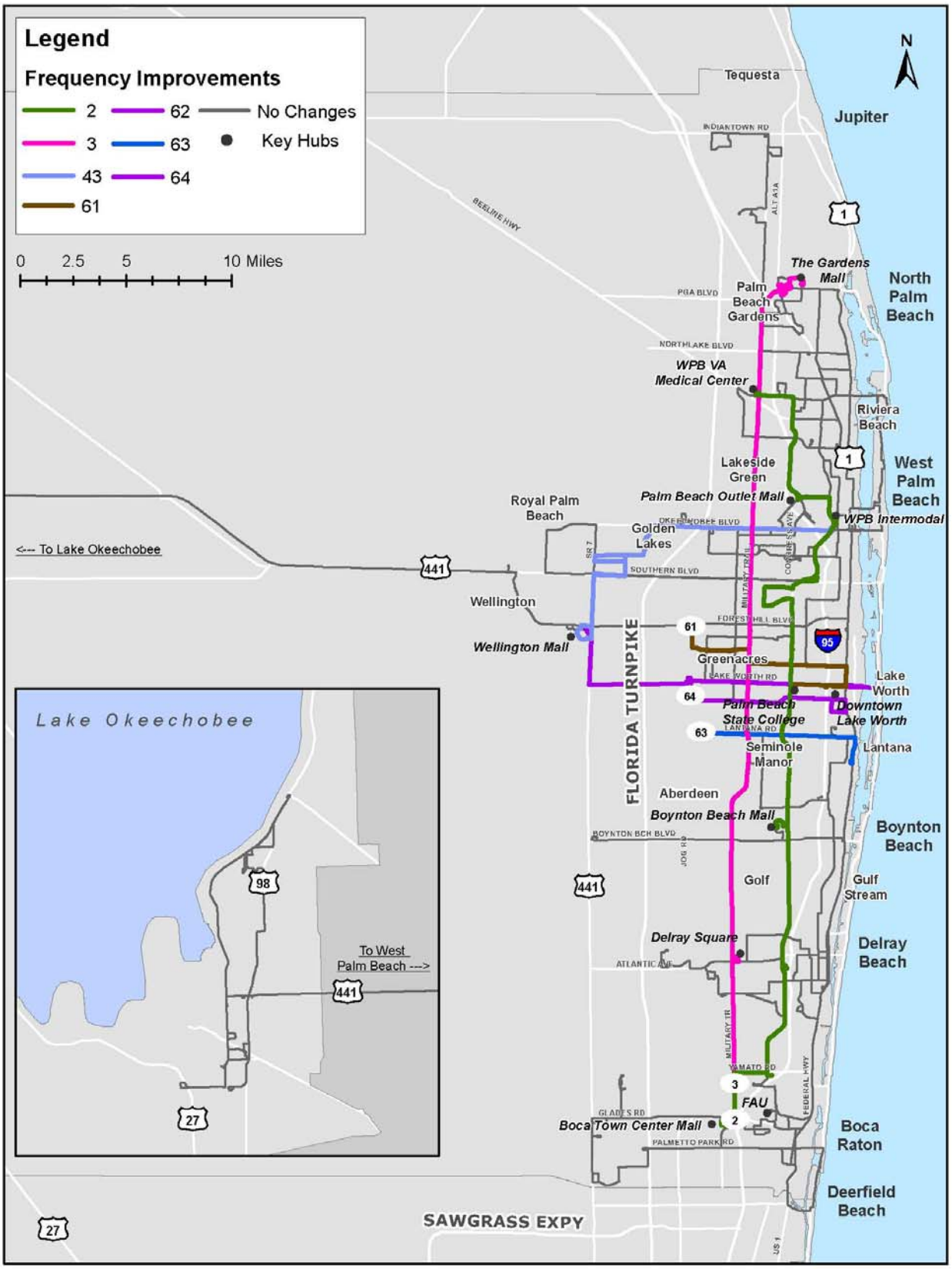


Figure 8 Frequency Improvements



APPENDIX F
Farebox Recovery

- Current and Historical Farebox Recovery Ratio
- Prior Year Fare Studies and Changes
- Relevant Issues Affecting Farebox Recovery
- Strategies that may affect Farebox Recovery Ratio

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Palm Tran
Transit Development Plan
2017-2016

Annual Farebox Recovery Ratio Report

October 2016

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ANNUAL FAREBOX RECOVERY RATIO REPORT 2016

