



Interstate 95 Corridor
Planning Study
Miami-Dade County
US 1/SR 5 to Broward County Line
FM# 414964-6-22-01

Express Lane Conversion Analysis

April 22, 2018

EXECUTIVE SUMMARY

In 2010, FDOT District 6 implemented managed lanes (95 Express) along Interstate 95 from the Golden Glades Interchange to south of Interstate 195 (Segment 1). Managed lanes are lanes dynamically tolled based upon congestion levels, where tolls fluctuate per the amount of traffic using the managed lanes. The goals of 95 Express are to reduce overall traffic congestion; provide a safe and predictable trip, in terms of travel time, for express lane motorists; maintain an express lane free-flow speed of 45 mph or greater for users including express buses; and increase the overall throughput on the entire facility.

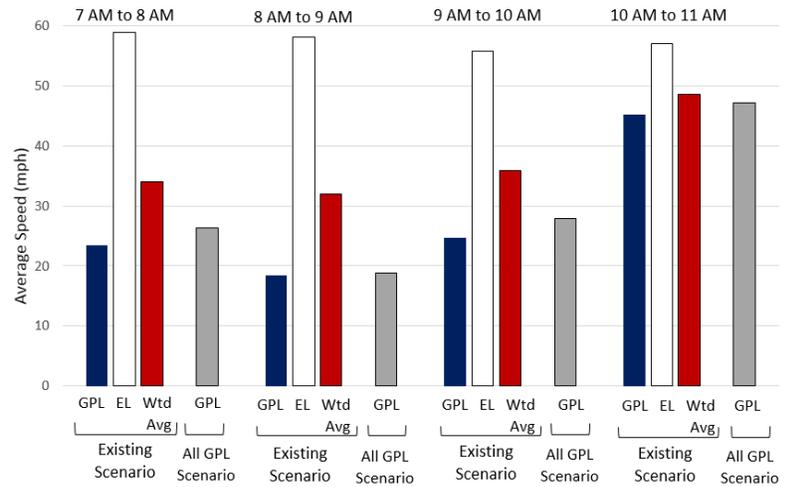
Operational improvements were realized upon the completion of Segment 1 with gains in travel speeds and throughput, along with decreasing travel times. Based upon that success, FDOT District 6 and District 4 have expanded the express lane facility north to Broward Boulevard (Segments 2 and 3). Segment 2 was completed in 2015, while Segment 3 was completed in 2016.

An analysis was performed using PTV's VISSIM microscopic traffic flow simulation software, comparing the existing express lanes conditions to a scenario where the express lanes are converted into general purpose lanes. This comparative analysis focuses on congestion levels, travel speeds/times, and vehicle throughput during the peak periods in the peak travel direction. The conversion of the express lanes to general purpose lanes is expected to result in the following impacts.

- General purpose lane users would experience an increase in travel time during the during the AM peak period as much as 5 minutes or 43 percent. During the initial PM peak hour (4 PM to 5 PM), general purpose lane users would experience a slight decrease in travel time as congestion builds. During the remainder of the peak period (5 PM to 8 PM), users would experience an increase in travel time of over 5 minutes or 68 percent.

- Express lane users now traveling in the general purpose lanes would experience an increase in travel time in the peak direction during the peak hour, of as much as an additional 21 minutes (208 percent) in the AM peak period and as much as an additional 13 minutes (112 percent) in the PM peak period.
- Overall corridor speeds weighted by volume would generally decrease during the peak periods.

Southbound Average Speed Comparison
AM Peak Period – South of NW 62nd Street



- A reduction in vehicle throughput of as much as 7 percent for the overall corridor would occur within the limits of 95 Express Segment 1 during the core peak hours.
- As evidenced by the general increase in travel times, decrease in average travel speeds, reduction in vehicle throughput, and increase in the duration of congestion, the elimination of the express lanes is expected to have a negative impact on the operations of the I-95 corridor in Miami-Dade County, including the general purpose lanes.





TABLE OF CONTENTS

Section	Page No.
Introduction	1
Model Development/Calibration	3
Existing Conditions Scenario	3
‘All General Purpose Lane’ Scenario.....	3
Comparative Analysis.....	4
Travel Times.....	4
Travel Speeds	8
Throughput/Volumes	13
Speed Contour Maps.....	15
AM Peak Period.....	15
PM Peak Period.....	15
Conclusion	18

LIST OF TABLES

Table	Page No.
Table 1: Southbound AM Peak Period, General Purpose Lanes Comparison – Average Travel Times.....	5
Table 2: Northbound PM Peak Period, General Purpose Lanes Comparison – Average Travel Times.....	6
Table 3: Southbound AM Peak Period, Express Lanes/General Purpose Lanes Comparison – Average Travel Times.....	7
Table 4: Northbound PM Peak Period, Express Lanes/General Purpose Lanes Comparison – Average Travel Times.....	8
Table 5: Southbound AM Peak Period, General Purpose Lanes Comparison – Average Travel Speeds.....	8
Table 6: Northbound PM Peak Period, General Purpose Lanes Comparison – Average Travel Speeds.....	9
Table 7: Southbound AM Peak Period, Express Lanes/General Purpose Lanes Comparison – Average Travel Speeds.....	10
Table 8: Northbound PM Peak Period, Express Lanes/General Purpose Lanes Comparison – Average Travel Speeds.....	10
Table 9: Southbound AM Peak Period, Average Traffic Volumes.....	13
Table 10: Northbound PM Peak Period Average Traffic Volumes.....	14



LIST OF FIGURES

Figure	Page No.
Figure 1: 95 Express Network.....	2
Figure 2: Southbound Spot Speed Comparison.....	11
Figure 3: Northbound Spot Speed Comparison.....	12
Figure 4: AM Peak Period Southbound Speed Contour Map.....	16
Figure 5: PM Peak Period Speed Northbound Contour Map.....	17



INTRODUCTION

FDOT District 6 implemented managed lanes (95 Express) along northbound Interstate 95 in 2008 and along southbound Interstate 95 in 2010, from the Golden Glades Interchange to south of Interstate 195 (Segment 1). The Golden Glades Interchange is located at the confluence of several primary transportation corridors including Interstate 95, Florida’s Turnpike, SR 826, SR 7/US 441, and SR 9. Managed lanes are lanes dynamically tolled based upon congestion levels, where tolls fluctuate per the amount of traffic using the managed lanes. The goals of 95 Express are to reduce overall traffic congestion; provide a safe and predictable trip, in terms of travel time, for motorists who chose to use the express lanes; maintain a free-flow speed of 45 mph or greater in the express lanes; and increase the corridor’s overall person throughput, including transit ridership on the entire facility.

