Broward MPO

2035 Long Range Transportation Plan

Update

Technical Report # 5
Transportation Needs Assessment

Created by:

JACOBS

December 2009

TABLE OF CONTENTS

LIST OF EXHIBITS

The 2035 Transportation Needs Assessment Technical Report explains the technical evaluation approach and processes used for identifying the Needs Plan projects. This technical report documents the results obtained from the travel demand model used for the deficiency analysis and transportation needs assessment for the 2035 Long Range Transportation Plan (LRTP). It also explains the methodology used for developing project cost estimates for all modal categories. It should be noted that in addition to the technical data provided in this technical report, the project team also considered information gathered through public outreach as well as issue based needs in identifying Needs Plan projects. The issue based needs and the finding of the public outreach effort are documented in the final 2035 LRTP report.

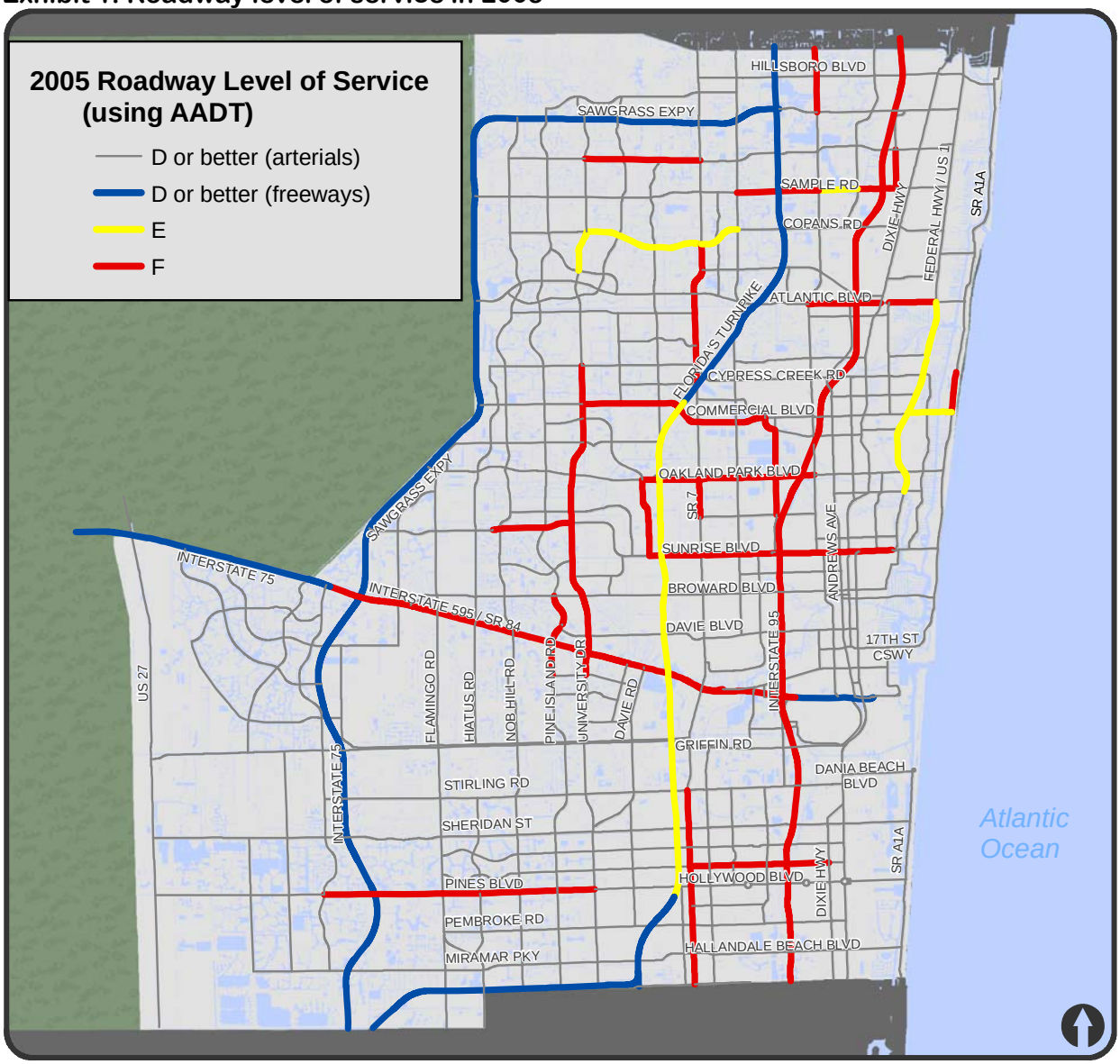
1.0 Existing Travel Conditions

Before forecasting future travel demand, traffic volumes, ridership statistics, and level of service, understanding and quantifying the base year (2005) travel patterns and level of service is a prerequisite. The following discussion describes the existing roadway and transit service performance in Broward County.

FDOT's level of service manual (2007) was used to determine the performance of roadways. LOS "F" represents a condition where the daily volume on a roadway is higher than its carrying capacity. LOS "D" is considered acceptable in most cases; however, on I-95 and in some parts of the downtown LOS "E" is acceptable.

Exhibit 1 shows the level of service on the roadways within the county in 2005 using the observed data (Average Annual Daily Traffic). The entire stretch of Interstate 95 in Broward County is congested and operates at LOS "F". This calls for a careful planning of I-95 corridor especially since there is a limited right-of-way. I-595 serves Sawgrass Mills Mall, Plantation, South Florida Education Center and the Fort Lauderdale-Hollywood International Airport and connects I-75, Sawgrass Expressway, Turnpike and I-95. Most of I-595 operated at LOS "F" in 2005. Parts of SR 7, University Drive, Commercial Boulevard, Oakland Park Boulevard, Sunrise Boulevard and Pines Boulevard also operate at LOS "F".

Exhibit 1: Roadway level of service in 2005



Existing transit services in Broward County include fixed-route buses and community buses. Broward County Transit (BCT) provides fixed-route service. In addition, community bus service is designed to increase the number of destinations within the city limits by providing connections to the BCT routes. Both fixed-route and community buses are coded in the travel demand model. Assuming a uniform distribution of the population and the employment within each TAZ, 59% of the population lives within 0.25 mile of transit stops. 70% of the total employment is within 0.25 mile of transit stops. Limited stop service in 2005 was provided along SR 7 from Palm Beach County Line to Golden Glades in Miami-Dade.

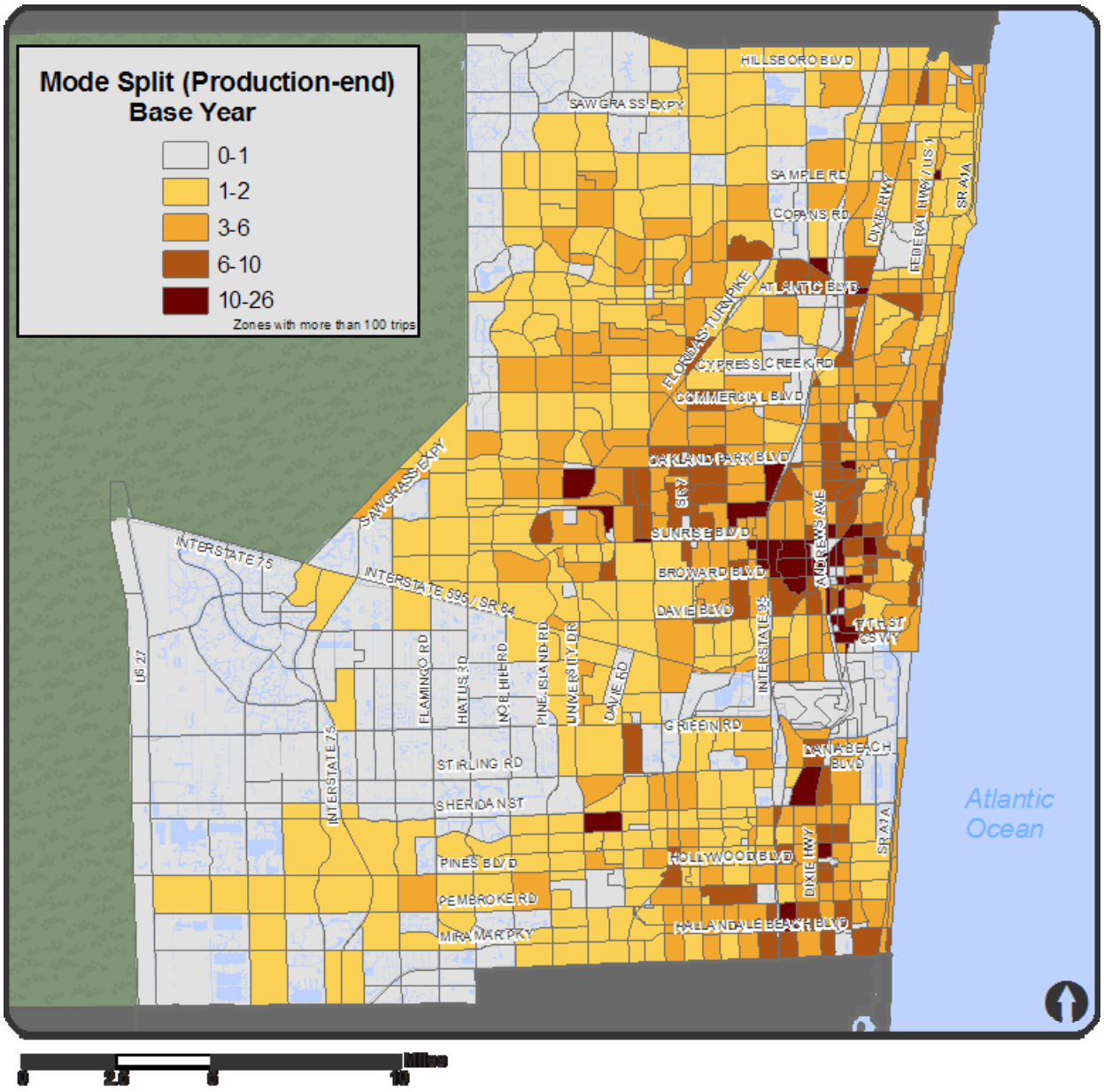
Exhibit 2 shows major roadways with the number of buses per hour during the peak period. The LOS is asserted using the FDOT LOS Manual and is solely based on the frequency of the service assuming less than 84% sidewalks coverage along the roadways.

Exhibit 2: Transit Level of Service (LOS), Base Year 2005

Roadway	Buses per hour	Level of Service (LOS)
Pines Boulevard	3	D
Sheridan Street	2	E
I-595	1.5	F
Broward Boulevard	6	B
Sunrise Boulevard	6	B
Oakland Park Boulevard	6	B
Commercial Boulevard	4	C
Cypress Creek	3	D
Atlantic Boulevard	3	D
Sample Road	3	D
I-75	-	F
University Drive	4	C
SR 7	10	B
I-95	-	F
US 1	3	D

Exhibit 3 shows the mode split of trips produced from each zone for the base year. The transit usage is relatively high around downtown Fort Lauderdale and downtown Hollywood. It is relatively low in the southwestern and northwestern part of the county.

Exhibit 3: Mode split for base year at production-end



2.0 Existing + Committed (E+C) Network

The following section describes the development of existing and committed highway and transit networks, which comprise a portion of the supply side of the travel demand model. Existing projects include projects which went into operation between 2005 and 2008 and committed projects are those which would be operational by year 2013/2014. It was agreed during the Regional Transportation Technical Advisory Committee (RTTAC) meetings that only the projects included in the county's Transportation Improvement Program (TIP) should be considered a part of E+C network. The list of the existing and the committed projects were provided by each of the three MPOs. Exhibit 4 shows the list of completed projects. Separate lists were developed for highway and transit projects. These projects were coded in the base year highway and transit networks by FDOT District IV and their consultants. The coding was reviewed for reasonableness by the respective MPOs and their consultants. The final E+C network contained E+C highway and transit projects from all three counties.

