CONNECTING THE HIGHWAYS NETWORK

MISSING LINKS

Miami-Dade Transportation Planning Organization

FINAL

December 2017

Prepared for:

Miami-Dade Transportation Planning Organization

Work Order #GPC VI-22

Prepared by:

MARLIN and JACOBS

DISCLAMER

The Miami-Dade TPO complies with the provisions of Title VI of the Civil Rights Act of 1964, which states: No person in the United States shall, on grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. It is also the policy of the Miami-Dade TPO to comply with all of the requirements of the Americans with Disabilities Act (ADA). For materials in accessible format please call 305-375-1888.

The preparation of this report has been financed in part from the U.S. Department of Transportation (USDOT) through the Federal Highway Administration (FHWA) and/or the Federal Transit Administration (FTA), the State Planning and Research Program (Section 505 of Title 23, U.S. Code) and Miami-Dade County, Florida. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

TPO

Miami-Dade Transportation Planning Organization

EXECUTIVE SUMMARY

The purpose of this study is to evaluate the existing and planned highway network and provide the needed connectivity to meet the future demand in accessing major employment and activity centers in Miami-Dade County. Emphasis has been placed in the further development and expansion of existing highway facilities in the Miami-Dade County area. Specifically, the following missing highway links were provided as a starting point for this study:

- Extending SR-826/Palmetto Expressway from the Golden Glades Interchange (GGI) to North Miami Beach
- Connecting SR-112/Airport Expressway to the Palmetto Expressway and the Florida Turnpike
- Connecting SR-874/Don Shula Expressway from the Homestead Extension of Florida's Turnpike (HEFT) to SR-836/ Dolphin Expressway Southwest Extension
  (SR-874/Don Shula Expressway Ramp Connector to SW 128th Street is now under construction)

Readily available data was collected and analyzed for each corridor in terms of existing land use, traffic demand, congestion, speeds, bottlenecks, and crashes. In addition, the South East Florida Regional Planning Model (SERPM 7) was used to evaluate the connectivity of the potential expressway extensions. Data pertaining to the future conditions such as the adopted land use plans, 2040 Long Range Transportation Plan (LRTP) roadway and transit planned improvements, and 2040 Levels of Service (LOS) were also collected as part of this task.

Due to the construction currently underway on the SR-874/Don Shula Expressway ramp connector to SW 128th Street, the SR-874 alternative was not carried onto the subsequent steps of the missing highway links evaluation. Based on the analysis conducted for the existing conditions and input from the Project Advisory Committee (PAC) members, the following three (3) missing highway links were analyzed as the future build alternatives using the SERPM 2040 Model:

- SR-826 Extension via NE 167th/163rd Street Corridor to SR-A1A
- SR-112 Extension via Okeechobee Road Corridor to SR-826
- SR-112 Extension via NW 36th Street Corridor to SR-826

The corresponding freeway links were coded in the model and a select-link analyses were conducted for each model run. The resultant demand was graphically displayed to show where trips are coming from and going to, and the impact on the surrounding arterials was also inspected. This resultant demand indicates that the project with the highest demand is the SR-826 Highway Extension via NE 167th/163rd Street to SR-A1A, with 15% more demand than the SR-112 Extension via Okeechobee Road and 43% more that the SR-112 Extension via NW 36th Street.

The resultant vehicle-miles-traveled (VMT) and vehicle-hours-traveled (VHT) in Miami-Dade County were also compared to analyze the impact of each alternative versus the No-Build conditions. Consistently with SR-826

being the most constrained of the corridors, and the one with the highest demand, the SR-826 alternative is anticipated to reduce VMT and VHT the most.

The study also included an analysis of the trip patterns within the County. Origin-Destination (OD) Streetlight data provided by the TPO was used to analyze the travel demand trends in Miami-Dade County for Year 2015. The data contains trips between 42 zones—delineated consistently with the Traffic Analysis Districts (TADs) defined by Miami-Dade County—as well as intrazonal trips within each TAD. The OD data provided was disaggregated by day of week, trip purpose (personal or commercial), and time period; and later summarized for daily weekday (Monday to Thursday) trips including both trip purposes, to make it compatible with similar data from the SERPM Model and, thus, enable a valid comparison.

In 2015, the TAD zone with the highest number of trips (including intrazonal trips) is the zone that includes the areas of Doral and Medley, and it is ranked first for both origin and destination of trips. The second ranked origin and third ranked destination is the zone including South Miami and part of Glenvar Heights, and a small portion of Coral Gables. The third ranked origin and second ranked destination is a zone that includes a large portion of North Miami Beach and Aventura. The fourth ranked (both as origin and destination) includes the northern portion of Coral Gables, West Miami and the neighborhood of Flagami. Lastly, the area including Downtown Miami is ranked fifth for both origin and destination of trips.

The same exercise was carried out using the trip tables from the SERPM Model for the Year 2040. In this case, a general pattern of the top vehicular demand was exposed as follows: east-west between Little Havana and Coral Way and the northern portion of West Miami and the neighborhood of Flagami; and north-south from just west of Coral Gables, West Miami and Flagami and the Doral and Medley areas. This pattern exhibits the east-west movement along SR-836 and the north-south portion of SR-826. These results emphasize the need to ameliorate these over-capacity facilities through the improvement of existing facilities or the provision of new alternative facilities in order to meet the vehicular demand anticipated for Year 2040.

Within the scope of the existing and future conditions analyses conducted, it became apparent that additional high-capacity links/segments are needed throughout Miami-Dade County. Although the County is fully connected by roadways of different functional classification and capacity, the growth in demand has not been accompanied by a comparable growth in lane-miles, particularly high-capacity lane-miles such as freeways. This imbalance results in the existing congestion experienced by the roadway network, which is expected to worsen in the future, given the anticipated demand growth throughout Year 2040.

It is worth mentioning that the future scenarios include significant investment in Premium Transit (namely, most of the corridors established in the SMART plan). Nevertheless, the increase in population and employment forecasted for future years still leaves an unsatisfied demand for mobility.

The results presented in this study are at a very general planning level and they identified the need—based on demand—for efficient connectivity along the examined corridors. Therefore, a more detailed assessment of the actual feasibility of said corridors should be pursued. In addition, the study was based on a preselected trio of corridors. It is therefore recommended to pursue similar studies including other corridor sets in order to

identify additional needs and prioritize other corridors based on demand. It should be noted that the feasibility of the corridors should be part of a second-tier analysis and not included in the first tier, which—as in this case—should only consider travel demand.

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF FIGURES

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

TABLE OF CONTENTS

APPENDICES

1 INTRODUCTION

The purpose of this study is to evaluate the existing and planned highway network and provide the needed connectivity to meet the future demand in accessing major employment and activity centers in Miami-Dade County.

Emphasis has been placed in the further development and expansion of existing highway facilities in the Miami-Dade County area, including but not limited to I-95, Palmetto Expressway (SR-826), Dolphin Expressway (SR-836), Florida's Turnpike, Airport Expressway (SR-112), Gratigny Parkway Expressway (SR-974), Don Shula Expressway (SR-874) and Snapper Creek Expressway (SR-878). Specifically, the following missing highway links were provided as a starting point for this study:

- Extending SR-826/Palmetto Expressway from the Golden Glades Interchange (GGI) to North Miami Beach
- Connecting SR-112 to the Palmetto Expressway and Florida's Turnpike
- Connecting SR-874 to the proposed Southwest extension of SR-836 to the Miami Executive Airport*

Previous studies conducted on each of the missing link sections have been reviewed by the project team. These studies are included in **Table 1-1**.

Table 1-1: Previous Studies Related to Missing Highway Links

Roadway	Limit A	Limit B	Reference Document
SR-112/195/Airport Expressway	SR-826/Palmetto Expressway	Florida's Turnpike	SR-112 Extension Concept Study (from LeJeune Road to HEFT) 1995 SR-112 Extension Study Issues paper 1995
SR-826/Palmetto Expressway	Golden Glades Interchange	North Miami Beach	City of North Miami Beach Community Mobility Program (indirectly) 2003
SR-874/Don Shula Expressway*	SW Extension of SR-836/Dolphin Expressway	Miami Executive Airport along SW 136th Street	Access to SW 137th Avenue to and from SR-874 (Don Shula Expressway) 2002

* SR-874/Don Shula Expressway Ramp Connector to SW 128th Street is now under construction.

This document details the efforts undertaken to evaluate the existing conditions of the three (3) potential missing highway segments defined as follows:

- SR-826/Palmetto Expressway from Golden Glades Interchange (GGI) to North Miami Beach
- SR-112/Airport Expressway to Palmetto Expressway and Turnpike
- SR-874/Don Shula Expressway from the Homestead Extension of Florida's Turnpike (HEFT) to SR-836/ Dolphin Expressway Southwest Extension
  (SR-874/Don Shula Expressway Ramp Connector to SW 128th Street is now under construction)

The study includes an overview of the Year 2015 land use, traffic volumes, levels of service, congestion, speed scans, safety and connectivity around the missing connections. Furthermore, future conditions sections for each of the study corridors are included to present readily available information for 2020-2030 land use, planned programs and 2040 levels of service In addition, the 2040 South East Regional Planning Model version 7.071 (SERPM 7) was used to analyze three grade-separated build alternatives that were developed after the existing conditions analysis in conjunction with the project team and the Project Advisory Committee (PAC) members.

The PAC was comprised of representatives from the Miami-Dade Transportation Planning Organization (TPO), Florida Department of Transportation (FDOT) District Six Freight and Planning Departments, Miami-Dade Expressway Authority (MDX), Florida's Turnpike, Miami-Dade Department of Transportation and Public Works (DTPW), and supporting consultant staff. Over the extended 10-month study timeframe, two (2) PAC meetings were held. The PAC's input was critical to the scope as the study evolved.

2 SR-826/PALMETTO EXPRESSWAY FROM GGI TO N MIAMI BEACH

This section includes the data collected for the potential highway network connection along the SR-826/NW 167th Street from the GGI to North Miami Beach, which would serve as an extension of the SR-826/Palmetto Expressway. This missing highway link is defined herein as the SR-826 corridor.

2.1 SR-826 EXISTING LAND USE

In the vicinity of the SR-826 corridor, the land use is mainly commercial from the GGI to US-1. Expanding the scope to the north and the south, the land use is primarily residential with some institutional land. East of US-1, the land use is mainly recreational on the south side of the corridor and commercial/office and residential on the north side of SR-826.

The existing land use surrounding a one-mile buffer of the SR-826 corridor is shown in **Figure 2-1**.

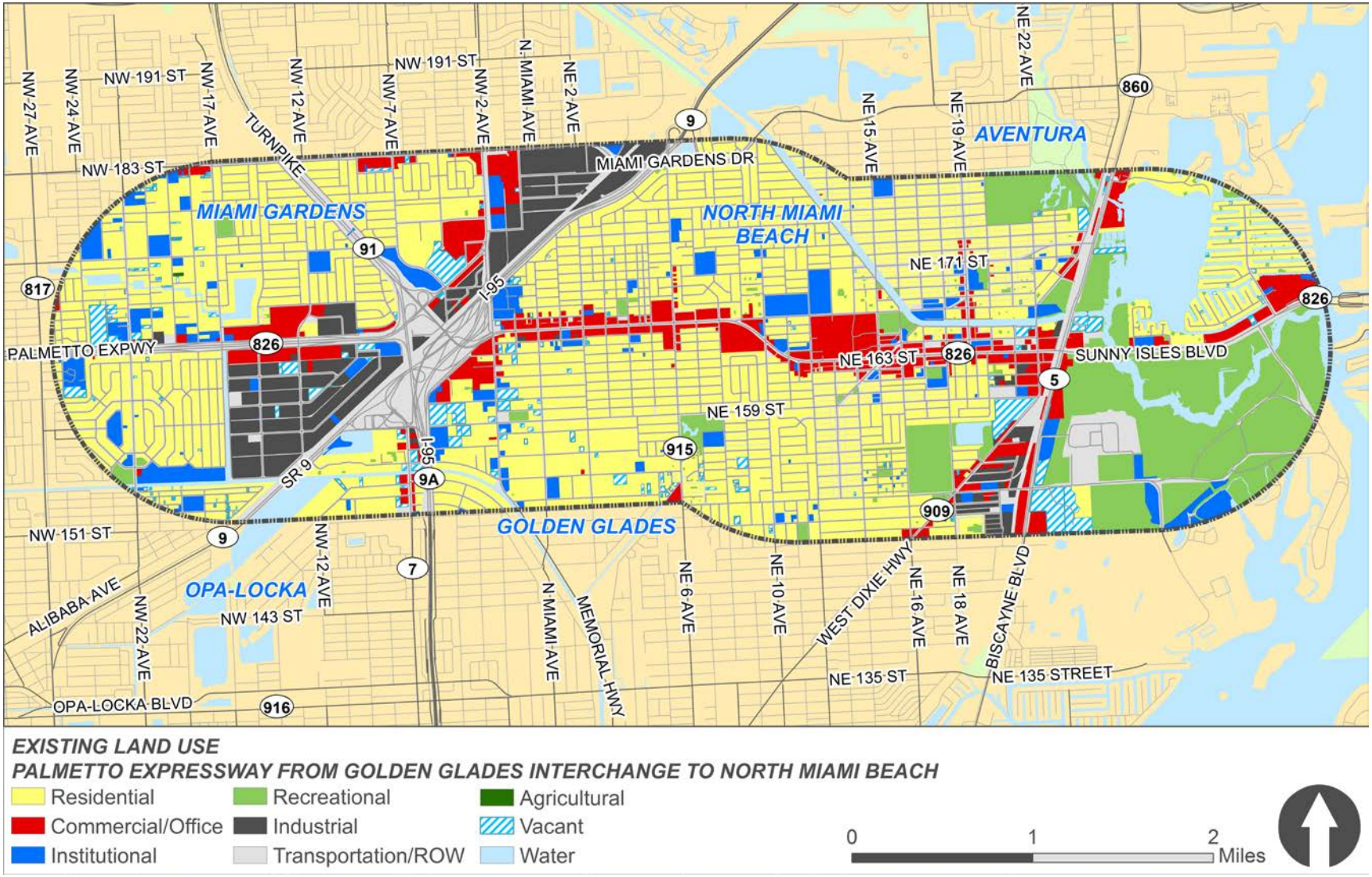


Figure 2-1: SR-826 Existing Land Use

2.2 SR-826 TRAFFIC VOLUMES (FROM WEST OF NW 57TH AVENUE TO GGI)

The 2015 and 2016 Annual Average Daily Traffic (AADT) along SR-826 from west of NW 57th Avenue to the GGI were obtained from traffic monitoring stations data from the FDOT Florida Traffic Online (FTO) resource. There are a total of six (6) stations on the Palmetto Expressway mainline and 20 locations with counts on the on- and off-ramps. The AADTs are summarized in **Table 2-1**.

Table 2-1: SR-826 Traffic Volumes (from West of NW 57th Ave to GGI)

Station No.	Milepost	Station Name	2016 AADT	2015 AADT
876277	0.038	RAMP 87260337 FROM WB NW 167 ST TO WB SR 826, 200' W OF NW 167 ST	11,000	10,500
870554	**18.932**	**SR 826/PALMETTO EXPWY, 1100' W NW 57 AV/ SR 823**	**143,500**	**141,000**
876278	0.038	RAMP 87260502 FROM WB SR 826 TO WB NW 167 ST, 200' W OF SR 826	15,000	14,500
870405	**19.235**	**SR 826/PALMETTO EXPWY, 1100' E NW 57 AV/SR 823**	**139,500**	**131,000**
876283	0.019	RAMP 87260510 FROM EB SR826 TO EB NW 167 ST, 100' E OF SR 826	7,900	7,700
876284	0.038	RAMP 87260511 FROM EB NW 167 ST TO EB SR 826, 200' E OF NW 167 ST	8,500	8,300
870577	**20.249**	**SR 826/PALMETTO EXPWY, 1000' E NW 47 AV**	**141,000**	**141,500**
876282	0.019	RAMP 87260509 FROM WB SR 826 TO WB NW 167 ST, 100' W OF SR 826	8,500	8,300
876212	0.019	RAMP 87260153 FROM WB NW 167 ST TO WB SR 826, 100' W OF NW 167 ST	7,900	7,700
876215	0.038	RAMP 87260156 FROM EB NW 167 ST TO EB SR826, 200' E OF NW 167 ST	9,500	9,300
876213	0.019	RAMP 87260154 FROM WB SR 826 TO WB NW 167 ST, 100' W OF SR 826	8,300	8,100
870578	**21.751**	**SR 826/PALMETTO EXPWY, 1500' W NW 27 AV**	**145,500**	**143,500**
876217	0.019	RAMP 87260158 FROM EB SR826 TO EB NW 167 ST, 100' E OF SR826	9,000	8,800
876216	0.019	RAMP 87260157 FROM WB NW 167 ST TO WB SR826, 100' W OF NW 167 ST	7,400	7,200
876218	0.038	RAMP 87260159 FROM EB NW 167 ST TO EB SR826, 200' E OF NW 167 ST	9,300	9,100
876219	0.019	RAMP 87260160 FROM WB SR826 TO WB NW 167 ST, 100' W OF SR 826	9,200	9,000
870579	**22.256**	**SR 826/PALMETTO EXPWY, 1000' E NW 27 AV**	**152,000**	**150,500**
876222	0.009	RAMP 87260163 FROM EB SR826 TO EB NW 167 ST, 50' E OF SR 826	6,100	6,000
876220	0.009	RAMP 87260161 FROM WB NW 167 ST TO WB SR826, 50' W OF NW 167 ST	6,600	6,400
876223	0.019	RAMP 87260164 FROM EB NW 167 ST TO EB SR826, 100' E OF NW 167 ST	5,300	5,200
876221	0.019	RAMP 87260162 FROM WB SR 826 TO WB NW 167 ST, 100' W OF SR 826	4,300	4,200
870581	**23.262**	**SR 826/PALMETTO EXPWY, 1000' E NW 17 AV**	**142,500**	**140,500**
876287	0.019	RAMP 87260514 FROM EB NW 167 ST TO WB SR 826, 100' E OF NW 167 ST	7,700	7,500
876285	0.009	RAMP 87260512 FROM WB SR826 TO WB NW 167 ST, 50' W OF SR 826	8,500	8,300
876288	0.038	RAMP 87260515 FROM EB SR826 TO RAMP 87270210, 200' E OF SR 826	42,500	41,500
876286	0.019	RAMP 87260513 FROM SB FLTRNPIKE OFF RAMP 87270210 TO SB SR 826, 100' S OF RAMP 87270210	9,800	9,800

2.3 SR-826 YEAR 2015 LEVEL OF SERVICE

The level of service (LOS) is a measure of quality of service of a roadway facility based on performance measures such as density for uninterrupted flow facilities and control delay for interrupted flow facilities. This measure is used by planners and engineers during the conceptual stage of a project to assess the multimodal service of a particular roadway. The LOS discussed in this study refers only to automobile mode. The letters used to stratify the LOS go in alphabetical order from A (best) to F (worst).

The Year 2015 LOS information was provided by FDOT District Six as ESRI ArcGIS shapefile format. Year 2015 LOS on roadways along and near the SR-826 corridor are shown in **Figure 2-2**. The figure shows that SR-826 operates at LOS D from east of NW 27th Avenue to west of the GGI and LOS F from east of GGI to NE 18th Avenue. The operation improves on the SR-826 corridor to LOS C or better east of NE 18th Avenue.

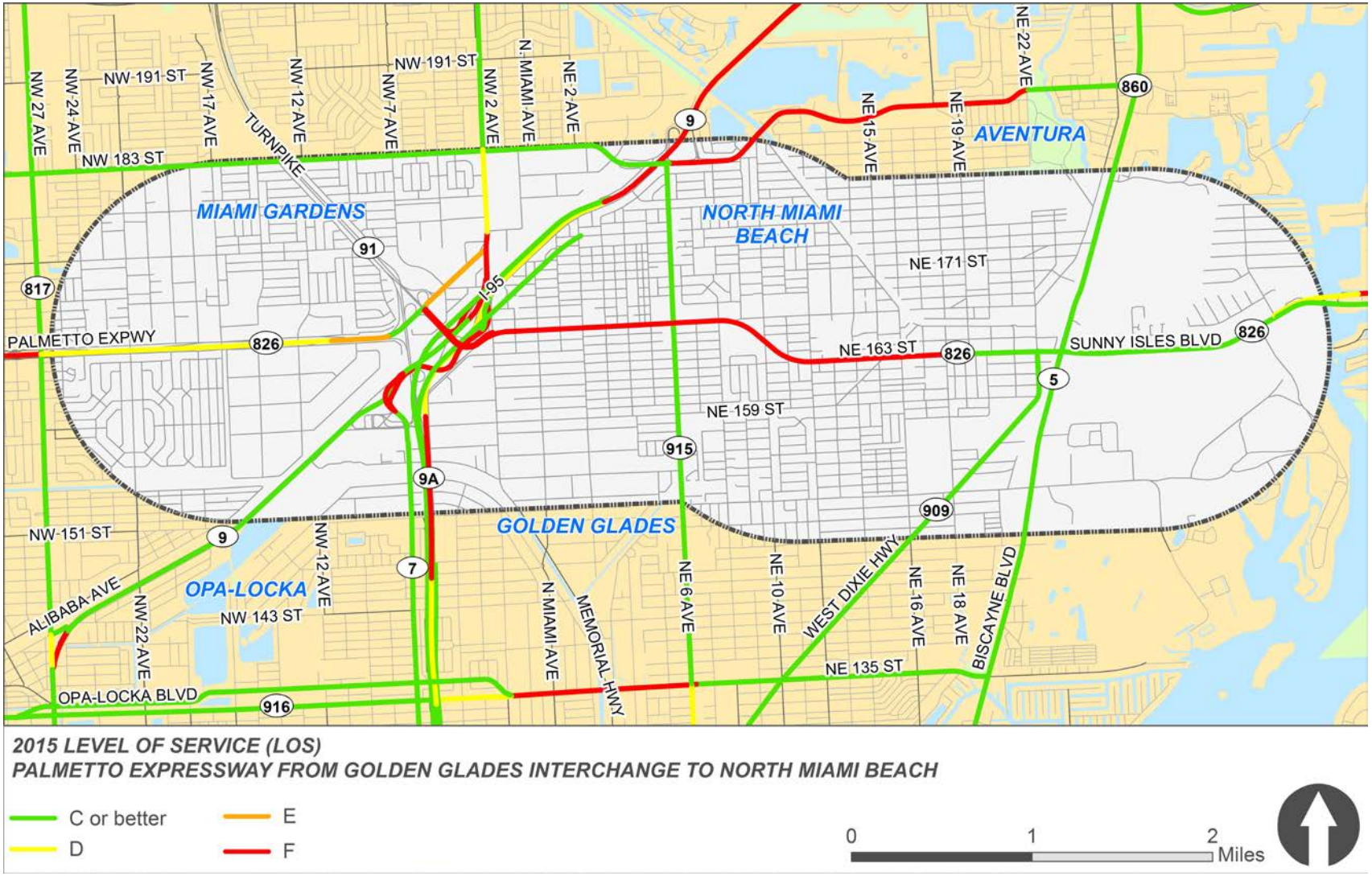


Figure 2-2: SR-826 2015 Level of Service (LOS)

2.4 SR-826 HISTORICAL TREND ANALYSIS

The FDOT Traffic Trends Analysis Tool – TREND_V03a was used to conduct a historical trend analysis on data from traffic monitoring stations along the Palmetto Expressway, using only locations with at least ten years of historical data available. Statistical measures such as the R-squared (R^2) and the historic and projected compounded growth rates are typically observed in a historical trend analysis. R-squared is a statistical measure that determines how close the data points are to the fitted regression line. Values can range from 0% to 100%. Values closer to 100% indicate that the model or formula of the regression line can predict very well the variance of the data points to the mean. The *FDOT Project Traffic Forecasting Handbook (January, 2014)* indicates that, in general, only growth with an R^2 greater than or equal to 75% should be considered when determining growth factor rates. The compounded growth rate refers to the annual growth of the traffic volumes over a period of time.

The resultant R-squared and compounded growth rates for these locations are summarized in **Table 2-2**. The historical trend analysis reports are included in **Appendix A**.

Table 2-2: SR-826 Historical Trend Analysis Summary

Growth Rate Computation Option:		Decaying Exponential Growth		
Station	Description	Trend R^2	Compounded Historic Growth Rate	Compounded Growth Rate (2016 to Design Year 2040)
870577	1000' East of NW 47 Avenue	36.82%	0.85%	0.16%
870578	1500' West of NW 27 Avenue	40.97%	0.78%	0.15%
870579	1000' East of NW 27 Avenue	40.17%	0.95%	0.18%
870581	1000' East of NW 17 Avenue	9.96%	0.45%	0.09%
872114	1500' East of NW 12 Avenue	27.76%	0.67%	0.13%

The values shown in Table 2-2 indicate that traffic volumes in the corridor have grown at an average compounded annual rate of 0.7% from 2006 to 2016. Furthermore, the projections using decaying exponential growth indicate the corridor will have an average compounded annual growth rate of 0.1% from 2016 to the Design Year 2040.

2.5 SR-826 REGIONAL INTEGRATED TRANSPORTATION INFORMATION SYSTEM (RITIS) DATA

Existing available data from the Regional Integrated Transportation Information System (RITIS), used to identify congestion patterns, speeds, and bottleneck locations along SR-826 is included in the following sections. The data was extracted for typical weekdays from March 7th to 9th, 2017.

2.5.1 SR-826 CONGESTION AND SPEEDS

Figure 2-3 to Figure 2-6 show the congestion and speeds measured on SR-826 from west of NW 67th Avenue/Ludlam Road to Collins Avenue during the AM (6:30 to 10:30) and the PM (3:30 to 7:30) peak periods. Congestion shown in **Figure 2-3 and Figure 2-4** corresponds to measured speed as a percentage of the free-flow speed during the AM and PM peak periods, respectively. The speeds shown in **Figure 2-5 and Figure 2-6** are measured as the current estimated harmonic mean speed for the roadway segment in miles per hour during the AM and PM peak periods, respectively.

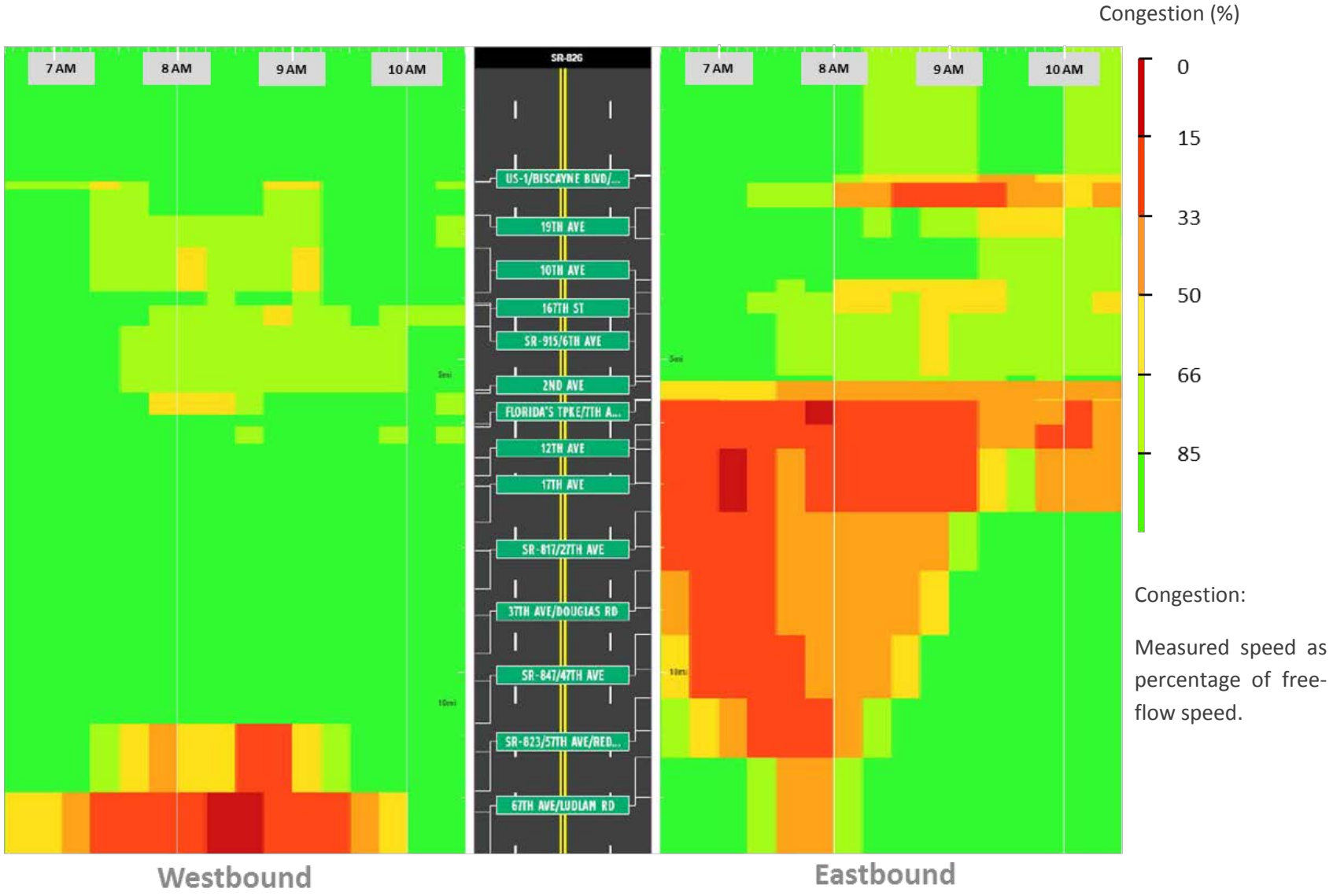


Figure 2-3: RITIS Data — SR-826 AM Congestion

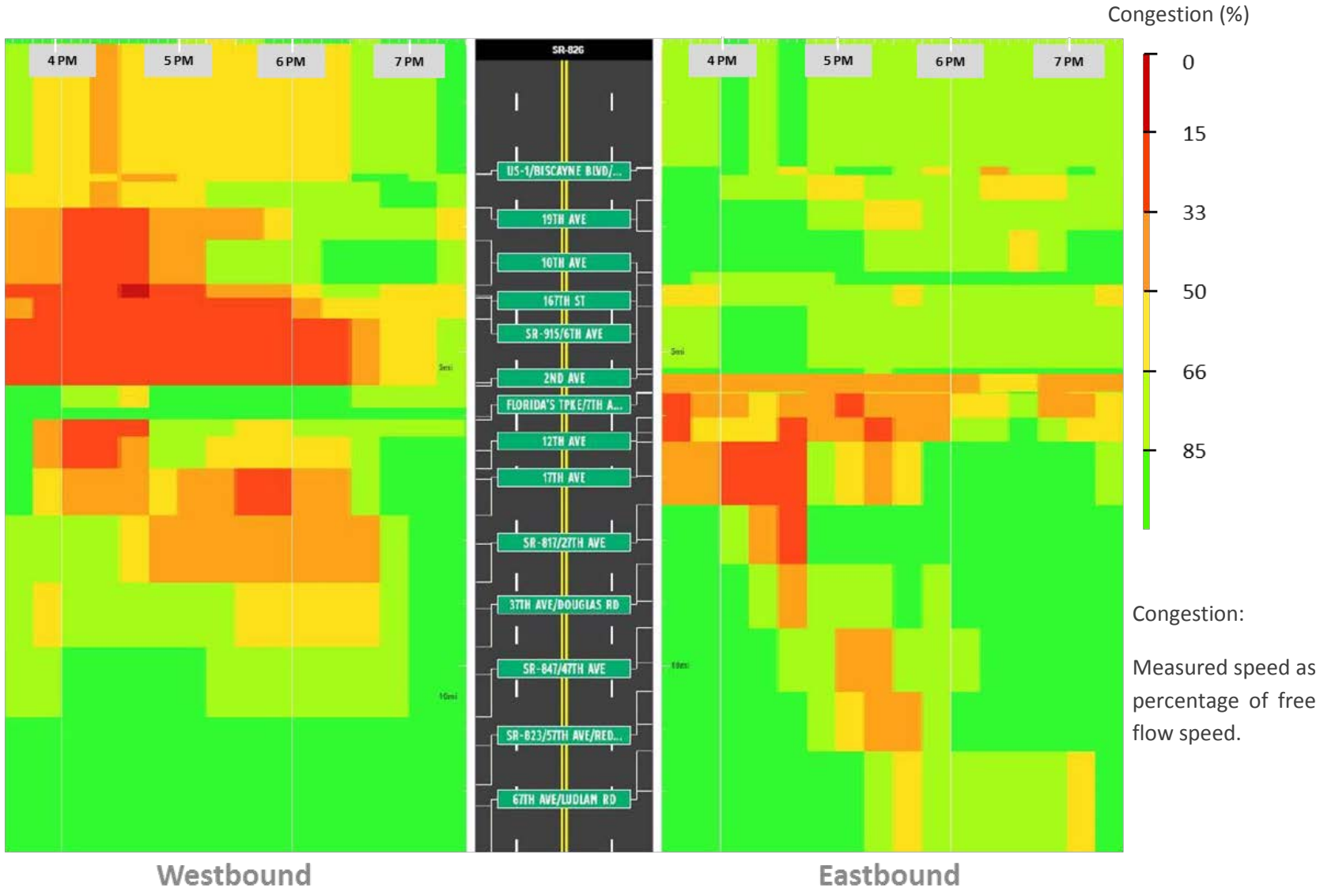


Figure 2-4: RITIS Data — SR-826 PM Congestion

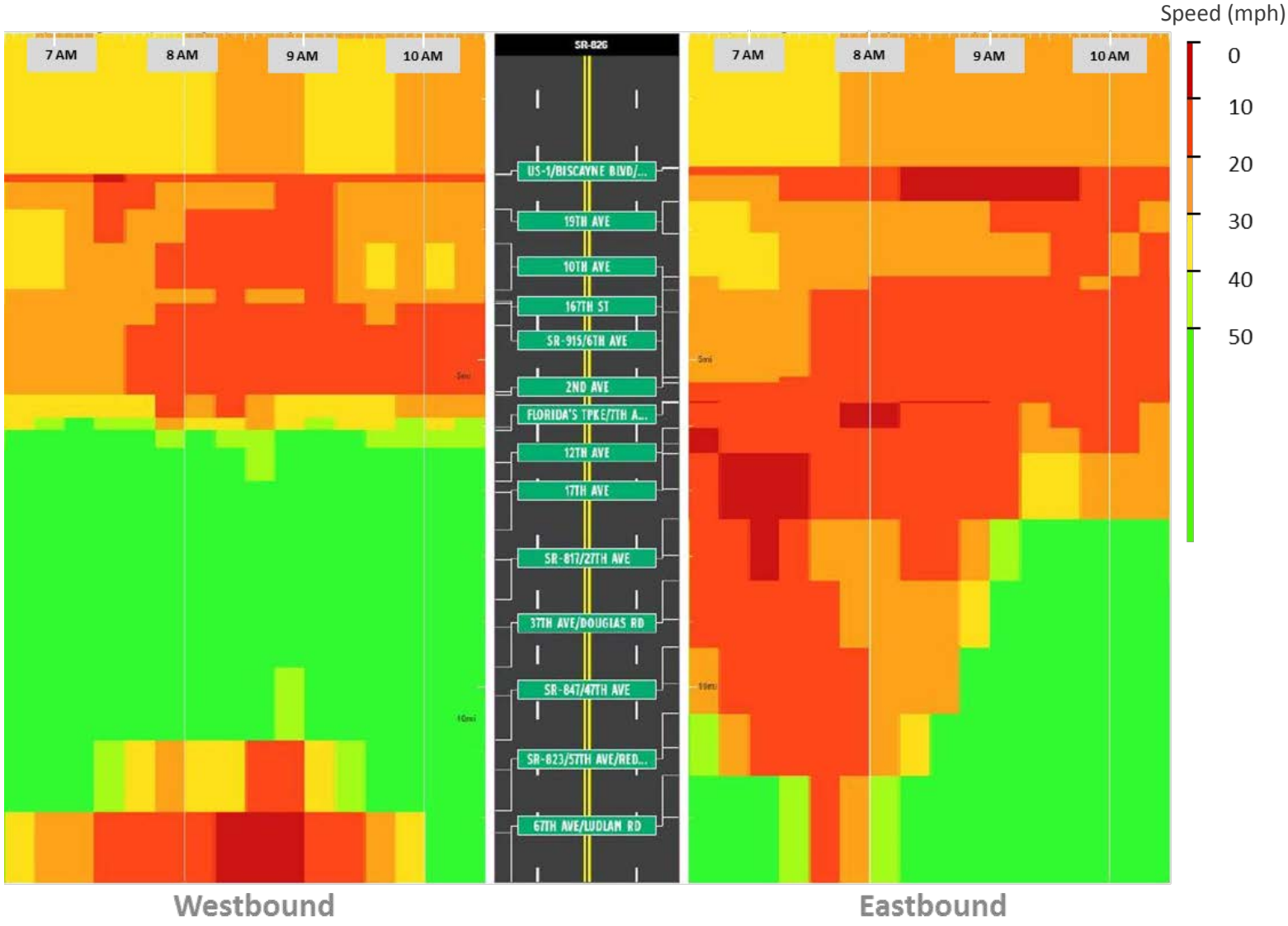


Figure 2-5: RITIS Data — SR-826 AM Speeds

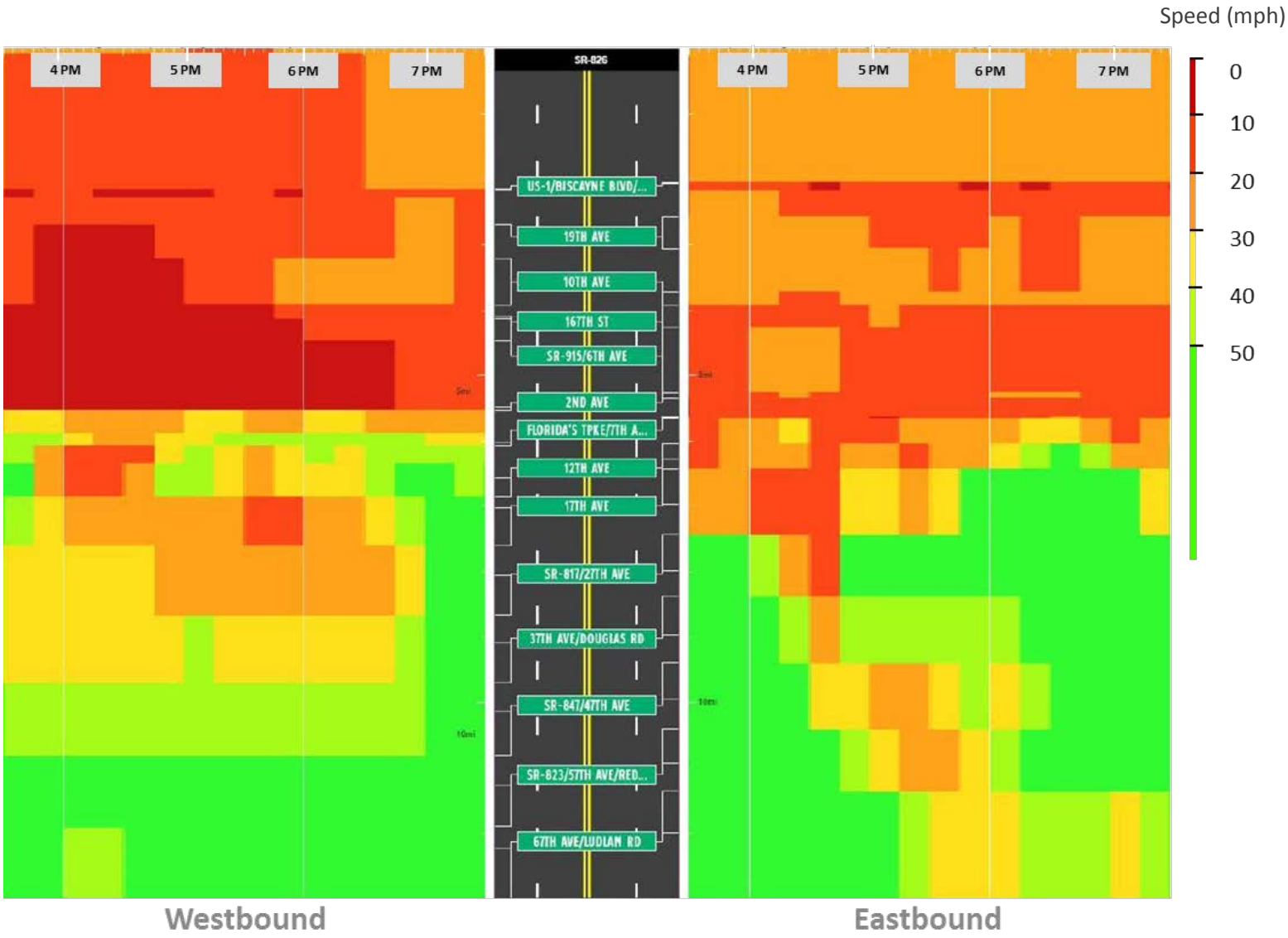


Figure 2-6: RITIS Data — SR-826 PM Speeds

Free-flow speed is defined as the speed that occurs when density and flow are zero, or in other words, the speed at which drivers desire to travel based upon design principles. The AM period congestion shown in **Figure 2-3** indicates that vehicles travel at less than 50% of the free-flow speed during the first two hours in the eastbound direction from NW 67th Avenue to the Palmetto Expressway termini at NW 2nd Avenue and in the westbound direction from NW 57th Avenue to NW 67th Avenue.