Prior to the 95 Express implementation, the corridor generally provided one (1) high occupancy vehicle (HOV) lane and four (4) general purpose lanes within Segment 1. The facility was modified to provide two (2) managed/express lanes and four (4) general purpose lanes separated by flexible delineators/express lane markers. This expansion was accomplished in part by a reduction in lane and shoulder widths.

Operational improvements were realized upon the completion of Segment 1 with gains in travel speeds and throughput, along with decreasing travel times, for the overall facility. Based upon that success, FDOT District 6 and District 4 have expanded the express lane facility north to Broward Boulevard (Segments 2 and 3). Segment 2 was completed in 2015, while Segment 3 was completed in 2016.

The purpose of this analysis was to compare the existing 95 Express operation in Miami-Dade County to a scenario where the two (2) existing express lanes would be converted to general purpose lanes generally providing for a total of six (6) general purpose lanes in each direction with no congestion pricing/dynamic tolling. The analysis was conducted using PTV’s VISSIM microscopic traffic simulation software (Version 7.00-08). The analysis did not include a scenario where the express lanes were converted back to HOV lanes, the condition prior to express lane implementation. This comparative analysis focuses on congestion levels, travel speeds/times, and vehicle throughput during the peak periods in the peak travel direction.

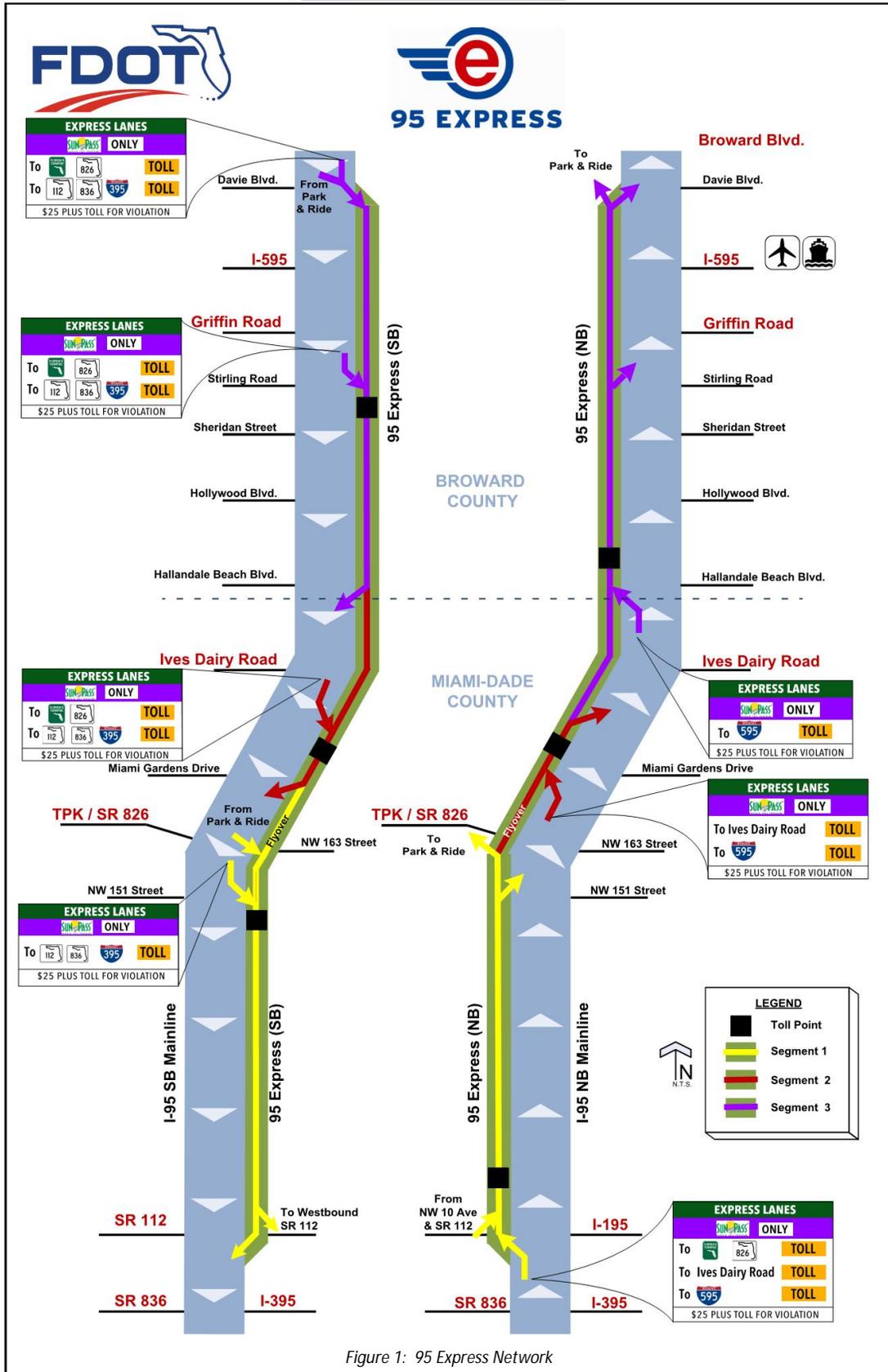


Figure 1: 95 Express Network



MODEL DEVELOPMENT/CALIBRATION

Existing Conditions Scenario

As part of the ongoing FDOT District 6 *Interstate 95 Corridor-wide Planning Study*, a calibrated existing conditions VISSIM model was developed. The VISSIM model limits are from SR 5/US 1/ South Dixie Highway to north of NE 203rd Street (Ives Dairy Road) at the Broward County line. The model includes the ramp terminal intersections at interchanges along the corridor; system-to-system interchanges at the Golden Glades Interchange, I-195/SR 112, and I-395/SR 836; express lane entry/exit points; and over 75 intersections located within interchange influence areas. The model was calibrated from various sources of traffic data from March 2015, including field collected data (volume, travel time, travel speed, and queues) and SunGuide[®] data extracted for a typical weekday free of any major incidents. FDOT District 6's SunGuide[®] Traffic Management Center operates and maintains over 100 roadway detectors along the Interstate 95 corridor that continuously capture traffic data, including speed, volume, and occupancy. Segment 1 was the only operating 95 Express segment at the time of model development, as Segment 2 was under construction. Analyses are generally based upon data/conditions in March 2015.

