FLORIDA'S TURNPIKE ENTERPRISE

Traffic Trends Report

July 2015

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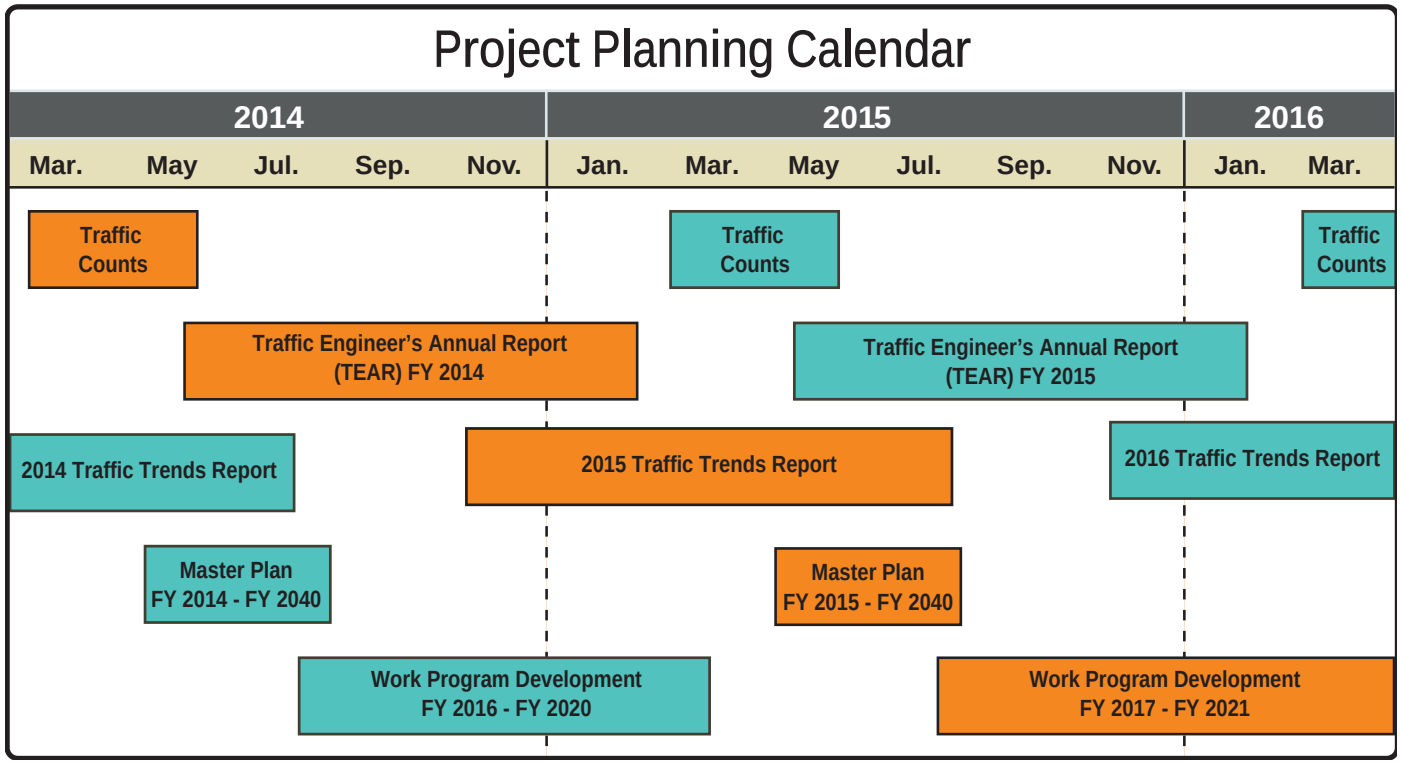
INTRODUCTION

The ***Turnpike Annual Traffic Trends Report*** is the initial component of the Florida's Turnpike Enterprise's long-range planning process that evaluates current and future capacity deficiencies on the Turnpike system. The report serves as a screening tool to identify improvement projects that are needed in addition to those that are already programmed in the Tentative Turnpike Work Program (FY 2016-2020). This effort supports the Turnpike Master Plan and the Work Program decision process.

Capacity and improvement needs identified in the ***Turnpike Annual Traffic Trends Report*** may be advanced to capital improvement projects during the annual Turnpike Master Plan process. Improvement projects in the Turnpike Master Plan are reviewed based on appropriate criteria for potential inclusion in the Work Program of the following year. The Turnpike's fiscal year begins July 1st and extends through June 30th. The chronology of the process is illustrated in the Project Planning Calendar below.

It should also be noted that the findings in this report are based on traffic counts collected prior to and including FY 2014. Additional details pertaining to the forecasts, analysis assumptions, and results are provided in a Technical Appendix published under a separate cover.



EVALUATION OF MOBILITY

The Mobility Report Card provides an annual assessment of the existing travel conditions on the Turnpike systems, while also providing a future mobility outlook. The future outlook highlights deteriorating travel conditions or improved mobility as capacity improvements are completed. At the core of the existing conditions evaluation are three mobility measures:

- Percent Travel Meeting LOS Criteria
- Percent Miles Severely Congested
- Travel Time Reliability

An overall Mobility Score for the existing conditions has been developed, providing a composite grade indicative of all three mobility measures. Each mobility measure and corresponding Mobility Score is calculated individually for each Turnpike system. Furthermore, to provide a broader overview of each Turnpike systems' performance, the most recent transaction growth rate and daily VMT is provided. The derivation of each mobility measure and a summary of the mobility measures by system are summarized in **Table 1** and **Table 2**, respectively.

The Mobility Score is based on a range of 0 to 100. A higher score indicates a good level of mobility, and accordingly a lower score demonstrates reduced mobility. A traffic light symbol has been included to provide a quick reference on the range of Mobility Scores: green represents a score of 100, yellow represents a score of 99 to 75, and red represents a score of 74 or lower.

The transaction growth rate data and daily vehicle miles of travel (VMT) are both obtained from the Turnpike count program and the ***Traffic Engineers Annual Report (TEAR)***. The level of service measures are based on the ***FDOT Quality / Level of Service Handbook.***

The travel time data utilized to calculate the travel time reliability was obtained from the Federal Highway Administration (FHWA). FHWA has contracted with HERE North America, LLC (formerly known as Nokia/ NAVTEQ) to obtain travel time data to be included in the National Performance Management Research Data Set (NPMRDS). While the HERE travel time data is still being validated, it is currently the most comprehensive data source for travel time data by segment on the Turnpike systems.

As shown on **Table 2**, most systems are currently displaying mobility scores of 75 or higher. All three systems with a low mobility score (under 75), Turnpike Mainline (S.R. 821), Beachline West Expressway, and Veterans Expressway have widening projects under construction or programmed within the next 5 years.

Table 1
Mobility Measures

Mobility Measure	Description	Derivation	Percent Weighting of Mobility Score
Percent Travel Meeting LOS Criteria	The percentage of vehicle miles of travel operating at the desired level of service.	VMT at Acceptable LOS / Total VMT	40%
Percent Miles Severely Congested	The percentage of distance operating at a failing level of service.	Miles at LOS "F" / Total Miles	20%
Travel Time Reliability	The percentage of vehicle miles of travel maintaining at least 50 MPH.	VMT at or above 50 MPH / Total VMT	40%

Table 2
Mobility Report Card

System	FY 2013 Mobility Measures and Score							FY 2013		Future Outlook			Comments
	Transaction Growth Rate (FY 14 - FY 15)	Daily VMT / System Length	% Travel Meeting LOS Criteria	% Miles Severely Congested	Travel Time Reliability	Mobility Score (0 - 100)		Mobility Score (0 - 100)		Programmed Widening	Earliest Year of Unfunded Need	Future Trend	
Turnpike Mainline (S.R. 821) - Homestead Extension	5.1%	92,800	63%	15%	24%	35		50		✓	2025	↑	A combination of an increase in VMT, increase in % Miles Severely Congested, and continued construction activities have resulted in a decrease in overall Mobility Score from last year. Once the improvements are completed the Mobility Score is anticipated to increase.
Turnpike Mainline (S.R. 91) - Southern Coin	7.4%	94,900	85%	0%	70%	76		79			2015	↓	A moderate mobility score of 76 reflects several congested segments on this facility. However, with no funded widening projects and a widening need in 2015, the mobility score is anticipated to worsen over time.
Turnpike Mainline (S.R. 91) - Ticket	7.1%	36,200	93%	0%	93%	92		96			2015	↓	A relatively high mobility score of 92 with generally good travel conditions except on the southernmost segments. However, with no funded widening projects and a widening need in 2020, the mobility score is anticipated to decrease over time.
Turnpike Mainline (S.R. 91) - Northern Coin	7.8%	51,600	100%	0%	96%	98		93		✓	2025	↑	A high mobility score of 98 with generally good travel conditions, but segments are beginning to show some congestion in peak periods in the Orlando urban area. With upcoming improvements, the mobility score is anticipated to stabilize.
Beachline West Expressway	7.6%	75,800	60%	38%	48%	36		41		✓	2025	↑	Overall poor measures in travel time reliability and LOS, including 38% of the system operating at LOS "F", contribute to the very low mobility score. The upcoming widening project between I-4 and Florida's Turnpike will improve the score when complete.
Beachline East Expressway	3.6%	31,900	100%	0%	100%	100					2030	Stable	This facility has a perfect mobility score and a stable outlook.
Sawgrass Expressway	5.6%	68,600	100%	0%	90%	95		95		✓	2015	↓	A high mobility score of 95 indicates good travel conditions except on the northern and southern ends of the facility. An improvement has been committed, but with an immediate 2015 need, the Mobility Score is anticipated to decrease until the improvement is complete.
Seminole Expressway	8.0%	39,900	96%	0%	96%	96		98		✓	2025	↑	A relatively high mobility score of 96 indicates generally good travel conditions except the segment south of Aloma Avenue where congestion has been occurring. With a funded improvement on this section, the Mobility Score should stabilize after completion.
Veterans Expressway	4.4%	49,700	51%	26%	17%	24		24		✓	2035	↑	Overall poor measures in travel time reliability and LOS, including 26% of the system operating at LOS "F", contribute to the very low mobility score. The on-going widening project will improve the mobility score when complete.
Southern Connector Extension	13.3%	18,900	100%	0%	100%	100		100			n/a	Stable	This facility has a perfect mobility score and a stable outlook.
Polk Parkway	8.8%	17,500	100%	0%	100%	100		100			n/a	Stable	This facility has a perfect mobility score and a stable outlook.
Suncoast Parkway	8.1%	17,200	100%	0%	100%	100		100			2035	Stable	This facility has a perfect mobility score and a stable outlook.
Western Beltway Part C	17.9%	13,900	100%	0%	100%	100		100			n/a	Stable	This facility has a perfect mobility score and a stable outlook.
All Systems	***6.7%***	***48,700***	***87%***	***3%***	***75%***	***78***		***81***		✓	2015	Stable	Considerable growth in traffic combined with current construction activities on three of the lowest scored systems has resulted in an overall decrease in Mobility Score. With improvements on the most needed sections, the overall Turnpike outlook is stable.

Ranges of Mobility Scores:	**100**	**75-99**	**0-74**

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The Future Outlook was developed to provide an indication of probable future trends of the mobility measures. Systems with programmed improvements are anticipated to exhibit an increase in mobility, whereas a decrease in mobility is expected for systems with near-term unfunded needs. These future trends are summarized by a corresponding up or down arrow for each system on **Table 2**.

To assist with the evaluation of the Mobility Score and Future Outlook results, a brief description of each facility has been provided in the Comments section of **Table 2**. These descriptions explain the real-world conditions that contribute towards the corresponding Mobility Score, and also provide reasons for the Future Outlook forecasts.

The current mobility score for all Turnpike systems combined is 78. It is anticipated this value will remain stable over the next few years with the slow decline in some systems' mobility measures balanced with the continued implementation of improvements on the three lowest graded systems.

FORECASTING METHODOLOGY

The capacity deficiencies identified in the ***Turnpike Annual Traffic Trends Report*** are based on quantitative and qualitative analysis methods. In the quantitative analysis, potential future system deficiencies are identified by comparing projections of future traffic demand against the capacity of the system components available to meet that demand. The qualitative analysis focuses on areas of known recurring congestion or other travel issues that could benefit from improvement. Methods used to identify those areas include field observations, aerial photography, and measured travel speeds.

The quantitative component begins with an evaluation of 15 years of Annual Average Daily Traffic (AADT) volumes (FY 2000 through FY 2014) published in the respective annual editions of the ***Traffic Engineer's Annual Report (TEAR)***. Historical annual growth rates are calculated for individual freeway segments, which are then geographically grouped based on similar volumes and growth trends. The annual compound growth rates and weighted average 2014 AADT volumes calculated for each group are presented on **Figures 1** through **4**.