Exhibit 4: List of projects completed during 2005/2006 – 2007/2008

Project Name	Limits	Type of work
Andrews Ave Ext	South of RR/Hammondville Rd to NW 15 St	Bridge over CSX RR & Roadway Approaches
Andrews Ave Ext	South of Atlantic Blvd to S of RR (Hammondville	Bridge Approach
Blount Rd	Copans Rd to Sample Rd	New 2 lanes
Copans Rd	E. of FTPK to Powerline Rd	Add 2L (6LD)
Flamingo Rd	Honey Hill Rd to HEFT	Add 2L (4LD)
Griffin Rd	Flamingo Rd to Nob Hill Rd	Add 2L/4L (6LD)
Hiatus Rd	Broward Blvd to Sunrise Blvd	New 4LD
N Andrews Ave	NW 15 St to NW 18 St	New 4LD
Miramar Pkwy	Flamingo Rd to Red Rd	Add 2L (6LD)
Sawgrass Expressway	Atlantic Blvd to Coral Ridge Dr	Add 2L (6LD)
Sawgrass Expressway	Coral Ridge Dr to Mainline FTPK	Add 2L (6LD)
SW 172 Ave	Sheridan St to south of SW 48 Ct/Bass Creek Rd	Add 1L/2L (4LD)
Sheridan St	University Dr to Pine island Rd	Add 2L (6LD)
Sunrise Blvd	Hiatus Rd to Pine Island Rd	Add 2L (6LD)
Sheridan St	NW 196 Ave to SW 172 Ave	Add 2L (4LD)

Source: Broward MPO, November 2009

2.1 Existing + Committed (E+C) Highway Network

Exhibit 5 shows the list of committed projects that were coded in the E+C network based on the Broward County adopted FY 2013/2014 TIP. Reversible HOT lanes on I-595 between I-75 and I-95 were included in the E+C network. These are coded as three lanes operating eastbound during the AM peak and WB during the PM peak. The only access and egress points are at the Turnpike, I-75 and I-95 interchanges. State Road 7 is a major arterial connecting the three counties and it will also see capacity improvements. It should be noted that the model is insensitive to minor interchange improvements, road surfacing etc. New center turning lanes are generally not coded in the highway network, as they do not truly represent a significant capacity improvement.

Exhibit 5: List of committed roadway improvements during 2009/2010 – 2013/2014

TIP No	Project Name	Limits	Type of work	Miles
1023	Bailey Rd	NW 64 Ave to SR 7	Add 2L (4LD)	2.0
773	Banks Rd	Cullum Rd to Wiles Rd	New 4LD	0.2
865	Banks Rd	NW 40 St to Cullum Rd	New 4LD	0.2
774	Banks Rd	Sample Rd to NW 40 St	Add 2L (4LD)	0.2
1711	College Ave	Nova Dr to SR 84	Add 1,2 L (3, 4LD)	0.5
337	Cullum Road	NW 54 Ave to Lyons Rd	New 4LD	0.7
793	Davie Rd Ext	SW 72 Ave to Stirling Rd	Add 2L (4LD)	0.2
27	Dixie Hwy	Palm Beach County Line to Hillsboro Blvd	New/Add 2L (4LD)	0.5
163	Eller Dr	AT FEC RR Extension	Grade Separation	1.1
52	FTPK	Griffin Rd to north of Sunrise Blvd	Add 2L (8LD)	5.0
1372	FTPK	Peters Rd to north of Sunrise Blvd	Add 2L (8LD)	2.1
1373	FTPK	North of Sunrise to north of Atlantic Blvd	Add 2L (8LD)	8.0
1375	FTPK	At Miramar Plaza	Dedicated Lanes	0.2
1379	FTPK	From FTPK to I-595	Add 2-lane flyover	0.2
4	Griffin Rd	Flamingo Rd to east of I-75	Add 2L (4LD)	2.9
117	Griffin Rd	SW 172 Ave to W. of SW 188 Ave	Add 2L (4LD)	2.0
357	Hiatus Rd	Sunrise Blvd to Oakland Park Blvd	New 4LD	1.2
1535	I-595	East of I-75 to west of I-95	Corridor Improvements (*)	9.8
979	I-75	Miramar Pkwy	Minor Interchange Improvements	0.3
1065	I-75	Pines Blvd	Major Interchange Improvements	2.6
1314	I-75	Griffin Rd	PE for Interchange Modification	0.3
1592	I-95	Miami-Dade to Broward Blvd/I-595	Managed Lanes (Express HOT lanes)	11
790	Johnson Rd	SR 7 to Lyons Rd	Add 2L (4LD)	1.0
373	Miramar Blvd	Hiatus to Palm Ave	Add 2L (4LD)	1.1
206	NW 21 Ave	NW 19 St to Oakland Park	Add 1L (3L)	1.0
775	NW 39 Ave	Vinkemulder Rd to NW 43 St	New 2L	0.4
205	NW 40 St	NW 54 Ave to Lyons Rd	Add 2L (4LD)	0.7
779	NW 49 Ave	NW 26 St to NW Oakland Park	Add 2L (4LD)	0.4
207	NW 51 Ter	Lyons Tech Parkway to NW 69 St	New 2L	0.1
210	NW 51 Ter	NW 69 St to Hillsboro Blvd	New 2L	0.3
1117	Palm Ave	Stirling Rd to Griffin Rd	Add 2L (4LD)	1.2
266	Pembroke Rd	Dykes Rd (SW 160 Ave) to SW 136 Ave including	New 4LD	2.1

TIP No	Project Name	Limits	Type of work	Miles
783	NW 71 Pl	NW 51 Ter to Lyons Rd	New 2L	0.5
271	Pine Island	I-595 to Nova Dr	Add 2L (6LD)	1.0
154	Pine Island	Oakland Park Blvd to Commercial Blvd	Add 2L (6LD)	1.7
813	Ravenswood	Stirling Rd to Griffin Rd	Add 2L (4LD)	1.0
6	SR 7	Dade County Line to north of Hallandale Bch Blvd	Add 2L (6LD)	1.1
15	SR 7	North of Hallandale Bch Blvd to north of Fillmore	Add 2L (6LD)	1.7
918	SR 7	.6 m south of Griffin Rd to .3 m south of Griffin Rd	Add 2L (6LD)	.3
188	SW 11 Way	SW 10 St to Green Rd (NW 48 St)	Add 2L (4LD)	1.2
	US 1 Bypass	SE 17 St to US 1	New 2L	2.0
796	Wiles Rd	Lyons Rd to Powerline Rd	New 4LD	2.0
	FTPK (HEFT)	Miami-Dade County Line to FTPK mail line	Open Road Tolling	8.0
	FTPK	Miami-Dade County Line to Griffin Rd	Open Road Tolling	7.0

Source: Broward MPO Transportation Improvement Program, FY 2009/2010-FY 2013/2014

2.2 Existing + Committed (E+C) Transit Network

The transit network coded in the base year of the model reflects year 2005 weekday service. Both Broward County Transit's (BCT) fixed-routes and the community buses are coded in the model. However due to budget cuts, there has been some reduction in the transit service in recent months. The E+C network reflects these reductions. Several community buses were excluded from the network, Exhibit 6 shows the existing BCT routes as well as services scheduled to be operational in the next few years. The frequencies coded in the base year network and E+C network are also shown. The recent changes in the service (September 21, 2008) are also included in the E+C network. The network includes Route 1 Breeze (along US 1), Route 2 Breeze (along University Drive), Route 7 Breeze (along Pines Boulevard) and 441 Breeze (along SR 7) providing extended service to Miami Dade. In addition, BCT provides connections to Palm Tran buses via Route 18, Route 10 and Route 97.

The E+C transit network was later updated in June/July 2009 based on RTTAC's continued model refinement process. Those updates are included in the final transit E+C network but not reflected in Exhibit 6. Significant changes during the final update include the following major transit improvements:

- I-595 express buses on Reversible Lanes (four routes)
- I-95 express buses on Managed Lanes:
- Two on Pines Boulevard (Route 7) then to downtown Miami;
- Two between downtown Miami and downtown Fort Lauderdale; and
- University Drive and SR 7 Breezes extend to downtown Miami.

Exhibit 6: BCT transit route characteristics (weekday service only)

ROUTE	DAYS OF SERVICE	HOURS OF SERVICE A.M. - P.M.	E+C SERVICE (SEPT. 2008)	# OF PEAK VEHICLES	BASE YEAR SERVICE (AUG. 2005)
1	Monday-Friday	5:05a – 11:59p	15 Minutes	10	15/20
1 Breeze	Monday-Friday Peak Only	6:00a - 9:12a 3:55p - 713p	30 Minutes	7	n/a
2	Monday-Friday	5:10a – 12:35a	20/30 Minutes	12/9	20/30
3	Monday-Saturday	5:45a - 8:05p	60 Minutes	3	60
4	Monday-Friday	5:35a - 11:35p	45 Minutes	4	30
5	Monday-Friday	6:05a - 9:45p	30/60 Minutes	5	60
6	Monday-Friday	5:15a – 9:55p	30 Minutes	6	30
7	Monday-Friday	5:00a - 11:40p	30 Minutes	6	30
9	Monday-Friday	5:30a - 10:55p	45 Minutes	4	45
10	Monday-Friday	5:20a - 11:53p	30 Minutes	6	30
11	Monday-Saturday	5:00a - 11:55p	30 Minutes	7	30
12	Monday-Friday	6:00a – 8:00p	45 Minutes	5	45
14	Monday-Friday	5:00a - 11:50p	20/30 Minutes	8/5	15/30
15	Monday-Saturday	5:40a - 10:05p	45 Minutes	2	45
16	Monday-Friday	6:00a - 9:45p	30/60 Minutes	4/2	n/a
17	Monday-Friday	5:23a - 8:23p	60 Minutes	1	45
18	Monday-Friday	4:40a - 12:38a	15 Minutes	17	15
18 Breeze	Monday-Friday Peak Only	5:07a - 10:35a 2:42p - 7:52p	30 Minutes 30 Minutes	8 8	30
20	Monday-Saturday	5:40a - 9:45p	40 Minutes	4	40
22	Monday-Friday	5:20a - 11:50p	15/20 Minutes	9/6	20
23	Monday-Friday	6:30a - 7:40p	40/60 Minutes	3/2	40/60
28	Monday-Friday	5:25a - 11:55p	30 Minutes	5	30
30	Monday-Friday	5:30a - 11:20p	30 Minutes	3	30
31	Monday-Friday	5:05a - 11:40a	20/30 Minutes	8/5	15/30
34	Monday-Friday	5:15a -10:20p	30 Minutes	4	30
36	Monday-Friday	5:00a - 12:25p	15/20 Minutes	14/10	20
40	Monday-Friday	5:30a - 11:25p	20/30 Minutes	8	20/30
42	Monday-Friday	5:20a - 11:00p	30 Minutes	4	30
50	Monday-Friday	5:15a - 11:45p	20/30 Minutes	9/6	20/30

ROUTE	DAYS OF SERVICE	HOURS OF SERVICE A.M. - P.M.	E+C SERVICE (SEPT. 2008)	# OF PEAK VEHICLES	BASE YEAR SERVICE (AUG. 2005)
55	Monday-Friday	5:15a - 9:20p	40 Minutes	5	40
56	Monday-Friday	6:30a - 9:55p	30 Minutes	7	30
57	Monday-Friday	7:00a - 7:40p	80 Minutes	1	80
60	Monday-Friday	5:25a - 11:41p	20/30 Minutes	8/5	15/30
62	Monday-Friday	5:20 - 9:15p	40 Minutes	7/4	30/60
72	Monday-Friday	5:00a - 12:15a	15/20 Minutes	11/8	15/20
81	Monday-Friday	6:00a - 11:55p	30 Minutes	4	30
83	Monday-Friday	5:40a - 10:05p	30/40 Minutes	4/3	30
88	Monday-Friday	6:00a - 8:45p	30/60 Minutes	4/2	30/60
92	Mon/Wed/Fri Tue/Thurs	7:50a - 4:25p 7:50a - 9:00p	45 Minutes 45 Minutes	1 1	45
93	Mon/Wed/Fri Tue/Thurs	9:30a - 4:50p 9:30a - 9:50p	90 Minutes 90 Minutes	1 1	90
94	Monday-Friday	9:00a - 3:25p	45 Minutes	1	45
95	Monday-Saturday	8:20a - 5:50p	90 Minutes	1	90
97	Monday-Saturday	10:00a - 4:55p	60 Minutes	1	60
2 Breeze	Monday-Friday Peak Only	6:00a - 9:12a 3:55p - 713p	30 Minutes	8	n/a
7 Breeze	Monday-Friday Peak Only	6:00a - 9:12a 3:55p - 713p	30 Minutes	5	n/a
48	Monday-Friday	6:00a - 9:45p	45/45 Minutes		n/a

Source: Broward County Office of Transportation, (August 1, 2008) with existing service

2.3 Supply Parameters (E+C)

This section quantifies the supply side of the transportation network in the county. The E+C highway projects indicate a 4.4% increase in the total lane-miles over the base year. The notable increase is the HOT lane-miles on I-595 (see Exhibit 7).

Exhibit 7: Highway Supply Parameters

Parameter	Description	2005	E+C	% Increase
Freeway	General purpose lanes on I-75, I-595 and I-95	439	457	**4.1%**
Arterials/Collectors	Undivided/divided arterials and collectors	3,787	3,866	**2.1%**
HOV	HOV lanes on I-95	51	54	**5.9%**
HOT	I-595 reversible lanes	0	27	-
Toll	Florida's Turnpike and Sawgrass Expressway	295	368	**24.7%**
Total Lane Miles	**Broward County**	**4,572**	**4,772**	**4.4%**

The same is true for the transit supply. The route-miles shown in Exhibit 8 represent the sum of the distances covered by all the routes in the system. The express buses operating on I-595 as a part of FDOT's demonstration program were included in the E+C network. Most of the increase in route-miles comes from the introduction of three new limited stop buses which travel long distances. Along with the limited-stop bus along SR 7 in the base year, similar service is also provided on University Drive, US 1 and Pines Boulevard in E+C. Bus Rapid Transit (BRT) and Light Rail Transit (LRT) modes do not exist in the base year as well in the E+C network.