The VISSIM model includes the weekday period from 6 AM to 12 PM and from 3 PM to 9 PM with results focusing on the four (4) core hours of each time period (i.e. 7 AM to 11 AM and 4 PM to 8 PM). The existing conditions model was developed and calibrated using year 2015 geometry, signal timings, traffic demand inputs, free-flow speeds, conflict areas, reduced speed areas, and driver behavior. In general, the existing facility provides for two (2) express lanes and four (4) general purpose lanes in each direction. Express lane operations were modeled using the 95 Express toll methodologies/formulas and VISSIM's managed lane decision model. The 2015 existing conditions model meets the calibration criteria set forth in the *FHWA's Traffic Analysis Tools – Volume III: Guidelines for Applying Microsimulation Model Software* and *FDOT's Traffic Analysis Handbook*.

'All General Purpose Lane' Scenario

The fully calibrated 2015 VISSIM model was the base for the 'All General Purpose Lane' scenario model. The express lanes were recoded as general purpose lanes generally providing for a total of six (6) general purpose lanes in each direction. The express lane flyover ramps at the Golden Glades Interchange and the direct connect ramps at SR 112 were adjusted for general purpose use. The distribution of general purpose traffic utilizing these ramps, rather than the mainline lanes or the conventional exit/entrance ramps, were estimated for purposes of this analysis. The resulting models/model outputs were examined for reasonableness.



COMPARATIVE ANALYSIS

A comparative analysis was conducted to determine the potential impacts of converting the existing express lanes to general purposes lanes. The analysis focused on travel time, travel speed, volume/throughput, and general speed contours. The following sections summarize the results of the analysis. Data along the corridor were extracted from the existing conditions and the 'All General Purpose Lane' model scenarios. The data presented represents the average of eight (8) model runs for each peak period in order to obtain convergence of model results. Corridor analysis segmentation for general purpose lane and express lane operations were consistent with the *Traffic Operations Simulation Final Report* prepared for the Interstate 95 Corridor-wide Planning Study specifically focusing on the operations of the corridor within the limits of the express lanes in Segment 1. The following sections summarize the results of the analysis.

Travel Times

Average travel times along the corridor were extracted from the 2015 existing conditions and the 'All General Purpose Lane' model scenarios. Tables 1 and 2 summarize the travel times for each scenario during the AM and PM peak periods, in the peak travel direction for the general purpose lanes. This comparison evaluates the performance of the general purpose lanes comparing the existing scenario with four (4) general purpose lanes in each direction with an 'All General Purpose Lane' scenario that would provide for six (6) general purpose lanes in each direction. In the AM peak period, the peak direction of travel is in the southbound direction. A comparison of southbound travel times for the general purpose lanes, between the existing conditions and the 'All General Purpose Lane' scenario, is shown below in Table 1 for the AM peak period.

As shown in Table 1, the travel times in the general purpose lanes increase with the elimination of the express lanes through the entire four (4) hour core period. Travel times increase between 29 and 43 percent during the first two (2) core hours and between 25 and 29 percent during the second two (2) core hours as demand dissipates at the end of the morning peak period.

Table 1 demonstrates that the conversion of the existing two (2) express lanes to general purpose lanes has a negative impact on travel times for general purpose lane users.



**Table 1: Southbound AM Peak Period
General Purpose Lanes Comparison – Average Travel Times (minutes)**

Time Period	Segment	Existing Scenario (4 GPL)	'All General Purpose Lane' Scenario (6 GPL)	Difference
7 AM to 8 AM	South of the Golden Glades Interchange to NW 62 nd Street	7.86	12.11	+4.25 (+54.1%)
	NW 62 nd Street I-195/SR 112	4.18	5.10	+0.92 (+22.0%)
	Corridor Total	12.03	17.21	+5.18 (+43.1%)
8 AM to 9 AM	South of the Golden Glades Interchange to NW 62 nd Street	13.69	19.03	+5.34 (+39.0%)
	NW 62 nd Street I-195/SR 112	5.02	5.08	+0.06 (+1.2%)
	Corridor Total	18.71	24.11	+5.40 (+28.9%)
9 AM to 10 AM	South of the Golden Glades Interchange to NW 62 nd Street	9.13	12.23	+3.10 (+33.9%)
	NW 62 nd Street I-195/SR 112	3.68	4.32	+0.64 (+17.4%)
	Corridor Total	12.81	16.55	+3.74 (+29.2%)
10 AM to 11 AM	South of the Golden Glades Interchange to NW 62 nd Street	5.24	5.28	+0.04 (+0.76%)
	NW 62 nd Street I-195/SR 112	1.45	3.09	+1.64 (+113.1%)
	Corridor Total	6.70	8.37	+1.67 (+24.9%)



For the PM peak period, the northbound direction is the peak direction of travel. A comparison in travel time between existing conditions and the 'All General Purpose Lane' or 'All GPL' scenario is presented below in Table 2.

