









# PALM BEACH MPO CONGESTION MANAGEMENT PROCESS









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# EXECUTIVE SUMMARY

Congestion in the transportation system is an issue that plagues urban communities, and is one of the most consistently cited issues of concern in citizen surveys. Time unnecessarily spent waiting for traffic signals to clear, or for buses to arrive, is frustrating to many citizens. Communities that seek to attract businesses often cite good transportation systems as a selling point in their promotion of good local quality of life. While Palm Beach County does not suffer the levels of congestion that are experienced in other, communities, it is important to keep an eye on travel trends and congestion levels for two reasons:

- Transportation is a very costly public infrastructure, and early corrective measures to reverse adverse trends lessens the fiscal impacts, and
- Because of the size of the infrastructure, it is easy to lose sight of slow deterioration. Quantitative measures can identify if progress is being made towards system goals at a pace that is satisfactory to the community.

This report complies with the Federallymandated procedures in 23 CFR 450.320a & b, which requires that all modes of transportation be addressed. It follows a 2011 "guideline report" published by the Federal Highway Administration (FHWA) that lays out a sequential process: define the study boundary, establish regional goals and measurable objectives, collect data, identify and analyze problem areas, generate and assess strategies, implement mitigation measures, and evaluate the outcome. This report was created with the help of various Palm Beach MPO stakeholders and data resources, including Palm Beach County Engineering, the Florida Department of Transportation, local municipalities, PalmTran, and Tri-Rail.

This edition of the report is one of the first of its kind so, while trends are not readily apparent yet, solutions to existing deficiencies are discussed. As subsequent updates to this report are undertaken, valuable trends analyses will follow. The report card on the following page summarizes the various measures that the CMP tracks and relates to Table 01. Section 6 of the report discusses implementation of solutions, making use of a project ranking/prioritization procedure that transcends modes of travel. Appropriate project development phases of financially feasible mitigation measures should be included in the Long Range Transportation Plan (LRTP), the MPO Priority Project List, and the Transportation Improvement Program (TIP), as appropriate.

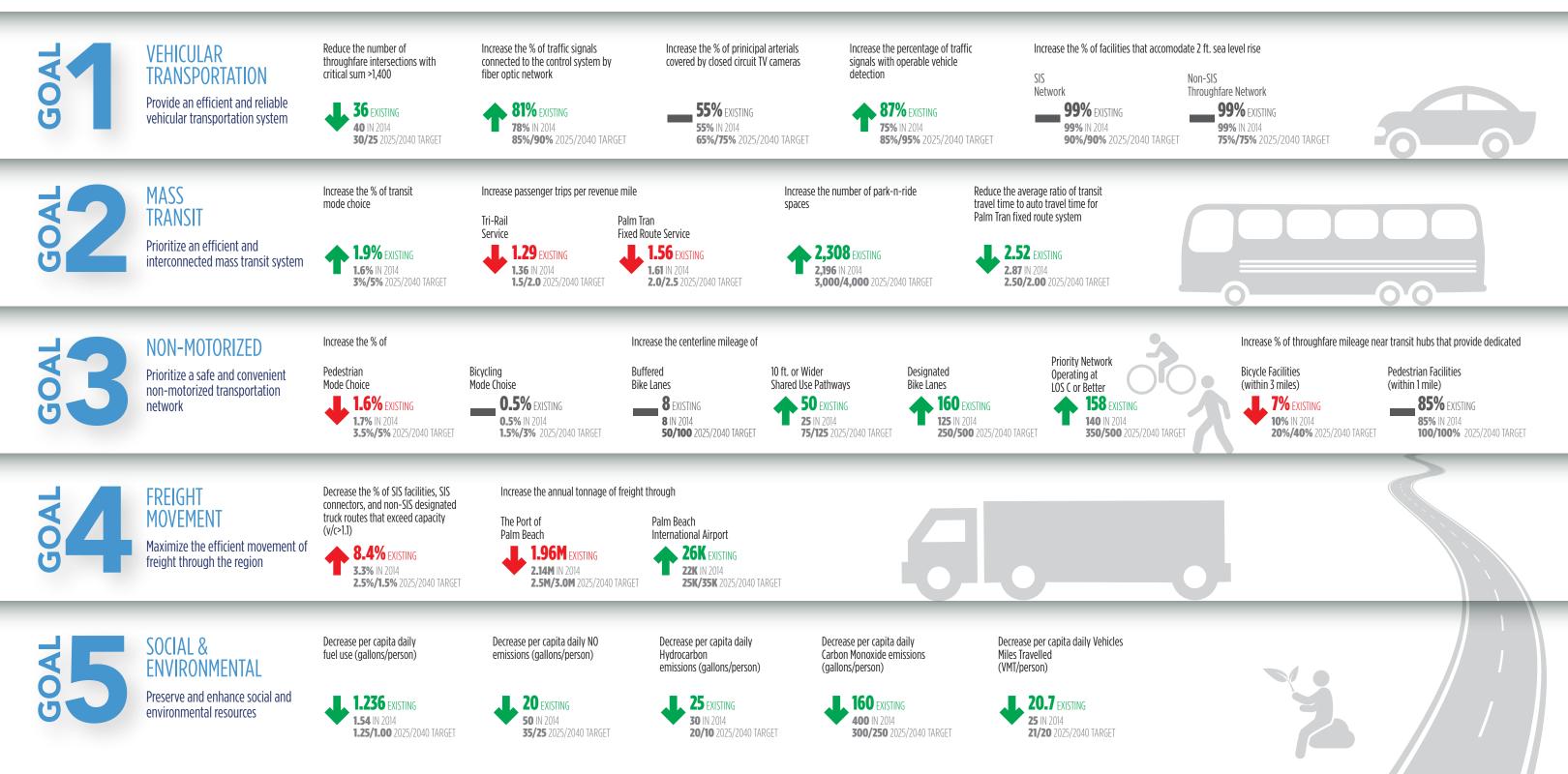
Measurement of transportation performance trends on a large-scale basis is challenging, and conditions may vary up or down from year to year, so immediate trend observations may not be accurate this early in the life of the congestion management program. However, of the 27 measures, early indications are that progress is being made in 14 measurement areas, no measureable change in six (yet), and that ground has been lost in seven. In some of the measures where ground was lost, such as park-n-ride spaces, the decline may be a result of formalizing the measurement procedure in this update. Others, such as decreasing the percentage of truck routes that are congested or reducing the number of congested intersections will likely be difficult to achieve since creation of transportation system capacity lags the rate at which travel is growing. For the "alternate" modes of travel measures, continued coordinated development of the alternate modes system is likely to show benefits over time.

This report provides policy-makers with a periodic review of local transportation conditions to support identification of trends in congestion so that solutions to congestion issues can be advanced.

Specific potential projects for improvement are identified in the report. In many cases the initial steps of advancing involve undertaking additional study to establish priorities and develop specifics of implementation, while others could advance into design and implementation sooner. There is a need, addressable as MPO transportation planning moves forward, to consider the financial and practical ability of MPO funding sources to achieve the stated goals and to assess the magnitude of the needs and integrate their costs into the County-wide transportation budget.

# PALM BEACH MPO CONGESTION MANAGEMENT PROCESS 2016 ANNUAL REPORT CARD

## 2040 LRTP GOALS & OBJECTIVES





#### TABLE 01 PALM BEACH MPO DIRECTIONS 2040 LRTP GOALS & OBJECTIVES

	OBJECTIVE	DESCRIPTION	2014 VALUE	2016 VALUE	2025 VALUE	2040 VALUE
		Goal 1: Provide an efficient and reliable vehicular transportation	system			
	1.1	Reduce the number of thoroughfare intersections with critical sum > 1400	40	36	30	25
	1.2	Increase the percentage of traffic signals connected to the central control system by fiber optic network	78%	81%	85%	90%
1	1.3	Increase the percentage of principal arterials covered by closed circuit TV cameras	55%	55%	65%	75%
	1.4	Increase the percentage of traffic signals with operable vehicle detection	75%	87%	85%	95%
	1.5	Increase the percentage of facilities that accommodate two feet sea level rise For the SIS network For the non-SIS thoroughfare network	99% 99%	99%+ 99%	90% 75%	90% 75%
		Goal 2: Prioritize an efficient and interconnected mass transit s	ystem			
	2.1	Increase the percentage of transit commuter mode choice	1.6%	1.9%	3%	5%
2	2.2	Increase passenger trips per revenue mile For Tri-Rail service For Palm Tran fixed route service	1.36 1.61	1.29 1.56	1.5 2.0	2.0 2.5
~	2.3	Increase the number of park-n-ride spaces	2,196	2,014	3,000	4,000
	2.4	Reduce the average ratio of transit travel time to auto travel time for Palm Tran fixed route system	2.87	2.52	2.5	2.00
		Goal 3: Prioritize a safe and convenient non-motorized transportation	on netwoi	rk		
	3.1	Increase the percentage of Pedestrian commuter mode choice Bicycling commuter mode choice	1.7% 0.5%	1.6% 0.5%	3.5% 1.5%	5% 3%
3	3.2	Increase centerline mileage of Buffered bike lanes 10-ft or wider shared use pathways Designated bike lanes Priority bike network operating at LOS C or better	8 25 125 140	8 50 160 158	50 75 250 350	100 125 500 500
	3.3	Increase percentage of thoroughfare mileage near transit hubs That provides dedicated bicycle facilities (within 3 miles) That provides dedicated pedestrian facilities (within 1 mile)	10% 85%	7% 85%	20% 100%	40% 100%
		Goal 4: Maximize the efficient movement of freight through the	region			
	4.1	Decrease the percentage of SIS facilities, SIS connectors, and non-SIS designated truck routes that exceed capacity (v/c > 1.1)	3.3%	8.4%	2.5%	1.5%
4	4.2	Increase the annual tonnage of freight through The Port of Palm Beach Palm Beach International Airport	2.14M 22K	1.96M 24K	2.5M 25K	3.0M 35K
		Goal 5: Preserve and Enhance Social and Environmental Reso	urces			
	5.1	Decrease per capita daily fuel use (gallons/person)	1.54	1.24	1.25	1.00
_	5.2	Decrease per capita daily NOx emissions (grams/person)	50	20	35	25
5	5.3	Decrease per capita daily Hydrocarbon emissions (grams/person)	30	25	20	10
	5.4	Decrease per capita daily Carbon Monoxide emissions (grams/person)	400	160	300	250
	5.5	Decrease per capita daily Vehicles Miles Travelled (VMT/person)	25	20.7	21	20

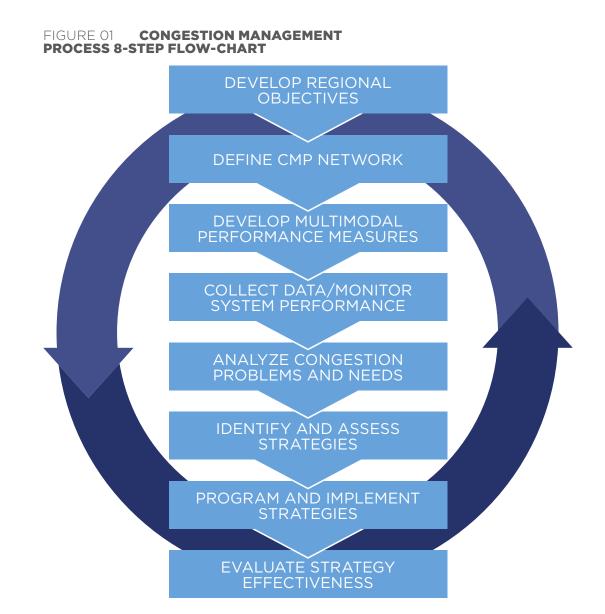
#### TABLE 02 MITIGATION STRATEGIES

		DESCRIPTION	STRATEGY				
		Goal 1: Provide an efficient and reliable vehicula	r transportation system				
	1.1	Reduce the number of thoroughfare intersections with critical sum > 1400	Conceptual schematic diagrams of the 36 potential improvements and a summary of all 400 intersection capacity analyses are included in Appendix C. Upon review by local agency staff, those locations judged to be in greatest need of improvement should be advanced for further study to refine the solution and feasibility of improvement.				
	1.2	Increase the percentage of traffic signals connected to the central control system by fiber optic network	To address measures 1.2 and 1.3, an update to Palm Beach County's Intellegent Transportation Systems Master Plan should be undertaken				
1	1.3	Increase the percentage of principal arterials covered by closed circuit TV cameras	to establish the next logical expansion of the ATMS.				
1	1.4	Increase the percentage of traffic signals with operable vehicle detection	The MPO currently has a Local Initiative prioritized project with design funding in the TIP in year 2018. Once construction funds are programmed, this project will move the MPO closer to achieving its target.				
	1.5	Increase the percentage of facilities that accommodate two feet sea level rise For the SIS network For the non-SIS thoroughfare network	In regard to the identified road segments the MPO suggests each responsible agency incorporate an engineering solution which will				
		Goal 2: Prioritize an efficient and interconnect	ed mass transit system				
	2.1	Increase the percentage of transit commuter mode choice	Fund identified LRTP and TDP projects.				
2	2.2	Increase passenger trips per revenue mile For Tri-Rail service For Palm Tran fixed route service	Funding TDP recommendations and system enhancements.				
	2.3	Increase the number of park-n-ride spaces	Fund future TDP recommended Park-n-ride lots.				
	2.4	Reduce the average ratio of transit travel time to auto travel time for Palm Tran fixed route system	A TDP, in progress for PalmTran, will identify appropriate strategies to make bus transit service more effecient.				
		Goal 3: Prioritize a safe and convenient non-motori	zed transportation network				
	3.1	Increase the percentage of Pedestrian commuter mode choice Bicycling commuter mode choice	Fund sidewalks and bicycle facilities through Transportation Alternatives (TA) and Local Intiative (LI) programs.				
3	3.2	Increase centerline mileage of Buffered bike lanes 10-ft or wider shared use pathways Designated bike lanes Priority bike network operating at LOS C or better	Fund sidewalks and bicycle facilities through Transportation Alternatives (TA) and Local Intiative (LI) programs.				
	3.3	Increase percentage of thoroughfare mileage near transit hubs That provides dedicated bicycle facilities (within 3 miles) That provides dedicated pedestrian facilities (within 1 mile)	Fund sidewalks and bicycle facilities through Transportation Alternatives (TA) and Local Initiative (LI) programs.				
		Goal 4: Maximize the efficient movement of fre	ight through the region				
	4.1	Decrease the percentage of SIS facilities, SIS connectors, and non-SIS designated truck routes that exceed capacity (v/c > 1.1)	A solution strategy would be to implement capacity-increasing improvements such as intersection lane additions or capacity increases where possible, and according higher priorities to such improvements that fall on the SIS and non-SIS truck routes.				
4	4.2	Increase the annual tonnage of freight through The Port of Palm Beach Palm Beach International Airport	While the MPO does not directly participate in attracting freight movement though Palm Beach County's ports, the MPO can influence the identification and assignment of higher priorities to improvements to land-side access roads to minimize congestion, as discussed above in Section 4.1.				
		Goal 5: Preserve and Enhance Social and Envi	ronmental Resources				
	5.1	Decrease per capita daily fuel use (gallons/person)	<ul> <li>Methods to decrease fuel consumption per capita would include:</li> <li>Continue to improve service provided by alternative modes</li> <li>Support CAFÉ standards and alternative energy vehicles (electric/hydrogen)</li> <li>Improve mix of land uses to bring homes and needs/ employment closer (density and diversity of land uses)</li> <li>Reduce congestion/delay/idle-time through intersection, roadway, and ITS/signal timing improvements</li> </ul>				
	5.2	Decrease per capita daily NOx emissions (grams/person)					
5	5.3	Decrease per capita daily Hydrocarbon emissions (grams/person)	Research capital funding of air quality stations in Palm Beach County; reduce VMT and promote alternatives modes of transportation.				
	5.4	Decrease per capita daily Carbon Monoxide emissions (grams/person)	is a second second second the second s				
	5.5	Decrease per capita daily Vehicles Miles Travelled (VMT/person)	<ul> <li>Three strategic options to reduce motor fuel consumption that can be funded by MPO programs are:</li> <li>Shift travel to alternate modes by improving the quality of service provided for those modes.</li> <li>Shorten necessary trips by promoting higher densities and diversity of land uses,</li> <li>Reduce the need for trip-making through improved communications and goods and service delivery technologies.</li> </ul>				

# SECTION 1: INTRODUCTION

A Congestion Management Process, or CMP, involves routinely monitoring all modes of travel and activity on the transportation network and managing the system's performance by identifying and advancing effective solutions, or improvements, that mitigate the adverse impacts of congestion. The majority of congestion occurs when demand exceeds the capacity of a transportation facility, resulting in significant increases in user travel time. Congestion also arises due to non-recurring events, such as accidents, adverse weather, work zone activity, and special events. The goal of the CMP is to maintain acceptable levels of congestion through the implementation of agreed upon mitigation solutions.

According to federal legislation (23 CFR 450.320a & b), MPOs that reside in Transportation Management Areas (TMAs), which are urban areas that have a population of at least 200,000, "shall address congestion management through a process that provides for safe and effective integrated management and operation of the multimodal transportation system." Figure 01 outlines the 8-step process of the CMP as recommended by FHWA.



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If performance falls short of the regional goals and objectives, then the process is reevaluated to consider the need for additional funding, adjusting goals, and/or identifying alternative or adjusted mitigation strategies. Otherwise, the CMP is showing evidence of effectiveness, and stability. Such an iterative process is characteristic of the '3C' (Continuing, Comprehensive, and Cooperative) transportation planning process required of Metropolitan Planning Organizations (MPOs) under the Federal-Aid Highway Act of 1962.

Prior to instituting an on-going performancemonitoring and mitigation-driven system, the MPO was only required to produce planninglevel (i.e., Long Range Transportation Plans, or LRTP), and investment allocation (i.e., Transportation Improvement Program, or TIP) documents. What these two documents fail to capture, however, is an on-going, continuous monitoring process of the transportation network at the level of operations to ensure the established regional goals and objectives are in fact being achieved at the person-trip level. The CMP makes up for this shortfall by ensuring not only that the performance targets are being achieved, but that they maintain this status over time by creating an iterative and robust process that evaluates and implements congestionmitigation strategies dynamically.

Each of the eight steps of the CMP is stated in general form, allowing for the flexibility of the respective MPO to define their own objectives, performance measures, targets, and mitigation strategies. This is to be expected since the CMP is context sensitive and that each MPO is independent and unique in nature with respect to (among others) population and network infrastructure, socioeconomic characteristics, geography, and political structure.

A unique feature to this new version of the 8-step CMP is the added feedback mechanism after the final step, resulting in a repeat of step 1 and the assurance of an on-going, continuous process. Such an analytical and iterative framework is what makes the 8-step CMP a dynamic process, as opposed to a static system. In the early 1990's the CMP was originally called CMS, or Congestion Management System, and was produced in a fashion that would reflect a combination of the LRTP and TIP, but without any form of on-going monitoring of the performance of the system and would essentially be treated as a static document. By converting the system to a process, the CMP has become a more influential planning tool that can be utilized by MPOs to ensure their LRTPs and TIPs are being fully executed.

The subsequent Sections will cover in further detail each of the eight steps of the CMP with respect to the Palm Beach Metropolitan Planning Organization (PBMPO), including established performance measures and desired targets, existing data collection programs, project prioritization selection process, evaluation, and implementation, and recommended future steps to help further the evolution and development of the CMP. A summary with final conclusions will also be provided that will summarize the lessons learned by the Palm Beach MPO and what future steps are recommended in order to help improve the overall congestion management process.

# **SECTION 2: DEFINE** THE CMP NETWORK

The second step of the CMP is to define the study area, or boundary, that will encompass the entire scope of analysis. This is typically done at the county level, as opposed to the city level, and would encompass all modes of the transportation network. Figure 02 displays the study area (outlined in red) for the Palm Beach MPO CMP. The total area (land and water) of Palm Beach County is approximately 2,400 square miles, making it the second largest county in the state of Florida.

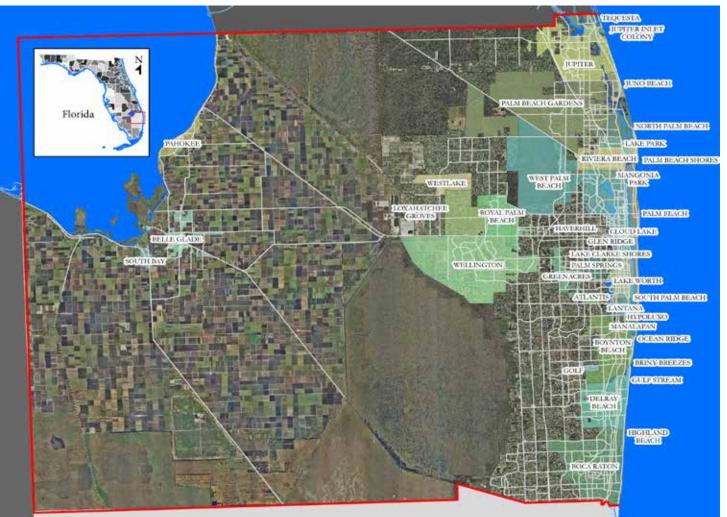
Palm Beach County's population is expected to grow by 26 percent from 2015 to 2040, and Vehicle Miles Travelled by 34 percent, annual growth rates of 0.93 and 1.24 percent per year, respectively, according to the Southeast (Florida) Regional (Transportation) Planning Model (SERPM).

**CMP STUDY AREA** 

FIGURE 02

## ROADS

Palm Beach County's transportation network includes a dense array of freeways, arterials, collector non-motorized facilities, airports, a deep-water seaport, and extensive rail facilities serving passenger and freight purposes. The system includes 4,650 lane-miles of major roads (excluding local streets, 600 limited access, 3,340 arterial, and 710 collector, see Appendix A for 2014 Federal Functional Classification map) which carries 29.7 million vehicle-miles of travel per day. The major corridors include I-95, the longest north-south interstate in the country stretching 1,925 miles along the US eastern coastline, Florida's Turnpike, a limited access toll facility that provides auto and truck



drivers with an alternate, parallel route to I-95. Major east-west arterial roads include: Beeline Highway, Southern Boulevard, Indiantown Road, Northlake Blvd, Okeechobee Blvd, Lake Worth Road, Atlantic Avenue, and Glades Road. Figure 03 and Figure 04 chart the distribution of roadways designated on the 2014 Federal Functional Classification map by responsible agency and municipality (local roads only), respectively.

#### FIGURE 03 2014 FEDERAL ARTERIAL AND COLLECTOR ROAD CENTERLINE MILE DISTRIBUTION

## TRANSIT

The two major transit operators in the county are PalmTran (Bus), with a fleet of 192 buses operating 35 fixed routes and averaging approximately 36,000 riders per weekday, and Tri-Rail (commuter train) who has 18 stations along 71 miles of track with a ridership of approximately 14,800 per weekday. Figure 05 and Figure 06 provide system maps of the PalmTran and Tri-Rail operators. Other smaller operators include local municipal shuttle and trolley services.

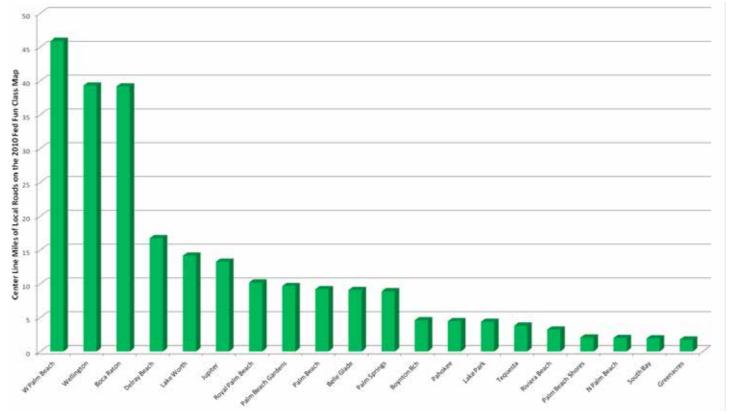
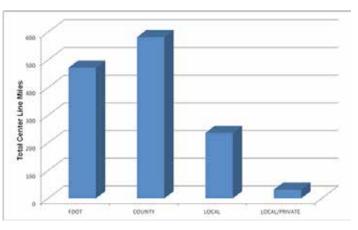
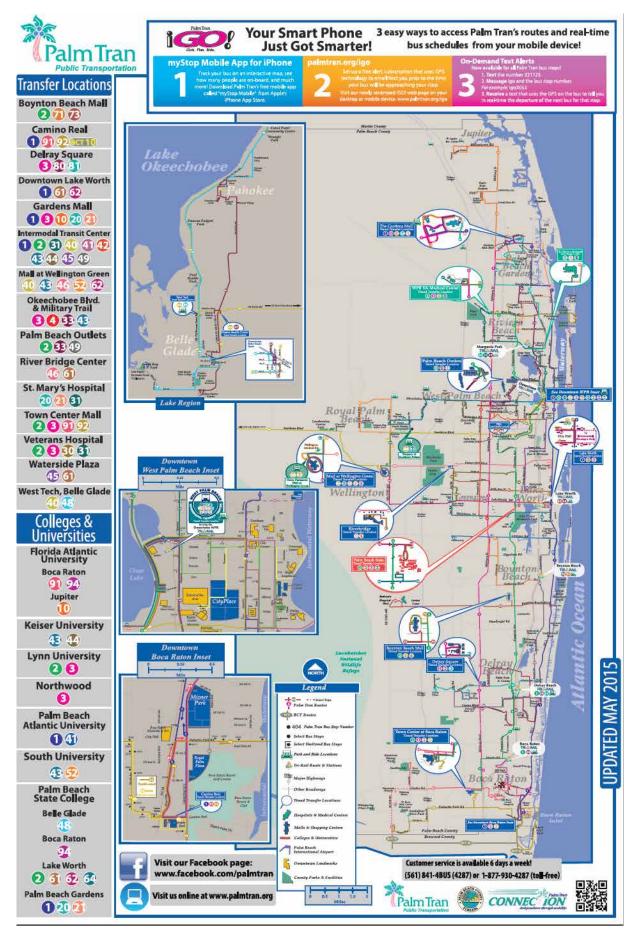


FIGURE 04 2014 MUNICIPAL ROAD CENTERLINE MILES ON FEDERAL FUNCTIONAL CLASSIFICATION SYSTEM







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## **NON-MOTORIZED**

Bike lanes and other non-motorized facilities, including greenways, are also prevalent throughout the County. A map illustrating the extent of on-road bicycle facilities is provided in Figure 07. Sidewalks are an important component of the non-motorized network. At the time of publication, sidewalk data was not complete, but will be used in future iterations of the report.

## FIGURE 07 PALM BEACH COUNTY ON-ROAD BICYCLE FACILITIES MAP



# SECTION 3: DEVELOP REGIONAL GOALS, OBJECTIVES & PERFORMANCE MEASURES

After defining the CMP network, the next step of the CMP is to establish and define the region's desired transportation goals and associated objectives; and in turn, performance measures to be met. The goals are comprised of generalized statements that are traditionally transportation-specific and would ideally address a particular mode of transport (e.g., goals in terms of automobile versus transit). The objectives on the other hand are more specific and measurable in nature. Each objective is also tied to a goal to maintain consistency, and is stated in a manner that is regional in scale. The Palm Beach MPO preceded the formal unveiling of the region's goals and objectives by first establishing a set of Values that were used to develop the long range plan. Table 03 provides the Values of the Palm Beach MPO's 2040 LRTP. In parallel with the state and federal transportation administrations, the first value of the Palm Beach MPO is to improve the safety and security of the transportation system, followed by maintaining and utilizing the existing system to its maximum potential and design-life.

The values range across all modes, users, and geographic- and economic-type areas of the Palm Beach County region. Value #3: "Implement Transportation Systems Management and Operations (TSM&O) and Transportation Demand Management (TDM) strategies to maximize efficiency of existing system before expanding." foreshadows the efforts of developing and maintaining a CMP since TSM&O and TDM strategies are critical components of the overall Congestion Management Process. The Values provide a framework for the Palm Beach MPO to work from when generating the goals and objectives for the CMP.

### TABLE 03 PALM BEACH MPO DIRECTIONS 2040 LONG RANGE TRANSPORTATION PLAN VALUES

1	Improve the safety and security of the transportation system for all users.
2	Fund maintenance and rehabilitation of existing infrastructure before expanding.
3	Implement Transportation Systems Management and Operations (TSM&O) and Transportation Demand Management (TDM) strategies to maximize efficiency of existing system before expanding.
4	Maximize benefits of existing transportation revenues.
5	Provide multimodal access to areas with low income and/or traditionally under served populations.
6	Support context-sensitive implementation of complete street principles in or near identified redevelopment areas or urban centers.
7	Support economic growth and development through projects consistent with local comprehensive plans and with minimal environmental impacts.
8	Promote regionally significant facilities and coordination of projects crossing jurisdictional boundaries to facilitate effective movement of people and goods.
9	Prioritize non-motorized facilities at all transit hubs, interchanges, bridges, and railroad crossings.
10	Invest in efficient, convenient and attractive mass transit system.