Figure 1
South Florida Traffic Growth Trends (2000-2014)

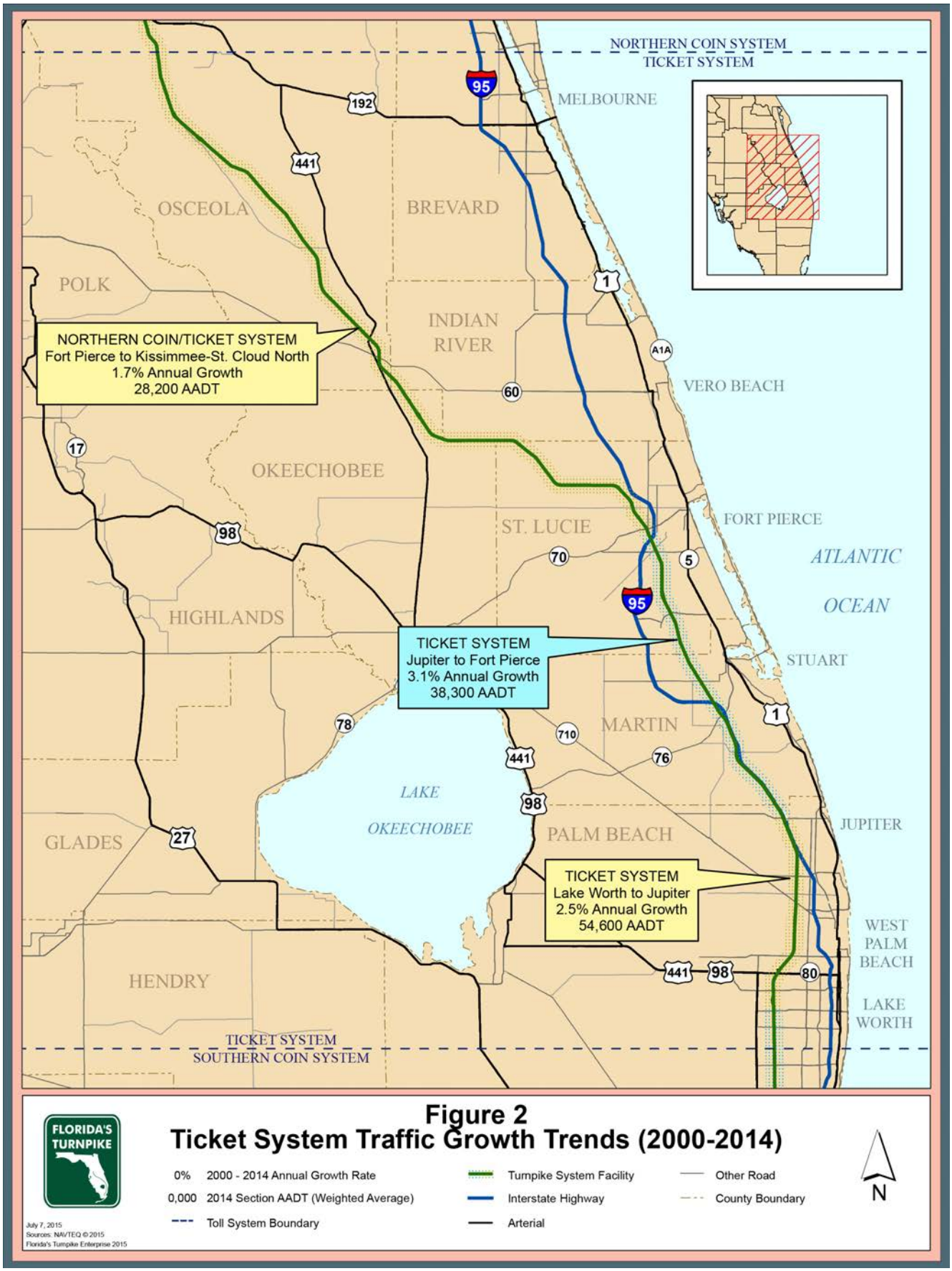


Figure 2
Ticket System Traffic Growth Trends (2000-2014)

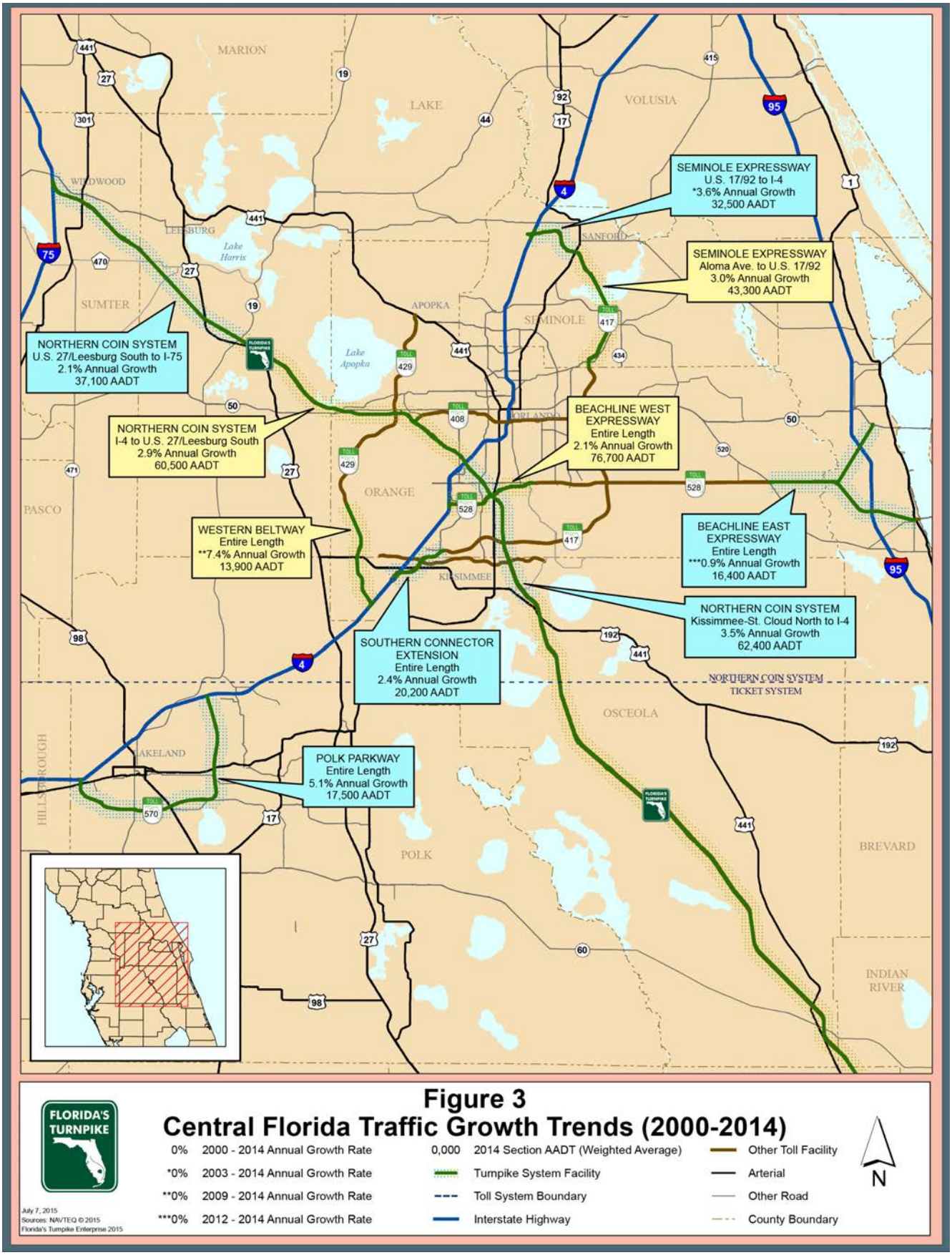
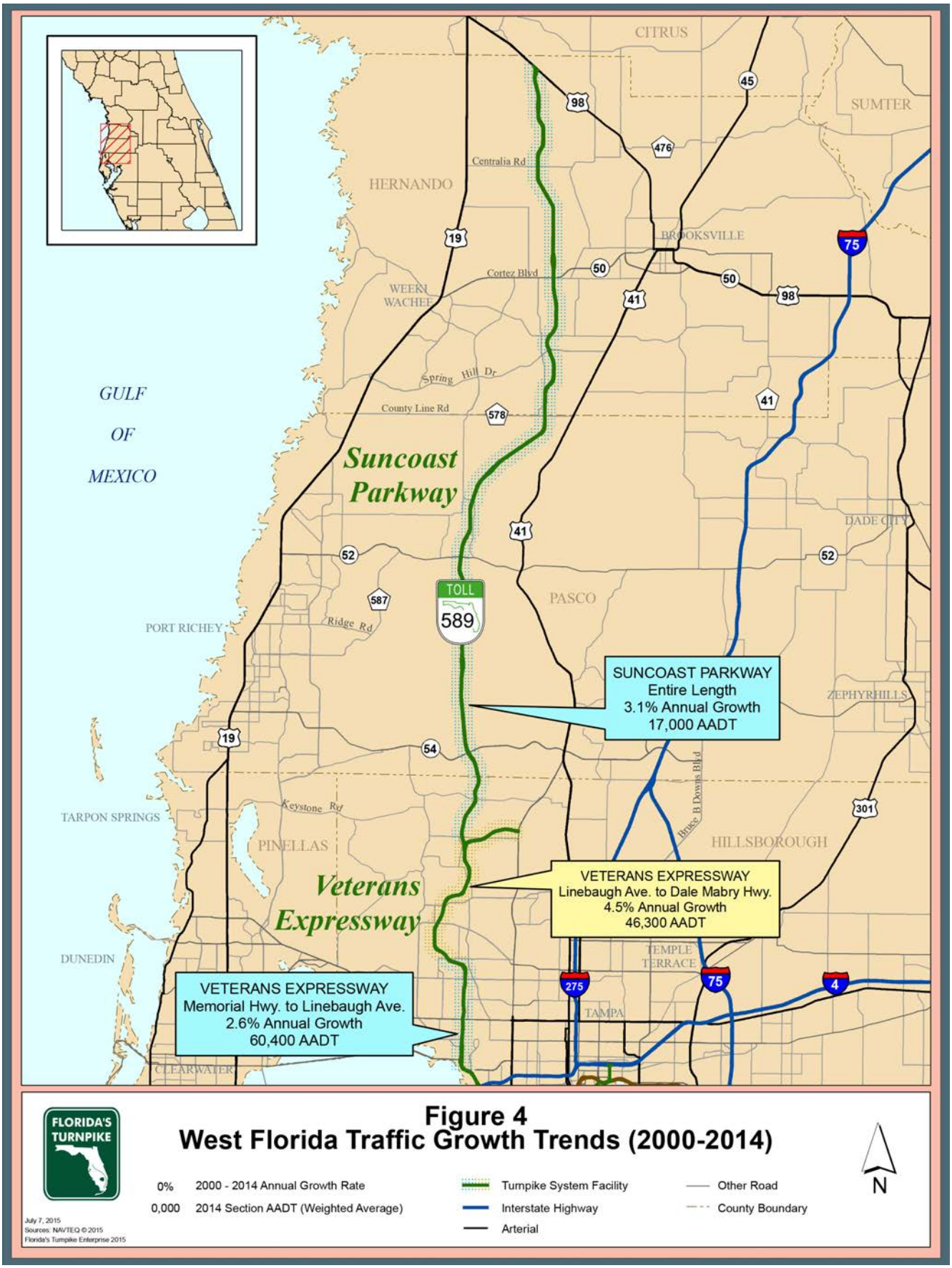


Figure 3
Central Florida Traffic Growth Trends (2000-2014)


CITRUS
SUMTER
HERNANDO
BROOKSVILLE
WEEKI WACHEE
GULF OF MEXICO
Suncoast Parkway
PASCO
DADE CITY
PORT RICHEY
ZEPHYRHILLS
TARPON SPRINGS
PINELLAS
HILLSBOROUGH
Veterans Expressway
DUNEDIN
TEMPLE TERRACE
TAMPA
CLEARWATER
TOLL 589
SUNCOAST PARKWAY
Entire Length
3.1% Annual Growth
17,000 AADT
VETERANS EXPRESSWAY
Linebaugh Ave. to Dale Mabry Hwy.
4.5% Annual Growth
46,300 AADT
VETERANS EXPRESSWAY
Memorial Hwy. to Linebaugh Ave.
2.6% Annual Growth
60,400 AADT
Centralia Rd
Cortez Blvd
Spring Hill Dr
County Line Rd
Ridge Rd
Keystone Rd
Bruce B Downs Blvd
FLORIDA'S TURNPIKE
Figure 4
West Florida Traffic Growth Trends (2000-2014)
0% 2000 - 2014 Annual Growth Rate
0,000 2014 Section AADT (Weighted Average)
Turnpike System Facility
Interstate Highway
Arterial
Other Road
County Boundary
N
July 7, 2015
Sources: NAVTEQ © 2015
Florida's Turnpike Enterprise 2015