Vehicle-hours is another representation of the transit supply as it includes both the frequency of the service and the length of service in terms of time it takes to cover the route distance. There is a decrease in the vehicle-hours because of the recent budget cuts reflecting a decrease in the transit supply in the county. There is a decrease of about 3.3% in the vehicle-hours within the county. The vehicle-hours are calculated based a highly simplifying assumption that the peak period is 6-hour long and the off-peak period is 10-hour. The decrease is mainly due to the discontinued service of many community bus routes.

Exhibit 8: Transit Supply Parameters (Vehicle Hours)

Parameter	Base Year Network	E+C Network	% Increase
Local	1,856	1,761	**-5.1%**
Express	116	-	**-**
Limited Stop	50	296	**492%**
New mode (BRT/LRT)	-	-	**-**
Total Route Miles	***2,022***	***2,057***	***1.7%***
Local	3,474	3,104	**-10.7%**
Express	22	-	**-**
Limited Stop	24	301	**1154.2%**
New mode (BRT/LRT)	-	-	**-**
Total Vehicle Hours	**3,520**	**3,405**	**-3.3%**

Exhibit 9 shows the change in accessibility to the transit service between the base year and the E+C. The accessibility is defined as the proportion of zones within ¼ mile of transit stops. The figure shows Traffic Analysis Zones (TAZ) in red where the accessibility to the transit decreased by more than 10% and in green where the accessibility increased by more than 10%. The reds overwhelm the green TAZs representing an overall decrease in the transit service within the county. The total population accessible to the transit decrease from 59% to 58% in E+C assuming an equal distribution of population within a TAZ. The percent of employment accessible to the transit decrease from about 70% to 66%.

Exhibit 9: Decrease in Transit Coverage

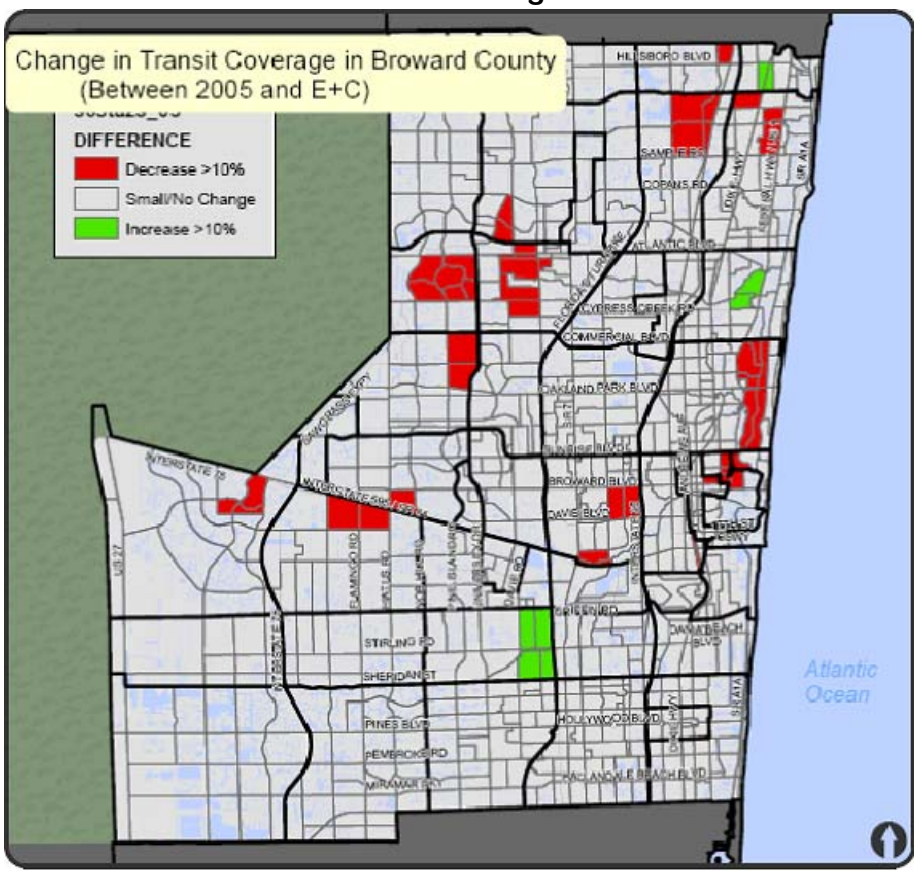


Exhibit 10 shows the number of buses running per hour on major roadways in the county in the base year and in E+C. The LOS reflects the FDOT LOS manual which is solely based on the frequency of service assuming less than 84% sidewalks coverage along the roadways.

Exhibit 10: Comparison of Transit LOS on Major Roadways between Base Year and E+C

	Base Year Network		E+C Network	
Roadway	**Buses per hour**	**Transit LOS**	**Buses per hour**	**Transit LOS**
Pines Boulevard	3	D	4	C
Sheridan Street	2	E	1.5	F
I-595	1.5	F	-	F
Broward Boulevard	6	B	4	C
Sunrise Boulevard	6	B	4	C
Oakland Park Boulevard	6	B	4	C
Commercial Boulevard	4	C	2.5	E
Cypress Creek	3	D	1.5	F
Atlantic Boulevard	3	D	2	E
Sample Road	3	D	2	E
I-75	-	F	-	F
University Drive	4	C	5	B
SR 7	10	B	6	B
I-95 (South of Pines)	-	F	2	E
US 1	3	D	2	E

3.0 Travel Demand Analysis

The travel demand model uses the socio-economic and land use data along with other information to estimate trip flows between each pair of TAZs. The regional travel demand model (SERPM) encompasses Miami-Dade, Broward and Palm Beach Counties. For modeling purposes, Broward County is divided into 921 traffic analysis zones (TAZs). Most of the results produced by the travel demand model are at zonal level. This level of disaggregation is essential if we are planning for a specific area or a corridor. However, this can be overwhelming when regional analyses of travel supplies and demands are needed. Hence these 921 TAZs were aggregated into 45 groups, which are referred to as "superzones." The following describes how the boundaries of these superzones were determined.

north/ south

east/west

The superzones can be categorized into trip production superzones and trip attraction superzones. Exhibit 11 shows these superzones. The production superzones are numbered from 1-21 and 24-37 (35 production superzones) and the attraction superzones are numbered from 38-47 (10 attraction superzones). The trip production superzones were created using the major roadways as dividers. I-95, Florida's Turnpike, University Dr/Nob Hill Rd and I-75 are used as north/south dividers and Sheridan St, Griffin Rd, I-595, Sunrise Boulevard, Commercial Boulevard, Atlantic Boulevard, and Sawgrass Expressway are used as east/west dividers. The attraction districts were either major regional attractor of trips or are special generators such as the airport and the seaport. The trip attractions per acre in these attraction superzones were substantially higher than other parts in the region. The traffic analysis zones (TAZs) with high trip attractions per acre were aggregated to form attraction superzones. The production and the attraction superzones do not overlap. A brief description of the 10 attraction superzones follows.

Downtown Fort Lauderdale – is the Central Business District (CBD) in the City of Fort Lauderdale, the largest city in Broward County. This high employment density center is characterized by narrow streets with sidewalks a variety of land uses such as retail, commercial, office, and residential in a relatively small geographical area, which makes this area vibrant.

Cypress Creek – is primarily a suburban office park with wide arterials and swales separating office buildings. Though the area is not very pedestrian and bicycle friendly, it exhibits tremendous opportunity for improvement with advent of high quality transit service.

Plantation Midtown – is high density employment center characterized with suburban office type land use development and supporting uses. The City of Plantation has ambitious plans for developing this area into a mixed use development that would provide excellent support for transit.

SR 7 at Sample – is the general area planned to be developed as Town Center in Coconut Creek. This area is also designated as a transit oriented corridor in Broward County's Land Use Plan.

Sawgrass Mills – is multi-use trip generator. The area house Bank Atlantic Center that host special events in Broward County.

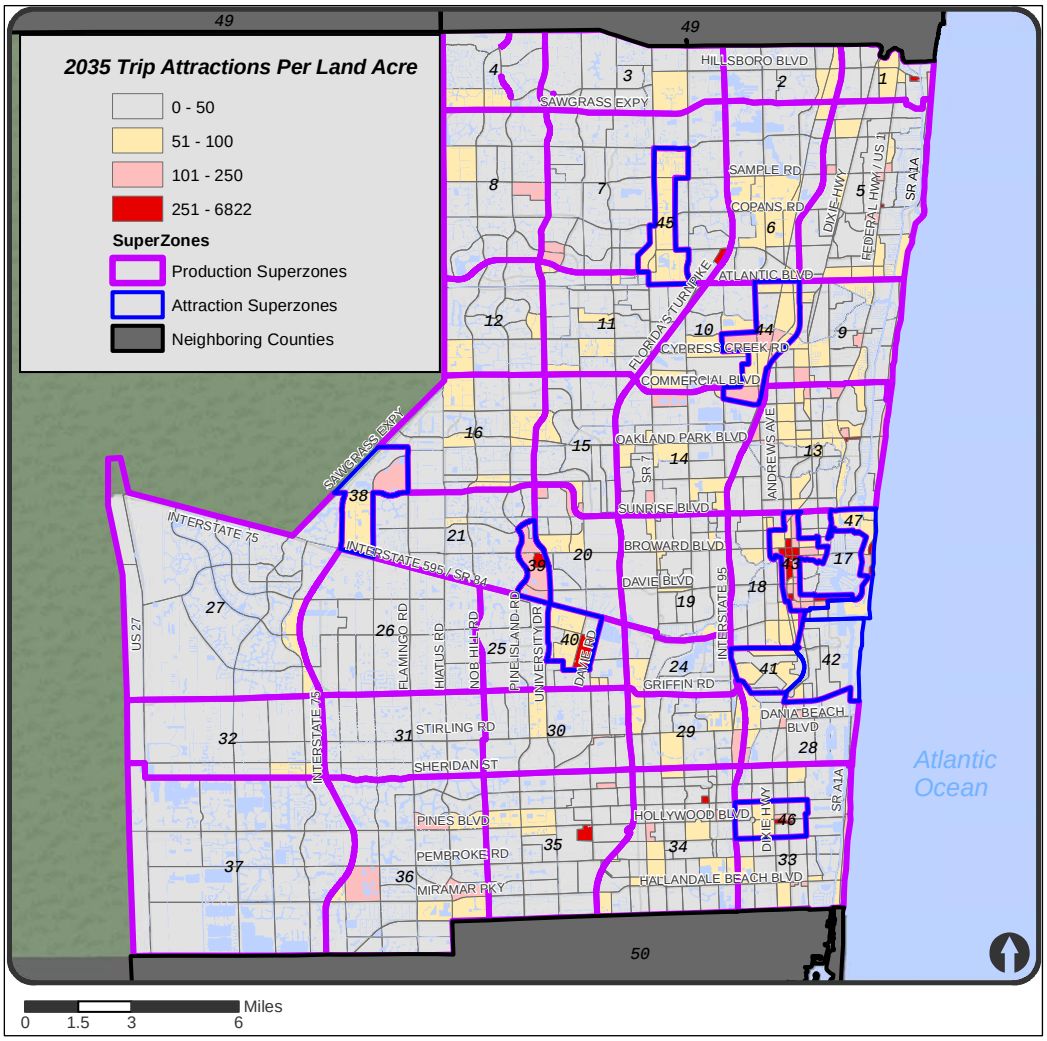
Education Center – includes several different college campuses including Broward College, NOVA University, and Florida Atlantic University.

Fort Lauderdale Beach – is primarily a recreational area. This area is designation as Community Redevelopment Area (CRA).

Downtown Hollywood – is a high density employment center with retail and recreational land uses in its vicinity. The area has extremely pedestrian and bicycle friendly.

Airport – The Fort Lauderdale-Hollywood International Airport is an important intermodal hub in Broward County. Typically trip attraction density at airports is low given the nature of land development and land requirements for airport operations. However, they are special considered as special trip generators.

Exhibit 11: Superzones trip attraction density (trip attractions per acre)



The future travel demand for the 2035 LRTP was forecast by loading the 2035 land use data on E+C network. As explained earlier the TAZs were grouped into 45 superzones to present the results for the flows. This helped in understanding the travel patterns and behaviors within the region.

Exhibit 12 shows the top 10 superzones in terms of the number of trip productions for work trips only. The eastern part of Coral Springs is an area with high work trip productions. Overall, central Broward County between Commercial Boulevard and Atlantic Boulevard is an area which produces more work trips per acre of land than others.