Figure 2-4 shows vehicles travel at less than 50% of the free-flow speed in the eastbound direction from NW 67th Avenue to NW 2nd Avenue for small periods of time during the PM peak period. However, speeds remain below 50% almost throughout the PM period in the westbound direction from US-1 to NW 2nd Avenue.

The speeds measured during the morning period shown in **Figure 2-5** indicate that vehicles are traveling between 10 and 20 mph on the expressway segment of eastbound SR-826 between 7:00 AM and 8:00 AM from NW 57th Avenue to NW 2nd Avenue. Similar speeds were measured on the arterial segment of SR-826 in both directions from NW 2nd Avenue to US-1 throughout the morning period.

Figure 2-6 shows measured speeds between 0 and 10 mph during the afternoon peak period along westbound SR-826 from US-1 to NW 2nd Avenue between 3:30 PM and 6:45 PM.

2.5.2 SR-826 BOTTLENECKS

RITIS uses an algorithm to identify bottleneck locations along a roadway segment; bottleneck conditions are determined when the measured speeds fall below 60% of the reference speed, which corresponds to the 85th percentile observed speed for all periods. Whenever the conditions for a bottleneck are met for longer than five minutes, the bottleneck is reported.

In addition, bottlenecks can be ranked based on the impact, defined as the aggregation of queue length over time for congestion originating at each location in mile-minutes. The segment on SR-826 from NW 67th Avenue to US-1 was selected for the analysis. The RITIS bottleneck ranking is included in **Table 2-3**. Based on RITIS data, the top ranked bottleneck location is SR-826 at NW 2nd Avenue (just east of the GGI).

A time spiral graph and bottleneck elements graph for the SR-826 corridor are included in **Figure 2-7** and **Figure 2-8,** respectively. The time spiral graph for the SR-826 corridor indicates that the worst bottleneck conditions were observed from about 12:30 PM to 6:30 PM with maximum queue lengths of approximately five to eight miles.

The bottleneck elements graph in **Figure 2-8** includes the SR-826 section from NW 27th Avenue to Collins Avenue. The graph shows that bottleneck conditions with longer queues and time duration in SR-826 occurred between 12:00 PM and 7:00 PM from NW 2nd Avenue to US-1.

Table 2-3: SR-826 Bottleneck Ranking

Rank	Head Location (approximate)	Impact[1]	Average max length (miles)[2]	Average daily duration[3]	All Events/ Incidents[4]
1	FL-826 S @ 2ND AVE	4,697.22	2.84	9 h 40 m	0
2	FL-826 N @ I-95/US-441	3,090.74	1.70	10 h 44 m	0
3	FL-826 N @ FL-909/22ND AVE/DIXIE HWY	1,060.82	0.55	10 h 21 m	0
4	FL-826 N @ 15TH AVE	1,048.90	1.53	4 h 11 m	0
5	FL-826 N @ FL-A1A/COLLINS AVE	1,014.69	2.12	2 h 40 m	0
6	FL-826 N @ 10TH AVE	965.63	1.17	4 h 44 m	0
7	FL-826 N @ 2ND AVE	828.94	1.51	3 h 36 m	0
8	FL-826 N @ 167TH ST	626.58	1.03	3 h 39 m	0
9	FL-826 S @ 37TH AVE/DOUGLAS RD	512.55	2.06	1 h 18 m	0
10	FL-826 S @ FL-817/27TH AVE	433.81	1.74	1 h 35 m	0
11	FL-826 S @ 15TH AVE	388.19	1.44	1 h 39 m	0
12	FL-826 S @ I-95/US-441	375.94	3.01	47 m	0
13	FL-826 N @ 37TH AVE/DOUGLAS RD	345.62	2.83	39 m	0
14	FL-826 S @ FL-915/6TH AVE	340.92	1.11	2 h 22 m	0
15	FL-826 N @ FL-915/6TH AVE	315.47	0.94	1 h 51 m	0
16	FL-826 S @ US-1/FL-5/BISCAYNE BLVD	278.04	2.02	46 m	0
17	FL-826 S @ 17TH AVE	265.31	3.60	18 m	0
18	FL-826 S @ 19TH AVE	242.23	0.90	1 h 38 m	0
19	FL-826 S @ 10TH AVE	230.84	1.42	1 h 01 m	0
20	FL-826 N @ 47TH AVE	164.17	2.00	24 m	0
21	FL-826 N @ 67TH AVE/LUDLAM RD	155.34	1.76	29 m	0
22	FL-826 N @ US-1/FL-5/BISCAYNE BLVD	152.1	0.14	6 h 13 m	0
23	FL-826 S @ FL-909/22ND AVE/DIXIE HWY	149.67	0.51	2 h 37 m	0
24	FL-826 S @ 167TH ST	131.22	1.19	51 m	0
25	FL-826 N @ FL-817/27TH AVE	114.28	2.77	14 m	0
26	FL-826 N @ 17TH AVE	108.79	2.46	17 m	0
27	FL-826 N @ FLORIDA'S TPKE	90.25	2.08	19 m	0
28	FL-826 N @ 19TH AVE	64.56	0.49	43 m	0
29	FL-826 N @ FL-823/57TH AVE/RED RD	45.19	1.87	9 m	0
30	FL-826 W @ FL-7/FLORIDA'S TPKE	43.78	1.06	16 m	0
31	FL-826 S @ FL-823/57TH AVE/RED RD	35.43	2.75	4 m	0
32	FL-826 N @ FL-7/FLORIDA'S TPKE	33.63	0.63	37 m	0
33	FL-826 S @ 47TH AVE	23.12	2.88	3 m	0
34	FL-826 S @ 67TH AVE/LUDLAM RD	22.05	2.63	3 m	0
35	FL-826 N @ 12TH AVE	17.62	1.88	4 m	0
36	FL-826 S @ FLORIDA'S TPKE	12.03	0.81	7 m	0
37	FL-826 S @ FL-A1A/COLLINS AVE	7.74	0.05	47 m	0
38	FL-826 S @ 12TH AVE	5.49	0.67	2 m	0

[1] Impact=the aggregation of queue length over time for congestion originating at each location in mile-minutes
[2] Average max length=average maximum length, in miles, of queues formed by congestion originating at each location
[3] Average daily duration=average amount of time per day that congestion is identified originating at each location
[4] All incidents/events=the number of traffic events and incidents that occurred within the space of the bottleneck at any time during the time period searched

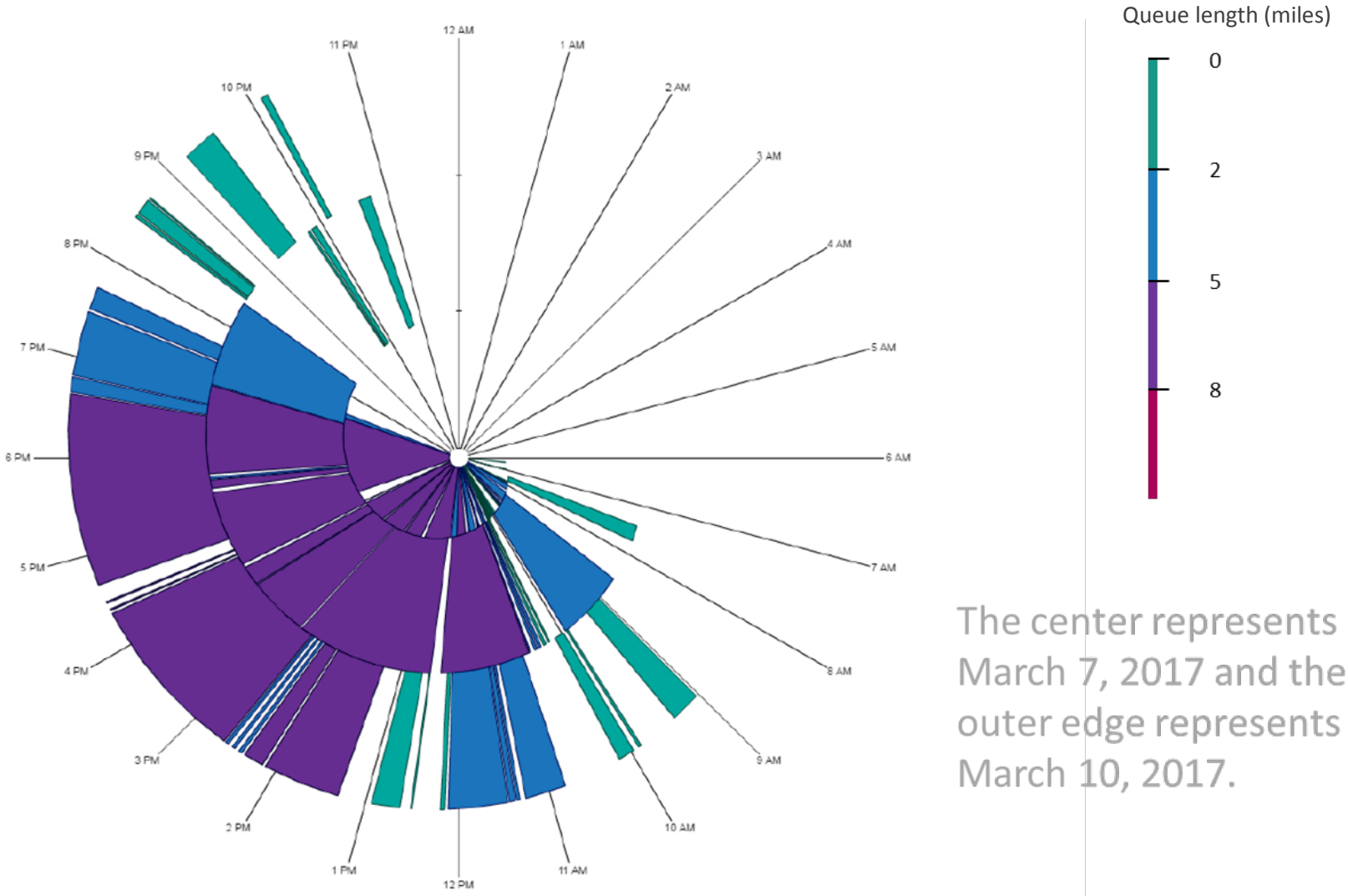


Figure 2-7: SR-826 Bottleneck Time Spiral Graph

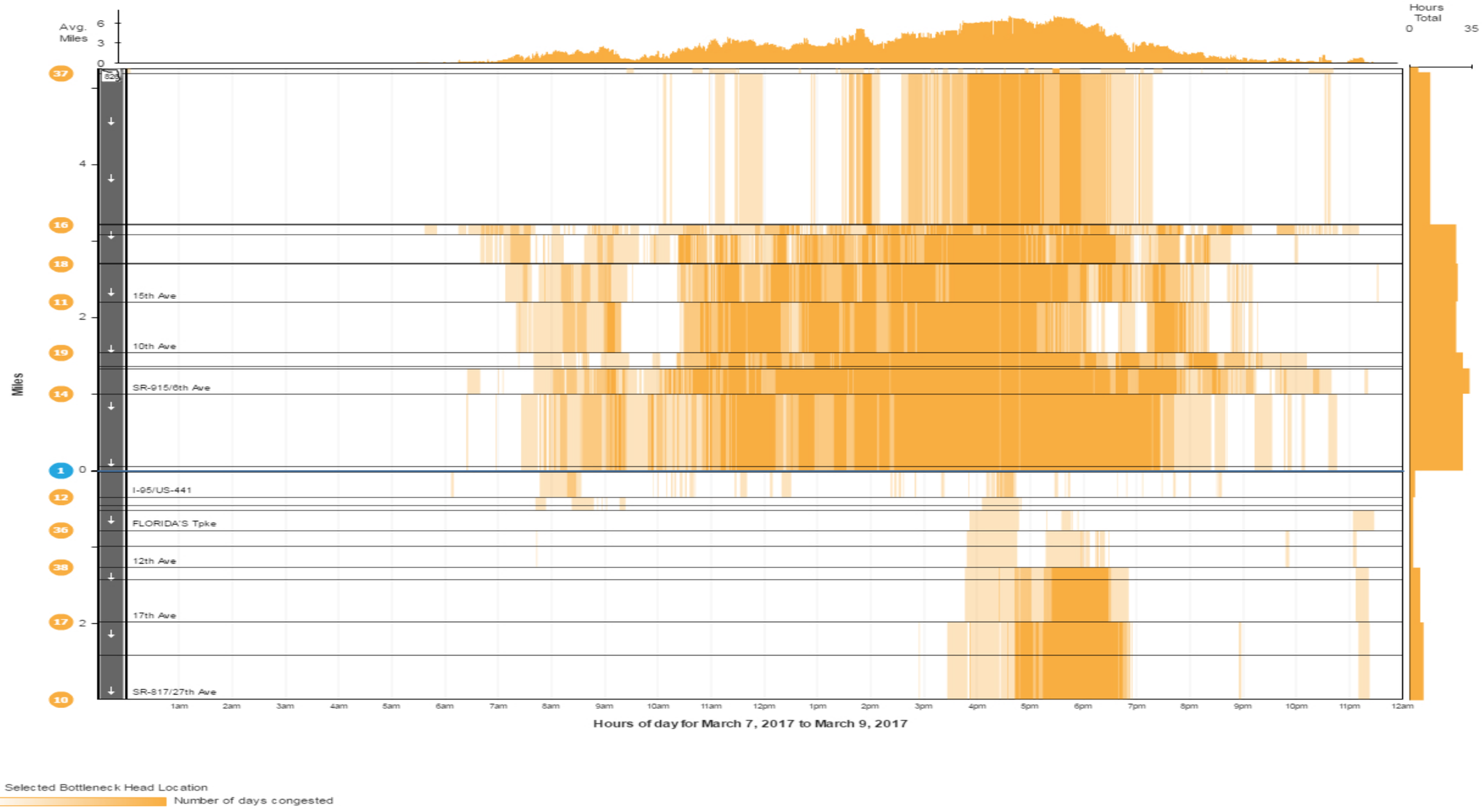


Figure 2-8: SR-826 Bottleneck Elements Graph

2.6 SR-826 CRASH DATA

Crash data from FDOT's All Roads Crash Analysis (ARCA) web application was collected for the SR-826 Palmetto Expressway from NW 154th Street to the GGI from 2010 to 2014. The four-year data was combined and the crash records were clustered to identify high crash locations. The data shows that high crash locations are observed near the Palmetto Expressway on- and off-ramps with 130 to 140 crashes. A total of 194 crashes were observed on SR-826 near the NW 57th Avenue interchange. The crash clusters for SR-826 from NW 154th Street to the GGI are shown in **Figure 2-9**.

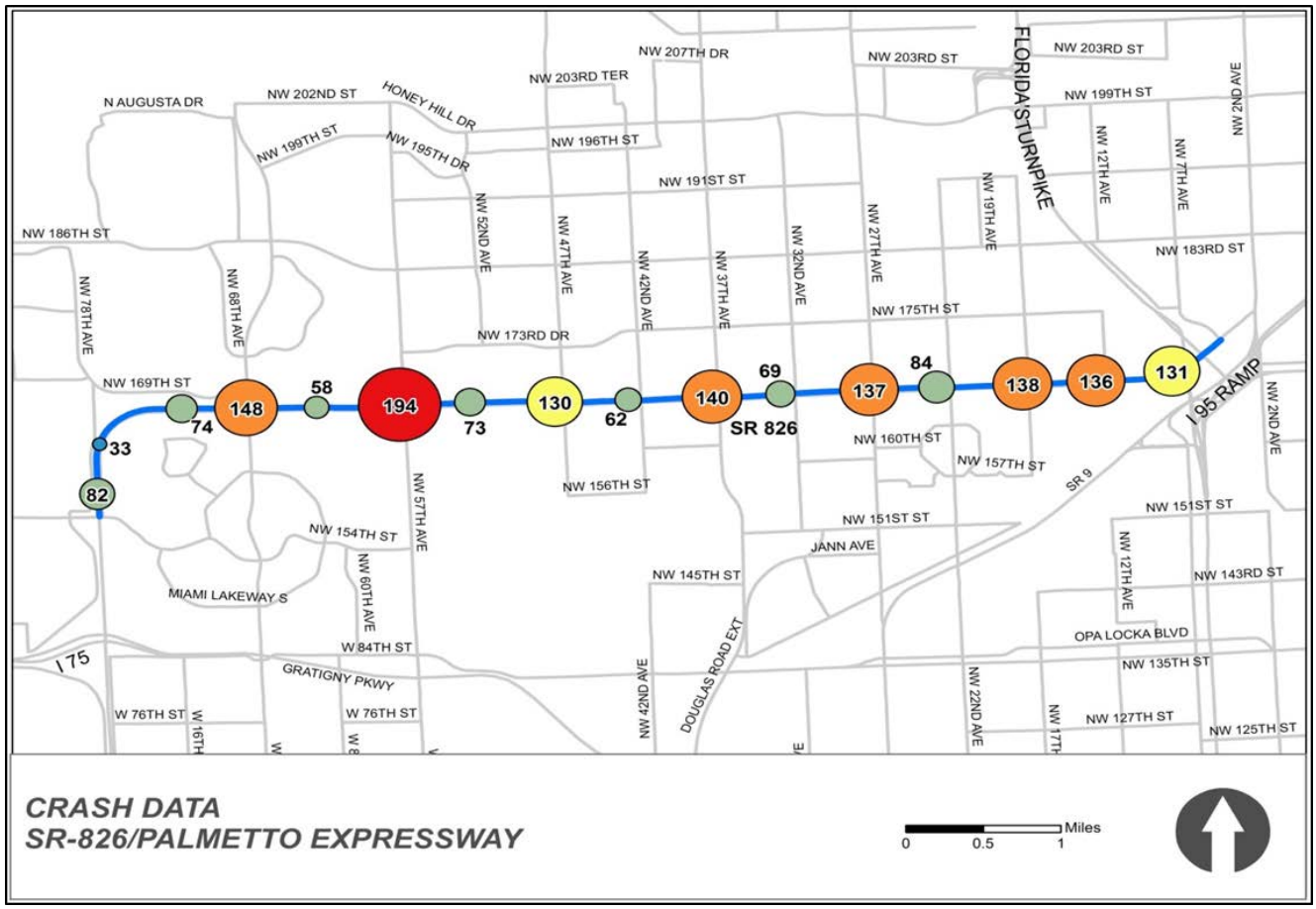


Figure 2-9: SR-826 High Crash Locations (2010 to 2014)

2.7 SR-826 CONNECTIVITY

The Southeast Regional Planning Model (SERPM 7) was used to evaluate the potential extension of the highway segment of SR-826 from the GGI to SR A1A/Collins Avenue. A select-link analysis was conducted using the Base Year 2015 Model. The SERPM Model runs in the Cube software platform, and therefore Cube's multi-bandwidth display tool was used to identify the origins and destinations of the trips that would potentially use the selected link. The multi-bandwidth displays for the eastbound and westbound selected links along the SR-826 corridor are shown in **Figure 2-10 and Figure** 2-11, respectively. The values shown in the multi-bandwidth displays indicate the directional daily volumes on SR-826 from the select-link analysis. Shades of blue and red with varying thicknesses are used to indicate the directional demand on the corridor in vehicles per day.

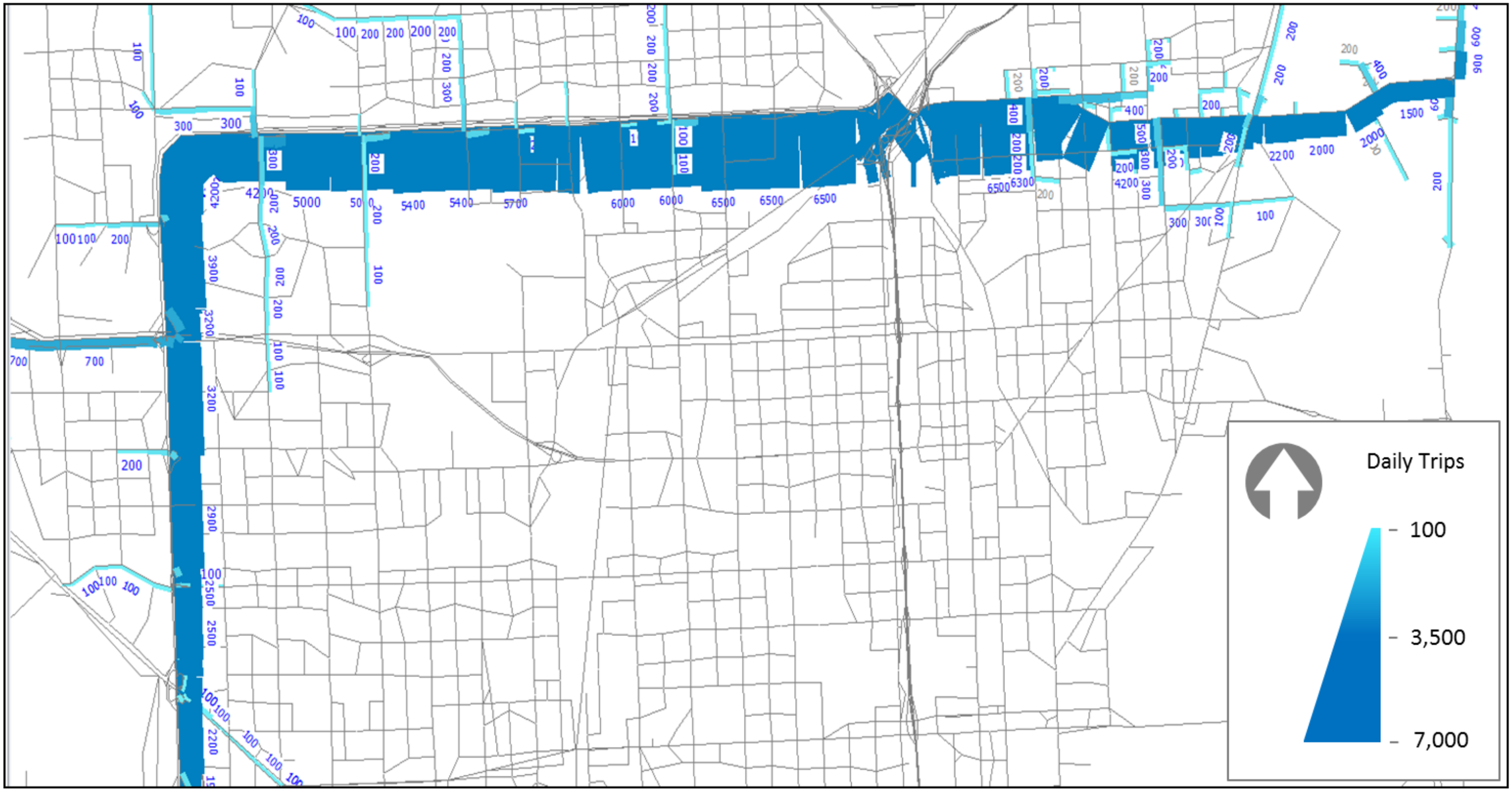


Figure 2-10: SR-826 Select-link Multi-Bandwidth Display – Eastbound (vehicles per day)

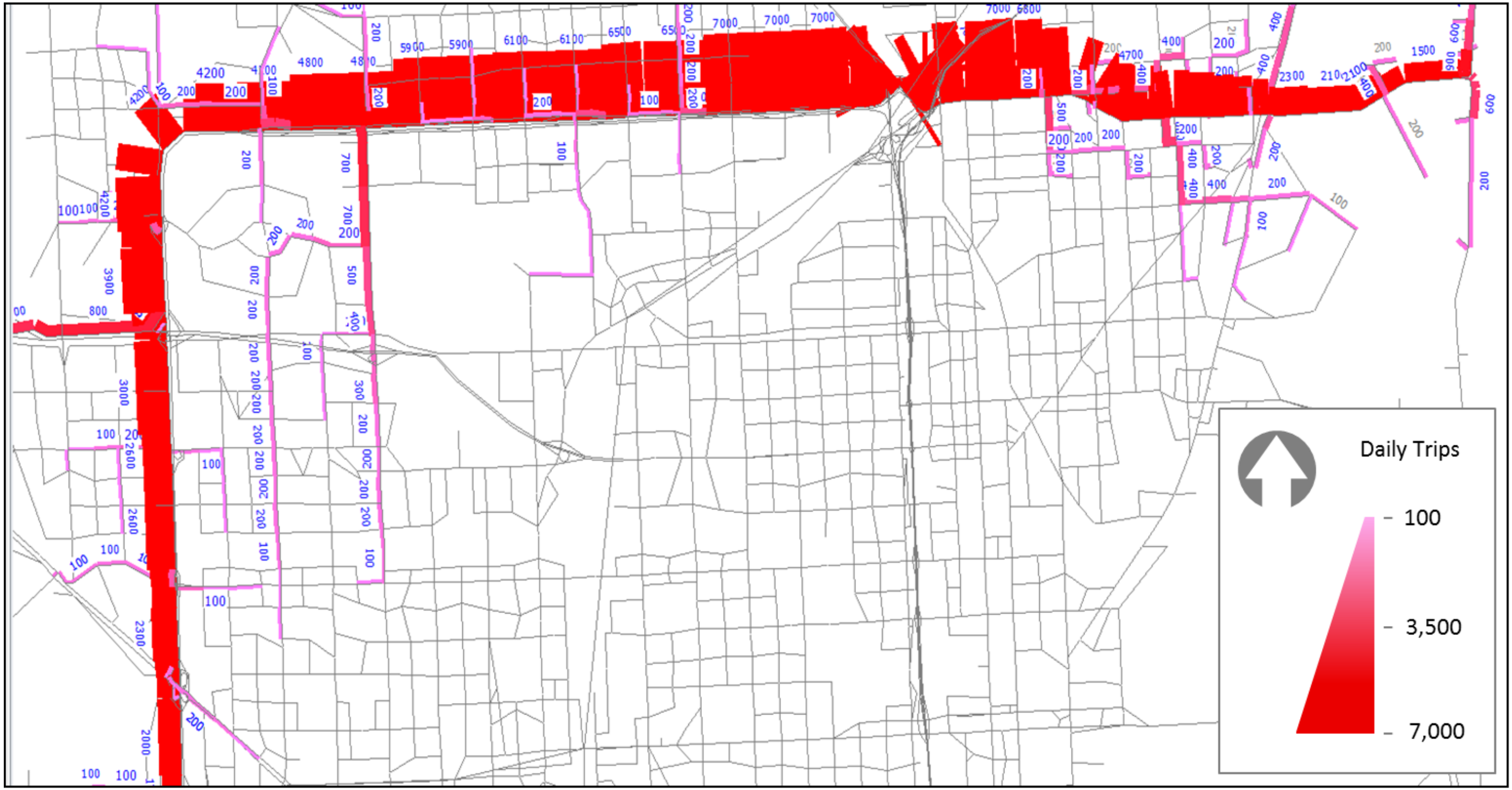


Figure 2-11: SR-826 Select-link Multi-Bandwidth Display – Westbound (vehicles per day)

2.8 SR-826 FUTURE LAND USE

The future land use was obtained from the adopted Miami-Dade County 2020-2030 Comprehensive Development Master Plan (CDMP) updated in January, 2016. **Figure 2-12** shows the future land use for the area near the SR-826 corridor. The figure shows the majority of the land use in the vicinity of the SR-826 corridor being occupied by commercial use. The surrounding areas are mainly used for residential purpose.

2.9 SR-826 PLANNED PROGRAMS

Roadway and transit improvements included in the Miami-Dade Transportation Planning Organization (TPO) 2040 Long Range Transportation Plan (LRTP) and Miami-Dade 2016 Transit Development Plan (TDP) related to the SR-826 corridor were reviewed by the project team. **Table 2-4 and Table 2-5** show the planned programs related to roadway and transit improvements, respectively, which involve the SR-826 corridor.

Table 2-4: SR-826 Roadway Improvements

Name of Road	From	To	Description	Funding FY
SR-826/Palmetto Expressway	I-75	I-95	Add lanes and reconstruct	2019-2021
Golden Glades Interchange	SR-826/Palmetto Expressway	I-95 NB/SB & SR-821/Turnpike	Interchange improvement	2015-2040
Turnpike (Mainline)	Golden Glades Interchange	SR-821/HEFT	Widening	2026-2030
SR-9A/I-95 PD&E Study	US-1	Miami-Dade/Broward County Line	PD&E/EMO Study	On-Going

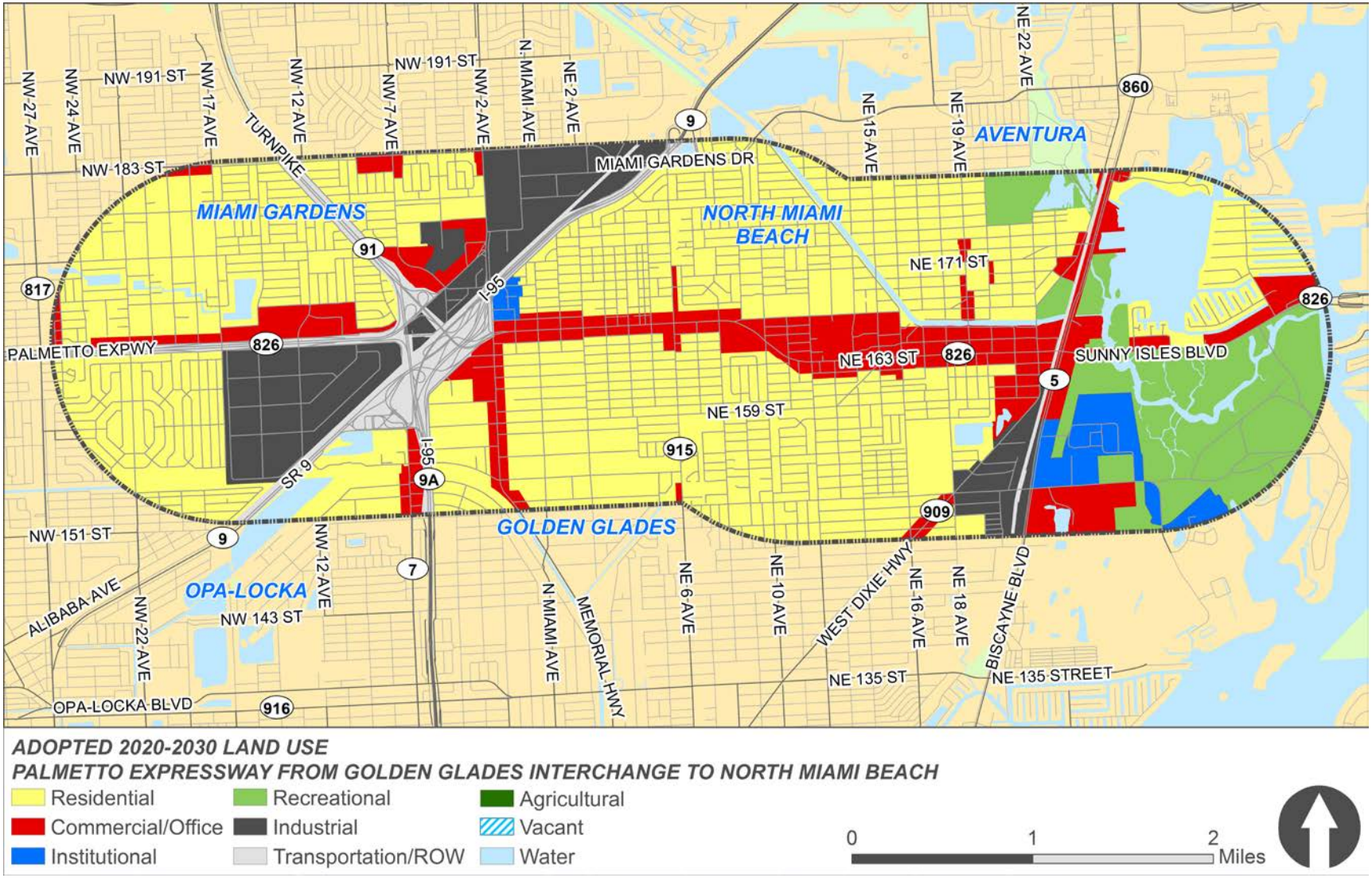


Figure 2-12: SR-826 Adopted 2020-2030 Future Land Use

Table 2-5: SR-826 Transit Improvements

Project Name	From	To	Description	Funding FY
Golden Glades Intermodal Terminal Phase I	Golden Glades Interchange		Parking garage w/2 surface lots, transit hub, retail space, lounge, improved pedestrian and bicycle facilities	2018
Route 93 (Biscayne MAX)	Downtown Miami	Aventura Mall	Add 5 articulated buses	2021

2.10 SR-826 FUTURE 2040 LEVEL OF SERVICE

The future LOS near the SR-826 corridor was also reviewed by the project team. The 2040 LOS was provided by FDOT District Six in ESRI ArcGIS shapefile format. The Palmetto Expressway shows an improvement operating at LOS C or better in the segment from NW 27th Avenue to the GGI. The remaining segment of SR-826 east of the GGI is not included in the database. The 2040 LOS map is included in **Figure 2-13**.

Figure 2-13: SR-826 Future 2040 Level of Service

3 SR-112/AIRPORT EXPRESSWAY

This section includes the data collected for the potential highway network missing link along NW 41 Street and SR-948/NW 36 Street which would serve as an extension of the SR-112/Airport Expressway. This extension would provide a connection from the Airport Expressway termini at Okeechobee Road/LeJeune Road to the Palmetto Expressway and the HEFT (Florida's Turnpike). This highway network missing link is defined herein as the SR-112 corridor.

3.1 SR-112 EXISTING LAND USE

West of the HEFT, the land use is mainly industrial, agricultural and vacant. The land use from east of the HEFT to NW 87th Avenue is primarily residential and recreational with small areas occupied by commercial use. From NW 87th to NW 67th Avenue, the land use is predominantly industrial with a portion of commercial in the west and some vacant land in the northwest. From NW 67th Avenue to west of LeJeune Road, the land use is residential on the north side of the corridor and the Miami international Airport is located on the south. East of LeJeune Road, the land use is mostly industrial north of the corridor and combined between industrial, commercial and residential to the south.

The existing land use surrounding a one-mile buffer of the SR-112 corridor is shown in **Figure 3-1**.

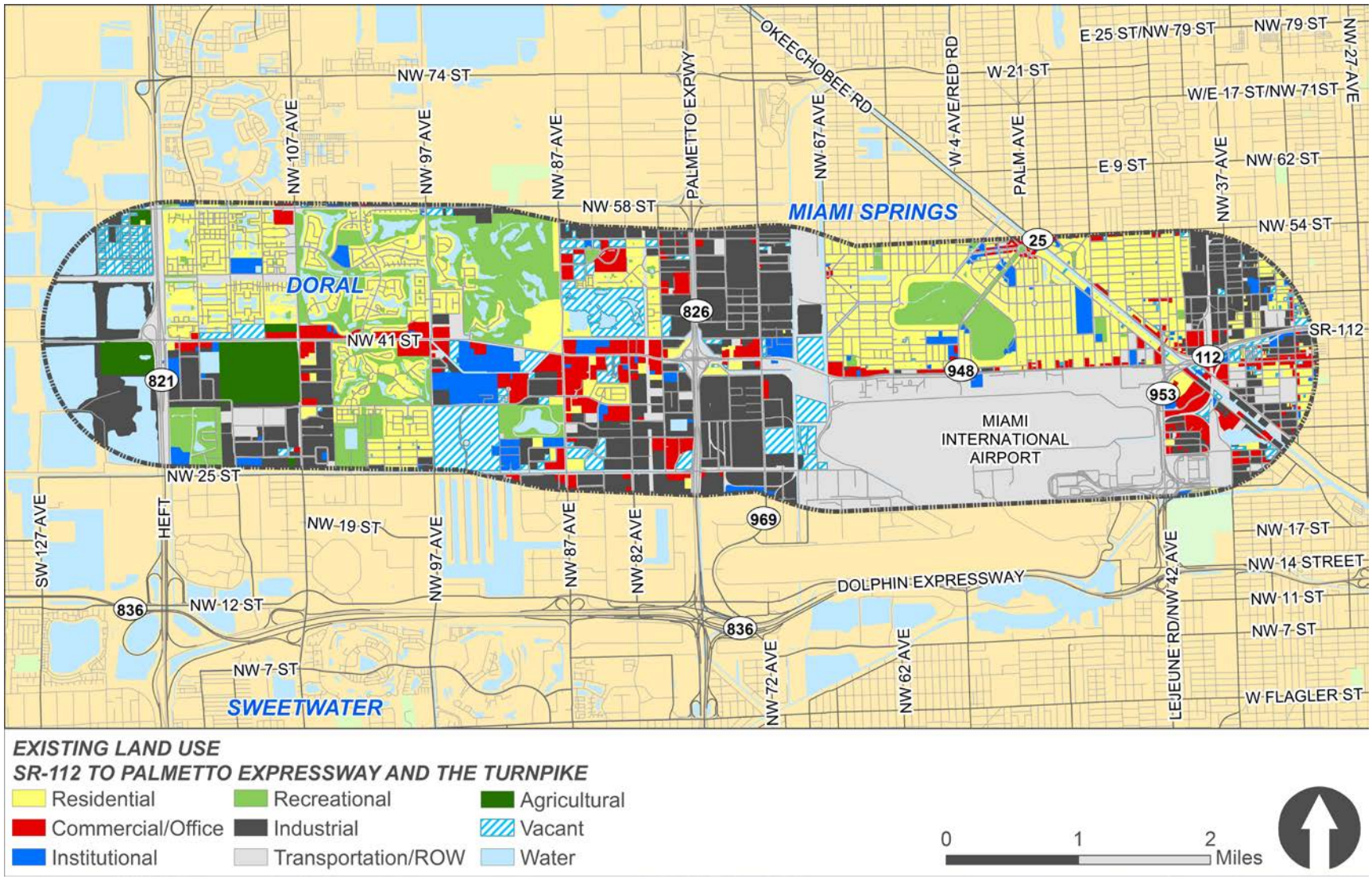


Figure 3-1: SR-112 Existing Land Use

3.2 SR-112 TRAFFIC VOLUMES (FROM NW 42ND AVENUE/LEJEUNE ROAD TO NW 17TH AVENUE)

The 2015 and 2016 AADTs along the SR-112 Airport Expressway from east of NW 42nd Avenue/LeJeune Road to NW 17th Avenue were obtained from traffic monitoring station locations from the FTO. There are a total of four (4) stations on the SR-112 Expressway mainline and 16 locations with counts on the ramps. The AADTs are summarized in **Table 3-1**.

Table 3-1: SR-112 Traffic Volumes (from NW 42nd Ave/LeJeune Rd to NW 17th Ave)

Station No.	Milepost	Station Name	2016 AADT	2015 AADT
876002	0.057	RAMP 87003004 FROM WB SR 112 TO SB LE JEUNE , 300' S OF SR 112	13,000	15,500
876004	0.047	RAMP 87003006 FROM NB LE JEUNE TO EB SR 112, 250' N OF LE JEUNE RD	12,500	12,000
876006	0.038	RAMP 87003008 FROM WB SR 112 TO WB NW 36 ST, 200' W OF SR112	8,500	10,000
876397	0.057	RAMP 87003020 FROM EB NW 36 ST TO EB SR 112, 300' E OF NW 36 ST	9,600	13,500
876005	0.076	RAMP 87003007 FROM OKEECHOBEE TO EB SR 112, 400' SE OF OKEECHOBEE	14,000	12,500
872065	1.116	SR 112/AIRPORT EXPWY, 200' W NW 32 AV BRIDG	105,500	94,500
876007	0.17	RAMP 87003109 FROM WB SR 112 TO NB OKEECHOBEE, 900' W OF SR 112	11,500	12,500
872055	1.961	SR 112/AIRPORT EXPWY, 1500' E NW 27 AV	107,000	101,500
876008	0.038	RAMP 87003010 FROM EB SR112 TO SB NW 29 AVE, 200' SE OF SR112	4,400	5,200
876009	0.038	RAMP 87003011 FROM WB NW 41 ST TO WB SR112, 200' W OF NW 41 ST	4,400	5,300
876010	0.038	RAMP 87003012 FROM WB NW 38 ST TO EB SR 112, 200' N OF NW 38 ST	1,800	1,100
876011	0.038	RAMP 87003013 FROM WB SR 112 TO WB NW 41 ST, 200' W OF SR 112	6,700	6,700
876012	0.047	RAMP 87003014 FROM NB NW 25 AVE TO EB SR 112, SR 250' E OF NW 25 ST	5,300	4,800
876014	0.057	RAMP 87003016 FROM EB SR112 TO SB NW 22 AVE, 300' E OF SR 112	5,000	8,900
876013	0.066	RAMP 87003015 FROM SB NW 22 AVE TO WB SR 112, 350' W OF NW 22 AVE	4,800	5,300
876015	0.066	RAMP 87003017 FROM NB NW 22 AVE TO EB SR112, 350' E OF NW 22 AVE	4,800	3,500
876016	0.038	RAMP 87003018 FROM WB SR112 TO WB NW 41 ST, 200' W OF SR 112	4,700	6,000
872050	3.445	SR 112/AIRPORT EXPWY, 200' W NW 17 AV	118,000	112,500
872023	3.521	SR 112/AIRPORT EXPWY, 200' E NW 17 AVE	119,000	112,500
876019	0.047	RAMP 87003023 FROM EB SR112 TO SB NW 12 AVE, 250' E OF SW 112	1,400	1,300

3.3 SR-112 YEAR 2015 LEVEL OF SERVICE

Year 2015 LOS data was provided by FDOT District Six. The data indicates that NW 36th Street operates at LOS F from NW 67th Avenue to NW 57th Avenue and the remaining segments from Palmetto Expressway to NW 67th Avenue and from NW 57th Avenue to the LeJeune Road operate at LOS C or better. Data for the segment on NW 41st Street from the HEFT to Palmetto expressway is not included in the existing LOS database. The 2015 LOS near and along the SR-112 corridor are included in **Figure 3-2**.