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Table 04 outlines the desired goals and objectives for the Palm Beach MPO's Directions 2040 Long Range Transportation Plan and are derived from the Values shown in Table 03. Each of the five goals has been partitioned by mode: Vehicular, Public Transit, Non-Motorized, and Freight (with a final category that includes Energy and Environmentally-driven goals). Each goal also has assigned to it a set of objectives, or performance measures, which will be used to measure the effectiveness of the MPO's long range plan and associated cost feasible projects.

The objectives were explicitly defined in a manner that ensures the MPO's ability to measure and quantify each performance metric, including base year conditions, and desired target values for future horizon years. Further discussion of these performance measures will be provided in subsequent Sections given they are a separate step in the CMP process. Note that the goals, objectives, and values (or GOVs) of the LRTP are used as the GOVs for the CMP, ensuring both consistency and continuity between the MPO's long range planning efforts and its near-term congestion management process. Performance measures in addition to those shown on Table 04 may be added to the CMP, given the time-scale of several of the objectives.

Following identification of goals and objectives is the selection of the appropriate Performance Measures (PMs) that will be utilized to assess the functionality and operation of the transportation system. According to MAP-21, "... MPOs shall develop long-range transportation plans and transportation improvement programs through a performance-driven, outcome-based approach to planning," 23 USC Section 134(c) (1). The regional values and goals of the Palm Beach MPO were introduced in Table 03 to set a foundation for the PMs through means of the objectives shown in Table 04. Each one of the five goals shown in the table has been assigned specific, measurable, agreed-upon, realistic, and time-bound (SMART) objectives. For the purposes of the CMP, and with respect to the aforementioned MAP-21 guidelines. these objectives will be used as a proxy for PMs of the transportation system, in addition to other measures that will be discussed in the subsequent sections.

## **3.1 LONG RANGE TRANSPORTATION PLAN OBJECTIVES AND TARGETS**

There are a total of 27 PMs shown on Table O4, each one presented as goal- and modespecific. Partnered with the Performance Measures are a set of target values, including the 2014 base year value. The "2016 Value" column is the condition measured in 2016, and addresses the data gathering process of this report. These measures are early indicators with respect to future desired outcomes. The 2025 target serves as a midway check-point between the base year and horizon year. By providing midpoint target values, the MPO could make adjustments to policy decisions in certain areas that are showing poor performance with respect to the established objectives.

### TABLE 04 PALM BEACH MPO DIRECTIONS 2040 LRTP GOALS & OBJECTIVES

	OBJECTIVE	DESCRIPTION	2014 VALUE	2016 VALUE	2025 VALUE	2040 VALUE
		Goal 1: Provide an efficient and reliable vehicular transportation	system			
	1.1	Reduce the number of thoroughfare intersections with critical sum > 1400	40	36	30	25
	1.2	Increase the percentage of traffic signals connected to the central control system by fiber optic network	78%	81%	85%	90%
1	1.3	Increase the percentage of principal arterials covered by closed circuit TV cameras	55%	55%	65%	75%
	1.4	Increase the percentage of traffic signals with operable vehicle detection	75%	87%	85%	95%
	1.5	Increase the percentage of facilities that accommodate two feet sea level rise For the SIS network For the non-SIS thoroughfare network	99% 99%	99%+ 99%	90% 75%	90% 75%
		Goal 2: Prioritize an efficient and interconnected mass transit s	ystem			
	2.1	Increase the percentage of transit commuter mode choice	1.6%	1.9%	3%	5%
2	2.2	Increase passenger trips per revenue mile For Tri-Rail service For Palm Tran fixed route service	1.36 1.61	1.29 1.56	1.5 2.0	2.0 2.5
4	2.3	Increase the number of park-n-ride spaces	2,196	2,014	3,000	4,000
	2.4	Reduce the average ratio of transit travel time to auto travel time for Palm Tran fixed route system	2.87	2.52	2.5	2.00
		Goal 3: Prioritize a safe and convenient non-motorized transportation	on netwoi	rk		
	3.1	Increase the percentage of Pedestrian commuter mode choice Bicycling commuter mode choice	1.7% 0.5%	1.6% 0.5%	3.5% 1.5%	5% 3%
3	3.2	Increase centerline mileage of Buffered bike lanes 10-ft or wider shared use pathways Designated bike lanes Priority bike network operating at LOS C or better	8 25 125 140	8 50 160 158	50 75 250 350	100 125 500 500
	3.3	Increase percentage of thoroughfare mileage near transit hubs That provides dedicated bicycle facilities (within 3 miles) That provides dedicated pedestrian facilities (within 1 mile)	10% 85%	7% 85%	20% 100%	40% 100%
		Goal 4: Maximize the efficient movement of freight through the	region			
	4.1	Decrease the percentage of SIS facilities, SIS connectors, and non-SIS designated truck routes that exceed capacity (v/c > 1.1)	3.3%	8.4%	2.5%	1.5%
4	4.2	Increase the annual tonnage of freight through The Port of Palm Beach Palm Beach International Airport	2.14M 22K	1.96M 24K	2.5M 25K	3.0M 35K
		Goal 5: Preserve and Enhance Social and Environmental Reso	urces			
	5.1	Decrease per capita daily fuel use (gallons/person)	1.54	1.24	1.25	1.00
_	5.2	Decrease per capita daily NOx emissions (grams/person)	50	20	35	25
5	5.3	Decrease per capita daily Hydrocarbon emissions (grams/person)	30	25	20	10
	5.4	Decrease per capita daily Carbon Monoxide emissions (grams/person)	400	160	300	250
	5.5	Decrease per capita daily Vehicles Miles Travelled (VMT/person)	25	20.7	21	20

# SECTION 4: DATA COLLECTION, ANALYSIS, AND RECOMMENDATIONS

An important aspect of establishing the performance measures is to be sure the needed data is collected consistently by responsible agencies, that subsequent preparers of this report know exactly where the data resides and how to convert the data to measures for consistency of reporting, and that the data itself represents the desired measure. This Section, and its associated appendices, summarizes the data sources and analysis procedures.

The following sections describe in further detail the variables quantified for each respective transportation mode, starting with the mode exhibiting the highest share of travel throughout Palm Beach County: Vehicular Travel.

## 1. VEHICULAR PERFORMANCE MEASURES 1.1 REDUCE THE NUMBER OF THOROUGHFARE INTERSECTIONS WITH CRITICAL SUM > 1,400

To measure how congested an intersection is you must analyze the sum of critical movement volumes at a signalized intersection. The higher the value, the greater the congestion, with a sum of 1,400 being near the limit of capacity. The level of congestion at signalized intersections is a good measure to monitor because urban roadway operations are largely controlled by the operation of signalized intersections.

Using peak-hour turning movement counts provided by the County's traffic division, the critical movement sum for 400 of approximately 1,175 signalized locations was calculated using the FHWA's Critical Movement Analysis (CMA) methodology. The methodology is summarized in Appendix B. The premise of the CMA is to determine the sum of the per-lane volumes that conflict with each other at an intersection. A listing of the intersections with current critical movement sums greater than 1,400 is provided in Table 05, which also includes a notation if the intersection is included in a roadway lane-addition project in the costfeasible transportation plan and an indication of a potential improvement to restore the sum of critical movements to less than 1,400, if possible. Three of the 36 intersections are located on roads scheduled for improvement in the first ten years of the adopted cost-feasible transportation plan.

### **Mitigation Strategy**

Conceptual schematic diagrams of the 36 potential improvements and a summary of all 400 intersection capacity analyses are included in Appendix C. Upon review by local agency staff, those locations judged to be in greatest need of improvement should be advanced for further study to refine the solution and feasibility of improvement.

The 2040 Long-Range Transportation Plan includes a \$954 million budget from 2020 through 2040 for "Local Initiatives" projects, which could be used to fund improvements identified for the measure.

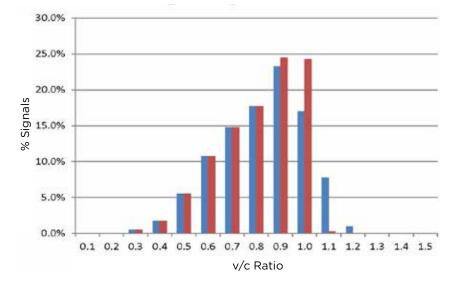
Figure 08 shows the distribution of CMA results, using the critical sum divided by 1,400 as a volume-to-capacity (v/c) ratio, and the weighted average value as a single measure of overall conditions, for intersections using data collected in 2012 through 2016. These counts indicate that 36 locations have critical sums over 1,400, and the 400 intersections have an average volumeto-capacity ratio (weighted by the volume of traffic using the intersections) of 0.827. While the figure and accompanying table shows the 36 intersections with critical sums over 1,400 today (v/c ratios greater than 1.0), another 171 intersections are indicated as operating in the range from 0.80 to 1.00. At an annual traffic growth rate of 1.24 percent per year, over the coming 15 years, they will also exceed the 1,400 limit. Analysis of potential "cures" to reduce the critical sums to less than 1,400 indicate that many of the 36 intersections will need further improvements within the coming 15-year timeframe. The implication is that capacityadding improvements will be required at more than 11 intersections per year over the coming 15 years.

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#### TABLE 05 SUMMARY OF POTENTIAL INTERSECTION IMPROVEMENTS

Signal		тмс	Max	Adde	Max Added Lanes:											Max	Total	Lane	s:									
Signal ID	Intersection	Year	CMS	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
58005	Clint Moore Rd at Lyons Rd	2016	1,460								1					1,265								2				
27127	Community Dr at Military Tr	2016	1,400									1				1,361									1			
33500	Forest Hill BI at Congress Ave	2015	1,438									1				1,368									1			
33475	Forest Hill BI at Kirk Rd	2015	1,400											1	-1	1,287											2	
33405	Forest Hill BI at Lyons Rd	2015	1,438								1					1,192								2				
33450	Forest Hill at Military Tr	2016	1,532										1		1	1,399										2		1
62635	Glades Rd at Airport Rd/NW 15th Ave	2013	1,513							1				1		1,346						3					2	
62510	Glades Rd at Fl Turnpike	2016	1,492	1												1,335	3											
4750	Indiantown Rd at Alt A1A/SR 811	2016	1,440							1						1,281							2					
4660	Indiantown Rd at Central Bl	2016	1,408								1					1,332								2				
37001	Lake Worth at SR 7	2016	1,465	1								1				1,380	3								1			
40150	Lantana Rd at High Ridge Rd	2015	1,539									1	1			1,379									1	2		
55160	Linton BI at Federal Hwy/US 1	2016	1,466					1								1,369					3							
55075	Linton BI at Military Tr	2015	1,499				1								1	1,372				3								1
17380	Northlake BI at Alt A1A/SR 811	2016	1,443	1												1,169	2											
17290	Northlake BI at Beeline HWY	2015	1,523					1								1,289					3							
27728	Okeechobee BI at Benoist Farms Rd/WPB FS #7	2015	1,430								1					1,397								2				
27750	Okeechobee BI at Jog Rd	2015	1,495							1						1,395							3					
27850	Okeechobee BI at Military Tr	2016	1,483							1			1			1,399							3			3		
27885	Okeechobee BI at Palm Beach Lakes BI	2016	1,481													1,481												
26020	Palm Beach Lakes BI at Robbins Dr	2015	1,559		1											1,344		4										
64021	Palmetto Park Rd at Lyons Rd	2016	1,460										1			1,397										3		
64050	Palmetto Park Rd at Powerline Rd	2016	1,645	1	1									1		1,390	3	4									3	
14300	PGA BI at Fla Turnpike/Fairway Dr	2016	1,412				1									1,277				2								
14450	PGA BI at Prosperity Farms Rd	2016	1,401										1			1,353										3		
30735	Southern BI at Forest Hill/Crestwood BI	2016	1,454				1									1,305				3								
30860	Southern BI at Kirk Rd	2016	1,409				1									1,399				3								
30790	Southern BI at Lyons Rd/Sansbury Way	2016	1,511				1						1	1		1,397				2						3	2	
34500	Stribling Way at SR 7	2016	1,413				1									1,321				2								
67410	SW 18th St Lyons Rd	2016	1,575				1			1						1,368				3			2					
67530	SW 18th St at Military Tr	2015	1,536	1				1			1			1		1,193	2				2			3			3	
67500	SW 18th St at Powerline Rd	2016	1,489											1		1,374											3	
53043	W Atlantic Ave at FI Turnpike/Tranquility	2016	1,459						1							1,350						1						
47575	Woolbright Rd at Seacrest Bl	2015	1,414			1										1,142			1									
59000	Yamato Rd at Lyons Rd	2016	1,574		1											1,320		3										
300024	Yamato Rd at Military Tr	2014	1,507				1			1						1,396				3			3					

### FIGURE 08 DISTRIBUTION OF CRITICAL MOVEMENT ANALYSIS RESULTS



V/C Ratio Existing		Impr	oved	
(<=to)	Count	%	Count	%
0.10	0	0.0%	0	0.0%
0.20	0	0.0%	0	0.0%
0.30	2	0.5%	2	0.5%
0.40	7	1.8%	7	1.8%
0.50	22	5.5%	22	5.5%
0.60	43	10.8%	43	10.8%
0.70	59	14.8%	59	14.8%
0.80	71	17.8%	71	17.8%
0.90	93	23.3%	98	24.5%
1.00	68	17.8%	97	24.3%
1.10	31	7.8%	1	0.3%
1.20	4	1.0%	0	0.0%
1.30	0	0.0%	0	0.0%
1.40	0	0.0%	0	0.0%
1.50	0	0.0%	0	0.0%
Count	400		400	
			Existing	Improved
Number w/CN	1S > 1,400:		36	1
Weighted Ave	erage V/C:	0.827	0.814	

While it will be desirable to keep congestion as low as practicable in upcoming years, it will not be possible to keep all intersections operating at good levels of service -- as both the social and economic costs of continuing to widen roads is not affordable. In several of the intersection improvement cases studied for this CMP update, the ability to widen roadways (e.g. six or eight through lanes) and the number of auxiliary turn lanes (three lefts and two rights) are at their practical limits.

Grade-separation with significant impacts on surrounding properties, or development of parallel corridors would be the next step of roadway improvement. In addition, since the rate of funding to add capacity lags the rate of growth in travel, roadway congestion levels will increase in the future. Thus, shifts in travel to modes with greater capacity (e.g. express bus or rail) and redevelopment at increased land use densities to reduce per capita travel demand are the longer-term solutions to mobility. This intersection congestion monitoring exercise remains valuable, however, to minimize roadway congestion where effective opportunities exist.

## 1.2 INCREASE THE PERCENTAGE OF TRAFFIC SIGNALS CONNECTED TO THE CENTRAL CONTROL SYSTEM BY FIBER-OPTIC NETWORK.

Fiber-optic communications from remote traffic signals to a central control system allows the maintaining agency to respond more readily to congestion. Fiber-optic communications allows video observations of an intersection and for county staff to modify traffic signal timings or for emergency-response vehicles to respond more quickly and better-equipped to incidents that cause congestion. At the end of 2015, there were 1,175 traffic signals in Palm Beach County, 952 of them (81 percent) were connected to the County or City traffic control centers by fiberoptic communication lines. To achieve the goal of 85 percent connected by 2025, an additional 47 signals need to be connected.

## 1.3 INCREASE THE PERCENTAGE OF PRINCIPAL ARTERIALS COVERED BY CLOSED-CIRCUIT TV CAMERAS

The purpose of being able to monitor traffic flow through closed-circuit television (CCTV) is to be able to identify the specific cause of non-recurring congestion and allow corrective measures to be implemented from the remote traffic control center, or for emergencyresponse to be deployed more quickly with a better understanding of the cause of the congestion. At the end of 2015, 229 of the 416 centerline miles (55 percent) of major roads in Palm Beach County were monitored via 141 CCTV's. At this rate of coverage, an additional 26 cameras need to be installed to meet the 2025 goal of 270 miles (65 percent) coverage.

### **Mitigation Strategy**

To address measures 1.2 and 1.3, an update to Palm Beach County's Intellegent Transportation Systems Master Plan should be undertaken to establish the next logical expansion of the Adaptive Traffic Management System (ATMS).

## 1.4 INCREASE THE PERCENTAGE OF TRAFFIC SIGNALS WITH OPERABLE VEHICLE DETECTION

Vehicle detection at traffic signals enable a signal controller to reduce congestion by responding to varying traffic volumes on each movement. Detectors are most commonly wire loops cut into the pavement, video cameras, or infrared heat detectors, and the traffic signal controller must have the capability of accepting their communications.

Some traffic signals in Palm Beach County and its municipalities are not capable of having vehicle detection due to "legacy" equipment, and others do not have working detection as a result of inadequate maintenance capability. In Palm Beach County, the number of intersections having non-functioning detection due to maintenance issues is 158 (13%). Additional capital funding to modernize traffic signals and additional maintenance funding to improve agency ability to respond to broken or nonfunctioning equipment is needed.

### **Mitigation Strategy**

The MPO currently has a Local Initiative prioritized project with design funding in the TIP in year 2018. Once construction funds are programmed, this project will move the MPO closer to achieving its target.

## 1.5 INCREASE THE PERCENTAGE OF FACILITIES THAT ACCOMMODATE TWO FEET SEA LEVEL RISE:

- FOR THE STRATEGIC INTERMODAL SYSTEM (SIS) NETWORK
- FOR THE NON-SIS THOROUGHFARE NETWORK

Global warming threatens to flood the road network in coastal areas. The effects of sealevel rise on transportation facilities have been estimated by the Southeast Florida Regional Climate Change Compact ("Climate Change Study"), and this analysis is used for this assessment. A two-foot rise in sea level has been estimated by the Climate Change Study to submerge 1.42 miles of major roadway in Palm Beach County, as follows:

ROAD SEGMENT	JURISDICTION
<b>S Ocean Blvd/SR-A1A</b> from Lantana-Manalapan border to E Ocean Ave	Florida DOT
<b>Bradley Place</b> from Flagler Memorial Bridge to Dunbar Rd	City of Palm Beach
<b>Flagler Dr</b> from 7th St to 9th St	City of Palm Beach/ Palm Beach County
<b>Flagler Dr</b> from LA Kirksey St to Lakeside Ct	City of Palm Beach/ Palm Beach County
<b>Cocoanut Row</b> from Worth Ave to Brazilian Ave	City of Palm Beach

No SIS facilities are compromised.

Currently, none of these potentially affected roads are scheduled for improvement in the cost-feasible LRTP, so to reduce the number of "at-risk" miles of road, additional funds must be allocated for this purpose.

Solutions proposed in the Climate Change Study to eliminate the flooding risk include either raising the elevation of the road, or building a dike system.

### **Mitigation Strategy**

In regard to the identified road segments the MPO suggests each responsible agency incorporate an engineering solution which will accomodate a two-foot sea level rise.

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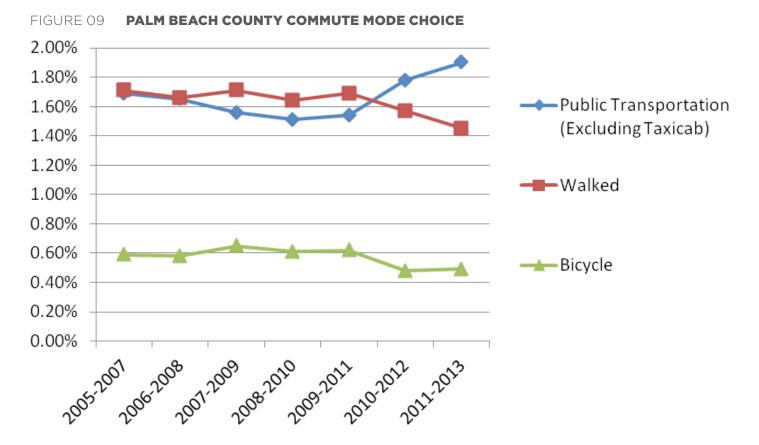
## 2. PUBLIC TRANSPORTATION MEASURES 2.1 INCREASE THE PERCENTAGE OF TRANSIT COMMUTER MODE-

CHOICE.

Public transit ridership, as a percentage of commute trips, is used as the primary measure for this objective. This percentage is monitored by the American Community Survey (http:// www.census.gov/programs-surveys/acs/about. html), which is a continuously on-going survey effort undertaken by the U.S. Census Bureau. The three-year average value is used for this measure. Figure 09 shows the mode share of work trips made by public transit (blue), walking (red), and bicycle (green) in Palm Beach County from the 3-year data from the 2015-2013 American Community Survey (ACS), Table B08301. Data from 2013 (reported in 2015) indicates an increase in transit usage of 1.9 percent, up from 1.5 percent in 2010.

Transit is most effective at serving the work trip, and the increase in transit ridership is likely attributed to continuing maturation of the Tri-Rail system. With continued coordination between Palm Tran bus service and the Tri-Rail system, and encouragement of higher-density land uses in the vicinity of Tri-Rail stations, will encourage more utilization of public transportation services.

Similarly to measure 2.1, increasing the passenger trips per revenue-mile is a matter of making transit service more competitive with the alternatives. The competition includes cost, travel time, convenience, comfort, and safety in all phases of the transit trip – from the front door to the transit stop/station, parking, the environment for waiting for a transit vehicle at the stop/station, the "line-haul", and the travel from the destination stop/station to the final destination. All of these elements are considered in periodic updates to the Transit Development Plan. Improving frequency and coverage of service, land use shifts, improved convenience, more competitive travel times, and managing



Source: U.S. Census. 2015. American Community Survey. 3 Year Data : 2005-2013 Means of Transportation to Work (Table B08301) parking at the destination-end of the transit trip are common strategies for increasing the attractiveness of transit travel. Other social factors, such as increasing costs of operating personal vehicles, over which agencies have little control, also influence transit ridership.

Plans are in progress for developing the Tri-Rail "Coastal Link", a second major north-south commuter rail corridor in southeast Florida, with goals of service initiation prior to 2025. Projects that are currently underway to make transit usage more convenient and competitive include transit signal priority and implementing a universal fare card system.

The currently adopted LRTP for Palm Beach County proposes improvements to the bus system network involving increasing geographic coverage, increasing the frequency of service, and improving the quality of service through coordination between Tri-Rail and Palm Tran.

### **Mitigation Strategy**

Fund identified LRTP and TDP projects.

## 2.2 INCREASE PASSENGER TRIPS PER REVENUE MILE:

FOR TRI-RAIL SERVICE

### FOR PALMTRAN FIXED ROUTE SERVICE

Increased ridership per revenue mile is a second measure indicative of public transportation use. This measure differs from the mode-choice measure above because it relates to economic efficiency. Fleet-miles and ridership are reported annually to the Federal Transit Administration (FTA) by each local transit agency. The measure is calculated from reported data as the Unlinked Passenger Trips / Total Actual Revenue Miles. The Tri-Rail system reports 1.29 passenger trips per revenue-mile, and Palm Tran 1.56.

### **Mitigation Strategy**

Funding TDP recommendations and system enhancements.

# 2.3 INCREASE THE NUMBER OF PARK-N-RIDE SPACES

Park-n-ride spaces improve the convenience of transit travel and car-pooling, making it more convenient for commuters to drive a car or bike to a transit stop/station, park, then ride a bus or train. Since public transportation stops and stations are the primary location for park-n-ride lots, and since transit funding inevitably involves federal and state funding, the inventory of park-n-ride spaces maintained by the Florida DOT's district public transportation office is drawn upon for this report. The current inventory of spaces is 2,014. Table 06 summarizes the current inventory of park-n-ride facilities in Palm Beach County.

Park-n-ride lots are developed as a part of the public transportation system, and funding for park-n-ride spaces is included in the costfeasible plan. Transit Development Plans (TDP's) are in progress for both PalmTran and SFRTA, and these studies will identify the need for and location of additional park-n-ride facilities.

#### **Mitigation Strategy**

Fund future TDP recommended Park-n-ride lots.

## TABLE 06PALM BEACH COUNTY 2015PARK-N-RIDE INVENTORY

			2015	Spring Inve	ntory
Site ID	Page Number	Facility Name	Park- and-Ride Spaces	Occupied Spaces	Percent Occupied
PALM	BEACH COU	JNTY			
10	51	Boca Raton Tri-Rail Station	172	90	52%
11	56	Congress Avenue Park-and- Ride	100	0	0%
12	61	Delray Beach Tri-Rail/Amtrak Station	129	120	93%
13	66	Boynton Beach Tri-Rail Station	336	191	57%
14	71	Lake Worth Tri-Rail Station	318	162	51%
15	76	Lake Worth Road and Turnpike Mile Post 93 Park-and-Ride	76	33	43%
16	81	West Palm Beach Tri-Rail/ Amtrak Station	280	151	54%
17	86	Magnolia Park Tri-Rail Station	273	149	55%
18	91	PGA Boulevard Turnpike Mile Post 109 park-and-Ride	44	12	27%
19	96	Indiantown Road and Turnpike Mile Post 116 Park-and-Ride	38	20	53%
24	121	West Palm Beach Park-and- Ride	46	8	17%
27	136	Wellington Park-and-Ride	138	2	1%
30	151	Oakton Commons Park-and- Ride	34	17	50%
31	156	Indiantown Road and Central Boulevard Park-and-Ride	30	9	30%
PALM	BEACH COU	JNTY TOTALS	2,014	964	48%

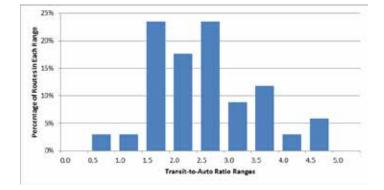
## 2.4 REDUCE THE AVERAGE RATIO OF TRANSIT TRAVEL TIME TO AUTO TRAVEL TIME FOR PALMTRAN FIXED ROUTE SYSTEM

This measure compares the competitiveness of public transportation with the privately owned vehicle. To make transit an attractive alternative to the private auto and encourage motorists to switch to transit for their commutes, the Palm Beach MPO has set goals to reduce the ratio of transit-to-auto travel time to 2.50 by 2025 and to 2.00 by 2040.

This measure compares the travel time from one end of a transit route to the route end, as measured by the bus schedule (for buses) to the travel time during the a.m. and p.m. peak period as determined using Google Map directions (for autos).

During the PM peak period of a weekday in May 2016, the in-vehicle transit travel time across Palm Tran's routes is about 2.52 times the auto travel time. The distribution of ratios across routes shows that 29 percent of the bus routes are meeting the 2040 goal of 2.0 or less, and an additional 47 percent are meeting the 2025 goal of 2 or less. Figure 10 presents the distribution of transit-to-auto travel time ratios, and the individual route comparisons are provided in Appendix D.

### FIGURE 10 DISTRIBUTION OF TRANSIT-TO-AUTO TRAVEL TIME RATIOS



To meet the 2025 goal (2.5), the average transitto-auto travel time ratio must be reduced by only one percent. To achieve the 2040 goal (2.0), the ratio must be further reduced by twenty percent. The strategies summarized below seek to reduce transit travel time with minimal or no impact to automobile travel time.

**Transit Network Optimization** >> Optimizing the transit network can create substantial travel time and operating savings at a fraction of the cost of building new transit infrastructure. It can also set the stage for micro-level transit treatments that can further add to the efficiency of the network.

A common first step in transit network optimization is to simplify existing routes (National Association of City Transportation Officials, 2016):

- > Direct, simple routes are easy to use and save time compared with circuitous routes.
- Transit routes that have evolved in a piecemeal fashion over decades can be simplified to create more frequent and direct service.
- Reducing the number of turns, especially through complex intersections, eliminates a large source of transit delay.
- Simplifying routes can create opportunities for other transit treatments, including exclusive lanes and transit signal priority.

**Exclusive Lanes** >> Giving transit vehicles exclusive lanes can significantly decrease transit travel times, but may impact automobile travel times on congested corridors. Transit lanes are a portion of the street designated by signs and markings for the preferential or exclusive use of transit vehicles, sometimes permitting limited use by other vehicles. Transit lanes are not physically separated from other traffic, unlike on-street transit-ways.

**Transit Signal Priority (TSP)** >> TSP is a general term for a set of operational improvements to reduce transit delay at traffic signals by holding green lights longer or shortening red lights. TSP may be implemented at individual intersections or across corridors or entire street systems.

**Queue Jumps** >> queue jumps enable transit vehicles to bypass long queues at signalized intersections. An intersection with a queue jump provides an additional travel lane, which can be transit-only or shared, on the approach to the signal.