Exhibit 12: Top 10 superzones in terms of the number of trip productions

Superzone	Name	Trip Production in '000s	Trip Production per Acre
7	East Coral Springs	112	**9.4**
35	East Pembroke Park	104	**11.5**
13	Wilton Manor	89	**10.0**
36	West Pembroke Pines	88	**8.1**
34	West Hollywood	85	**10.1**
14	Lauderdale Lakes	83	**11.8**
11	East Tamarac	81	**13.0**
37	South West Broward	79	**4.5**
5	Hillsboro Beach	79	**8.7**
8	**West Coral Springs**	**77**	**10.3**

Exhibit 13 shows the top 10 superzones in terms of the number of trip attractions for work trips only. Downtown Fort Lauderdale is the densest in terms work trips being attracted per acre of the superzone. Cypress Creek area also attracts a high number of trips per acre of land.

Exhibit 13: Top 10 superzones in terms of the number of trip attractions

Superzone	Name	Trip Attraction in '000s	Trip Attraction per Acre
36	West Pembroke Pines	98	**8.9**
6	Along Powerline Road N of Commercial and S of Atlantic Boulevard	95	**13.0**
13	Wilton Manors	89	**10.7**
43	Downtown Fort Lauderdale	85	**58.0**
34	West Hollywood	76	**9.0**
44	Cypress Creek	70	**28.7**
14	Lauderdale Lakes	60	**8.5**
5	Hillsboro Beach	59	**6.6**
8	West Coral Springs	56	**7.6**
7	**East Coral Springs**	**55**	**5.6**

Exhibit 14 shows the attraction superzones in terms of the trip attraction per acre of land for work trips only. The intensity of the trip attractions is high these attraction superzones compared to others. Downtown Fort Lauderdale tops the list with about 58 work trip attractions per acre of land followed by Plantation at 43 work trip attractions per acre.

Exhibit 14: Attraction superzones

Superzone	Name	Trip Attraction in '000s	Trip Attraction per Acre
43	Downtown Fort Lauderdale	85	**58.0**
44	Cypress Creek	70	**28.7**
39	Plantation Midtown	36	**42.7**
45	SR 7 at Sample	36	**18.7**
38	Sawgrass Mills	34	**18.2**
40	Education Center	23	**18.0**
47	Fort Lauderdale Beach	16	**15.5**
46	Downtown Hollywood	16	**12.3**
41	Airport	11	**8.0**
42	**Port Everglades**	**9**	**4.1**

3.1 Trip flows within Broward County

For summarizing and reporting traffic flows, the 45 superzones were further aggregated into 13 bigger superzones called the "districts". These districts are shown in Exhibit 15. This section reports the trips *in '000s of trips*. These trips represent an *average weekday daily trips* in year 2035.

Exhibit 15: Superzones aggregated into 13 districts for reporting traffic flows

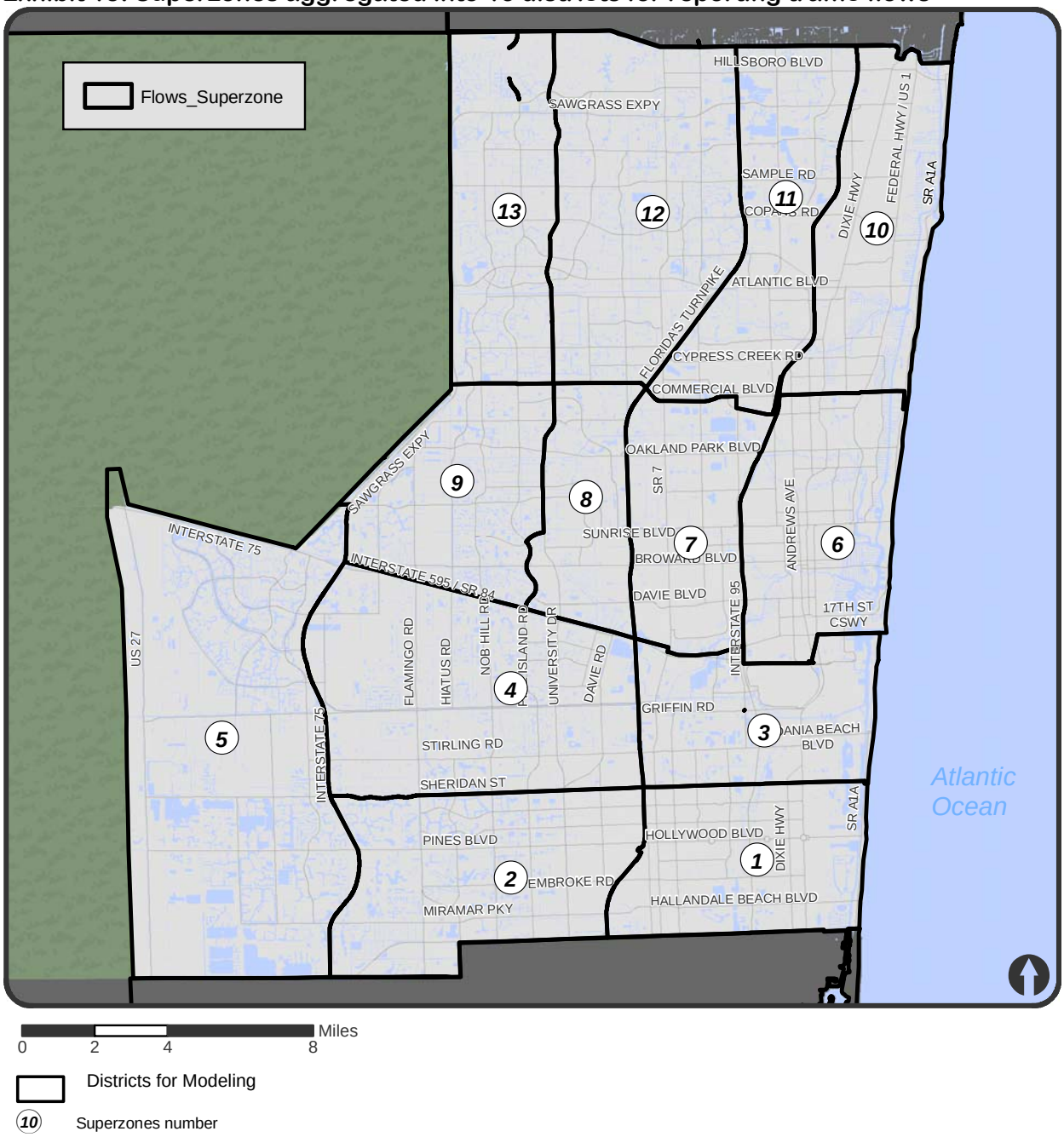


Exhibit 16 shows trip attractions from these 13 districts to the three major attraction superzones (Downtown Fort Lauderdale, Cypress Creek, and Plantation Midtown). The numbers in the table is combination of the trips attracted to and trips produced from these attraction districts.. The highest number of trips to downtown Fort Lauderdale is from nearby production district Fort Lauderdale (#6). The number of work trips from Sawgrass Mills Mall area (#9) to downtown Fort Lauderdale is about 5,000. These are long trips likely to have impacts on congestion on I-595. There are about 84,000 total work trips to downtown Fort Lauderdale (369,000 total person trips).

Exhibit 16: Trips Attractions (in '000s) to Major Attraction Superzones from the 13 Districts

	Home-Base Work (HBW) Flows			Total Person Flows		
Attraction Superzone → Production district ↓	Downtown Fort Lauderdale	Cypress Creek	Plantation Midtown	Downtown Fort Lauderdale	Cypress Creek	Plantation Midtown
1. Hollywood	6	2	2	20	6	7
2. Pembroke Pines Area	3	1	3	7	2	10
3. Dania Beach Area	4	1	1	32	9	9
4. Davie Area	6	2	6	16	4	27
5. South West Broward	3	1	3	6	2	10
6. Fort Lauderdale	21	9	3	109	39	11
7. Lauderdale Lakes	12	7	4	41	24	16
8. Plantation Area	5	3	4	15	8	22
9. Sawgrass Mall	5	3	7	12	7	31
10.North East Broward	7	11	1	22	44	3
11.Cypress Creek Area	3	5	1	17	31	3
12.Coconut Creek Area	5	13	3	14	36	9
13.North West Broward	2	4	2	5	11	8
14.Intra-District	3	1	1	54	19	12
Total	**84**	**61**	**38**	**369**	**241**	**175**

The work trip attractions to Downtown Fort Lauderdale are shown in graphically in Exhibit 17. Significant number of trips is attracted to downtown from longer distances (#1 and #4). Exhibits 18 and 19 show the work trip attractions to Cypress Creek and Plantation Midtown respectively.

Exhibit 17: Trip attractions to Downtown Fort Lauderdale

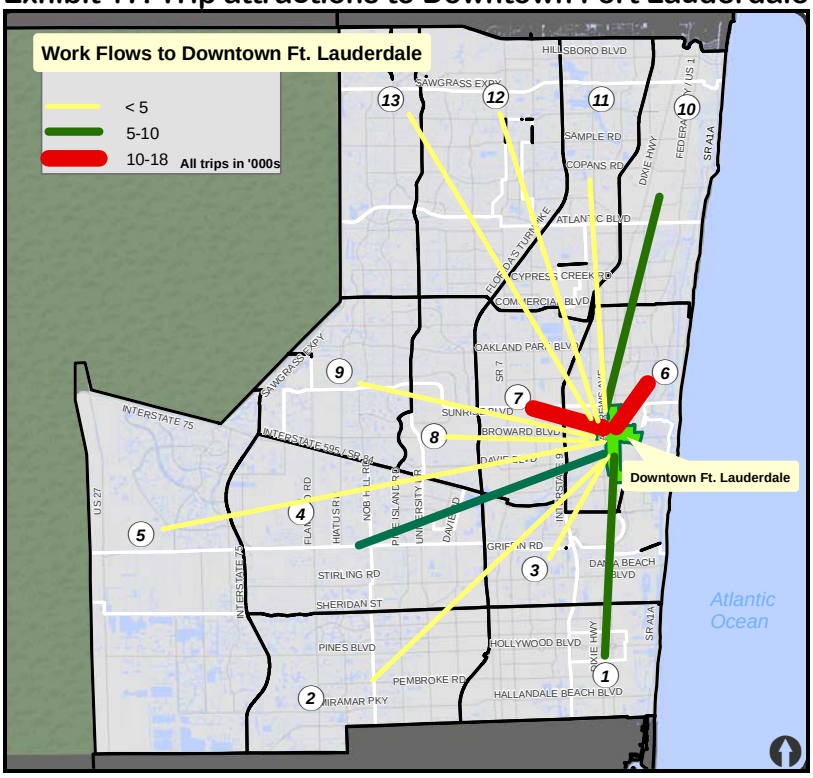


Exhibit 18: Trip attractions to Cypress Creek Area

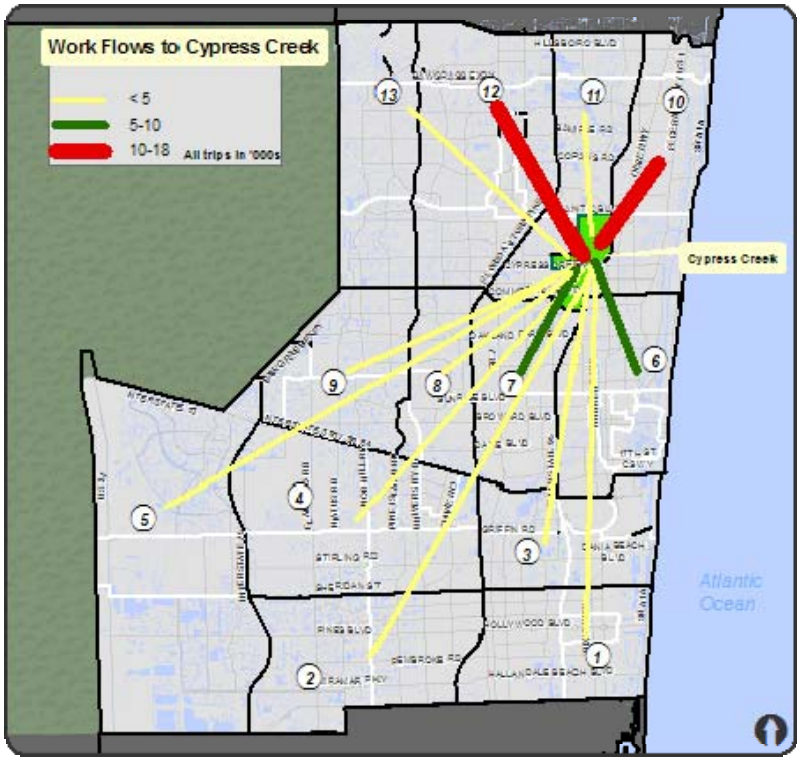


Exhibit 19: Trip attractions to Plantation Midtown

Exhibits 20 and 21 show the work trips and the total person trips in P-to-A format between the 13 districts shown in Exhibit 15. The intra-district trips in the tables are shown in yellow cells and the top 25 flows across the districts are shown in red cells. The highest work flow (both direction) of about 53,000 trips is between Coconut Creek superzone (#12) to Cypress Creek superzone (#11). The other dominant flow movements (over 40,000 trips) are between North West Broward (#13) to Coconut Creek superzone (#12), between Cypress Creek (#11) and North East Broward (#10) and between Lauderdale Lakes (#7) and Fort Lauderdale (#6). Apart from these east-west movements, the dominant movements from #6 to #11, from #6 to #10 and from #1 to #6 are likely to have impact on the mobility on I-95. Florida's Turnpike would be impacted by dominant movements such as from #8 to #12, from #7 to #11 and from #7 to #12. The movements on the west side (from #5 to #9 and #9 to 13) will impact I-75 and Sawgrass Expressway.