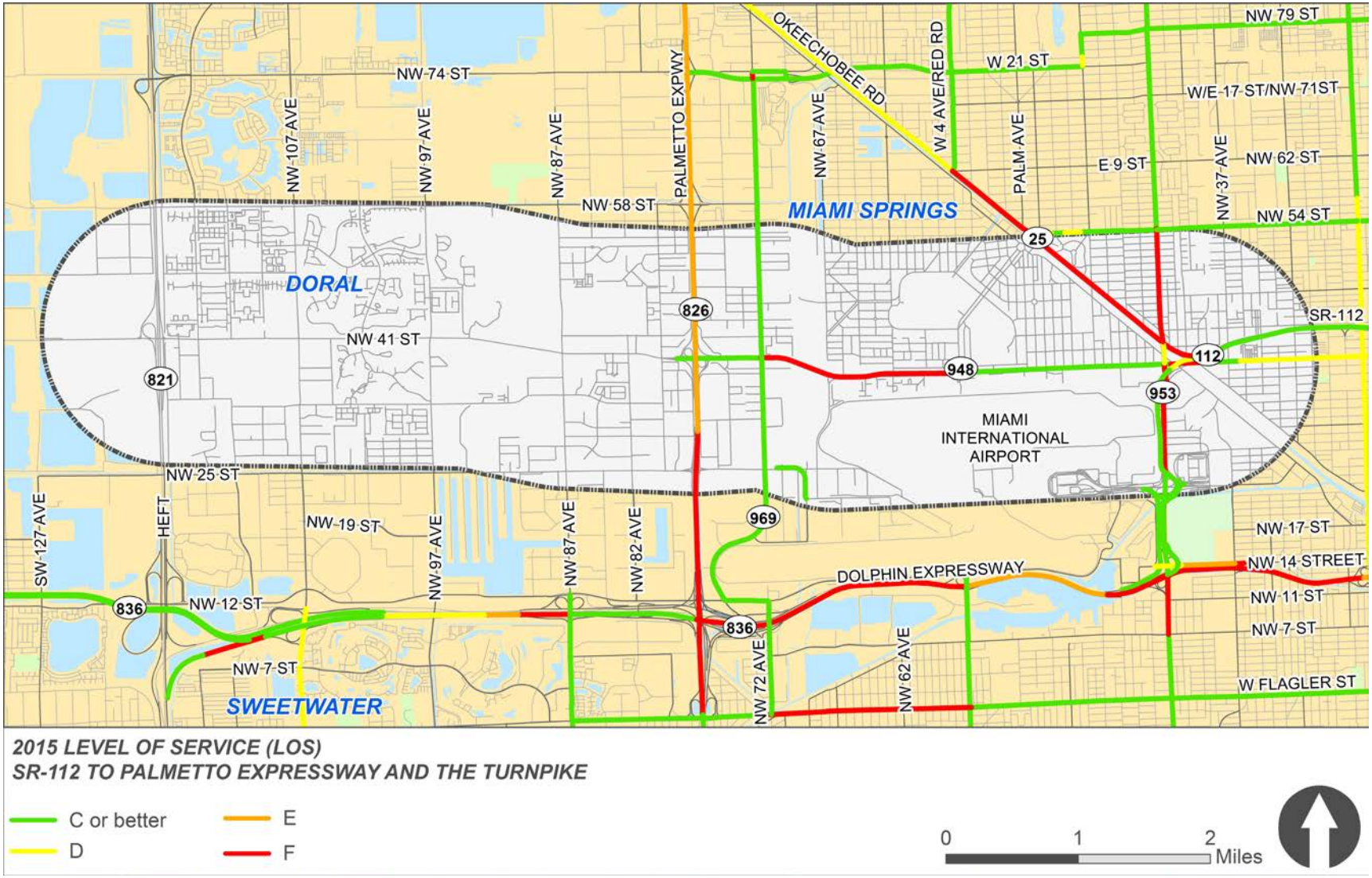


Figure 3-2: SR-112 2015 Level of Service (LOS)

3.4 SR-112 HISTORICAL TREND ANALYSIS

The FDOT Traffic Trends Analysis Tool - TREND_V03a was used to conduct a historical trend analysis on traffic monitoring station locations along the Airport Expressway with at least ten years of historical data available. The resultant R-squared and compounded growth rates for these locations are summarized in **Table 3-2**. The historical trend analysis reports for the Airport Expressway are included in **Appendix B**.

Table 3-2: SR-112 Historical Trend Analysis Summary

Growth Rate Computation Option:		Decaying Exponential Growth		
Station	Description	Trend R^2	Compounded Historic Growth Rate	Compounded Growth Rate (2016 to Design Year 2040)
872065	200' W of NW 32 Avenue Bridge	2.90%	0.40%	0.08%
872055	1500' E of NW 27 Avenue	18.97%	0.59%	0.11%
876397	Ramp from EB NW 36 Street to EB SR 112	59.05%	-0.91%	-0.16%

The values shown in Table 3-2 indicate that traffic volumes along the corridor have grown at an average annual rate of 0.5% from 2006 to 2016. In addition, the projections using decaying exponential growth indicate the corridor will have an average annual compounded growth rate of 0.1% from 2016 to the Design Year 2040.

3.5 SR-112 REGIONAL INTEGRATED TRANSPORTATION INFORMATION SYSTEM (RITIS) DATA

Existing readily available RITIS data, used to identify congestion patterns, speeds, and bottleneck locations along the SR-112 corridor, is included in the following sections. The data was extracted for typical weekdays from March 7th to 9th, 2017.

3.5.1 SR-112 CONGESTION AND SPEEDS

Figure 3-3 to Figure 3-6 show the congestion and speeds measured in the SR-112 corridor from the Miami International Airport to NW 17th Avenue during the AM (6:30 to 10:30) and the PM (3:30 to 7:30) peak periods. Congestion shown in **Figure 3-3 and Figure 3-4** correspond to measured speed as a percentage of the free flow speed during the AM and PM peak periods, respectively. The speeds shown in **Figure 3-5 and Figure 3-6** are measured as the current estimated harmonic mean speed for the roadway segment in miles per hour during the AM and PM peak periods, respectively.

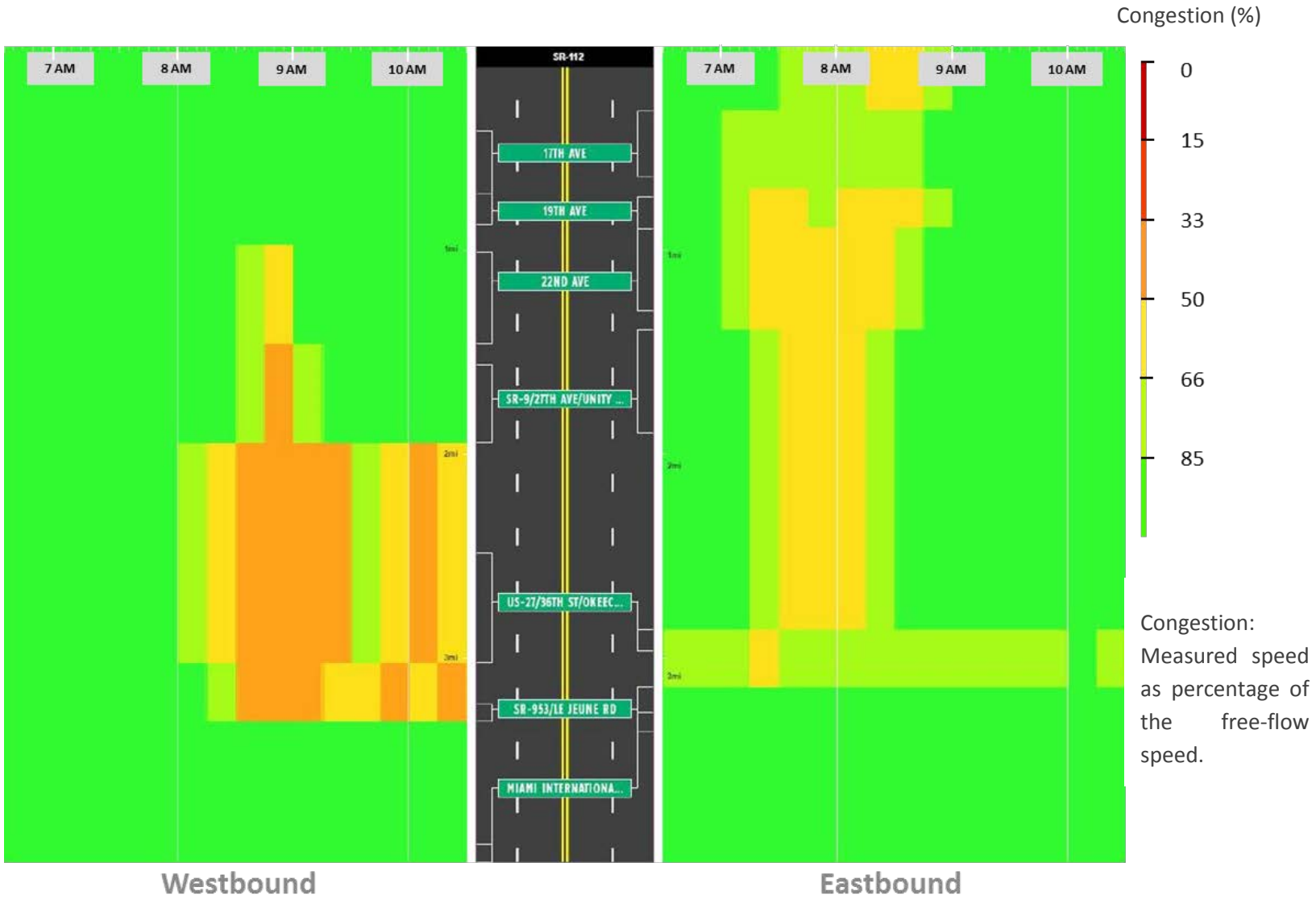


Figure 3-3: RITIS Data — SR-112 AM Congestion

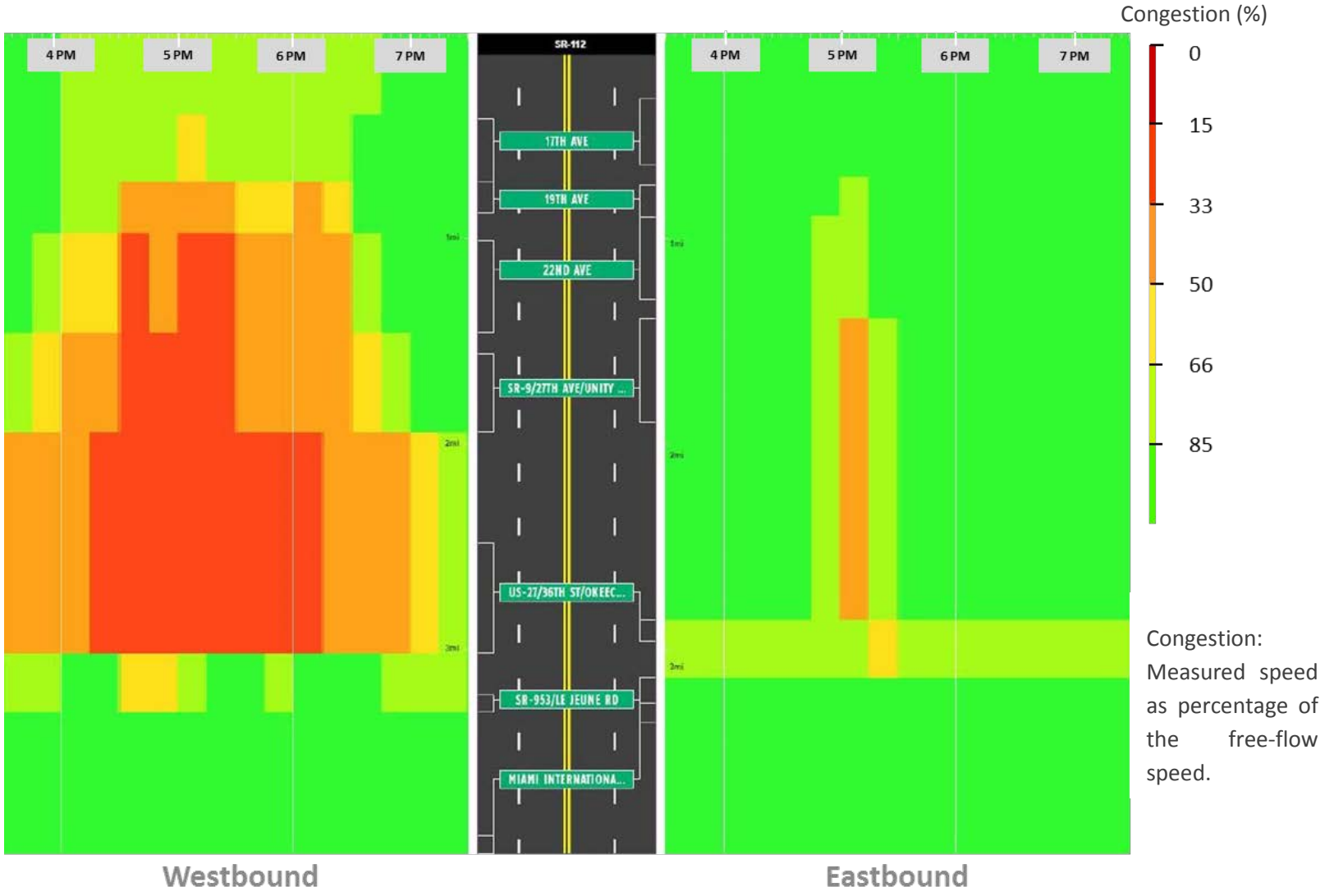


Figure 3-4: RITIS Data — SR-112 PM Congestion

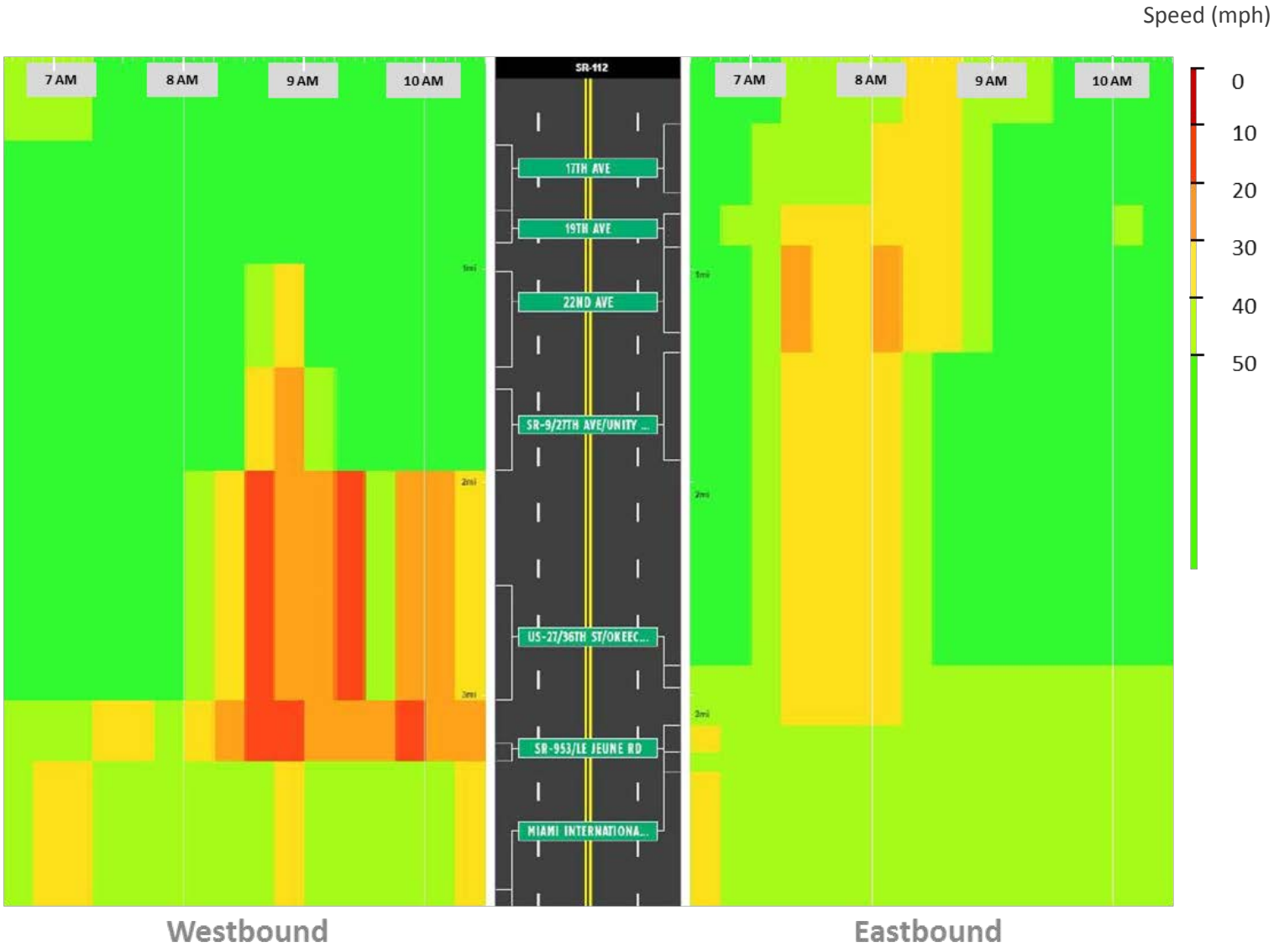


Figure 3-5: RITIS Data — SR-112 AM Speeds

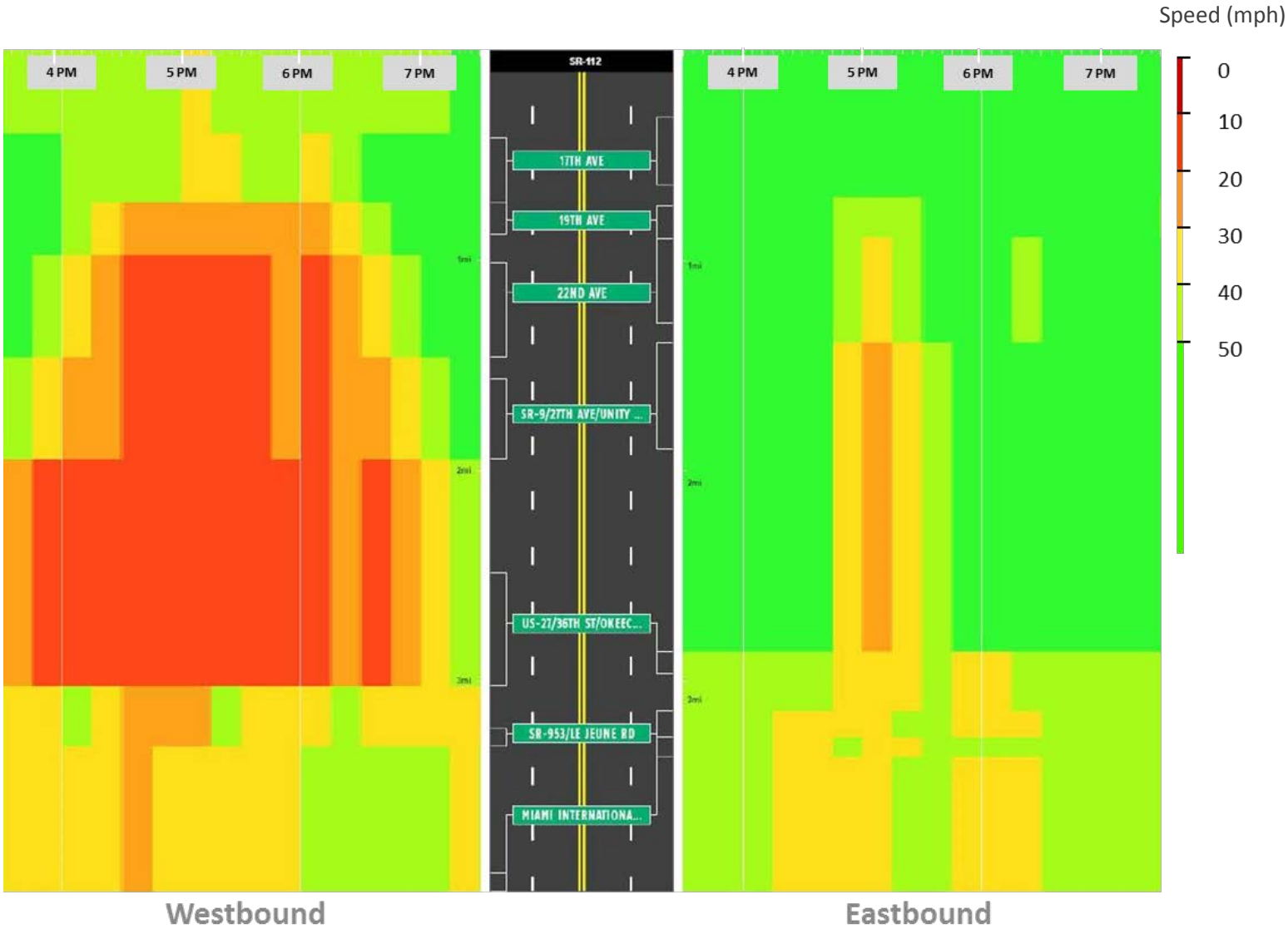


Figure 3-6: RITIS Data — SR-112 PM Speeds

Figure 3-3 shows vehicles travel at less than 50% of the free flow speed during the morning period from 8:30 AM to 9:30 AM in the westbound direction along the SR-112 segment from NW 27th Avenue to LeJeune Road. The AM peak period congestion in the eastbound direction shows vehicles traveling between 50% and 66% of the free flow speed from LeJeune Road to NW 19th Avenue between 7:30 AM and 9:30 AM.

The congestion shown in **Figure 3-4** indicates that conditions worsen throughout the afternoon period along westbound SR-112 from NW 19th Avenue to NW 36th Street where vehicles travel at less than 50% of the free flow speed.

Figure 3-5 show that vehicles travel at less than 30 mph along westbound SR-112 from approximately 8:15 AM to 10: 15 AM from LeJeune Road to NW 27th Street.

The speed shown in **Figure 3-6** indicate that vehicles travel at less than 20 mph on westbound SR-112 from about 3:45 PM to 6:45 PM from east of LeJeune Road to NW 19th Avenue.

3.5.2 SR-112 BOTTLENECKS

The segment on SR-112 from Miami International Airport to NW 17th Avenue was selected for the bottleneck analysis. The RITIS bottleneck ranking is included in **Table 3-3**. Based on RITIS data, the top ranked bottleneck location is SR-112 at Okeechobee Road/NW 36th Street followed by the segment near LeJeune Road.

A time spiral graph for the SR-112 corridor is included in **Figure 3-7**. The time spiral graph for the SR-112 corridor indicates that bottleneck conditions from 3:00 PM to 7:00 PM had maximum queue lengths from two to five miles.

The bottleneck elements graph in **Figure 3-8** includes the SR-112 segment from the Miami International Airport to NW 17th Avenue. The graph shows that bottleneck conditions with the longer queues and time duration in SR-112 occurred between 4:00 PM and 7:00 PM from LeJeune Road to NW 27th Avenue.

Table 3-3: SR-112 Bottleneck Ranking

Rank	Head Location (approximate)	Impact[1]	Average max length (miles)[2]	Average daily duration[3]	All Events/ Incidents[4]
1	FL-112 W @ US-27/OKEECHOBEE RD/36TH ST	989.14	1.22	3 h 39 m	32
2	FL-112 W @ FL-953/LE JEUNE RD	451.21	1.63	1 h 54 m	50
3	FL-112 E @ FL-9/27TH AVE	86.09	1.53	18 m	1
4	FL-112 E @ 22ND AVE	67.61	1.45	13 m	1
5	FL-112 E @ 19TH AVE	55.27	2.27	9 m	1
6	FL-112 W @ AIRPORT EXPY	41.71	2.64	7 m	40
7	FL-112 E @ 12TH AVE/JOHN HENRY PEAVY JR AVE	33.83	1.32	14 m	1
8	FL-112 E @ FL-953/LE JEUNE RD	12.37	0.82	5 m	0
9	FL-112 E @ 17TH AVE	7.93	2.64	1 m	1
10	FL-112 W @ 22ND AVE	4.25	0.61	2 m	4
11	FL-112 E @ US-27/OKEECHOBEE RD/36TH ST	1.02	1.02	0 m	1

[1] Impact=the aggregation of queue length over time for congestion originating at each location in mile-minutes
[2] Average max length=average maximum length, in miles, of queues formed by congestion originating at each location
[3] Average daily duration=average amount of time per day that congestion is identified originating at each location
[4] All incidents/events=the number of traffic events and incidents that occurred within the space of the bottleneck at any time during the time period searched

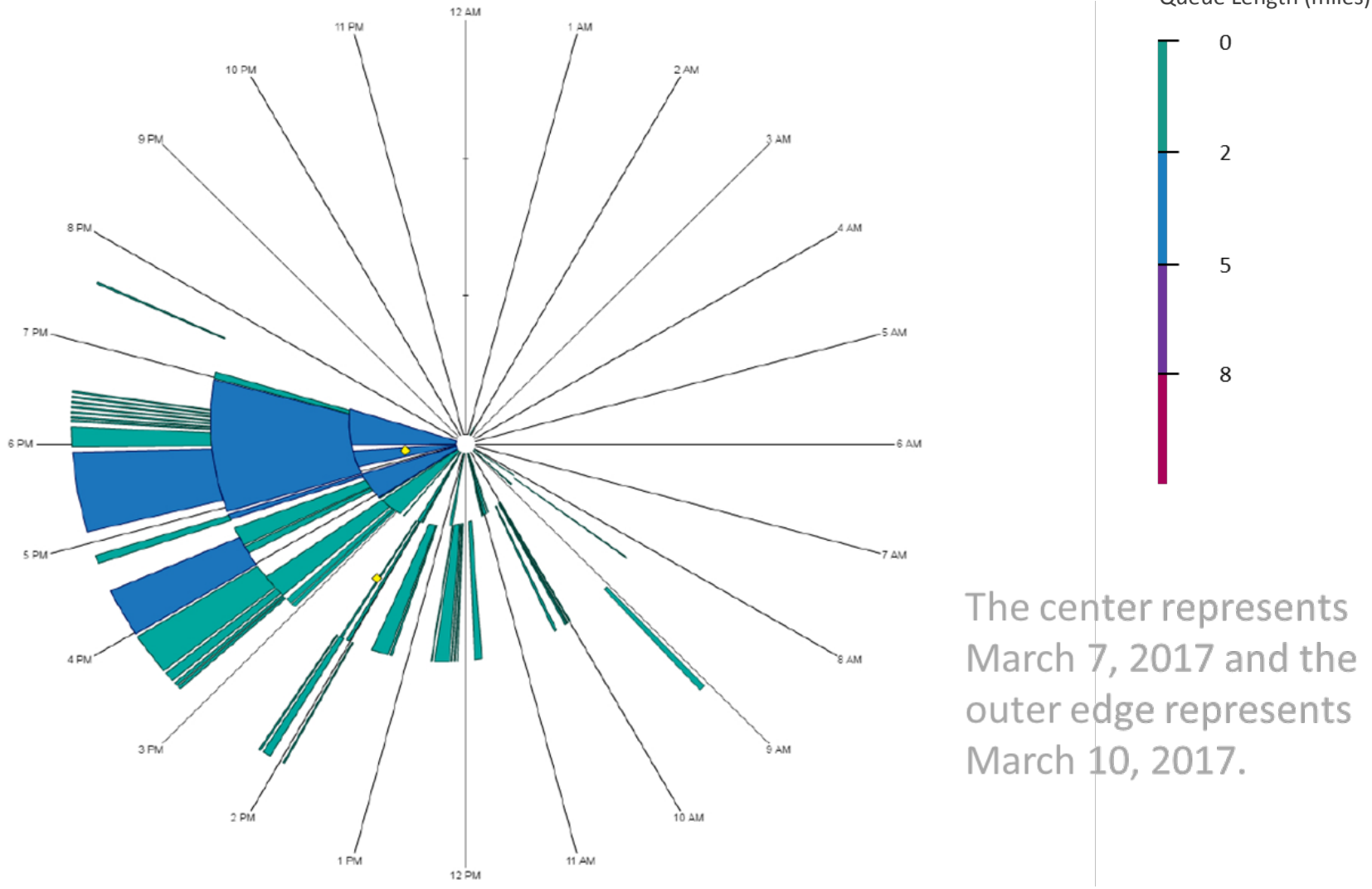


Figure 3-7: SR-112 Bottleneck Time Spiral Graph

SR-112/AIRPORT EXPRESSWAY

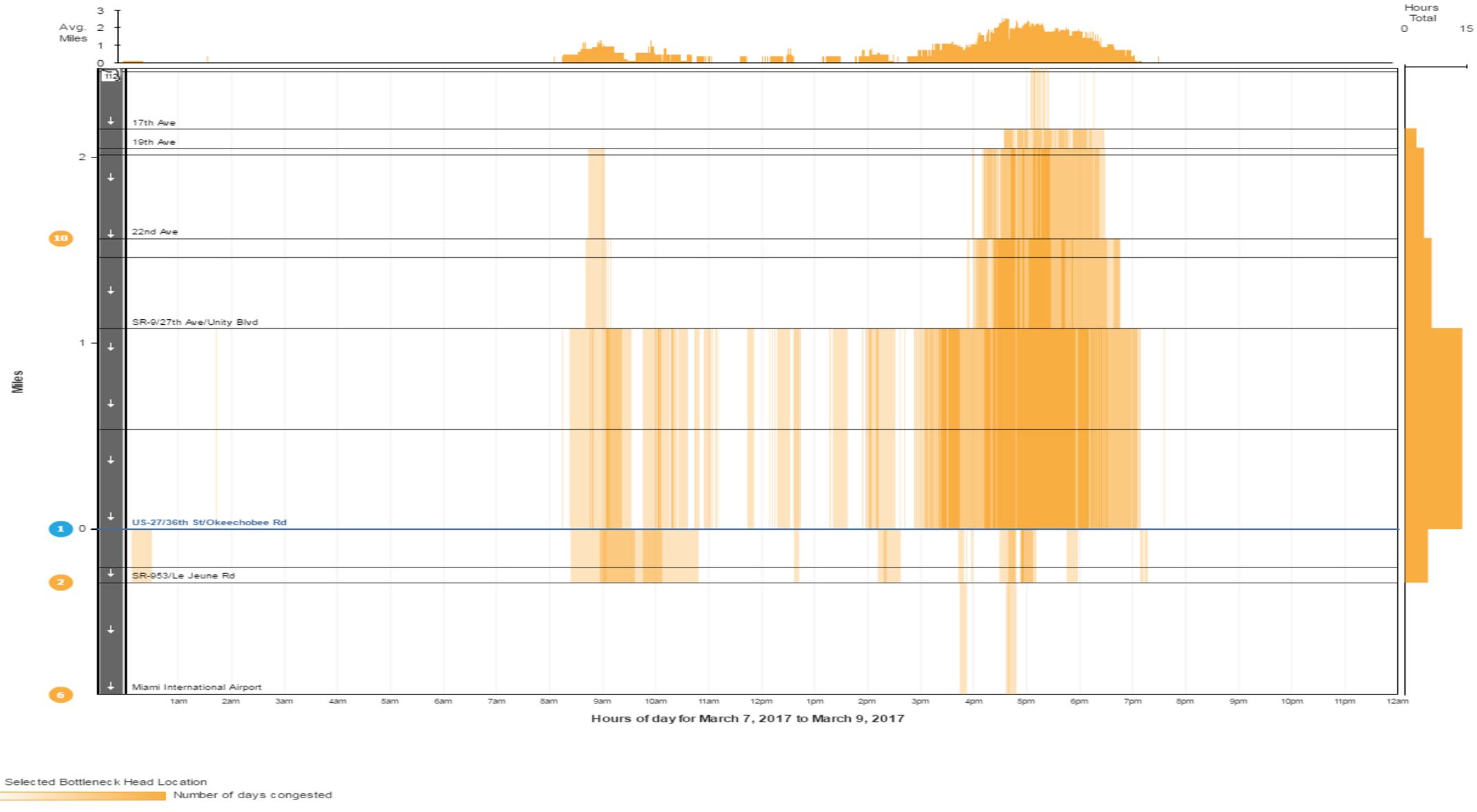


Figure 3-8: SR-112 Bottleneck Elements Graph

3.6 SR-112 CRASH DATA

Four years of ARCA data (2010-2014) were combined and the crash records were clustered to identify high crash locations along SR-112 from the western termini at LeJeune Road to I-95. The data shows that high crash locations are observed near NW 37th Avenue and the on- and off-ramps on SR-112 with 55 to 69 crashes during the four-year period. The locations with the highest number of crashes observed are near NW 27th Avenue and NW 17th Avenue with more than 70 crashes each. The crash clusters on SR-112 from Okeechobee Road to I-95 are shown in **Figure 3-9.**

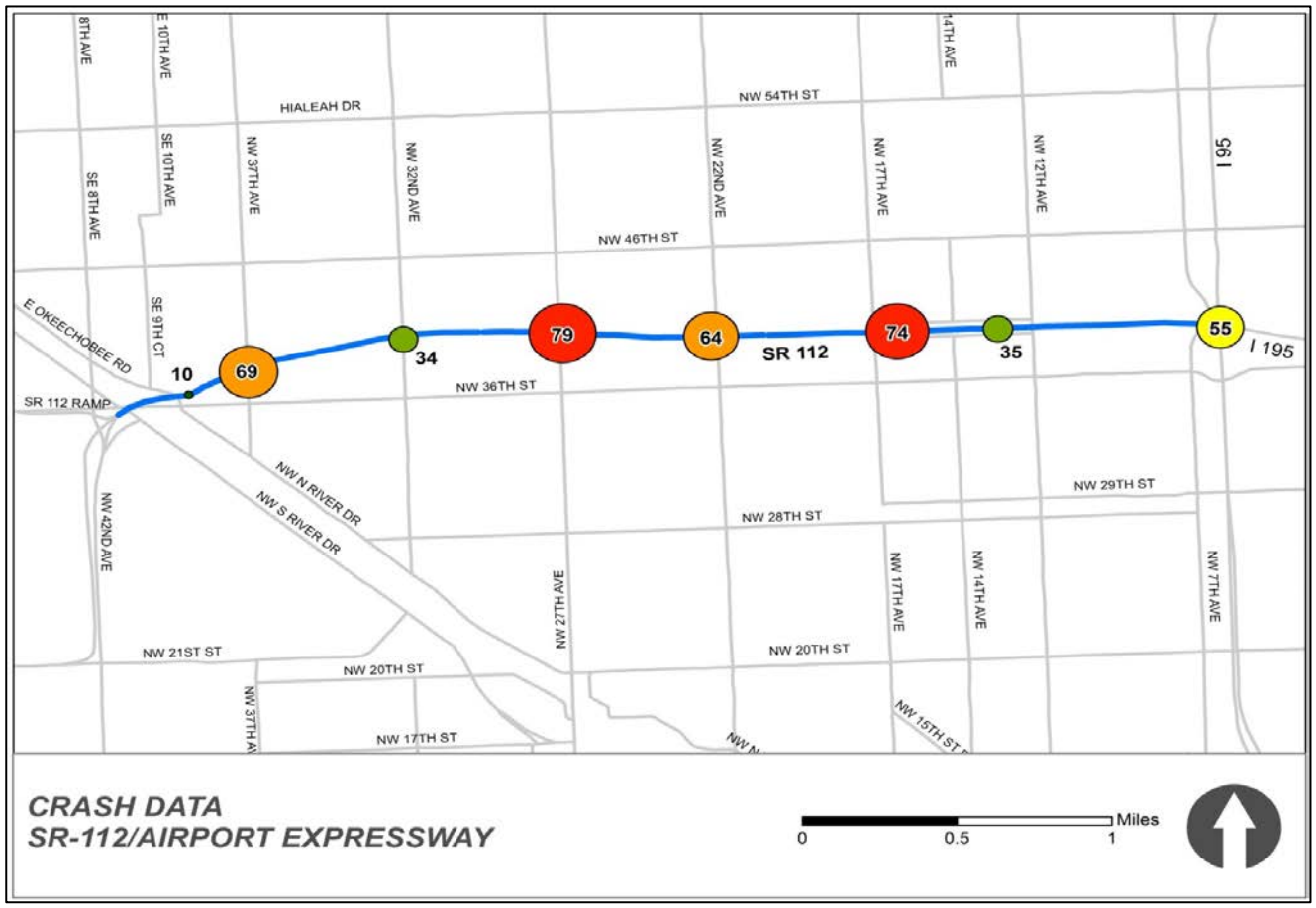


Figure 3-9: SR-112 High Crash Locations (2010 to 2014)

3.7 SR-112 CONNECTIVITY

The SERPM 7 Model was used to evaluate the potential extension of the SR-112 corridor west of LeJeune Road to the HEFT with connection at the Palmetto Expressway. A select-link analysis was conducted using the Base Year 2015 Model. The multi-bandwidth display tool from the CUBE Platform was used to identify the origins and destinations of the trips that would potentially use the selected link. The multi-bandwidth displays for the eastbound and westbound selected link along the SR-112 corridor are shown in **Figure 3-10 and Figure 3-11**, respectively. Shades of blue and red with varying thicknesses are used to indicate the directional demand on the corridor in vehicles per day.

The values shown in the multi-bandwidth displays indicate the directional daily volumes on SR-112 for the select-link analysis. The highway assignment from the Model run shows that the majority of the trips on eastbound SR-112 come from the Doral area on NW 107th Avenue and the major destinations are the connection to I-195 and southbound I-95. The majority of trips in the westbound direction originate from the beach on I-195, Downtown Miami and Southbound I-95 with a major destination in Doral near NW 107th Street.