**Bus Bulb-Outs** >> are curb extensions that allow buses to stop and board passengers without ever leaving the travel lane. Bus bulbs help buses move faster and more reliably by decreasing the amount of time lost when merging in and out of traffic.

**Fare Pre-Payment** >> Fare collection and boarding can be time consuming, accounting for half to a third of vehicle revenue time. Strategies that streamline fare collection and allow for multi-door boarding can dramatically speed up passenger boarding time, reducing dwell time and total run-time.

### **Mitigation Strategy**

A TDP, in progress for PalmTran, will identify appropriate strategies to make bus transit service more effecient.

## **3. BICYCLE AND PEDESTRIAN MEASURES** 3.1 INCREASE THE PERCENTAGE OF:

- PEDESTRIAN COMMUTER MODE CHOICE
- BICYCLING COMMUTER MODE CHOICE

As discussed under measure 2.1, the percentage of trips to work by mode, including bicycle and walking, is monitored by the American Community Survey (http://www.census.gov/ programs-surveys/acs/about.html). The threeyear average value is used for this measure. Figure 09 shows the mode share of work trips made by walking (red), and bicycle (green) in Palm Beach County from the 3-year data from the 2015-2013 American Community Survey (ACS), Table B08301. Where walking and bicycling is a viable option for travel, making provision for these modes is the best action for further increases in modeshare. Walking trips typically are less than one mile, and rarely more than two, while bicycling trips are usually less than five miles and rarely more than ten. Thus, assigning priority to providing facilities, or bringing existing facilities to standards, at locations within these distances that have higher trip-end densities and higher potential for traffic conflicts would be appropriate.

### **Mitigation Strategy**

Fund sidewalks and bicycle facilities through Transportation Alternatives (TA) and Local Intiative (LI) programs.

# 3.2 INCREASE CENTERLINE MILEAGE OF:

- BUFFERED BIKE LANES
- > 10-FT OR WIDER SHARED USE PATHWAYS
- DESIGNATED BIKE LANES
- PRIORITY BIKE NETWORK OPERATING AT LOS C OR BETTER

Providing suitable facilities for bicycle and pedestrian travel facilitates and encourages use of these modes. A bicycle facility master plan was undertaken by the Palm Beach MPO in 2010, and an inventory of bicycle facilities and the level of service provided by the bicycle facilities at that time was prepared. The database continues to be maintained by MPO staff, and was updated for this report to reflect roadway lane-addition improvements and 2015 AADT data. A goal of 725 miles of bicycle facilities by 2040 has been set, with 156 miles existing today. Thus, the needs are substantial. At an assumed cost of \$200,000 per mile, a funding commitment of \$113 million is needed over the coming 24 years, and a rate of construction of 24 miles per year.

### **Mitigation Strategy**

Fund sidewalks and bicycle facilities through Transportation Alternatives (TA) and Local Intiative (LI) programs.

## 3.3 INCREASE PERCENTAGE OF THOROUGHFARE MILEAGE NEAR TRANSIT HUBS:

- THAT PROVIDES DEDICATED BICYCLE FACILITIES (WITHIN 3 MILES)
- THAT PROVIDES DEDICATED PEDESTRIAN FACILITIES (WITHIN 1 MILE)

This measure indicates the extent to which non-automobile travel is facilitated by providing safe and convenient access for walk and bike travel to public transportation hubs. Palm Beach County's thoroughfare network is dominated with auto-oriented design; however, because these corridors and hubs are the most economically active, they are often the best places to provide facilities which promote active transportation. The benefits of providing dedicated bicycle and pedestrian facilities include having a safer space to walk or ride in, perhaps illuminated, and are reasonably unaffected by puddles or flooding.

The transit hubs were identified by MPO staff and include Tri-Rail stations, bus transit transfer stations, and several shopping centers. Geographic Information System inventories of the existing bicycle facilities and sidewalks maintained by MPO staff were used for this analysis and the results indicate substantial needed facilities. The measures identify the proportion of major roads within the typical "trip-shed" for bicycle and pedestrian travel to the transit centers that have such facilities.

Within the 3-mile "catchment area" for dedicated bicycle facilities 126 miles of 418 miles (23%) of roadway do not have bike lanes, and within the 1-mile catchment area for sidewalks, there are 7 miles of 104 miles (7%) of roadways that do not have any sidewalks and an additional 20 miles (19%) that have sidewalks only on one side. 77 miles (74%) have sidewalks on both sides. These measures exclude freeway ramps and interstate facilities, which would not have such facilities. Maps in Appendices E and F, respectively, identify the locations where bicycle and pedestrian facilities are missing in the vicinity of transit hubs.

### **Mitigation Strategy**

Fund sidewalks and bicycle facilities through Transportation Alternatives (TA) and Local Initiative (LI) programs.

## 4. FREIGHT MOVEMENT MEASURES

## 4.1 DECREASE THE PERCENTAGE OF SIS FACILITIES, SIS CONNECTORS, AND NON-SIS DESIGNATED TRUCK ROUTES THAT EXCEED CAPACITY (V/C > 1.1)

Trucks that move goods and materials are a critical component of economic vitality and cost-efficiency, so it is a good investment to minimize congestion on designated truck routes. The measure makes use of the traffic counts recorded annually by the Florida DOT and Palm Beach County on major roads and a roadway inventory database maintained by MPO staff that indicates number of lanes and capacity of the major roads. For this report, the number of lanes indicated in the inventory were updated to reflect recently improved roads (MPO website-"Recent Major Projects"), and the daily traffic volumes on roads were updated to 2015 values from Palm Beach County Traffic Engineering Division's "Counts4Web" database. Using a volume/capacity ratio of 1.1 identifies the more significantly congested roadways in the network. Figure 11 illustrates the locations of these truck route segments, totaling 17.3 miles.

### **Mitigation Strategy**

A solution strategy would be to implement capacity-increasing improvements such as intersection lane additions or capacity increases where possible, and according higher priorities to such improvements that fall on the SIS and non-SIS truck routes.

#### FIGURE 11 CONGESTED TRUCK ROUTE SEGMENTS



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## 4.2 INCREASE THE ANNUAL TONNAGE OF FREIGHT THROUGH

## THE PORT OF PALM BEACH

## PALM BEACH INTERNATIONAL AIRPORT

Annual tonnage of freight provides an indication of the utilization of the freight facilities and the importance of access to the airport and port. This data is reported monthly in publications of the Palm Beach County Department of Airports ("Traffic Report") and Port of Palm Beach District ("Cumulative All Cargo Tonnage" report).

The Port of Palm Beach attracts approximately 1.96 million tonnage of freight into the county. Additionally, the Palm Beach International Airport brings in approximately 25,800 tons of freight into Palm Beach County.

## **Mitigation Strategy**

While the MPO does not directly participate in attracting freight movement though Palm Beach County's ports, the MPO can influence the identification and assignment of higher priorities to improvements to land-side access roads to minimize congestion, as discussed above in Section 4.1.

## 5. SOCIAL AND ENVIRONMENTAL RESOURCE MEASURES

## 5.1 DECREASE PER CAPITA DAILY FUEL USE (GALLONS/PERSON)

The State of Florida Department of Revenue collects information regarding the number of gallons of motor vehicle fuel sold in each county for the purposes of distributing motor fuel tax revenues. In addition, the Florida Bureau of Economic and Business Research annually publishes County population estimates. These two sources of data are combined to create this measure. Table 07 summarizes fuel use per capita in Palm Beach County since the 1981, and shows increases in the '80's, '90's, and early 2000's, then decreases during the "great recession" of 2008 through 2014, and has recently shown an increase in 2015.

## **Mitigation Strategy**

Methods to decrease fuel consumption per capita would include:

- > Continue to improve service provided by alternative modes
- Support CAFÉ standards and alternative energy vehicles (electric/hydrogen)
- Improve mix of land uses to bring homes and needs/employment closer (density and diversity of land uses)
- Reduce congestion/delay/idle-time through intersection, roadway, and ITS/ signal timing improvements

#### TABLE 07 HISTORICAL FUEL USE

Year	Population	Daily Gallons Motor Fuel + Diesel	Gallons/ Capital/ Day	Fleet Fuel Efficiency (mpg)	Estimated Dailt VMT	VMT/ Capital/ Day
1981	618,370	734,256	1.187	14.53	10,668,736	17.3
1986	753,724	886,215	1.176	14.29	12,664,014	16.8
1991	887,893	1,183,332	1.333	17.15	20,294,359	21.7
2001	1,156,550	1,458,168	1.261	19.34	28,200,976	24.4
2006	1,291,426	1,743,233	1.350	19.90	34,690,332	26.9
2007	1,302,451	1,704,616	1.309	20.51	34,961,665	26.8
2008	1,307,784	1,631,692	1.248	20.96	34,200,263	26.2
2009	1,312,016	1,572,630	1.199	20.69	32,537,710	24.8
2010	1,320,134	1,568,190	1.188	21.03	32,979,029	25.0
2011	1,325,758	1,571,356	1.185	20.71	32,542,776	24.5
2012	1,335,415	1,579,429	1.183	20.70	32,694,183	24.5
2013	1,345,652	1,582,012	1.176	20.57	32,541,990	24.2
2014	1,360,238	1,629,694	1.198	20.36	33,172,466	24.4
2015	1,378,417	1,703,591	1.236	20.70	35,264,337	25.6

Sources: Florida Office of Economic and Demographic Research, Florida Department of Revenue, and Federal Highway Administration

http://edr.state.fl.us/Content/population-demographics/data/CountyPopulation\_2015.pdf http://dor.myflorida.com/taxes/pages/distributions.aspx http://www.fhwa.dot.gov/policyinformation/index.cfm http://ygogle.com/publicdata/explore?ds=gb66iodhisaab

# Estimated value, data not yet available.

Most of the above strategies involving enhancement of alternative mode systems are discussed in the sections above regarding those alternative modes. Not specifically addressed are: providing electric vehicle recharging features to strengthen public perception that electric vehicles are here to stay, encouraging shorter trip lengths by advocating for land development regulations that promote and incentivize more dense urban forms of development, such as geographically varied impact fees and easier development approvals in core areas.

Some improvements to make the transportation system more fuel-efficient by reducing congestion fall within the MPO's influence; however, current funding levels suggest increased roadway congestion is inevitable. A balance must be found between funding roadway improvements and improvements to alternative modes of transportation.

## 5.2 DECREASE PER CAPITA DAILY NOX EMISSIONS (GRAMS/PERSON) 5.3 DECREASE PER CAPITA DAILY HYDROCARBON EMISSIONS (GRAMS/PERSON)

## 5.4 DECREASE PER CAPITA DAILY CARBON MONOXIDE EMISSIONS (GRAMS/PERSON)

Oxides of nitrogen and hydrocarbons are precursors to the formation of Ozone in the atmosphere. Carbon monoxide is unhealthy for humans. These are common emissions of the internal combustion engine, and are more costeffectively managed through engine technology and vehicle design, rather than through implementation of transportation system improvements. That said, increased levels of congestion do contribute to unnecessary fuel consumption and thus increased emissions.

The measures adopted by the MPO are generated by the computer models used by the MPO for urban transportation systems planning, and thus the measures are based on planning assumptions and theoretical models. The MPO desires to move toward direct measurement of air quality conditions, such as making use of air quality monitoring stations maintained by Palm Beach County and reported on the Florida Department of Environmental Protection monitors for oxides of nitrogen and ozone concentrations. One such station is located in Lantana Nature Preserve. Standard reports include the top ten days of ozone concentrations, and oxides of nitrogen concentrations each year. A specific measure that could be used is the computation of the fourth-highest 8-hour average reading for the past three years. If this value exceeds 75 parts per billion (ppb), the Federal standard would be exceeded, triggering mandatory actions to improve air quality. The current three-year average is not available, as the station did not measure ozone concentrations in 2014 or 2013. The 2015 value was 62 ppb.

#### **Mitigation Strategy**

Research capital funding of air quality stations in Palm Beach County; reduce VMT and promote alternatives modes of transportation.

## 5.5 DECREASE PER CAPITA DAILY VEHICLE MILES TRAVELLED (VMT/ PERSON)

The fuel consumption per capita measure from measure 5.1 was multiplied by the average fleet fuel efficiency (miles per gallon), obtaining fleet fuel efficiency measures from the Federal Highway Administration. Historical data of this measure is also summarized in Table 07, and indicates that travel per capita increased in the late 20th century, but remained relatively stable during the "great recession" of the early 21st century. Of interest to note also is that fleet fuel efficiency improved in the late 20th century, but has not significantly improved in the early 21st. New corporate average fuel economy standards and the introduction of electric vehicles into the fleet should cause this number to increase in upcoming years.

### **Mitigation Strategy**

Three strategic options to reduce motor fuel consumption that can be funded by MPO programs are:

- Shift travel to alternate modes by improving the quality of service provided for those modes.
- Shorten necessary trips by promoting higher densities and diversity of land uses,
- Reduce the need for trip-making through improved communications and goods and service delivery technologies.

# SECTION 5: EVALUATION OF ALTERNATIVE SOLUTIONS

The next step, and perhaps the most challenging step in terms of project advancement, is the evaluation of potential solutions. These solutions include capital investments, operational improvements, and policy initiatives aimed toward demand management. Further, adequate funding is not available to address all needs, so a procedure that balances the allocation of resources to needs and chooses the set of improvements that best supports the goals of the community is needed.

The Palm Beach MPO created a Priority Scoring Procedure to allocate funding for the Local Initiatives funding program that reflects the 10 values presented earlier in Section 3. Table 08 shows the point distribution (100 point scale) of the 10 Values, or categories, and is based on a number of criteria that are specific, measurable, agreed-upon, realistic, and timebound (SMART). This scoring procedure was established collaboratively by MPO staff and the advisory committees and is able to be modified on an annual basis before the MPO's application cycle begins..

#### TABLE 08 PALM BEACH MPO 2015 LOCAL INITIATIVES PROJECTS SCORING CRITERIA

LRTP ID	LRTP Category	Crietria	Value	Scoring	Max				
1&6		Project improves non-motorized safety by	buffered bike lanes - 4*	8	15				
	and Complete		10'+ shared-use pathways - 3*	5					
	Streets		designated bike lanes - 2*	4					
			new sidewalks - 1*	2					
		Project improves safety and convenience for users	(project must demonstrate)	5	5				
		Project improves performance of hurricane evacuation	oject improves performance of hurricane evacuation route						
		Project mitigates impacts of sea level rise	2						
2	Maintenance	Project improves infrastructure in unacceptable con advanced signs of deterioration; potential imminer		7	10				
		Project improves infrastructure in poor condition an approaching the end of its service life, exhibiting sig strong risk of failure		5					
		Project improves non-motorized and/or transit infra service level	astructure or improves transit	3					
3	TSM&O / TDM	Non-capacity project implements TSM strategies		7	10				
		Non-capacity project implements TDM strategies		3					
		Capacity project improves Thoroughfare intersection 1400	on(s) where critical sum >	5					
		Capacity project expands fiber optic traffic signal r	network	3					
		Capacity project expands CCTV camera coverage a	Capacity project expands CCTV camera coverage area on principal arterials						
4	Maximize MPO	Local Implementation via Local Area Participation(	LAP) Agreement or FTA Flex	5	5				
	Funds	FDOT Implementation on State Highway System wi	3						
		FDOT Implementation with Local Funding for desig	in	1					
5	Equity	Median HH income within 1 mile of project vs PBC	<60%	10	10				
		median income (\$52,806) 60 - <80%							
			80% - <100%	3					
		Traditionally underserved population percentage	>80%	5	5				
		within 1 mile of project	>60 - 80%	4					
			>40% - 60%	3					
			>20% - 40%	2					
			5-20%	1					
7a		Project is endorsed by members of benefit area (He		5	10				
7b		Project will have positive environmental impacts (p		5					
8	Regional Freight	Project improves capacity on congested SIS facility/connector or non-SIS truck route	v/c > 1.2	5	5				
	Freight	Tachity/connector of non-SIS track route	v/c > 1.1	3					
			v/c > 1	2	_				
		Project improves efficient movement of freight in re		5	5				
9	Non-motorized Connectors	Project improves non-motorized facilities at an inte crossing	6 4	10					
		Project improves non-motorized connectivity to facilities on PBC Thoroughfare Map within 2 miles of a transit hub							
10									
	Transit	Project reduces transit travel time between transit I	hubs	4					
Note:	Non-motorized	Point System			100				

Note: Non-motorized Point System

31

\*Multiply length (up to 2 miles) by factor shown in value column

# SECTION 6: IMPLEMENTATION

After evaluating all proposed transportation improvement projects and assigning each a respective score that reflects the 10 Values of the MPO, the projects are ranked and listed in order of priority. The list of priority projects are broken into three categories based on scale and implementation cost: Major Highway, Transit and Freight Projects, the Local Initiatives Program (for non-regionally significant projects), and the Transportation Alternatives Program for smaller non-motorized projects. These lists act as a vehicle for guiding the MPO staff and Board in terms of which areas in the network require significant attention. Flexibility in the selection process allows for any unforeseen engineering, right-of-way, construction, environmental, or stakeholder conflicts. These three lists are compiled into one Priority Projects document and submitted to the Florida Department of Transportation (FDOT) for funding in the Five-Year Draft Tentative Work Program. The MPO and FDOT collaboratively work together to include as many projects as possible into the final Work Program given the funding availability and project constraints.

The higher-ranking, financially feasible projects are then included in the MPO's 5-year Transportation Improvement Program (TIP). This process is repeated on an annual basis and is the platform through which congestion management solutions are fully evaluated and implemented.

# SECTION 7: FEEDBACK

Feedback is the direct act of taking output produced from a sequential process, such as the CMP, and reverting back to the initial step of the procedure to ensure consistency (or convergence). If the output does not match the input, then the model is considered "inconsistent", and the process must therefore be repeated until convergence (or equilibrium) is achieved. This test for consistency adds an iterative feature to the overall CMP, resulting in a framework that is dynamic, as opposed to a static system. Recall, the initial step of the CMP was to establish a set of goals and objectives with respect to the region's transportation system, leading to a selected set of improvement projects that were formulized to meet the region's travel demand needs, and thus achieve the desired goals and objectives that were initially defined at the onset.

The final step of the CMP will be to feedback to the initial step of the process and ensure the goals and objectives of the Palm Beach MPO are in fact being achieved (and sustained over time). Feedback is achieved in the Congestion Management Process on a recurring threeyear cycle of updates to the transportation system performance measures through the CMP. Table 04 lists the overall goals of the Palm Beach MPO's transportation planning efforts, including their associated objectives that are specific and measurable. The annual calculation of performance measures allows for measurement of progress toward the establish targets once projects selected from the list of priorities have been completely implemented. This feedback mechanism is a critical component of the CMP; the outcome will direct future policy refinements, updated target values, and/or funding decisions.

# SECTION 8: CONCLUSIONS

The CMP has evolved from what was originally called the Congestion Management System to a more systematic, continuous process that includes a feedback mechanism for ensuring consistency between the established goals and objectives and the alternative improvement projects that are selected to meet the desired goals. The current version of the CMP can now be classified as an analytical process that takes a large problem of managing congestion and breaks it into smaller units that can be computationally evaluated and addressed.

Recall, the congestion management process comprises of the following eight steps:

- 1. Establish regional goals and objectives;
- Define the study area boundary and CMP network;
- 3. Develop multimodal performance measures;
- 4. Collect the necessary data;
- 5. Analyze the data, calculate the performance measures, and identify areas in need of improvement;
- 6. Evaluate feasible solutions and/or improvements;
- 7. Implement the agreed-upon projects from the list of priorities; and
- 8. Feedback to Step 1 to ensure goals and objectives are being achieved (and sustained).

The project prioritization process described earlier in Section 6 includes a variety of transportation projects, including capital expansion, infrastructure reconstruction, increased service, and safety and operation improvements. The Palm Beach MPO's philosophy has adapted to today's planning climate where road widening projects are no longer the only viable solutions considered for addressing traffic congestion. Widening projects tend to carry the highest price tag given the amount of resources that are required to add a general purpose lane in each direction of travel. including right of way acquisition, engineering design, environmental studies, purchasing of materials, and final construction. These types of projects tend to be in reaction to an instantaneous increase in demand of a certain facility (say due to a recent development), as opposed to proactively shaping travel behavior and addressing demand before it exceeds capacity.

History has shown that investments in infrastructure expansion projects have not kept pace with user demand, population growth, or improvements in vehicle and operation control technologies. Investments in modes other than single-occupant-vehicle transport facilities on the other hand, such as public transit and bicycle and pedestrian infrastructure, will offer travelers other feasible alternatives of travel and will indirectly result in a positive impact on network travel times by removing vehicles from the traffic stream.

The CMP is a perfect example of the 3C process: Continuing, Comprehensive, and Cooperative. The 8-step framework is an on-going (Continuing) process that will be implemented on an annual basis as new traffic information is collected, especially with the assistance of emerging data retrieval technologies and monitoring systems. The management and evaluation of network congestion encompasses all modes of travel throughout the entire County (Comprehensive) with the assistance of numerous agencies, including all 39 municipalities, the county traffic division, the Florida Department of Transportation, and the Port of Palm Beach (Cooperative). The end goal of the Congestion Management Process is to "take back" that capacity that is lost to congestion by bottlenecks, accidents, incidents, road construction, weather, and traffic control delay. According to the FHWA, non-recurring congestion (such as accidents) account for nearly 25% of travel time delay, which is currently being addressed by the Florida Department of Transportation through enhanced roadway safety measures and the creation of the Traffic Incident Management Program. Future work will look into further incorporating performance measures related to safety into the congestion management process, as well as additional measures with respect to freight and socioeconomic data. The Palm Beach MPO will also analyze the DOT's definition of network "Reliability" and how this performance measure can be inserted into the next version of the CMP. Also, a newly formed committee called the TSM+O (Transportation Systems Management and Operations) subcommittee of SEFTC is another example of how the Southeast Florida MPOs are addressing congestion management practices from a regional perspective by bringing together traffic operations and transportation planning divisions.

Moving forward, the framework of the CMP will continue to be evaluated in order to identify areas of improvement. For example, as technology evolves (e.g., Intelligent Transportation Systems, or ITS) and transportation data becomes more readily accessible (e.g., telecommunications), the performance measures may be redefined in order to adapt to emerging state-of-theart practices. Also, draft policies by the MPO are currently underway involving a comprehensive analysis of potential hazardous walking conditions to school, and guidelines on Complete Streets design and funding prioritization that can then be added to the CMP.

Following are the summarized Mitigation Strategies this report recommendations.

## MITIGATION STRATEGIES 1.1 REDUCE THE NUMBER OF THOROUGHFARE INTERSECTIONS WITH CRITICAL SUM > 1,400

Conceptual schematic diagrams of the 36 potential improvements and a summary of all 400 intersection capacity analyses are included in Appendix C. Upon review by local agency staff, those locations judged to be in greatest need of improvement should be advanced for further study to refine the solution and feasibility of improvement.

## 1.2 INCREASE THE PERCENTAGE OF TRAFFIC SIGNALS CONNECTED TO THE CENTRAL CONTROL SYSTEM BY FIBER-OPTIC NETWORK.

## 1.3 INCREASE THE PERCENTAGE OF PRINCIPAL ARTERIALS COVERED BY CLOSED-CIRCUIT TV CAMERAS

To address measures 1.2 and 1.3, an update to Palm Beach County's Intellegent Transportation Systems Master Plan should be undertaken to establish the next logical expansion of the ATMS.

## 1.4 INCREASE THE PERCENTAGE OF TRAFFIC SIGNALS WITH OPERABLE VEHICLE DETECTION

The MPO currently has a Local Initiative prioritized project with design funding in the TIP in year 2018. Once construction funds are programmed, this project will move the MPO closer to achieving its target.

## 1.5 INCREASE THE PERCENTAGE OF FACILITIES THAT ACCOMMODATE TWO FEET SEA LEVEL RISE:

- FOR THE SIS NETWORK
- FOR THE NON-SIS THOROUGHFARE NETWORK

In regard to the identified road segments the MPO suggests each responsible agency incorporate an engineering solution which will accomodate a two-foot sea level rise.

## 2.1 INCREASE THE PERCENTAGE OF TRANSIT COMMUTER MODE-CHOICE.

Fund identified LRTP and TDP projects.

# 2.2 INCREASE PASSENGER TRIPS PER REVENUE MILE:

- FOR TRI-RAIL SERVICE
- FOR PALMTRAN FIXED ROUTE SERVICE

Funding TDP recommendations and system enhancements.

## 2.3 INCREASE THE NUMBER OF PARK-N-RIDE SPACES

Fund future TDP recommended Park-n-ride lots.

## 2.4 REDUCE THE AVERAGE RATIO OF TRANSIT TRAVEL TIME TO AUTO TRAVEL TIME FOR PALMTRAN FIXED ROUTE SYSTEM

A TDP, in progress for PalmTran, will identify appropriate strategies to make bus transit service more effecient.

## 3.1 INCREASE THE PERCENTAGE OF:

- PEDESTRIAN COMMUTER MODE CHOICE
- BICYCLING COMMUTER MODE CHOICE

Fund sidewalks and bicycle facilities through Transportation Alternatives (TA) and Local Intiative (LI) programs.

# 3.2 INCREASE CENTERLINE MILEAGE OF:

- BUFFERED BIKE LANES
- 10-FT OR WIDER SHARED USE PATHWAYS
- DESIGNATED BIKE LANES
- PRIORITY BIKE NETWORK OPERATING AT LOS C OR BETTER

Fund sidewalks and bicycle facilities through Transportation Alternatives (TA) and Local Intiative (LI) programs.

## 3.3 INCREASE PERCENTAGE OF THOROUGHFARE MILEAGE NEAR TRANSIT HUBS:

- THAT PROVIDES DEDICATED BICYCLE FACILITIES (WITHIN 3 MILES)
- THAT PROVIDES DEDICATED PEDESTRIAN FACILITIES (WITHIN 1 MILE)

Fund sidewalks and bicycle facilities through Transportation Alternatives (TA) and Local Initiative (LI) programs.

## 4.1 DECREASE THE PERCENTAGE OF SIS FACILITIES, SIS CONNECTORS, AND NON-SIS DESIGNATED TRUCK ROUTES THAT EXCEED CAPACITY (V/C > 1.1)

A solution strategy would be to implement capacity-increasing improvements such as intersection lane additions or capacity increases where possible, and according higher priorities to such improvements that fall on the SIS and non-SIS truck routes.

## 4.2 INCREASE THE ANNUAL TONNAGE OF FREIGHT THROUGH

- THE PORT OF PALM BEACH
- PALM BEACH INTERNATIONAL AIRPORT

While the MPO does not directly participate in attracting freight movement though Palm Beach County's ports, the MPO can influence the identification and assignment of higher priorities to improvements to land-side access roads to minimize congestion, as discussed above in Section 4.1.

## 5.1 DECREASE PER CAPITA DAILY FUEL USE (GALLONS/PERSON)

Methods to decrease fuel consumption per capita would include:

- > Continue to improve service provided by alternative modes
- Support CAFÉ standards and alternative energy vehicles (electric/hydrogen)
- Improve mix of land uses to bring homes and needs/employment closer (density and diversity of land uses)
- Reduce congestion/delay/idle-time through intersection, roadway, and ITS/ signal timing improvements

## 5.2 DECREASE PER CAPITA DAILY NOX EMISSIONS (GRAMS/PERSON)

## 5.3 DECREASE PER CAPITA DAILY HYDROCARBON EMISSIONS (GRAMS/PERSON)

## 5.4 DECREASE PER CAPITA DAILY CARBON MONOXIDE EMISSIONS (GRAMS/PERSON)

Research capital funding of air quality stations in Palm Beach County; reduce VMT and promote alternatives modes of transportation.