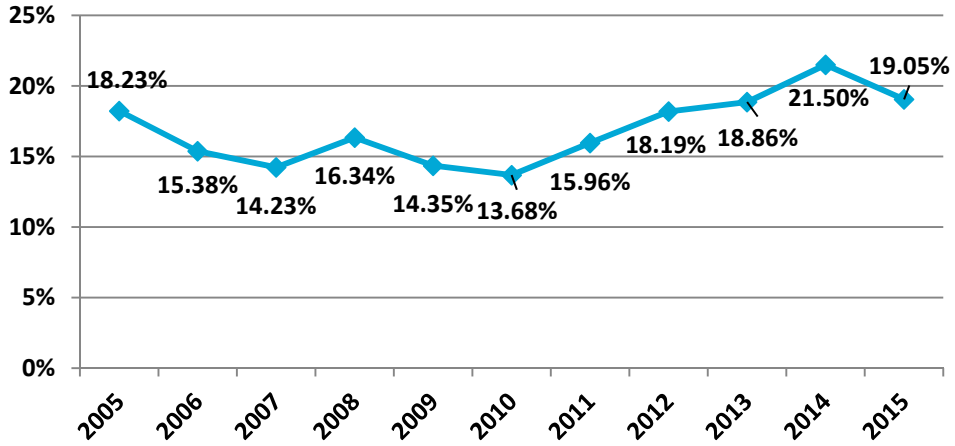
PALM TRAN FIXED-ROUTE BUS SYSTEM, PALM BEACH COUNTY, FLORIDA

September 2016

Current and Historical Farebox Recovery Ratio

Farebox recovery (ratio) refers to the percent of the transit system's total operating expenses that are funded with fares paid by passengers and is calculated by dividing the total fare revenue collected by the total operating expenses. This value is reported by transit agencies to the National Transit Database using a standardized equation, as required for FTA grant recipients. As shown in Figure 1, the farebox recovery ratio for Palm Tran, the public transportation provider for Palm Beach County, was 19.05 percent in FY 2015, increasing from 14.35 percent in FY 2009.

Figure 1: Palm Tran Farebox Recovery



Source: NTD MB Data (2005-2014), Palm Tran (2015)

Table 1 displays the Farebox Recovery Ration with the percent change from the previous year. As shown, the farebox recovery increased from 2011 through 2014, but declined in 2015. The following presents information on increasing the farebox recovery ratio to assist Palm Tran in improving operating efficiency.

Prior Year Fare Studies and Changes

Palm Tran's last fare increase occurred on October 7, 2013, and brought Palm Tran's fares closer to the fares in Miami-Dade County, surpassing Broward County, but generally closer to the average of the larger metropolitan areas in the state. There are currently no plans for further fare increases at this time or in the near future. The current fare structure is shown in Table 2.

Table 1: Palm Tran Farebox Recovery Ratio Change Over Time

Year	Farebox Recovery	% Change from Previous Year
2005	18.23%	
2006	15.38%	-18.53%
2007	14.23%	-8.08%
2008	16.34%	12.91%
2009	14.35%	-13.87%
2010	13.68%	-4.90%
2011	15.96%	14.29%
2012	18.19%	12.26%
2013	18.86%	3.55%
2014	21.50%	12.28%
2015	19.05%	-12.86%

Source: NTD MB Data (2005-2014), Palm Tran (2015)

Table 2: Palm Tran Fare Structure

Customer Type	Fare Type	Current Fare
Adult Regular Fare	Single Trip	$2.00
	Unlimited 1-Day	$5.00
	Unlimited 31-Day	$70.00
Reduced Fare	Single Trip	$1.00
	Unlimited 1-Day	$3.50
	Unlimited 31-Day	$55.00
Transferring	To BCT from Palm Tran	Free
	To Palm Tran from BCT	$0.50
	From Tri-Rail to Palm Tran	$0.50

*Reduced fares available for: Seniors (65 and up), Students (21 or under), Disabled, Medicare recipients, and VA card holders

Relevant Issues Affecting Farebox Recovery

Declining ridership has negatively affected farebox recovery over the last two years. Possible causes could be declining fuel costs and an increased propensity to automobile travel by former transit users. Ridesharing services that offer multiple passengers trips in the same vehicle may be affecting ridership on fixed-route services as well.

Strategies that may affect the Farebox Recovery Ratio

1. Determine most cost-effective service type on all major corridors, given demand, routings, and coverage areas.
2. Increase ridership by increasing average frequency and improving fare collection options and fare media accessibility for riders.
3. Increase ridership by transitioning paratransit service patrons to fixed-route service.
4. Minimize costs required to operate and administer transportation services.
5. Continuously monitor performance to determine if adjustments need to be made.

6. Conduct bus on-board surveys to gather valuable information on how to make services more convenient and useful to patrons.
7. Strive to increase ridership by enhancing marketing activities.

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