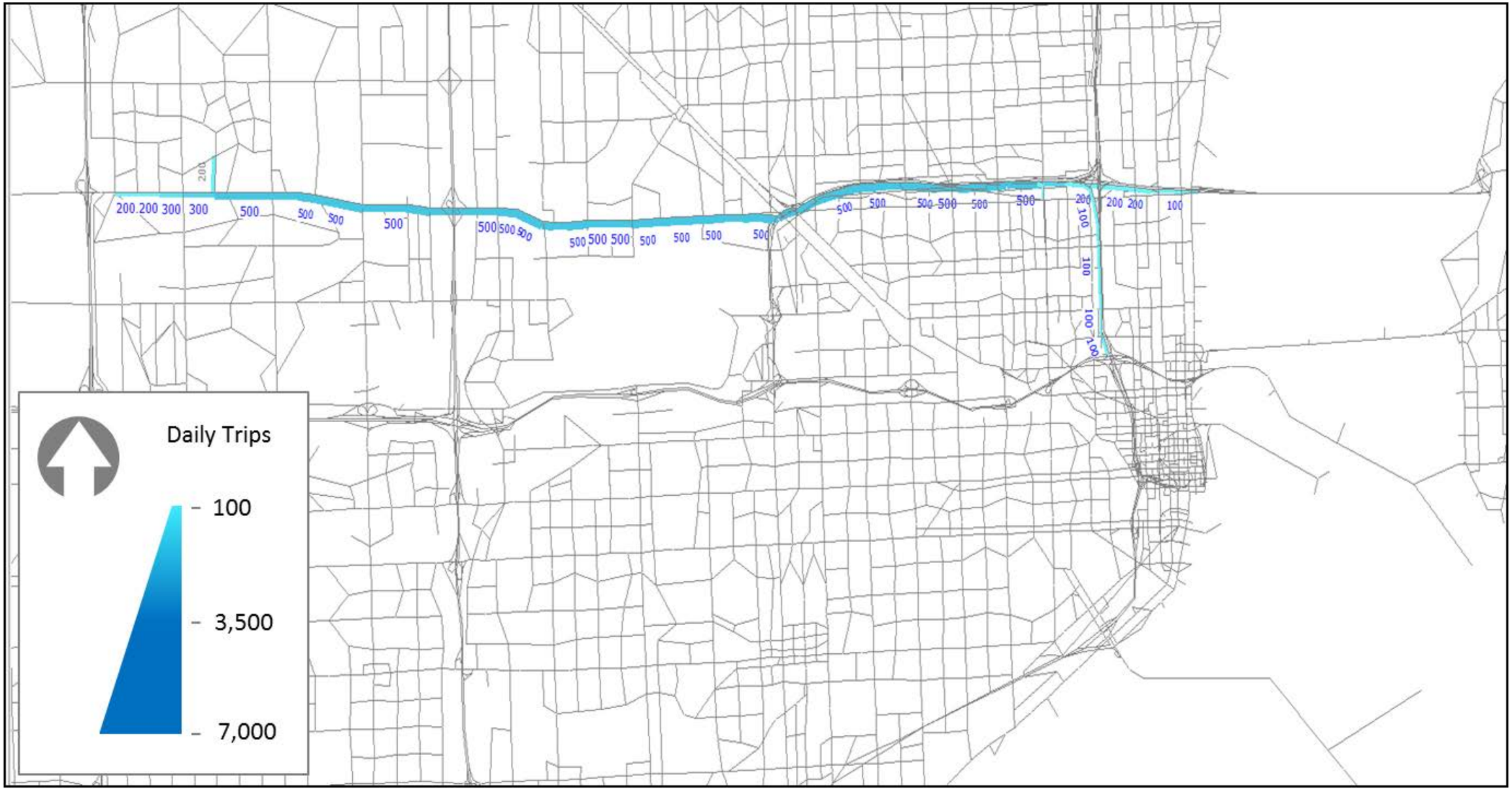


Figure 3-10: SR-112 Select-link Multi-Bandwidth Display – Eastbound (vehicles per day)

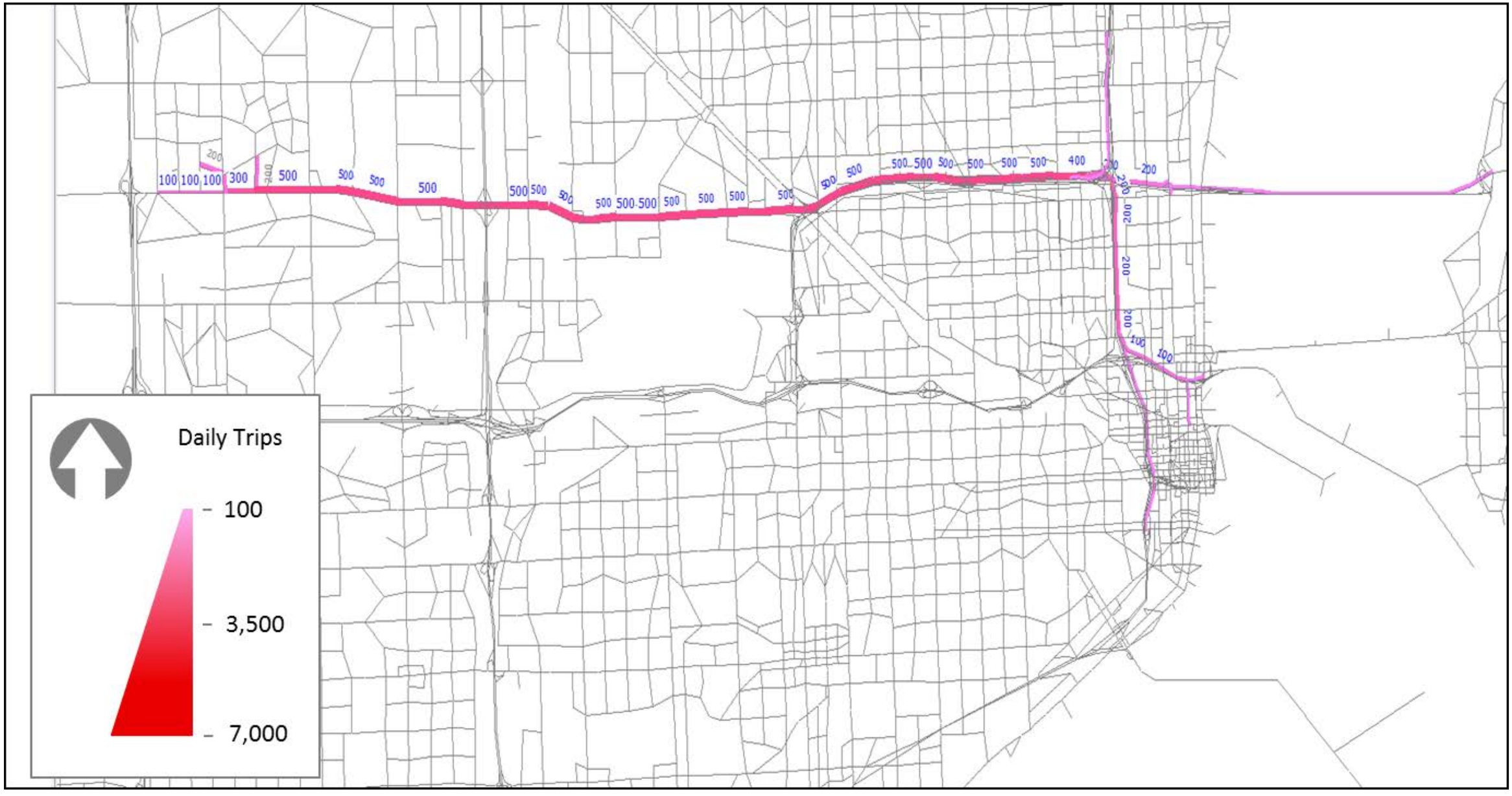


Figure 3-11: SR-112 Select-link Multi-Bandwidth Display – Westbound (vehicles per day)

3.8 SR-112 FUTURE LAND USE

The future land use was obtained from the adopted Miami-Dade County 2020-2030 CDMP. **Figure 3-12** shows the future land use for the area near the SR-112 corridor. The future land use in the vicinity of the SR-112 corridor is mainly commercial with a segment from NW 67th Avenue to LeJeune Road used by the Miami International Airport. Most of the existing vacant land is occupied in the future for industrial, commercial and institutional use, and the majority of the residential and recreational areas remain unchanged in the adopted 2020-2030 CDMP.

3.9 SR-112 PLANNED PROGRAMS

Roadway and transit improvements included in the Miami-Dade TPO 2040 LRTP and Miami-Dade 2016 TDP related to the SR-112 corridor were reviewed by the project team. **Table 3-4 and Table 3-5** show the planned programs related to roadway and transit improvements, respectively, that involve the SR-112 corridor.

Table 3-4: SR-112 Roadway Improvements

Roadway	From	To	Description	Funding FY
SR-112 at NW 37 Ave (MDX Study)			Construction of partial interchange	2019
Connect 4 Express (MDX Study)	Central Miami-Dade County	North Miami-Dade County	PD&E Study of potential new expressway	2019
SR-953/NW 42 Ave with SR-948/NW 36 St & SR-25/Okeechobee Rd - Iron Triangle (FDOT Study)			Urban interchange mobility planning study	On-Going
NW 36 St/NW 41 St (FDOT Study)	NW 42 Ave/ LeJeune Rd	SR-821 (HEFT)	Operational Improvements	2026-2030

Table 3-5: SR-112 Transit Improvements

Roadway	From	To	Funding FY
NW 27 Ave Bus Rapid Transit	Miami Intermodal Center (MIC)	NW 215 St Terminal	2020

3.10 SR-112 FUTURE 2040 LEVEL OF SERVICE

The future level of service on facilities near SR-112 was also reviewed by the project team. The 2040 LOS was provided by FDOT District Six as ESRI ArcGIS shapefile format. The segment on the SR-112 corridor from the HEFT to LeJeune Road is not included in the 2040 LOS database. The 2040 LOS map is included in **Figure 3-13**.

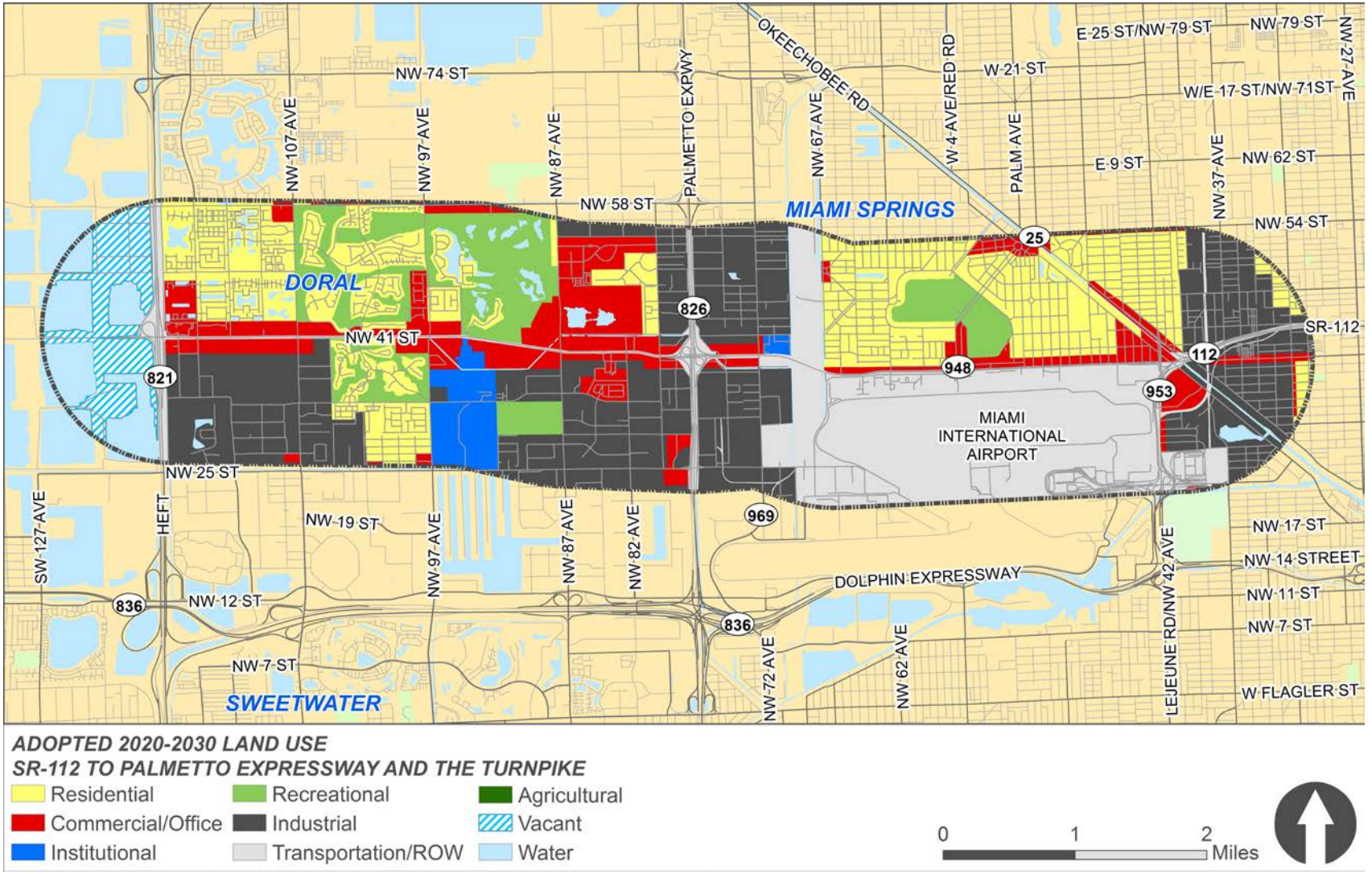


Figure 3-12: SR-112 Adopted 2020-2030 Land Use

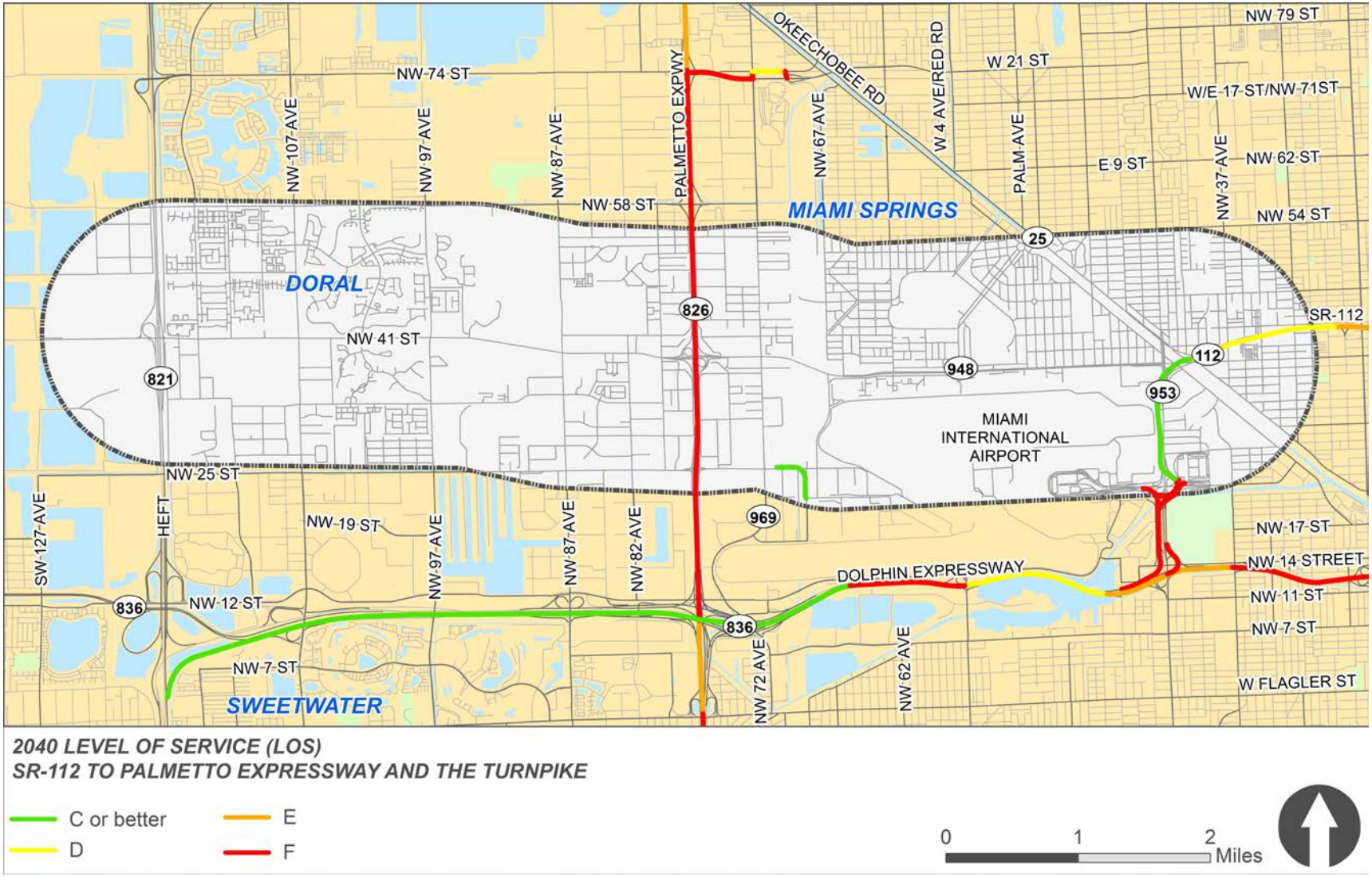


Figure 3-13: SR-112 Future 2040 Level of Service

4 SR-874/DON SHULA EXPRESSWAY

This section includes the data collected for the potential highway network missing link along SW 136th Street which would serve as an extension of the SR-874/Don Shula Expressway. This highway network missing link would provide a connection from the SR-836/Dolphin Expressway extension (currently under the planning phase) to the existing termini of the SR-874 at the HEFT. This highway network missing link is defined herein as the SR-874 corridor.

4.1 SR-874 EXISTING LAND USE

The majority of the land use in the area south of the SR-874 corridor and east of the HEFT is mainly residential. North of the corridor is occupied by industrial in addition to the Kendall Tamiami Executive Airport, located between SW 157th Avenue and SW 137th Avenue. West of SW 157th Avenue, the land use is mainly used for agricultural purposes. There is some vacant land near the industrial and agricultural use areas.

Figure 4-1 shows the existing land use near the SR-874 corridor.

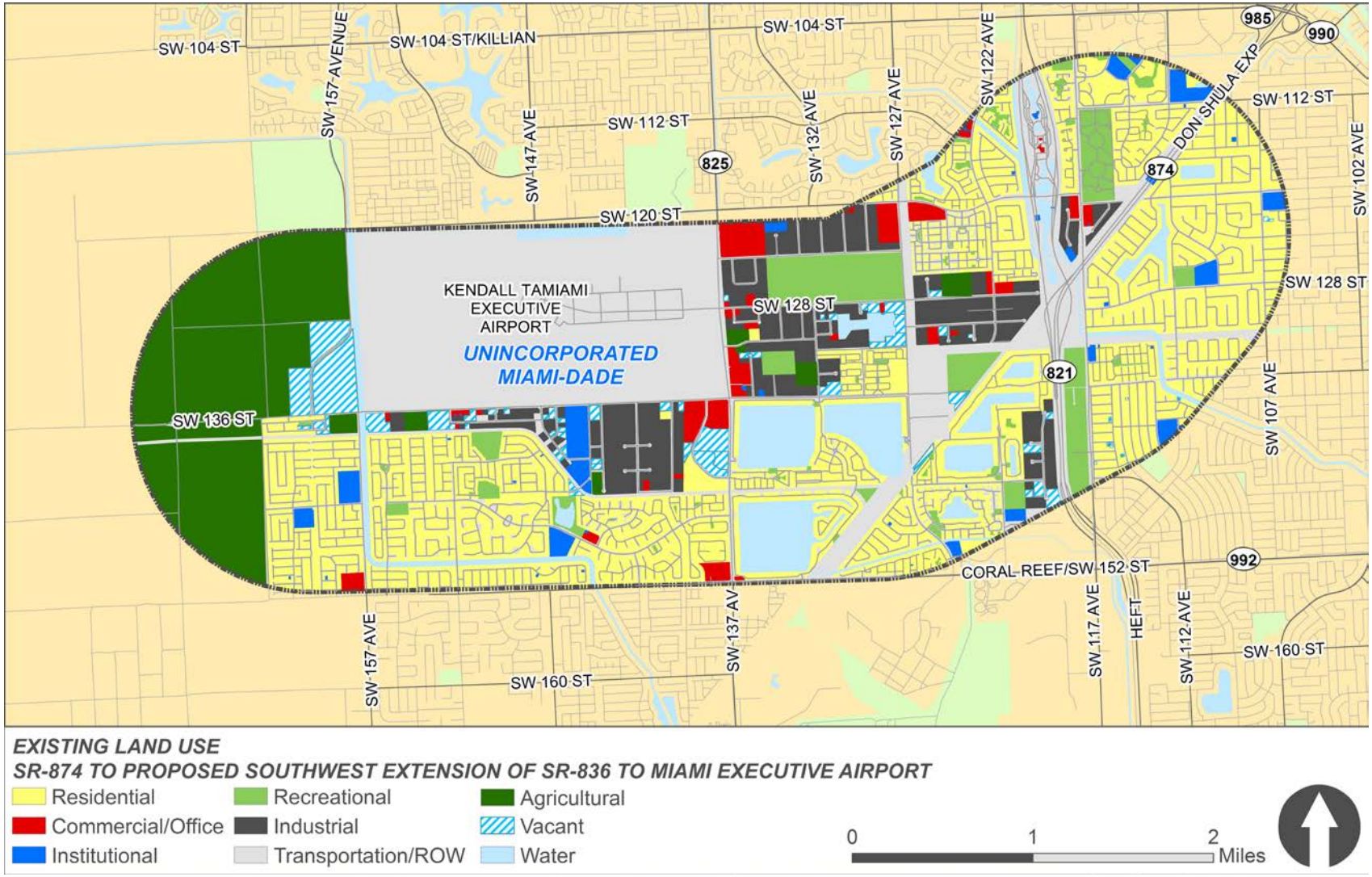


Figure 4-1: SR-874 Existing Land Use

4.2 SR-874 TRAFFIC VOLUMES (FROM WEST OF NW 57TH AVENUE TO GGI)

The 2015 and 2016 AADTs along the SR-874 corridor from the HEFT to the Palmetto Expressway were obtained from traffic monitoring station locations form the FTO. There are a total of three (3) stations on the SR-874 mainline and 12 locations with counts at the on- and off-ramps. The AADTs for SR-874 are summarized in **Table 4-1**.

Table 4-1: SR-874 Traffic Volumes (from HEFT to SR-826/Palmetto Expressway)

Station No.	Milepost	Station Name	2016 AADT	2015 AADT
876439	0.050	RAMP 87005112 FROM SB SR 874 TO SB HEFT, 200' SOUTH OF SR 874	11,500	8,300
872274	**1.543**	**SR 874/S DADE EXPWY, 2500' N TOLL/S KILLIAN PKWY**	**90,000**	**94,000**
876033	0.161	RAMP 87005031 FROM EB SW 104 ST TO SB SR 874, 850' S OF SW 104 ST	5,000	5,000
876038	0.057	RAMP 87005038 FROM WB KILLIAN PKWY TO NB SR 874, 300' W OF KILLIAN PKWY	4,400	3,200
876037	0.095	RAMP 87005136 FROM EB SW 104 ST TO NB SR 874, 500' S OF SW 104 ST	17,500	12,000
876034	0.076	RAMP 87005033 FROM SB SR874 TO EB KILLIAN PKWY, 400' S OF SR 874	3,400	2,700
872276	**2.443**	**SR 874/S DADE EXPWY, 300' N KILLIAN PKWY**	**114,500**	**116,500**
876040	0.095	RAMP 87005041 FROM EB SW 88 ST TO SB SR874, 500' S OF SW 88 ST	4,200	4,200
876041	0.08	RAMP 87005142 FROM NB SR 874 TO EB SW 88 ST, 1000' N OF SR 874	4,700	6,700
876412	0.065	RAMP 87005111 FROM RAMP 87021211 TO NB SR 874	6,400	5,200
872565	0.133	SNAPPER CREEK EXPRESSWAY 700' S OF RAMP 87021003	31,000	22,000
876051	0.095	RAMP 87021003 FROM SB SR 874 TO WB SR 878, 500' S OF SR 874	9,200	6,500
872278	**5.536**	**SR 874/S DADE EXPWY, 300' NE SW 87 AV**	**84,000**	**87,000**
876044	0.038	RAMP 87005512 FROM NB SR 874 TO SW 40 ST OFF RAMP 87260275, 200' N OF SR 874	8,700	6,700
876043	0.152	RAMP 87005511 FROM SW 40 ST SB ON RAMP 87260135 TO SB SR 874, 800' S OF RAMP 87260135	8,400	6,900

4.3 SR-874 YEAR 2015 LEVEL OF SERVICE

Year 2015 LOS data compiled as ESRI ArcGIS shapefile format was provided by FDOT District Six. The LOS data indicates that the SR-874 operates at LOS C or better from east of the HEFT to SR-990/Killian Parkway. The existing LOS database does not include any information for SW 136th Street. **Figure 4-2** shows the existing LOS for SR-874.

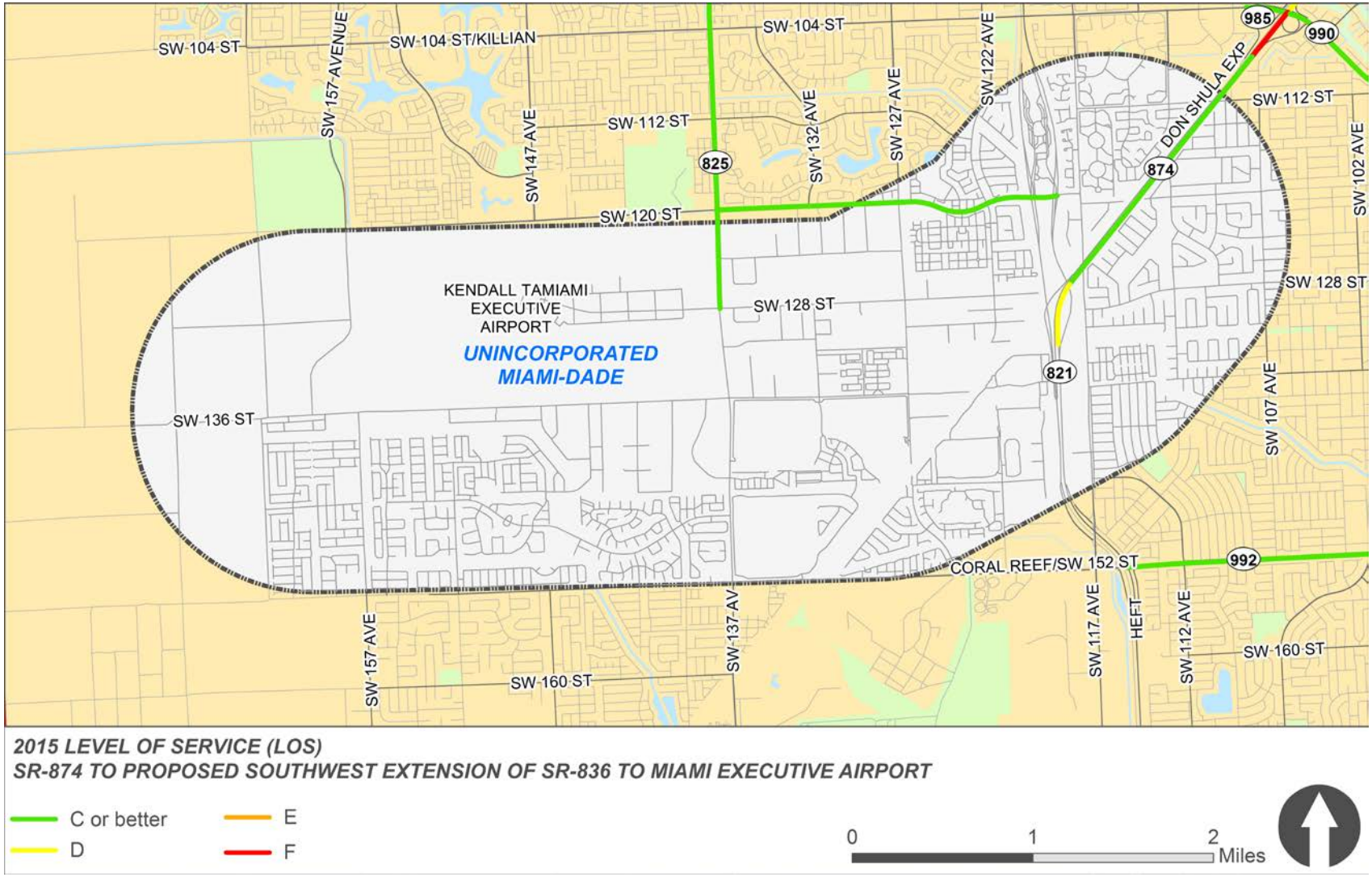


Figure 4-2: SR-874 2015 Level of Service (LOS)

4.4 SR-874 HISTORICAL TREND ANALYSIS

The FDOT Traffic Trends Analysis Tool - TREND_V03a was used to conduct a historical trend analysis on traffic monitoring station locations along SR-874 with at least ten years of historical data available. The resultant R-squared and compounded growth rates for these locations are summarized in **Table 4-2**. The historical trend analysis reports for SR-874 are included in **Appendix C**.

Table 4-2: SR-874 Historical Trend Analysis Summary

Growth Rate Computation Option:		Decaying Exponential Growth		
Station	Description	Trend R^2	Compounded Historic Growth Rate	Compounded Growth Rate (2016 to Design Year 2040)
878681	Ramp SR-874 SB to HEFT SB	43.07%	9.47%	1.22%
872274	2500' South of Killian Pkway	6.83%	0.67%	0.13%
878681	300' North of Killian Pkway	1.29%	0.24%	0.05%

The values shown in Table 4-2 indicate that traffic volumes along the corridor have grown at an average annual rate of 0.5% from 2006 to 2016. In addition, the projections using decaying exponential growth indicate the corridor will have an average annual compounded growth rate of 0.1% from 2016 to the Design Year 2040.

4.5 SR-874 REGIONAL INTEGRATED TRANSPORTATION INFORMATION SYSTEM (RITIS) DATA

Existing readily available RITIS data, used to identify congestion patterns, speeds, and bottleneck locations along the SR-874 corridor, is included in the following sections. The data was extracted for typical weekdays from March 7th to 9th, 2017.

4.5.1 SR-874 CONGESTION AND SPEEDS

Figure 4-3 to Figure 4-6 show the congestion and speeds measured along SR-874 from the HEFT to NW 40th Street/Bird Road during the AM (6:30 to 10:30) and the PM (3:30 to 7:30) peak periods. Congestion shown in **Figure 4-3 and Figure 4-4** correspond to measured speed as a percentage of the free-flow speed during the AM and PM peak periods, respectively. The speeds shown in **Figure 4-5 and Figure 4-6** are measured as the current estimated harmonic mean speed for the roadway segment in miles per hour during the AM and PM peak periods, respectively.

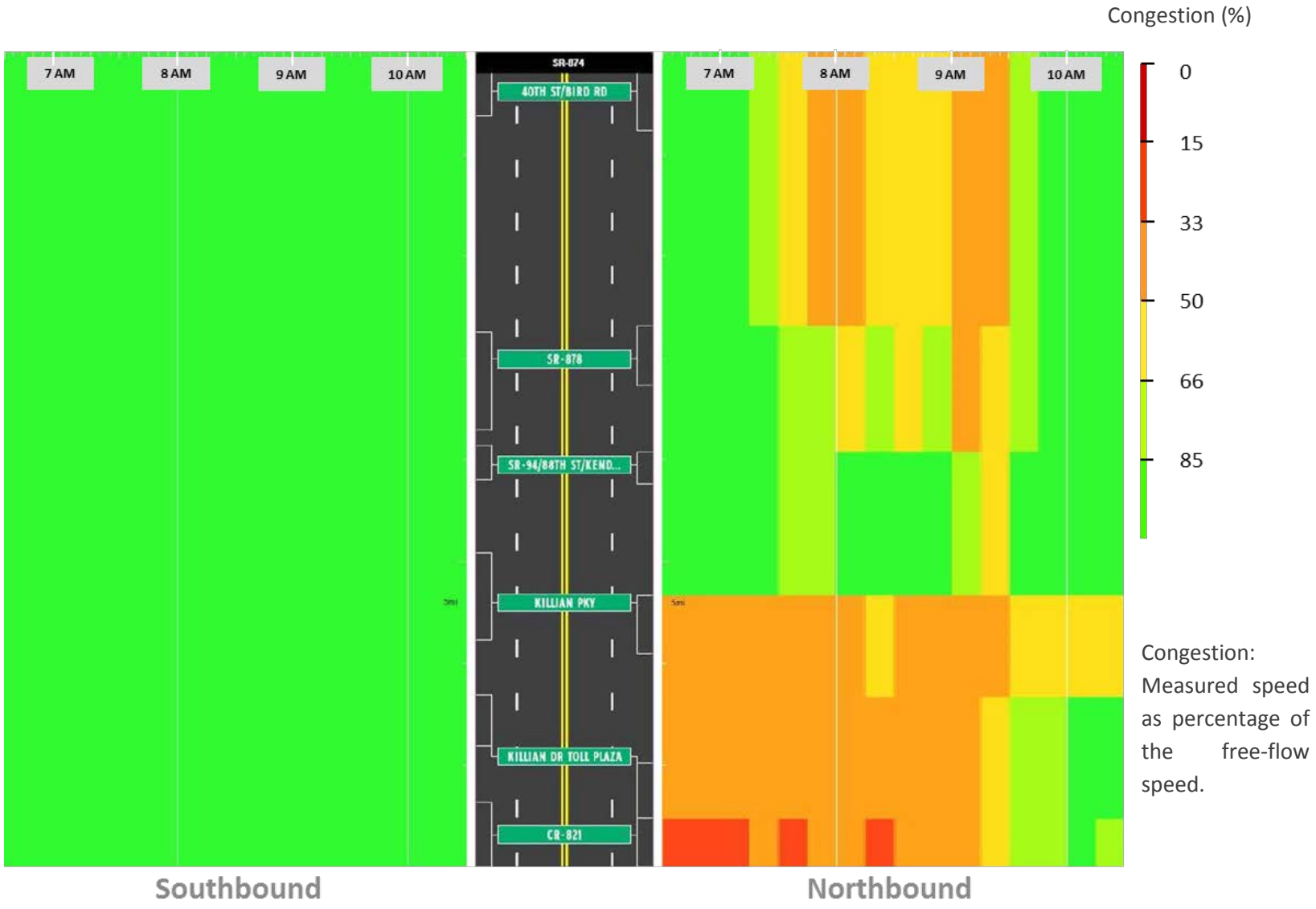


Figure 4-3: RITIS Data — SR-874 AM Congestion

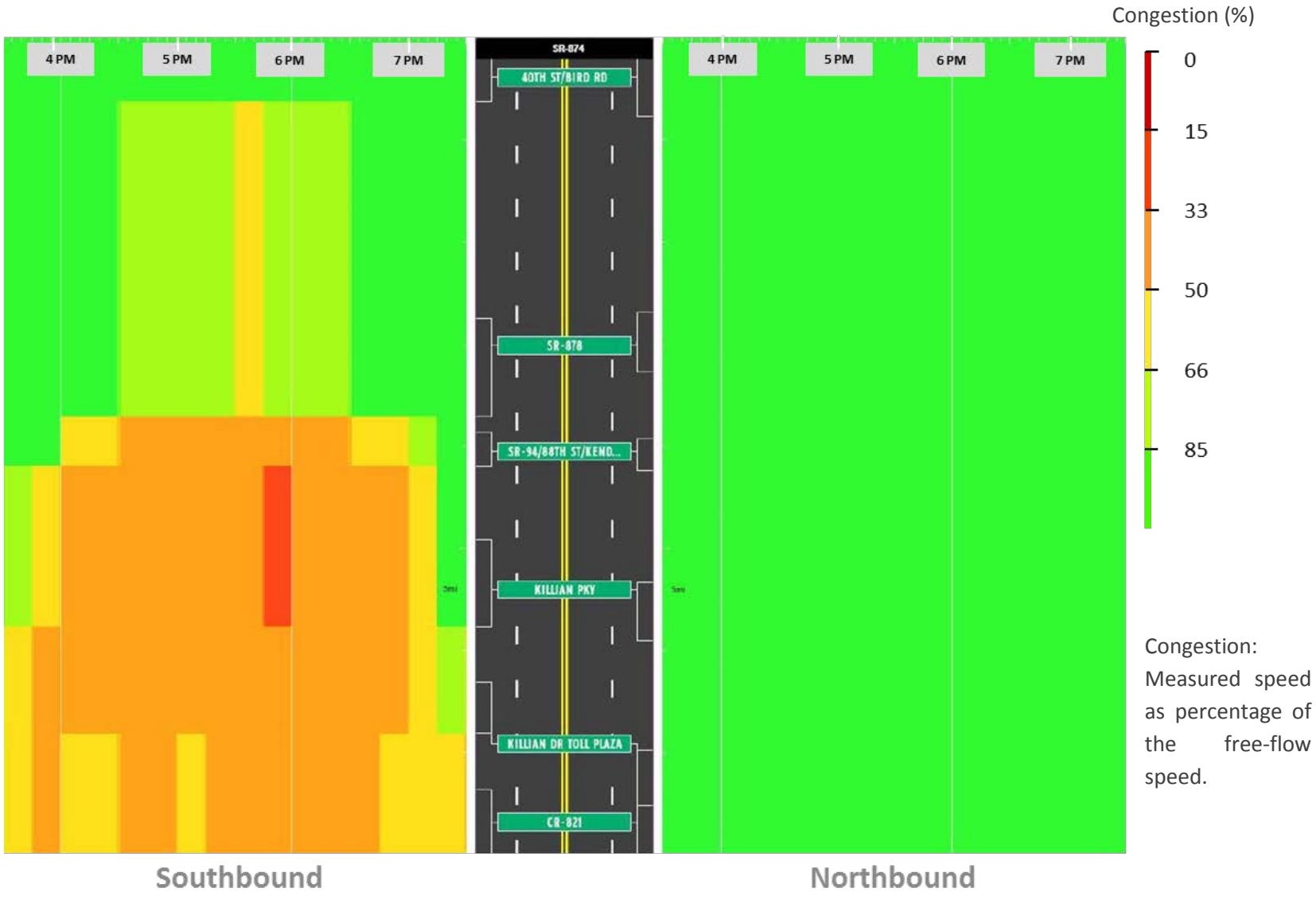


Figure 4-4: RITIS Data — SR-874 PM Congestion

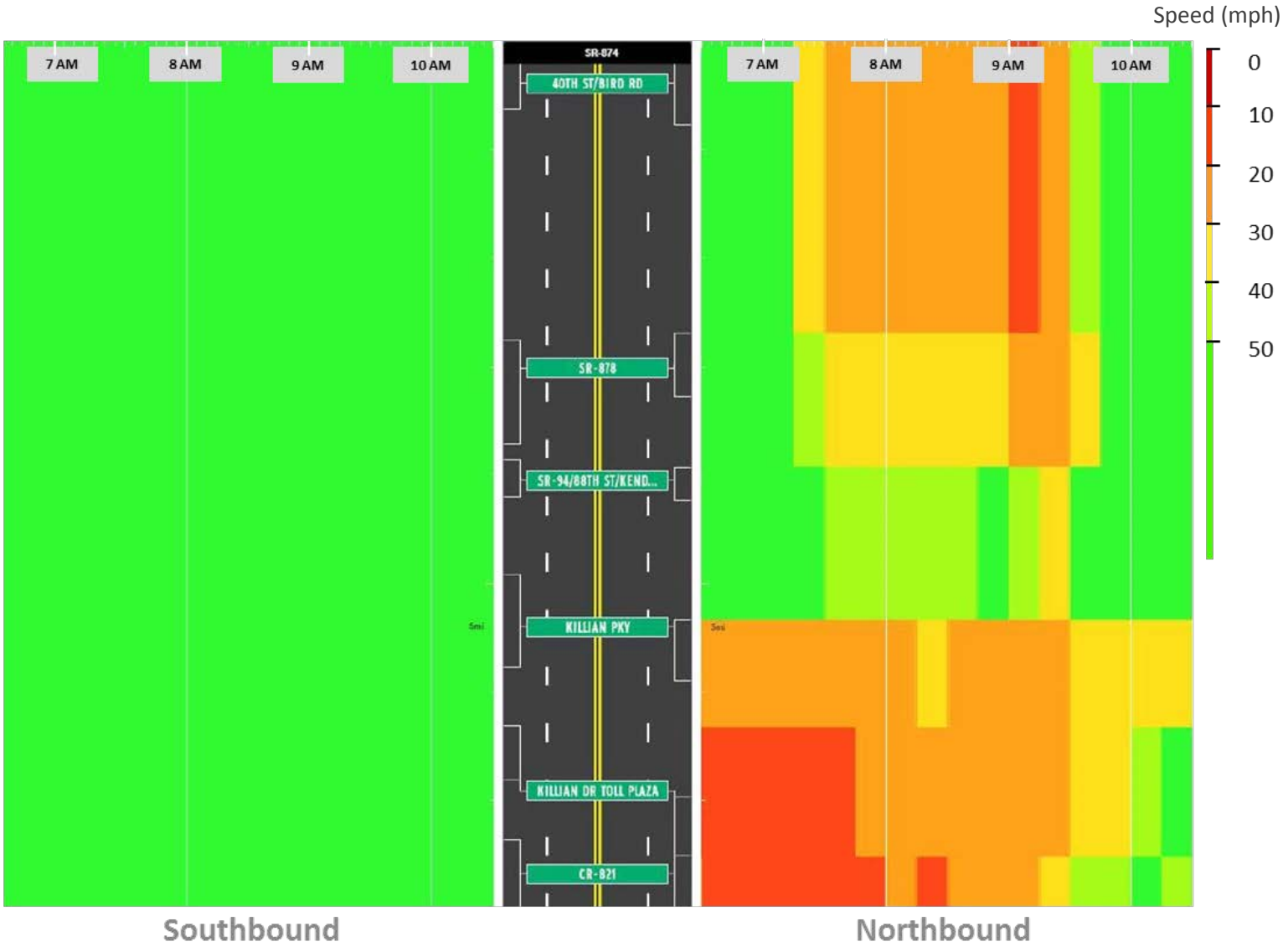


Figure 4-5: RITIS Data — SR-874 AM Speeds

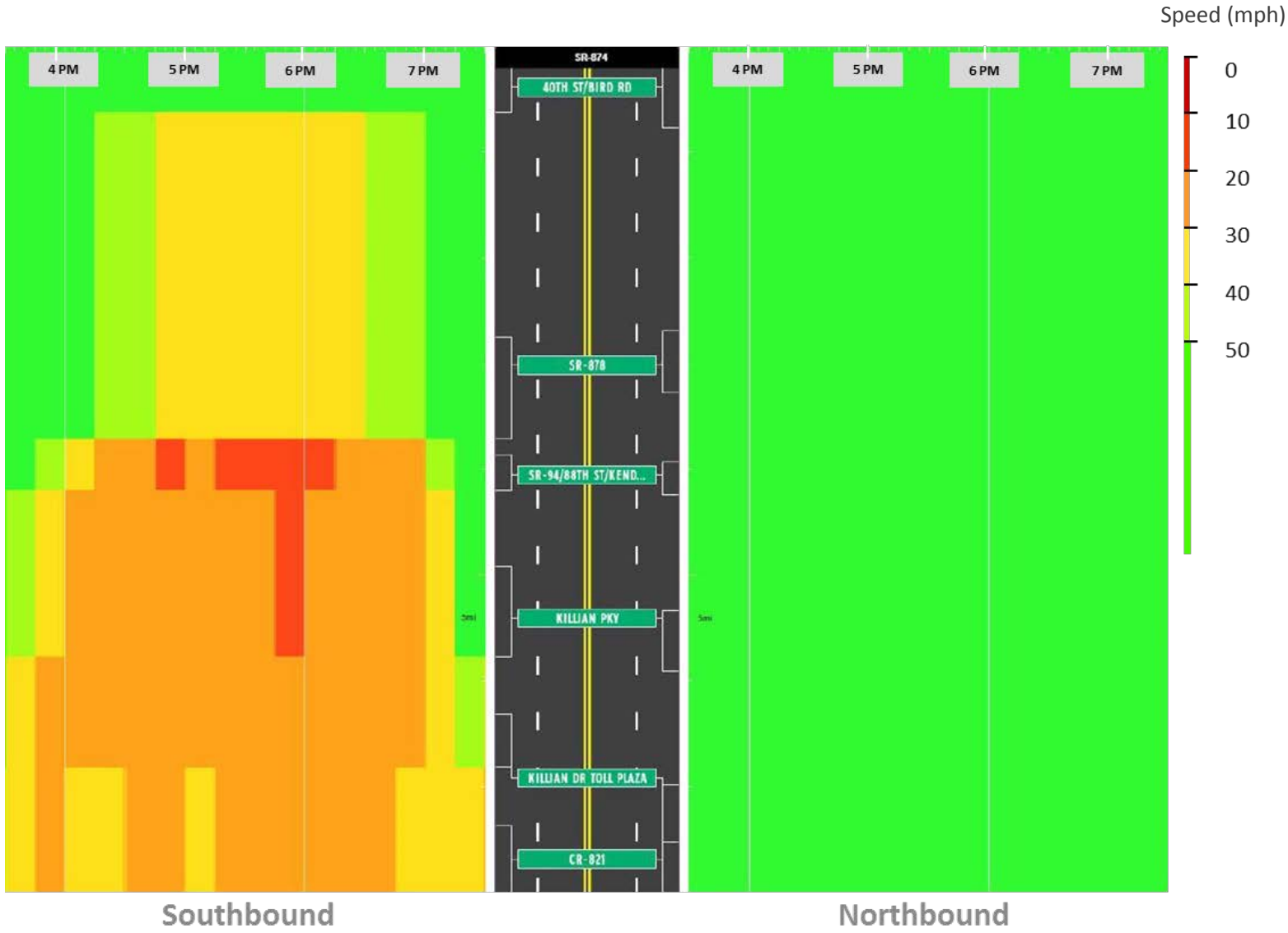


Figure 4-6: RITIS Data — SR-874 PM Speeds

Figure 4-3 and Figure 4-4 show very directional congestion on the SR-874 with vehicles traveling northbound at less than 50% of the free-flow speed during the morning peak period and less than 50% of the free-flow speed in the southbound direction during the afternoon peak period. Therefore, this corridor experiences a typical commuter travel pattern.