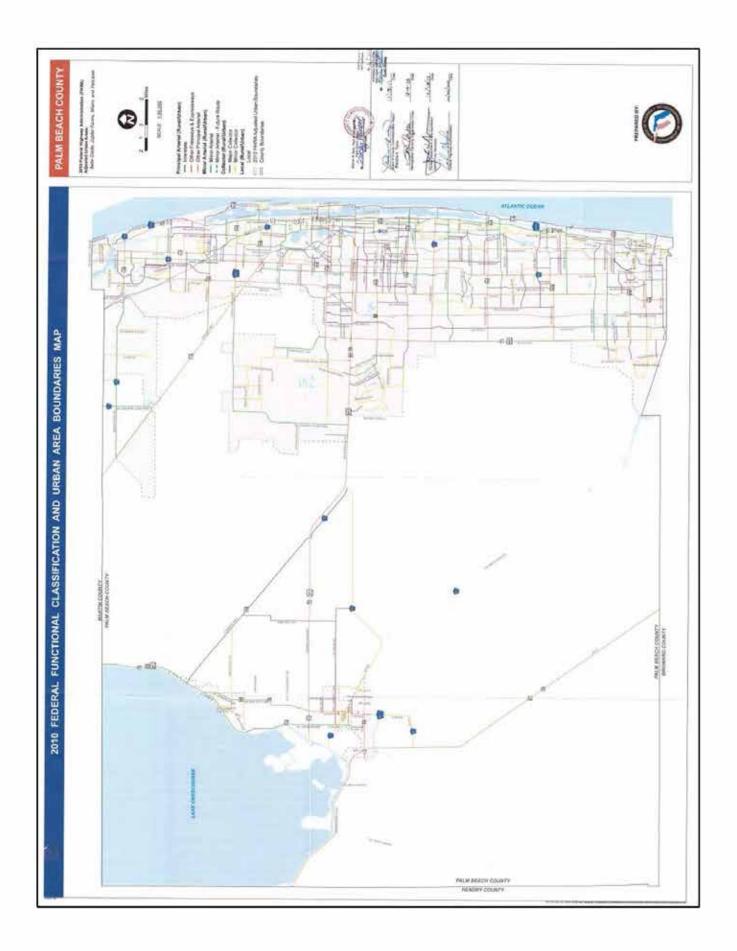
## 5.5 DECREASE PER CAPITA DAILY VEHICLE MILES TRAVELLED (VMT/ PERSON)

Three strategic options to reduce motor fuel consumption that can be funded by MPO programs are:

- > Shift travel to alternate modes by improving the quality of service provided for those modes.
- Shorten necessary trips by promoting higher densities and diversity of land uses,
- > Reduce the need for trip-making through improved communications and goods and service delivery technologies.

# **APPENDICES**

### APPENDIX A 2010 FEDERAL FUNCTIONAL CLASSIFICATION MAP



## **APPENDIX B INTERSECTION CAPACITY ANALYSIS**

### **Intersection Capacity Analysis**

#### Procedure

The Critical Sum is calculated as follows:

$$EB/WB = max \ imum \ of \ \left[\frac{(EB_{thru} + EB_{right})}{N_{lanes}} + \frac{(WB_{left})}{N_{lanes}}\right] \quad or \ \left[\frac{(WB_{thru} + WB_{right})}{N_{lanes}} + \frac{(EB_{left})}{N_{lanes}}\right] \tag{1}$$

$$NB/SB = maximum of \left[\frac{(NB_{thru}+NB_{right})}{N_{lanes}} + \frac{(SB_{left})}{N_{lanes}}\right] \quad or \quad \left[\frac{(SB_{thru}+SB_{right})}{N_{lanes}} + \frac{(NB_{left})}{N_{lanes}}\right]$$
(2)

$$Critical Sum = Max[EB/WB] + Max[NB/SB]$$
(3)

Where;

EB = Eastbound direction of travel, WB = Westbound direction of travel,

- NB = Northbound direction of travel, SB = Southbound direction of travel, &
- N = Number of lanes in direction of travel

1	to update countywide CMA Calculation Copy latest Palm Beach County TurnCount.mdb Access database from N:\TRAFFIC\DATA SECTION\COUNTS (Note
1	• • • • • • • • • • • • • • • • • • • •
	database file may have a date in the name) to S:\DATA\Traffic Counts\[YEAR]
2	Open database and open query entitled "Current CMA" in design view
3	Update criteria for COUNT_YEAR field to only produce records for the most recent 3 years (e.g. for counts in 201
	thru 2015, criteria is ">2012")
4	Select all records and copy to the Excel spreadsheet named "Get Latest Turn Counts.xls" tab "TMC Data". This
	database may have duplicate counts for the same intersection for a given year, so you'll need to sort and select
	the latest count for each intersection, or average multiple counts if there is more than one count at a location. In
	addition, for intersection ID 43870, there are actually two intersections one on either side of the Forida
	Turnpike, so you'll need to assign a separate temporary ID to each location. To find the latest count year for each
	signal, we created a character string of the Signal ID plus the year of count on the TMC Data layer, copied this and
	sorted from high to low, then created a "0/1" flag that assigned a value of 1 if that record was the first of each
	unique ID (therefore having the highest year number) and zero if not. Be sure in this step that you get all of the
	rows of the imported data. Set the column with the "0/1" flag to values, and sort on the "0/1" flag from high to
	low and with Signal ID as the second level in the sort. Separate the signal ID and the year value out from the
	character string, and copy the ID and the year to columns Copy the unique Signal ID's to column B of the "Most
	Recent Only" tab, which then updates columns G through AL to retrieve the a.m. and p.m. peak hour TMC's. Not
	that this layer also gets the a.m. and p.m. peak hour TMC's onto the same row, and changes the nomenclature
5	used in the TurnCount.mdb database of "NAL" (north approach left) to "SL" (southbound left). Copy the range of a.m. and p.m. peak hour TMC's from the "Most Recent Only" layer and "Paste Special" as value
5	into the Objective 1.1 Analysis.xls spreadsheet "TMC" layer.
6	Tab to the KAI CMS layer. This layer computes the Critical Sums and allows development of solutions.
U	Intersections are ordered in alphabletical order, on the East-West then North-South street name convention to
	make them easier to find in printed reports. The layer pulls the appropriated TMC's into the appropriate row, th
	computes the a.m. and the p.m. critical movement sum. Note that signals having split-phases must be so-denote
	in columns AY (for existing) and CD (for improved) conditions. If the east-west direction is split-phased code "S-
	EW", if north-south then "S-NS", and if both directions then "S-B".
7	Check to be sure existing intersection goemtery in columns AM through AX is correct. The maximum of a.m. or
,	p.m. critical sums are reported in column BJ.
8	You can use a filter at the top of column BJ to see only those intersections with CMS greater than 1,400.
9	You can add lanes to restore the critical sum to less than 1,400 in columns BR through CC. Note, these are the
2	added lanes, the spreadsheet will total the existing lanes plus the lanes you indicate here.
10	The "SummaryKAI" layer provides a summary of the number of intersections at various levels of congestion and a
000100.0	weighted v:c ratio.
11	Confirm correct TMC's and lane geometry with County Traffic division. Correct in the County's Access database
	and this spreadsheet as needed.
12	For each intersection where CMS > 1400, review traffic count and calculated CMS against previous year values for
	the same time period (AM or PM) to confirm trend
13	If no trend exists, request Traffic Division to perform a new peak hour traffic count at the intersection to confirm
14	Update TMC's for any intersections where demand data was determined to be an anomaly
15	Report number of intersections in updated CMP report as new value for Objective 1.1
16	For each intersection where the CMS > 1400, filter the records and report Signal_ID, Location, Date, lane addition
	and Adjusted_CS columns to new tab entitled "Potential Projects".
17	Check locations where CMS>1,400 against MPO LRTP Cost-Feasible Plan to see if an improvement is
	scheduled/planned that would cure the issue, and so denote on a summary table.
18	Create a column entitled "Potential operational improvements" and identify operational improvements that cou
	be implemented to mitigate congestion (e.g. improved vehicle detection, installation of adaptive signal system,
	improved timing, etc.)

Signal	TAC AM A	AM AM	AN AN AN AN AN AN AN AN AN			AM PM PM	M4 M4 M4 M4	PM PM PM	ING ING ING ING ING	Exist	Existing Lanes			AM ON		PM CMS	-
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10th Are N at Boutwell Hut 10th Are N at Concrete Are	821	566 240	5 228 77 2	238 7.5 282 1284	0 45 118 816 2	2010 423 853 2	22 U 14 1100 16 260 13 224 821 21	4 26 226 508 2	21 U 153 3 1/1 C	H N	2 0 2 2 2 2	0 17 0 7 0 7 0 7 0	0 0 7 8 7 7		416 500 266 117 1,235 416 500 546 1.757	574 590 618	1 861,1 012
10th Ave Nat Davis Rd	16	503	8	55 0 75 98	74 0 51 106	110 0 9/ 1221	82 0 48 524 10	8 2 48 42	40 0 119 52 36 0	н	2 0 1 2	2 1 2 0	1 1 0		316 253		218 935
		370 192	_	104 2 154 665 00 0 000 400	110 0 81 455 00 0 30 4120	23 2 29 638 2 20 2 10 10 2	244 0 986 541 6	10 150 650 1	225 0 132 581 53 0 24 4 Al 1717 401 0		1 1 1 1 1 1	0 0 10 0 11 0 11 0 11 0	0 0	04 677	382 478 511 961 700 776 600 1 001	437 549 575 237 744 667	514 1,124 1
tOth Aue Nat Firk Rd		580 77	3 5	58 0 tel 207	100 0 53 201	115 0 111 1059	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	M 0 40 27	10 0 73 227 112 0	1 41	1 11	2 स २ स र स र स	२ ल २ ल न ल	Т		677	380 1.245 1
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35701. 10th Juw N at Sherwood Forest BI	2014 44	451 82	1 22 455	83 0 f28 236	68 0 82 120	42 0 62 512	(38) 0 42 542 3	3 0 52 165	25 0 55 224 37 0	11	2 2 2 2	0 1 1 1	त त	2		352 378 351	268 729
13(h Si al Broidweig/US 1	014 4	0 0	2 0 0 2 0 2 0	0 2 24	20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 2	23 0 23	2 0 2 0 2 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0	32 4 54 800 8 0	-	2 0 0		2 2	4 67		53 49 452	366 5/35
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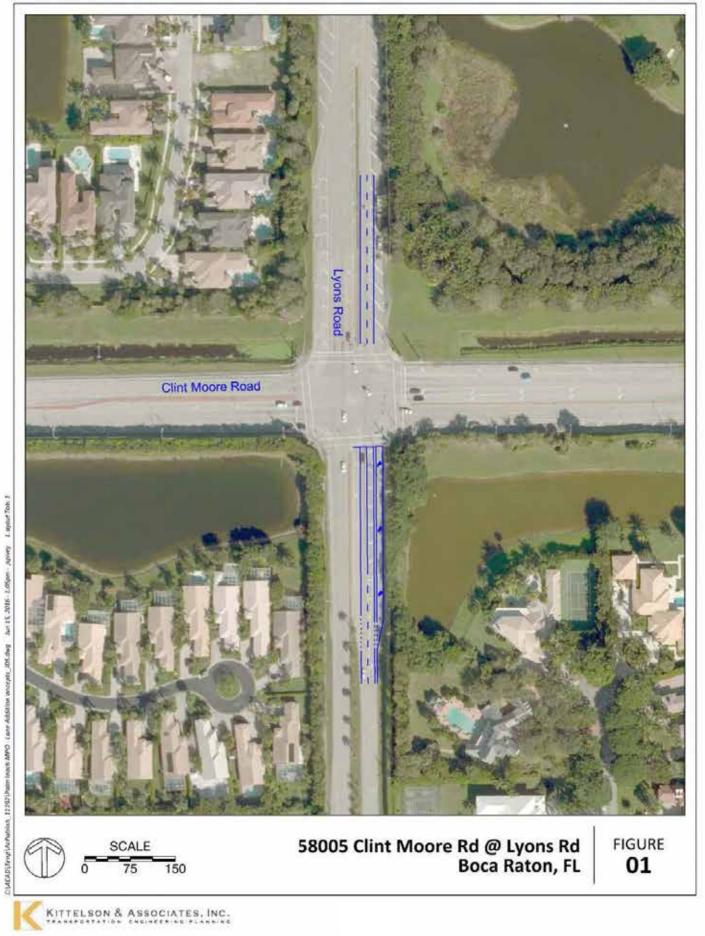
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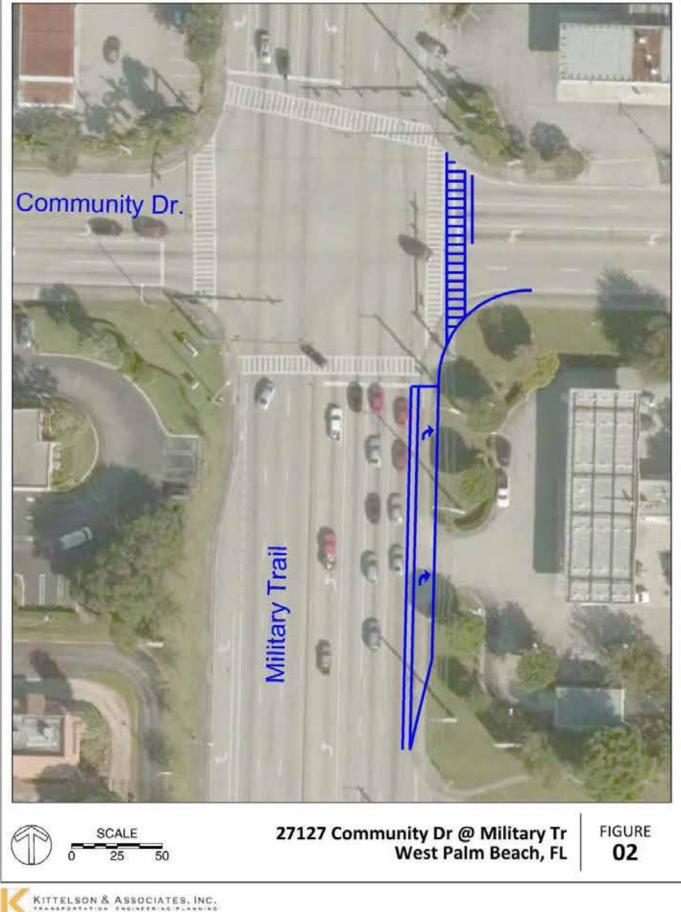
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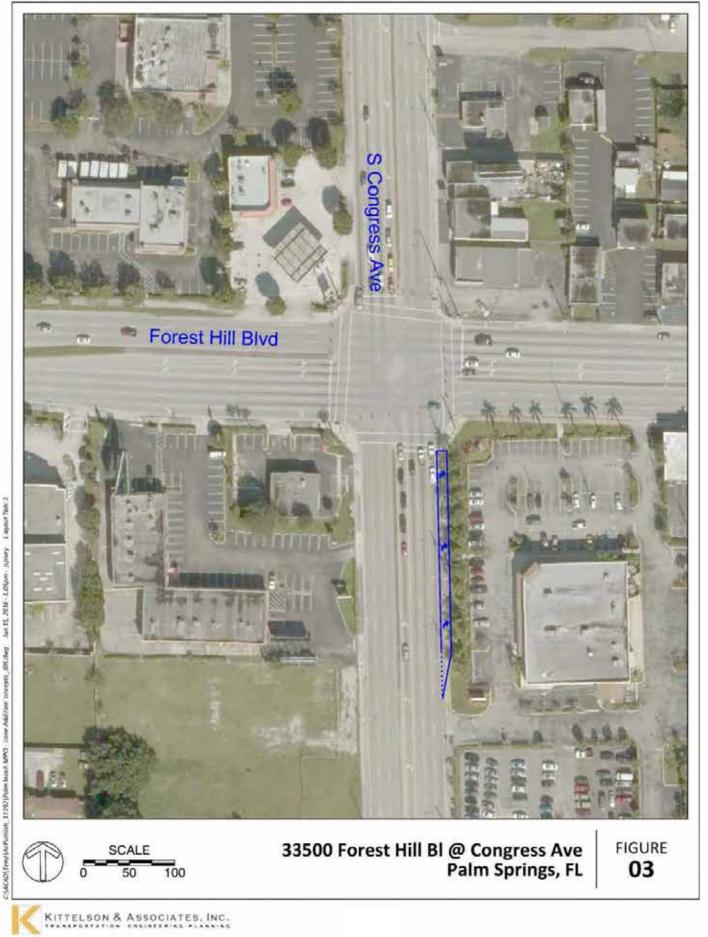
Palm Beach Metropolitan Planning Organization CONGESTION MANAGEMENT PROCESS