Figures 5 and 6 depict the traffic volume trends on the Turnpike Mainline and Expansion projects respectively since the late 1990's. Traffic volumes on most of the Turnpike system had a negative trend during the economic downturn from FY 2007-2009, referred to as the Great Recession. This was a significant reversal of the trends experienced during the earlier years of the past decade, when annual traffic volume increases throughout the system ranged from 4.1 percent to 12.1 percent. As the charts show, FY 2006 and FY 2007 marked the high point for traffic volumes on most of the Turnpike systems roads. The FY 2009 traffic volumes dropped to the previous FY 2004 or FY 2005 levels on most sections of the Turnpike Mainline. Traffic volumes also dropped on the Turnpike expansion projects, but not quite so severely as on the Turnpike Mainline. With the exception of the Veterans Expressway on which traffic volumes are decreasing

Figure 5
Historical Traffic Volume Trends - Mainline Systems

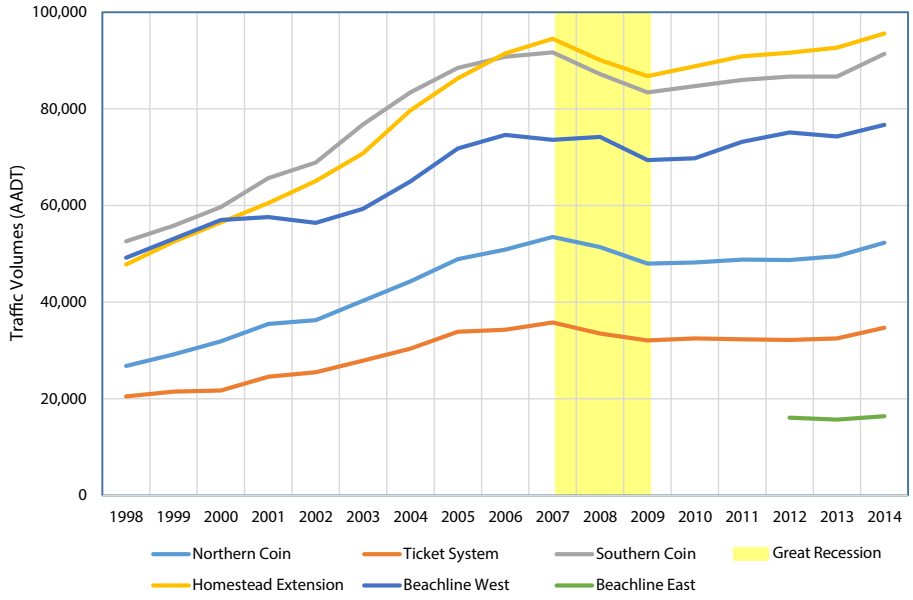
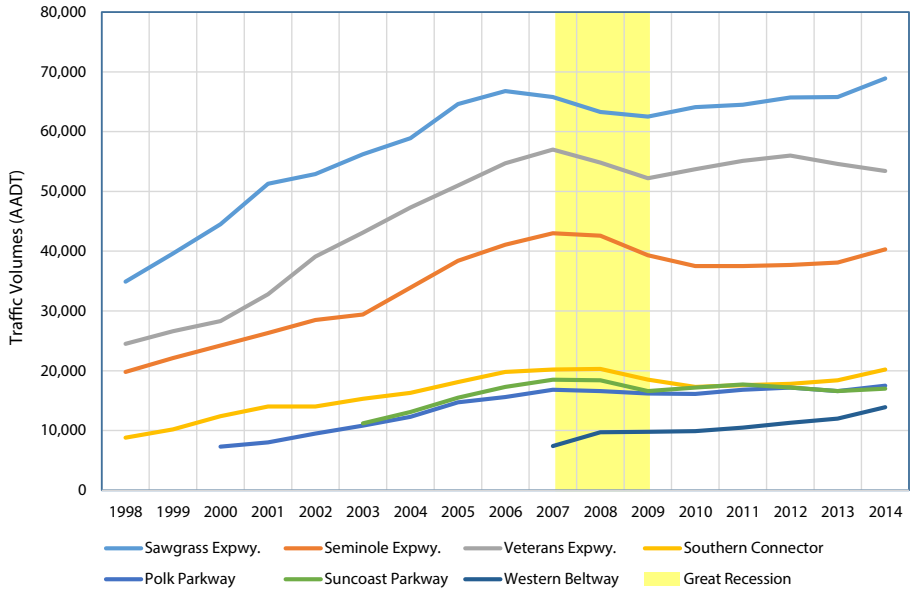


Figure 6
Historical Traffic Volume Trends - Expansion Systems



due to construction activities, most Turnpike systems have displayed a considerable increase in AADT over the last couple years. While still slower than the increase pre-recession, recent traffic growth may see new high traffic marks achieved on the Turnpike System.

The ***Turnpike Annual Traffic Trends Report*** employs a series of growth rate assumptions to predict future travel demand. Projections of traffic are unconstrained by capacity limitations and are developed for the entire system. The following provides a summary of the growth rates utilized for respective timeframes:

Table 3
Growth Rate Data Sources

Timeframe	Growth Rate Data Source
2014 – 2015	TEAR Traffic Volumes and Forecasts from YTD FY 2015 Traffic Data
2016 – 2040	Blend of Historical and TSM Growth Rates

As stated previously, historical traffic counts are summarized from 2000 and 2014. Furthermore, future growth rates are derived from the Turnpike State Model (TSM). An overall blended growth rate is developed from both the historical and TSM growth rates, which is utilized to calculate future year traffic volumes from 2016 to 2040.

The resulting overall weighted average annual growth rate for each system between 2015 and 2040 is less than 1.7 percent for the Southern Coin system, and greater than 3.0 percent for Seminole Expressway and Western Beltway. The remaining systems all have a projected growth rate between 1.7 percent and 3.0 percent per year.

The Traffic Trends forecasts are used as the basis for the quantitative analysis of basic freeway segments and ramp roadways. The analysis entails a comparison of daily traffic demand with available capacity to determine mainline and ramp widening needs. The results indicate when and where these components are anticipated to be over capacity.

A component of the quantitative analysis is a planning level assessment of future ramp street terminal intersection performance for urban portions of the system. This assessment includes the documentation of intersection geometry and development of Year 2020 intersection traffic forecasts. Intersection volume forecasts were developed from available intersection turning movement count data, the 2020 ramp forecasts, and growth assumptions for the cross-streets. The analysis used the intersection capacity utilization (ICU) calculations from Synchro analysis software to assess performance.

The qualitative analysis is used to determine locations of existing congestion and to ascertain the potential for improvement. Expenditure of funds to complete peak season peak hour system-wide aerial surveillance was not possible within the last few years. As a result, an alternative cost-saving method for this year's qualitative assessment was developed and incorporated. This method utilizes the system travel speeds and congestion reports provided by the Turnpike Traffic Management Center (TMC).

A method to identify congestion levels during the peak season using the qualitative data was developed and the results were summarized. The congestion identified from the qualitative data highlighted areas for further evaluation using available camera surveillance, field observations, and historical aerial photography.

Also included in the analysis are safety enhancement priorities determined by Florida's Turnpike Enterprise Traffic Operations group. System-wide analyses of historical annual crash data (calendar year 2010 - 2013) are a component of the ranking of the top 30 priority mainline and interchange locations. The ranking considers the crash frequency rate and severity. The Traffic Trends recommendations for unfunded widening and interchange project needs included consideration for these priority safety locations.

ANALYSIS OF SYSTEM COMPONENTS

Basic Freeway Segments

Basic freeway segments are portions of limited-access highways that are outside the operational influence of ramps, weaving areas, or toll plazas. These segments are the primary components of the freeway analysis that determine widening needs. Widening needs are identified by comparing the forecasted future demand against the existing or programmed freeway segment capacity. The results of the widening needs assessment are shown on **Figures 7** through **11** for the Turnpike Mainline and on **Figures 12** through **19** for the Turnpike Expansion facilities.

The figures are color-coded bar charts that show the existing or programmed lanes and the number of lanes needed from 2015 through 2040, in five-year increments. The horizontal axis on the charts represents the number of lanes needed for the corresponding segment identified on the vertical axis. The programmed lanes are based on the tentative FY 2016–2020 Turnpike Work Program.