Time Period	Segment	Existing Scenario (4 GPL)	'All General Purpose Lane' Scenario (6 GPL)	Difference
4 PM to 5 PM	I-195/SR 112 to NW 62 nd Street	2.97	2.14	-0.83 (-28.0%)
	NW 62 nd Street to South of Golden Glades Interchange	18.17	17.47	-0.70 (-3.8%)
	Corridor Total	21.14	19.61	-1.53 (-7.24%)
5 PM to 6 PM	I-195/SR 112 to NW 62 nd Street	5.00	4.45	-0.55 (-11.0%)
	NW 62 nd Street to South of Golden Glades Interchange	16.71	20.53	+3.82 (+22.9%)
	Corridor Total	21.71	24.98	+3.27 (+15.1%)
6 PM to 7 PM	I-195/SR 112 to NW 62 nd Street	3.45	3.01	-0.44 (-12.8%)
	NW 62 nd Street to South of Golden Glades Interchange	16.22	18.30	+2.08 (+12.8%)
	Corridor Total	19.67	21.30	+1.64 (+8.3%)
7 PM to 8 PM	I-195/SR 112 to NW 62 nd Street	1.55	1.54	-0.01 (-0.7%)
	NW 62 nd Street to South of Golden Glades Interchange	6.67	12.30	+5.63 (+84.4%)
	Corridor Total	8.22	13.84	+5.64 (+68.4%)

Travel times initially decrease during the first analysis hour in the 'All GPL' scenario when compared to the existing conditions. As the PM peak period volumes continue to increase, travel times increase at a higher rate in the 'All GPL' scenario than in existing conditions. Additionally, the general purpose lanes in the 'All GPL' scenario do not recover from the peak of congestion as

quickly as in the existing condition. Table 2 demonstrates that the conversion of the existing two (2) express lanes to general purpose lanes does not generally provide time savings for general purpose lane users.

A comparison between the existing express lanes and the general purpose lanes under the 'All General Purpose Lane' model scenario was also performed. This comparison examines the travel time changes for the current users of the express lanes who would no longer have the choice to travel in a managed lane system and would have to travel within the general purpose lanes. Table 3 and Table 4 summarize these results for the peak periods.

Table 3: Southbound AM Peak Period
Express Lanes/General Purpose Lanes Comparison – Average Travel Times (min.)

Time Period	Segment	Existing Scenario (2 EL)	'All General Purpose Lane' Scenario (6 GPL)	Difference
7 AM to 8 AM	North of the Golden Glades Interchange (EL Begin) to South of I-195/SR 112 (EL End) ⁽¹⁾	10.16	22.73	+12.58 (+123.9%)
8 AM to 9 AM		10.29	31.65	+21.36 (+207.6%)
9 AM to 10 AM		10.74	21.42	+10.68 (+99.4%)
10 AM to 11 AM		10.48	12.69	+2.21 (+21.1%)

(1) Analysis based on March 2015 data. Segment 2 and Segment 3 of 95 Express were not in operation in March 2015

Table 3 indicates a significant increase in average travel times for the existing express lane users in the 'All General Purpose Lane' scenario. Converting the express lanes to general purpose lanes would result in travel times significantly increasing for express lane users in the AM peak period. Travel times for these users would be as much as three (3) times greater than existing conditions. The existing volumes in the express lanes currently account for approximately a third of the total corridor volume, resulting in a travel time increase for a significant portion of corridor users.

Table 4 summarizes the comparison of the existing northbound express lane travel times for the 'All General Purpose Lane' scenario, for the PM peak period. Similar to the AM peak period, express lane users would experience an increase in travel time under a 'All General Purpose Lane' scenario. Travel times for these users would be as much as two (2) times greater than existing conditions.

Table 4: Northbound PM Peak Period
Express Lanes/General Purpose Lanes Comparison – Average Travel Times (min.)

Time Period	Segment	Existing Scenario (2 EL)	'All General Purpose Lane' Scenario (6 GPL)	Difference
4 PM to 5 PM	South of I-195/SR 112 (EL Begin) to North of the Golden Glades Interchange (EL End) ⁽¹⁾	16.31	23.37	+7.06 (+43.3%)
5 PM to 6 PM		17.34	28.92	+11.58 (+66.9%)
6 PM to 7 PM		11.81	25.05	+13.24 (+112.1%)
7 PM to 8 PM		10.81	17.60	+6.79 (+62.8%)

(1) Analysis based on March 2015 data. Segment 2 and Segment 3 of 95 Express were not in operation in March 2015

The conversion of the express lanes to general purpose lanes is expected to increase travel times for express lane users. The typical travel time savings provided by the express lanes would be eliminated.

Travel Speeds

Average travel speeds along the corridor were extracted from the existing conditions and the 'All General Purpose Lane' model scenarios. Tables 5 and 6 summarize the travel speeds during the AM and PM peak period in the peak travel direction, for the general purpose lanes. As indicated in Table 5, during the southbound AM peak period, the general purpose lanes would experience a decrease in average travel speeds throughout the morning under the 'All General Purpose Lane' scenario.

Table 5: Southbound AM Peak Period
General Purpose Lanes Comparison – Average Travel Speeds (mph)

Time Period	Segment	Existing Scenario (4 GPL)	'All General Purpose Lane' Scenario (6 GPL)	Difference
7 AM to 8 AM	South of the GGI to NW 62 nd Street	46.6	28.0	-18.6
	NW 62 nd Street to I-195/SR 112	23.9	14.8	-9.1
8 AM to 9 AM	South of the GGI to NW 62 nd Street	30.3	16.9	-13.4
	NW 62 nd Street to SR 5/US 1	27.7	14.9	-12.8
9 AM to 10 AM	South of the GGI to NW 62 nd Street	36.9	25.8	-11.1
	NW 62 nd Street to SR 5/US 1	20.6	17.5	-3.1
10 AM to 11 AM	South of the GGI to NW 62 nd Street	59.1	58.8	-0.3
	NW 62 nd Street to SR 5/US 1	52.1	24.5	-27.6



Table 6 presents the average travel speed comparison for the general purpose lanes in the northbound direction during the PM peak period. The conversion of the express lanes would generally result in decreases in travel speeds through the majority of the corridor (NW 62nd Street to South of the GGI), except during the beginning of the analysis period. Consistent with the travel time analysis, speeds in the general purpose lanes do not recover as quickly under the 'All GPL' scenario compared to existing conditions.