6/15/2016

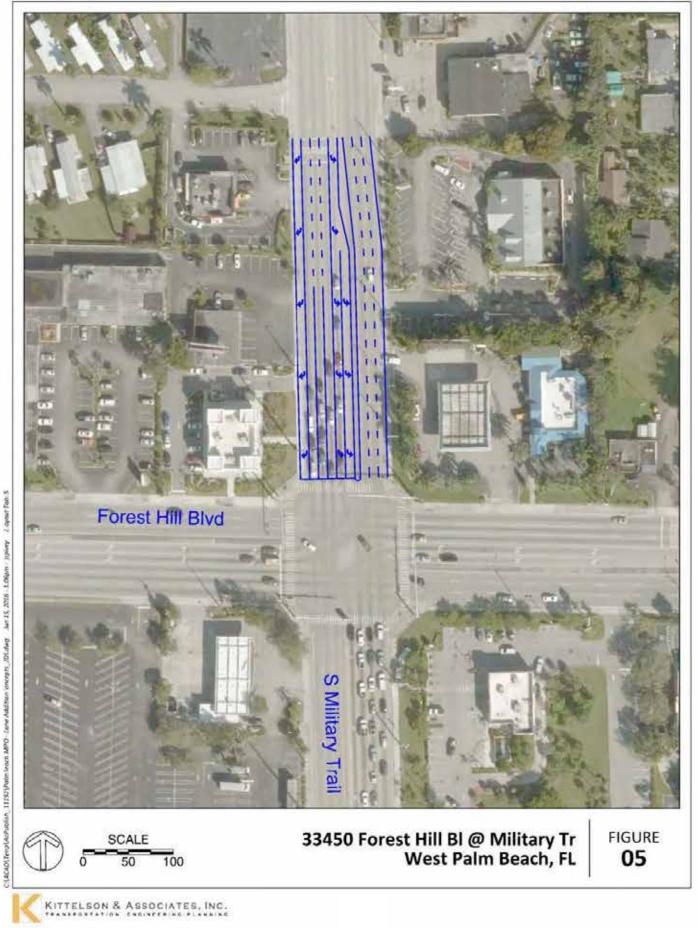
## **APPENDIX C POTENTIAL INTERSECTION IMPROVEMENT SCHEMATIC ILLUSTRATIONS**

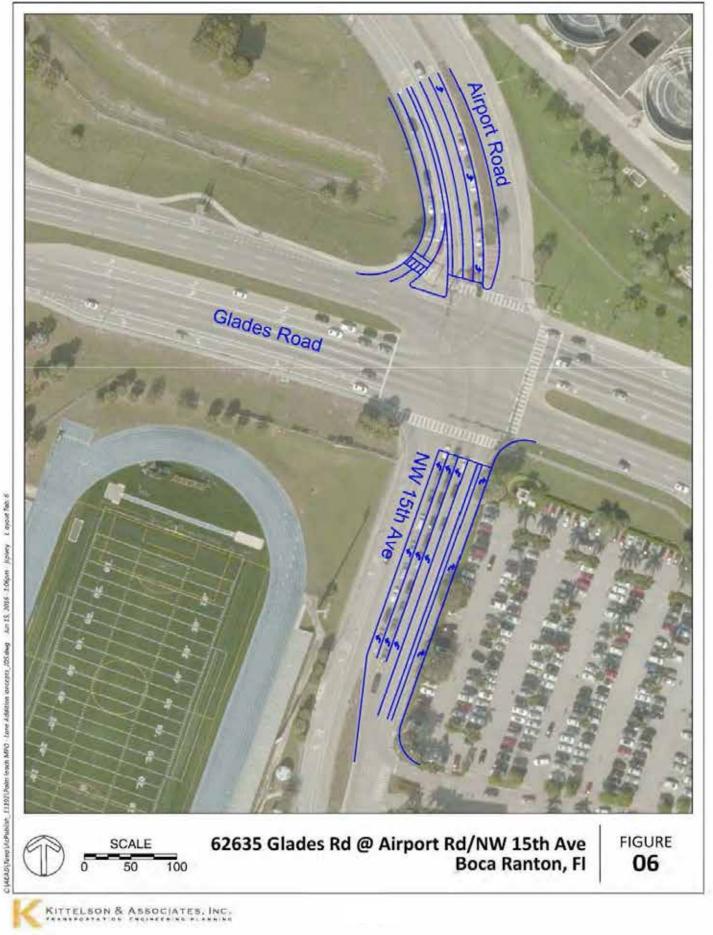


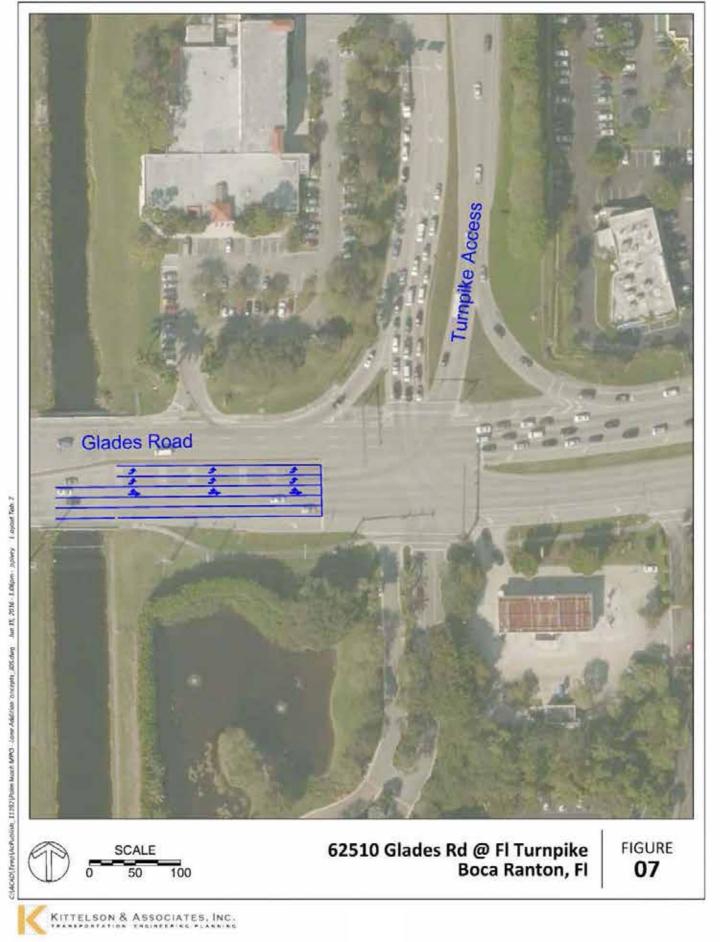


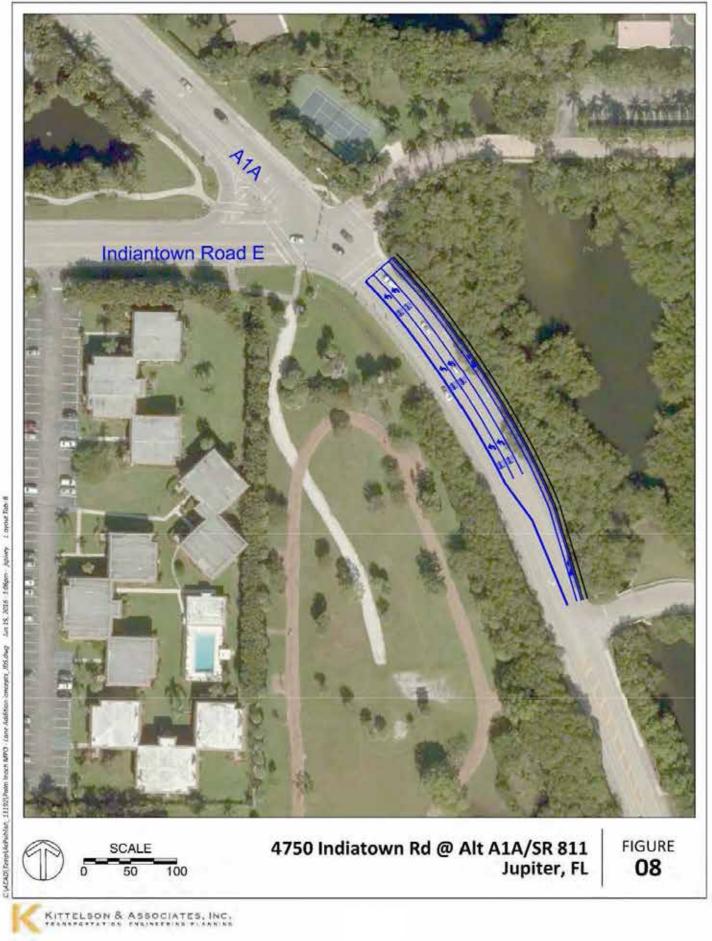




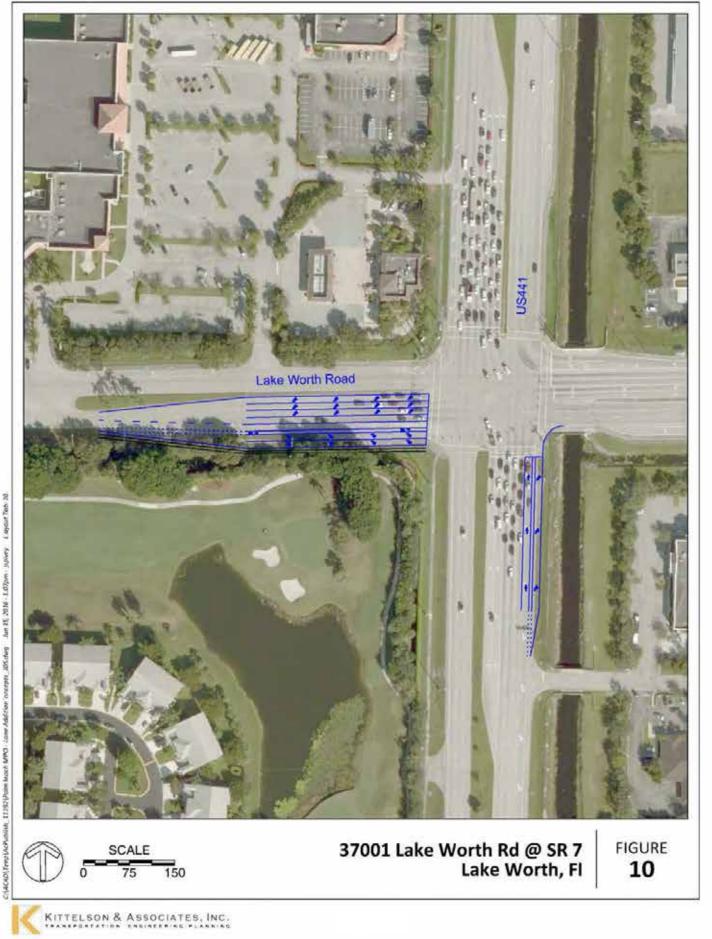


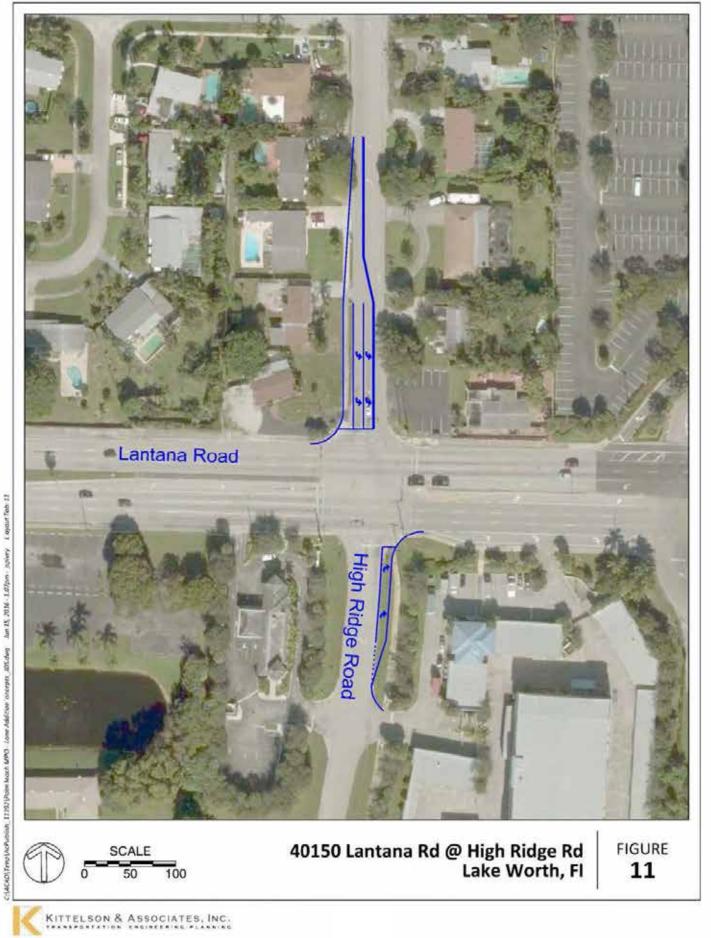






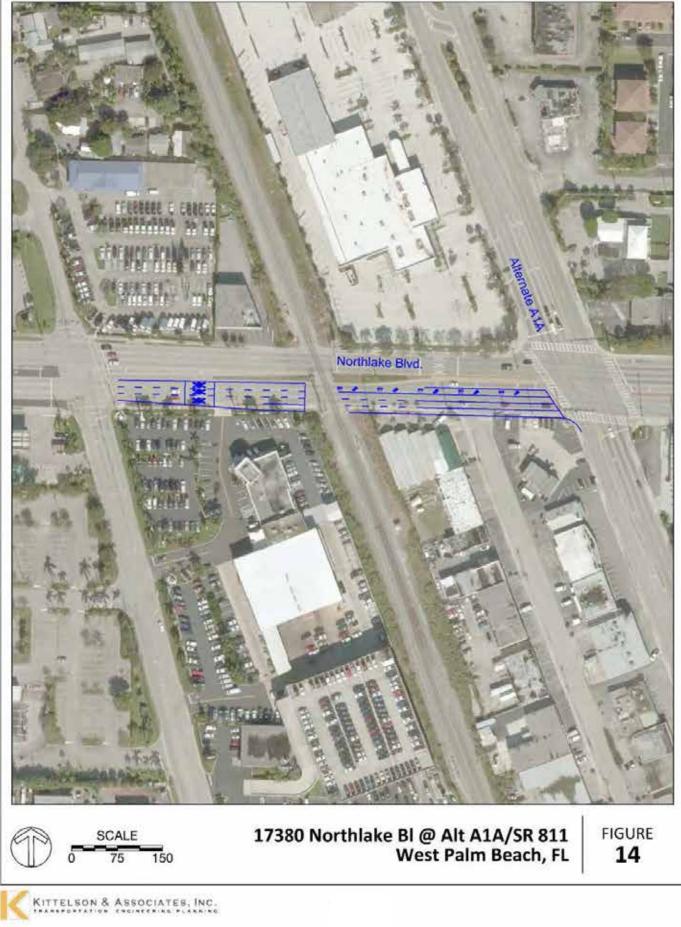




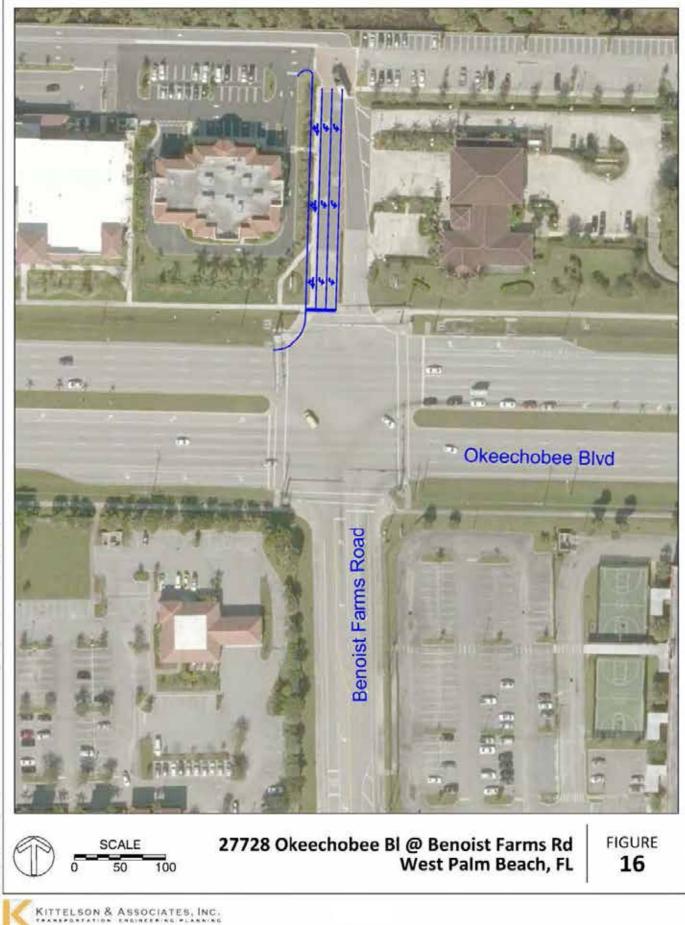


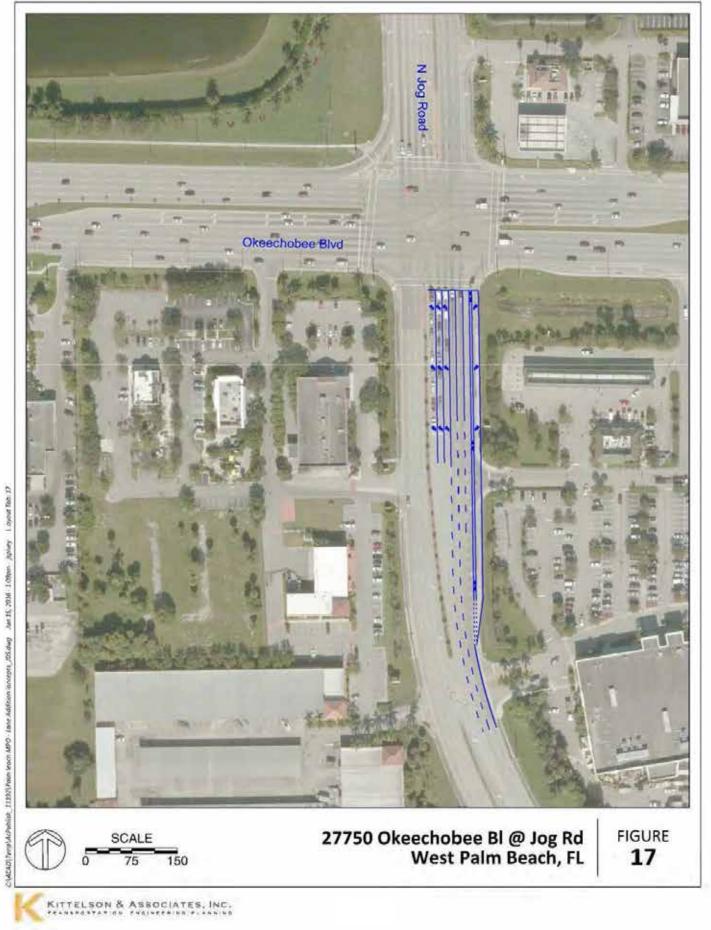


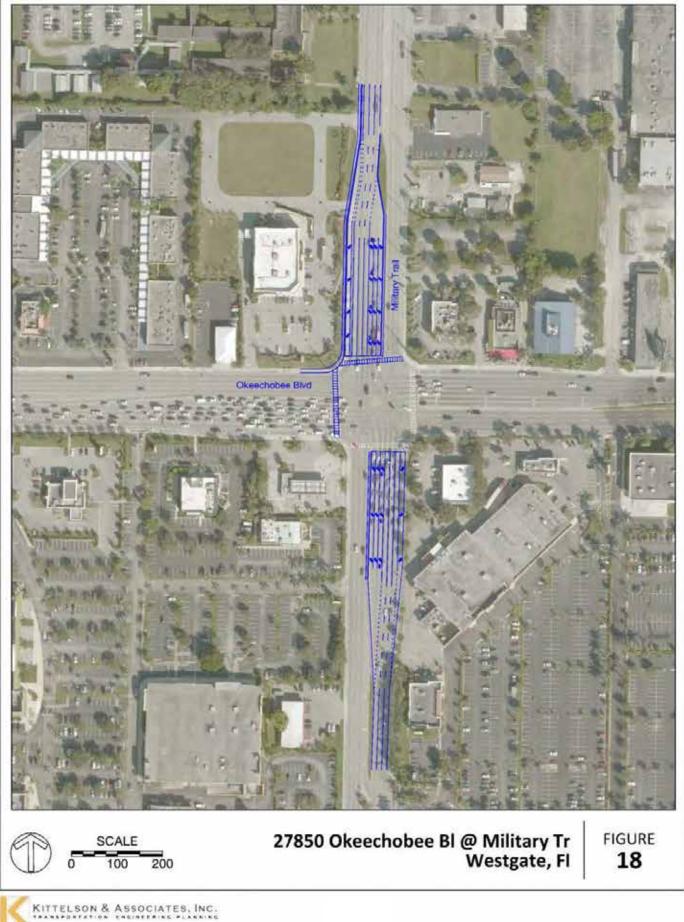


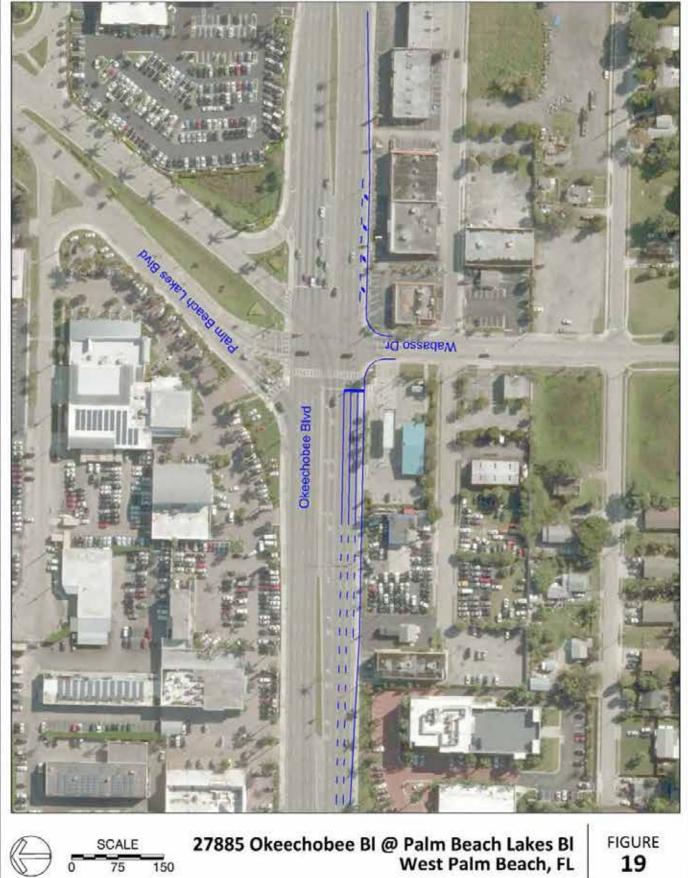




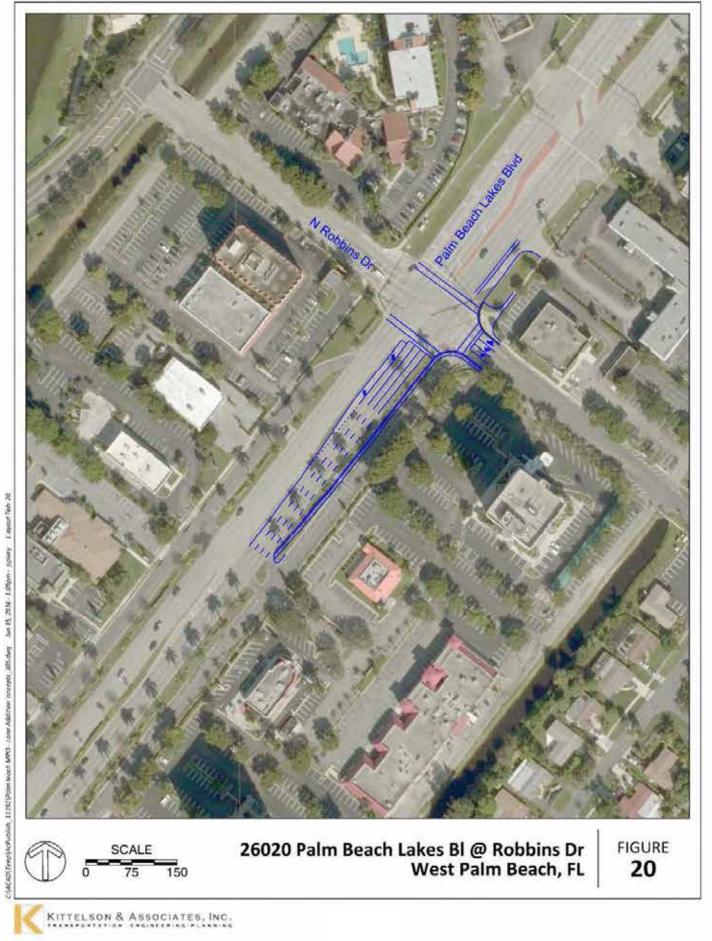






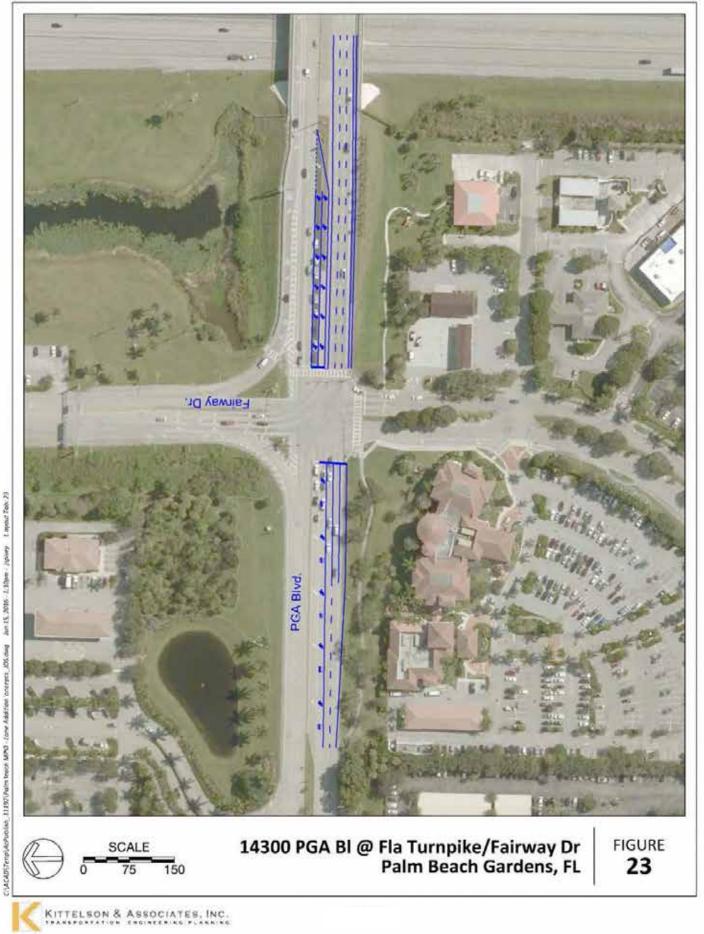


KITTELSON & ASSOCIATES, INC.

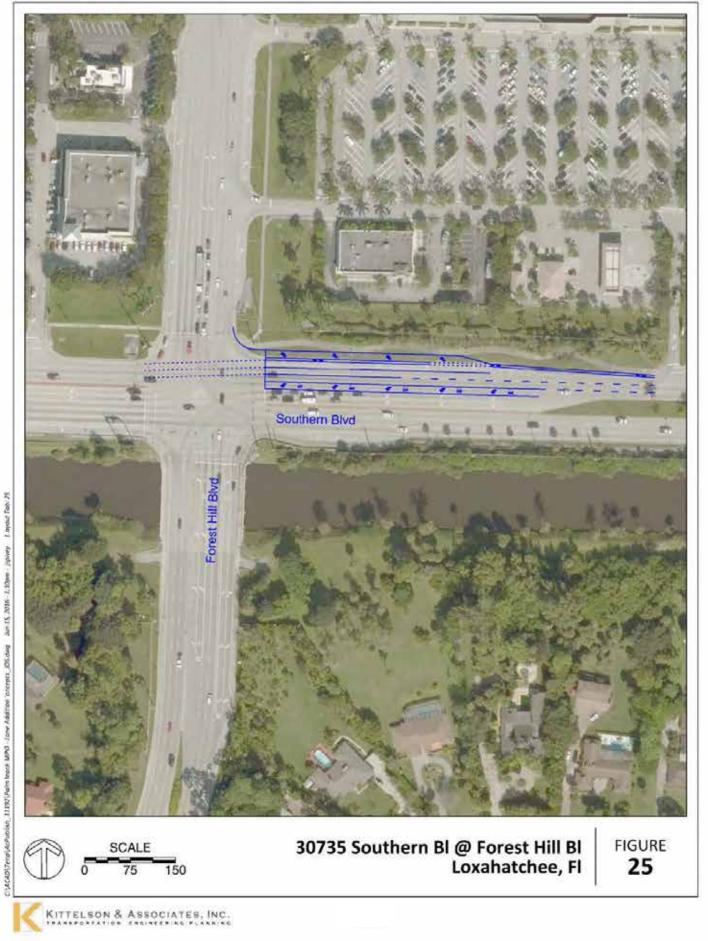


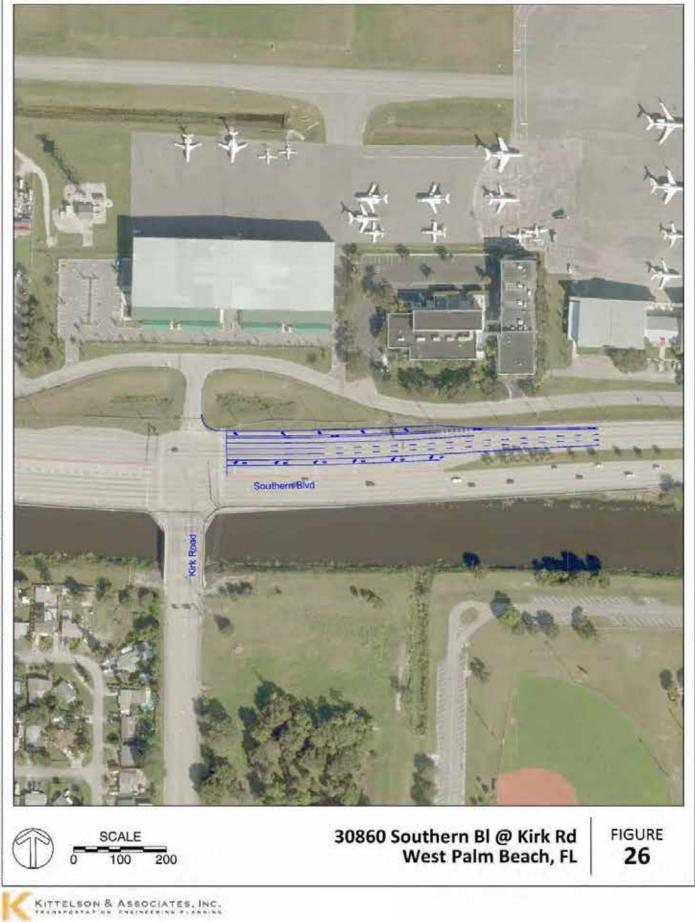


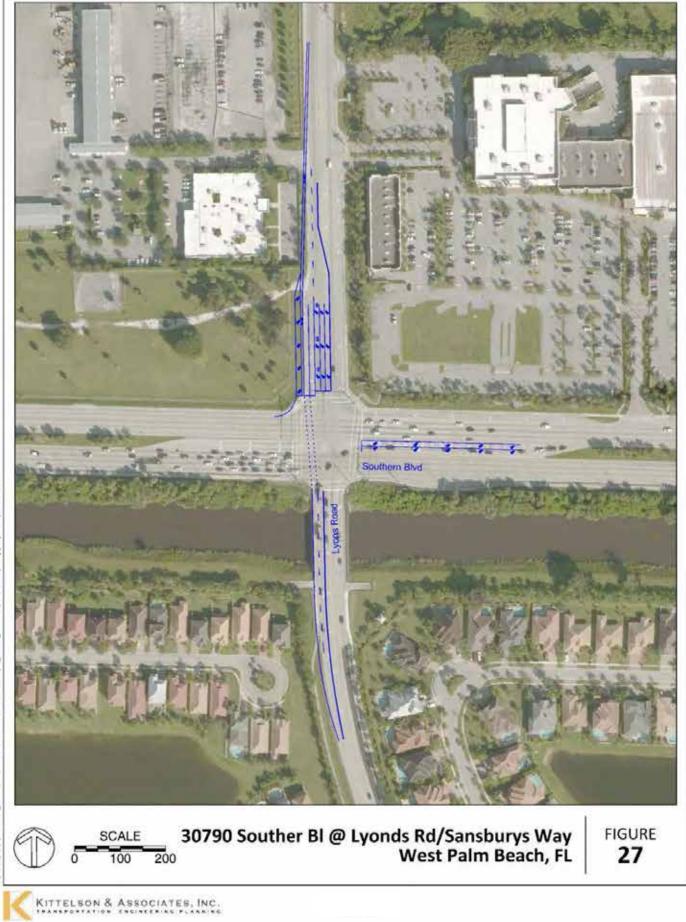








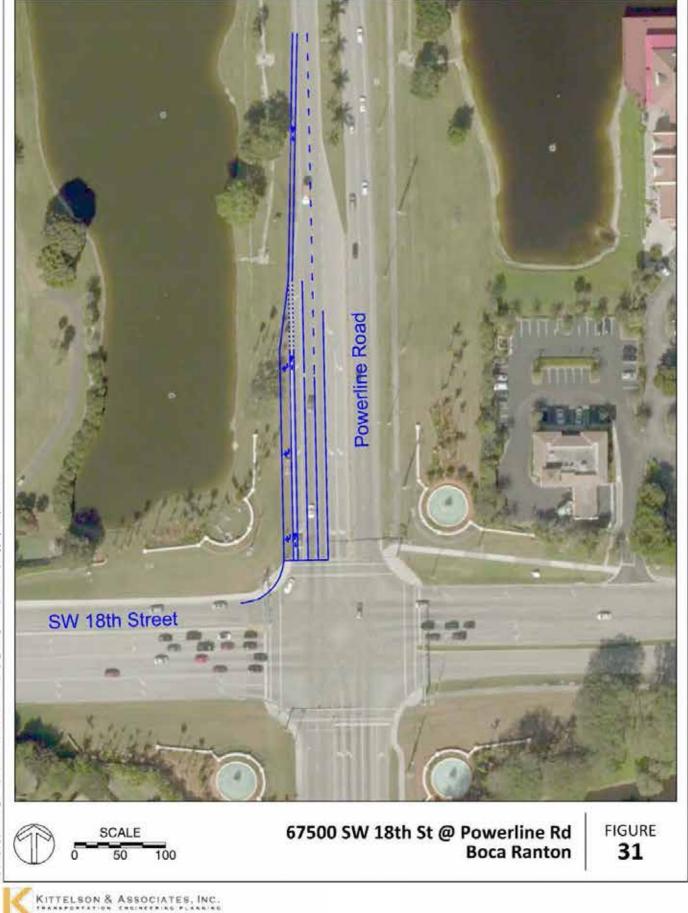




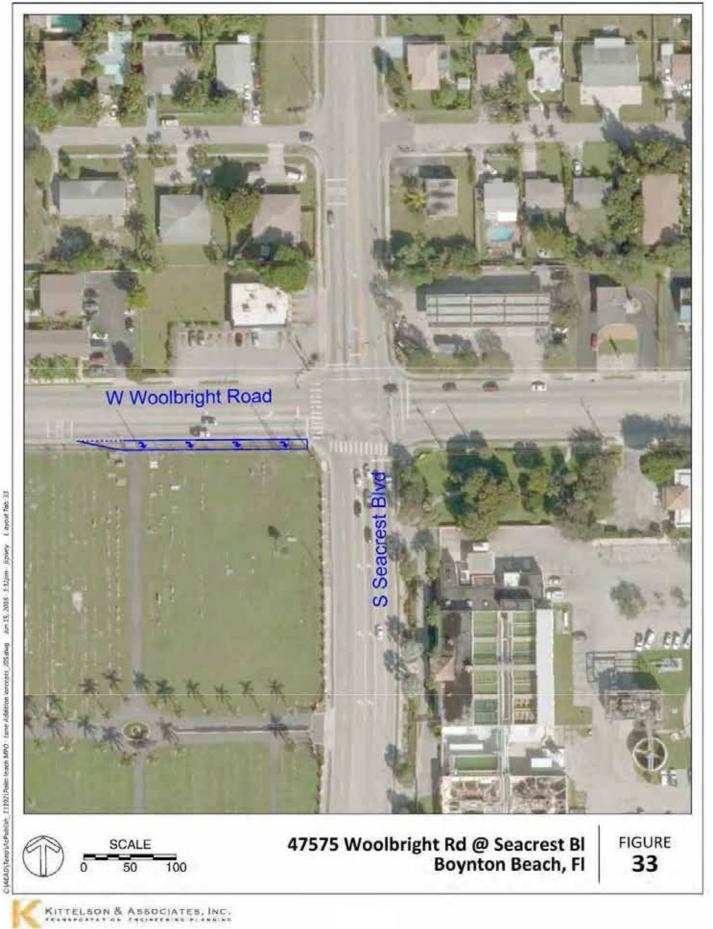


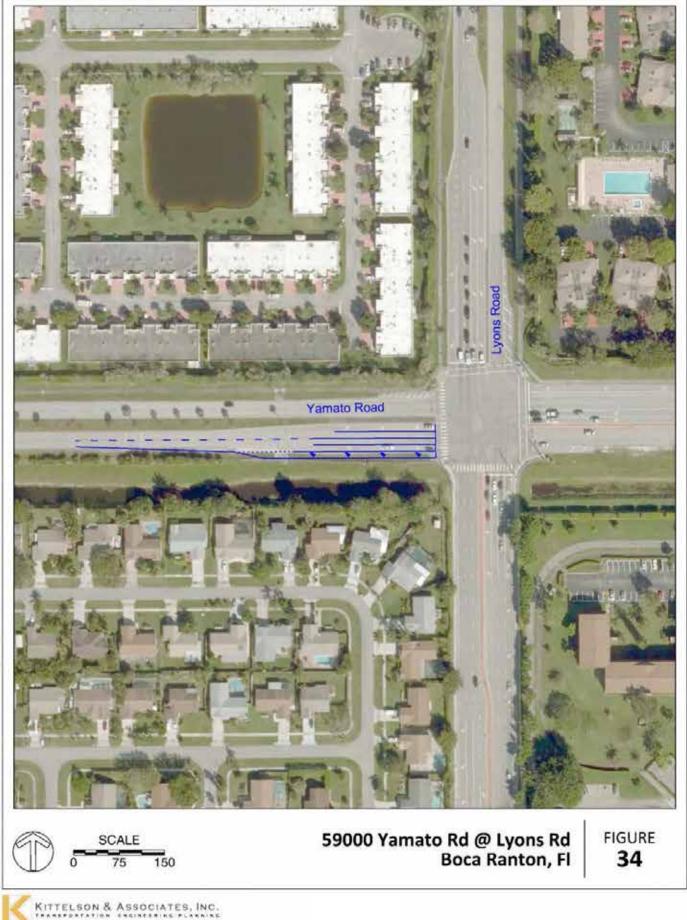














## APPENDIX D TRANSIT VS. AUTO TRAVEL TIME COMPARISONS

### Auto: Transit Travel Time Ratio

#### Performance Measure

In a multimodal environment, transit is just one of many modal options. In order to make transit a realistic and competitive option, it is important to understand transit-to-auto travel time. The Palm Beach County MPO has set goals to reduce the transit-to-auto travel time ratio to 2.50 by 2025 and to 2.00 by 2040. A lower transit-to-auto ratio means a more competitive transit system that can encourage motorists to switch to transit for their commutes.

#### Data

PalmTran, the transit service provider in Palm Beach County, maintains GIS databases for bus routes and bus stops in the County. In addition to providing these GIS files to the general public, PalmTran recently provided bus routes, stops, and schedules to Google in the GTFS (General Transit Feed Specification) format.

By doing this, Palm Tran joins a growing cadre of transit systems using Google Transit in Florida and across the country. This service calculates the route, transit time, cost and compares alternate trip methods.

#### Method

Kittelson & Associates, Inc. reviewed the bus routes and bus stops GIS shapefiles provided by PalmTran to identify the start and end locations of each bus route in the system. Then, using Google Maps during a midweek afternoon peak period, the Kittelson & Associates, Inc. team recorded the travel times by auto and by transit for each pair of start and end locations.

The auto travel time estimates are based on Google's traffic model, which uses historical data to output the likely travel times. The transit travel times are based on the in-vehicle travel time in PalmTran's schedule, as provided to Google in the GTFS format. Transit travel times do not include access or waiting times. Because the comparison is done along individual bus routes, transfer times are not applicable.

To compute an average transit-to-auto travel time ratio for PalmTran's system, the sum of transit travel time across all routes was divided by the sum of auto travel time across all routes (r from 1 to N = 34). The equation below shows the calculation.