Figure 7
Turnpike Mainline (S.R. 821) Potential Lane Demand

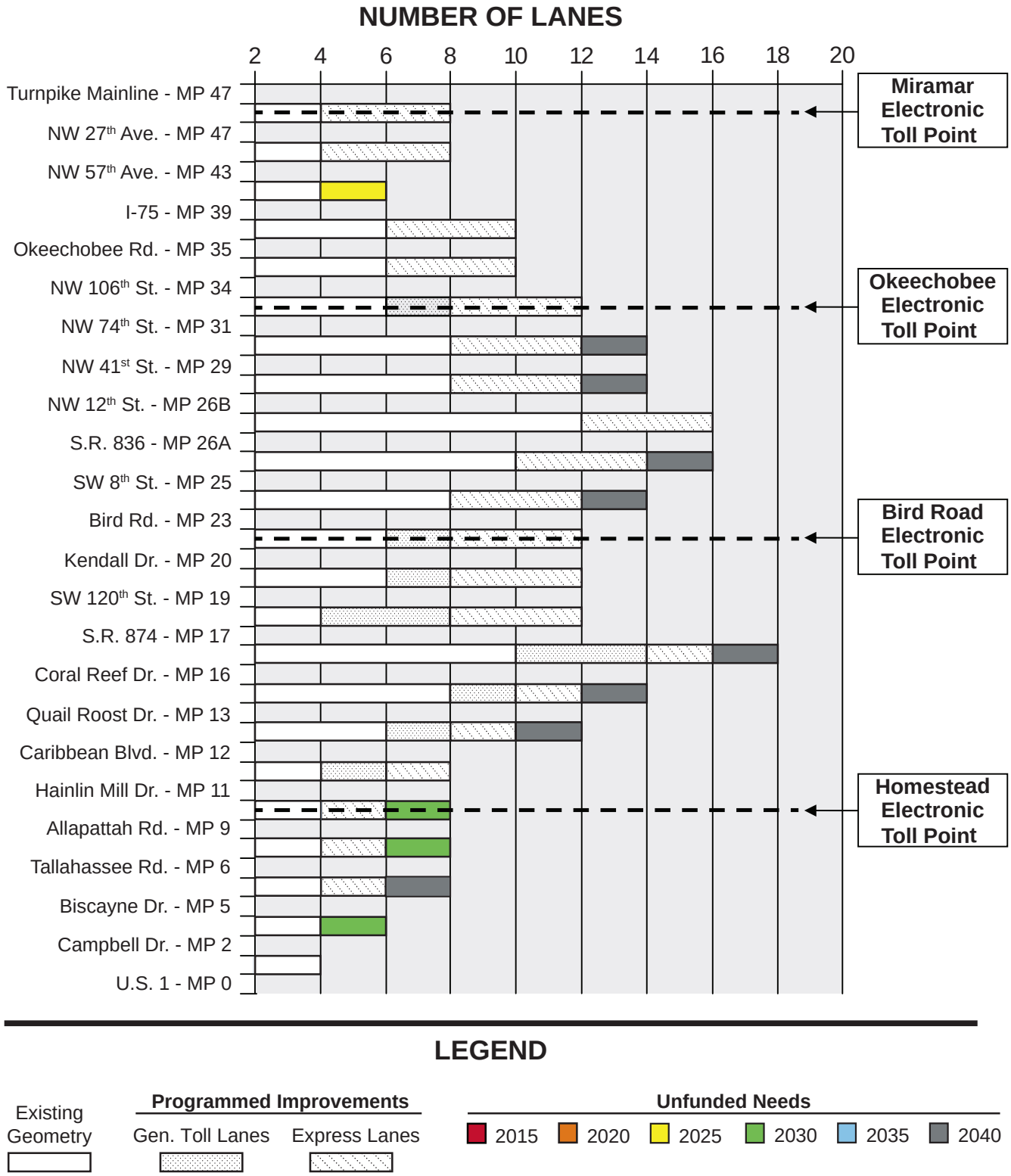


Figure 8 Turnpike Mainline (S.R. 91) Southern Coin System Potential Lane Demand

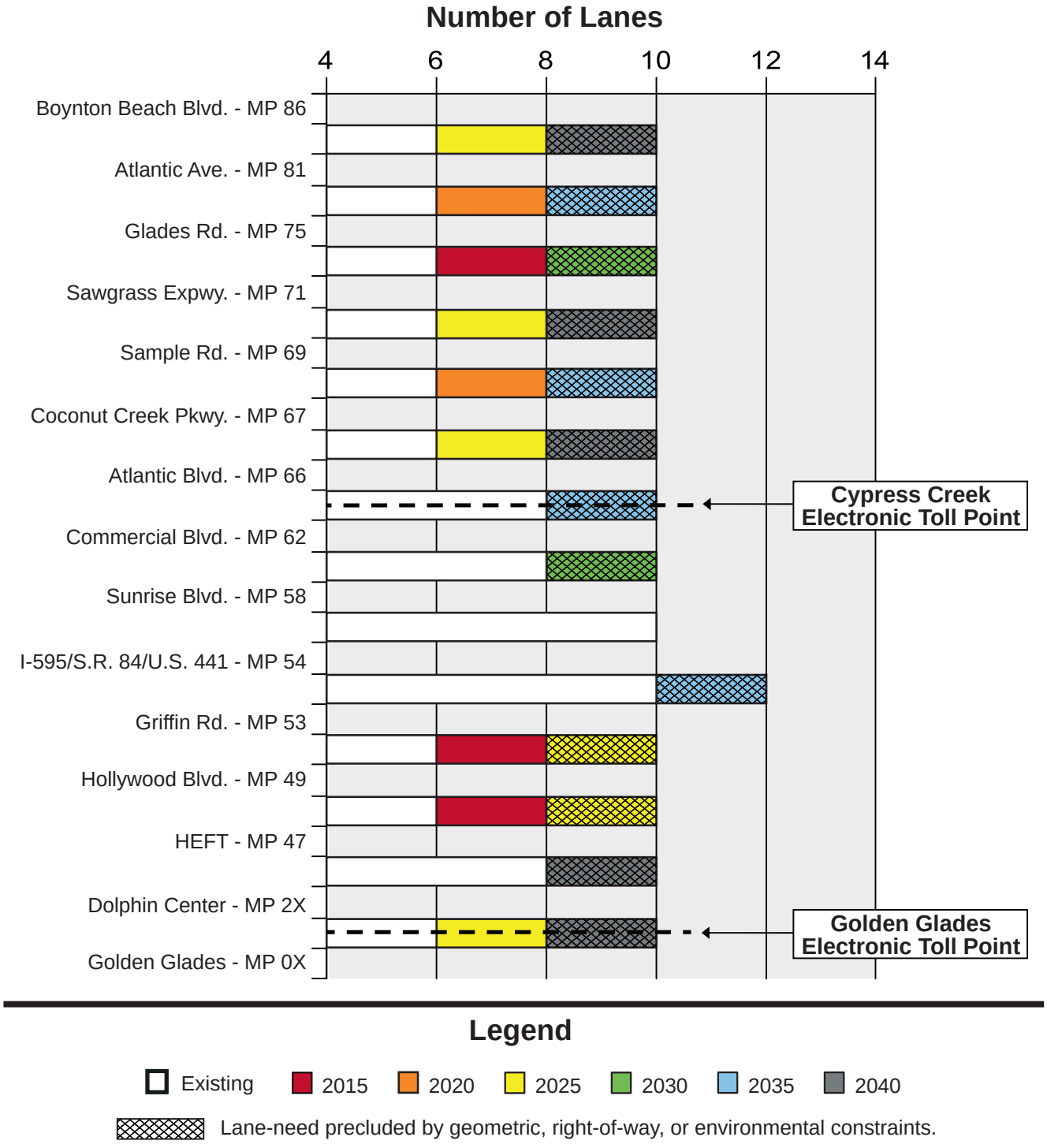


Figure 9 Turnpike Mainline (S.R. 91) Ticket System Potential Lane Demand

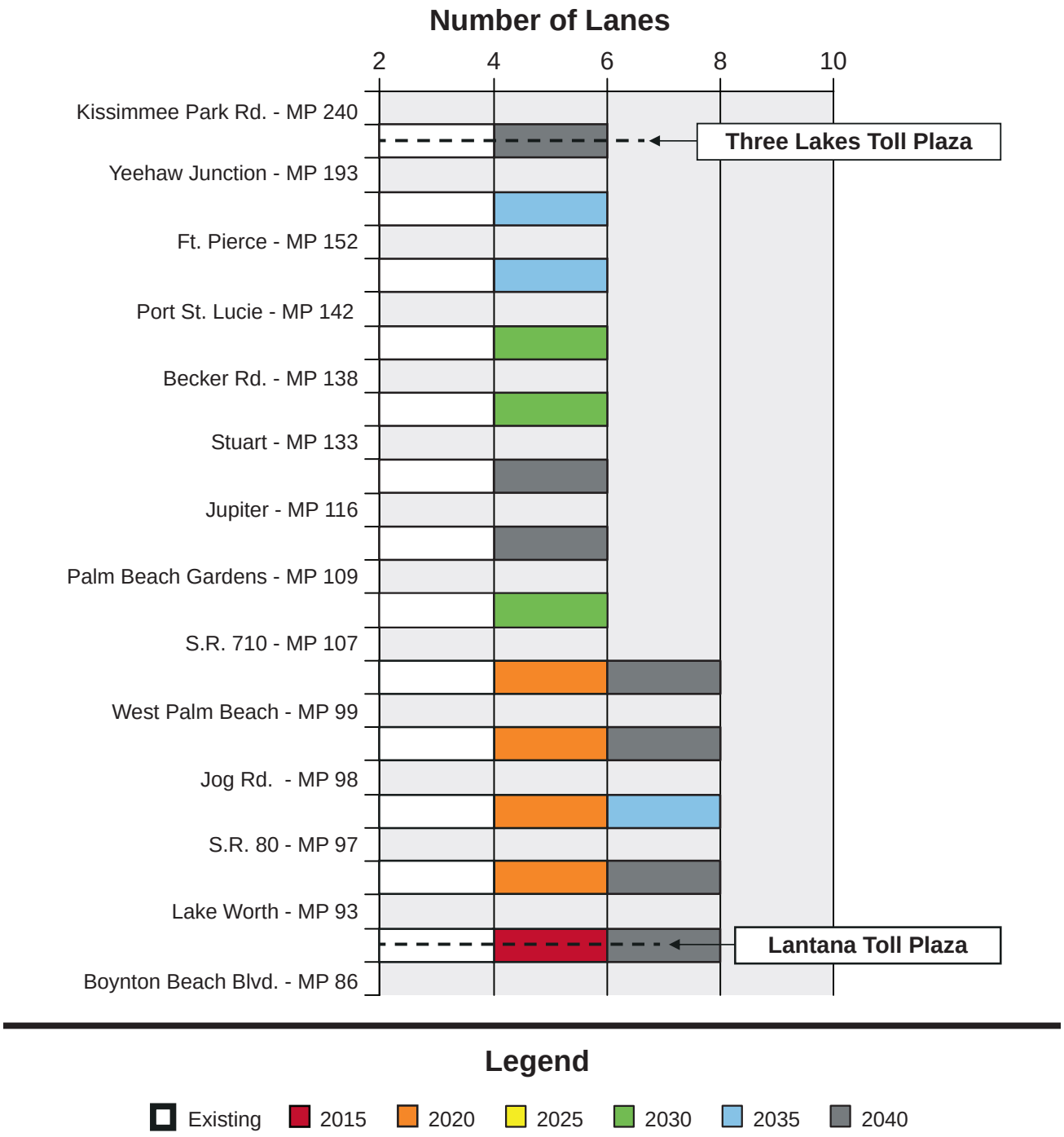


Figure 10 Turnpike Mainline (S.R. 91) Northern Coin System Potential Lane Demand

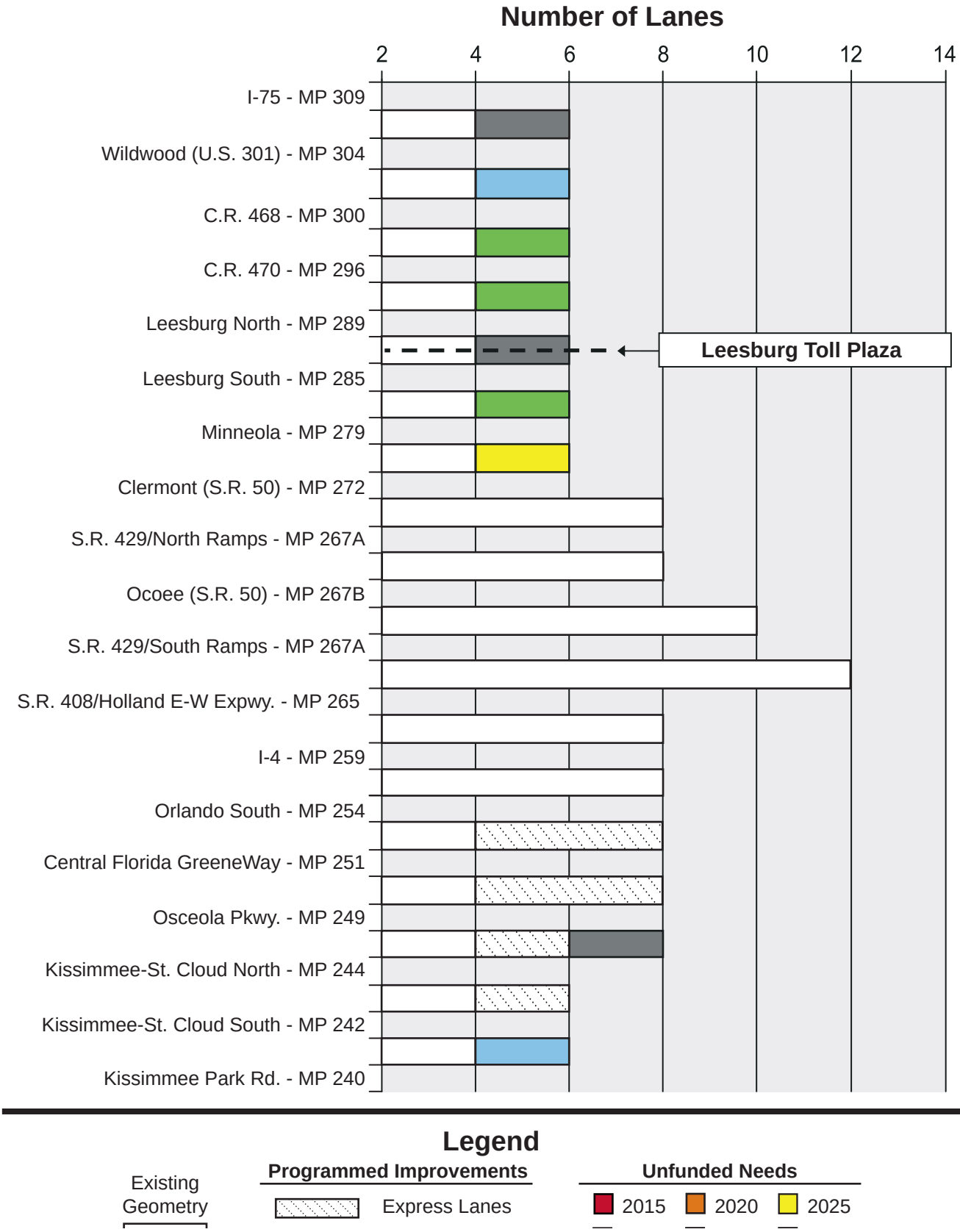


Figure 11
Beachline Expressway Potential Lane Demand