The work flow movements in Exhibit 20 are shown graphically in Exhibit 22. The work trips within the 13 districts are shown using circles filled in blue with magnitude of flows represented by the size of the circles. The magnitude of the work trips between these superzones are shown using varying color bandwidths. The bandwidths represent the bi-directional trips. The map clearly shows dominant east-west flow movements.

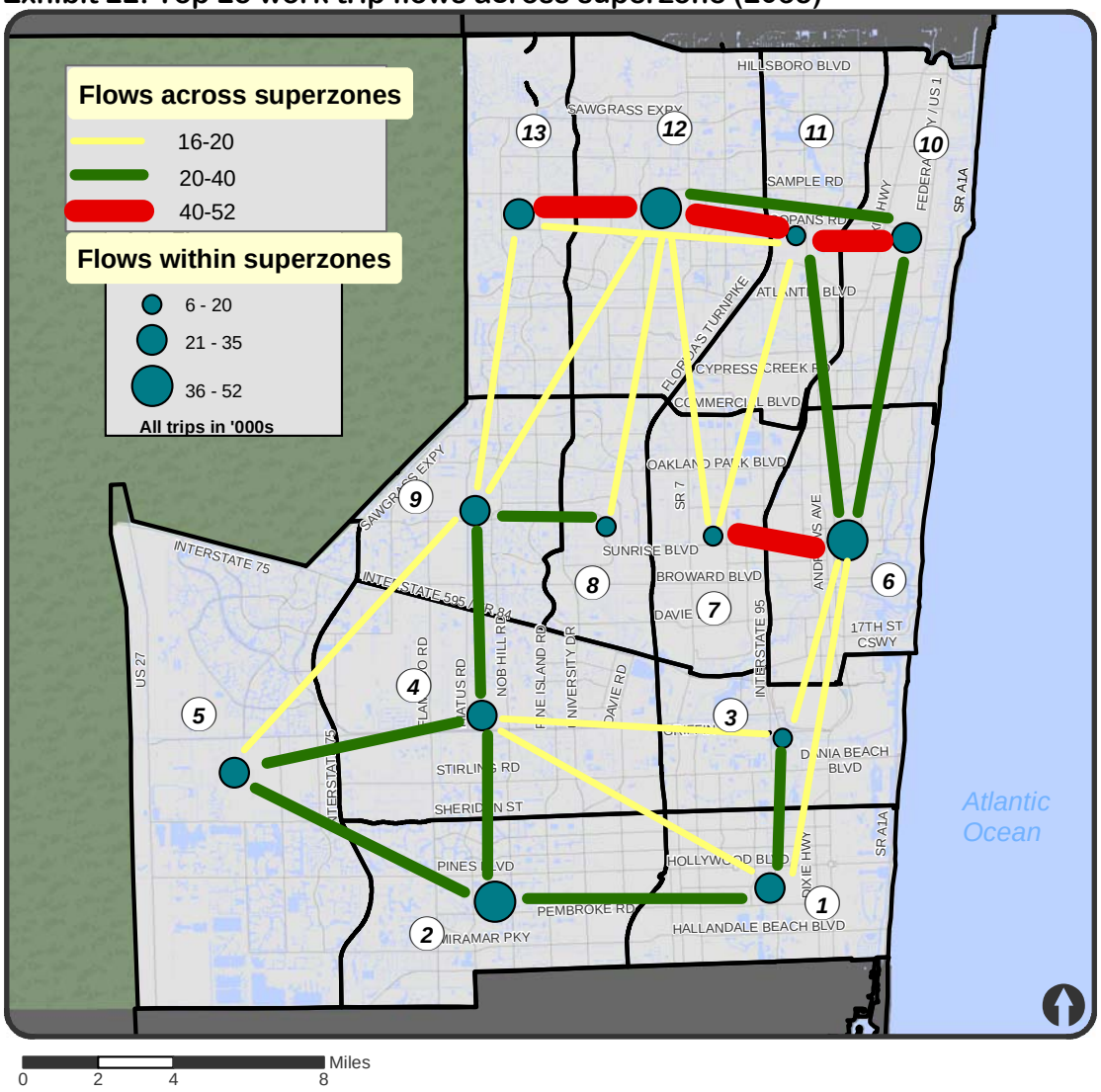
Exhibit 20: Work trip Flows (in '000s) Across Superzones (in P-to-A format)

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
1. Hollywood	30	11	14	6	2	11	3	2	2	2	4	1	1	**91**
2. Pembroke Pines Area	19	38	10	15	11	6	3	4	5	1	2	2	1	**117**
3. Dania Beach Area	8	3	9	4	1	7	2	1	1	1	2	1	0	**40**
4. Davie Area	11	18	14	21	11	12	5	9	11	2	4	3	3	**123**
5. SouthWest Broward	6	21	6	12	29	6	3	5	10	1	2	2	3	**106**
6. Ft. Lauderdale	6	2	10	4	1	52	10	4	3	13	19	4	2	**130**
7. Lauderdale Lakes	6	3	10	6	2	29	16	9	7	8	17	8	3	**122**
8. Plantation Area	3	3	5	6	2	11	8	9	9	3	7	5	4	**73**
9. Sawgrass Mall	4	7	7	11	7	12	8	14	22	3	8	8	9	**118**
10.NorthEast Broward	2	1	4	1	1	22	5	2	2	29	34	9	3	**114**
11. Cypress Creek Area	1	0	2	1	0	7	3	1	1	9	17	6	2	**49**
12. Coconut Creek Area	3	2	4	4	3	17	12	9	11	19	47	47	26	**203**
13. NorthWest Broward	1	2	2	3	3	6	4	6	11	7	17	23	25	**110**
Total	**101**	**110**	**94**	**92**	**72**	**197**	**82**	**78**	**94**	**99**	**179**	**117**	**82**	**1,396**

Exhibit 21: Total person trip flows (in '000s) across superzones (in P-to-A format)

From \ To	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
1. Hollywood	192	50	68	27	8	36	12	8	7	7	11	4	2	**431**
2. Pembroke Pines Area	55	249	27	66	48	13	7	12	15	3	5	4	4	**506**
3. Dania Beach Area	55	20	81	30	8	56	19	13	12	15	18	12	6	**344**
4. Davie Area	28	64	44	176	42	28	16	32	42	5	8	7	7	**500**
5. SouthWest Broward	12	72	12	46	234	12	6	13	32	2	4	5	7	**457**
6. Ft. Lauderdale	24	7	48	21	5	326	57	18	14	60	59	17	6	**660**
7. Lauderdale Lakes	18	9	34	32	6	95	133	42	25	23	48	28	11	**503**
8. Plantation Area	9	10	15	35	8	30	35	71	46	8	16	20	17	**319**
9. Sawgrass Mall	10	18	15	55	25	26	23	64	155	7	16	23	31	**468**
10.NorthEast Broward	7	2	11	7	2	80	18	6	5	202	107	34	9	**490**
11. Cypress Creek Area	6	2	8	5	2	39	23	7	7	66	117	49	13	**345**
12. Coconut Creek Area	8	7	11	21	8	41	40	29	35	53	126	299	105	**782**
13. NorthWest Broward	3	6	5	19	11	13	12	19	39	16	36	94	173	**445**
Total	**426**	**516**	**377**	**539**	**407**	**794**	**403**	**333**	**434**	**467**	**568**	**596**	**389**	**6,247**

Exhibit 22: Top 25 work trip flows across superzone (2035)



3.2 Trips to/from Palm Beach and Miami-Dade Counties

By 2035, there will be approximately 1.4 million intra-Broward work trips. This represents a 29% increase from 2005. Trips between Broward and adjacent counties are expected to grow 17% by 2035 to approximately 0.7 million trips. 77% of all work trips originating in Broward County are intra-county, 23% are destined to Palm Beach or Miami-Dade. Exhibit 23 shows county-county work trip flows.

Exhibit 23: Work Trips (in 000s) between the three counties

Year 2035	Palm Beach County	Broward County	Miami-Dade County	Total
Palm Beach County	1,097	*122*	6	**1,225**
Broward County	*120*	1,395	*300*	**1,815**
Miami-Dade County	5	*152*	2,098	**2,255**
Total	**1,222**	**1,669**	**2,403**	**5,294**

The total person trips within the county will approximately grow to 6.3 million by 2035, which is a 28% increase from 2005. Trips between Broward and adjacent counties are expected to grow 33% by 2035 to approximately 1.7 million trips. Eighty-two percent (82%) of all trips originating in Broward County are intra-county; 18% are destined to Palm Beach or Miami-Dade. Exhibit 24 shows county-county total person trip flows.

Exhibit 24: Total Trips (in 000s) between the three counties

Year 2035	Palm Beach County	Broward County	Miami-Dade County	Total
Palm Beach County	5,816	486	26	**6,328**
Broward County	358	6,247	1,003	**7,608**
Miami-Dade County	15	616	11,033	**11,664**
Total	**6,190**	**7,349**	**12,062**	**25,600**

The percent increase in trips from the neighboring counties is significant as far into the county as Sawgrass Mills and Plantation Midtown. This is significant since this will have impacts on the regional facilities. The bi-directional trip flows across the Broward County is expected to increase by about 450,000.

4.0 Deficiency Analysis

The long range plan tries to identify the projects that are needed beyond previously committed projects to increase the mobility and relieve congestion. Hence, in order to determine the deficiency in the network, an alternative with E+C highway and transit networks and 2035 socio-economic data was modeled. The results of this alternative run were used to identify the congestion level in the county if no new projects are added in the transportation system. A discussion of the travel demand model outputs for the deficiency analysis follows. Additional data and technical information for the deficiency "model run" is provided in the Appendix.

Exhibit 26 shows the level of service on the major roadways within the county using the E+C networks and 2035 socioeconomic network. The annual average daily two-way volumes LOS "D" capacities were used for the deficiency analysis. The LOS map is made using the adjusted future year volumes and are shown only on links where 2005 AADT data was available. Most of the freeway system within the county, Turnpike between Miami-Dade County Line and Atlantic Boulevard, I-595 between the I-95 and I-75 interchanges and Sawgrass Expressway between Sawgrass Mills Mall and Atlantic Boulevard interchanges are expected to operate at LOS "F". The entire stretch of I-95 within the county is LOS "F". Most of I-75 will operate at LOS "E" or LOS "D".

For facilities within Strategic Intermodal System, the generalized peak hour two-way LOS standards, established by FDOT, is used as guidance for the daily LOS. Exhibit 25compares these LOS standards against the LOS using the actual counts and using the E+C networks.

Exhibit 25: Comparison of LOS

SIS/FHIS Roadway	Roadway Segment	LOS Standard	2005 AADT LOS	Estimated E+C LOS
FL Turnpike & HEFT	Miami-Dade to Palm Beach County Line	D	D/E	**F**
I-95	Miami-Dade to Palm Beach County Line	E	F	**F**
I-595	I-75 to US 1	D	F	**F**
Sawgrass Expressway	I-75 to SW 10th Street	D	D	**D/E/F**
I-75	Miami-Dade County Line to west of US 27	D	D	**E/F**
I-75	West of US 27 to Collier County Line	B	A	**A**
US 27	Miami-Dade County Line to I-75	D	D	**D**
US 27	**I-75 to Palm Beach County Line**	**B**	**B**	**D**

The arterials operating at LOS "F" and LOS "E" are also shown in Exhibit 26. It tries to identify continuous stretch of roadways where the LOS is "F". Entire stretch of SR 7 within the county and most of University Drive, Nob Hill Road and Pines Boulevard will operate at LOS "F".