 $Transit to Auto Ratio = \frac{\sum_{r=1}^{N} Transit Travel Time_r}{\sum_{r=1}^{N} Auto Travel Time_r}$ 

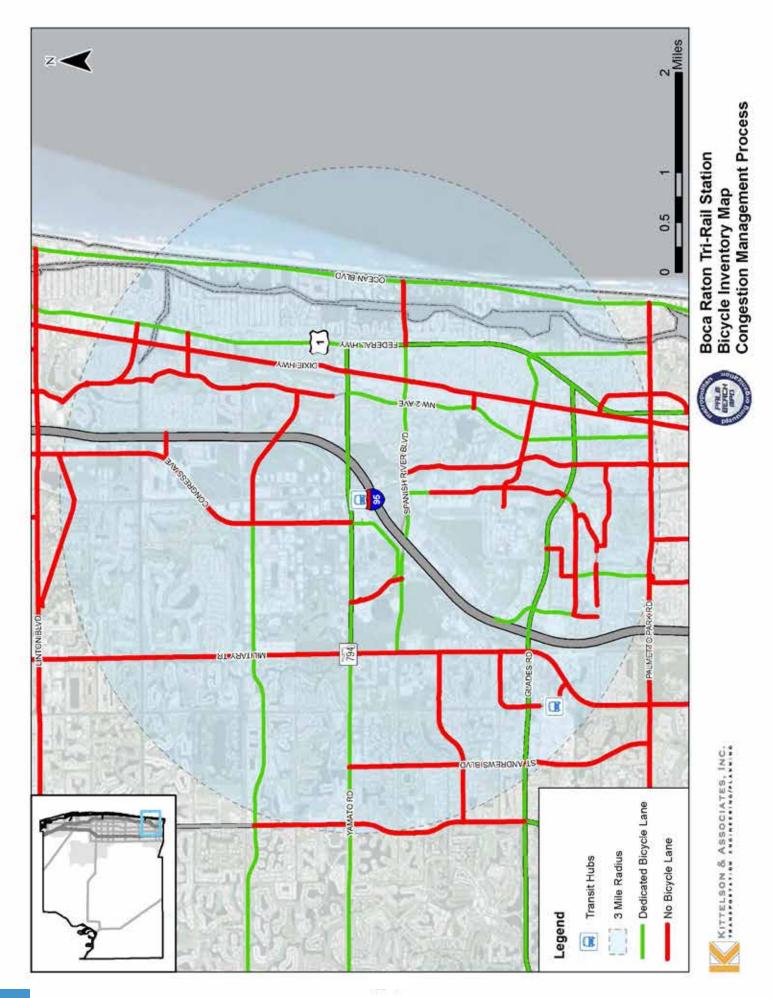
#### Findings

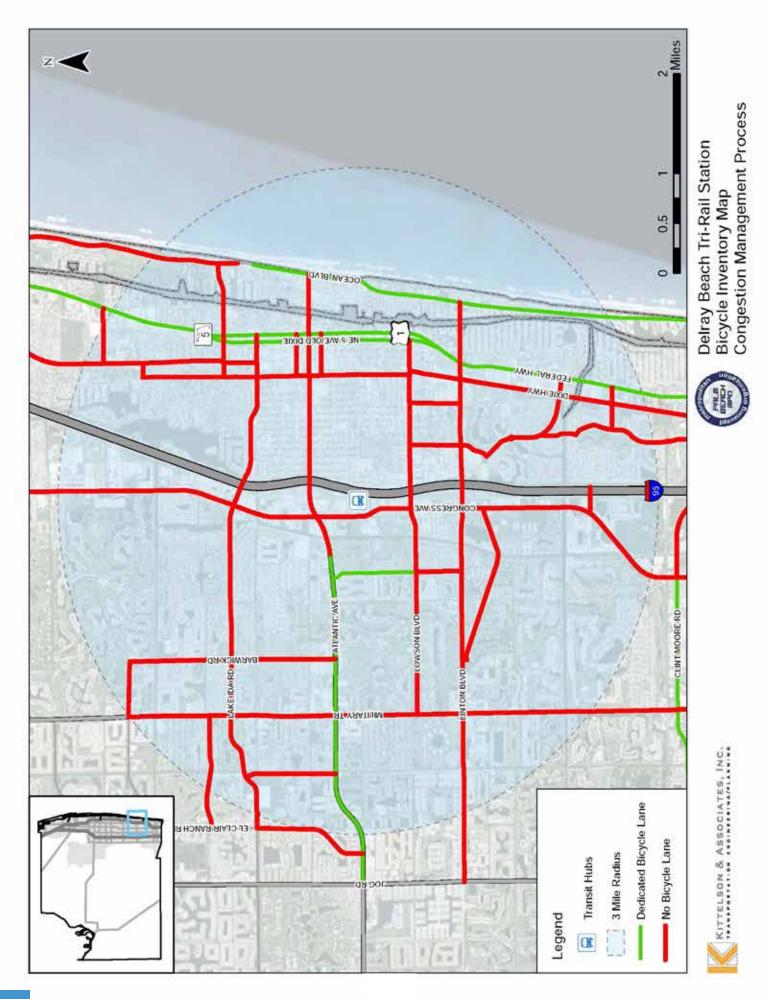
During the PM peak period of a weekday in May 2016, the in-vehicle transit travel time across PalmTran's routes is about 2.52 times the auto travel time. The distribution of ratios across routes shows that 29 percent of routes are meeting the 2040 goal of 2.0 or less, while 47 percent are meeting the 2025 goal of 2.5 or less. Figure 1 presents the distribution of transit-to-auto travel time ratios. Figure 2 shows the top and bottom PalmTran routes by transit-to-auto travel time ratios.

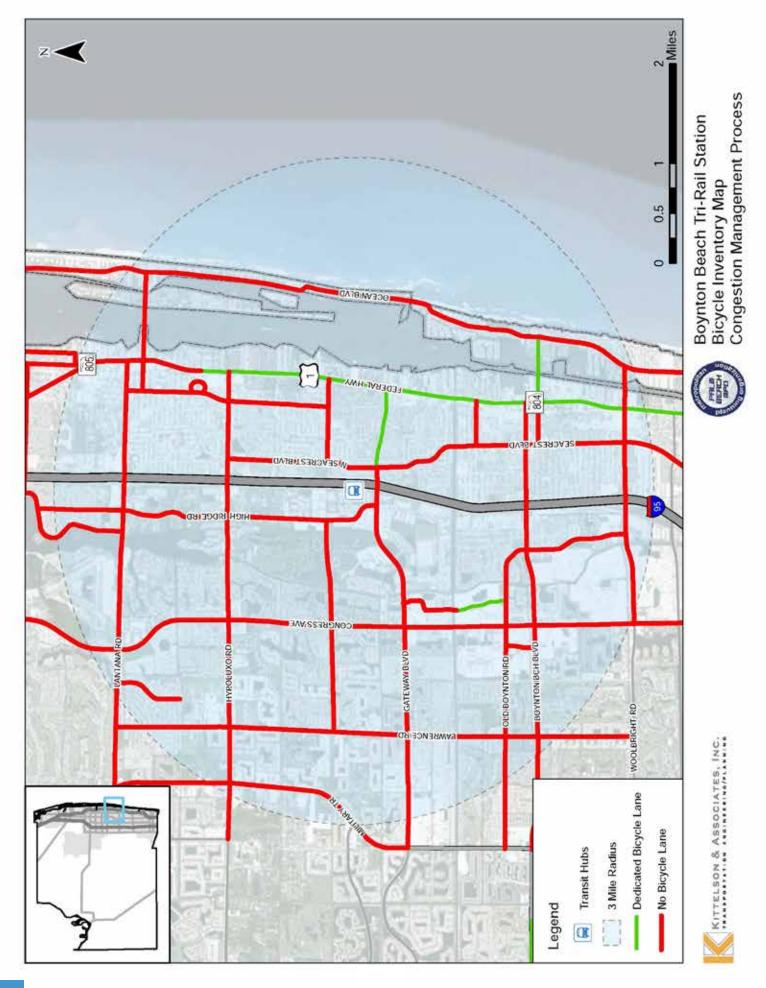
### 2016 Auto to Transit Travel Time Comparison

		Driving	Driving	Transit	Transit	
TimeStamp	Route	Distance	Time	Distance	Time	Ratio
5/5/2016 10:41	94	3.0	10.3	3.0	10.0	0.97
5/5/2016 10:41	43	13.6	27.0	12.6	35.0	1.30
5/5/2016 10:41	30	5.1	17.5	6.7	27.4	1.57
5/5/2016 10:41	63	7.0	16.6	7.1	26.6	1.60
5/5/2016 10:41	71	5.3	12.1	5.9	20.0	1.65
5/5/2016 10:41	1	29.3	44.1	28.0	73.0	1.65
5/5/2016 10:41	62	11.4	29.8	13.4	50.0	1.68
5/5/2016 10:41	41	6.0	20.6	5.1	35.0	1.70
5/5/2016 10:41	49	2.7	8.4	2.6	15.1	1.80
5/5/2016 10:41	44	6.2	17.5	6.2	32.8	1.87
5/5/2016 10:41	64	6.3	20.0	6.9	40.3	2.01
5/5/2016 10:41	48	17.6	29.5	21.0	60.6	2.05
5/5/2016 10:41	73	8.9	21.7	11.1	45.7	2.11
5/5/2016 10:41	46	9.7	24.4	9.8	53.0	2.17
5/5/2016 10:41	92	8.2	23.5	10.6	51.5	2.19
5/5/2016 10:41	52	4.9	11.1	4.8	24.4	2.19
5/5/2016 10:41	40	42.7	55.5	50.5	145.0	2.61
5/5/2016 10:41	81	7.3	18.7	12.1	50.0	2.68
5/5/2016 10:41	2	32.5	40.8	31.0	110.0	2.69
5/5/2016 10:41	10	10.2	15.8	16.9	45.0	2.84
5/5/2016 10:41	31	7.7	12.0	8.0	35.0	2.91
5/5/2016 10:41	91	8.2	22.0	12.2	65.0	2.95
5/5/2016 10:41	47	12.8	21.4	16.9	63.5	2.96
5/5/2016 10:41	21	9.3	20.0	12.7	60.0	3.00
5/5/2016 10:41	61	6.3	18.4	9.8	55.6	3.03
5/5/2016 10:41	3	37.1	45.6	37.8	140.0	3.07
5/5/2016 10:41	4	7.6	21.0	7.9	65.3	3.11
5/5/2016 10:41	33	9.2	16.3	11.6	58.0	3.57
5/5/2016 10:41	70	13.2	23.5	21.5	85.0	3.62
5/5/2016 10:41	45	7.7	13.2	10.8	49.2	3,72
5/5/2016 10:41	20	8.6	18.5	14.8	70.0	3.78
5/5/2016 10:41	42	4.0	8.4	6.0	35.0	4.16
5/5/2016 10:41	80	2.2	8.0	2.7	36.7	4.62
5/5/2016 10:41	60	4.3	12.3	5.9	57.7	4.71
		Totals:	725.6		1826.3	
Transit:Auto Ratio: 2.52						

## APPENDIX E BICYCLE FACILITY GAPS NEAR TRANSIT HUBS





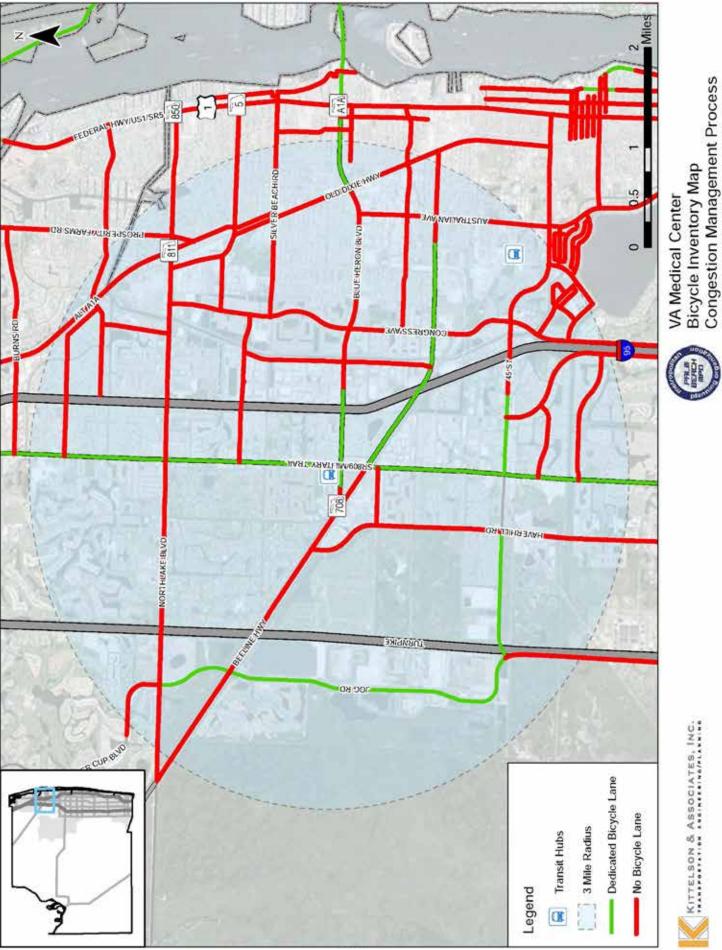


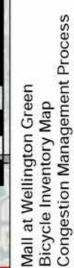






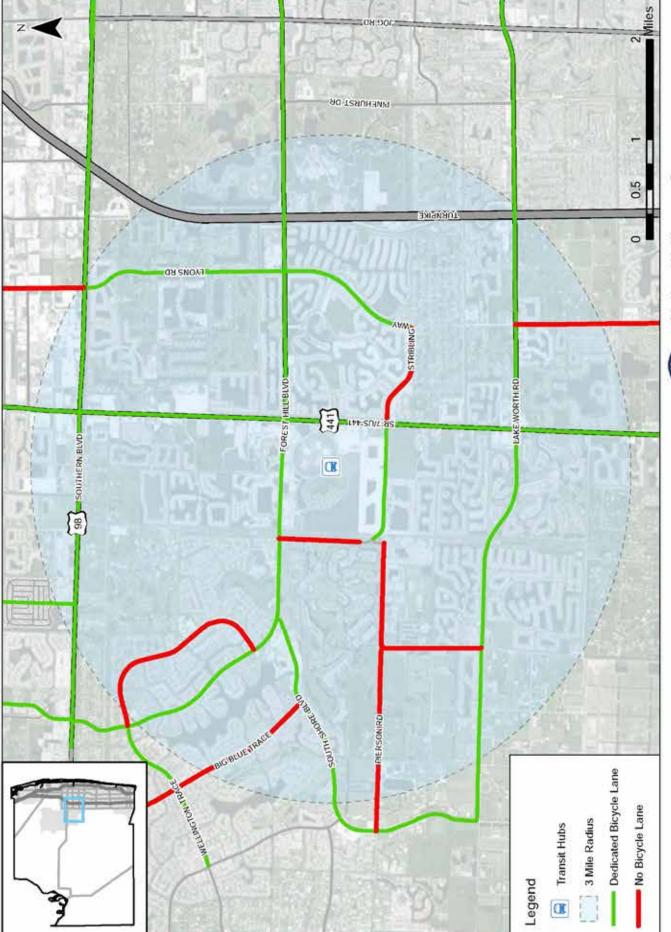


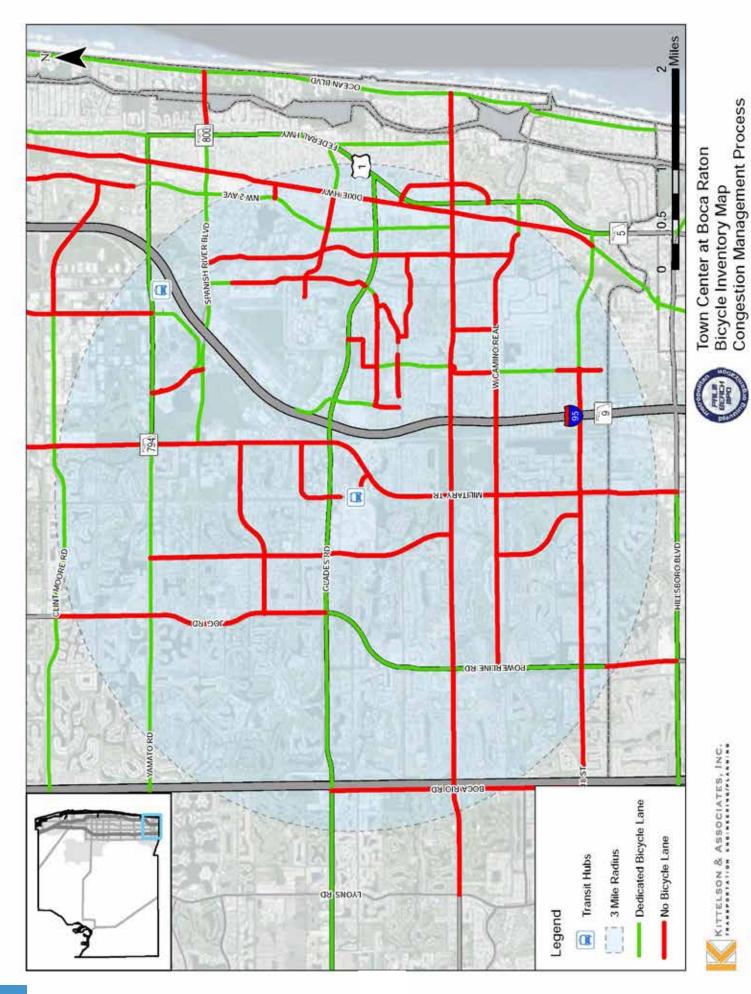




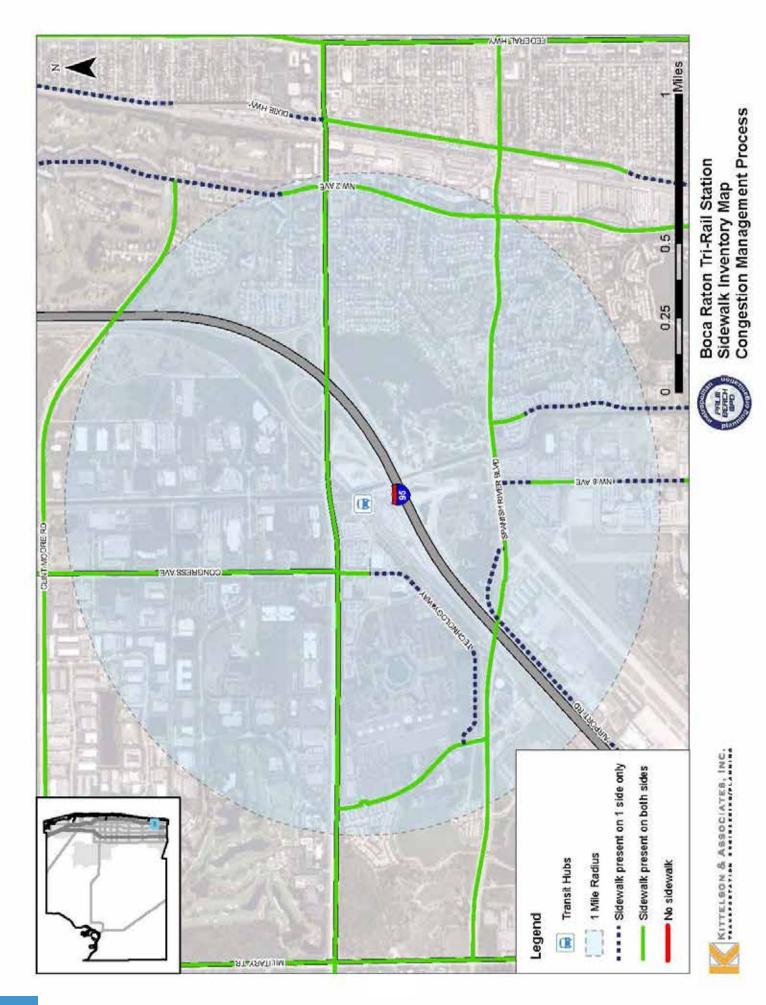


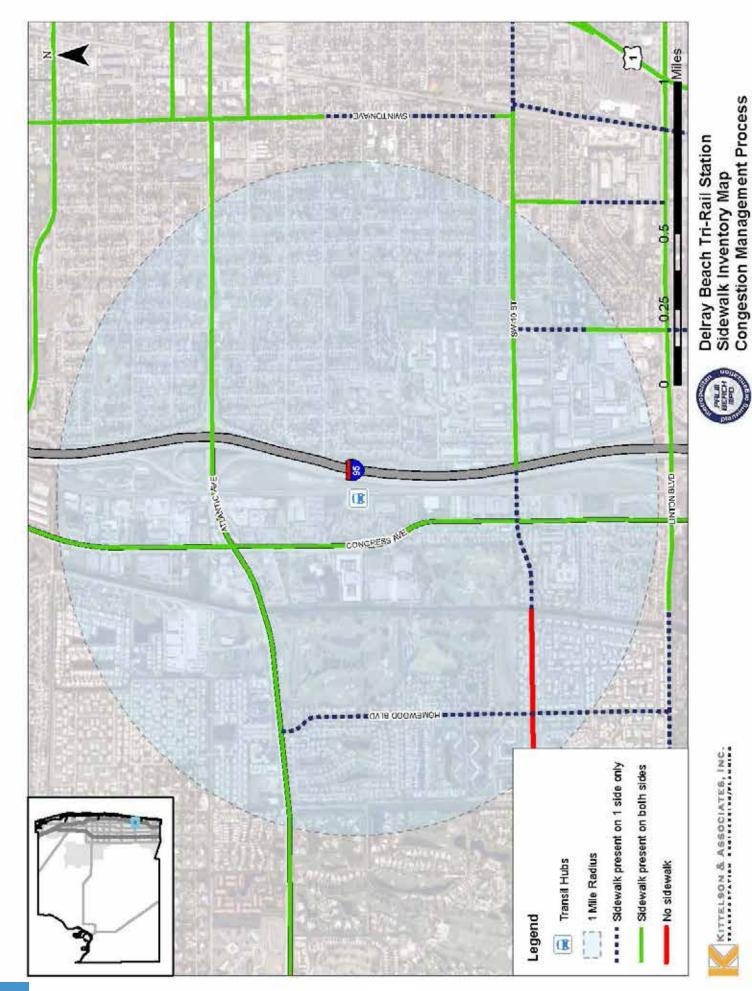


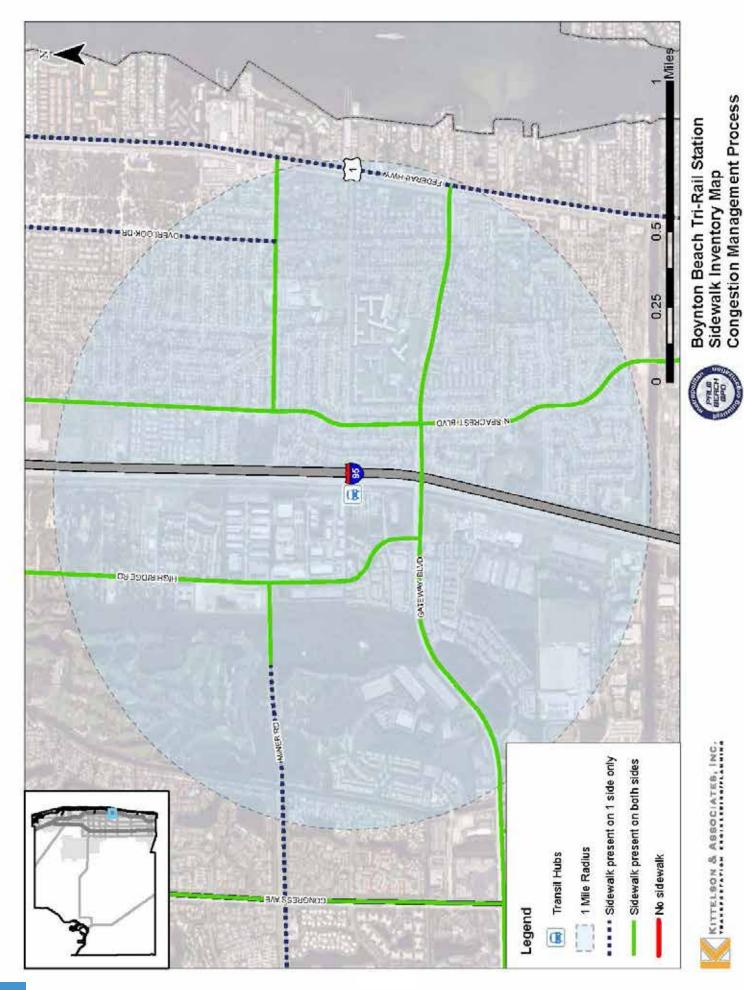


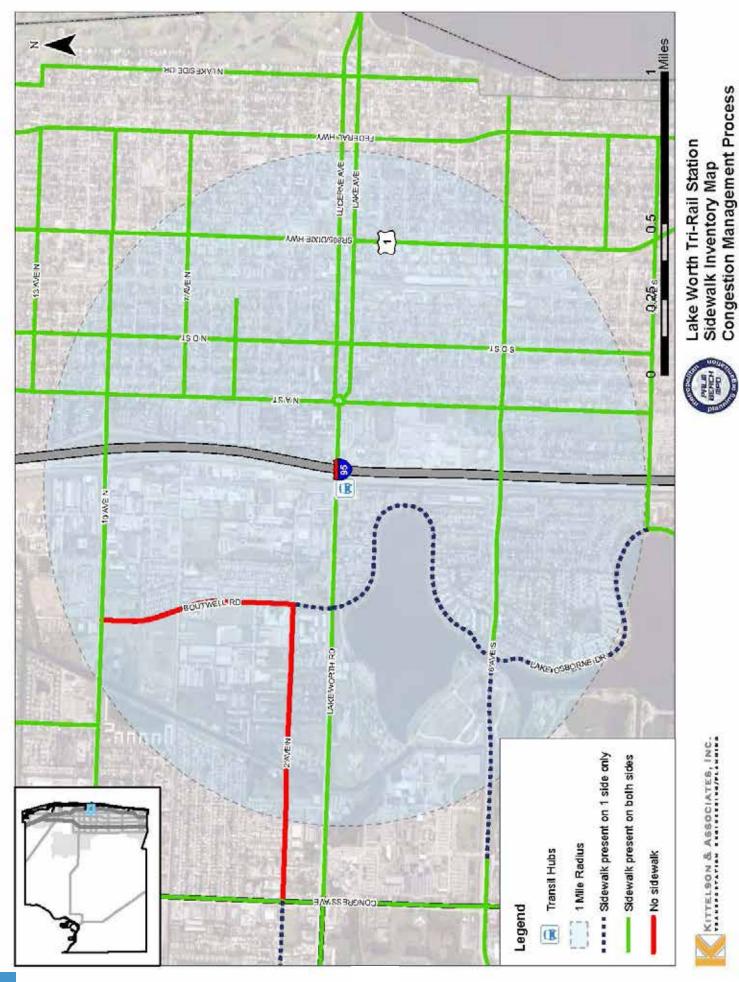


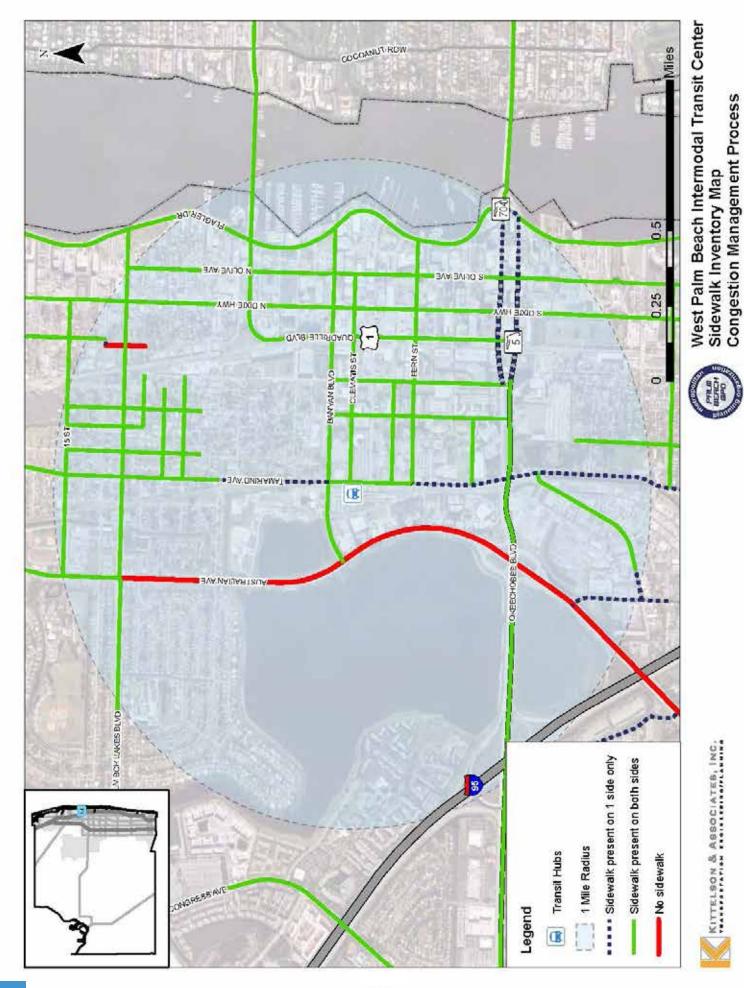
# APPENDIX F SIDEWALK GAPS NEAR TRANSIT HUBS