The speeds shown in **Figure 4-5** indicate that vehicles travel between 10 and 20 mph from the HEFT to the Killian Drive toll plaza during the first hour of the AM peak period. In addition, the speeds measured from Snapper Creek Expressway to Bird Road show vehicles traveling at less than 40 mph. The PM peak period speeds shown in **Figure 4-6** indicate that vehicles travel at less than 30 miles per hour from Kendall Drive to the HEFT.

4.5.2 SR-874 BOTTLENECKS

The segment on SR-874 from HEFT to Bird Road was selected for the bottleneck analysis. The RITIS bottleneck ranking is included in **Table 4-3**. Based on RITIS data, the top ranked bottleneck location is SR-874 at the HEFT followed by Killian Parkway.

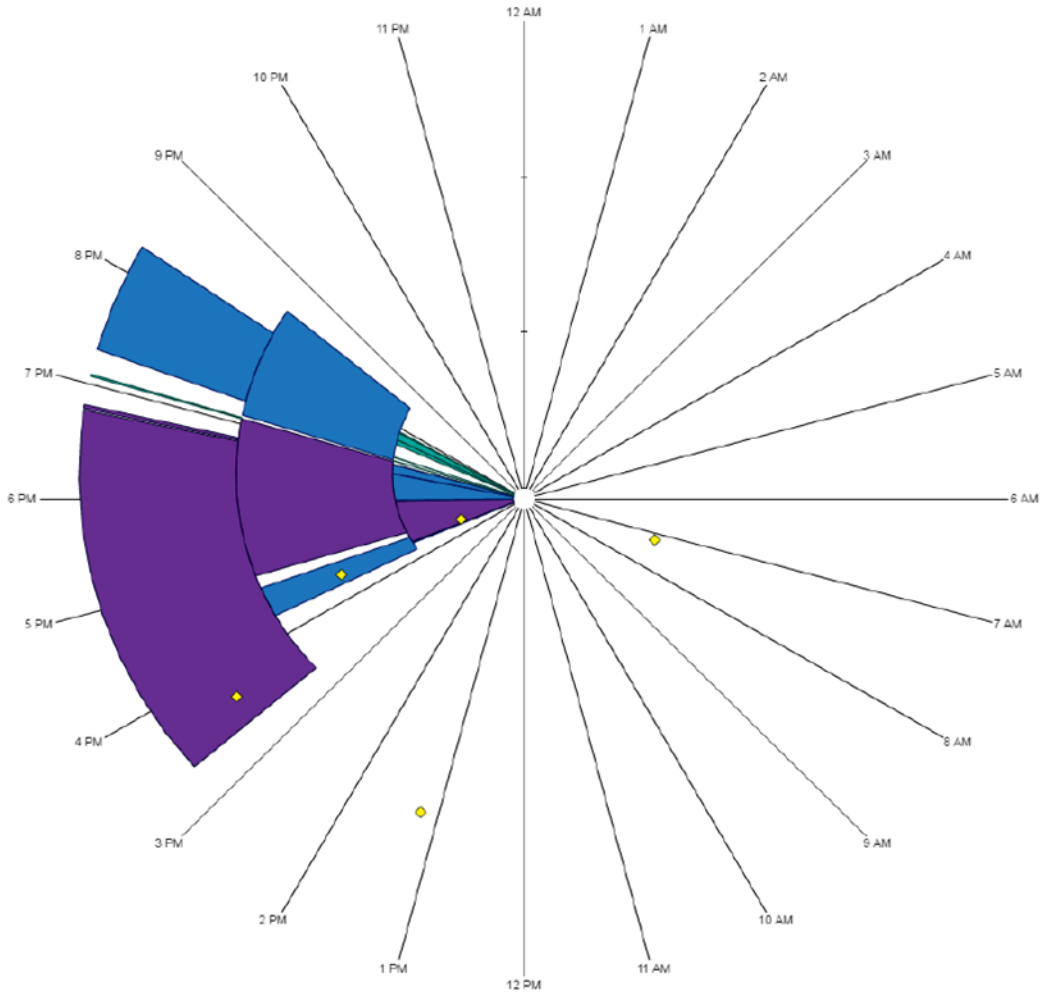
A time spiral graph for the SR-874 corridor is included in **Figure 4-7**. The graph indicates that bottleneck conditions worsen from about 3:15 PM to 7:00 PM with maximum queue length of approximately five to eight miles.

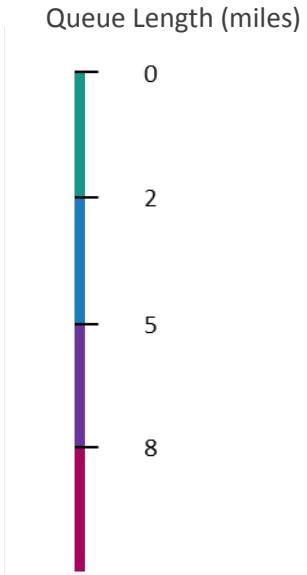
The bottleneck elements graph included in **Figure 4-8** shows the SR-874 segment from HEFT to Bird Road. The graph shows that bottleneck conditions with longer queues and time duration in SR-874 occurred between 4:00 PM and 7:00 PM from HEFT to Snapper Creek Expressway.

Table 4-3: SR-874 Bottleneck Ranking

Rank	Head Location (approximate)	Impact[1]	Average max length (miles)[2]	Average daily duration[3]	All Events/Incidents[4]
1	FL-874 S @ FL-821	3089.07	4.02	3 h 43 m	13
2	FL-874 N @ KILLIAN PKWY	1118	2.28	2 h 49 m	6
3	FL-874 N @ FL-976/40TH ST/BIRD RD	1051.8	4.25	1 h 18 m	12
4	FL-874 S @ KILLIAN DR TOLL GANTRY	170.76	2.24	29 m	9
5	FL-874 S @ KILLIAN PKWY	37.5	3.55	4 m	9
6	FL-874 N @ KILLIAN DR TOLL GANTRY	24.68	1.76	4 m	4
7	FL-874 N @ FL-94/88TH ST/KENDALL DR	20.57	1.29	5 m	2
8	FL-874 N @ FL-878	16.45	2.06	4 m	4
9	FL-874 S @ FL-976/40TH ST/BIRD RD	1.51	0.5	1 m	11
10	FL-874 N @ FL-821	0.5	0.5	0 m	1

[1] Impact=the aggregation of queue length over time for congestion originating at each location in mile-minutes
[2] Average max length=average maximum length, in miles, of queues formed by congestion originating at each location
[3] Average daily duration=average amount of time per day that congestion is identified originating at each location
[4] All incidents/events=the number of traffic events and incidents that occurred within the space of the bottleneck at any time during the time period searched





The center represents March 7, 2017 and the outer edge represents March 10, 2017.

Figure 4-7: SR-874 Bottleneck Time Spiral Graph

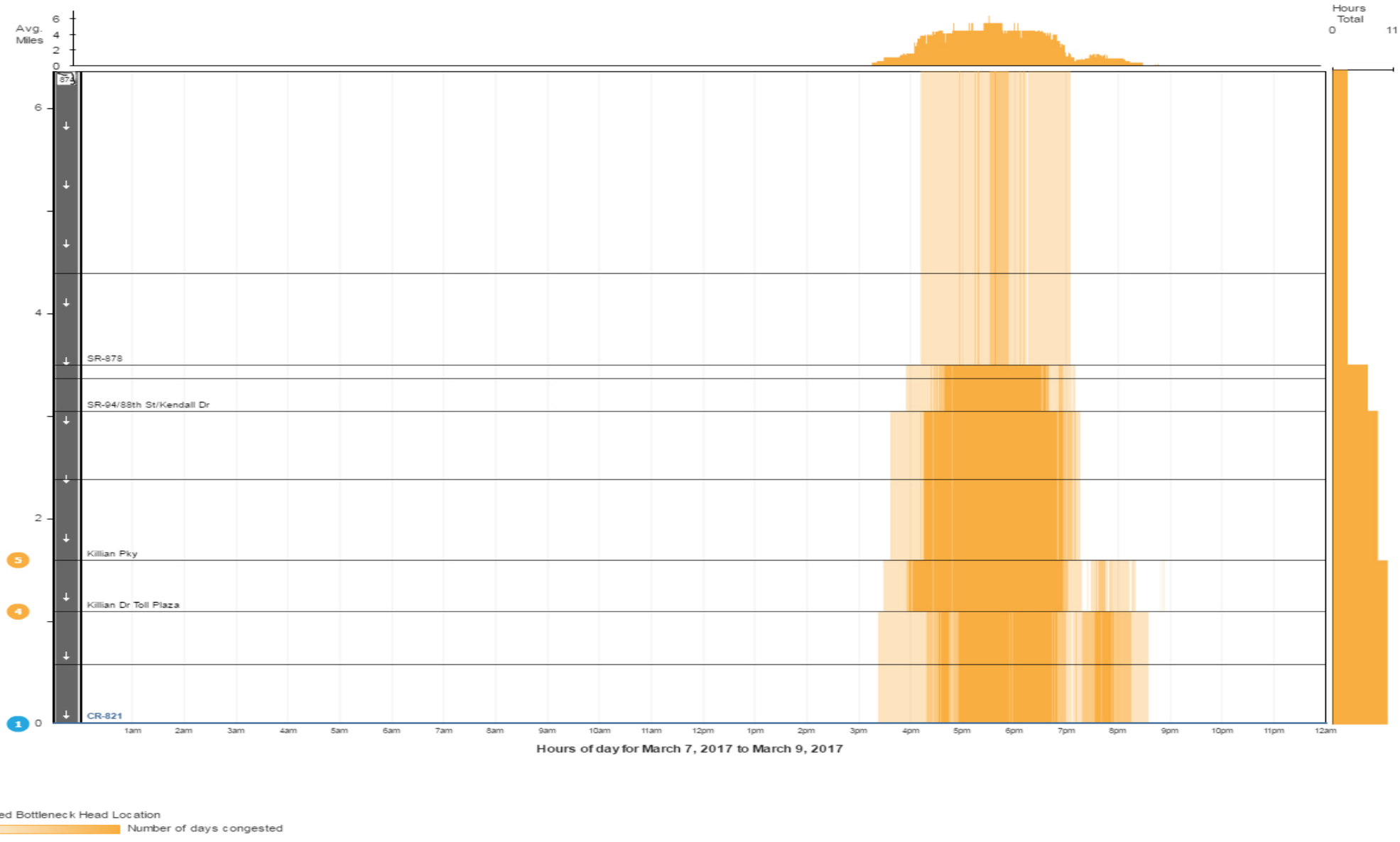


Figure 4-8: SR-874 Bottleneck Elements Graph

4.6 SR-874 CRASH DATA

Four years of ARCA data (2010-2014) were combined and the crash records were clustered to identify high crash locations along SR-874 from the HEFT to the Palmetto Expressway. The data shows three locations with the highest number of crashes at Kendall Drive with 154, SW 104 Street with 132, and south of Snapper Creek Expressway with 120 crashes. In addition, high numbers of crashes were observed near the on-/off-ramps at SW 56th Street with 101, north of SW 112 Street with 89 and north of Snapper Creek Expressway with 88 crashes. The crash clusters for SR-874 from the HEFT to the Palmetto Expressway are shown in **Figure 4-9.**

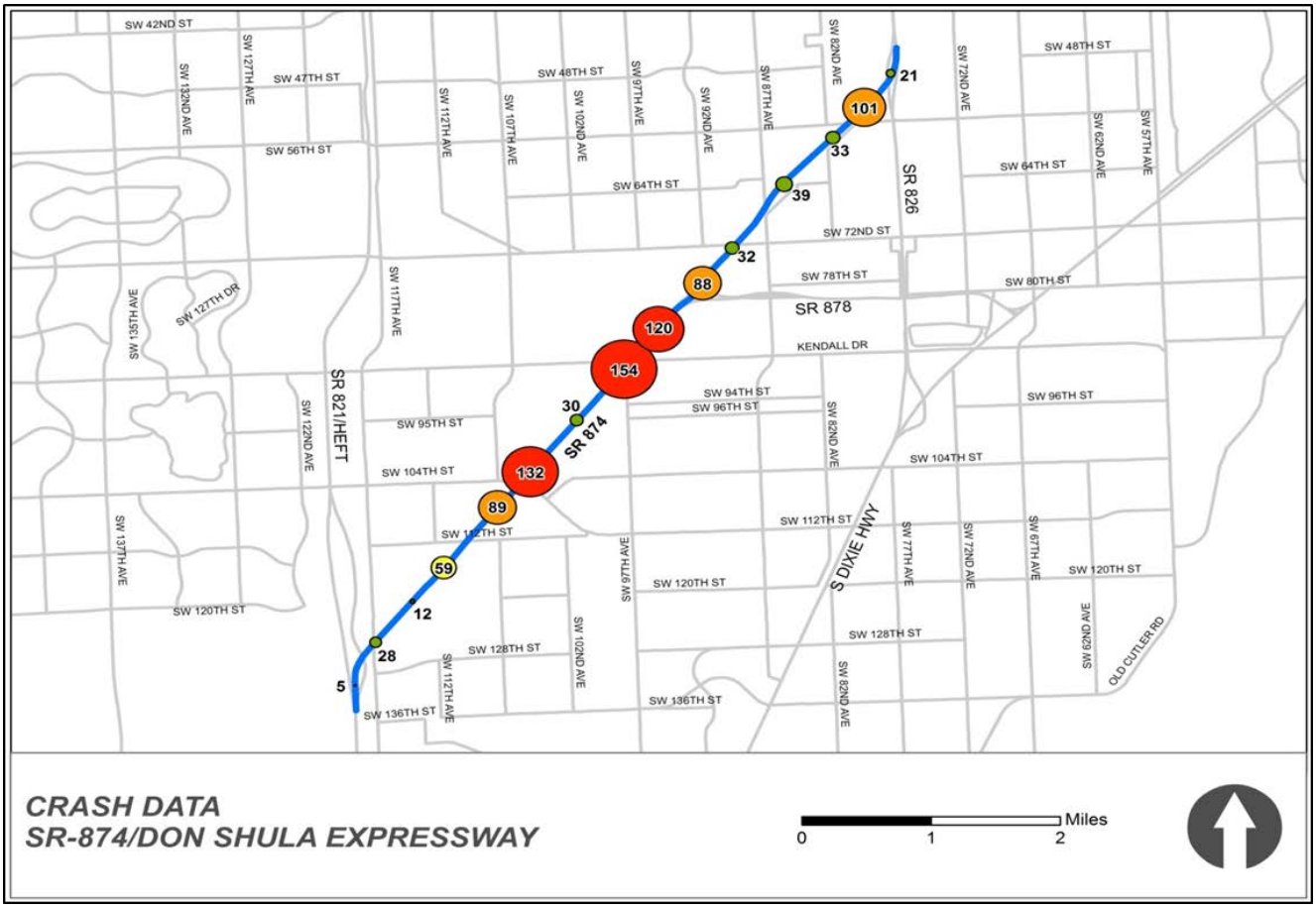


Figure 4-9: SR-874 High Crash Locations (2010 to 2014)

4.7 SR-874 CONNECTIVITY

The SERPM 7 Model was used to evaluate the connectivity of SR-874 to the proposed extension of SR-836 along SW 136th Street. A select-link analysis was conducted using the Base Year 2015 Model. The multi-bandwidth display tool from the CUBE Platform was used to identify the origins and destinations of the trips that would potentially use the selected link. The multi-bandwidth displays for the northbound and southbound selected link along the SR-874 corridor are shown in **Figure 4-10 and Figure 4-11,** respectively. Shades of blue and red with varying thicknesses are used to indicate the directional demand on the corridor in vehicles per day.

The values shown in the multi-bandwidth displays indicate the directional daily volumes on SR-874 for the select-link analysis. The highway assignment from the Model run shows that the majority of the trips on northbound SR-874 come from west of SW 177th/Krome Avenue and the major destination is Downtown Miami. The southbound shows similar trip patterns with the major origin in Downtown Miami and the major destination on SW 177th/Krome Avenue.

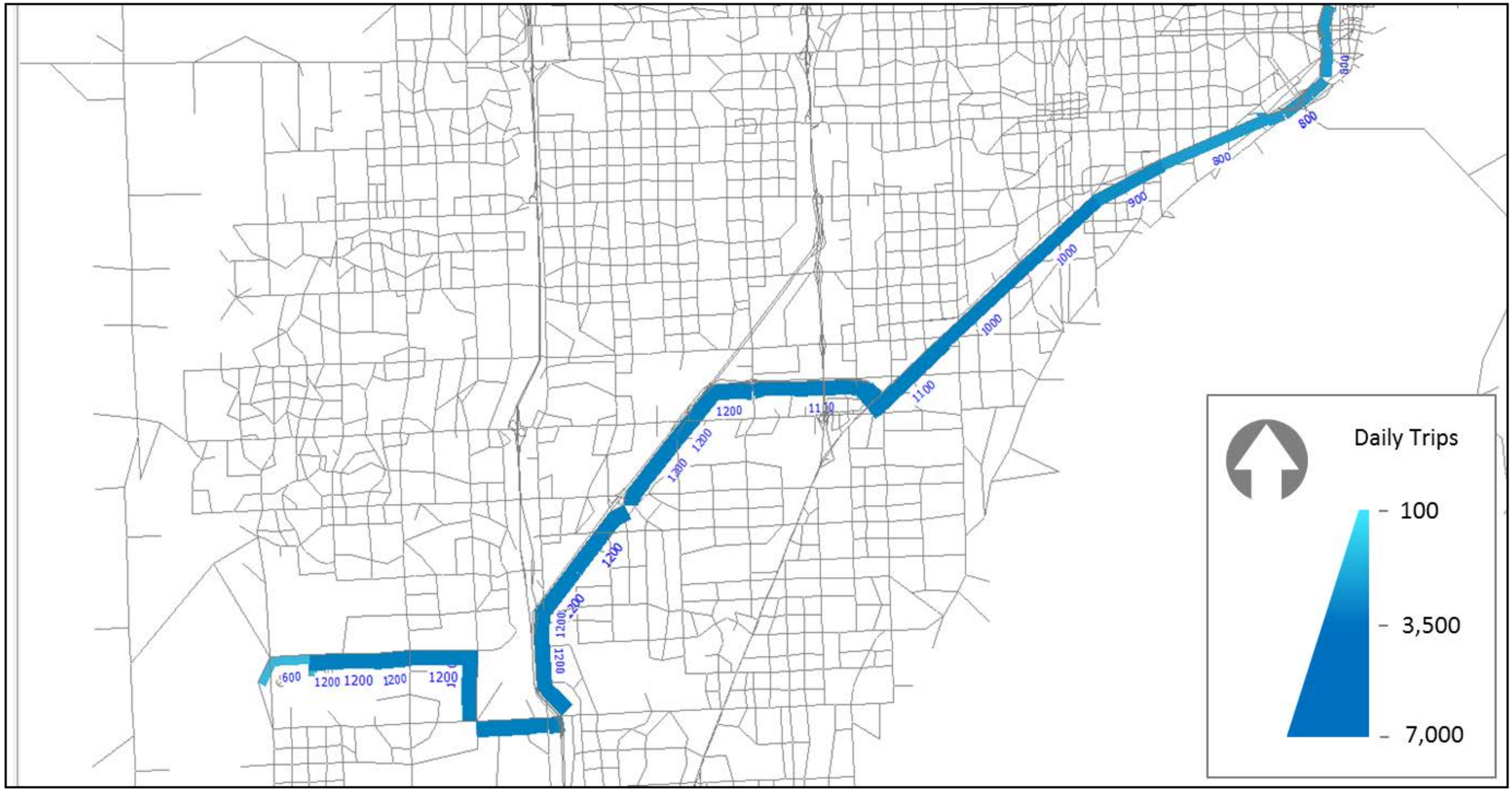


Figure 4-10: SR-874 Select-link Multi-Bandwidth Display – Northbound (vehicles per day)

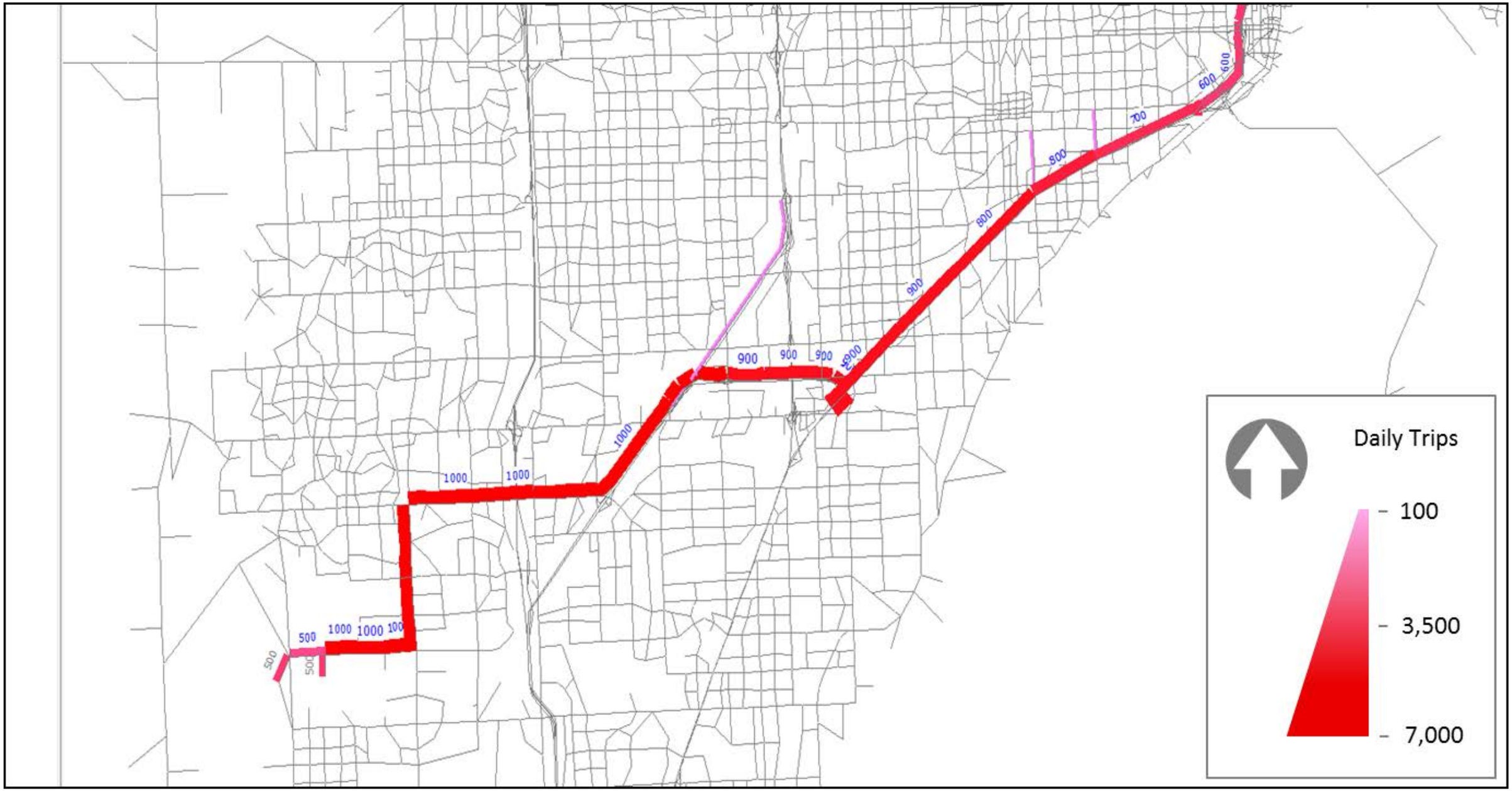


Figure 4-11: SR-874 Select-link Multi-Bandwidth Display – Southbound (vehicles per day)

4.8 SR-874 FUTURE LAND USE

The future land use was obtained from the adopted Miami-Dade County 2020-2030 CDMP. **Figure 4-12** shows the future land use for the area near the location of the SR-874 corridor. The future land use on the western end of SW 136th Street is agricultural. From SW 157th Avenue to SW 137th Avenue, the future land use is transportation/ROW on the north side of SW 136th Street and industrial on the south. The future land use continues mostly industrial on the north side and mostly residential on the south side from SW 137th Avenue until the HEFT.

4.9 SR-874 PLANNED PROGRAMS

Roadway and transit improvements included in the Miami-Dade TPO 2040 LRTP and Miami-Dade 2016 TDP related to the SR-874 corridor were reviewed by the project team. **Table 4-4** shows the planned programs related to roadway improvements. No transit improvements were identified for the general SR-874 study area.

Table 4-4: SR-874 Roadway Improvements

Name of Road	From	To	Description	Funding FY
SR-874/Don Shula Expwy	SR-821/HEFT	SR-94/SW 88 St/Kendall Dr	Widening and interchange reconstruction	On-Going
SR-874/Don Shula Expressway at SW 128 St	East of SR-821/HEFT	SW 137 Ave (East of airport entrance)	Construction of ramp connector	On-Going
SR-821/HEFT	North of Eureka Dr	SR-874/Don Shula Expwy	Widening	On-Going

4.10 SR-874 FUTURE 2040 LEVEL OF SERVICE

The future level of service was also reviewed by the project team. The 2040 LOS was provided by FDOT District Six as ESRI ArcGIS shapefile format. The segment on the SR-874 corridor from the future SR-836 extension to HEFT is not included in the 2040 LOS database. The 2040 LOS map is included in **Figure 4-13**.

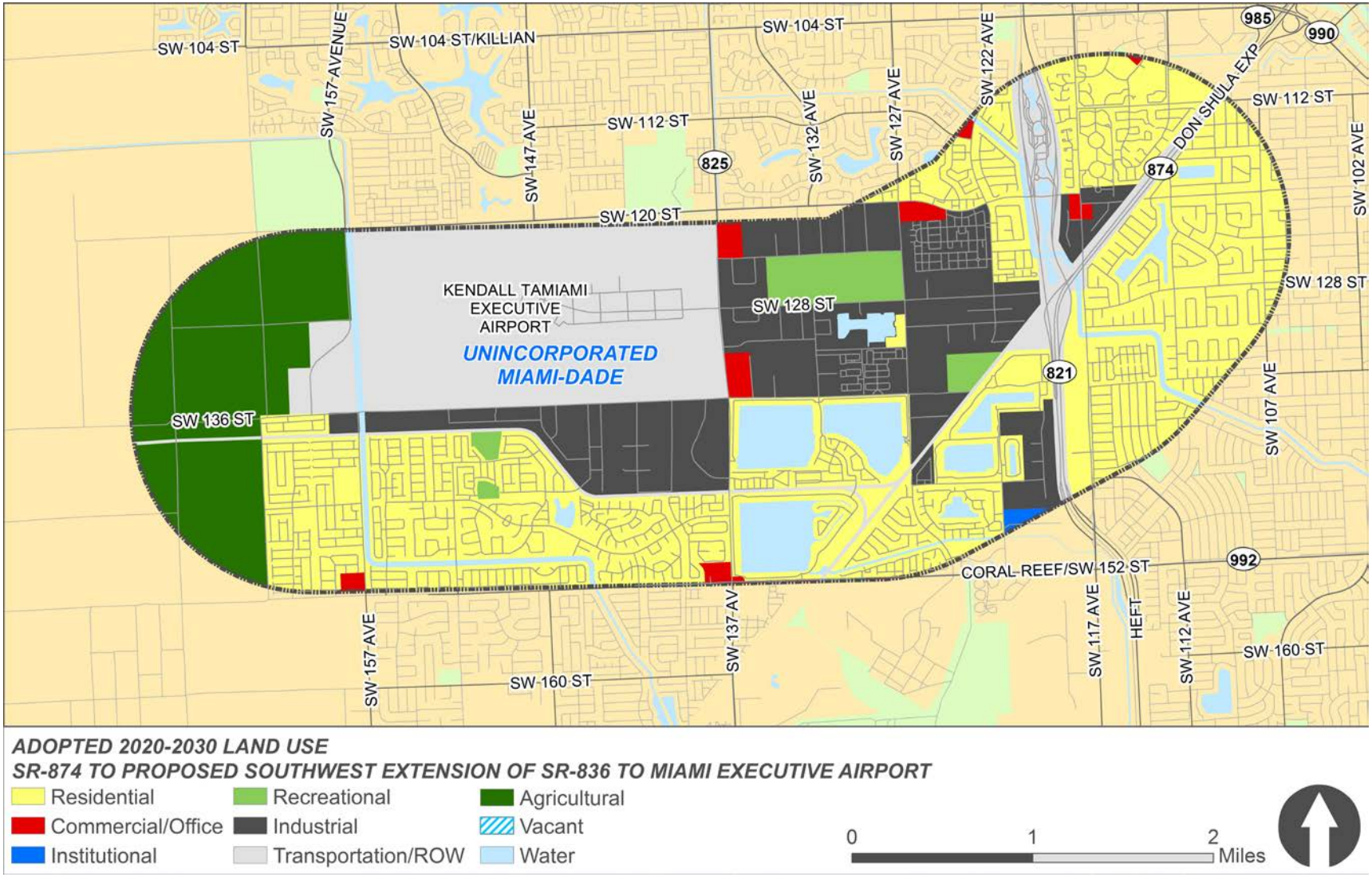


Figure 4-12: SR-874 Adopted 2020-2030 Land Use

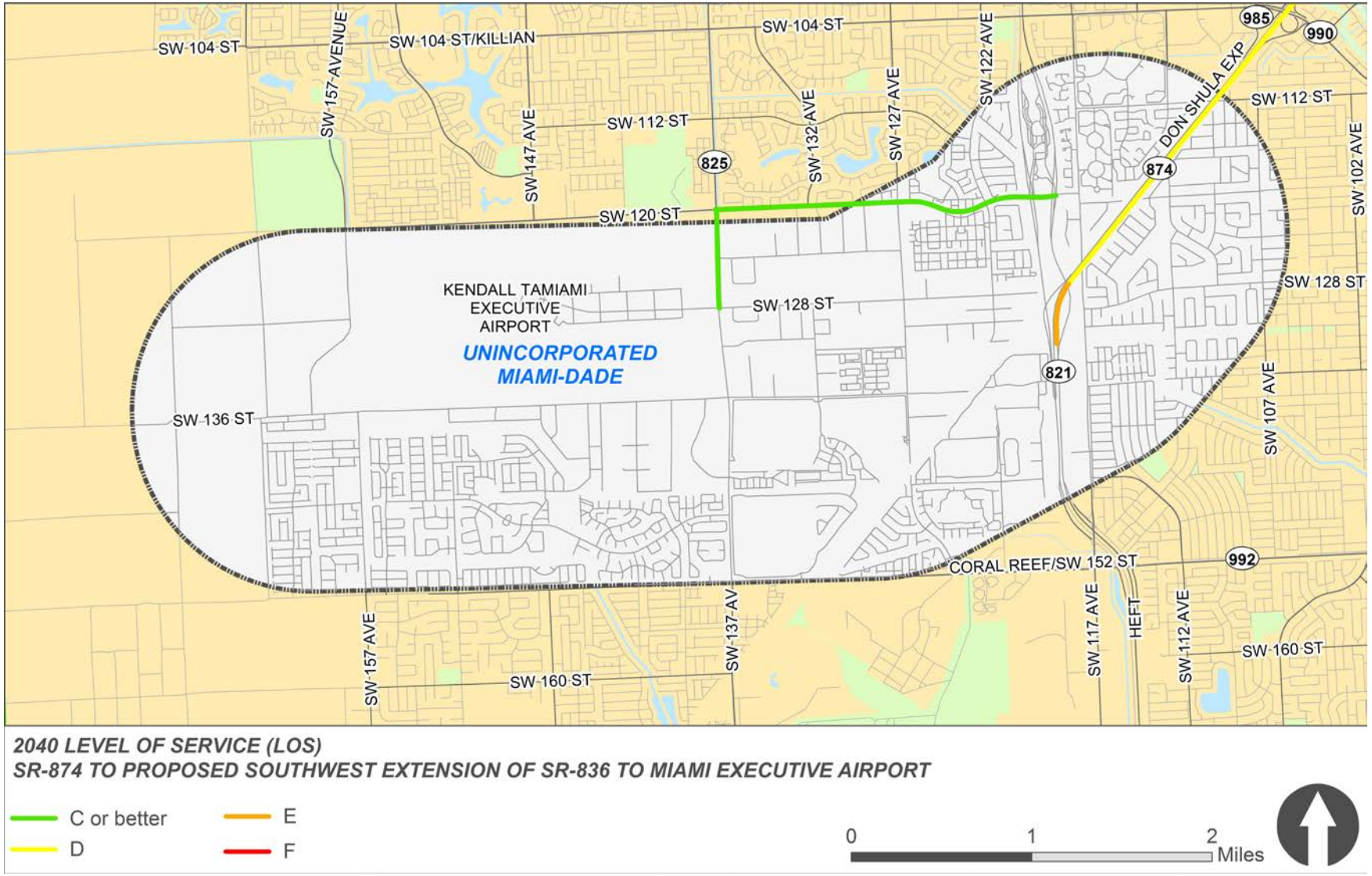


Figure 4-13: SR-874 Future 2040 Level of Service

5 2015 TRAVEL DEMAND TRENDS IN MIAMI-DADE COUNTY

Origin-Destination (OD) Streetlight data provided by the TPO was used to analyze the travel demand trends in Miami-Dade County for Year 2015. The data includes intrazonal as well as trips between 42 zones that are consistent with the Traffic Analysis District (TAD) definition for Miami-Dade County as shown in **Figure 5-1**. The OD data provided was disaggregated by day of week, trip purpose (personal or commercial), and time period. The data was summarized for daily weekday (Monday to Thursday) trips including both trip purposes.

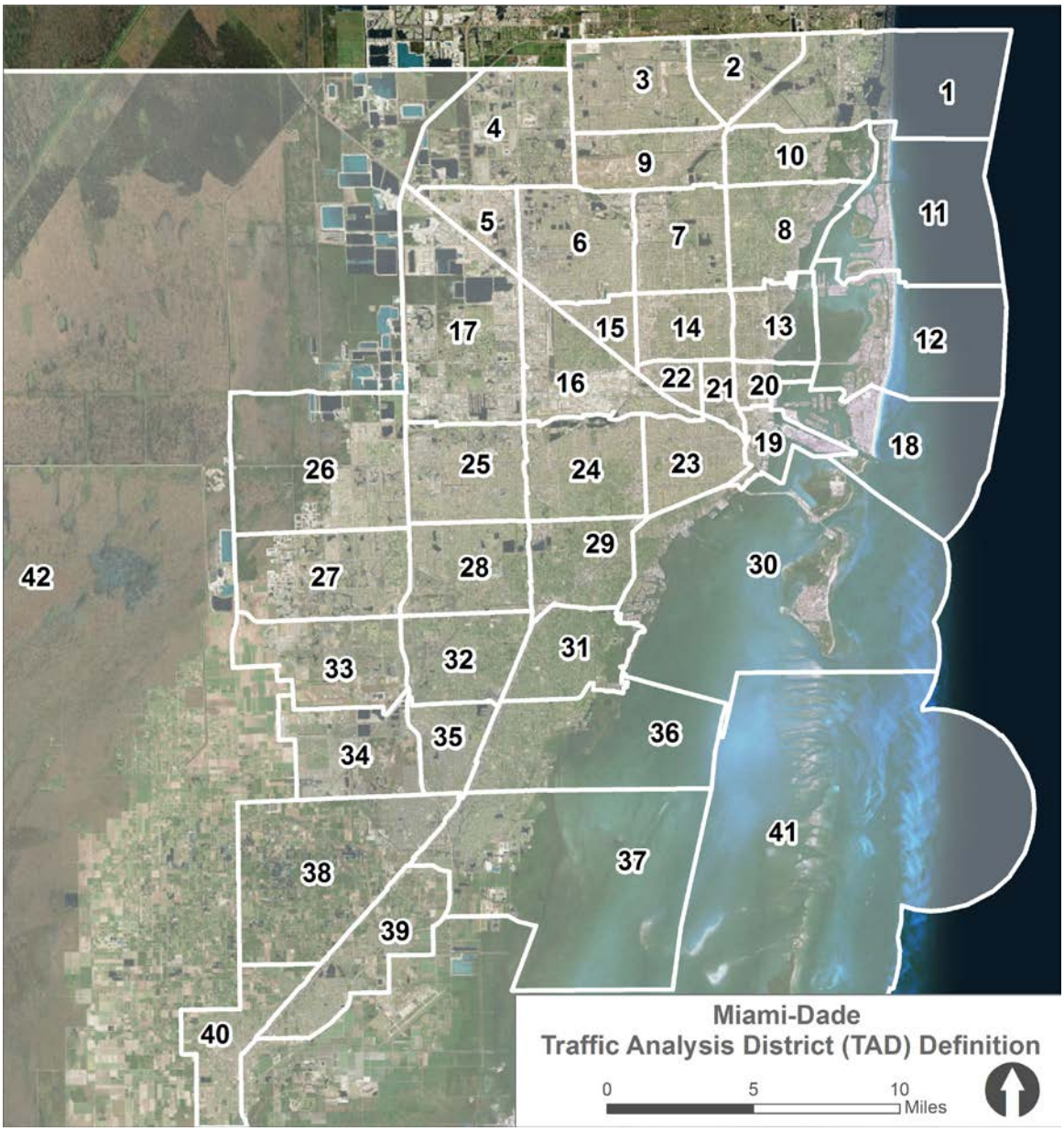


Figure 5-1: Miami-Dade County TAD Boundaries

The ranking of the top five (5) TAD zones with the most trips in 2015 is shown in **Table 5-1.** In most of the top 5 zones, the intrazonal trips correspond to the majority of the trips produced. Therefore, the ranking was also generated with the exclusion of intrazonal trips as shown in **Table 5-2**.

Table 5-1: Year 2015 Top 5 Ranking of TAD Zones with Most Trips (Including Intrazonal Trips)

Top 5 Origins		
Rank	Trips	Zone ID
1	1,600,000	17
2	1,140,000	29
3	1,130,000	1
4	1,060,000	24
5	930,000	19
Top 5 Destinations		
Rank	Trips	Zone ID
1	1,600,000	17
2	1,150,000	1
3	1,120,000	29
4	1,070,000	24
5	960,000	19

The TAD zone with the highest number of trips (including intrazonal trips) is zone 17, which includes the areas of Doral and Medley, and it is ranked first as both origin and destination. The second ranked origin and third ranked destination is zone 29, which includes South Miami and part of Glenvar Heights, and a small portion of Coral Gables. The third ranked origin and second ranked destination is zone 1, which includes a large portion of North Miami Beach and Aventura. The fourth ranked (both as origin and destination) is zone 24, which includes the northern portion of Coral Gables, West Miami and the neighborhood of Flagami. Zone 19, which includes the area of Downtown Miami is ranked fifth as both origin and destination.

Table 5-2: Year 2015 Top 5 Ranking of TAD Zones with Most Trips (No Intrazonal Trips)

Top 5 Origins		
Rank	Trips	Zone ID
1	740,000	17
2	730,000	29
3	690,000	24
4	650,000	19
5	520,000	16
Top 5 Destinations		
Rank	Trips	Zone ID
1	730,000	17
2	710,000	29
3	700,000	24
4	670,000	19
5	530,000	16

When the intrazonal trips are excluded from the OD matrices, the ranking of the zones are the same when looking at the zones as either origin or destination. As shown in **Table 5-2**, the TAD zone with the highest number of trips (without intrazonal trips) is zone 17. Ranked in the second, third, and fourth places are zones 29, 24, and 19, respectively, which are common in the top five ranking when including intrazonal trips. Zone 16, which includes the areas of Miami Springs, Virginia Gardens and the Miami International Airport, is ranked fifth.

Figure 5-2 illustrates the TAD zone ranking by number of trip productions (including intrazonal trips) in Miami-Dade County and **Figure 5-3** compares the zones excluding intrazonal trips. TADs with darker shades indicate higher number of trips.