Exhibit 26: Level of service in 2035 using E+C networks

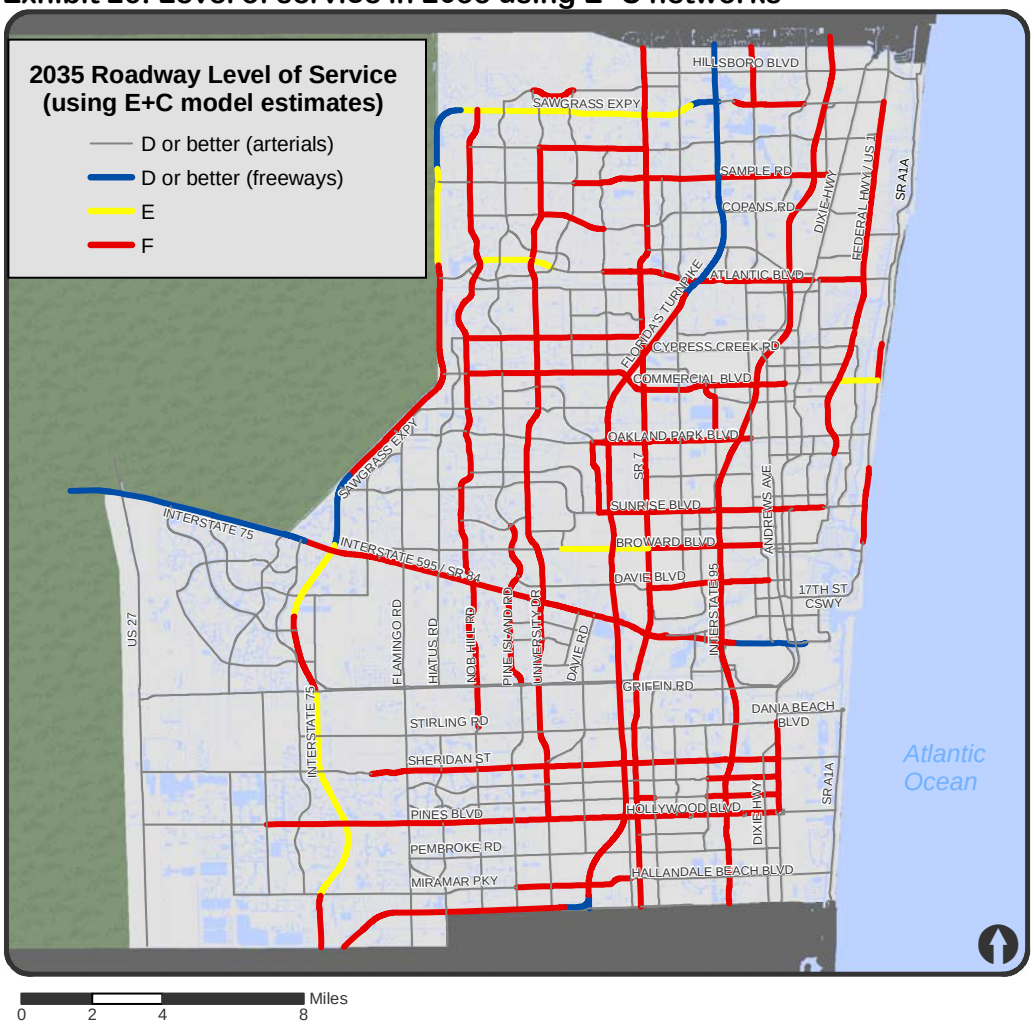


Exhibit 27 shows the roadway LOS using the 2005 AADT and the E+C networks. Almost 32% of the roadways will operate at LOS "F" compared to 17% in the base year. The shaded cells represent the percentage of the roadways which get worse or remain LOS "F" in E+C. Ten percent (10%) of the roadways operating at LOS "D" or better in the base year are expected to be operating at LOS "F" in E+C. This table includes both SIS facilities (freeways) and the arterials.

Exhibit 27: Comparison of AADT LOS to E+C LOS

E+C LOS / 2005 ADT	D	E	F	Total
D	59%	7%	10%	**76%**
E	1%	1%	5%	**7%**
F	1%	0%	17%	**17%**
Total	**60%**	**8%**	**32%**	**100%**

4.1 Impact of Congestion on Travel Time

Exhibits 28 and 29 show the travel time contours to downtown Fort Lauderdale in the base year (2005) and the future year (2035). The travel time contours show an increase in number of zones that take longer to reach downtown. The percent of people in Broward County taking more than 40 minutes to reach downtown Fort Lauderdale will increase from about 4% in the base year to about 15% in the future year.

Exhibit 28: Travel time (2005) contours to Downtown Fort Lauderdale

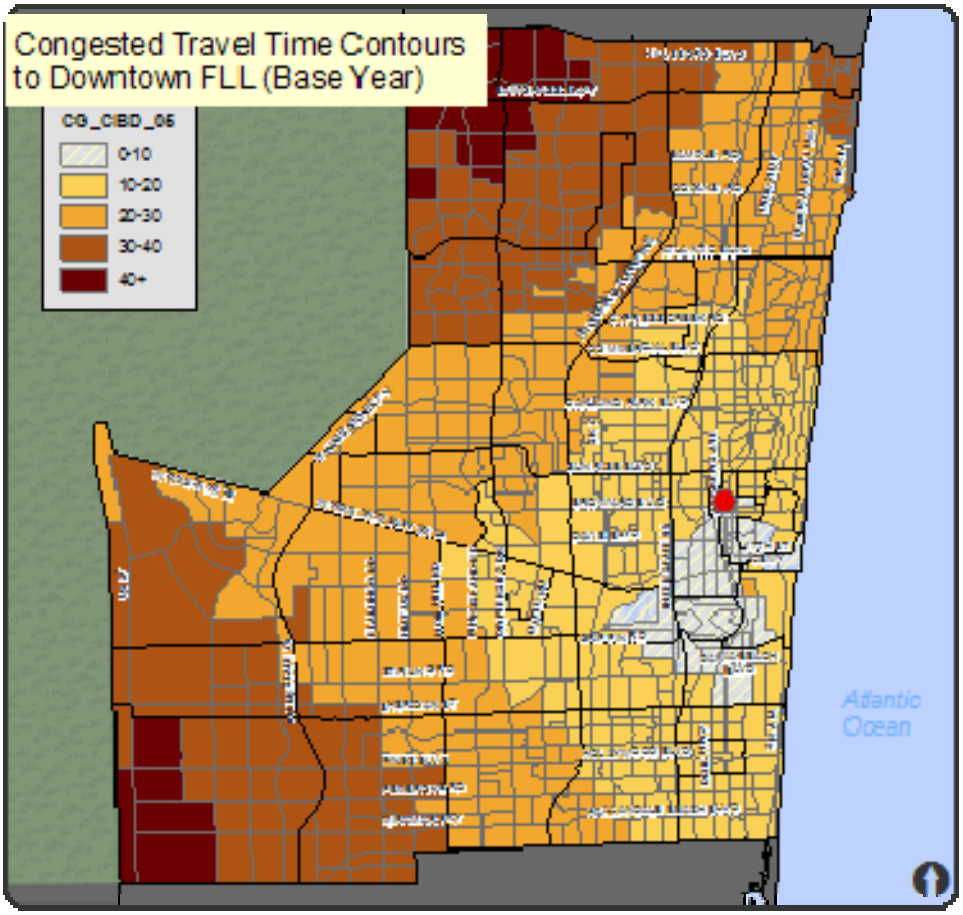
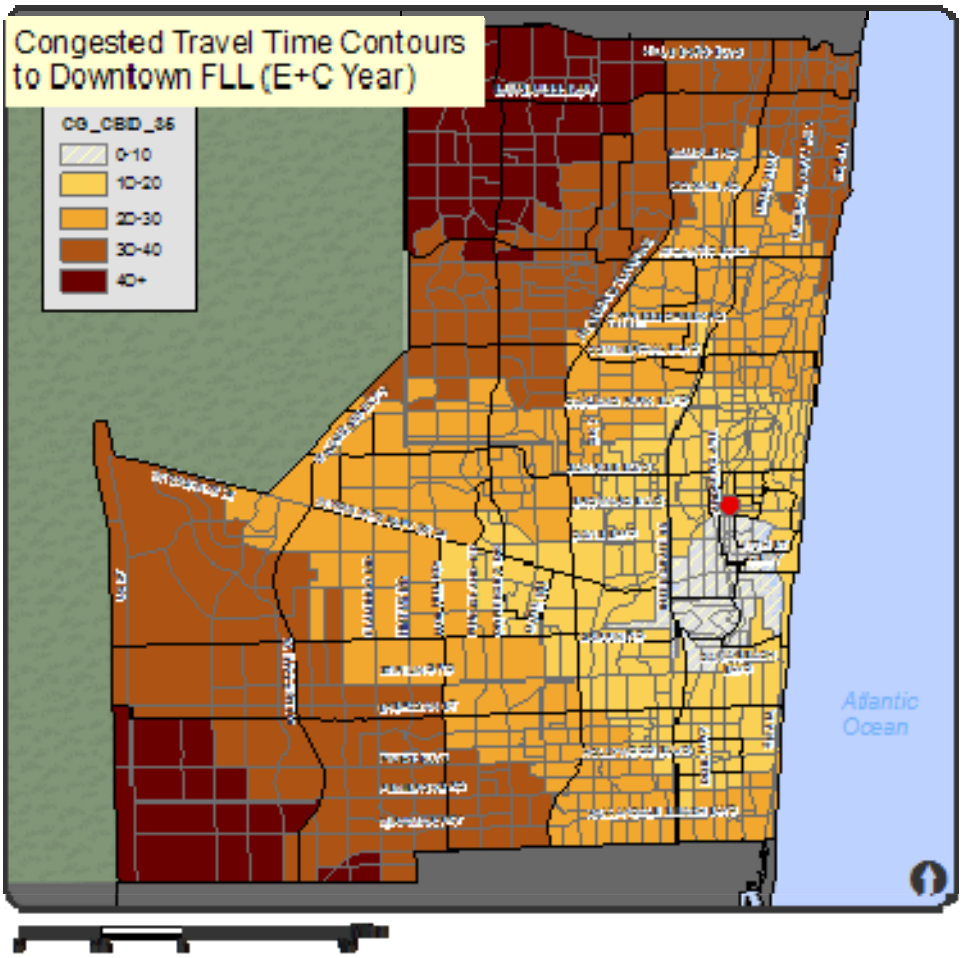


Exhibit 29: Travel time (2035) contours to Downtown Fort Lauderdale



4.2 Transit Level of Service (LOS)

Exhibit 30 shows the mode splits at major attractions. The mode split of work trips to downtown Fort Lauderdale is 6.4% in the base year and 5.8% in the future year. The mode split shows a decrease in most of the attraction superzones. The decrease in the mode split is due to the decline in transit service (3.3% less vehicle-hours of transit service in E+C reflecting the recent budget cuts as shown in Exhibit 9) combined with increase in the total person trips (28%, as explained using Exhibit 24).

Exhibit 30: Mode splits at major attractions

Superzones	Home-based work trips (HBW)		Home-based trips (HBW+HBO)	
	Base	E+C	Base	E+C
Sawgrass Mills Mall	3.0	2.5	1.7	**1.4**
Plantation Midtown	3.9	3.4	2.3	**2.0**
South Florida Education Center	2.6	2.3	1.2	**1.0**
Fort Lauderdale-Hollywood International Airport	3.3	3.1	2.1	**1.9**
Port Everglades	1.3	2.2	0.7	**1.3**
Fort Lauderdale Downtown	6.4	5.8	4.2	**3.7**
Cypress Creek	3.5	3.2	2.3	**2.1**
SR 7 at Sample Road	4.1	3.5	2.2	**2.0**
Hollywood Downtown	4.6	4.3	2.8	**2.4**
Fort Lauderdale Beach	**5.0**	**4.5**	**2.9**	**2.5**

4.3 Demand Parameters

Broward County's VMT and VHT will increase 31% and 45% respectively. More increase in VHT compared to VMT means the overall speeds would decrease. The congested speeds decrease by about 6%. VMT per household increases by 9% whereas VHT per household increases by 22%. Exhibit 31 tabulates the highway demand parameters.

Exhibit 31: Highway demand parameters

Parameters	Base Year	E+C	Percent Change
Vehicle-Miles Traveled (VMT in millions)	37.37	48.95	31%
Vehicle-Hours Traveled (VHT in millions)	1.00	1.45	45%
Vehicle-Hours of Delay (in millions)	0.155	0.353	128%
Free flow speed (in mph – weighted by VMT)	47.09	47.77	1%
Congested speed (in mph – weighted by VMT)	42.05	39.42	-6%
LOS D or better	76%	60%	-21%
LOS E	7%	8%	14%
LOS F	17%	32%	88%
VMT per household	53.78	58.36	9%
VMT per person	21.37	21.74	2%
VHT per household	1.42	1.73	22%
VHT per person	0.56	0.64	14%

Exhibit 32 compares the overall transit share, boarding, passenger miles and passenger hours for the base year and the E+C transit network.