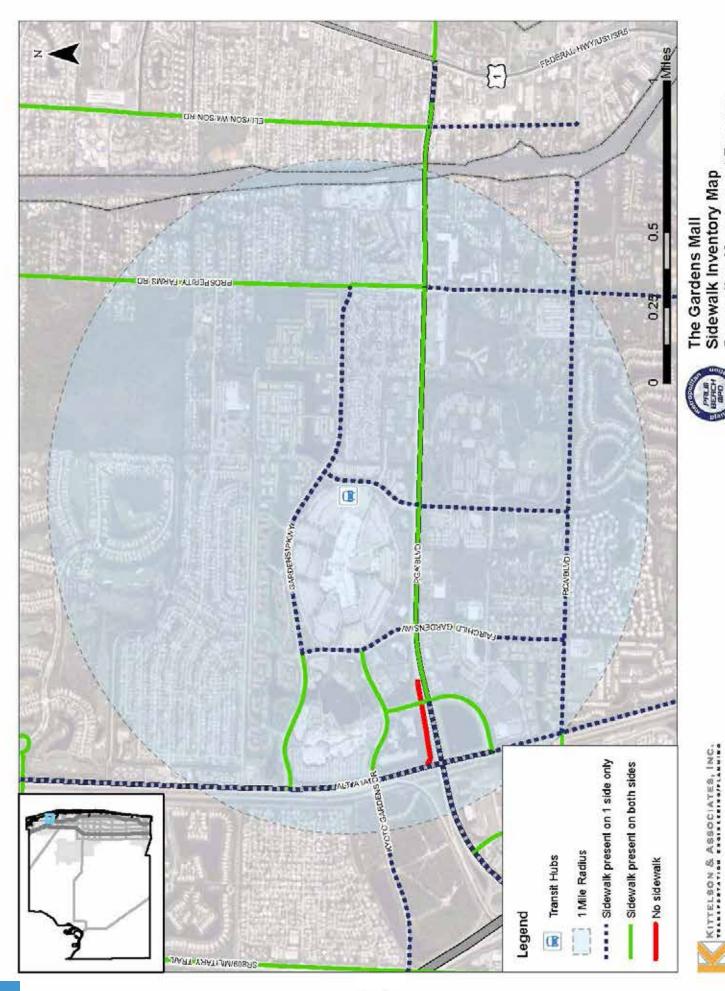




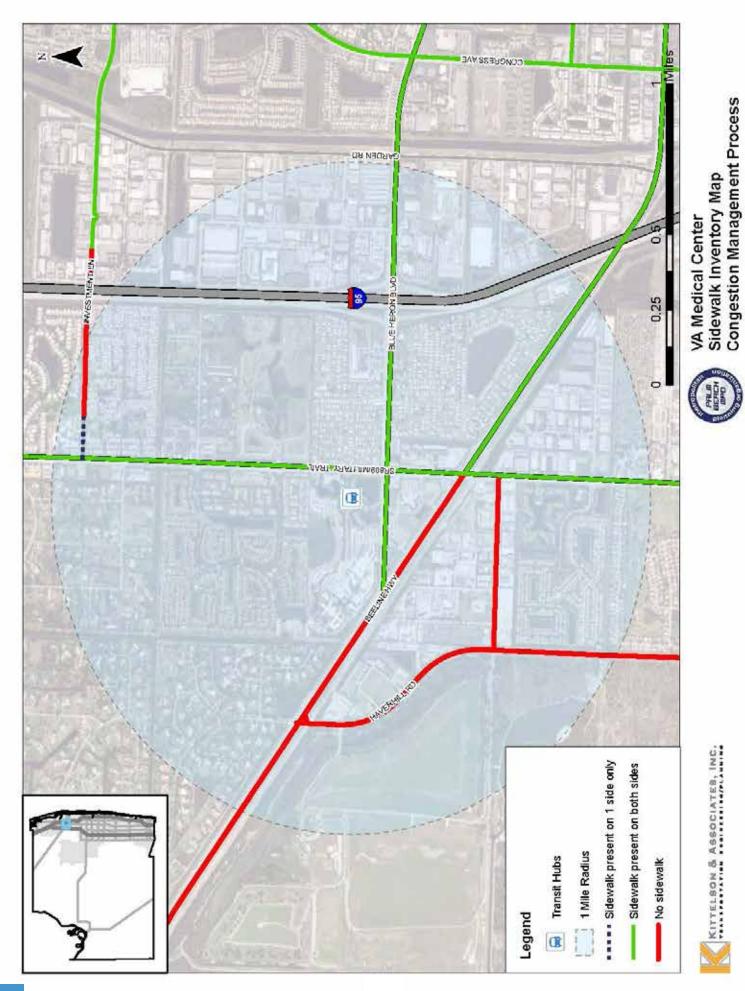


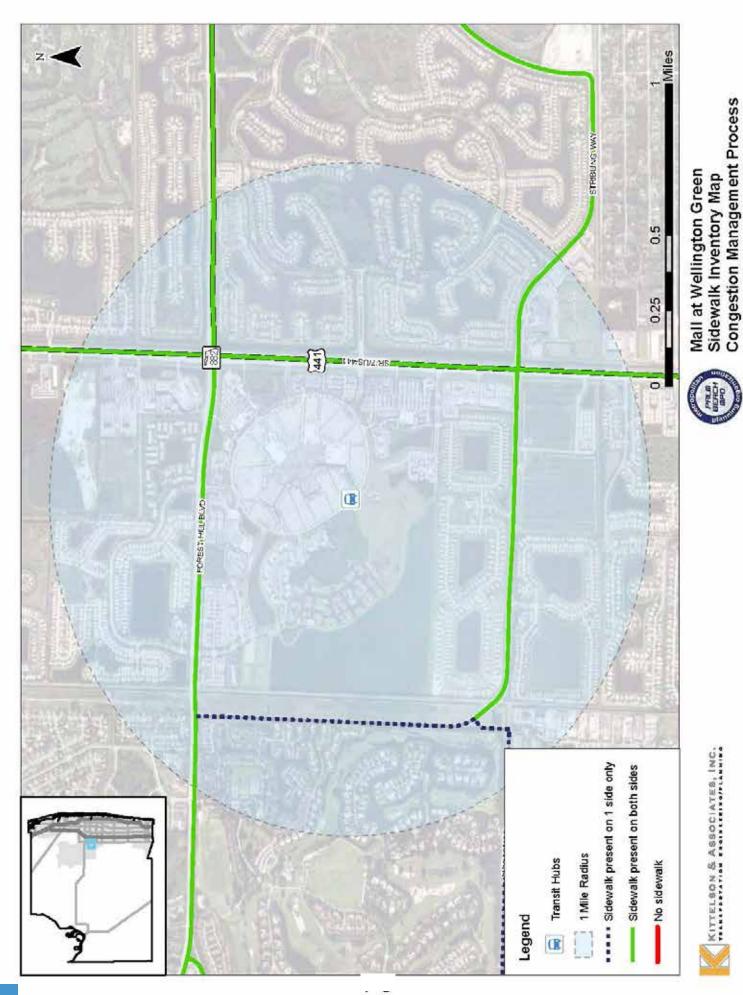


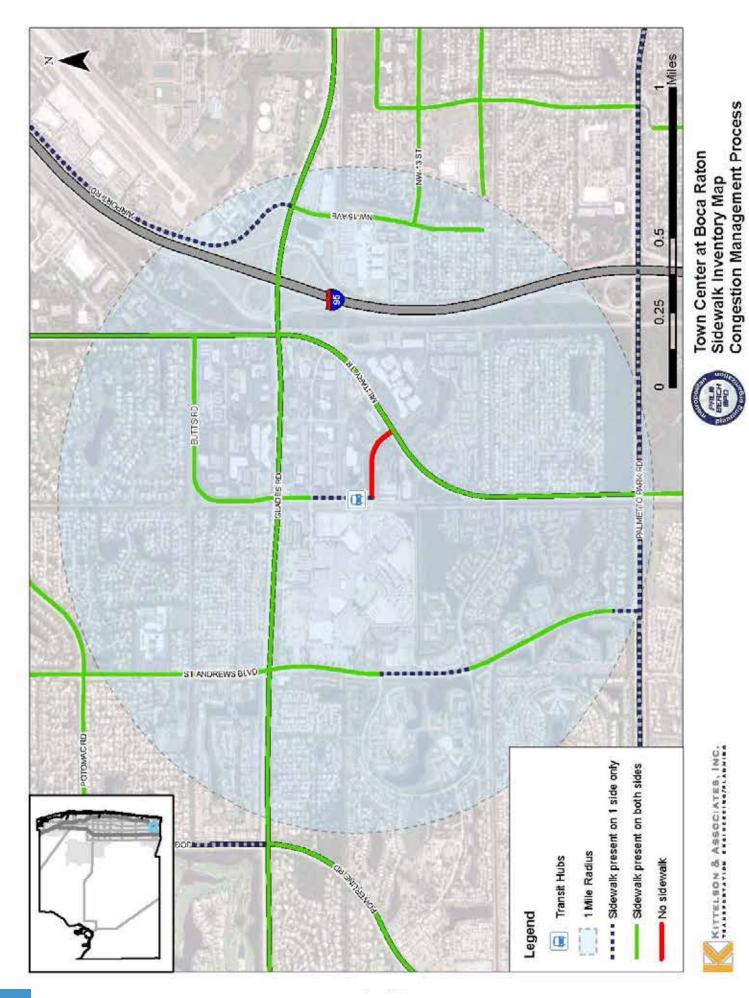
**Congestion Management Process** 



**Congestion Management Process** 







9 Palm Beach Metropolitan Planning Organization CONGESTION MANAGEMENT PROCESS

## APPENDIX G TRUCK ROUTE ANALYSIS WORKSHEETS

2015 Meet LOS?		Ŷ	Yes	Yes	Yes	Yes	Yes	Yes	٩	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	fes	Yes	Yes Yes	Yes	Yes	Yes	۶	٩	٩	۶	Yes	٩	Yes	٩	٩	Ŷ	Ŷ	Ŷ	Yes	٥N
2015 V/C		1.36	0.83	0.87	0.85	0.88	0.88	0.98	1.40	0.54	0.43	0.42	0.43	0.44	0.46	0.66	0.78	0.99	0.68	0.59	0.91	0.84	0.81	1.00	66 <sup>.</sup> 0	0.94	8.0	188	0.61	0.64	96.0	0.43	1.41	1.13	1.18	1.46	1.08	1.10	1.06	1.21	1.26	1.16	1.10	1.11	1.08	1.23
2015 AADT		45,255	42,000	43,748	28,330	13,429	44,038	49,366	46,557	8,186	6,604	13,905	14,160	14,459	15,237	21,969	25,909	49,934	10,337	19,670	100,000	92,900	89,022	73,700	73,000	69,200	04,400	64,800 56,000	44 900	47,259	48,114	6,527	207,000	207,000	173,000	214,177	198,246	203,000	195,661	223,000	232,000	213,527	202,500	204,725	200,011	226,000
2015 Service Capacity		33,200	50,300	50,300	33,200	15,200	50,300	50,300	33,200	15,200	15,200	33,200	33,200	33,200	33,200	33,200	33,200	50,300	15,200	33,200	110,300	110,300	110,300	73,600	73,600	73,600	/3,600	73,600	73,600	73,600	50,300	15,200	146,500	184,000	146,500	146,500	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184.000
2015 Lanes		S	80	60	<del>Q</del>	e (	99	60	<b>4</b>	2	2	4D	<b>4</b>	<b>4</b>	4D	4D	4D	6D	2	4D	6X	6X	6X	4X	4X	4X	<del>4</del>	4X	4X	4X	60	2	8X	10X	8X	8X	10X	10X	10X	10X	10X	10X	10X	10X	10X	10X
2015 Data Source		Counts4Web	FTI	Counts4Web	Counts4Web	Counts4Web	Counts4Web	Counts4Web	Counts4Web	Counts4Web	Counts4Web	Counts4Web	Counts4Web	Counts4Web	Counts4Web	Counts4Web	Counts4Web	Counts4Web	Counts4Web	Counts4Web	FTI	FTI	FTI	FTI	FTI	E	- 1	E T		FTI	Counts4Web	Counts4Web	FTI	FTI	FTI	Counts4Web	Counts4Web	Ē	Ē	Ē	Ē	Counts4Web	FTI	Counts4Web	Counts4Web	ETI
Length (Miles)	TORS	1.35	0.30	1.20	0.75	0.35	1.35	0.34	0.47	1.30	4.80	1.85	4.50	0.92	3.60	1.20	1.42	0.75	0.70	0.86	2.80	6.10	5.20	6.25	4.60	1.95	10.0	6.25	7 10	1.30	0.20	1.62	1.65	1.32	2.53	1.90	1.32	1.58	3.94	1.10	1.58	1.55	1.08	1.50	1.36	1.94
To	SIS ROADS AND SIS CONNECTORS	1-95	Congress Ave	Australian Ave	Greenwood Ave	Broadway (WPB)	Congress Ave	I-95	8th Ave SW	Indiantown Rd	Pratt-Whitney Rd	Caloosa	N County Airport	PGA BIVd	Northlake Blvd	Jog Rd	Haverhill Blvd.	Congress Ave	10th Av N	Blue Heron Blvd	Glades Rd	Atlantic Ave	Boynton Beach Blvd	Lake Worth Rd	Southern Blvd	Jog Rd	Ukecnopee bl	Beeline Highway	Indiantown Rd	Martin County Line	1-95	Hypoluxo Rd	Palmetto Park Rd	Glades Rd	Yamato Rd	Congress Ave	Linton Blvd	Atlantic Ave	Woolbright Rd	Boynton Beach Blvd	Gateway Blvd	Hypoluxo Rd	Lantana Rd	6th Ave N	10th Ave N	Forest Hill Blvd
From		Congress Ave	I-95	Congress Ave	Australian Ave	Greenwood Ave	Barwick Rd	Congress Ave	I-95	Martin County Line	Indiantown Rd	Pratt-Whitney Rd	Caloosa	N County Airport	PGA BIVd	Northlake Bhd	Jog Rd.	F95	2nd Ave N	MLK Bhd	Broward County Line	Glades Rd	Atlantic Ave	Boynton Beach Blvd	Lake Worth Rd	Southern Blvd	Jog Ka	Okeechobee Bl Booline Historium	Deeme numer	Indiantown Rd	High Ridge Rd	Gateway Blvd	Broward County Line	Palmetto Park Rd	Glades Rd	Yamato Rd	Congress Ave	Linton Blvd	Atlantic Ave	Woolbright Rd	Boynton Beach Blvd	Gateway Blvd	Hypoluxo Rd	Lantana Rd	6th Ave N	10th Ave N
Road		4203 10TH AVE N	937275 45TH ST	3843 45TH ST	3801 45TH ST	3845 45TH ST	5659 ATLANTIC AVE	ATLANTIC AVE	5309 ATLANTIC AVE	BEELINE HWY	1401 BEELINE HWY	1411 BEELINE HWY	2109 BEELINE HWY	BEELINE HWY	2403 BEELINE HWY	2419 BEELINE HWY	2209 BEELINE HWY	BLUE HERON BLVD	4676 BOUTWELL RD	2618 CONGRESS AVE	971930 FLORIDA TURNPIKE	FLORIDA TURNPIKE	970413 FLORIDA TURNPIKE		FLORIDA TURNPIKE	FLORIDA TURNPIKE		FLORIDA TURNPIKE	971950 FLORIDA TURNPIKE	FLORIDA TURNPIKE	GATEWAY BLVD	HIGH RIDGE RD	1-95	1-95	1-95	1-95	1-95	1-95	95	95	95	1-95	1-95	1-95	1-95	95
Station		4203 1	372754	3843 4	38014	3845 4	5659 A	5211 A	5309 A	1101 B	1401 E	1411 E	2109 E	2101 B	2403 E	2419 E	2209 E	2311 B	4676 E	2618 C	71930 F	971934 F	70413 F		970504 F		1748178	9/1944 F	71950 5	970417 F		4648 H	862507  -			6208 -		932193 I-	930198 1-95	932195 1-95	932196 I-95	_	932197  -	42181-	42161-	0222001L05

2016 Truck Route Analysis

Analysis	
Route	
Truck	
2016	

						TORS	SIS ROADS AND SIS CONNECTORS	S		
LOS?	VIC	2015 AADT	Capacity	Lanes	Source	(Miles)	To	From	Road	Station
Meet	2015		Service	2015	2015 Data	Length				
2015			2015							

Notes: I-95, Southern (part), US 27(part), Turnpike, and Yamato are 2011 counts

Total Congested Miles Miles Percentage SIS Truck Routes: 202.90 31.47 15.5%

				00					1000
		-				2015			
			Length	2015 Data	2015	Service		2015	Meet
Station Road	From	To	(Miles)	Source	Lanes	Capacity	2015 AADT	V/C	LOS?
			303.59						Yes
1405 INDIANTOWN RD	Bee Line Hwy	Pratt-Whitney Rd		Counts4Web	2	15,200	1,763	0.12	Yes
1403 INDIANTOWN RD	Pratt-Whitney Rd	130th Ave N		Counts4Web	24	15,200	4,985	0.33	Yes
1407 INDIANTOWN RD	Alevander Run	Alexander Kun	Ι	Counts4Web	<del>1</del>	33,200	77 337	0.87	Yes
	Juniter Farms Rd	Florida Turnoike		Counts4Web	₽₽	33,200	28.879	0.87	Kes Y
1201 INDIANTOWN RD	Florida Tumpike	I-95 Interchange		Counts4Web	09	50,300	48,380	0.96	Yes
1213 INDIANTOWN RD	I-95 Interchange	Island Way	0.64	Counts4Web	60	50,300	61,281	1.22	٩
1617 INDIANTOWN RD	Island Way	Central Blvd	0.34	Counts4Web	60	50,300	60,253	1.20	٩
1203 INDIANTOWN RD	Central Blvd	Center St		Counts4Web	60	50,300	53,551	1.06	Yes
601 INDIANTOWN RD	Center St	Military Tr		Counts4Web	6D	50,300	46,587	0.93	Yes
1209 INDIANTOWN RD	Military Tr	SR 811		Counts4Web	6D	50,300	42,614	0.85	Yes
1807 INDIANTOWN RD	SR 811	US 1		Counts4Web	60	50,300	33,744	0.67	Yes
1811 INDIANTOWN RD	US1	SR A1A		Counts4Web	4	33,200	16,998	0.51	Yes
2405 PGA BLVD	Bee Line Hwy	Ryder Cup Blvd (Jog Rd)		Counts4Web	2	15,200	3,717	0.24	Yes
	Ryder Cup Blvd (Jog Rd)	Florida Turnpike		Counts4Web	40	33,200	26,216	0.79	Yes
2201 PGA BLVD	Florida Tumpike	Central Blvd		Counts4Web	9	50,300	49,281	0.98	Yes
2609 PGA BLVD	Central Blvd	Military Tr		Counts4Web	99	50,300	48,298	0.96	Yes
2203 PGA BLVD	Military Tr	1-95		Counts4Web	99	50,300	47,349	0.94	Yes
2303 PGA BLVD	I-95	SR 811		Counts4Web	80	67,300	71,477	1.06	Yes
2829 PGA BLVD	SR 811	Gardens Mall	0.58	Counts4Web	60	50,300	57,047	1.13	٥N
2805 PGA BLVD	Gardens Mall	Prosperity Farms Rd		Counts4Web	09	50,300	41,615	0.83	Yes
2803 PGA BLVD	Prosperity Farms Rd	Ellison Wilson Rd		Counts4Web	99	50,300	41,927	0.83	Yes
283/ PGA BLVD	Ellison Wilson Kd	Federal Hwy		Counts4Web	<u>р</u>	50,300	28,/10	/9.0	Yes
	Seminore Frau Volumey Ko	N AND MARK		Counts4tveb	v	10,200	004/01	20.0	192
2421 NORTHLAKE BLVD	14UID AVE N	Coconut Biva	1.45	Counts4Web	2	15,200	1/,4/0	CL.1	2
2411 NORTHLAKE BLVD	Coconut Bivd	Ibis Kd		Counts4Web	<del>0</del>	33,200	28,3/0	28°	Yes
2407 NORTHLAKE BLVD	Ibis Rd	Beeline Hwy		Counts4Web	<del>6</del>	33,200	35,364	1.07	Yes
2401 NOKI HLAKE BLVD	Beeline Hwy	Kyder Cup Bivd		Counts4Web	60	50,300	20,/82	0.41	Yes
2205 NORTHLAKE BLVD		Steeplechase Ur / Ballen Isles Ur		Counts4Web	ß	50,300	33,489	/9/0	Yes
	Steeplechase Ur / Ballen Isles Ur	Military Ir		Counts4Web	Эð	50,300	46,120	997 F	Yes
	Military Ir	08-1	000	Counts4vveb	D de	20,300	00,050	99.1	Yes
	Pedatese Aum	Congress Ave	0.80	Counts4tveb	B	00000	45 109	77.1	No
2813 NORTHIAKE BLVD	SR 811	Drocharity Farme Rd		Counted/Mab	36	20,000	35 300	0.70	Vac Vac
2817 NORTHLAKE BLVD	Prosperity Farms Rd	Southwind Dr		Counts4Web	6D	50.300	37.157	0.74	Yes
2819 NORTHLAKE BLVD	Southwind Dr	US-1		Counts4Web	90	50.300	27.771	0.55	Yes
2601 BLUE HERON BLVD	Bee Line Hwy	Military Tr		Counts4Web	4	33,200	21.790	0.66	Yes
2211 BLUE HERON BLVD	Military Tr	1-95		Counts4Web	60	50,300	41,754	0.83	Yes
507 BLUE HERON BLVD	Congress Ave	Australian Ave		Counts4Web	6D	50,300	36,520	0.73	Yes
2823 BLUE HERON BLVD	Australian Ave	Old Dixie Hwy		Counts4Web	6D	50,300	31,650	0.63	Yes
930071 BLUE HERON BLVD	Old Dixie Hwy	US-1/A1A		FTI	5	33,200	17,600	0.53	Yes
3665 45TH ST	Military Tr	Village Blvd		Counts4Web	6D	50,300	42,966	0.85	Yes
3203 45TH ST	Village Blvd	1-95	0.56	Counts4Web	80	50,300	61,238	1.22	٥N
937275 45TH ST	F95	Congress Ave		FTI	60	50,300	42,000	0.83	Yes
3843 45TH ST	Congress Ave	Australian Ave		Counts4Web	60	50,300	43,748	0.87	Yes
3801 45TH ST	Australian Ave	Greenwood Ave		Counts4Web	4D	33,200	28,330	0.85	Yes
3845 45TH ST	Greenwood Ave	Broadway (WPB)		Counts4Web	9	15,200	13,429	0.88	Yes

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				25		2015			2015
			Length	2015 Data	2015	Service		2015	Meet
Station Road	From	To	(Miles)	Source	Lanes	Capacity	2015 AADT	V/C	LOS?
	Okeechobee Blvd	Village Blvd		Counts4Web	6D	50,300	31,624	0.63	Yes
3205 PALM BEACH LAKES BLVD	Village Blvd	1-95	0.63	Counts4Web	6D	50,300	57,087	1.13	٩
	1-95	PB Mall Main Entrance	0.33	Counts4Web	6D	50,300	58,499	1.16	No
	PB Mall Main Entrance	Congress Ave		Counts4Web	60	50,300	44,795	0.89	Yes
_	Congress Ave	Australian Ave		Counts4Web	8	50,300	42,040	0.84	Yes
	Australian Ave	Tamarind Ave		Counts4Web	4	33,200	32,081	0.97	Yes
3807 PALM BEACH LAKES BLVD	Tamarind Ave	Dixie Hwy		Counts4Web	4D	33,200	22,076	0.66	Yes
3419 OKEECHOBEE BLVD	Seminole Pratt Whitney Rd	E Rd		Counts4Web	2	15,200	8,971	0.59	Yes
	E Rd	Crestwood Blvd		Counts4Web	2	15,200	14,757	0.97	Yes
3411 OKEECHOBEE BLVD	Crestwood Blvd	Royal Palm Beach Blvd		Counts4Web	4D	33,200	29,304	0.88	Yes
3453 OKEECHOBEE BLVD	Royal Palm Beach Blvd	Wildcat Way		Counts4Web	6D	50,300	44,458	0.88	Yes
3401 OKEECHOBEE BLVD	Wildcat Way	SR-7		Counts4Web	8D	67,300	42,735	0.63	Yes
3403 OKEECHOBEE BLVD	SR-7	Sansbury's Way		Counts4Web	8D	67,300	49,462	0.73	Yes
3441 OKEECHOBEE BLVD	Sansbury's Way	Benoist Farms Rd		Counts4Web	8D	67,300	52,426	0.78	Yes
3439 OKEECHOBEE BLVD	Benoist Farms Rd	Skees Rd		Counts4Web	8D	67,300	62,215	0.92	Yes
3449 OKEECHOBEE BLVD	Skees Rd	Jog Rd		Counts4Web	80	67,300	62,333	0.93	Yes
930696 OKEECHOBEE BLVD	Jog Rd	Florida Turnpike		FTI	8D	67,300	59,000	0.88	Yes
3207 OKEECHOBEE BLVD	Florida Turnpike	Haverhill Rd		Counts4Web	8D	67,300	68,421	1.02	Yes
3671 OKEECHOBEE BLVD	Haverhill Rd	Military Tr		Counts4Web	8D	67,300	68,767	1.02	Yes
3633 OKEECHOBEE BLVD	Military Tr	Palm Beach Lakes Blvd		Counts4Web	8D	67,300	69,188	1.03	Yes
3603 OKEECHOBEE BLVD	Palm Beach Lakes Blvd	Congress Ave		Counts4Web	8D	67,300	46,996	02'0	Yes
3209 OKEECHOBEE BLVD	Congress Ave	1-95		Counts4Web	8D	67,300	62,293	0.93	Yes
3307 OKEECHOBEE BLVD	1-95	Australian Ave		Counts4Web	8D	67,300	73,733	1.10	Yes
	Australian Ave	Tamarind Ave		Counts4Web	8D	67,300	66,217	0.98	Yes
3837 OKEECHOBEE BLVD	Tamarind Ave	Dixie Hwy		Counts4Web	8D	67,300	48,783	0.72	Yes
3657 SUMMIT BLVD	Jog Rd	Haverhill Rd		Counts4Web	4D	33,200	11,893	0.36	Yes
3611 SUMMIT BLVD	Haverhill Rd	Military Tr		Counts4Web	5	33,200	21,105	0.64	Yes
3613 SUMMIT BLVD	Military Tr	Kirk Rd		Counts4Web	5	33,200	21,366	0.64	Yes
3615 SUMMIT BLVD	Kirk Rd	Davis Rd		Counts4Web	5	33,200	20,332	0.61	Yes
3617 SUMMIT BLVD	Davis Rd	Congress Ave		Counts4Web	5	33,200	22,896	0.69	Yes
	Congress Ave	Florida Mango Rd		Counts4Web	5	33,200	12,801	0.39	Yes
3621 SUMMIT BLVD	Florida Mango Rd	I-95		Counts4Web	5	33,200	11,122	0.34	Yes
3423 FOREST HILL BLVD	SR-7	Lyons Rd		Counts4Web	6D	50,300	37,209	0.74	Yes
3221 FOREST HILL BLVD	Lyons Rd	Pinehurst Dr		Counts4Web	6D	50,300	36,125	0.72	Yes
3666 FOREST HILL BLVD	Pinehurst Dr	Jog Rd		Counts4Web	6D	50,300	42,563	0.85	Yes
	Jog Rd	Sherwood Forest Blvd		Counts4Web	6D	50,300	37,786	0.75	Yes
3667 FOREST HILL BLVD	Sherwood Forest Blvd	Haverhill Rd		Counts4Web	6D	50,300	41,136	0.82	Yes
3625 FOREST HILL BLVD	Haverhill Rd	Military Tr		Counts4Web	6D	50,300	43,254	0.86	Yes
3627 FOREST HILL BLVD	Military Tr	Kirk Rd		Counts4Web	6D	50,300	41,933	0.83	Yes
3629 FOREST HILL BLVD	Kirk Rd	Congress Ave		Counts4Web	6D	50,300	42,266	0.84	Yes
3219 FOREST HILL BLVD	Congress Ave	1-95		Counts4Web	6D	50,300	43,813	0.87	Yes
3317 FOREST HILL BLVD	F95	Parker Åve		Counts4Web	5	33,200	27,796	0.84	Yes
FOREST HILL	Parker Ave	Dixie Hwy		Counts4Web	5	33,200	19,467	0.59	Yes
4603 10TH AVE N	Military Tr	Kirk Rd		Counts4Web	5	33,200	26,370	0.79	Yes
	Kirk Rd	Congress Ave		Counts4Web	5	33,200	31,960	0.96	Yes
	SR 7	Lyons Rd		Counts4Web	60	50,300	38,065	0.76	Yes
4103 LAKE WORTH RD	Lyons Rd	Florida Turnpike		Counts4Web	6D	50,300	42,333	0.84	Yes
4201 LAKE WORTH RD	Florida Turnpike	Pinehurst Dr		Counts4Web	60	50,300	39,166	0.78	Yes