Time Period	Segment	Existing Scenario (4 GPL)	'All General Purpose Lane' Scenario (6 GPL)	Difference
4 PM to 5 PM	I-195/SR 112 to NW 62 nd Street	30.5	42.3	+11.8
	NW 62 nd Street to South of the GGI	18.1	18.6	+0.5
5 PM to 6 PM	I-195/SR 112 to NW 62 nd Street	18.1	20.3	+2.2
	NW 62 nd Street to South of the GGI	16.6	20.4	-3.8
6 PM to 7 PM	I-195/SR 112 to NW 62 nd Street	26.2	26.2	0.0
	NW 62 nd Street to South of the GGI	20.4	17.9	-2.5
7 PM to 8 PM	I-195/SR 112 to NW 62 nd Street	58.5	58.8	+0.3
	NW 62 nd Street to South of the GGI	50.2	28.0	-22.2

A travel speed comparison was also performed between the existing express lanes and the general purpose lanes under the 'All General Purpose Lane' scenario. Table 7 and Table 8 summarize these results. In the southbound direction during the AM peak period, express lane users would experience a reduction in average travel speeds between 39 and 10 miles per hour within the limits of Segment 1 of 95 Express, as presented in Table 7.

Table 7: Southbound AM Period
Express Lanes/General Purpose Lanes Comparison – Average Travel Speeds (mph)

Time Period	Segment	Existing Scenario (EL)	'All General Purpose Lane' Scenario (GPL)	Difference
7 AM to 8 AM	North of the Golden Glades Interchange (EL Begin) to South of I-195/SR 112 (EL End) ⁽¹⁾	58.9	26.3	-32.6
8 AM to 9 AM		58.1	18.9	-39.2
9 AM to 10 AM		55.7	27.9	-27.8
10 AM to 11 AM		57.1	47.1	-10.0

(1) Analysis based on March 2015 data. Segment 2 and Segment 3 of 95 Express were not in operation in March 2015

Express lane users in the northbound direction will experience a reduction in average travel speeds of between 11 and 27 miles per hour during the PM peak period.

Table 8: Northbound PM Peak Period
Express Lanes/General Purpose Lanes – Average Travel Speeds (mph)

Time Period	Segment	Existing Scenario (EL)	'All General Purpose Lane' Scenario (GPL)	Difference
4 PM to 5 PM	South of I-195/SR 112 (EL Begin) to North of the Golden Glades Interchange (EL End) ⁽¹⁾	37.0	25.7	-11.3
5 PM to 6 PM		34.9	20.8	-14.1
6 PM to 7 PM		51.2	24.0	-27.2
7 PM to 8 PM		55.9	34.2	-21.7

(1) Analysis based on March 2015 data. Segment 2 and Segment 3 of 95 Express were not in operation in March 2015

Figures 2 and 3 provide a comparison of the spot speeds for express lanes and general purpose lanes for each scenario near NW 62nd Street, in the peak direction during the core peak hours. The average speed weighted by volume in the express lanes and general purpose lanes is also provided for the existing conditions scenario. As indicated in Figure 2, the weighted average speed ranged from 32 to 49 mph for existing conditions during the AM peak period, while the average speeds of

the 'All General Purpose Lane' scenario range from 19 to 47 mph. The existing weighted speed was consistently higher than the 'All GPL' scenario speed for all four (4) analysis hours.