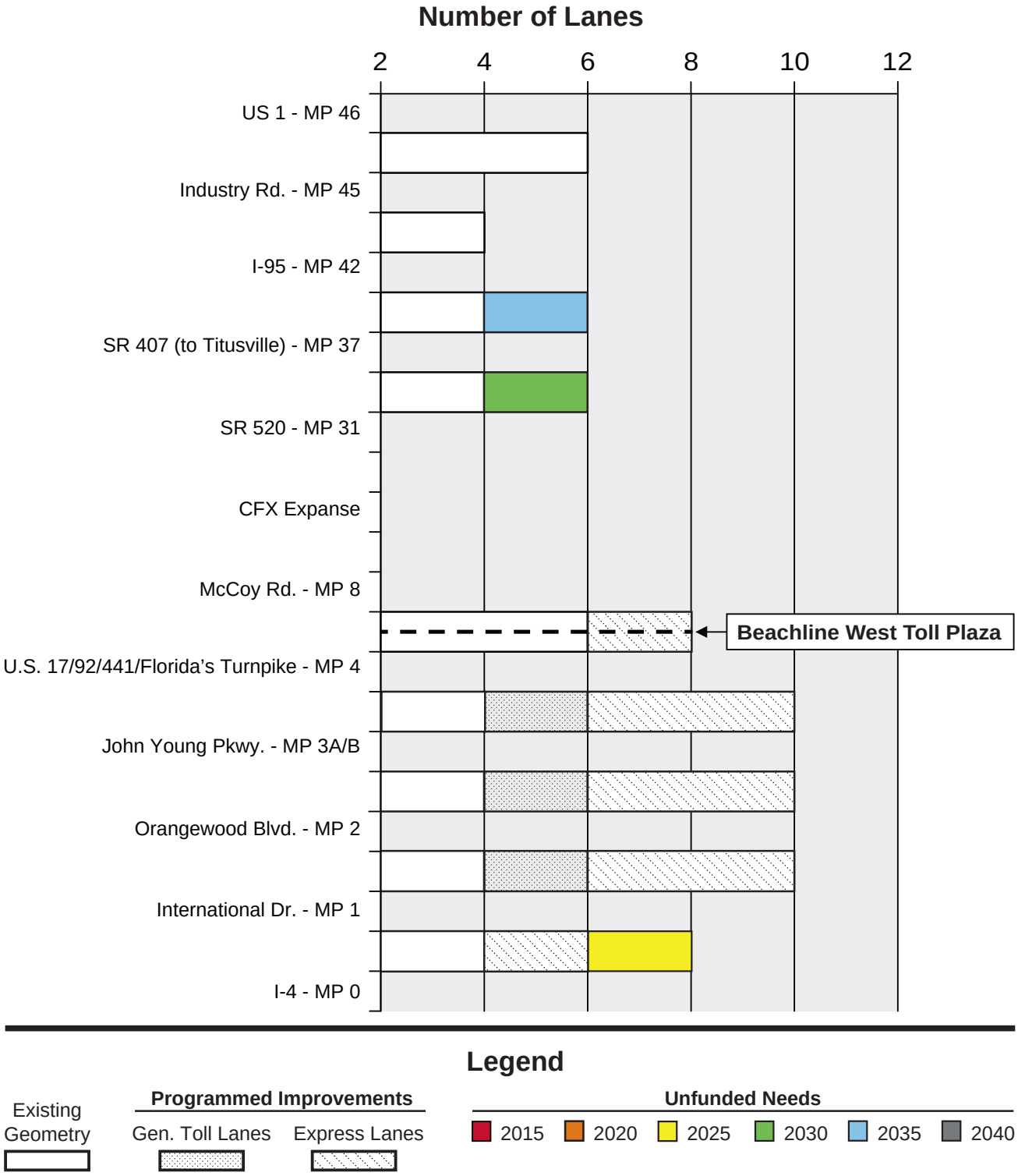


Figure 12
Sawgrass Expressway Potential Lane Demand

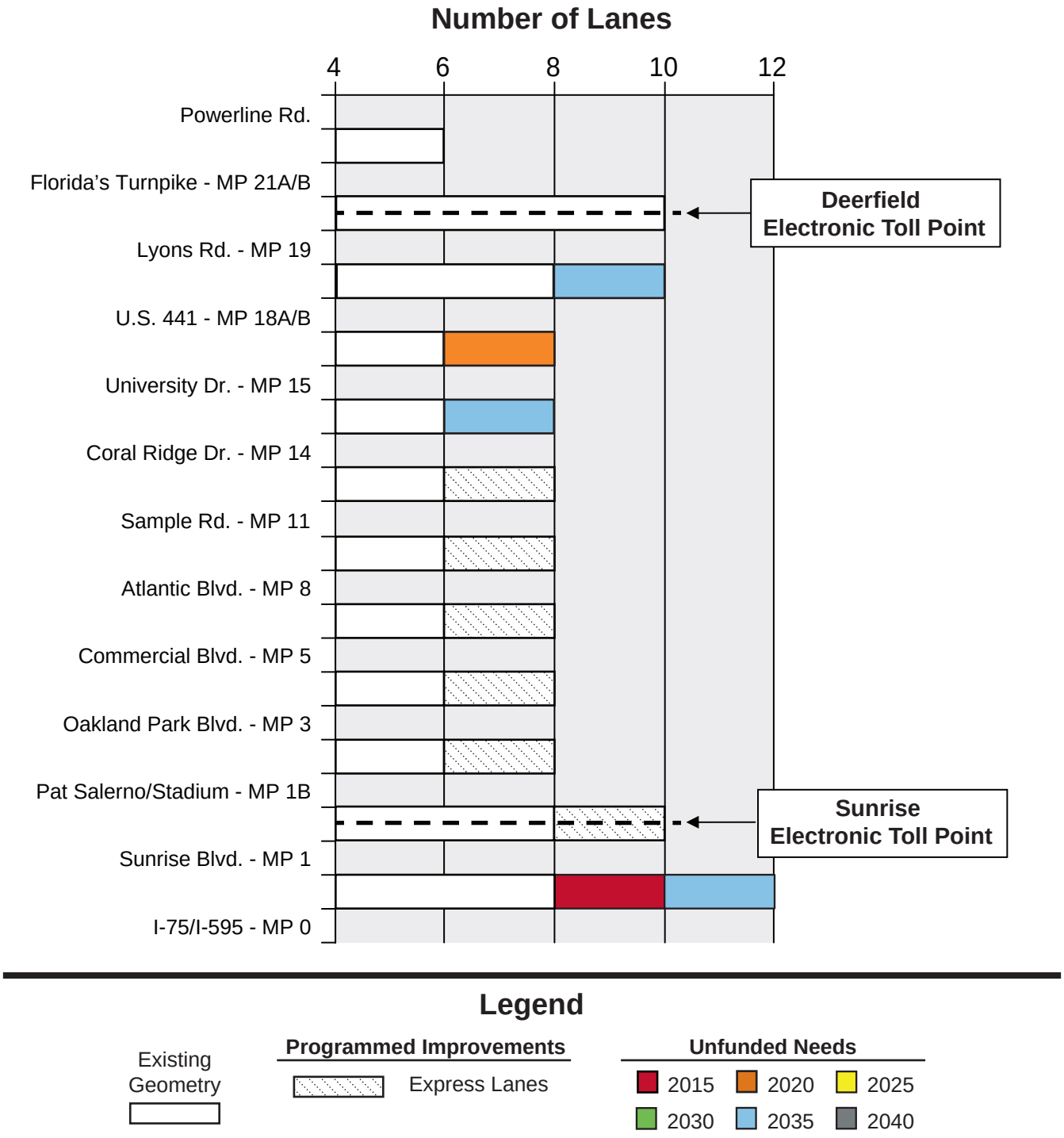


Figure 13
Veterans Expressway Potential Lane Demand

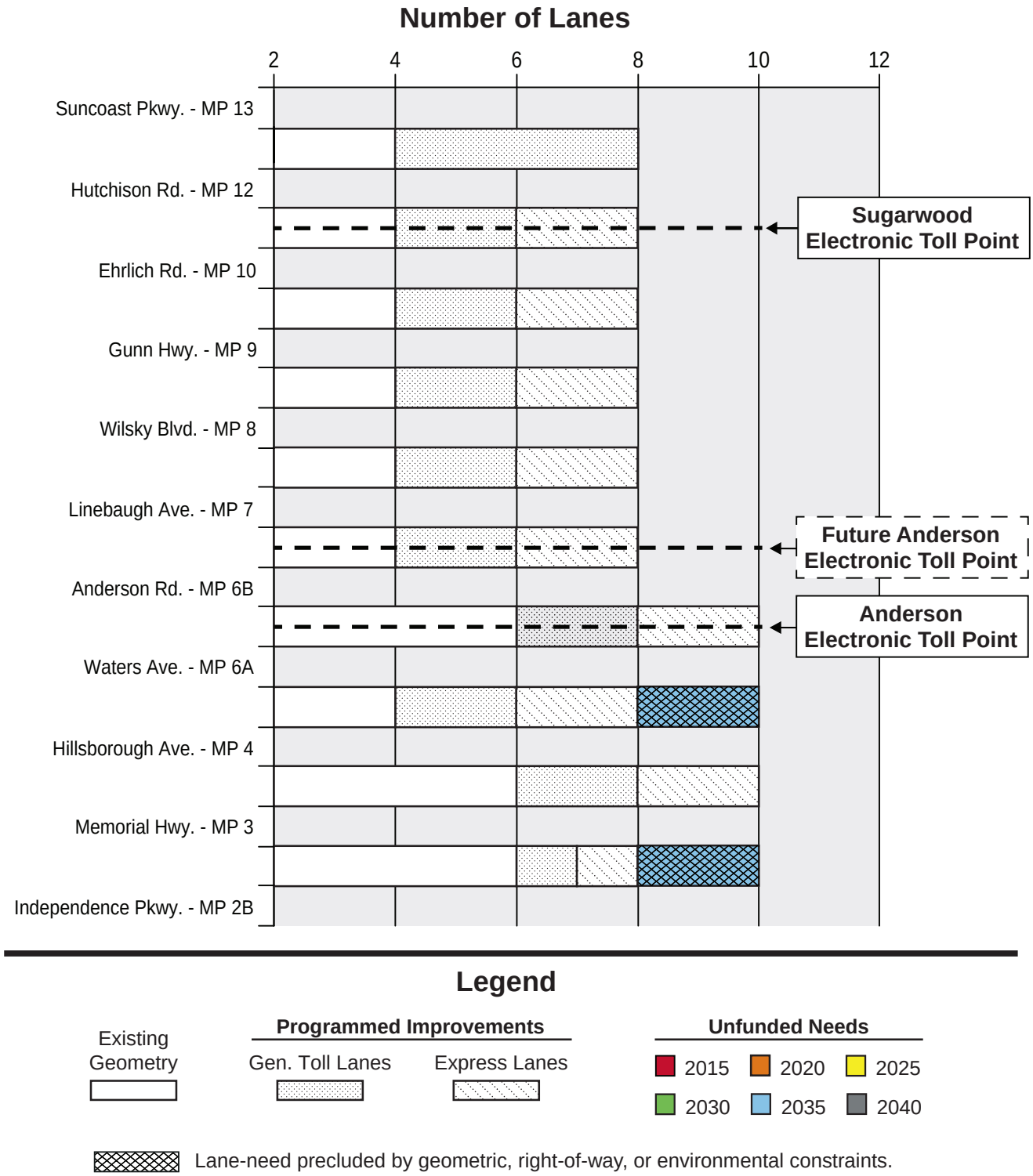


Figure 14
Seminole Expressway Potential Lane Demand

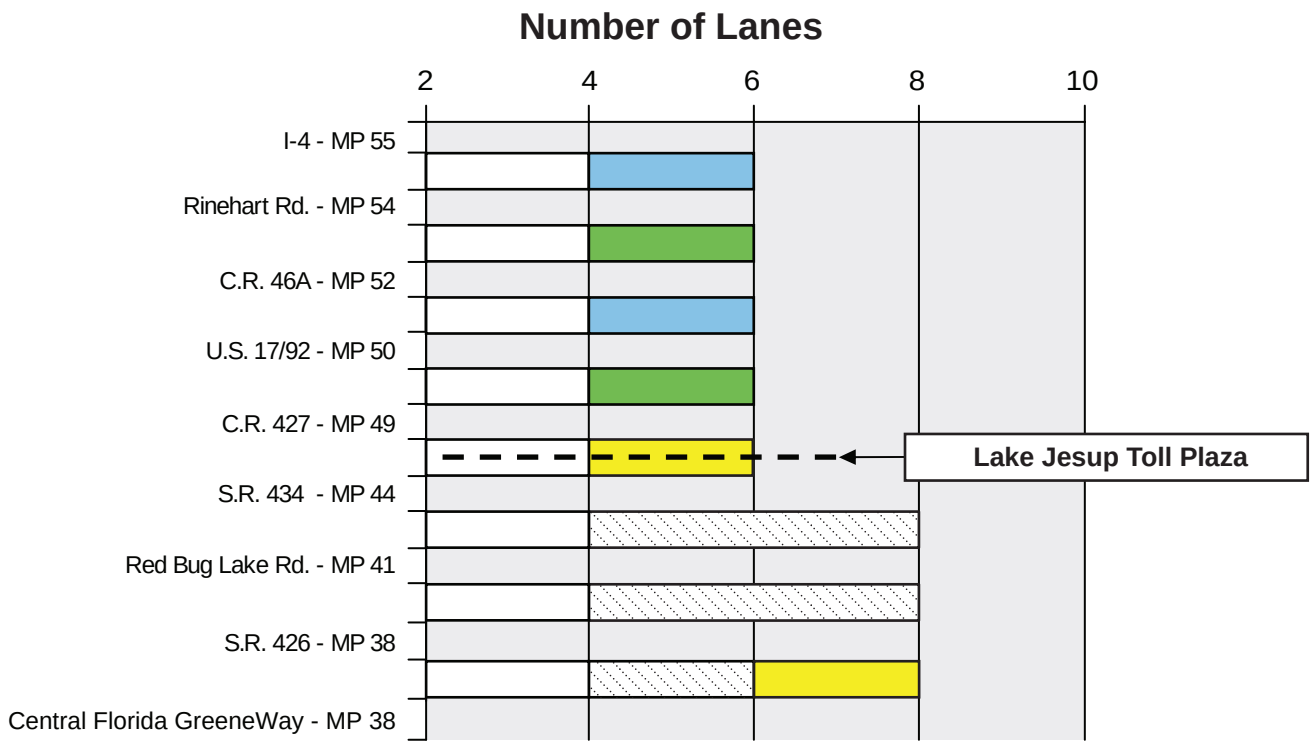
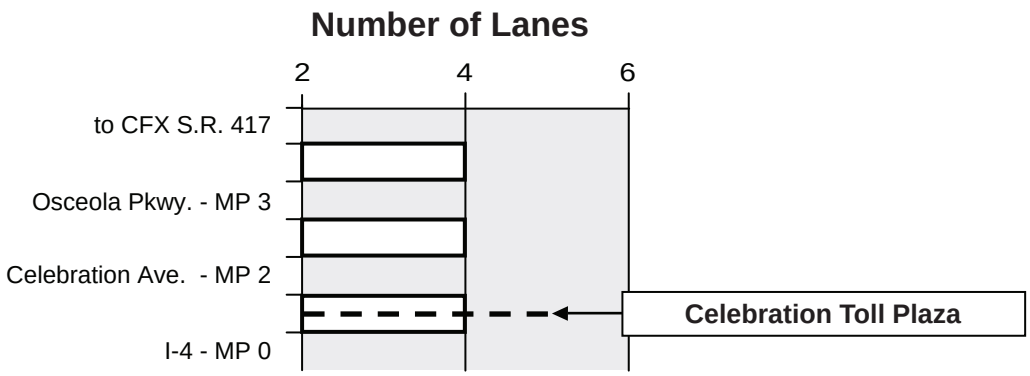


Figure 15
Southern Connector Extension Potential Lane Demand



Legend

Existing Geometry

Programmed Improvements

Gen. Toll Lanes