			UCK ROUTES IN PALM BEACH OTHER THAN SIS	THAN HAN	SIS					
							2015			2015
				Length	2015 Data	2015	Service		2015	Meet
	Road		To	(Miles)	Source	Lanes	Capacity	2015 AADT	V/C	LOS?
_	LAKE WORTH RD	rst Dr	Jog Rd		Counts4Web	9	50,300	46,028	0.92	Yes
	LAKE WORTH RD		Sherwood Forest Blvd		Counts4Web	60	50,300	45,661	0.91	Yes
	LAKE WORTH RD	orest Blvd	Haverhill Rd		Counts4Web	99	50,300	41,210	0.82	Yes
= "	LAKE WORTH RD	Haverhill Rd	Military Tr		Counts4Web	00	50,300	44,371	0.88	Yes
=+	AKE WORTH RD	Military Tr	Kirk Rd		Counts4Web	99	50,300	42,951	0.85	Yes
_	LAKE WORTH RD	Kirk Rd	Congress Ave		Counts4Web	60	50,300	38,415	0.76	Yes
4651 L	LAKE WORTH RD	Congress Ave	Boutwell Rd		Counts4Web	4D	33,200	23,415	0.71	Yes
4305 L	LAKE WORTH RD	Boutwell Rd	Lake/Lucerne Split		Counts4Web	4	33,200	25,497	0.77	Yes
4817 L	LAKE WORTH RD	Lake/Lucerne Split	US-1		Counts4Web	3	15,200	8,385	0.55	Yes
4815 L	LAKE WORTH RD	US-1	Federal Hwy		Counts4Web	2	15,200	8,410	0.55	Yes
4801 L	LAKE WORTH RD	Federal Hwy	A1A		Counts4Web	4	33,200	16,111	0.49	Yes
4403 L	LANTANA RD		Lyons Rd		Counts4Web	4D	33,200	15,574	0.47	Yes
4207 L	LANTANA RD		Hagen Ranch Rd		Counts4Web	4D	33,200	25,977	0.78	Yes
4669 L	LANTANA RD	Inch Rd	Jog Rd		Counts4Web	6D	50,300	32,219	0.64	Yes
4619 L	LANTANA RD	Jog Rd	Haverhill Rd		Counts4Web	6D	50,300	35,845	0.71	Yes
4675 L	LANTANA RD	Haverhill Rd	Military Tr		Counts4Web	60	50,300	42,602	0.85	Yes
4605 L	LANTANA RD	Military Tr	Lawrence Rd		Counts4Web	6D	50,300	41,854	0.83	Yes
4665 L	LANTANA RD	Lawrence Rd	Congress Ave		Counts4Web	6D	50,300	47,054	0.94	Yes
4623 L	LANTANA RD	Congress Ave	High Ridge Rd		Counts4Web	60	50,300	41,390	0.82	Yes
4209 L	LANTANA RD	High Ridge Rd	1-95	0.29	Counts4Web	4D	33,200	43,805	1.32	No
4311 L	LANTANA RD	1-95	Redding Dr	0.28	Counts4Web	ç	33,200	37,424	1.13	No
4807 L	LANTANA RD	Redding Dr	Federal Hwy		Counts4Web	5	33,200	19,392	0.58	Yes
4649 G	GATEWAY BLVD		Lawrence Rd		Counts4Web	6D	50,300	23,948	0.48	Yes
4625 G	GATEWAY BLVD		Congress Ave		Counts4Web	60	50,300	31,071	0.62	Yes
4667 G	GATEWAY BLVD	Congress Ave	High Ridge Rd		Counts4Web	6D	50,300	36,655	0.73	Yes
4213 G	GATEWAY BLVD	High Ridge Rd	I-95		Counts4Web	6D	50,300	48,114	0.96	Yes
4315 G	GATEWAY BLVD		Seacrest Blvd		Counts4Web	6D	50,300	26,287	0.52	Yes
930301 G	GATEWAY BLVD	rrest Blvd	US-1	0.72	FTI	3	15,200	24,500	1.61	No
5401 B	BOYNTON BEACH BLVD	SR 7	Lyons Rd		Counts4Web	4D	33,200	15,242	0.46	Yes
	BOYNTON BEACH BLVD	Lyons Rd	Turnpike		Counts4Web	6D	50,300	37,476	0.75	Yes
	BOYNTON BEACH BLVD		Hagen Ranch Rd		Counts4Web	60	50,300	46,955	0.93	Yes
5641 B	BOYNTON BEACH BLVD		Jog Rd		Counts4Web	6D	50,300	41,813	0.83	Yes
5633 B	BOYNTON BEACH BLVD	Jog Rd	El Clair Ranch Rd		Counts4Web	6D	50,300	39,735	0.79	Yes
5611 B	BOYNTON BEACH BLVD	El Clair Ranch Rd	Military Tr		Counts4Web	60	50,300	45,350	0.90	Yes
5613 B	BOYNTON BEACH BLVD		Lawrence Rd		Counts4Web	9	50,300	37,509	0.75	Yes
5601 B	BOYNTON BEACH BLVD	Lawrence Rd	Congress Ave		Counts4Web	80	50,300	40,732	0.81	Yes
5615 B	BOYNTON BEACH BLVD		Old Boynton Rd		Counts4Web	60	50,300	34,792	0.69	Yes
5203 B	BOYNTON BEACH BLVD	Boynton Rd	1-95		Counts4Web	6D	50,300	47,876	0.95	Yes
	BOYNTON BEACH BLVD		Seacrest Blvd		Counts4Web	5	33,200	35,624	1.07	Yes
5807 B	BOYNTON BEACH BLVD		US-1		Counts4Web	4	33,200	18,570	0.56	Yes
5205 V	WOOLBRIGHT RD	Congress Ave	1-95		Counts4Web	6D	50,300	45,772	0.91	Yes
5303 V	WOOLBRIGHT RD		US-1	0.82	Counts4Web	5	33,200	43,615	1.31	٩
5403 A	ATLANTIC AVE		Lyons Rd		Counts4Web	0	15,200	16,435	1.08	Yes
5101 A	ATLANTIC AVE		Turnpike		Counts4Web	4	33,200	29,886	0.90	Yes
935209 A	ATLANTIC AVE		Hagen Ranch Rd		FTI	4	33,200	34,000	1.02	Yes
5643 A	ATLANTIC AVE	Ranch Rd	Jog Rd	1.01	Counts4Web	<del>4</del>	33,200	36,572	1.10	۶
5631 A	ATLANTIC AVE		El Clair Ranch Rd		Counts4Web	8	50,300	40,737	0.81	Yes
563/ /	5637 AT LANTIC AVE	El Clair Ranch Rd	Military Tr		Counts4Web	60	50,300	44,644	0.89	Yes

2016 1	2016 Iruck Route Analysis	TRUCK R	UCK ROUTES IN PALM BEACH OTHER THAN SIS	IER THAN	SIS					Γ
							2015			2015
		Process.		Length	2015 Data	2015	Service	TOME AND	2015	Meet
Station /	ATLANTIC AVE	Military Tr	Ranvick Rd	(miles)	Counted Web	6D	50 300	41.810	0.83	Vac
5659 /	ATLANTIC AVE	Barwick Rd	Congress Ave		Counts4Web	909	50.300	44.038	0.88	Yes
5211/	ATLANTIC AVE	Congress Ave	1-95		Counts4Web	60	50,300	49,366	0.98	Yes
	ATLANTIC AVE	F95	8th Ave SW	0.46	Counts4Web	<b>4</b>	33,200	46,557	1.40	٩
5815/	ATLANTIC AVE	8th Ave SW	Swinton Ave		Counts4Web	4D	33,200	27,464	0.83	Yes
5817/	ATLANTIC AVE	Swinton Ave	US-1		Counts4Web	2	15,200	12,015	0.79	Yes
5635 L	LINTON BLVD	Jog Rd	Sim Rd		Counts4Web	4D	33,200	29,366	0.88	Yes
5625 L	LINTON BLVD	Sim Rd	Military Tr		Counts4Web	6D	50,300	28,587	0.57	Yes
5607 L	LINTON BLVD	Military Tr	Homewood Blvd		Counts4Web	6D	50,300	39,497	0.79	Yes
5661	LINTON BLVD	Homewood Blvd	Congress Ave		Counts4Web	6D	50,300	39,159	0.78	Yes
5213 [	LINTON BLVD	Congress Ave	1-95		Counts4Web	60	50,300	42,863	0.85	Yes
5313 [	LINTON BLVD	1-95	10th Ave SW		Counts4Web	60	50,300	48,617	0.97	Yes
	LINTON BLVD	10th Ave SW	Old Dixie Hwy		Counts4Web	99	50,300	40,279	0.80	Yes
	LINTON BLVD	Old Dixie Hwy	US 1		Counts4Web	99	50,300	32,088	0.64	Yes
6421	YAMATO RD	SR 7	Lyons Rd		Counts4Web	4	33,200	21,475	0.65	Yes
6103	YAMATO RD	Lyons Rd	Boca West Dr		Counts4Web	4	33,200	30,620	0.92	Yes
	YAMATO RD	Boca West Dr	Jog Rd		Counts4Web	60	50,300	35,434	0.70	Yes
6611 \	YAMATO RD	Jog Rd	Military Tr		Counts4Web	60	50,300	40,167	0.80	Yes
6603 \	YAMATO RD	Military Tr	Congress Ave		Counts4Web	8D	67,300	47,121	0.70	Yes
6203	YAMATO RD	Congress Ave	1-95		Counts4Web	8D	67,300	57,990	0.86	Yes
6303	YAMATO RD	1-95	Dixie Hwy		Counts4Web	6D	50,300	46,385	0.92	Yes
6807	YAMATO RD	Dixie Hwy	Federal Hwy		Counts4Web	6D	50,300	28,913	0.57	Yes
6605 \$	SPANISH RIVER BLVD	Military Tr	IBM Access		Counts4Web	4	33,200	29,285	0.88	Yes
6305 5	SPANISH RIVER BLVD	IBM Access	Perimeter Rd		Counts4Web		33,200	27,823	0.84	Yes
6811 \$	SPANISH RIVER BLVD	Perimeter Rd	Old Dixie Hwy		Counts4Web	4	33,200	22,555	0.68	Yes
6813 9	SPANISH RIVER BLVD	Old Dixie Hwy	Federal Hwy		Counts4Web	đ	33,200	18,750	0.56	Yes
6405 F	PALMETTO PARK RD	SR-7	Lyons Rd		Counts4Web	60	50,300	32,587	0.65	Yes
_	PALMETTO PARK RD	Lyons Rd	Boca Rio Rd		Counts4Web	99	50,300	43,242	0.86	Yes
	PALMETTO PARK RD	Boca Rio Rd	Powerline Rd		Counts4Web	60	50,300	47,717	0.95	Yes
6617 F	PALMETTO PARK RD	Powerline Rd	St Andrews Blvd		Counts4Web	99	50,300	44,178	0.88	Yes
6099	PALMETTO PARK RD	St Andrews Blvd	Military Tr		Counts4Web	8	50,300	55,317	1.10	Yes
6209 6	PALMETTO PARK RD	Military Tr	1-95	0.67	Counts4Web	8	50,300	62,319	1.24	Ŷ
6309 6	PALMETTO PARK RD	F95	12th 02	0.43	Counts4Web	99	50,300	59,816	1.19	٥N
	PALMEITO PARK RD	12th St	Boca Raton Blvd	1.32	Counts4Web	40	33,200	37,862	1.14	۶
	PAUMEITO PARK RD	Boca Katon Blvd	Old Dixie Hwy		Counts4Web	<del>4</del>	33,200	33,796	1.02	Yes
08/31	PAUMEITO PAKK KU				Counts4Web	Đ	33,200	33,795	20.1	Yes
3420	SEMINOLE PRALI - WHI NEY RU				Counts4Web	Đ	33,200	14,103	0.43	Yes
3424	SEMINOLE PRATT-WHITNEY RD	Okeechobee Blvd	Sycamore Dr E		Counts4Web	<del>4</del>	33,200	18,026	0.54	Yes
3442	SEMINOLE PRATT-WHITNEY RD	Sycamore Dr E	60TH ST N		Counts4Web	40	33,200	16,772	0.51	Yes
2408	SEMINOLE PRATT-WHITNEY RD	60TH ST N	Orange Bl		Counts4Web	<del>d</del>	33,200	13,600	0.41	Yes
2406	2406 SEMINOLE PRATT-WHITNEY RD	Orange Bl	Northlake Blvd		Counts4Web	2	15,200	11,577	0.76	Yes
6110 SR-7	SR-7	Broward County Line	SW 18 St		Counts4Web	60	50,300	51,985	1.03	Yes
6414 %	SR-7	SW 18 St	Palmetto Park Rd		Counts4Web	09	50,300	52,909	1.05	Yes
6400 SR-7	SR-7	Palmetto Park Rd	Glades Rd	1.25	Counts4Web	60	50,300	11/19	1.15	ę,
6402	SR-7	Glades Rd	Yamato Kd		Counts4Web	09 (¢	50,300	45,141	0.90	Yes
6412 %	SR-/	Yamato Kd			Counts4Web	99	50,300	30,321	0.72	¥€\$
2010	SR-/ SD 4	Clint Moore Kd	Winners Cir		Counts4web	B é	00:00	20,500	0000	Yes
7-20 4040	SR-/	Winner's Cir	VV Atlantic Ave		Counts4tveb	40	33,200	2/,414	U.83	Yes

	and ment a amout your	TRUCK RC	UCK ROUTES IN PALM BEACH OTHER THAN SIS	ER THAN	SIS					Γ
							2015			2015
				Length	2015 Data	2015	Service		2015	Meet
Station	Road	From	To	(Miles)	Source	Lanes	Capacity	2015 AADT	VIC	LOS?
5400	SR-7	W Attantic Ave	Lee Rd		Counts4Web	đ	33,200	24,509	0.74	Yes
5402	SR-7	Lee Rd	Boynton Beach Blvd		Counts4Web	<del>6</del>	33,200	23,191	0.70	Yes
5102	SR-7	Boynton Beach Blvd	Hypoluxo Rd		Counts4Web	00	50,300	27,687	0.55	Yes
4402	SR-7	Hypoluxo Rd	Lantana Rd		Counts4Web	9	50,300	31,450	0.63	Yes
4400	SR-7	Lantana Rd	Lake Worth Rd		Counts4Web	00	50,300	41,210	0.82	Yes
4406	SR-7	Lake Worth Rd	Stribling Way		Counts4Web	8D	67,300	65,398	0.97	Yes
4102	SR-7	Stribling Way	Forest Hill Blvd		Counts4Web	8D	67,300	49,645	0.74	Yes
3452	SR-7	Forest Hill Blvd	Pioneer Rd		Counts4Web	8D	67,300	58,868	0.87	Yes
3408	SR-7	Pioneer Rd	Southern Blvd		Counts4Web	80	67,300	56,643	0.84	Yes
930020	JOG RD	Broward County Line	Glades Rd		FTI	<del>4</del>	33,200	26,500	0.80	Yes
6618	JOG RD	Glades Rd	Potomac Rd		Counts4Web	4	33,200	33,018	0.99	Yes
6634	JOG RD	Potomac Rd	Yamato Rd		Counts4Web	4D	33,200	33,030	0.99	Yes
6616	JOG RD	Yamato Rd	Clint Moore Rd		Counts4Web	60	50,300	35,206	0.70	Yes
6200	JOG RD	Clint Moore Rd	C-15 Canal		Counts4Web	99	50.300	33,990	0.68	Yes
5622	JOG RD	C-15 Canal	Linton Blvd		Counts4Web	09	50,300	33,918	0.67	Yes
5620	JOG RD	Linton Blvd	Normandy Ln		Counts4Web	00	50,300	38,158	0.76	Yes
5616	JOG RD	Normandy Ln	Atlantic Ave		Counts4Web	8	50,300	41,228	0.82	Yes
5642	JOG RD	Atlantic Ave	Lake Ida Rd		Counts4Web	99	50,300	31,958	0.64	Yes
5648	JOG RD	Lake Ida Rd	Flavor Pict Rd		Counts4Web	99	50.300	24,867	0.49	Yes
5656	JOG RD	Flavor Pict Rd	Pipers Glen Blvd		Counts4Web	09	50.300	24,221	0.48	Yes
5640	JOG RD	Pipers Glen Blvd	Woolbright Rd		Counts4Web	60	50,300	25,487	0.51	Yes
5644	JOG RD	Woolbright Rd	Boynton Beach Blvd		Counts4Web	09	50,300	28,403	0.56	Yes
5200	JOG RD	Boynton Beach Blvd	Gateway Blvd		Counts4Web	99	50,300	33,181	0.66	Yes
4660	JOG RD	Gateway Blvd	Le Chalet Blvd		Counts4Web	09	50,300	37.759	0.75	Yes
4640	JOG RD	Le Chalet Blvd	Hypoluxo Rd		Counts4Web	99	50,300	41,103	0.82	Yes
4670	JOG RD	Hypoluxo Rd	Winston Trails Bl		Counts4Web	6D	50,300	35,642	0.71	Yes
4628	JOG RD	Winston Trails BI	Lantana Rd		Counts4Web	60	50,300	36,500	0.73	Yes
4612	JOG RD	Lantana Rd	Melaleuca Ln		Counts4Web	60	50,300	37,599	0.75	Yes
4634	JOG RD	Melaleuca Ln	Lake Worth Rd		Counts4Web	60	50,300	43,082	0.86	Yes
4616	4616 JOG RD	Lake Worth Rd	10th Ave N		Counts4Web	6D	50,300	38,550	0.77	Yes
4204	JOG RD	10th Ave N	Forest Hill Blvd		Counts4Web	6D	50,300	44,233	0.88	Yes
3650	JOG RD	Forest Hill Blvd	Summit Blvd		Counts4Web	80	50,300	39,544	0.79	Yes
3624	JOG RD	Summit Blvd	Southern Blvd		Counts4Web	60	50,300	36,684	0.73	Yes
3220	JOG RD	Belvedere Rd	Tumpike Int		Counts4Web	6D	50,300	25,922	0.52	Yes
3104	JOG RD	Turnpike Int	Okeechobee Blvd		Counts4Web	60	50,300	29,044	0.58	Yes
6620	ST ANDREWS BLVD	Palmetto Park Rd	Glades Rd		Counts4Web	<del>d</del>	33,200	23,129	0.70	Yes
6610	ST ANDREWS BLVD	Glades Rd	Potomac Rd		Counts4Web	4	33,200	20,425	0.62	Yes
6624	ST ANDREWS BLVD	Potomac Rd	Yamato Rd		Counts4Web	4	33,200	15,326	0.46	Yes
6612	MILITARY TRL	Butts Rd	Spanish River Blvd		Counts4Web	60	50,300	44,394	0.88	Yes
6612	6612 MILITARY TRL	Spanish River Blvd	Yamato Rd		Counts4Web	6D	50,300	44,394	0.88	Yes
6630	MILITARY TRL	Yamato Rd	Clint Moore Rd		Counts4Web	99	50,300	41,903	0.83	Yes
6202	MILITARY TRL	Clint Moore Rd	Linton Blvd		Counts4Web	60	50,300	36,976	0.74	Yes
5618	MILITARY TRL	Linton Blvd	Atlantic Ave		Counts4Web	6D	50,300	39,592	0.79	Yes
5606	5606 MILITARY TRL	Atlantic Ave	Lake Ida Rd		Counts4Web	09	50,300	45,250	0.90	Yes
5652	5652 MILITARY TRL	Lake Ida Rd	Flavor Pict Rd		Counts4Web	60	50,300	35,479	0.71	Yes
5614	MILITARY TRL	Flavor Pict Rd	Woolbright Rd		Counts4Web	99	50,300	33,656	0.67	Yes
5608	MILITARY TRL	Woolbright Rd	Boynton Beach Blvd		Counts4Web	99	50,300	31,271	0.62	Yes
5202	5202 MILITARY TRL	Boynton Beach Blvd	Gateway Blvd		Counts4Web	60	50,300	34,595	0.69	Yes

		UCK ROULES IN FALM BEACH OLDER THAN SIS		00					
			4	Date Date	2046	2015		Dute	2015
	From	To	(Miles)	Source	2015 Lanes	Capacity	2015 AADT	VIC	LOS?
	Gateway Blvd	Hypoluxo Rd		Counts4Web	60	50,300	33,709	0.67	Yes
	Hypoluxo Rd	Lantana Rd		Counts4Web	6D	50,300	30,811	0.61	Yes
	Lantana Rd	Melaleuca Ln		Counts4Web	6D	50,300	37,727	0.75	Yes
	Melaleuca Ln	Lake Worth Rd		Counts4Web	90	50,300	36,403	0.72	Yes
	Lake Worth Rd	10th Ave N		Counts4Web	99	50,300	41,244	0.82	Yes
	10th Ave N	Cresthaven Blvd		Counts4Web	9	50,300	43,454	0.86	₹
	Cresthaven Blvd	Forest Hill Blvd		Counts4Web	99	50,300	45,554	0.91	Yes
	Forest Hill Blvd	Summit Blvd		Counts4Web	99	50,300	42,197	0.84	Υes
	Summit Blvd	Gun Club Rd		Counts4Web	60	50,300	43,230	0.86	Yes
TRL	Gun Club Rd	Southern Blvd		Counts4Web	6D	50,300	39,773	0.79	Yes
	Southern Blvd	Belvedere Rd		Counts4Web	6D	50,300	44,116	0.88	Yes
	Belvedere Rd	Westgate Ave		Counts4Web	6D	50,300	45,916	0.91	Yes
	Westgate Ave	Okeechobee Bl		Counts4Web	6D	50,300	37,728	0.75	Yes
MILITARY TRL	Okeechobee Bl	Roebuck Rd		Counts4Web	60	50,300	36,386	0.72	Yes
MILITARY TRL	Roebuck Rd	45th ct		Counts4Web	00	50,300	33,587	0.67	Yes
MILITARY TRL	SR-710	Blue Heron Blvd		Counts4Web	99	50,300	31,994	0.64	Yes
	Blue Heron Blvd	Investment Lane		Counts4Web	99	50,300	28,801	0.57	Yes
MILITARY TRL	Investment Lane	Northlake Blvd		Counts4Web	99	50,300	32.036	0.64	Yes
	Northlake Blvd	Holly Dr		Counts4Web	60	50.300	40,246	0.80	Yes
	Holly Dr	PGA BIVd		Counts4Web	99	50.300	40.379	0.80	Yes
	PGA Blvd	1-95		Counts4Web	90	50,300	36,533	0.73	Yes
	1-95	Hood Rd		Counts4Web	60	50,300	27,257	0.54	Yes
MILITARY TRL	Hood Rd	Donald Ross Rd		Counts4Web	60	50,300	24,568	0.49	Yes
MILITARY TRL	Donald Ross Rd	Frederick Small Rd		Counts4Web	99	50,300	34,822	0.69	Yes
MILITARY TRL	Frederick Small Rd	Indian Creek Blvd		Counts4Web	6D	50,300	29,706	0.59	Yes
	Indian Creek Blvd	Indiantown Rd		Counts4Web	6D	50,300	24,049	0.48	Yes
OLD DIXIE HWY	PGA Blvd	SR-811/Beach Rd	7.73	FTI	6D	50,300	41,000	0.82	Yes
	SR-811/Beach Rd	Tequesta Dr	0.48	Counts4Web	4	33,200	13,519	0.41	Yes
OLD DIXIE HWY	Tequesta Dr	County Line Rd	0.89	Counts4Web	2	15,200	6,781	0.45	Yes
CONGRESS AVE	Atlantic Ave	Lake Ida Rd		Counts4Web	6D	50,300	34,768	0.69	Yes
	Lake Ida Rd	35th Ave SW		Counts4Web	6D	50,300	30,608	0.61	Yes
CONGRESS AVE	35th Ave SW	Golf Rd		Counts4Web	6D	50,300	36,139	0.72	Yes
	Golf Rd	Woolbright Rd		Counts4Web	6D	50,300	37,827	0.75	Yes
	Woolbright Rd	Boynton Beach Blvd		Counts4Web	6D	50,300	33,549	0.67	Yes
CONGRESS AVE	Boynton Beach Blvd	Old Boynton Rd		Counts4Web	6D	50,300	38,263	0.76	Yes
CONGRESS AVE	Old Boynton Rd	Gateway Blvd		Counts4Web	6D	50,300	36,914	0.73	Yes
CONGRESS AVE	Gateway Blvd	Hypoluxo Rd		Counts4Web	6D	50,300	28,960	0.58	Yes
CONGRESS AVE	Hypoluxo Rd	Lantana Rd		Counts4Web	4D	33,200	23,246	0.70	Yes
	Lantana Rd	JFK Dr		Counts4Web	6D	50,300	35,206	0.70	Yes
CONGRESS AVE	JFK Dr	6th Ave S		Counts4Web	60	50,300	35,163	0.70	Yes
CONGRESS AVE	6th Ave S	Lake Worth Rd		Counts4Web	60	50,300	35,712	0.71	Yes
CONGRESS AVE	Lake Worth Rd	French Ave		Counts4Web	60	50,300	35,400	0.70	Yes
	French Ave	10th Ave N		Counts4Web	99	50,300	38,733	0.77	Yes
	10th Ave N	Forest Hill Blvd		Counts4Web	6D	50,300	34,955	0.69	Yes
	Forest Hill Blvd	Summit Blvd		Counts4Web	60	50,300	26,658	0.53	Yes
	Summit Blvd	Gun Club Rd		Counts4Web	6D	50,300	33,418	0.66	Yes
CONGRESS AVE	Gun Club Rd	Southern Blvd		Counts4Web	60	50,200	33.642	0.67	Vac
						2000	410.00	22	ß

TRUCK ROUTES IN PALM BEACH OTHER THAN SIS
PBIA (Turnage Blvd)
Palm Beach Lakes Blvd
PBC / Broward County Line

2016 Truck Route Analysis

Congested Total Miles 325 Other Truck Routes: Total Truck Routes: Summary:

528.2

Percentag

Miles 12.68 4

## Palm Beach Metropolitan Planning Organization CONGESTION MANAGEMENT PROCESS

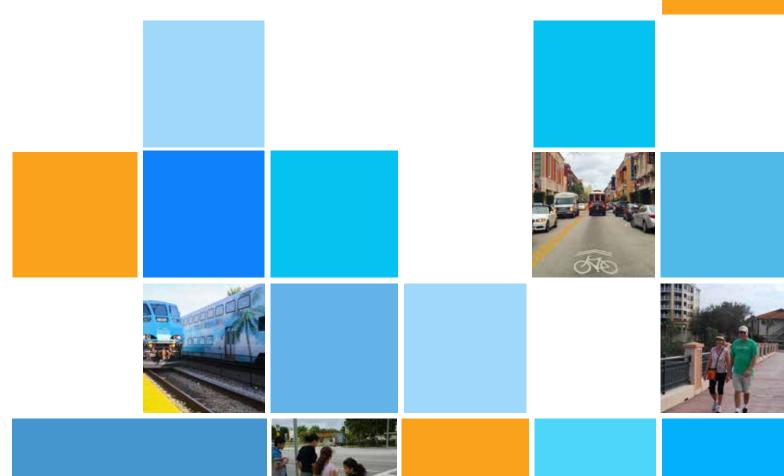












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