**Figure 2: Southbound Spot Speed Comparison
AM Peak Period – South of NW 62nd Street**

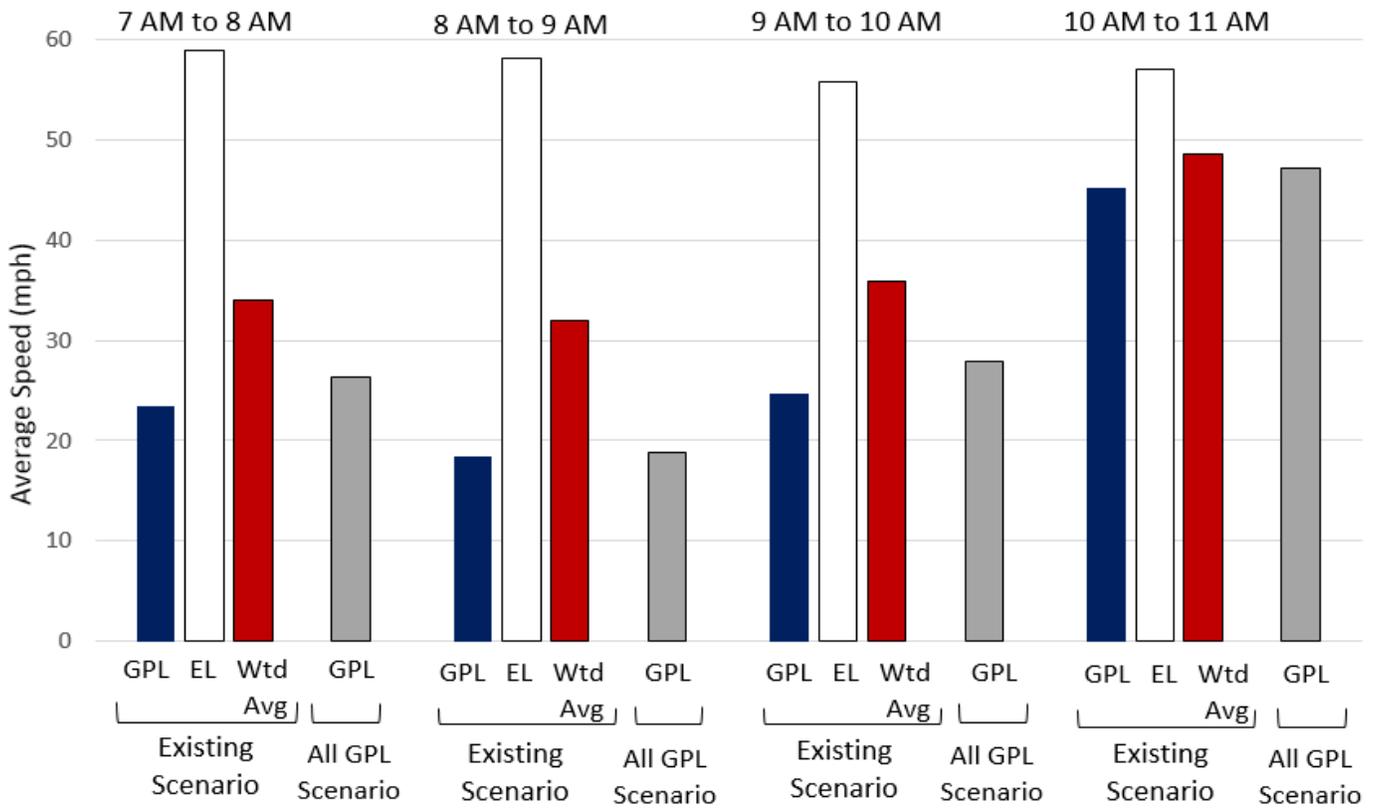
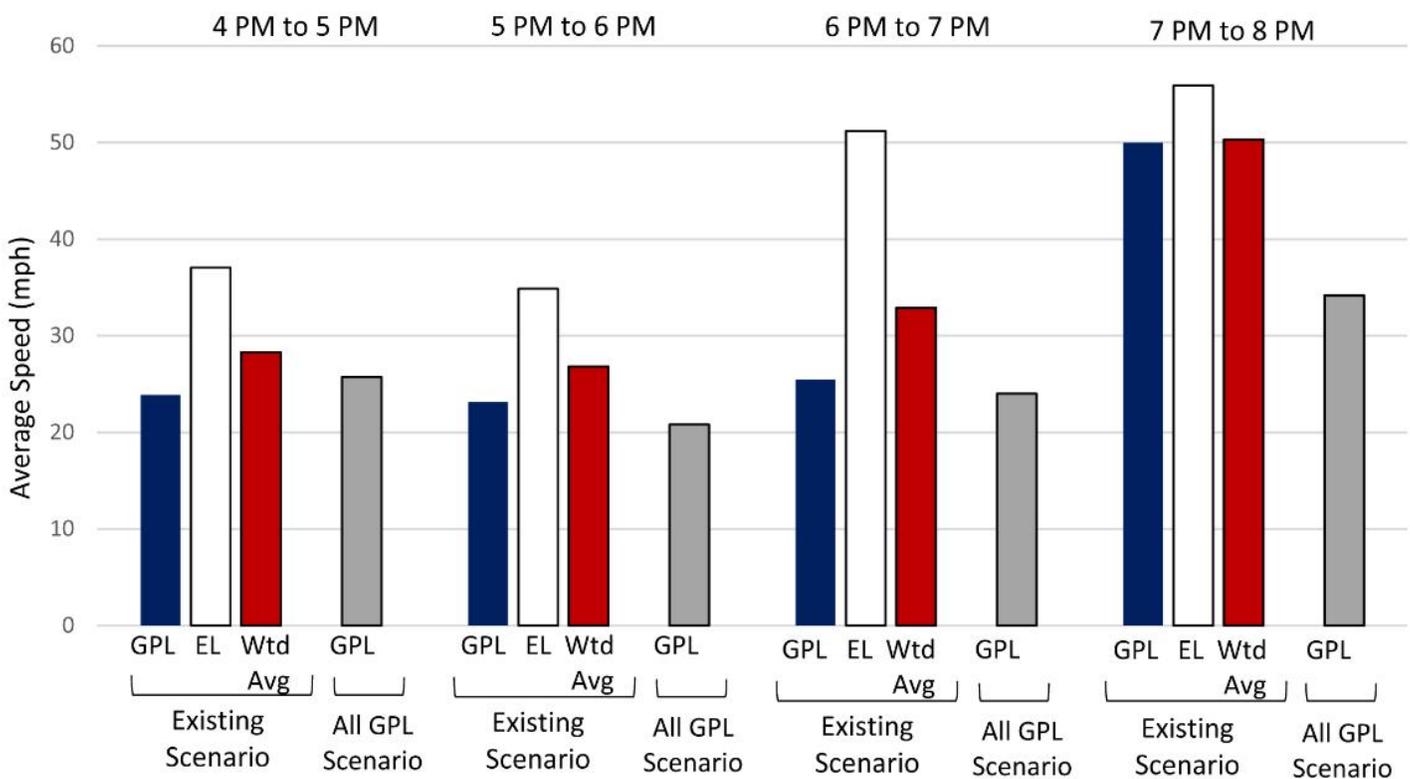


Figure 3 shows weighted spot speeds of approximately 28 mph to 50 mph for existing conditions during the PM peak period, while the average speed in the 'All General Purpose Lane' scenario ranges between 21 and 34 mph. The existing weighted speed was consistently higher than the 'All GPL' scenario speed for all four (4) analysis hours.

At this location, the conversion of the express lanes to general purpose lanes does not generally benefit the speeds of the general purpose lanes, while motorists that currently use the express lanes are negatively impacted.

**Figure 3: Northbound Spot Speed Comparison
PM Peak Period – South of NW 62nd Street**



Throughput/Volumes

Traffic volumes at two (2) locations along the corridor were extracted from the existing conditions and the 'All General Purpose Lane' model scenarios. Tables 9 and 10 summarize the throughput volumes for each scenario during the peak periods. Table 9 presents the throughput volumes for the two (2) scenarios, for the southbound direction of travel during the AM peak for a location south of NW 62nd Street. The conversion of the express lanes to general purpose lanes would typically result in a reduction in overall corridor throughput during the AM analysis period, especially as the demand builds starting at 8 AM.

Time Period	Location	Existing Scenario (GPL + EL)	'All General Purpose Lane' Scenario (GPL)	Difference
7 AM to 8 AM	South of NW 151 st Street	4,352+2,683 =7,035	9,232	+2,197 (+31.2%)
	South of NW 62 nd Street	6,216+2,658 =8,874	8,563	-311 (-3.5%)
8 AM to 9 AM	South of NW 151 st Street	4,122+3,131 =7,253	7,107	-146 (-2.0%)
	South of NW 62 nd Street	6,085+3,130 =9,215	8,878	-337 (-3.7%)
9 AM to 10 AM	South of NW 151 st Street	4,270+3,359 =7,629	7,062	-567 (-7.4%)
	South of NW 62 nd Street	5,895+3,342 =9,237	9,397	+160 (+1.7%)
10 AM to 11 AM	South of NW 151 st Street	5,037+2,231 =7,268	7,032	-236 (-3.2%)
	South of NW 62 nd Street	5,729+2,338 =8,067	8,519	+452 (+5.6%)



Table 10 summarizes the vehicle throughput in the northbound direction during the PM peak period. In general, the conversion would negatively impact throughput, especially during the most congested peak hours.