Express Lanes

Unfunded Needs

2015 2020 2025

2030 2035 2040

Figure 16
Polk Parkway Potential Lane Demand

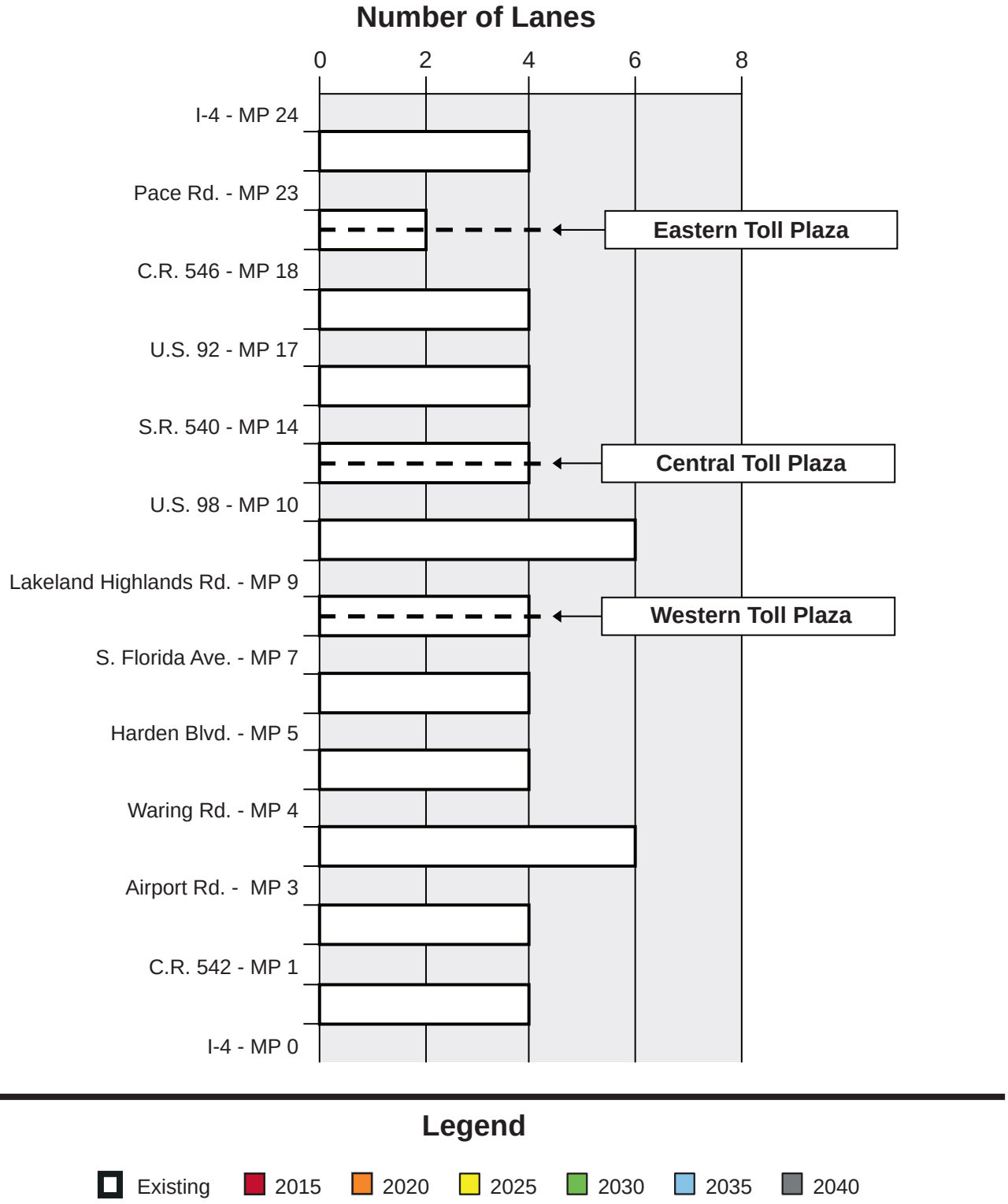
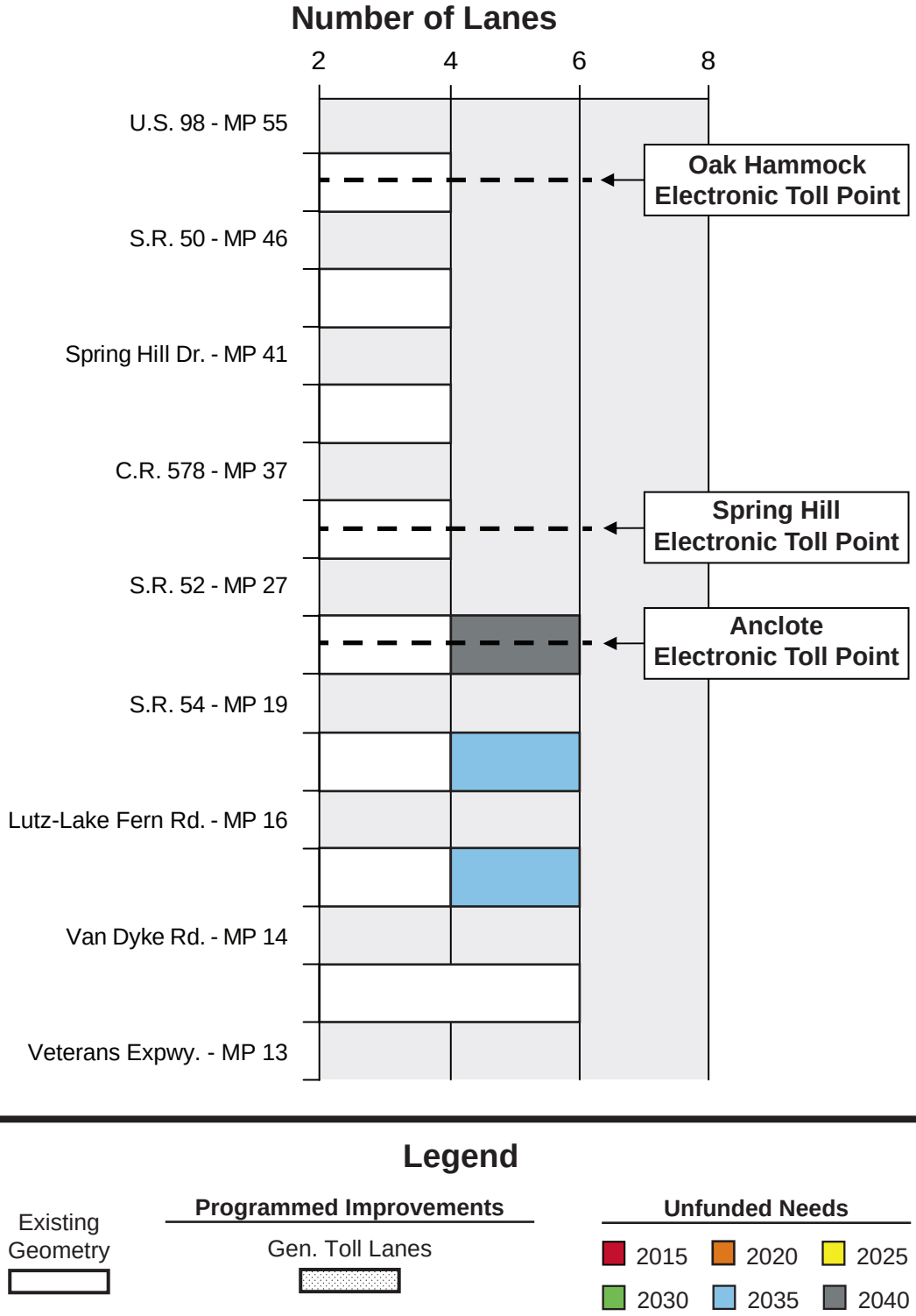


Figure 17
Suncoast Parkway Potential Lane Demand



Legend

Existing Geometry

Programmed Improvements

Gen. Toll Lanes

Unfunded Needs

2015 2020 2025
2030 2035 2040

Figure 18
Daniel Webster Western Beltway Potential Lane Demand

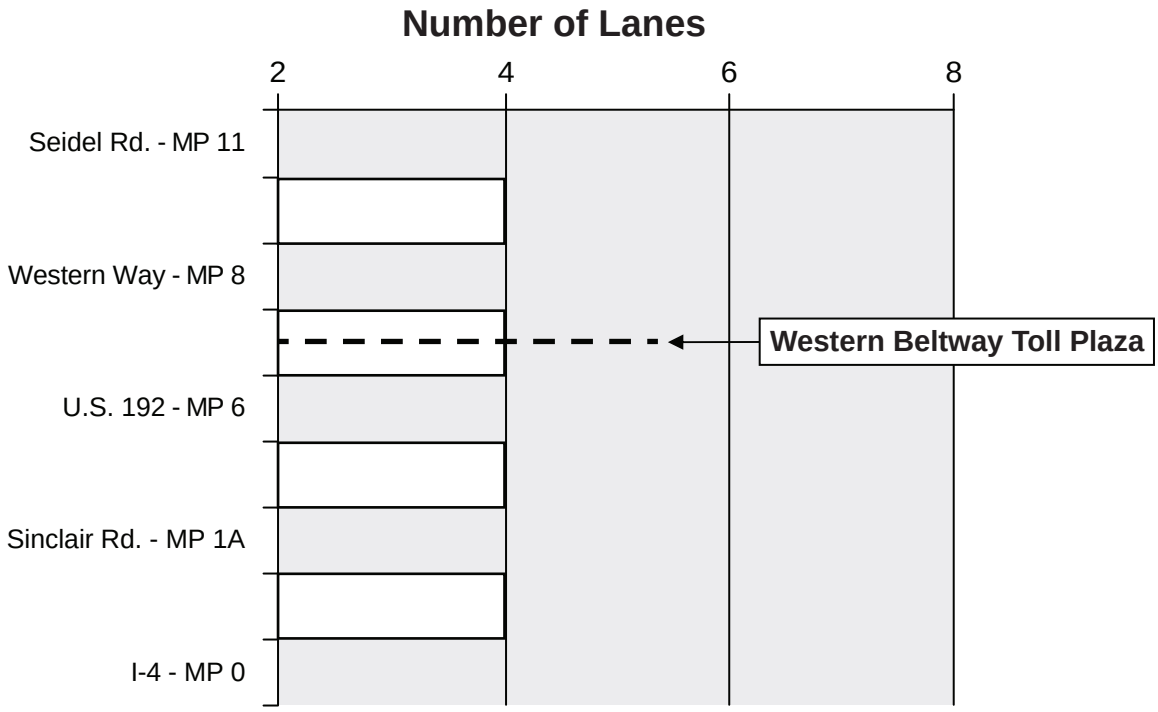
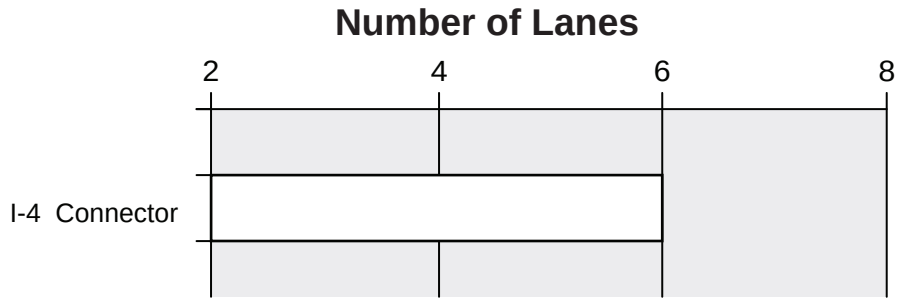