Exhibit 32: Transit demand parameters

Parameter	Base year	E+C	% Change
Mode split	1.85%	1.60%	-13.5%
BCT Boardings Total	145,160	159,124	9.6%
Local	143,000	151,344	5.8%
Express	156	-	-
Limited stop	1,213	7,780	541.3%
New mode	-	-	-
Tri-Rail (within Broward County)	4,923	5,982	21.5%
Passenger Miles	579,131	704,183	21.6%
Passenger Hours	3,582	3,405	-4.9%

The deficiency analysis and future travel demand in Broward County and between adjacent counties provided the technical base for assessing the highway and transit needs within Broward County. The deficiency analysis helped identify geographic areas and facilities that would be constrained if only transportation improvements programmed in the Broward MPO's TIP (FY 2009/10 – FY 2013/14) were implemented. The future demand analysis aided in understanding the travel patterns and identifying corridors experiencing high travel demand in the long-term in Broward County. The 2035 LRTP focused on meeting future demand and address transportation deficiencies through transit (instead of highway) improvements. Section 5 discusses the processes used for identifying mode specific projects.

5.0 Needs Plan Project Identification

Detailed discussion of mode specific evaluation criteria and additional technical analysis for transit projects follows. The Appendix provides a Needs Plan project list for each modal category.

5.1 Transit

A framework was established to identify candidate transit corridors for consideration in meeting existing deficiencies of the transit system and future demand. The framework that was followed to screen candidate transit projects is outlined below.

- Deficiency analysis-Identify geographic areas that exhibit a decrease in mode split;
- Identify high quality transit corridors experiencing high future travel movements within Broward County and between adjacent counties, and define Premium Transit projects to meet this demand;
- Identify the highest performing Broward County Transit (BCT) routes, both existing and future (2018) per BCT's Transit Development Plan (TDP), and define Premium Transit projects to meet this demand;
- Provide direct service connections or "one-seat" rides to major employment or activity centers;
- Provide transit service in areas designated by Broward County in the Comprehensive Land Use Plan as Transit Oriented Corridor (TOC), Transit Oriented District (TOD), Regional Activity Center (RAC), or Local Activity Center (LAC); and
- Increase transit service for the transit dependent population.

The following projects undergoing transportation planning studies were included in the Needs Plan without further review. These projects are being fully evaluated in separate corridor studies now underway and their respective merits will be determined based on the outcome of the National Environmental Policy Act (NEPA) process.

- Central Broward East-West Transit Analysis
- South Florida East Coast Corridor (FEC)
- People Mover–SunPort (Airport/Seaport)
- City of Fort Lauderdale Downtown Circulator (The Wave)

Candidate corridors were assigned service frequencies which classify the level of Premium Transit services proposed. They were modeled using the Southeast Florida Regional Planning Model, version 6.5, to illustrate the effect of the transit service on mode split, or public transit use, to determine their effectiveness in meeting future travel demand. Existing and projected ridership to 2018 from the Broward County Transit (BCT) Transit

Development Plan (TDP), future projected travel demand from 2035, and an operational analysis of synergies between candidate corridors and transit operations were used to determine optimum frequencies in an iterative process. Transit improvements were then rated as Premium High Capacity or Premium Rapid Bus for the cost feasible assessment.

5.2 Mobility Hubs

Mobility Hubs have been identified as the places where a majority of people would interact with the proposed multi-modal transportation system. A Mobility Hub is defined as a transit access point with frequent transit service, high development potential, and a critical point for trip generation or transfers within the transit system. They are places of connection for walking, biking, park-n-ride, transit, and carpooling. Mobility Hubs can also provide direct connections to concentrated activities such as housing, commercial, office, and entertainment. This concept also presents an incremental method of improving both the transportation and land use components within the communities in a management and focused way. Three types of Mobility Hubs were identified for the 2035 LRTP based on the criteria shown in Exhibit 33. The features associated with each hub type are shown in Exhibit 34.

Exhibit 33: Characteristics of Mobility Hubs

Characteristic	Gateway	Anchor	Community
Daily boardings/ alightings	High > 2,200	Moderate to high 1,500 to 2,200	< 1,500
Connectivity	Two or more planned high capacity transit lines (BRT/LRT)	One planned high capacity transit line (BRT/LRT)	Served by Rapid Bus
Development	High density mixed use developments; transit oriented corridors or transit oriented developments as defined in Broward County Future Land Use Plan	Near major institutions, employment centers, town centers and regional shopping centers (local or regional activity centers)	Attract more local trips than regional trips.

Exhibit 34: Mobility Hub Features

Feature	Gateway	Anchor	Community
Waiting Area*	Building*	Shelter*	Bus Stop
Community Plaza with Landscape/Public Art	Yes	No	No
Carshare Facility	Yes	No	No
Restrooms	Yes	No	No
Ticket Vending Machines	Yes	No	No
Wi-Fi Facility	Yes	No	No
ITS Equipment for Downtown Central Facility	Yes	No	No
Bus Pull-in Bays*	Yes	Yes	No
Taxi Bays and Kiss-n-ride Pull-in	Yes	Yes	No
Surface Parking	Yes	Yes	No
Bikeshare Facility	Yes	Yes	No
Closed Circuit TV Cameras	4	2	1
Real-time Passenger Information	Yes	Yes	Yes
Transit Maps and Schedules	Yes	Yes	Yes
Emergency Phone Service	Yes	Yes	Yes
Allowance for drainage, utilities, landscaping	Yes	Yes	Yes

Cost for platforms, canopy, ticket vending machines, and bus bays are included in the cost for transit corridors.

5.3 Bikeways/Pedestrian Walkways/Greenways

All projects identified through GIS analysis of available Broward County sidewalk/pedestrian and bicycle facilities inventory data were included in the Needs Plan. Also, greenways identified in the Broward County Greenways Master Plan were included in the Needs Plan. The Greenways Master Plan was approved by the Broward County Board of County Commissioners in 2002.

5.4 Roadway

Identification of roadway projects focused on missing links critical to local and regional connectivity, cost effective congestion mitigation strategies, improvements that support transit, bicycle and/or pedestrian enhancements, and safety improvements. Some of the guidelines for roadway project selection include the following:

- Roadways expanded beyond six lanes for major arterials were only considered for exclusive transit lanes.
- Priority for new roadways that are essential to the development of identified RACs, LACs, TODs, TOCs, and newly designated Mobility Hubs.
- Cost effective congestion mitigation strategies for major traffic back-ups, bottlenecks and corridors will include Intelligent Transportation Systems, reversible lanes, and managed lanes.
- Roadway improvements to increase emergency evacuation capacity and response times on designated hurricane evacuation routes.

5.5 Freight/Seaport/Airport

Funded projects programmed in the Transportation Improvement Program (TIP) were eliminated from the needs list. Those projects that have not yet been funded and were identified in previous studies are included in the Needs Plan. Studies listed below refer to priority projects to address system deficiencies.

- *Urban Freight/Intermodal Mobility Study* (Broward MPO, 2007/2008)
- *SIS Connector Study* (FDOT, District Four, Feb. 2007)
- *Port Everglades Unfunded Projects List–5-Year Capital Improvement Plan,* June 2009
- *Atlantic Commerce Corridor Study,* November 2003

In addition, projects were selected from prior years' LRTPs and the ongoing *Regional Freight Mobility Study* (FDOT, District Four) in progress at the publication time for the LRTP. Inclusion or deferral of projects was determined in consultation with the project sponsors. Any intermodal project that potentially improves passenger and/or the movement of goods within a facility or transportation system was added to the freight needs list. Most of the projects that did not make it to the needs lists are either capital maintenance projects or expansion projects with indirect affects. Other projects that address airport, seaport and rail needs will be addressed through the South Florida Regional LRTP rather than the Broward MPO 2035 LRTP.

US 27 Rail Corridor Study

The development of a new rail corridor along US 27 has the potential to significantly affect freight and passenger transportation in South Florida. The corridor could attract freight traffic from existing lines, creating new opportunities for passenger service along the eastern routes. It also has the potential to support industrial development in the Glades region, particularly the proposed Integrated Logistics Center.

5.6 Intelligent Transportation Systems

Congestion mitigation projects including Automated Transportation Management Systems (ATMS) to coordinate and synchronize traffic signals at intersections were identified through input received from the Broward County Traffic Engineering Division.

Open Road Tolling (ORT) was defined in the Needs Plan for Florida's Turnpike and the Sawgrass Expressway to allow free flow traffic to register tolls from transponders. License plate readers will also be developed to phase out and eliminate the toll booths. The automation of the revenue collection process will increase throughput and safety.

In addition, Intelligent Transportation Systems (ITS) projects were identified in a generic fashion due to lack of specific design application for a discrete list of projects. The types of projects identified for inclusion in the needs list along with their technology and applications in Broward County are listed below.

- Ramp Signals to manage traffic flow along I-95/595 and reduce travel times and congestion and improve safety.
- Arterial Dynamic Message Screens to alert the traveling public of congestion relative to accidents or emergency situations and anticipated travel times upon the approach to major interchanges.
- Travel Time Systems to provide accurate real-time data. Collection of data can be accomplished through either Automatic Vehicle Locators or license plate readers located along major arterial intersections and freeway interchanges. Next bus and next train technologies will also be implemented at select Mobility Hubs.
- Roadway Weather Information System includes remote weather stations at strategic locations such as bridges or roadways with high traffic volumes. Collection and dissemination from the Traffic Management Center will improve safety and support emergency evacuation plans.

5.7 Waterborne

While Broward County is bordered by the Atlantic Ocean, and a number of canals flow inland, the transportation deficiencies fall outside of the geographic coverage of those waterborne arteries. Water taxis serve an important role in providing circulator services in downtown Fort Lauderdale and provide a unique feature for tourists; however, waterborne transportation routes fall short of providing travel time savings to commuters. Capital-intensive improvements are required to support waterborne transportation, including docks, slip ramps, storage areas for vessels, and parking facilities to support direct access to docks. Furthermore, for waterborne transportation to serve as a well-utilized and cost-effective travel mode, adjacent high density employment areas (similar to New York, Boston, and Baltimore) are necessary to ensure sufficient demand. As such, waterborne projects were not included in the 2035 LRTP.

6.0 Capital and Operating & Maintenance Cost

Once projects were identified for the Needs Plan, their capital costs were estimated. Some of the assumptions used in development of capital program costing were developed specific to a given mode and in some cases taken from estimates prepared by others in separate planning processes. The aggregate intermodal cost for the Needs Plan with Rapid Bus projects totals $9 billion. The cost with High Capacity Transit was expressed as two scenarios, BRT or LRT, totaling $14 or $20 billion in 2009 dollars respectively, as tabulated in Exhibit 35. The Appendix provides a detailed capital and O&M cost breakdown for each Needs Plan element for the Bus Rapid, Bus Rapid Transit, and Light Rail Transit scenarios.

Exhibit 35: Needs Plan Cost Summary (By Scenario)

Cost Category	Capital Cost ($ millions 2009)	Annual O&M Cost ($ millions 2009)
Broward County Transit	$230	$185
Rapid Bus Scenario	$249	$72
Bus Rapid Transit Scenario	$4,502	$135
Light Rail Transit Scenario	$10,772	$147
Mobility Hubs	$220	$0.12
Bicycle/Pedestrian	$226	n/a
Greenways	$309	n/a
Roadways	$4,563	$125
Intelligent Transportation Systems	$182	n/a
Freight/Seaport/Airport	$477	n/a
Illustrative (On-going Transit Projects)[1]	$3,016	$34
Total Needs Plan Range:		
Rapid Bus Scenario	$9,472	$416
Bus Rapid Transit Scenario	$13,725	$479
Light Rail Transit Scenario	$19,995	$491

[1]Includes transit projects with corridor planning and environmental studies underway including Central Broward East-West Transit Analysis, South Florida East Coast Corridor Study, SunPort (Airport/Seaport People Mover), and the Wave (City of Fort Lauderdale Downtown Circulator).

Cost for three different transit technologies were calculated to provide a full spectrum of cost implications of selecting a particular transit technology. In addition, having an understanding of the cost variation between technologies provided flexibility in meeting the deficiency and future travel demand in Broward County in the most cost effective manner with the available financial resources. For instance, a corridor with low ridership in a non-transit friendly area could be designated as a Rapid Bus corridor in the cost feasible plan instead of BRT or LRT. The excess monies could be reallocated to another corridor to upgrade it. In other words different transit technology cost would allow for conducting a sensitivity analysis at the time of formulating the cost feasible plan.

Operating and maintenance (O&M) costs are not identified for some fixed facilities in the plan; however, costs may be involved in their ongoing maintenance. These costs are expected to be covered by other revenue sources beyond the scope of the LRTP. A description of the capital and O&M cost for each mode/category follows. Capital cost model used in estimating project cost for all modes/categories are included in the Appendix.