Table 10: Northbound PM Peak Period Average Traffic Volumes				
Time Period	Location	Existing Scenario (GPL + EL)	'All General Purpose Lane' Scenario (GPL)	Difference
4 PM to 5 PM	South of NW 62 nd Street	5,881+3,042 =8,923	9,023	+100 (+1.1%)
	South of NW 151 st Street	6,309+2,785 =9,094	8,633	-461 (-5.1%)
5 PM to 6 PM	South of NW 62 nd Street	6,032+2,768 =8,800	8,125	-675 (-7.7%)
	South of NW 151 st Street	6,539+2,824 =9,363	8,765	-598 (-6.4%)
6 PM to 7 PM	South of NW 62 nd Street	5,862+2,389 =8,251	8,123	-128 (-1.6%)
	South of NW 151 st Street	6,597+2,698 =9,295	9,206	-89 (-1.0%)
7 PM to 8 PM	South of NW 62 nd Street	5,577+2,229 =7,806	7,768	-38 (-0.5%)
	South of NW 151 st Street	6,645+2,304 =8,949	9,223	+274 (+3.1%)

Speed Contour Maps

An effective method for the identification of bottlenecks and congestion areas is the use of speed contour maps, which are color-coded speed diagrams that graphically depict operations over time. Speed contour maps were developed for both the existing conditions and the 'All General Purpose Lane' model scenarios for the six (6) hour AM (6 AM to 12 PM) and PM (3 PM to 9 PM) peak periods. Speeds were reported every 15 minutes. The speed contour maps for the AM and PM peak periods are presented in Figures 4 and 5. Slower speeds are depicted in red, while faster speeds are depicted in green.

AM Peak Period

The AM peak period travel speeds are presented in Figure 4. A bottleneck is noted, for both the existing conditions and 'All General Purpose Lane' analyses, in the southbound direction at the westbound off-ramp to SR 112/Airport Expressway. While the congestion points are similar, the congestion in the 'All General Purpose Lane' model does not dissipate over the course of the AM peak, as it does in the existing conditions model, and the congestion extended further in the 'All General Purpose Lane' scenario extending past the Golden Glades Interchange. For the existing conditions scenario, congestion generally ends around 9:30 AM, while congestion continues past 10 AM under the "All General Purpose Lane" scenario. Vehicles divert to the express lanes in the existing conditions model, which reduces the duration of the general purpose lanes congestion.

PM Peak Period

Figure 5 presents the speed contour maps for the PM peak period. The speed contours for the peak northbound travel direction indicate similar bottleneck and congestion patterns between the existing conditions model and the 'All General Purpose Lane' model. The congestion begins to build at similar time periods under both scenarios; however, the existing conditions model indicates that congestion dissipates around 7 PM, while congestion continues beyond 7 PM under the 'All General Purpose Lane' scenario. The queue extending from the Golden Glades Interchange eventually spills back to the south limits of the model.