Figure 19
I-4 Connector Potential Lane Demand



Legend

Existing | 2015 | 2020 | 2025 | 2030 | 2035 | 2040

The most urgent widening improvement needs among the freeway segments were determined through analysis of the 2020 peak hour peak direction Volume to Capacity (V/C) ratios. **Table 4** lists those segments with a forecasted V/C ratio greater than or equal to 1.0. This analysis segregates the Turnpike system segments for which future widening needs have been identified, but for which no improvements are included within the Turnpike's Tentative Five-Year Work Program. For each segment, the table also lists the forecasted AADT per lane.

Table 4
Freeway Segment Year 2020 V/C Ratios
(with Annual Average Daily Traffic per Lane)

System	Mainline Segment Description	2020 V/C	2020 AADT/Lane
Southern Coin	MP 49 to MP 53 – Hollywood Boulevard to Griffin Road	1.19*	27,600
Southern Coin	MP 47 to MP 49 – HEFT to Hollywood Boulevard	1.19*	27,300
Beachline West	MP 0 to MP 1 – I-4 to International Parkway	1.15	18,900
Ticket	MP 86 to MP 93 – Boynton Beach Boulevard to Lake Worth Road	1.11*	24,800
Sawgrass	MP 0 to MP 1 – I-75/I-595 to Sunrise Boulevard	1.10*	15,600
Southern Coin	MP 71 to MP 75 – Sawgrass Expressway to Glades Road	1.09*	22,900
Ticket	MP 97 to MP 98 – S.R. 80 to Jog Road	1.08	25,200
Ticket	MP 93 to MP 97 – Lake Worth Road to S.R. 80	1.07	24,700
Sawgrass	MP 15 to MP 18A/B – University Drive to US 441	1.06	17,300
Ticket	MP 99 to MP 107 – West Palm Beach to SR 710	1.04	23,700
Southern Coin	MP 67 to MP 69 – Coconut Creek Parkway to Sample Road	1.02	21,300
Southern Coin	MP 75 to MP 81 – Boca Raton to Delray Beach	1.01	21,200
Ticket	MP 98 to MP 99 – Jog Road to West Palm Beach	1.00	23,600

MP = Turnpike Milepost
S.R. 821 = Homestead Extension of Florida's Turnpike
*Has a V/C > 0.99 in 2015

Ramp-Freeway Junctions – Merges and Diverges

A ramp-freeway junction is the area where an on-ramp merges into a freeway section or where freeway traffic diverges to an off-ramp. Ramp merge deficiencies were identified through visual observations of on-ramp queues of vehicles unable to merge freely into the mainline. Ramp diverge deficiencies were identified through visual observations of mainline queues of vehicles unable to freely exit the mainline. Locations with observed ramp merge or diverge deficiencies are summarized in **Table 5**.

For most of the areas where merge and diverge deficiencies have been observed, there are programmed improvements that are expected to mitigate the deficiencies. Those improvements will add auxiliary lanes or widen the roadway segments.

Weaving Segments

Weaving segments are formed between a ramp merge area and a downstream ramp diverge area. Deficiencies occur when there is not sufficient distance between a ramp merge area and a downstream ramp diverge area for these areas to operate independently. Among the many weaving segments on the Turnpike system, no existing weaving capacity deficiencies were observed.

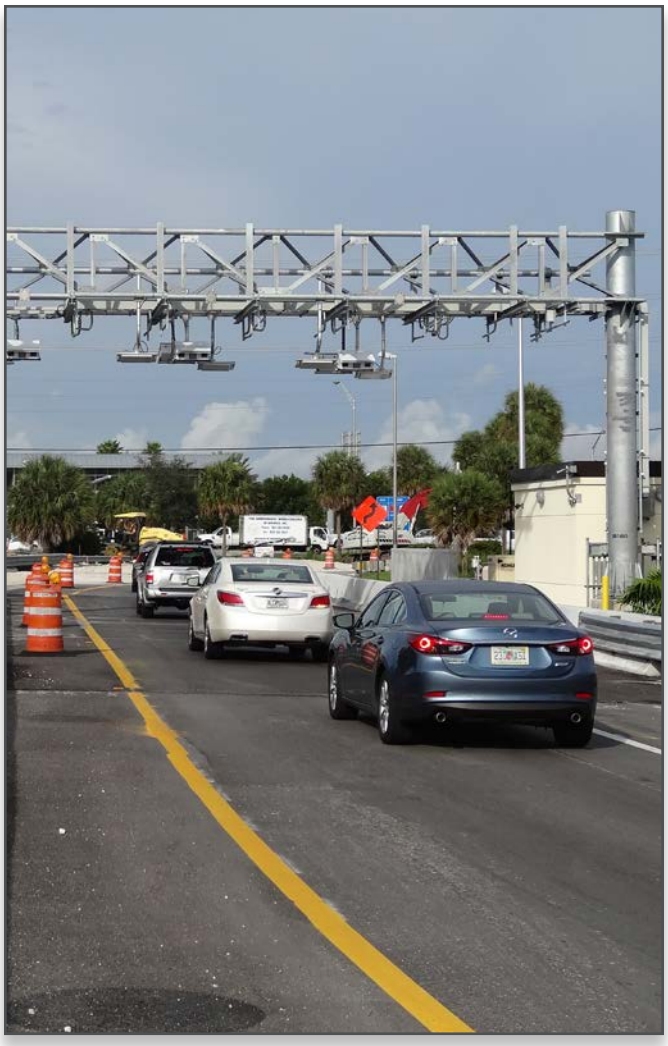


Table 5
Observed Ramp Merge and Diverge Deficiencies

System	MP	Location Description	Observed Congestion	Work Program Improvements
S.R. 821	20	Kendall Drive	NB merge – AM	415051-1
	35	Okeechobee Road	SB merge – AM	435542-1
Beachline West	0	Interstate 4	WB Diverge – PM	
	2	Orangewood Boulevard	EB merge – PM	406090-5
Veterans	6A	Waters Ave	SB merge – AM	406152-1

MP = Turnpike Milepost

ANALYSIS OF INTERCHANGE COMPONENTS

Ramp Roadways

An analysis of interchange ramp roadways was performed to determine where ramp improvements should be pursued. The developed projections of ramp roadway traffic are unconstrained by capacity limitations. Future ramp widening needs are identified through the comparison of the forecasted future demand to the existing or programmed ramp roadway capacity. Ramp capacity deficiencies based on observation are also summarized. Deficiencies identified are isolated to queues not affected by other mainline, ramp toll plaza or interchange cross-street congestion.

Table 6 summarizes locations where observations indicate peak hour congestion on Turnpike system ramp roadways. Among these locations, all have under construction or programmed improvements to assist or mitigate the observed congestion.

The ramp roadway lane demand based on future traffic forecasts are listed in **Table 7** with a projection of the future year that added capacity will be needed on those ramps.

Interchange Ramp Terminals

An interchange ramp terminal is the point where a ramp intersects with the interchange cross-street with either signal or stop control. This element of the ramp operation is critical at many constrained interchanges. A qualitative assessment was made of the current peak hour conditions at these locations to determine whether the cross-street operations impede access to the Turnpike or limit the ability of traffic to exit the Turnpike. The assessment was based on a review of available recent and historical aerial photography, assessment of peak hour travel speeds and/or field observations.

Table 6
Observed Ramp Roadway Deficiencies

System	MP	Location Description	Observed Congestion	Work Program Improvements
S.R. 821	47	NW 27th Avenue	NB off-ramp – AM	429328-1
Southern Coin	0X	Golden Glades	SB off-ramp – AM	437053-1
	75	Glades Road	NB off-ramp – AM	418214-1
Beachline West	4	U.S. 441/ Turnpike Mainline	WB off-ramp – PM	243017-1, 411406-1

MP = Turnpike Milepost

Table 7
Ramp Roadway Potential Lane Demand

System	MP	Location Description	Existing or Programmed Lanes	Ramp Direction	Number of Lanes Needed	Fiscal Year Needed
S.R. 821	0	U.S. 1	1	SB off	2	2030
	2	Campbell Drive	1	NB on, SB off	2	2035
	11	Hainlin Mill Drive	1	NB on	2	2015
			1	SB off	2	2020
	18	S.R. 874	3	NB off, SB on	4	2025
	19	SW 120th Street	1	NB on	2	2025
	25	SW 8th Street	1	NB off, SB on	2	2040
	26	S.R. 836	2	SB on	3	2025
	31	NW 74th Street	1	NB off, SB on	2	2040
	34	NW 106th Street	1	NB off, SB on	2	2030
	43	NW 57th Avenue	1	NB on	2	2015
	47	NW 27th Avenue	1	NB off, SB on	2	2035
Southern Coin	47	HEFT	2	NB on, SB off	3	2035
	71	Sawgrass Expressway	1	NB on	2	2015
	75	Glades Road	1	SB on	2	2025
	86	Boynton Beach Boulevard	1	SB on	2	2025
			1	NB off	2	2030
Ticket	109	Palm Beach Gardens	1	NB off	2	2030
Northern Coin	240	Kissimmee Park Road	1	NB on, SB off	2	2035
	249	Osceola Parkway	1	NB on, SB off	2	2040
	254	Orlando South	1	NB on	2	2025
			1	NB off, SB on, SB off	2	2040
	259	Interstate 4	1	NB on, SB off	2	2020
			2	NB off, SB on	3	2035
Beachline West	0	I-4	1	EB on (SB), WB off (NB)	2	2015
	4	U.S. 441	1	EB on, WB off	2	2035
	8	McCoy Road	1	EB on, WB off	2	2040

Table 7 (continued)
Ramp Roadway Potential Lane Demand

System	MP	Location Description	Existing or Programmed Lanes	Ramp Direction	Number of Lanes Needed	Fiscal Year Needed
Sawgrass	1	Sunrise Boulevard	1	SB on	2	2015
	1	Sunrise Boulevard	2	NB off	3	2035
	1	Sunrise Boulevard	2	SB on	3	2040
	8	Atlantic Boulevard	1	NB off, SB on	2	2040
	14	Coral Ridge Drive	1	NB on, SB off	2	2040
Seminole	38	Aloma Avenue	1	NB off, SB on	2	2030
	41	Red Bug Lake Road	1	NB off	2	2040
Suncoast	19	S.R. 54	1	NB off, SB on	2	2035
Western Beltway	0	I-4	1	NB on, SB off	2	2035

MP = Turnpike Milepost

Table 8 lists the Turnpike interchanges where ramp terminal intersections currently exhibit congestion.

A quantitative assessment was made of the 2020 projected peak hour conditions based on ramp and cross-street capacity. The ICU assessment estimates how much reserve capacity is available or how much an intersection is over capacity. **Table 9** lists the ramps having an ICU value greater than 1.0 for at least one peak hour, representing locations that will likely exhibit congestion by year 2020.

Mitigation for deficient ramp and cross-street intersections will be determined by further study and may include adding lanes at the intersection approaches, re-timing the signal, signalizing a stop-controlled intersection, or reconfiguring the interchange ramps.