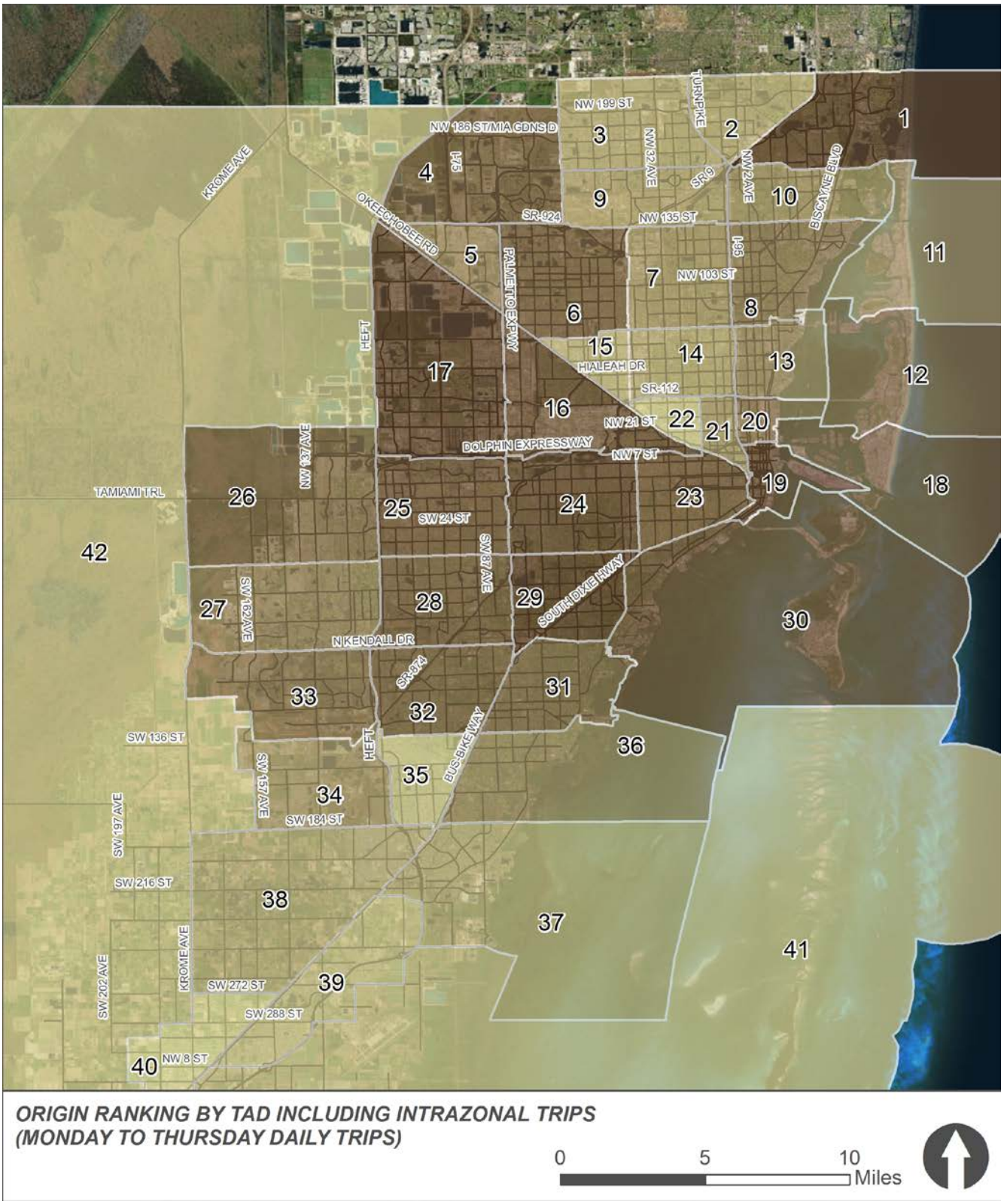


Figure 5-2: Year 2015 Observed Origin Ranking by TAD Including Intrazonal Trips

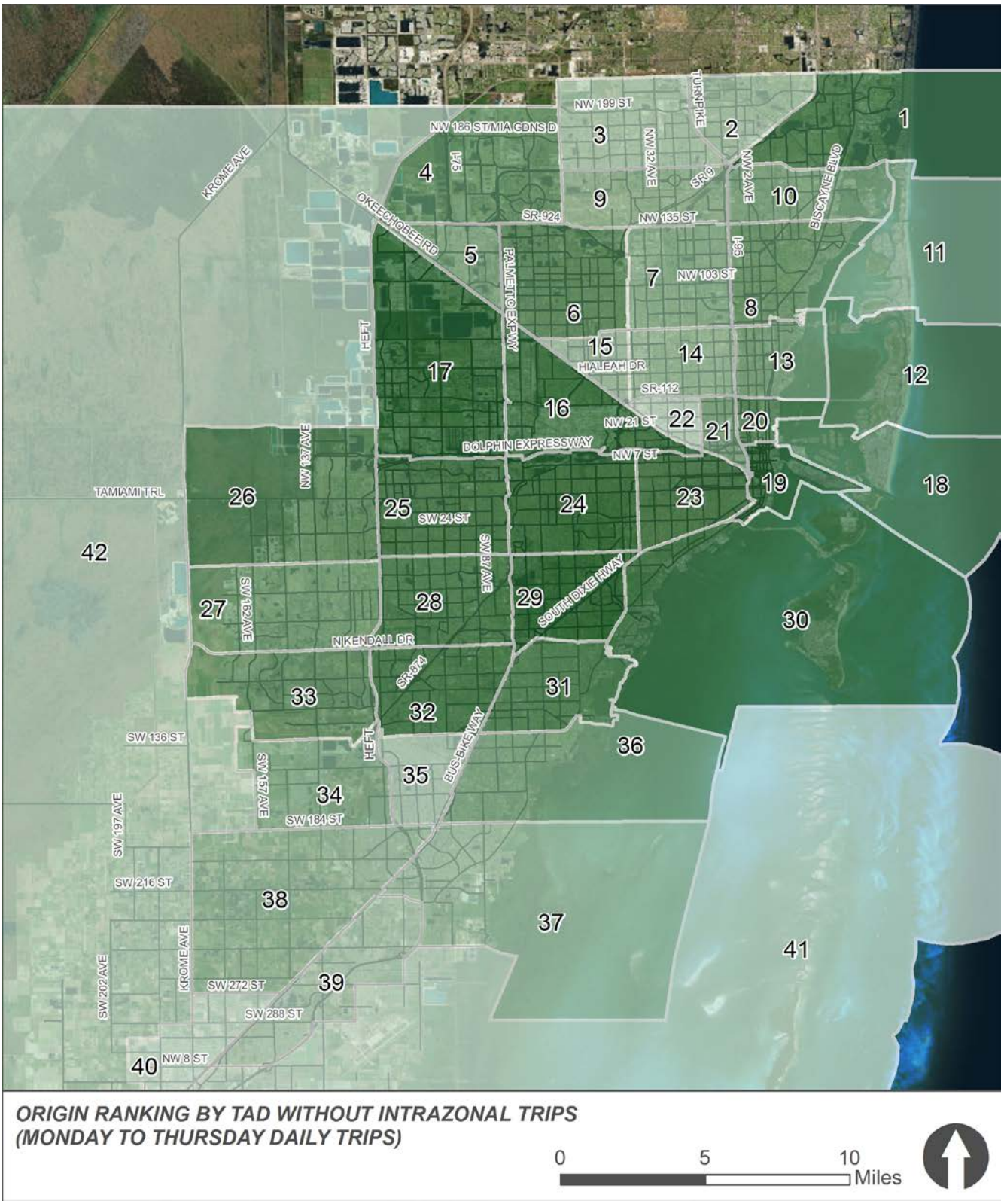


Figure 5-3: Year 2015 Observed Origin Ranking by TAD Without Intrazonal Trips

6 2040 SERPM 7 DEMAND

TADs were aggregated into superdistricts, as provided by the TPO and shown below in **Figure 6-1**. Highway trip matrices from the 2040 Cost Feasible SERPM 7 Model were summarized on a daily basis using the superdistricts definition to identify the zones projected to produce and attract the highest number of trips within Miami-Dade County.

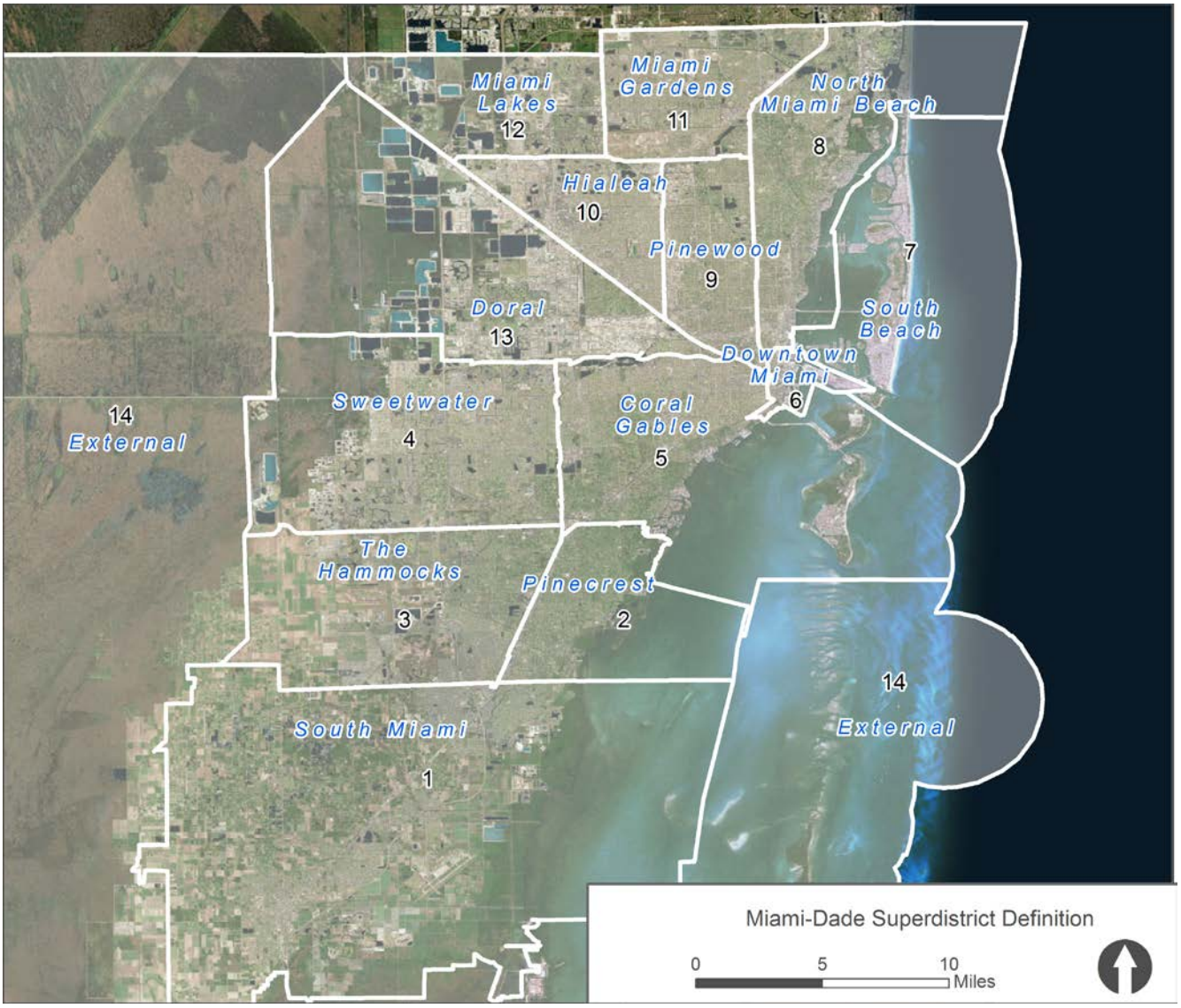


Figure 6-1: Miami-Dade County Superdistrict Boundaries

Figure 6-2 shows the number of SERPM 2040 origins by superdistrict in Miami-Dade County.

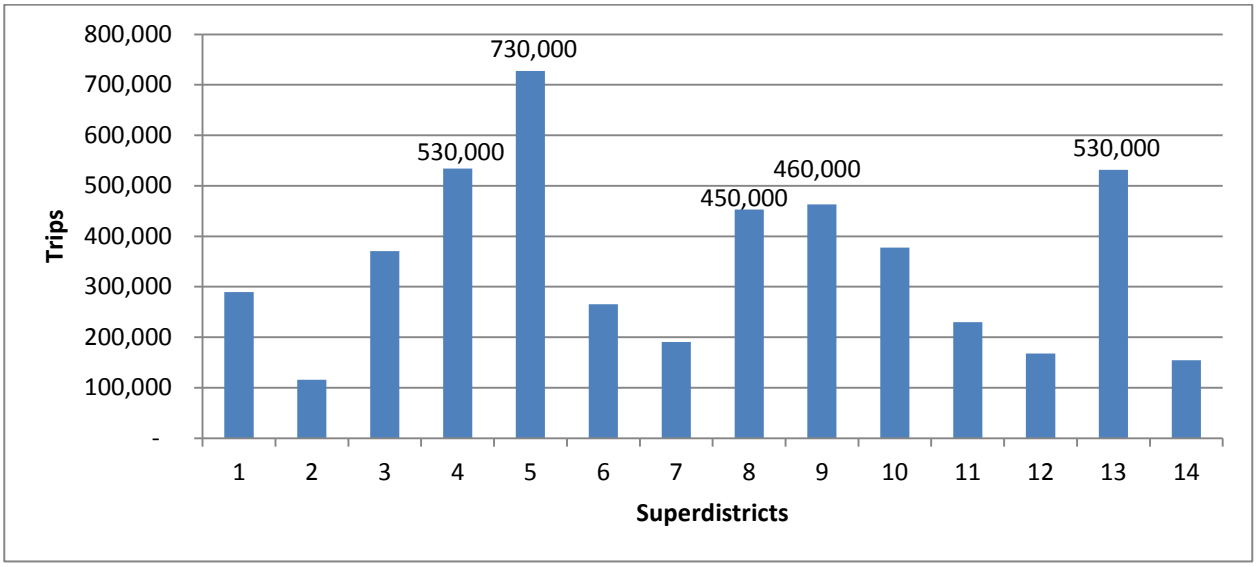


Figure 6-2: SERPM 2040 Origins by Superdistrict in Miami-Dade County

Figure 6-3 shows the number of SERPM 2040 destinations by superdistrict in Miami-Dade County.

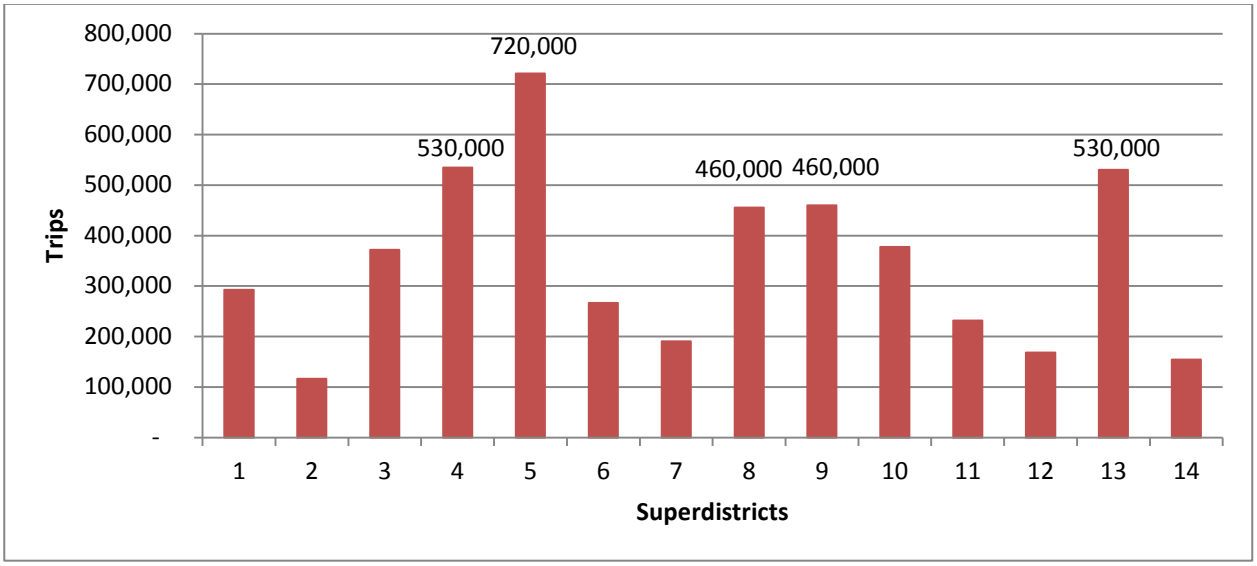


Figure 6-3: SERPM 2040 Destinations by Superdistrict in Miami-Dade County

Figure 6-4 shows the number of SERPM 2040 intrazonal trips for each superdistrict in Miami-Dade County.

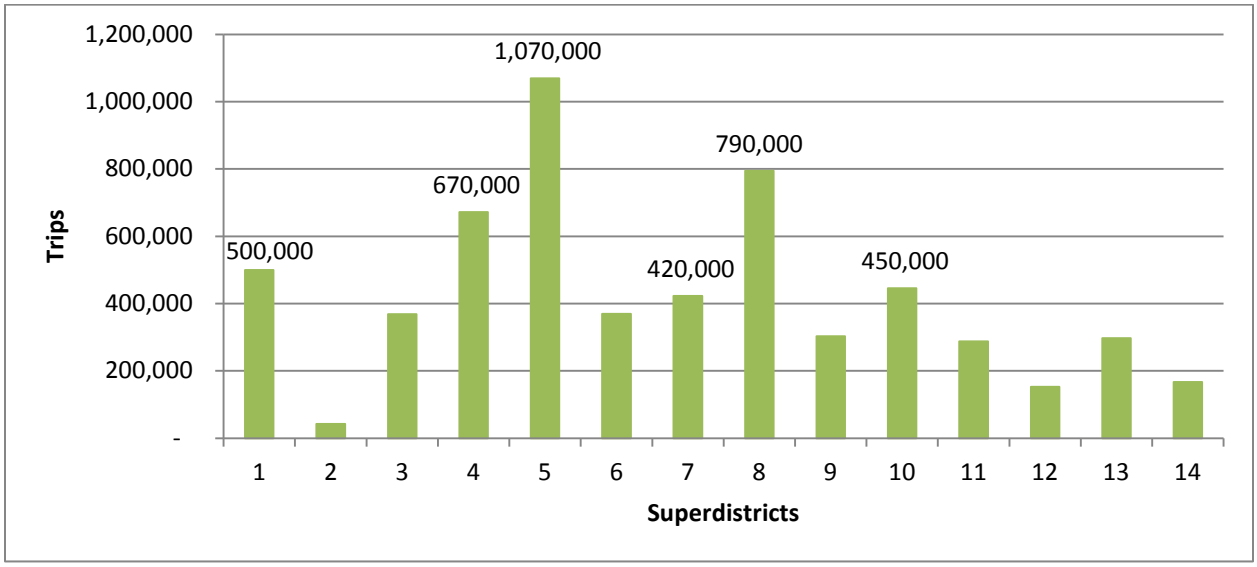


Figure 6-4: SERPM 2040 Intrazonal Trips by Superdistrict in Miami-Dade County

Figure 6-5 shows the number of SERPM 2040 origins, destinations and intrazonal trips within Miami-Dade County.

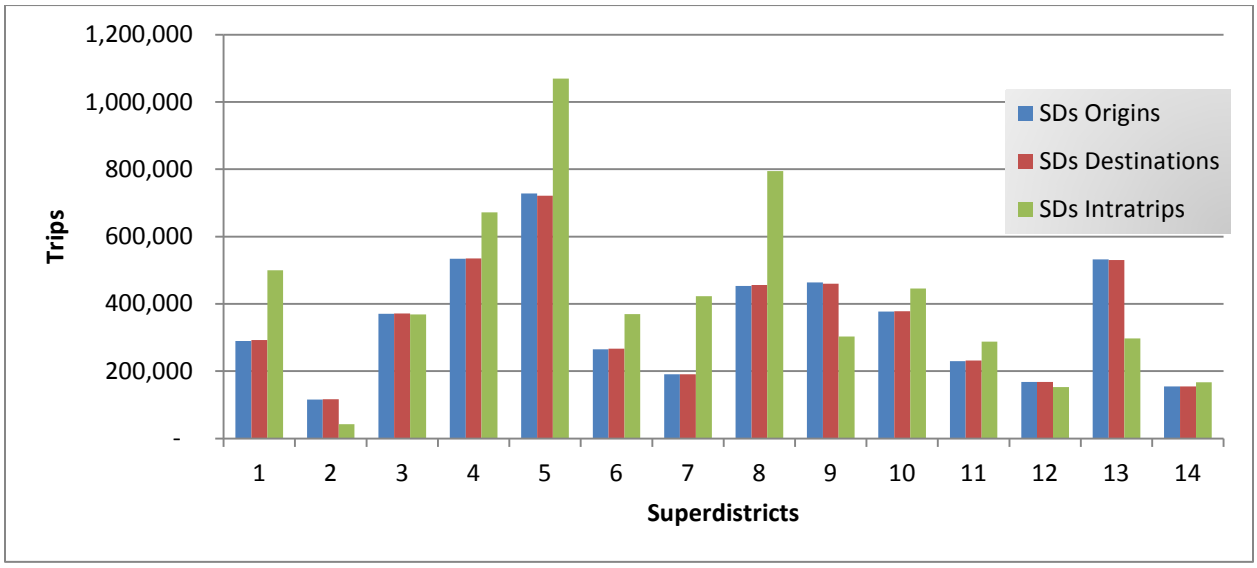


Figure 6-5: SERPM 2040 Origins, Destinations and Intrazonal Trips by Superdistrict in Miami-Dade County

Due to the high number of intrazonal trips when summarized by superdistrict, the SERPM 2040 highway trips were further disaggregated into the TAD-level. This also allowed the comparison of the SERPM 2040 data to the observed 2015 Streetlight data. **Figure 6-6** shows the SERPM 2040 origins by TAD in Miami-Dade County.

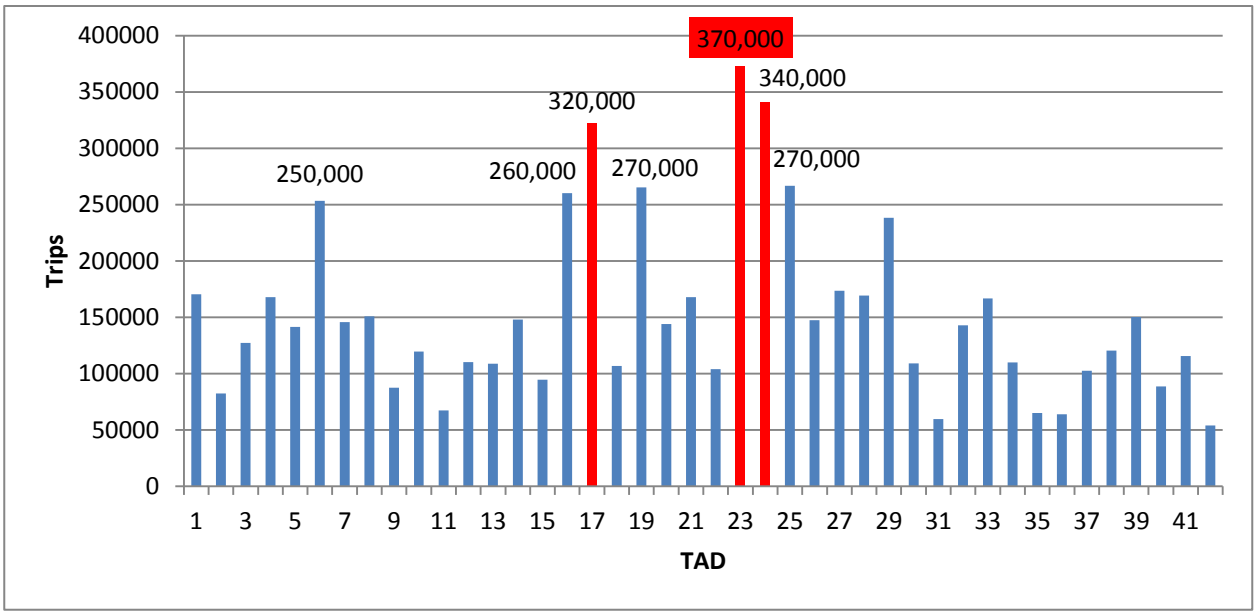


Figure 6-6: SERPM 2040 Origins by TAD in Miami-Dade County

Figure 6-7 shows the SERPM 2040 destinations by TAD in Miami-Dade County.

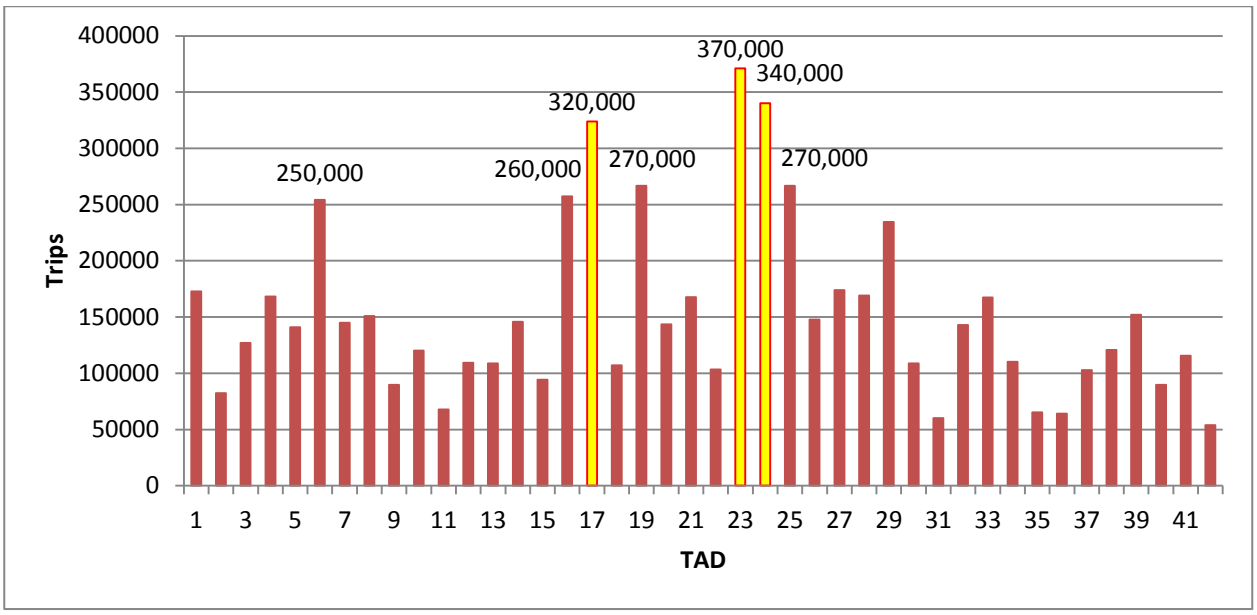


Figure 6-7: SERPM 2040 Destinations by TAD in Miami-Dade County

Figure 6-8 shows the SERPM 2040 intrazonal trips by TAD in Miami-Dade County.

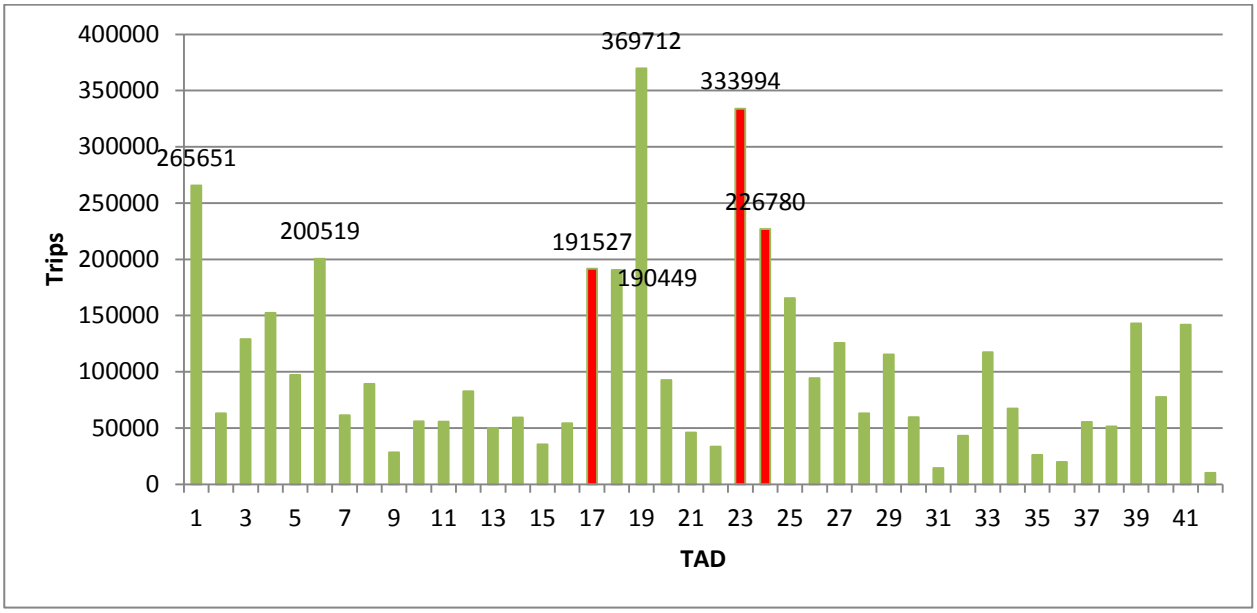


Figure 6-8: SERPM 2040 Intrazonal Trips by TAD in Miami-Dade County

Figure 6-9 shows the number of SERPM 2040 origins, destinations and intrazonal trips by TAD made within Miami-Dade County.

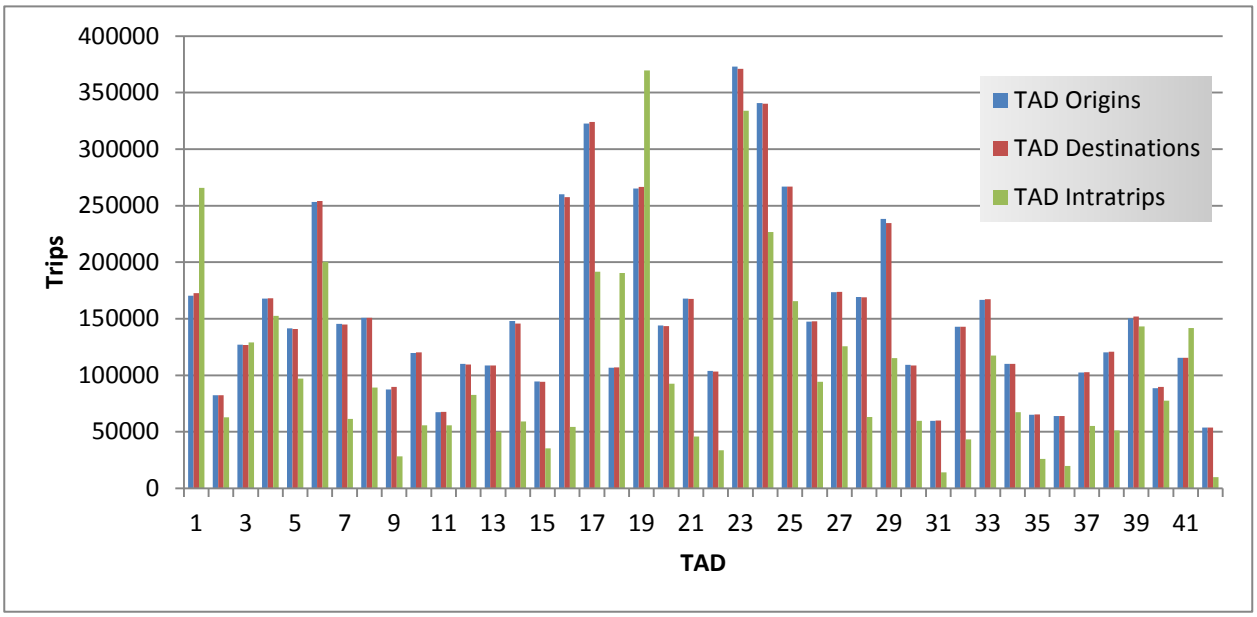


Figure 6-9: SERPM 2040 Origins, Destinations and Intrazonal Trips in Miami-Dade County

In the preceding figures, which show origins and destinations (**Figures 6-2, 6-3, 6-5, 6-6, 6-7, and 6-9**), the number of origins and destinations by superdistrict or TAD are similar due to the daily trip patterns being shown. The SERPM 2040 time-of-day matrices were aggregated to a daily basis, and therefore similar origins and destinations can be expected, a phenomenon typical of daily models. Daily models typically contain a return trip for each trip generated (i.e., a home-based-work trip will ultimately return home by the end of the day).

In order to identify trip patterns between the TADs with the most trips, **Figure 6-10 to 6-12** were generated using the SERPM 2040 highway trip matrices to display the desire lines for TADs 23, 24 and 17 individually (the 3 TADs with the most trips).

Through review of the desire lines in **Figure 6-10 to 6-12**, a general pattern of the top vehicular demand in 2040 was exposed: east-west between TADs 23 and 24, and north-south from just west of TAD 24 and TAD 17. This pattern exhibits the east-west movement along SR-836 and the north-south portion of SR-826. These results emphasize the need to ameliorate these over-capacity facilities through the improvement of existing facilities or the provision of new facilities in order to meet the vehicular demand anticipated in 2040.

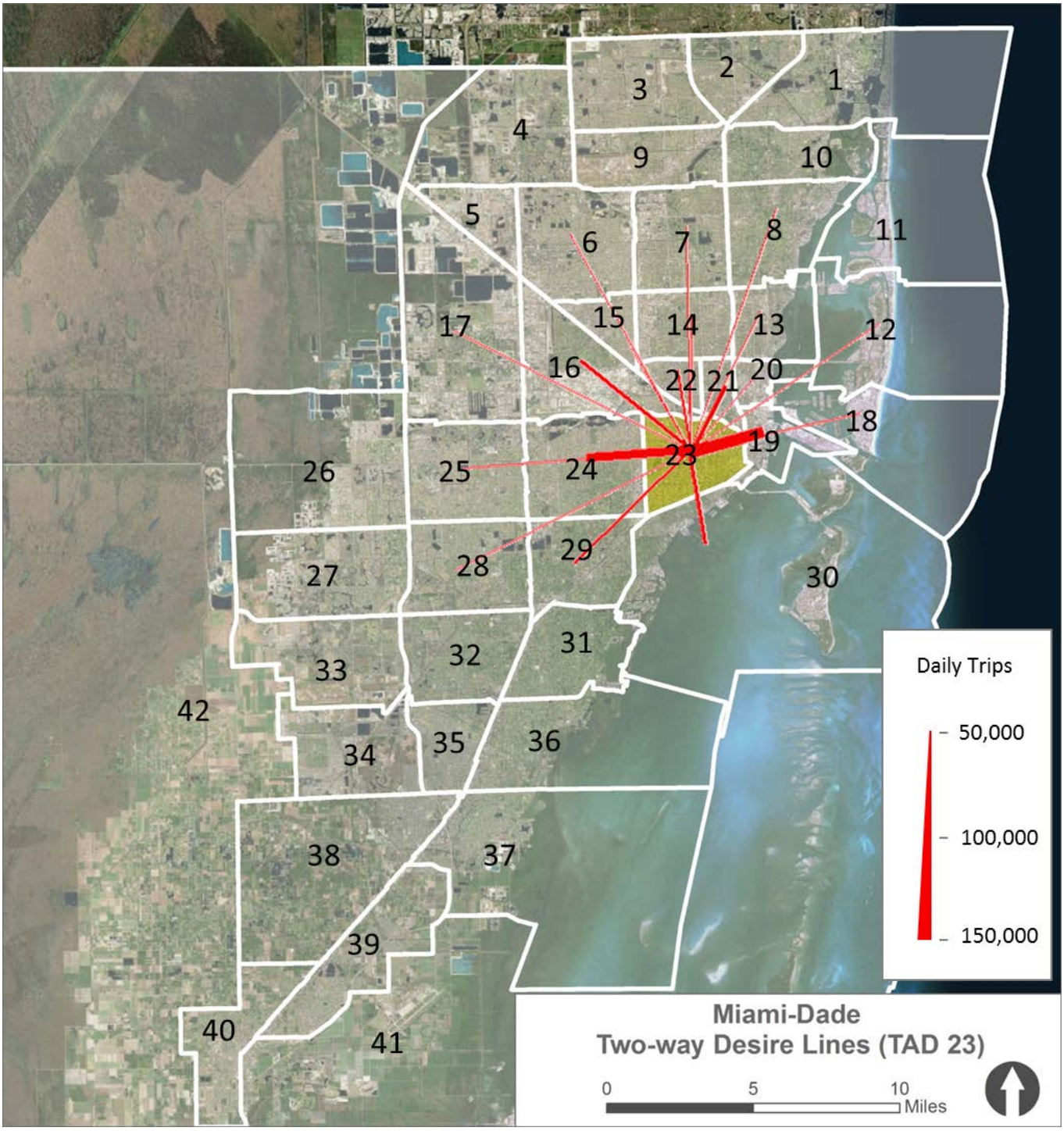


Figure 6-10: SERPM 2040 Desire Lines for TAD 23

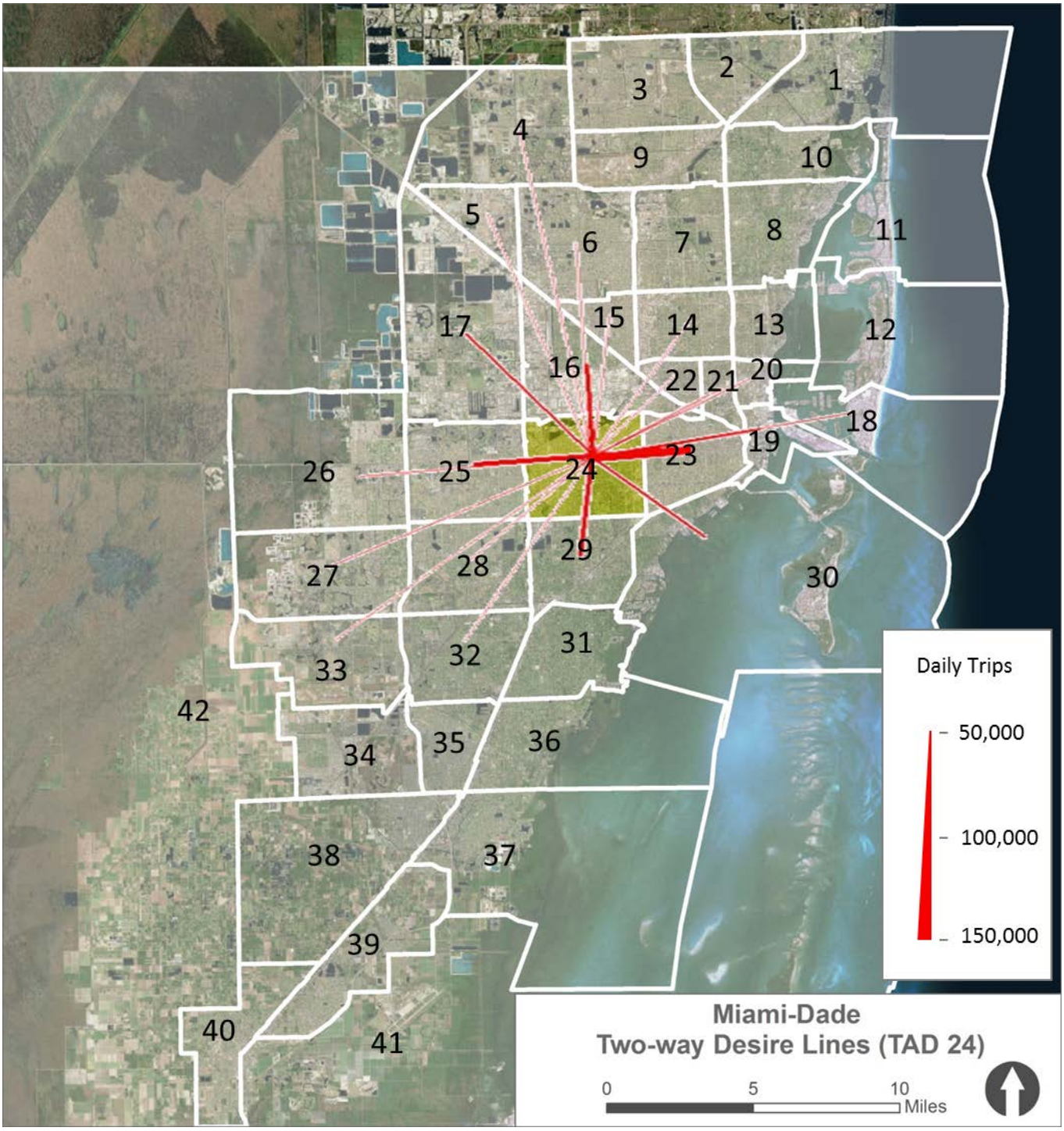


Figure 6-11: SERPM 2040 Desire Lines for TAD 24

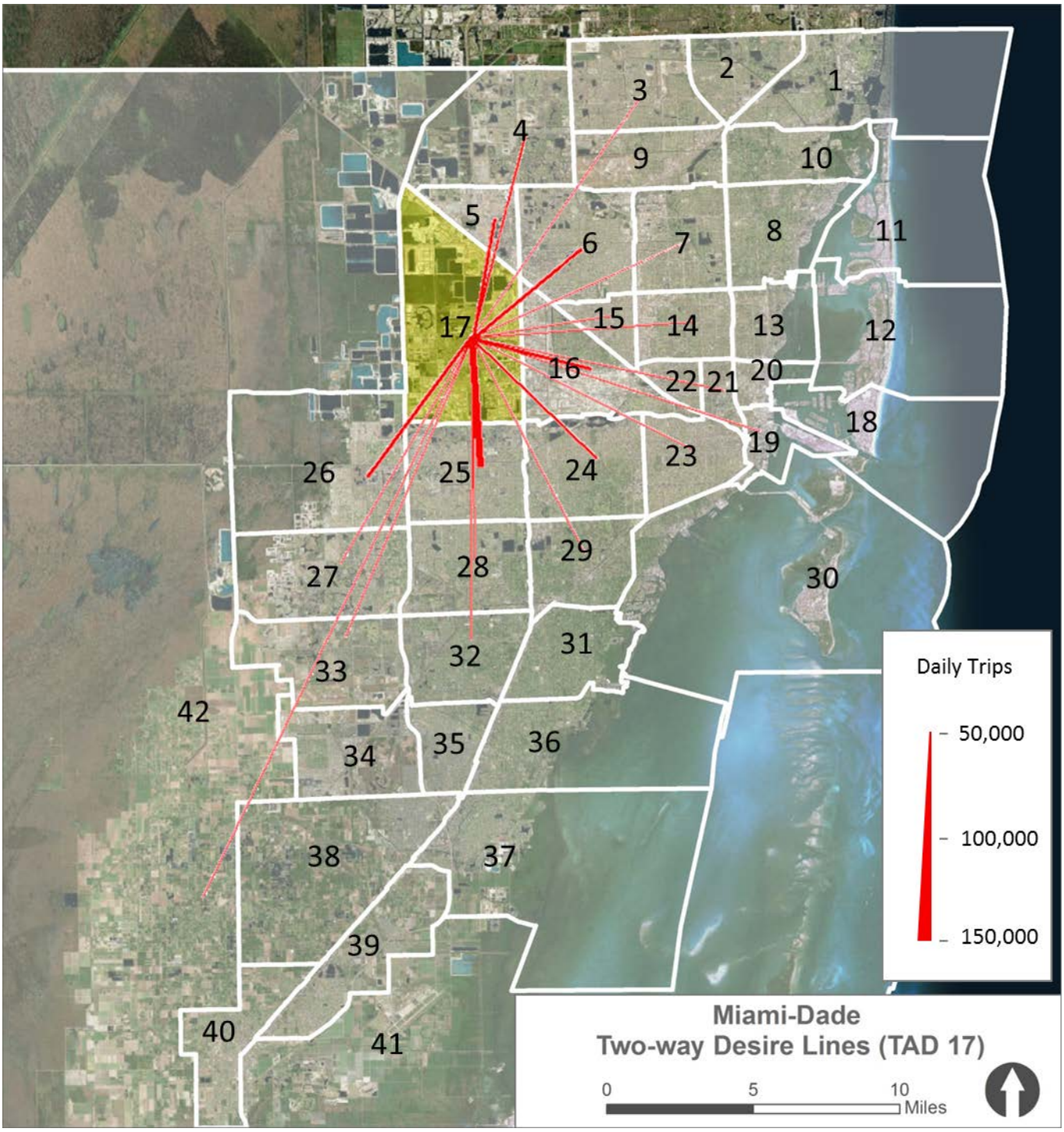


Figure 6-12: SERPM 2040 Desire Lines for TAD 17

7 2040 BUILD ALTERNATIVES

Based on the analysis conducted for the existing conditions and input from the Project Advisory Committee members, the following three (3) missing highway links were analyzed as the future build alternatives using the SERPM 2040 Model:

- SR-826 Extension via NE 167th/163rd Street Corridor to SR-A1A
- SR-112 Extension via Okeechobee Road Corridor to SR-826
- SR-112 Extension via NW 36th Street Corridor to SR-826

It should be noted that a ramp connector is currently under construction from SR-874/Don Shula Expressway to SW 128th Street as part of a Miami Dade Expressway (MDX) project since April 2017. The project includes widening from two to four lanes on SW 128th Street from SW 137th Avenue to SW 122nd Avenue. Once the construction is finalized, it is anticipated that the connector ramp will alleviate the traffic on adjacent arterials and provide additional connectivity to the area of West Kendall and Southwest Miami-Dade County. The project is estimated to be complete by 2020. Therefore, the SR-874 alternative was not carried onto the subsequent steps of the missing highway network links evaluation.