Figure 4: AM Peak Period Southbound Speed Contour Map

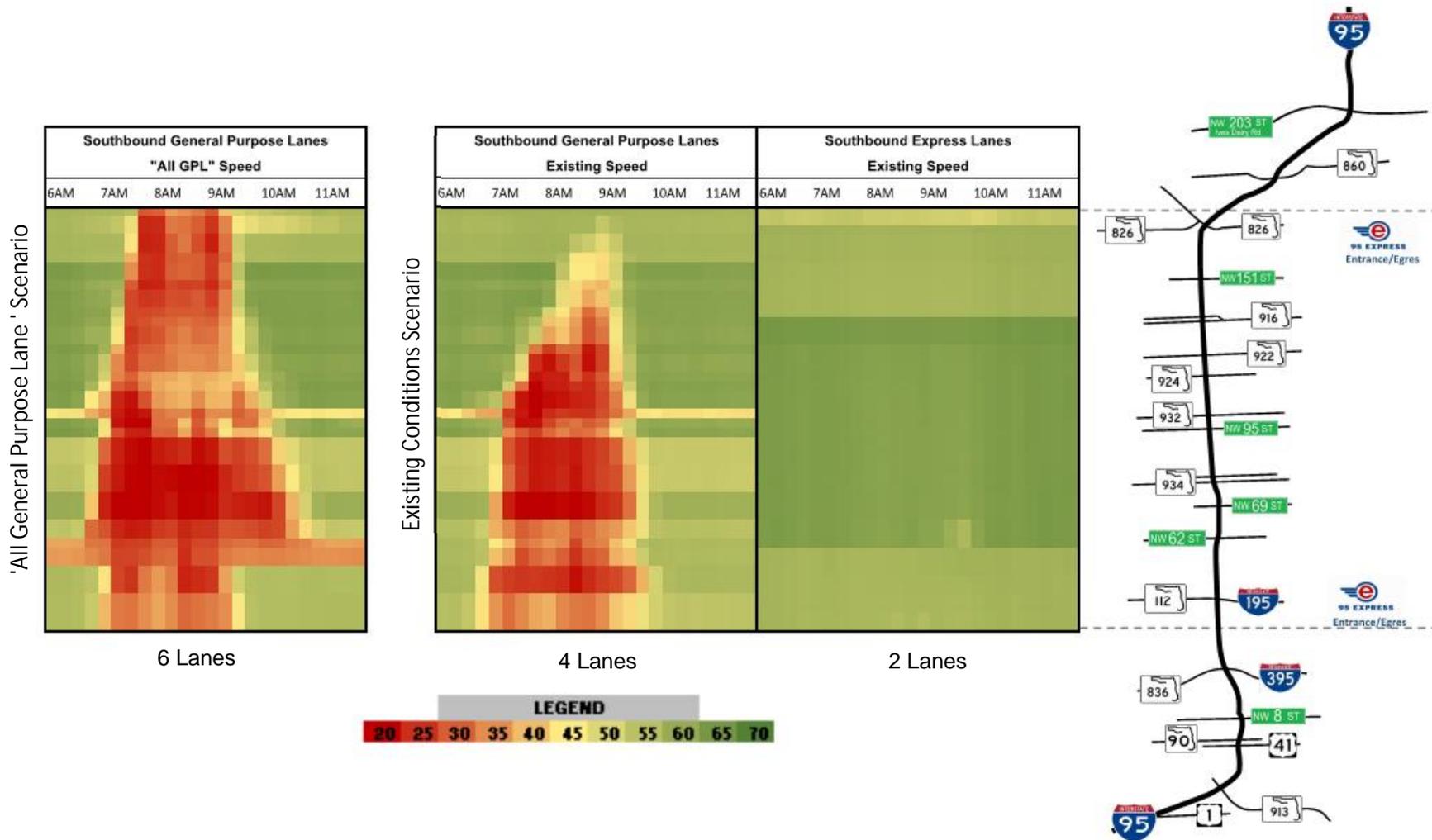
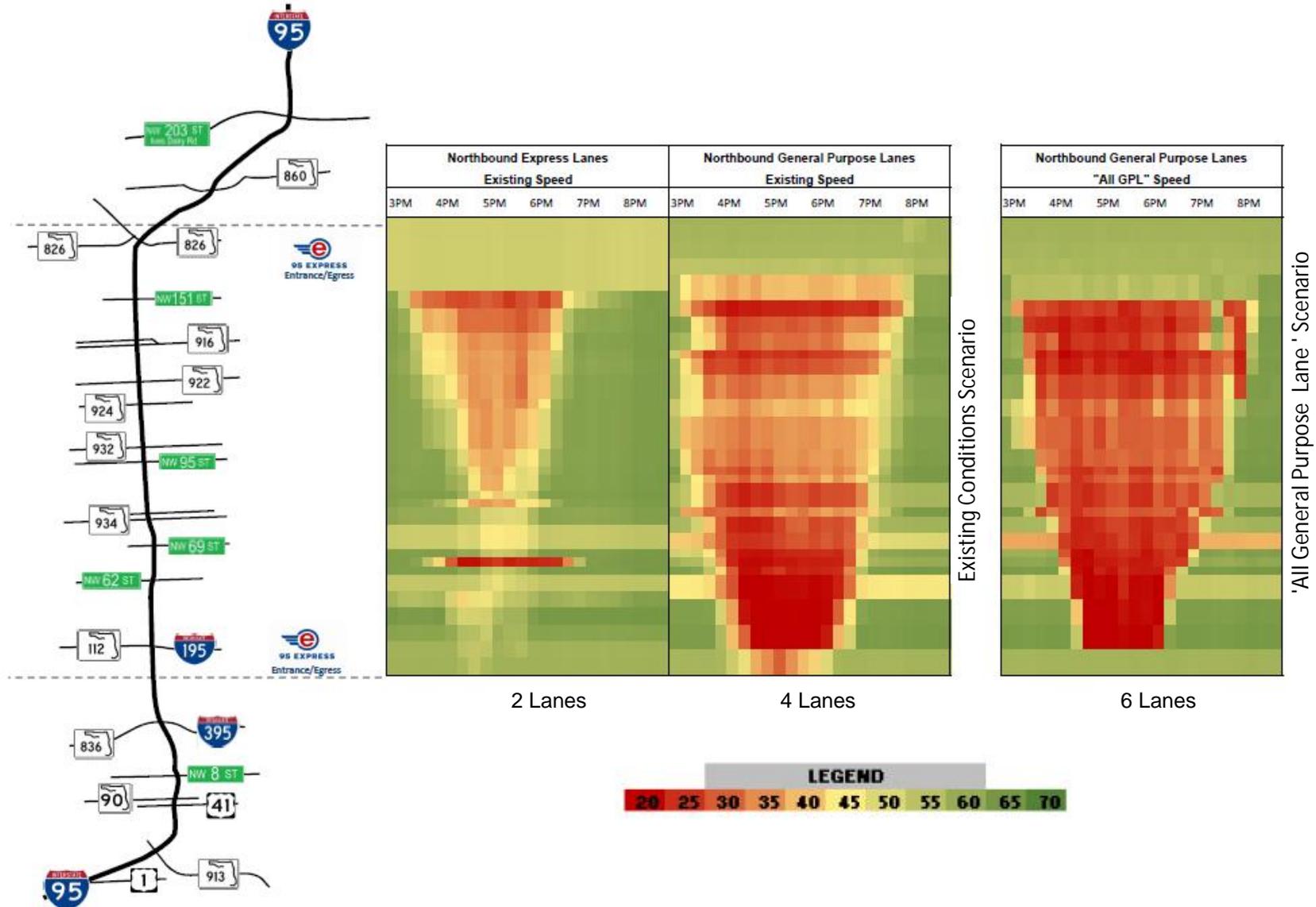


Figure 5: PM Peak Period Northbound Speed Contour Map





CONCLUSION

An analysis of the operations of the I-95 corridor in Miami-Dade County with Phase 1 of the 95 Express was conducted in comparison to a scenario that would eliminate the two (2) express lanes in each direction and provide for a total of six (6) general purpose lanes in each direction. Data from a calibrated 2015 existing conditions VISSIM model for the Interstate 95 corridor were compared to data from an 'All General Purpose Lane' scenario. The conversion of the existing express lanes to general purpose lanes would be expected to result in the following impacts:

- General purpose lane users would experience an increase in travel time between 25 and 43 percent during the AM peak hours. During the PM peak period, general purpose lane users would experience a nominal decrease in travel time beginning at 5 PM and ranging from 8-68 percent.
- Previous users of the express lanes who would now travel in the general purpose lanes would experience an increase in travel time in the peak direction during the peak periods, extending up to an additional 21 minutes (207 percent) in the AM peak hours and up to an additional 13 minutes (112 percent) in the PM peak hours.
- General purpose lanes users would experience decreases in travel speeds in the peak direction during the AM peak period and decreases in travel speeds in the peak direction beginning at 5 PM during the PM peak period.
- Previous users of the express lanes who would now travel in the general purpose lanes would experience considerable decreases in travel speeds of up to 39 mph in the AM peak period and up to an 27 mph decrease in the PM peak period.
- Overall corridor speeds weighted by volume would generally decrease during the AM and PM peak periods.
- A reduction in vehicle throughput up to 7 percent for the overall corridor would occur within the limits of 95 Express Segment 1 during the peak periods.

As evidenced by the general increase in travel times, decrease in average travel speeds, reduction in vehicle throughput, and increase in the duration of congestion, the elimination of the express lanes would have a negative impact on the operations of the I-95 corridor in Miami-Dade County, including the general purpose lanes.