Interchange Evaluation Summary

The evaluation of interchange capacity constraints is summarized in **Table 10**. It includes the deficiencies for ramp roadways and ramp terminals. The

Table 8
Observed Deficiencies at Interchange Ramp Terminals

System	MP	Location Description	Observations by Peak Period and Direction
S.R. 821	2	Campbell Drive	AM – NB on-ramp congestion due to unsignalized NB ramp intersection
	13	Quail Roost Drive	PM – SB off-ramp congestion
	16	Coral Reef Drive	PM – SB off-ramp congestion at SW 117th Avenue from signal at SW 152nd Street
	20	Kendall Drive	PM – SB and NB off-ramp congestion
	25	SW 8th Street	PM – SB to WB off-ramp congestion
		SW 8th Street	AM – SB off-ramp congestion
	27	NW 12th Street	PM – SB off-ramp congestion
	29	NW 41st Street	AM – NB off-ramp congestion
	34	NW 106th Street	NB off-ramp - PM
	35	Okeechobee Road	SB off-ramp - AM
Southern Coin	62	Commercial Boulevard	AM – SB off-ramp congestion
	67	Coconut Creek Parkway	PM – NB off-ramp congestion
	69	Sample Road	AM – NB off-ramp congestion
	75	Boca Raton	AM – NB off-ramp congestion
Northern Coin	249	Osceola Parkway	PM – all directions
	255	Consulate Drive	AM – SB off-ramp congestion
Sawgrass	1A	Sunrise Boulevard	AM – NB off-ramp congestion
	14	Coral Ridge Drive	AM – SB congestion approaching EB on-ramp

MP = Turnpike Milepost

deficiencies are categorized for the existing condition and for five-year increments from FY 2015 through FY 2040. Interchange improvements programmed in the tentative FY 2016 – FY 2020 Turnpike Work Program are also described. These improvements are anticipated to relieve the associated interchange deficiencies. Also

Table 9
2020 Deficiencies at Interchange Ramp Terminals

System	MP	Location Description	Intersection Capacity Utilization (ICU)	
			AM Peak	PM Peak
S.R. 821	2	Campbell Drive	0.99	1.03
	11	Hainlin Mill Drive	1.14	1.19
	13	Quail Roost Drive	1.15	1.09
	16	Coral Reef Drive	1.01	0.84
	19	SW 120th Street	1.07	1.18
	29	NW 41st Street	1.08	1.09
	31	NW 74th Street^	0.85	1.04
	34	NW 106th Street^	1.22	0.93
	35	Okeechobee Road	0.87	1.13
	47	NW 27th Avenue	1.12	1.27
Southern Coin	49	Hollywood Boulevard	0.79	1.03
	53	Griffin Road	1.17	1.38
	58	Sunrise Boulevard	1.05	1.06
	62	Commercial Boulevard	1.34	1.23
	66	Atlantic Boulevard	0.91	1.01
	67	Coconut Creek Parkway	1.21	1.26
	69	Sample Road	0.96	1.1
Ticket System	109	Palm Beach Gardens	1.01	0.91
	142	Port St. Lucie Boulevard	0.98	1.15
Sawgrass	1	Sunrise Boulevard*	2.22	1.15
	5	Commercial Boulevard*	0.99	1.02
	8	Atlantic Boulevard*	1.22	1.81
	14	Coral Ridge Drive	1.13	1.49
	15	University Drive	0.98	1.04

MP = Turnpike Milepost
(*) = Unsignalized Intersections
(^) = Based on adjacent intersection only

shown in **Table 10** is the current production status for the implementation of improvements at each of the interchanges: Concept, Project Development and Environment (PD&E), Design or Construction. The FPIDs of any associated work program improvements are also shown.

Table 10
Interchange Needs Summary

System	Interchange Location		Existing Deficiency[1]	Future Need and Year Needed	Production Status	Work Program Improvements
	MP	Cross street				
S.R. 821	0	U.S. 1		RR - 2030		
	2	Campbell Drive	RT	RR - 2035 RT - 2020	Construction FY 2016	FPID 435462-1
	11	Hainlin Mill Drive		RR - 2015 RR - 2020 RT - 2020		
	13	Quail Roost Drive	RT	RT - 2020	Under Construction	FPID 415488-1
	16	Coral Reef Drive	RT	RT - 2020	Under Construction	FPID 406096-1
	18	S.R. 874		RR - 2025	Under Construction	FPID 406096-1
	19	SW 120th Street		RR - 2025 RT - 2020	Under Construction	FPID 406096-1
	20	Kendall Drive	RR & RT		Under Construction	FPID 415051-1
	25	Tamiami Trail	RT	RR - 2040	Under Construction	FPID 415051-4
	26	S.R. 836		RR - 2025	Under Construction	FPID 415051-4
	27	NW 12th Street	RT		Construction FY 2018	FPID 435543-1
	29	NW 41st Street	RT	RT - 2020	Construction FY 2018	FPID 435543-1
	31	NW 74th Street		RR - 2040 RT - 2020	Construction FY 2018	FPID 435543-1
	34	NW 106th Street	RT	RR - 2030 RT - 2020	Construction FY 2018	FPID 435542-1
	35	Okeechobee Road	RT	RT - 2020	Construction FY 2018	FPID 435542-1
	43	NW 57th Avenue		RR - 2015	Construction FY 2017	FPID 429328-1
	47	NW 27th Avenue	RR	RR - 2035 RT - 2020	Construction FY 2017	FPID 429328-1

Table 10 (continued)
Interchange Needs Summary

System	Interchange Location		Existing Deficiency[1]	Future Need and Year Needed	Production Status	Work Program Improvements
	MP	Cross street				
Southern Coin	0X	Golden Glades	RR		Construction FY 2019	FPID 437053-1
	47	S.R. 821		RR - 2035		
	49	Hollywood Boulevard		RT - 2020		
	53	Griffin Road		RT - 2020		
	58	Sunrise Boulevard		RT - 2020	Under Construction	FPID 406103-1
	62	Commercial Boulevard	RT	RT - 2020		
	66	Atlantic Boulevard		RT - 2020		
	67	Coconut Creek Parkway	RT	RT - 2020		
	69	Sample Road	RT	RT - 2020	Under Construction	FPID 435614-1
	71	Sawgrass Expressway		RR - 2015		
	75	Glades Road	RR & RT	RR - 2025	Construction FY 2016	FPID 435615-1
	86	Boynton Beach Boulevard		RR - 2025 RR - 2030		
Ticket System	109	PGA Boulevard		RR - 2030 RT - 2020	Construction FY 2016	FPID 429334-1
	142	Port St. Lucie Boulevard		RT - 2020		
Northern Coin	240	Kissimmee Park Road		RR - 2035		
	249	Osceola Parkway	RT	RR - 2040	Construction FY 2019	FPID 436194-1
	254	Orlando South		RR - 2025 RR - 2040		
	255	Consulate Drive	RT		Under Construction	FPID 243017-1 FPID 411406-1
	259	Interstate 4		RR - 2020 RR - 2035		

Table 10 (continued)
Interchange Needs Summary

System	Interchange Location		Existing Deficiency[1]	Future Need and Year Needed	Production Status	Work Program Improvements
	MP	Cross street				
Beachline West	0	I-4	RR	RR - 2015	Under Construction	FPID 406090-5
	2	Orangewood Boulevard	RR		Under Construction	FPID 406090-5
	4	U.S. 441 / Turnpike Mainline	RR	RR - 2035	Under Construction	FPID 243017-1 FPID 411406-1
	8	McCoy Road		RR - 2040	Construction FY 2016	FPID 437156-1
Sawgrass	1A	Sunrise Boulevard	RT	RR - 2015 RT - 2020 RR - 2035 RR - 2040	Construction FY 2018	FPID 437155-1
	5	Commercial Boulevard		RT - 2020	Construction FY 2018	FPID 437155-1
	8	Atlantic Boulevard		RR - 2040 RT - 2020	Construction FY 2018	FPID 437155-1
	14	Coral Ridge Drive	RT	RR - 2030 RT - 2020	Construction FY 2019	FPID 435461-1
	15	University Drive		RT - 2020	Construction FY 2021	FPID 435461-3
Seminole	38	Aloma Avenue		RR - 2030	Construction FY 2016	FPID 417545-1
	41	Red Bug Lake Road		RR - 2040	Construction FY 2016	FPID 417545-1
Veterans	6A	Waters Avenue	RR		Under Construction	FPID 406152-1
Suncoast	19	S.R. 54		RR – 2035		
Polk Parkway	0	I-4		RR - 2030		
Western Beltway	0	I-4		RR – 2035		

Deficiency Types: RR = Ramp Roadway
RT = Ramp Terminal at Cross street

MP = Turnpike Milepost

The analysis results presented in this report reveal potential deficiencies through the year 2040. The improvement recommendations listed in this section, however, focus on operational deficiencies anticipated within the time frame of FY 2015-2025. The recommendations are for new projects or for programmed projects that have been deferred from the current Work Program.

RECOMMENDATIONS

Basic Freeway Segments

Segment widening needs were reviewed and consolidated into logical project sections based on previously identified project limits or logical project termini. For the purposes of ranking the unfunded widening needs, the segmentation was further modified to reflect logical construction projects.

The projects are ranked in **Table 11** in the order of need, initially based on the year needed, and then sorted by a combination of V/C ratio and logical project progression.

Interchanges

The interchange deficiencies shown in **Table 10** were compared with improvements anticipated in the near term. The following recommendations are provided to address locations where programmed improvements that would mitigate the deficiencies have been deferred due to budget constraints, or locations that have not been previously identified for improvement.

The following interchanges require near-term evaluation for additional ramp lanes due to existing deficiencies or deficiencies projected to occur by 2015:

- **Southern Coin with**
  Sawgrass Expressway
- **S.R. 821 with**
  Hainlin Mill Drive

The following interchanges require evaluation for mitigation of existing or projected 2015 ramp terminal deficiencies at the interchange cross-streets:

- **Southern Coin System with**
  Coconut Creek Parkway
  Commercial Boulevard

The interchanges recommended for improvement were ranked based on year of need, impacts to the mainline, and anticipated congestion. The interchange ranking is shown on **Table 12.**

Table 11
Ranking of 2015, 2020 & 2025 Unfunded Widening Needs

Ranking	System	Project Limits and Need	Year Needed
1	Southern Coin	MP 47 to MP 53 – HEFT to Griffin Road	2015
2	Ticket	MP 86 to MP 93 – Boynton Beach Boulevard to Lake Worth Road	2015
3	Sawgrass	MP 0 to MP 1 – I-75/I-595 to Sunrise Boulevard	2015
4	Southern Coin	MP 71 to MP 75 – Sawgrass Expressway to Glades Road	2015
5	Ticket	MP 93 to MP 99 - Lake Worth Road to Okeechobee Boulevard	2020
6	Sawgrass	MP 15 to MP 19 - University Boulevard to Lyons Road	2020
7	Ticket	MP 99 to MP 107 - Okeechobee Boulevard to S.R. 710	2020
8	Southern Coin	MP 66 to MP 71 - Atlantic Boulevard to Sawgrass Expressway	2020
9	Southern Coin	MP 75 to MP 81 - Glades Road to Atlantic Avenue	2020
10	Beachline West	MP 0 to MP 1 – I-4 to International Parkway	2025
11	S.R. 821	MP 39 to MP 43 – I-75 to NW 57th Avenue	2025
12	Seminole Expressway	MP 44 to MP 49 – S.R. 434 to C.R. 427	2025
13	Seminole Expressway	MP 38 to MP 38 – Central Florida GreeneWay to S.R. 426	2025
14	Southern Coin	MP 81 to MP 86 (Atlantic Avenue to Boynton Beach Boulevard)	2025
15	Northern Coin	MP 272 to MP 279 (S.R. 50 to Minneola)	2025
16	Southern Coin	MP 0X to MP 2x (Golden Glades to Dolphin Center)	2025

MP = Turnpike Milepost

Table 12
Ranking of Unfunded Interchange Needs

Rank	System	Interchange	Year Needed
1	Southern Coin	62 - Commercial Boulevard	2014
2	Southern Coin	67 - Coconut Creek Parkway	2014
3	Southern Coin	71 - Sawgrass Expressway	2015
4	S.R. 821	11 - Hainlin Mill Drive	2015
5	Northern Coin	259 - I-4	2020
6	Southern Coin	53 - Griffin Road	2020
7	Ticket	142 - Port St. Lucie Boulevard	2020
8	Sawgrass Expressway	15 - University Drive	2020
9	Southern Coin	49 - Hollywood Boulevard	2020
10	Southern Coin	66 - Atlantic Boulevard	2020
11	Northern Coin	254 - Orlando South	2025
12	Southern Coin	86 - Boynton Beach Boulevard	2025

MP = Turnpike Milepost

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