The results of the Model runs are discussed in the following sections.

7.1 SR-826 EXTENSION VIA NE 167TH/163RD STREET CORRIDOR TO SR-A1A

This alternative proposes an extension of the highway segment from the eastern terminus of the Palmetto Expressway/SR-826 from the GGI to SR-A1A, providing a two-way connection for 5.7 miles**.** Similarly to the alternatives analyzed using the SERPM 2015 Base Year Model, one link in each direction of the coded freeway segment was selected and analyzed during the Model run with the select-link analysis from the Cube software platform. This analysis is conducted to identify where the trips using the selected links are coming from and going to. The resultant volumes from this analysis can be illustrated in a map using the multi-bandwidth display from Cube. The multi-bandwidth display for the SR-826 extension alternative is shown in **Figure 7-1.**

Using the multi-bandwidth function, the impact of the subject alternative on the surrounding arterial network was analyzed and displayed to show the relative volumes from the no-Build to the Build alternative. The highway assignment differences between the alternatives are depicted in **Figure 7-2**. Shades of blue and red with varying thicknesses are used to indicate the additional demand and alleviation, respectively, on the arterial network under the subject Build alternative.

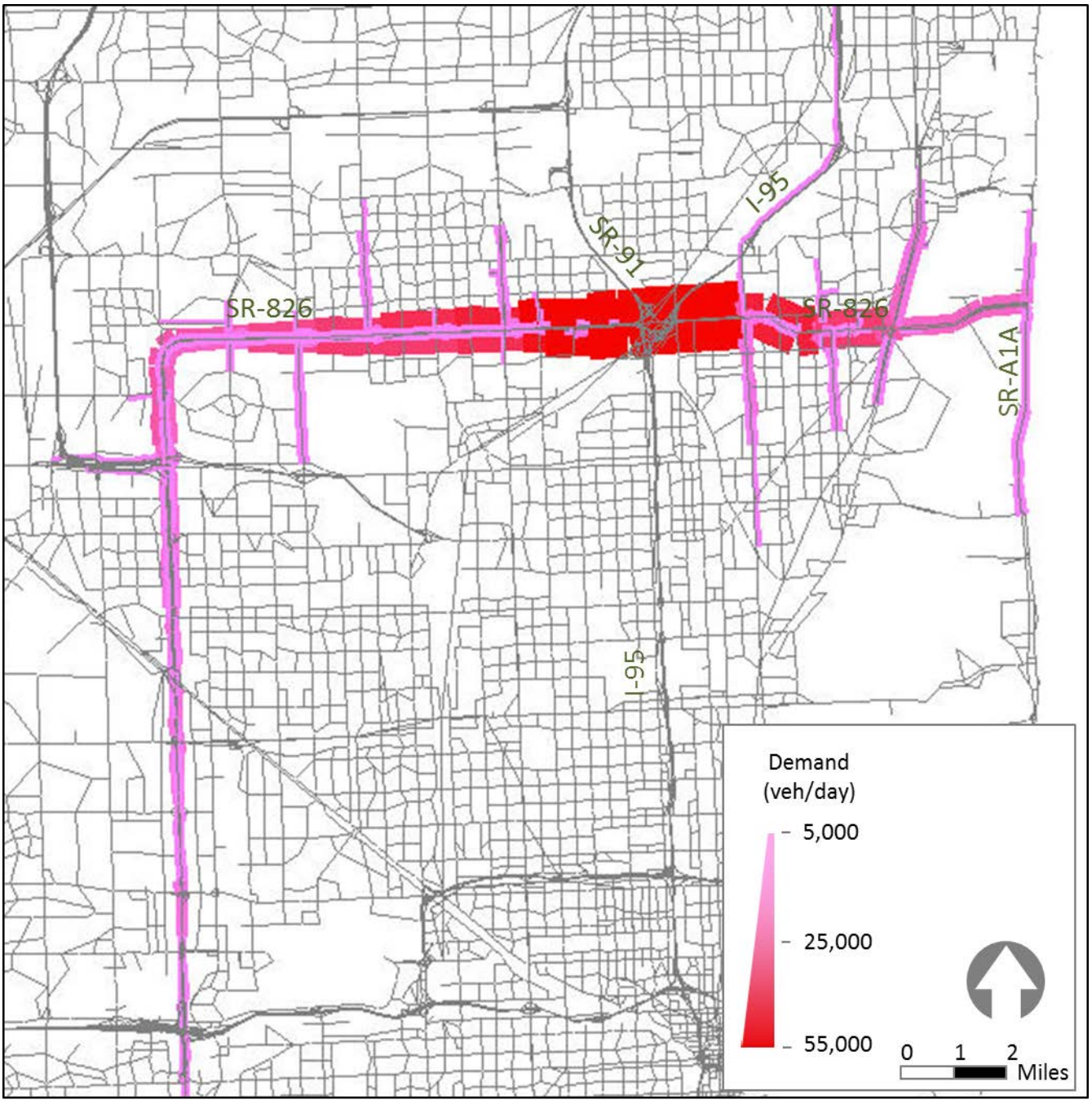


Figure 7-1: SERPM 2040 Multi-Bandwidth Display for Select-link Analysis on SR-826 Extension via NE 167th/163rd Street Corridor

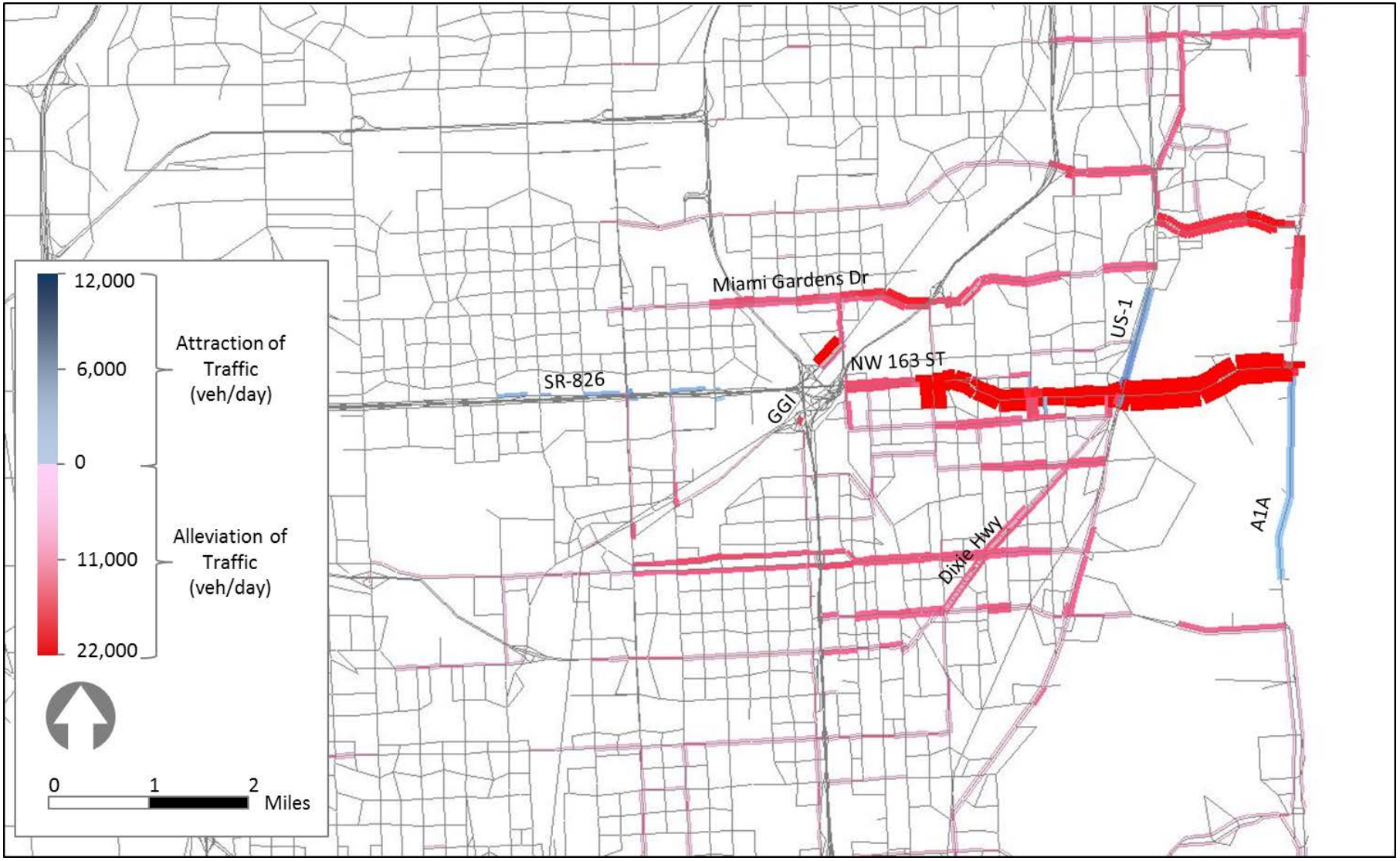


Figure 7-2: SERPM 2040 Arterial Comparison for SR-826 Extension via NE 167th/163rd Street Corridor

7.2 SR-112 EXTENSION VIA OKEECHOBEE RD CORRIDOR TO SR-826

This Build alternative proposes a two-way highway connection between the western terminus of SR-112 to SR-826 along Okeechobee Road. This freeway segment would extend for approximately 5 miles.

A select-link analysis was performed on the subject missing highway links proposed using the SERPM 2040 Model. The results for the select-link analysis of the SR-112 Extension via Okeechobee Road Build alternative is shown in **Figure 7-3**.

Similarly to the SR-826 Build alternative, the resultant impact on the surrounding arterial network for this Build alternative was analyzed and displayed using the multi-bandwidth function. The highway assignment differences from the No Build to the Build alternative are depicted in **Figure 7-4**. Shades of blue and red with varying thicknesses are used to indicate the additional demand and alleviation, respectively, on the arterial network.

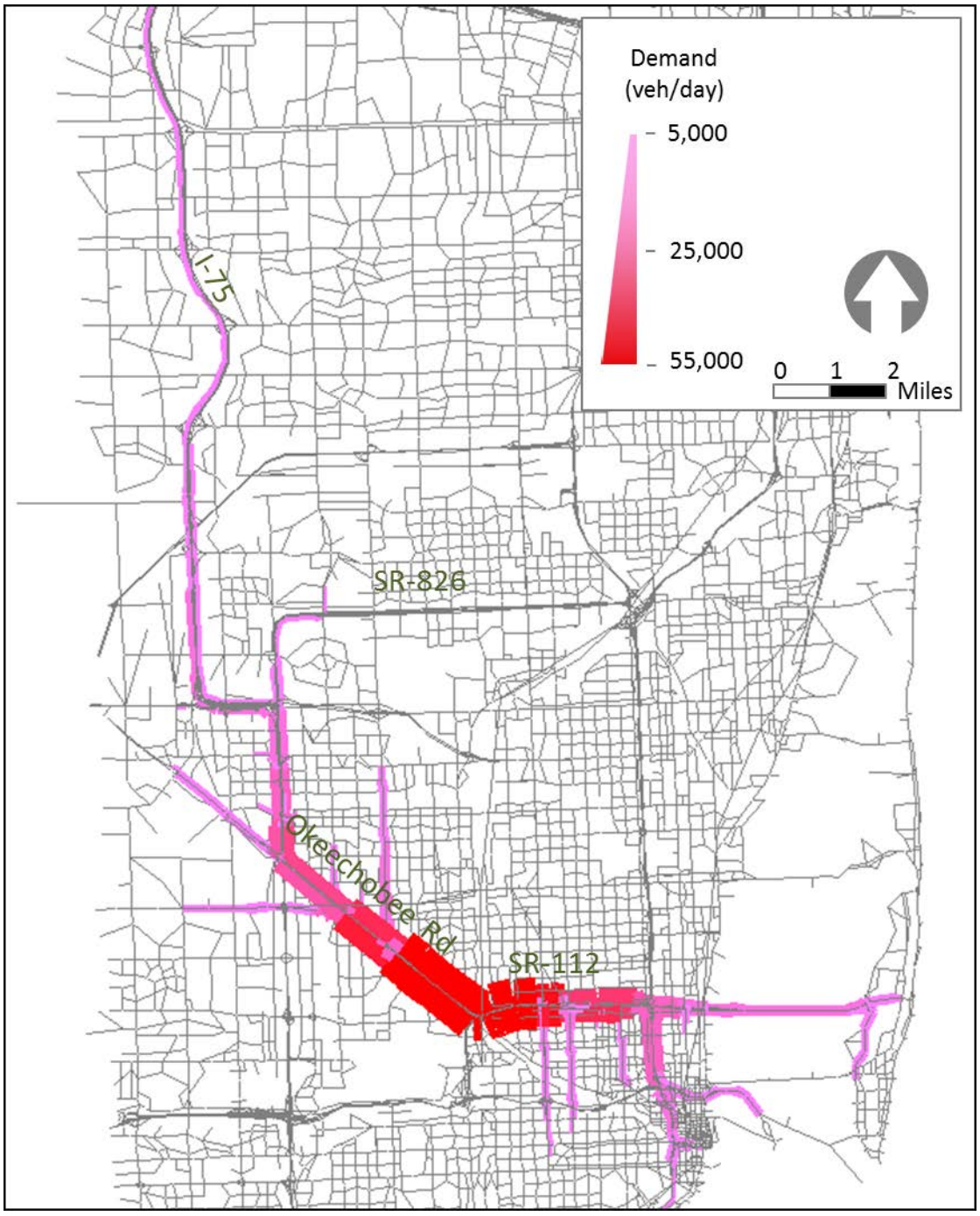


Figure 7-3: SERPM 2040 Multi-Bandwidth Display for Select-link Analysis on SR-112 Extension via Okeechobee Road

Figure 7-4: SERPM 240 Arterial Comparison for SR-112 Extension via Okeechobee Road Corridor

7.3 SR-112 EXTENSION VIA NW 36TH STREET CORRIDOR TO SR-826

This Build alternative proposes a two-way highway connection between the western terminus of SR-112 to SR-826 along NW 36th Street. This freeway segment would extend for 3.7 miles. The results of the select-link analysis for the SR-112 Extension via NW 36th Street Corridor is shown in **Figure 7-5**, and the resultant impact on the surrounding arterial network for this Build alternative is displayed in **Figure 7-6.**

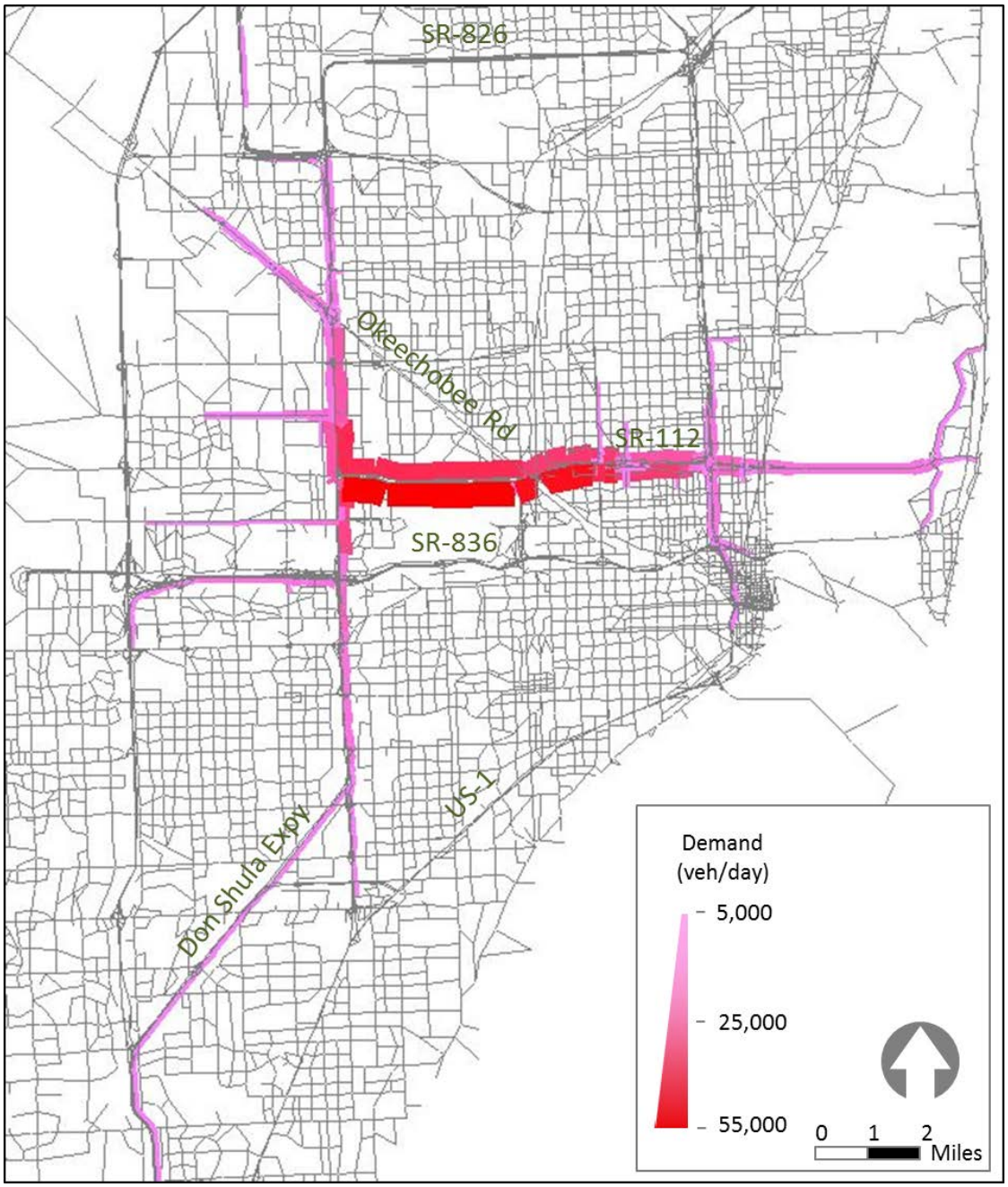


Figure 7-5: SERPM 2040 Multi-Bandwidth Display for Select-link Analysis on SR-112 Extension via NW 36th Street

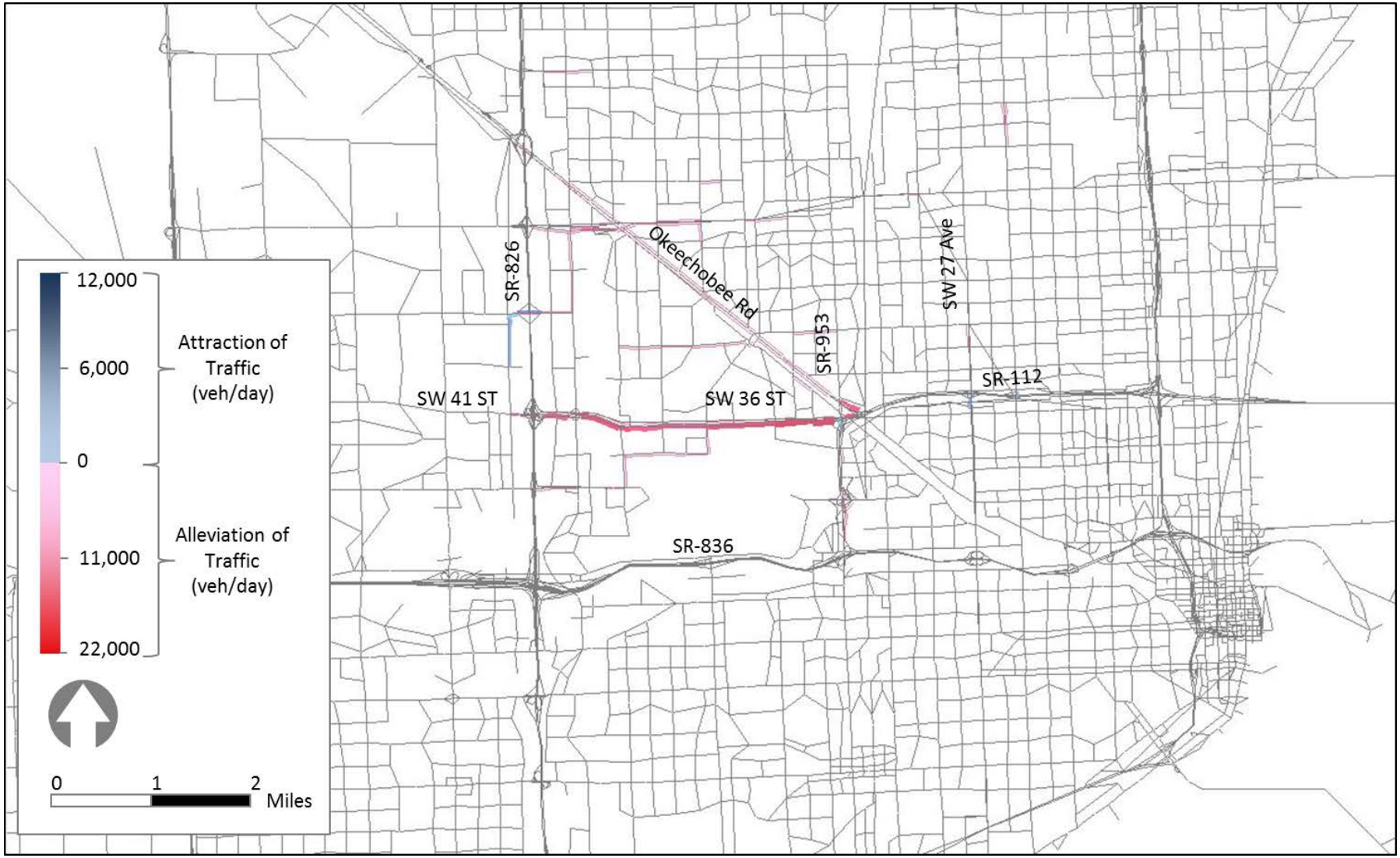


Figure 7-6: SERPM 2040 Arterial Comparison for SR-112 Extension via NW 36th Street Corridor

8 ALTERNATIVES ANALYSIS

Per project scope and during the existing conditions analysis, three potential missing highway connections were identified and examined; namely, SR-826/Palmetto Expressway extension from Golden Glades Interchange to North Miami Beach, SR-112/Airport Expressway extension from LeJeune Road/Okeechobee Road to HEFT and SR-874/Don Shula Expressway extension from SR-836/Dolphin Expressway Southwest Extension to HEFT. Readily available data was collected and analyzed for each corridor in terms of existing land use, traffic demand, congestion, speeds, bottlenecks, and crashes. In addition, the SERPM 7 Model was used to evaluate the connectivity of the potential expressway extensions. Data pertaining to the future conditions such as the adopted 2020-2030 land use, 2040 LRTP planned roadway and transit improvements, and 2040 Levels of Service were also collected as part of this task.

Due to the construction currently underway on the SR-874/Don Shula Expressway ramp connector to SW 128th Street, the SR-874 alternative was not carried onto the subsequent steps of the missing highway links evaluation.

The existing conditions on compromised segments identified along SR-826 and SR-112 are shown in **Table 8-1**:

Table 8-1: SR-826 and SR-112 Worst Existing Conditions

Roadway	SR-826	SR-112
Highest 2016 AADT	152,000	119,000
Worst Level of Service (LOS)	F	F
Average Annual Compounded Growth Rate (2006 - 2016)	0.74%	0.50%
Average Annual Compounded Growth Rate (2016 - 2040)	0.14%	0.10%
Highest Level of Congestion (% of reference speed)	0% - 15%	15% - 33%
Highest Level of Congestion Maximum Duration (minutes)	15	120
Lowest Speeds (mph)	0 - 10	10 - 20
Impact of Top Ranked Bottleneck Location (mile-minute)	4,697	989
Highest Number of Crashes in a Four-Year Period (clustered)	194	79

Table 8-1 shows that SR-826 has the higher traffic demand, historical and projected growth, and higher levels of congestion. In addition, the highest measured bottleneck impact on SR-826 is approximately five times higher than the worst one on SR-112.

Based on the analysis conducted for the existing conditions and input from the Project Advisory Committee members, the following grade-separated build alternatives were analyzed using the 2040 SERPM 7 Model:

- SR-826 Highway Extension via NE 167th/163rd Street Corridor to SR-A1A
- SR-112 Extension via Okeechobee Road Corridor to SR-826
- SR-112 Extension via NW 36th Street Corridor to SR-826

The freeway links were coded in the Model and a select-link analysis was conducted for each Model run. The resultant demand was graphically displayed to show where trips are coming from and going to. In addition, the impact on the surrounding arterials was inspected. A side-by-side comparison of the daily demand based on the estimation of the build alternatives coded in the 2040 SERPM 7 Model is shown in **Table 8-2**.

Table 8-2: SERPM 2040 Daily Demand

	SR-826 Extension	SR-112 Extension (Okeechobee Rd)	SR-112 Extension (NW 36th Street)
Southbound / Eastbound	50,000	45,000	44,000
Northbound / Westbound	56,000	47,000	30,000
Total	**106,000**	**92,000**	**74,000**

The resultant demand shown in the table above indicates that the project with the highest demand is the SR-826 Highway Extension via NE 167th/163rd Street to SR-A1A, with 15% more demand than the SR-112 Extension via Okeechobee Road and 43% more that the SR-112 Extension via NW 36th Street. The resultant vehicle-miles-traveled (VMT) and vehicle-hours-traveled (VHT) in Miami-Dade County were also compared to analyze the impact of each alternative versus the No-Build conditions. Consistently with the SR-826 being the most constrained of the two corridors and the one with the highest demand, the SR-826 alternative is anticipated to reduce VMT and VHT the most, as shown in **Table 8-3**.

Table 8-3: SERPM 2040 Performance Measures

MOE	No-Build	SR-826 Extension	Change from No-Build	
Vehicle-Miles-Traveled (VMT)	60,520,000	58,740,000	(1,780,000)	-2.9%
Vehicle-Hours-Traveled (VHT)	1,710,000	1,650,000	(60,000)	-3.5%
		SR-112 Extension (Okeechobee Rd)		
		60,450,000	(70,000)	-0.1%
		1,700,000	(10,000)	-0.6%
		SR-112 Extension (NW 36th St)		
		60,640,000	120,000	0.2%
		1,710,000	0	0.0%

Values rounded to the nearest 10,000

9 CONCLUSIONS

Within the scope limits of the existing and future conditions analyses conducted, it became apparent that additional high-capacity links/segments are needed throughout Miami-Dade County. Although the County is fully connected by roadways of different functional classifications and capacity, the growth in demand has not been accompanied by a comparable growth in lane-miles, particularly high-capacity lane-miles such as freeways. This imbalance results in the existing congestion experienced by the roadway network, which is expected to increase in the future, given the anticipated demand growth throughout Year 2040.

It is also worth mentioning, that the future alternative scenarios do include significant investment in Premium Transit (namely, most of the corridors established in the SMART plan). Nevertheless, the increase in population and employment forecasted for future years still leaves an unsatisfied demand for mobility.

From the alternatives analyzed in the subject study, the need for additional east-west capacity was revealed in particular between the GGI and North Miami Beach in the northern part of the County, and between SR-112 and SR-826 further south.

10 NEXT STEPS

The results presented in this study are at a very general planning level and they identified the need—based on demand—for efficient connectivity along the examined corridors. Therefore, a more detailed assessment of the actual feasibility of said corridors should be pursued.

In addition, the study was based on a preselected trio of corridors. It is therefore recommended to pursue similar studies including other corridor sets in order to identify additional needs and prioritize other corridors based on demand. It should be noted that the feasibility of the corridors should be part of a second-tier analysis and not included in the first-tier, which—as in this case—only consider travel demand.

APPENDIX A:

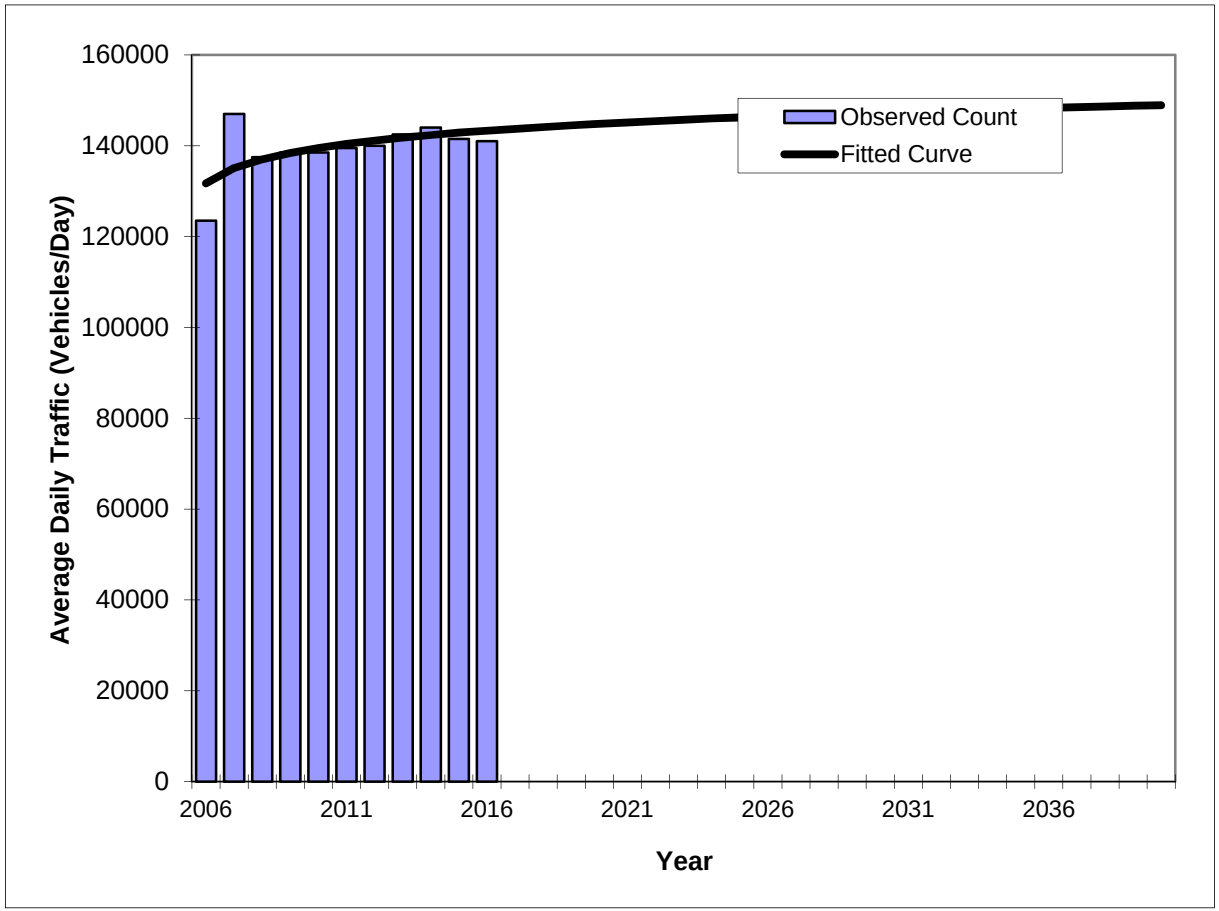
HISTORICAL TREND ANALYSIS REPORTS FOR SR-826/PALMETTO EXPRESSWAY

Traffic Trends - V03.a

--

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	0577
Highway:	0



Year	Traffic (ADT/AADT) Count*	Trend**
2006	123500	131700
2007	147000	135100
2008	137500	137000
2009	138500	138400
2010	138500	139500
2011	139500	140400
2012	140000	141100
2013	142500	141800
2014	144000	142300
2015	141500	142900
2016	141000	143300
2020 Opening Year Trend		
2020	N/A	144800
2030 Mid-Year Trend		
2030	N/A	147300
2040 Design Year Trend		
2040	N/A	148900
TRANPLAN Forecasts/Trends		

Trend R-squared:	36.82%
Compounded Annual Historic Growth Rate:	0.85%
Compounded Growth Rate (2016 to Design Year):	0.16%
Printed:	12-May-17

Decaying Exponential Growth Option

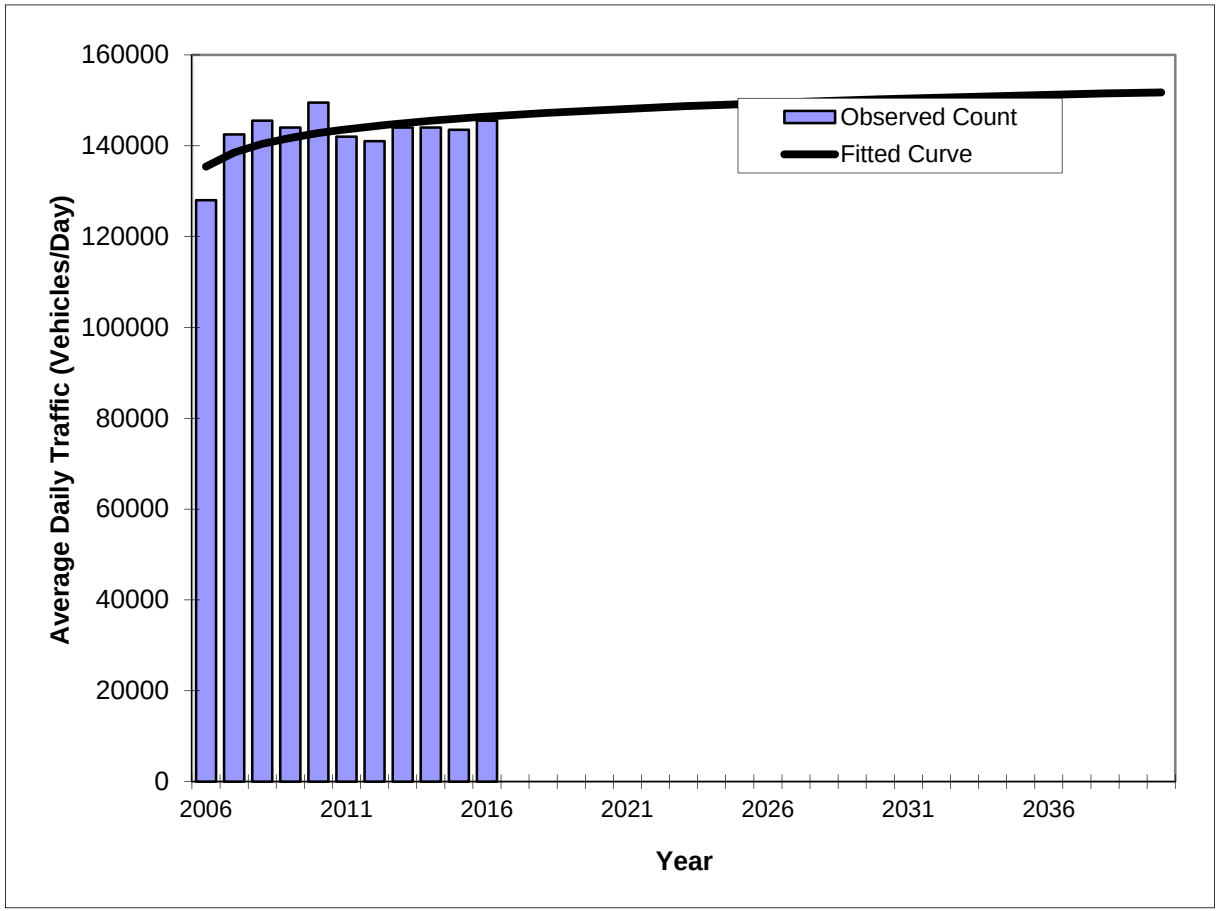
*Axle-Adjusted

Traffic Trends - V03.a

--

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	0578
Highway:	0



Year	Traffic (ADT/AADT) Count*	Trend**
2006	128000	135400
2007	142500	138500
2008	145500	140400
2009	144000	141700
2010	149500	142800
2011	142000	143600
2012	141000	144300
2013	144000	144900
2014	144000	145500
2015	143500	146000
2016	145500	146400
2020 Opening Year Trend		
2020	N/A	147800
2030 Mid-Year Trend		
2030	N/A	150200
2040 Design Year Trend		
2040	N/A	151700
TRANPLAN Forecasts/Trends		

Trend R-squared:	40.97%
Compounded Annual Historic Growth Rate:	0.78%
Compounded Growth Rate (2016 to Design Year):	0.15%
Printed:	12-May-17

Decaying Exponential Growth Option

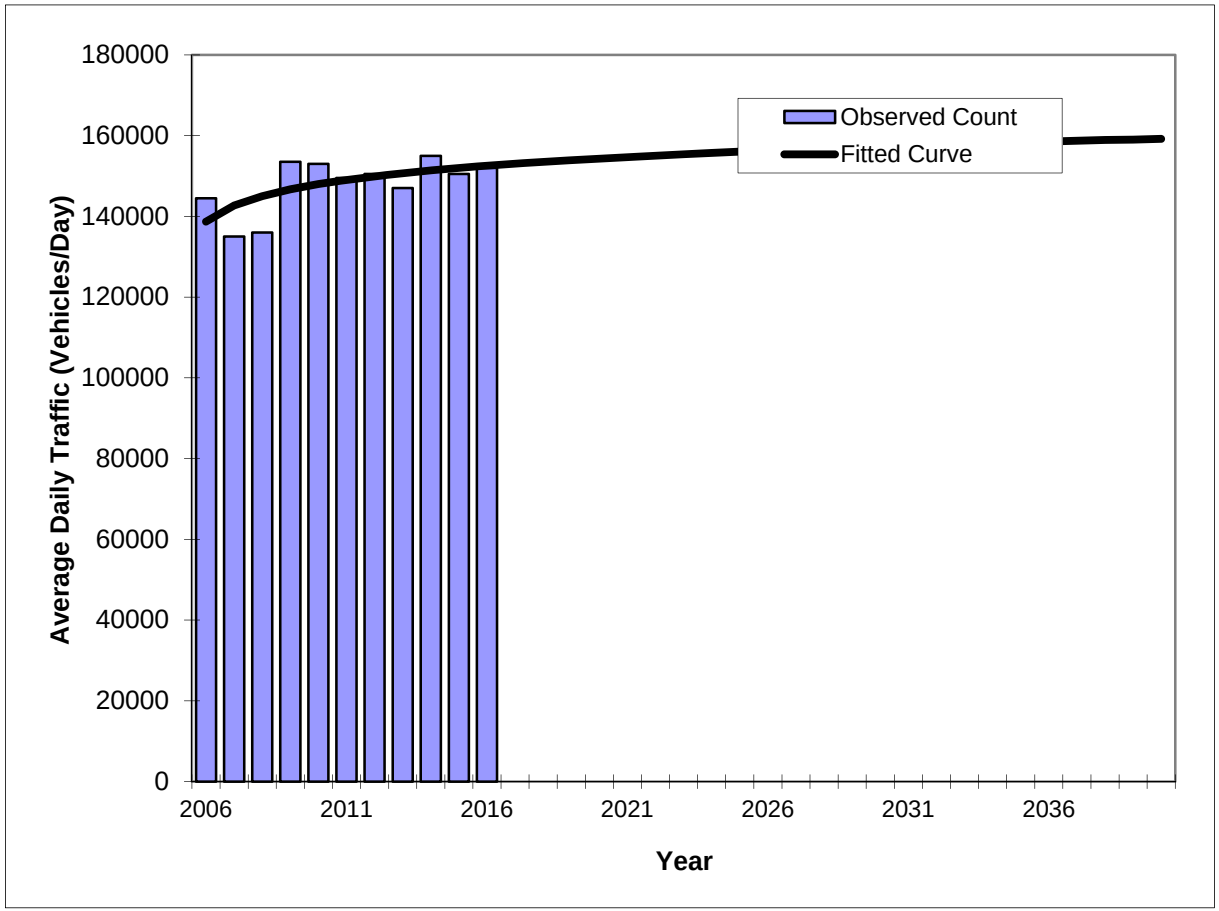
*Axle-Adjusted

Traffic Trends - V03.a

--

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	0579
Highway:	0



Year	Traffic (ADT/AADT) Count*	Trend**
2006	144500	138700
2007	135000	142700
2008	136000	145000
2009	153500	146700
2010	153000	148000
2011	149500	149000
2012	150500	149900
2013	147000	150700
2014	155000	151400
2015	150500	152000
2016	152000	152500
2020 Opening Year Trend		
2020	N/A	154300
2030 Mid-Year Trend		
2030	N/A	157300
2040 Design Year Trend		
2040	N/A	159200
TRANPLAN Forecasts/Trends		

Trend R-squared:	40.17%
Compounded Annual Historic Growth Rate:	0.95%
Compounded Growth Rate (2016 to Design Year):	0.18%
Printed:	12-May-17

Decaying Exponential Growth Option

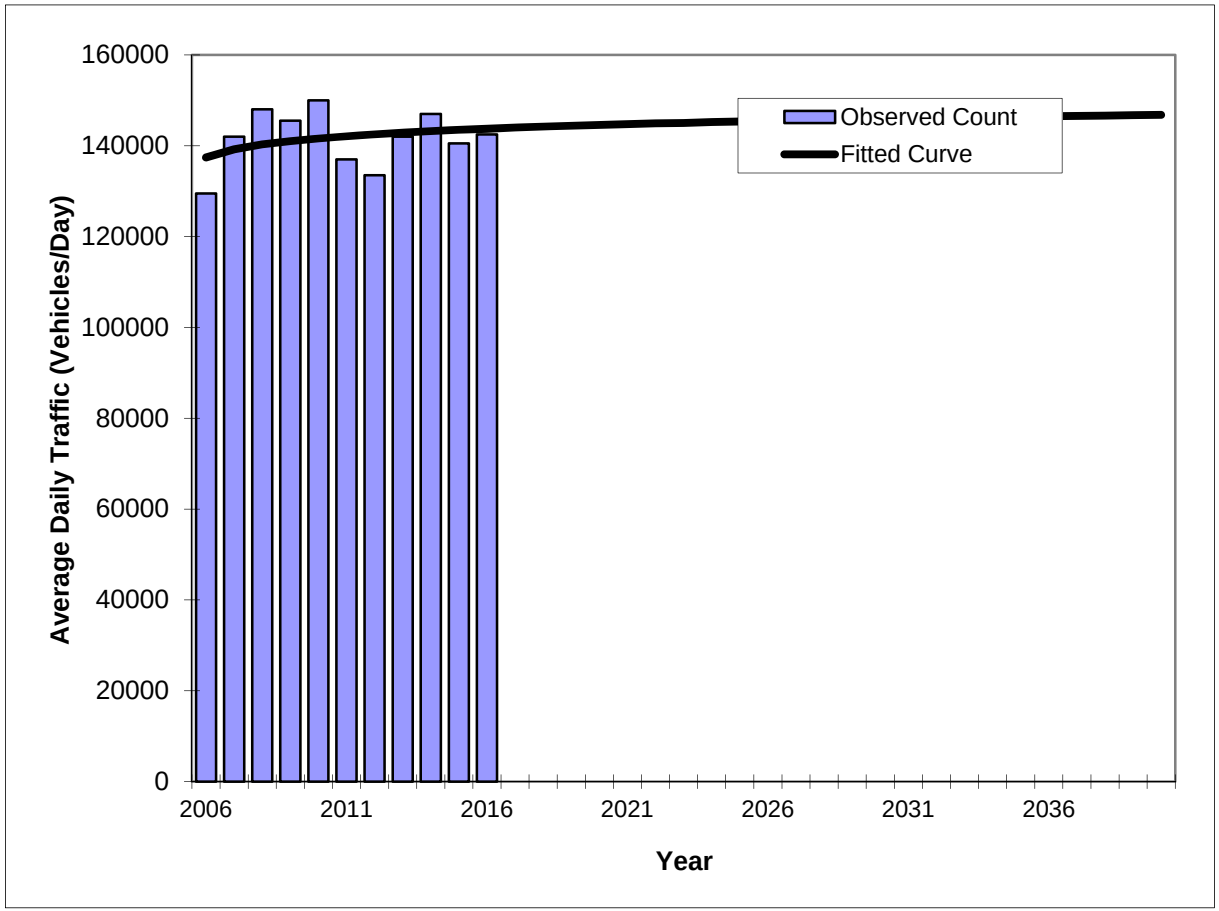
*Axle-Adjusted

Traffic Trends - V03.a

--

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	0581
Highway:	0



Year	Traffic (ADT/AADT) Count*	Trend**
2006	129500	137400
2007	142000	139200
2008	148000	140300
2009	145500	141000
2010	150000	141600
2011	137000	142100
2012	133500	142500
2013	142000	142900
2014	147000	143200
2015	140500	143500
2016	142500	143700
2020 Opening Year Trend		
2020	N/A	144600
2030 Mid-Year Trend		
2030	N/A	145900
2040 Design Year Trend		
2040	N/A	146800
TRANPLAN Forecasts/Trends		

Trend R-squared:	9.96%
Compounded Annual Historic Growth Rate:	0.45%
Compounded Growth Rate (2016 to Design Year):	0.09%
Printed:	12-May-17

Decaying Exponential Growth Option

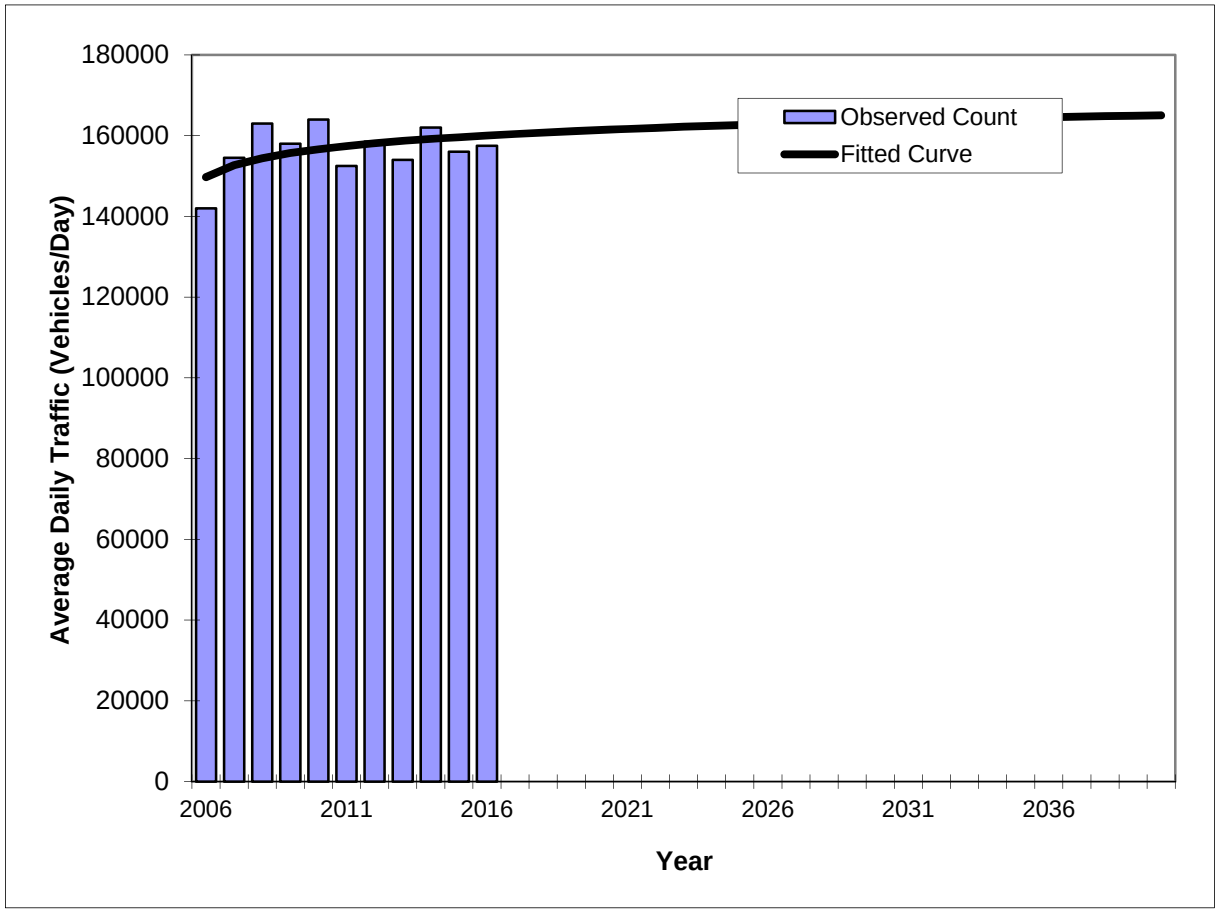
*Axle-Adjusted

Traffic Trends - V03.a

--

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	2114
Highway:	0



Year	Traffic (ADT/AADT) Count*	Trend**
2006	142000	149700
2007	154500	152700
2008	163000	154400
2009	158000	155700
2010	164000	156600
2011	152500	157400
2012	158500	158100
2013	154000	158700
2014	162000	159200
2015	156000	159600
2016	157500	160000
2020 Opening Year Trend		
2020	N/A	161400
2030 Mid-Year Trend		
2030	N/A	163600
2040 Design Year Trend		
2040	N/A	165000
TRANPLAN Forecasts/Trends		

Trend R-squared:	27.76%
Compounded Annual Historic Growth Rate:	0.67%
Compounded Growth Rate (2016 to Design Year):	0.13%
Printed:	12-May-17

Decaying Exponential Growth Option

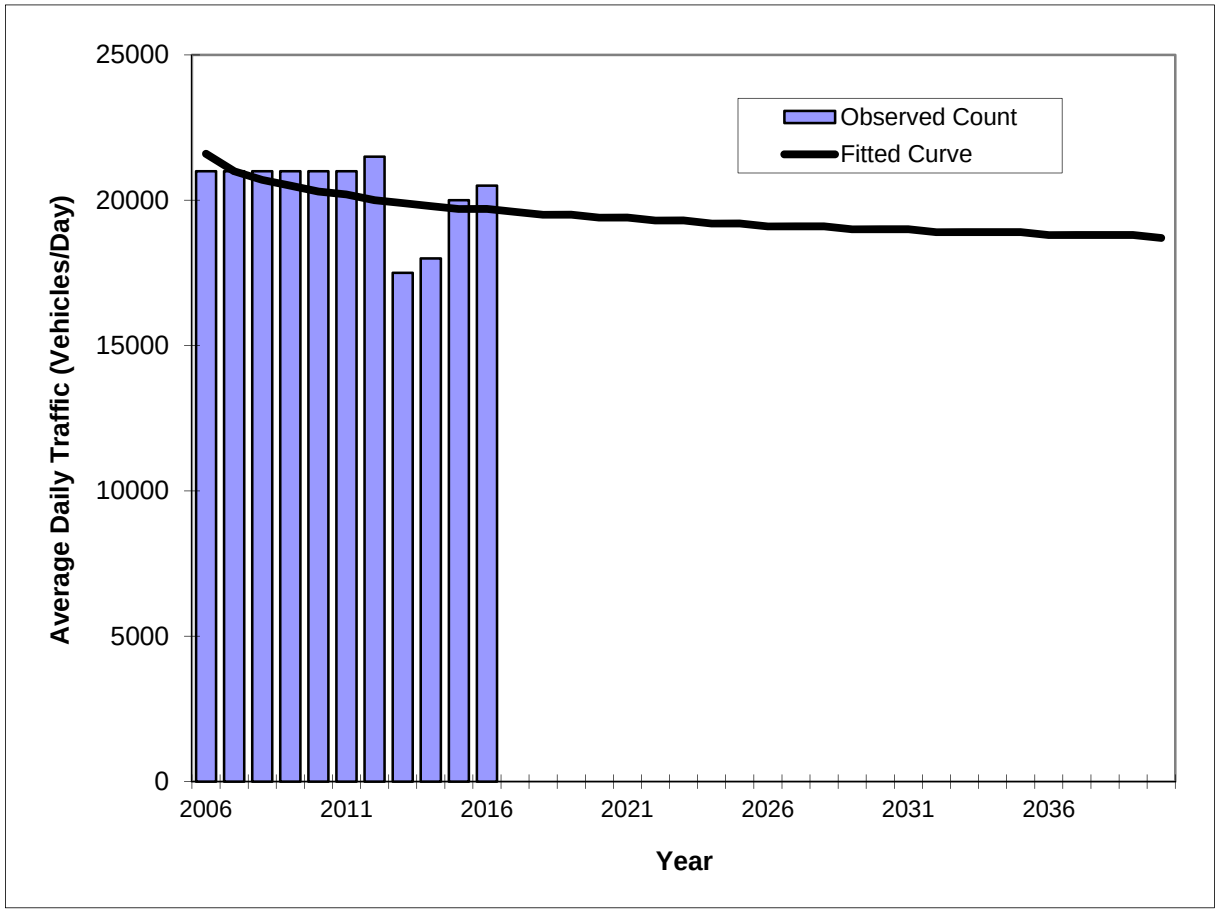
*Axle-Adjusted

Traffic Trends - V03.a

--

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	6291
Highway:	0



Year	Traffic (ADT/AADT) Count*	Trend**
2006	21000	21600
2007	21000	21000
2008	21000	20700
2009	21000	20500
2010	21000	20300
2011	21000	20200
2012	21500	20000
2013	17500	19900
2014	18000	19800
2015	20000	19700
2016	20500	19700
2020 Opening Year Trend		
2020	N/A	19400
2030 Mid-Year Trend		
2030	N/A	19000
2040 Design Year Trend		
2040	N/A	18700
TRANPLAN Forecasts/Trends		

*Axle-Adjusted

Trend R-squared:	20.36%
Compounded Annual Historic Growth Rate:	-0.92%
Compounded Growth Rate (2016 to Design Year):	-0.22%
Printed:	12-May-17

Decaying Exponential Growth Option

APPENDIX B:

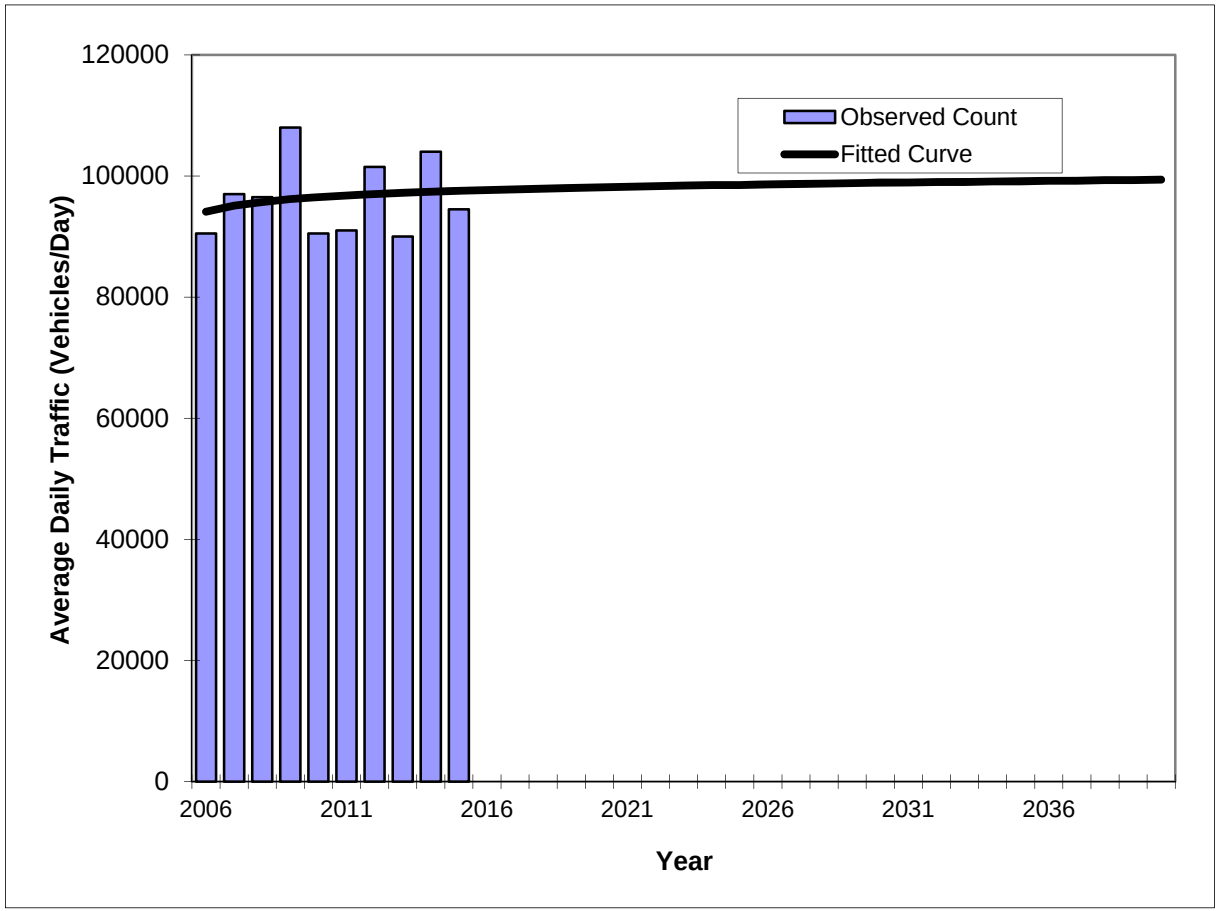
HISTORICAL TREND ANALYSIS REPORTS FOR SR-112/AIRPORT EXPRESSWAY

Traffic Trends - V03.a

--

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	2065
Highway:	0



Year	Traffic (ADT/AADT) Count*	Trend**
2006	90500	94100
2007	97000	95100
2008	96500	95700
2009	108000	96200
2010	90500	96500
2011	91000	96800
2012	101500	97000
2013	90000	97200
2014	104000	97400
2015	94500	97500
2020 Opening Year Trend		
2020	N/A	98100
2030 Mid-Year Trend		
2030	N/A	98900
2040 Design Year Trend		
2040	N/A	99400
TRANPLAN Forecasts/Trends		

Trend R-squared:	2.90%
Compounded Annual Historic Growth Rate:	0.40%
Compounded Growth Rate (2015 to Design Year):	0.08%
Printed:	30-May-17

Decaying Exponential Growth Option

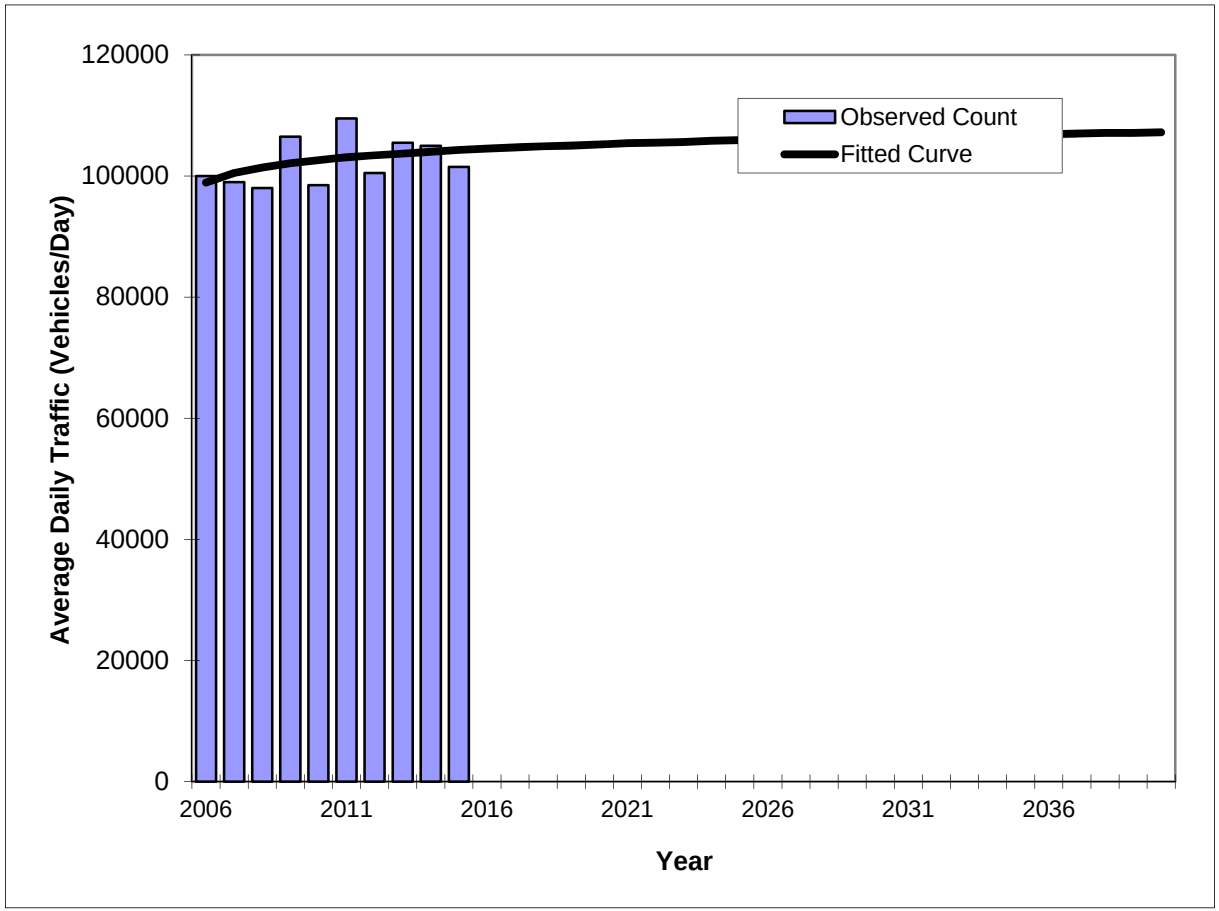
*Axle-Adjusted

Traffic Trends - V03.a

--

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	2055
Highway:	0



Year	Traffic (ADT/AADT) Count*	Trend**
2006	100000	98900
2007	99000	100500
2008	98000	101400
2009	106500	102100
2010	98500	102600
2011	109500	103100
2012	100500	103400
2013	105500	103700
2014	105000	104000
2015	101500	104300
2020 Opening Year Trend		
2020	N/A	105200
2030 Mid-Year Trend		
2030	N/A	106400
2040 Design Year Trend		
2040	N/A	107200
TRANPLAN Forecasts/Trends		

Trend R-squared:	18.97%
Compounded Annual Historic Growth Rate:	0.59%
Compounded Growth Rate (2015 to Design Year):	0.11%
Printed:	30-May-17

Decaying Exponential Growth Option

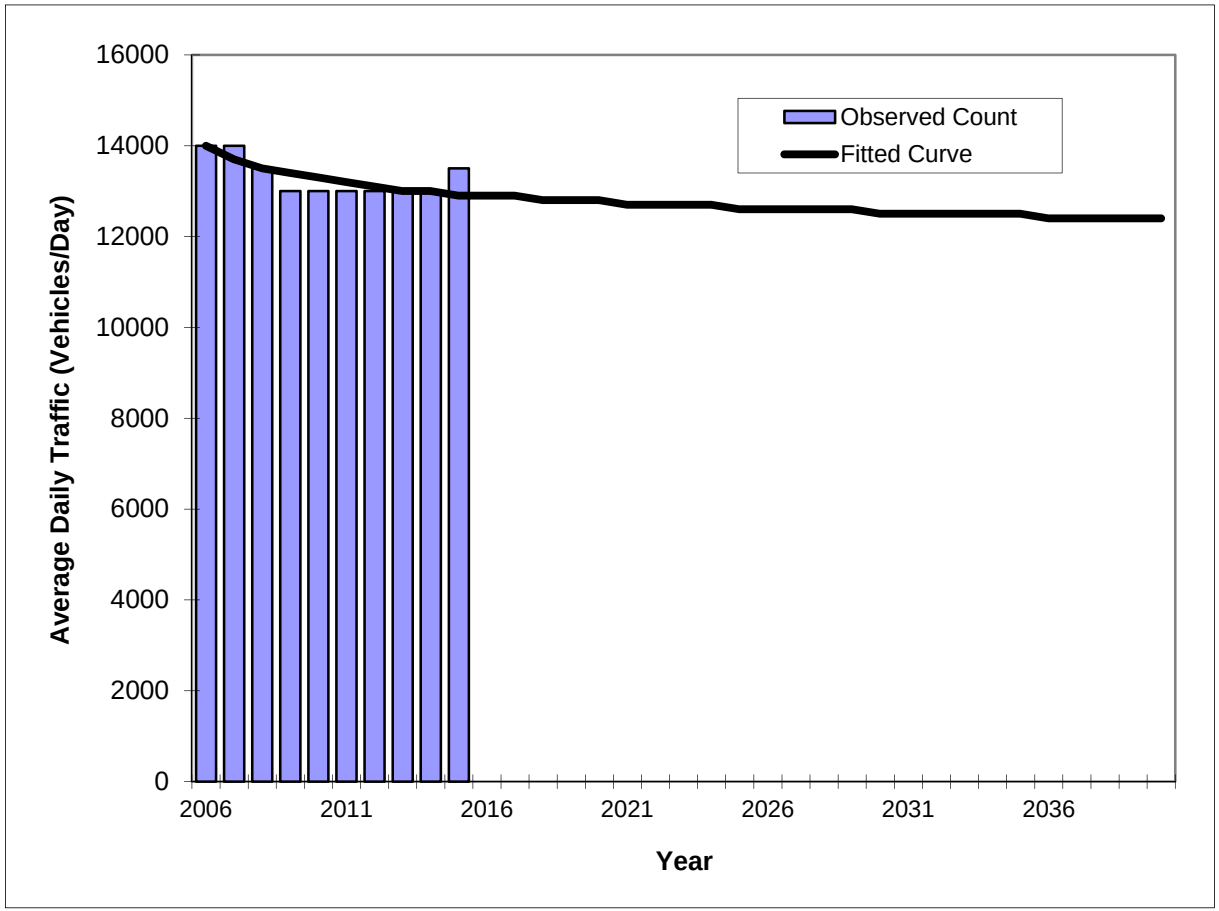
*Axle-Adjusted

Traffic Trends - V03.a

--

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	6397
Highway:	0



Year	Traffic (ADT/AADT) Count*	Trend**
2006	14000	14000
2007	14000	13700
2008	13500	13500
2009	13000	13400
2010	13000	13300
2011	13000	13200
2012	13000	13100
2013	13000	13000
2014	13000	13000
2015	13500	12900
2020 Opening Year Trend		
2020	N/A	12800
2030 Mid-Year Trend		
2030	N/A	12500
2040 Design Year Trend		
2040	N/A	12400
TRANPLAN Forecasts/Trends		

Trend R-squared:	59.05%
Compounded Annual Historic Growth Rate:	-0.91%
Compounded Growth Rate (2015 to Design Year):	-0.16%
Printed:	30-May-17

Decaying Exponential Growth Option

*Axle-Adjusted

APPENDIX C:

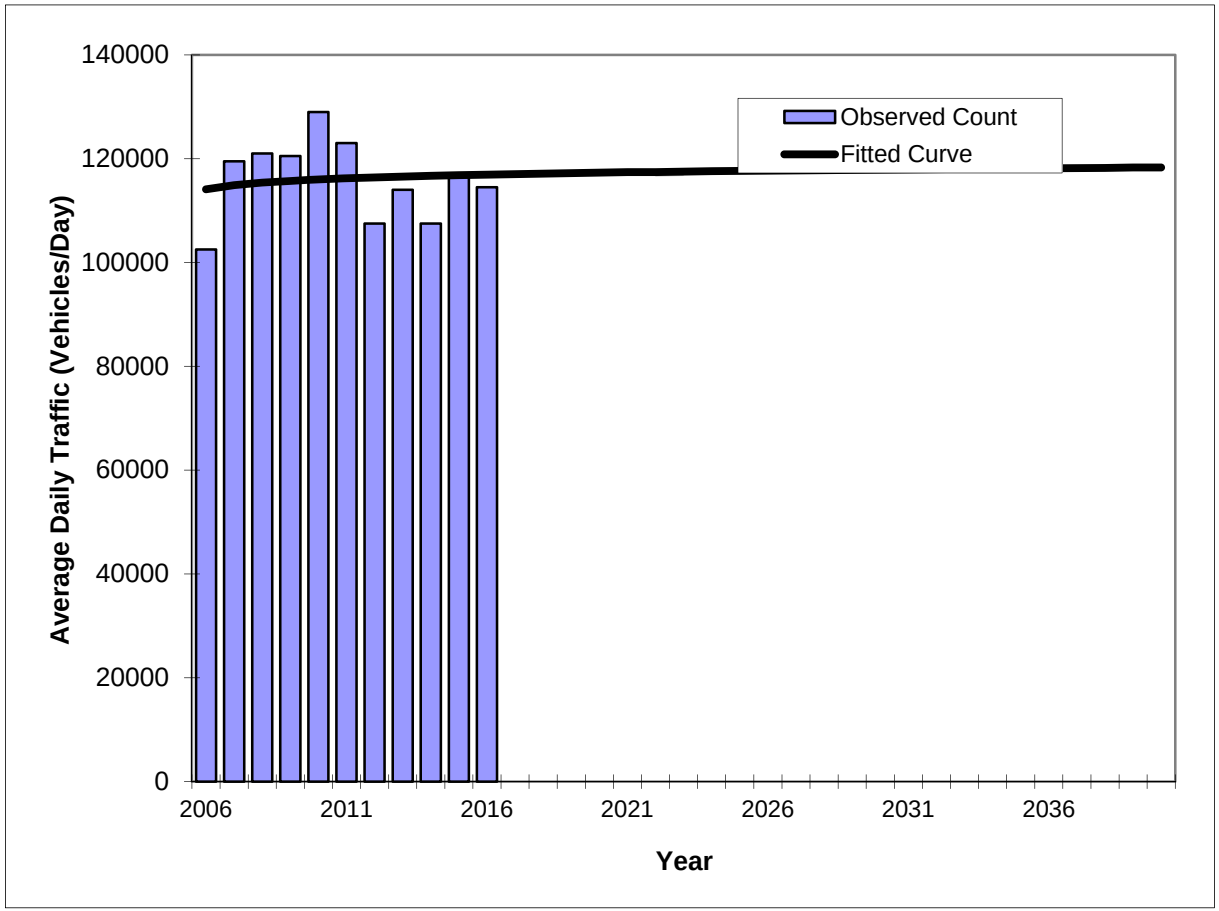
HISTORICAL TREND ANALYSIS REPORTS FOR SR-874/DON SHULA EXPRESSWAY

Traffic Trends - V03.a

--

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	8681
Highway:	0



Year	Traffic (ADT/AADT) Count*	Trend**
2006	102500	114100
2007	119500	114900
2008	121000	115400
2009	120500	115700
2010	129000	116000
2011	123000	116200
2012	107500	116400
2013	114000	116500
2014	107500	116700
2015	116500	116800
2016	114500	116900
2020 Opening Year Trend		
2020	N/A	117300
2030 Mid-Year Trend		
2030	N/A	117900
2040 Design Year Trend		
2040	N/A	118300
TRANPLAN Forecasts/Trends		

Trend R-squared:	1.29%
Compounded Annual Historic Growth Rate:	0.24%
Compounded Growth Rate (2016 to Design Year):	0.05%
Printed:	12-May-17

Decaying Exponential Growth Option

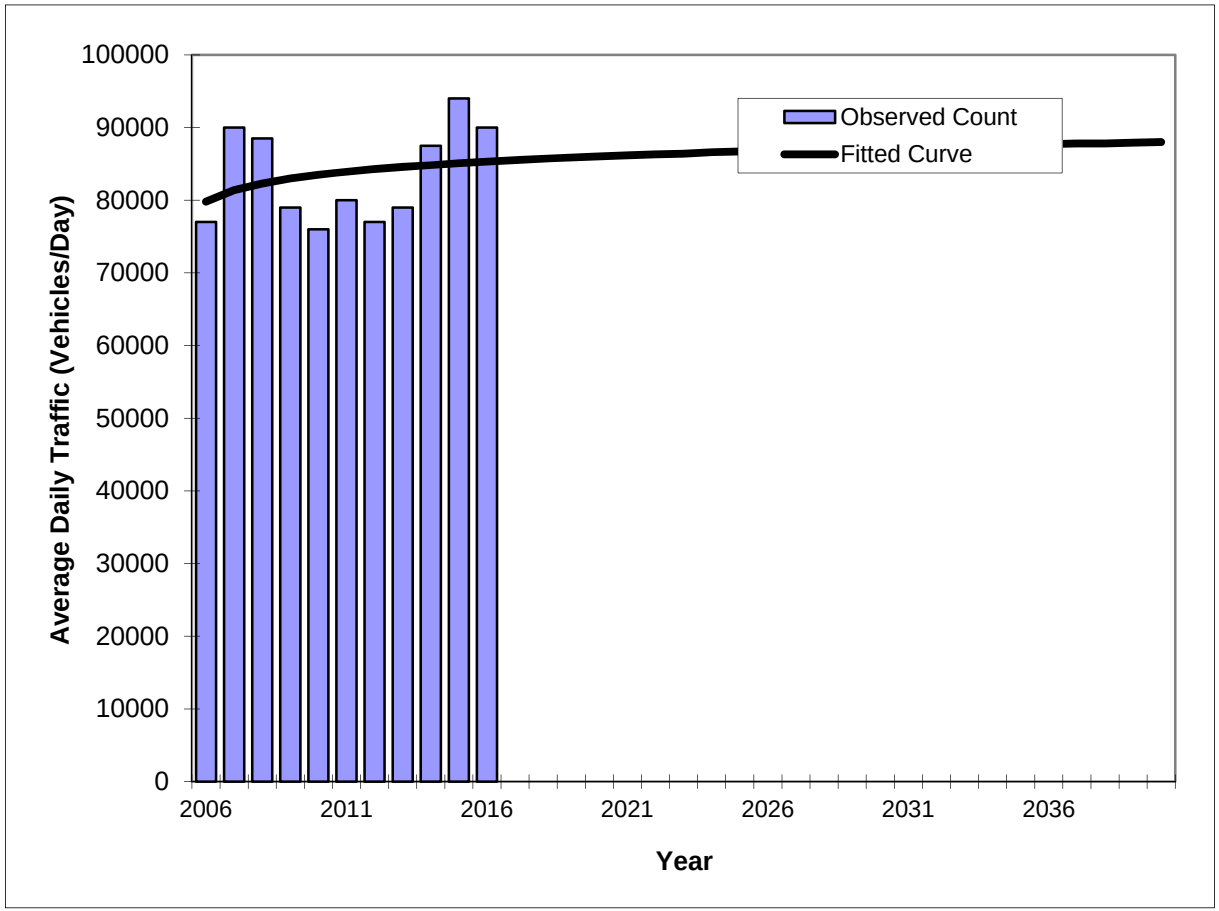
*Axle-Adjusted

Traffic Trends - V03.a

--

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	2274
Highway:	0



Year	Traffic (ADT/AADT) Count*	Trend**
2006	77000	79800
2007	90000	81400
2008	88500	82300
2009	79000	83000
2010	76000	83500
2011	80000	83900
2012	77000	84300
2013	79000	84600
2014	87500	84800
2015	94000	85100
2016	90000	85300
2020 Opening Year Trend		
2020	N/A	86000
2030 Mid-Year Trend		
2030	N/A	87200
2040 Design Year Trend		
2040	N/A	88000
TRANPLAN Forecasts/Trends		

Trend R-squared:	6.83%
Compounded Annual Historic Growth Rate:	0.67%
Compounded Growth Rate (2016 to Design Year):	0.13%
Printed:	15-May-17

Decaying Exponential Growth Option

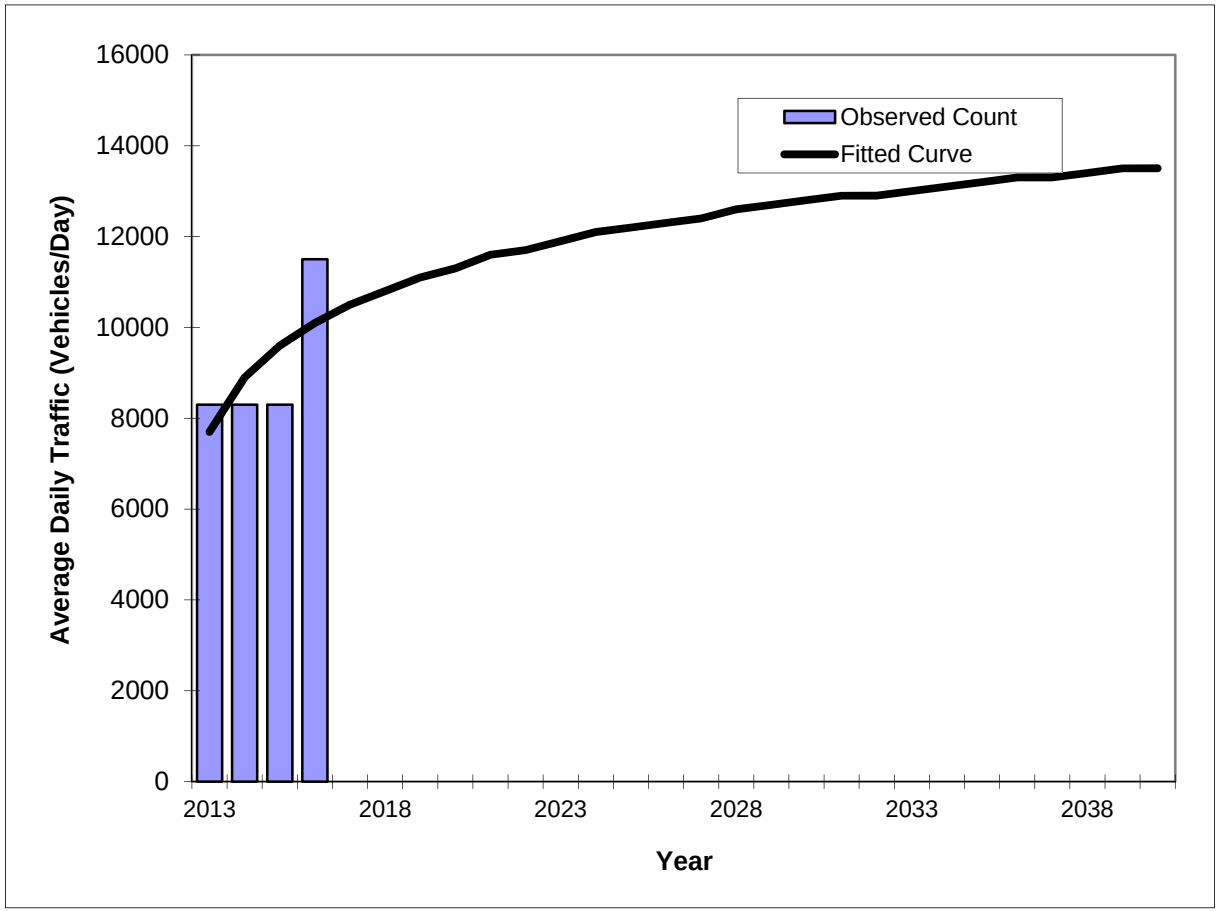
*Axle-Adjusted

Traffic Trends - V03.a

--

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	8681
Highway:	0



Year	Traffic (ADT/AADT) Count*	Trend**
2013	8300	7700
2014	8300	8900
2015	8300	9600
2016	11500	10100
2020 Opening Year Trend		
2020	N/A	11300
2030 Mid-Year Trend		
2030	N/A	12800
2040 Design Year Trend		
2040	N/A	13500
TRANPLAN Forecasts/Trends		

Trend R-squared:	43.07%
Compounded Annual Historic Growth Rate:	9.47%
Compounded Growth Rate (2016 to Design Year):	1.22%
Printed:	12-May-17

Decaying Exponential Growth Option

*Axle-Adjusted