6.1 Broward County Transit

The FY2018 Transit Development Plan (TDP) was the basis for cost projections in the 2035 LRTP. Capital maintenance, as well as operating and maintenance cost requirements for the TDP levels of local bus and Breeze services were also included in the Needs Plan. The TDP includes six "Strategic Opportunistic Service Initiatives" that overlap Premium Transit Corridors. No additional local transit service was included beyond the ten-year plan as they are served with Premium Transit services.

6.2 Premium Transit

Cost was developed for each type of transit element based on cost estimates from other high capacity fixed guideway transit facilities in the United States. A cost scenario was developed for each technology–Light Rail Transit, Bus Rapid Transit, and Premium Rapid Bus for 347 miles, including 109 miles of Premium Rapid Bus to provide connectivity between these modes. Selection of Premium Rapid Bus projects were made for corridors that did not merit premium high capacity transit modes (LRT or BRT) and included in each of the three scenarios. The range of cost levels by technology scenario are shown in Exhibit 36.

Exhibit 36: Needs Plan Cost by Technology (Premium Transit)

Transit Technology	Capital Cost ($ millions 2009)	Average Cost ($ millions 2009) (to construct/mile)	Annual O&M ($ millions 2009)
LRT	$10,772	$45	$185
BRT	$4,502	$19	$135
Rapid Bus	$249	$0.8	$72

Cost per mile is in the mid-range for current cost estimates in the U.S. Aggregate capital cost estimates above exclude right-of-way acquisition cost that could be required due to the lack of definition of alignments and extent of the property needed. It was expected that because the fixed guideways would be incorporated into existing public right-of-way, property takes would primarily occur at station locations and places where the guideway transitions require a wider radius than can be accommodated in existing intersections. The projects included in these scenarios would not likely include extensive grade separation or bridges. At this conceptual level of project definition, a 30% design contingency (percentage of professional services and construction) and a 10% contingency on construction cost were applied. Costs were adjusted to 2009 present day dollars, using an inflation factor of 3%.

6.3 Mobility Hubs

Mobility Hubs are locations where people meet transit and are classified by the expected transit use and surrounding land use. The cost for each of the Gateway, Anchor, and Community hubs were estimated based on the footprint of the structures, transit amenities, intermodal facilities, the deployment of intelligent transportation systems, and security programmed for each. Right-of-way cost is not included in capital cost estimates. Exhibit 37 shows the types of improvements anticipated for each type of hub.

Exhibit 37: Mobility Hub Features

Feature	Gateway	Anchor	Community
Waiting Area*	Building*	Shelter*	Bus Stop
Community Plaza with Landscape/Public Art	Yes	No	No
Carshare Facility	Yes	No	No
Restrooms	Yes	No	No
Ticket Vending Machines	Yes	No	No
Wi-Fi Facility	Yes	No	No
ITS Equipment for Downtown Central Facility	Yes	No	No
Bus Pull-in Bays*	Yes	Yes	No
Taxi Bays and Kiss-n-ride Pull-in	Yes	Yes	No
Surface Parking	Yes	Yes	No
Bikeshare Facility	Yes	Yes	No
Closed Circuit TV Cameras	4	2	1
Real-time Passenger Information	Yes	Yes	Yes
Transit Maps and Schedules	Yes	Yes	Yes
Emergency Phone Service	Yes	Yes	Yes
Allowance for drainage, utilities, landscaping	Yes	Yes	Yes

*Cost for platforms, canopy, ticket vending machines, and bus bays are included in the cost for transit corridors.

6.4 Bikeways/Pedestrian Walkways/Greenways

Bicycle projects were based on an average of the cost for two types of facilities, striped bike lanes on existing pavement and off-road facilities. The average cost for each was derived from FDOT's average unit cost for Broward County. An average cost of $232,000 per mile, or $44/linear foot, was applied to the total mileage. The mix of on-road and off-road facilities will be determined during design. Pedestrian sidewalks were estimated based on an average per mile cost of $358,000 or $68/linear foot. These costs were also developed using the FDOT LRE System. An average cost of $1 million per mile for greenway projects was provided by the Broward MPO.

6.5 Roadway

Roadway cost estimates were developed using FDOT's Long Range Estimation (LRE) System (July 2009). Right-of-way cost is included based on input from Broward MPO. Project contingency of 25% is applied to construction cost; design and construction engineering inspections (CEI) are estimated at 15% of total project cost with contingency for each.

6.6 Freight/Seaport/Airport

Improvements for freight includes costs for seaport and airport projects in addition to freight rail movement of goods and services as provided by studies noted in Section 5.5.

6.7 Intelligent Transportation Systems

Cost for Automated Traffic Management System projects were provided by Broward County Traffic Engineering Division as documented in the FY2010-11 Unfunded Multimodal Surface Transportation Priorities. The Open Road Tolling is based on a per mile cost of $1.5 million. ITS projects were estimated individually for each type of technology and the extent of its application in Broward County.

6.8 Safety and Security

Cost for safety and security features are included in individual project cost estimation for each mode.

7.0 Conclusion

The aggregate intermodal cost for the Needs Plan with Rapid Bus projects totals $9 billion. The total Needs Plan cost with High Capacity Transit under the BRT and LRT scenarios is $14 or $20 billion in 2009 dollars respectively. The Needs Plan performance results are included in the Appendix. The next step in the 2035 LRTP development involves evaluating the Needs Plan projects and forecasting revenues available for funding these projects. The project evaluation will help prioritize projects based on their technical merit.

Appendix

List of Exhibits

Appendix

Exhibit A-1: 2035 Transit Needs

11/24/2009

Corridor	Transit Mode	2035 Needs Assessment (Peak/Off Peak Headway in minutes)	Transit Improvements	Comments or Project Rationale
Supporting Facilities				
Third Operations/Maintenance Facility	System-wide	-NA-	1. New bus maintenance facility	Support in TDP
Intermodal Centers/Hubs	System-wide	-NA-	1. New hubs	Support in TDP
Park-n-Ride Facilities	System-wide	-NA-	1. New park-n-ride facilities	Support in TDP
Bus Shelters/Bus Bays/Bus Stop Upgrades	System-wide	-NA-	1. Improve bus stop infrastructure for existing and new bus service	Support in TDP
Broward County Transit Administration Building	System-wide	-NA-	-NA-	Requested by Broward County Transit
Broward County Intermodal Center	@ Fort Lauderdale-Hollywood International Airport	-NA-	1. New intermodal center	Fort Lauderdale Airport Master Plan, Ongoing study
Premium Transit Service*				
City of Ft. Lauderdale Downtown Circulator - The Wave (Andrews Ave, SE 7th St, SE3rd Ave, SE6th St, SE 2nd St, Brickell Ave, NE 4th St, NE 2nd Ave)	Circulator Service (Premium High Capacity)	7.5/10 (Str)	1. New street car service, connects to FEC station in downtown Ft. Lauderdale	Downtown Development Authority (DDA) Study (Downtown Transit Corridor Program)
Central Broward Transit [136th Ave/Canal ROW/I-595/SR-7/SFEC/Griffin Rd/US 1/30th St/Andrews Ave/BCT Central Terminal]	Premium High Capacity	5/7.5	1. New service, Connection to both Tri-Rail and FEC station	Central Broward Transit Corridor AA/DEIS (Ongoing study), Strategic Regional Transit Plan
People Mover - SunPort (Airport/Sea port) (Terminal Dr., Eller Dr Ramp, Eller Dr., SE 32nd St, Eisenhower Blvd.)	Automated People Mover (APM) (Premium High Capacity)	-na-	1. New people mover, connects to FEC at Broward County Intermodal Center	Fort Lauderdale Airport Master Plan, Ongoing study
South Florida East Coast Corridor (FEC)	Commuter Rail	15/30 (CRT)	1. New commuter rail service	SFECCTA Corridor Study, Strategic Regional Transit Plan, Ongoing study
Tri-Rail	Commuter Rail	15/30 (CRT)	1. Improved headway	Strategic Regional Transit Plan

Exhibit A-1: 2035 Transit Needs

11/24/2009

Corridor	Transit Mode	2035 Needs Assessment (Peak/Off Peak Headway in minutes)	Transit Improvements	Comments or Project Rationale
FEC/CSX Connector	Commuter Rail	-na-	1. Connects Tri-Rail commuter service to proposed FEC commuter service	Requested by South Florida Regional Transportation Authority (SFRTA)
Dixie Hwy (Deerfield Beach Station to BCT Central Terminal)	Premium High Capacity	5/7.5	1. New service	Future travel demand in the corridor.
A1A	Premium High Capacity	5/7.5	1. New service	Top 50% of best performing BCT routes.
Andrews Ave	Premium High Capacity	5/7.5	1. New service	Future travel demand
US 1	Premium High Capacity	5/7.5	1. New service 2. Convert Breeze to premium transit service	Top 50% of best performing BCT routes, Route 1 ranked number 3 in forecasted ridership per TDP
I-75	Premium High Capacity	5/7.5	1. New service	Future travel demand in the corridor
Sample Rd	Premium High Capacity	5/7.5	1. New limited stop service mimicking existing local service 2. Convert limited stop to premium transit service, 3. Connection to both Tri-Rail and FEC station	New Service, Support in Strategic Regional Transit Plan (SRTP), Top 50% of best performing BCT routes.
Cypress Creek Rd	Premium High Capacity	5/7.5	2. Connection to both Tri-Rail and FEC station	Future travel demand in the corridor, Connects large employment centers.
Pines Blvd /Hollywood Blvd	7 Breeze /Premium High Capacity	5/7.5	1. Improved Headway, Connection to both Tri-Rail and FEC station	Support in TDP, Support in Strategic Regional Transit Plan (SRTP), Top 50% of best performing BCT routes.
Miramar Pkwy /Hallandale Beach Blvd	Premium High Capacity	5/7.5	1. New service, Connection to FEC station	Provide east-west connection in the southern part of Broward County.
Broward Blvd (SR 7 to Downtown Ft. Lauderdale)	Premium High Capacity	5/7.5	1. New Service, Connection to both Tri-Rail and FEC station	SIS connector. Requested by City of Ft. Lauderdale through the steering committee. TCC concurred.
SR-7	Premium High Capacity	5/7.5	1. Improved Headway 2. From FAU to Golden Glades 3. Convert 441 Breeze to premium transit service	Support in Strategic Regional Transit Plan (SRTP), Top 50% of best performing BCT routes, ranked number 1 in forecasted ridership per TDP, Support in TDP.

Exhibit A-1: 2035 Transit Needs

11/24/2009

Corridor	Transit Mode	2035 Needs Assessment (Peak/Off Peak Headway in minutes)	Transit Improvements	Comments or Project Rationale
University Dr	Premium High Capacity	5/7.5	1. Improved Headway 2. Extend to the Holmberg Rd 3. Convert 2 Breeze to premium transit service	Support in Strategic Regional Transit Plan (SRTP), Top 50% of best performing BCT routes, ranked number 5 in forecasted ridership per TDP, Support in TDP.
Central Broward Loop (SR 7/Broward Blvd/Griffin Rd/US 1/30th St)	Premium High Capacity	5/7.5	1. New service, Improved Headway, Transit Signal Priority, articulated transit vehicle, Real time information, Connection to both Tri-Rail and FEC station	Circulator and connector for various transit modes
Oakland Park Blvd	Premium High Capacity	5/7.5	1. New service, Potential connection to both Tri-Rail and FEC station	New Service; Support in TDP, Support in Strategic Regional Transit Plan (SRTP), Top 50% of best performing BCT routes, ranked number 4 in forecasted ridership per TDP.
Sunrise Blvd	Premium High Capacity	5/7.5	1. New service 2. Potential connection to both Tri-Rail and FEC station	New Service; Support in TDP, Top 50% of best performing BCT routes, ranked number 2 in forecasted ridership per TDP
Nob Hill Rd	Premium Rapid Bus	10/15	1. Improved Headway, Transit Signal Priority, articulated transit vehicle, Real time information	Future travel demand in the corridor
Griffin Rd	Premium Rapid Bus	10/15	1. Improved Headway, Transit Signal Priority, articulated transit vehicle, Real time information, connects Tri-Rail and FEC stations	Future travel demand in the corridor
Powerline Rd	14 (Premium Rapid Bus)	10/15	1. Improved Headway, Transit Signal Priority, articulated transit vehicle, Real time information	Top 50% of best performing BCT routes

Exhibit A-1: 2035 Transit Needs

11/24/2009

Corridor	Transit Mode	2035 Needs Assessment (Peak/Off Peak Headway in minutes)	Transit Improvements	Comments or Project Rationale
Atlantic Blvd	42 (Premium Rapid Bus)	10/15	1. Improved Headway, Transit Signal Priority, articulated transit vehicle, Real time information, Connection to FEC station	Top 50% of best performing BCT routes
Commercial Blvd	55 (Premium Rapid Bus)	10/15	1. Improved Headway, Transit Signal Priority, articulated transit vehicle, Real time information	Future travel demand in the corridor
Hollywood Beach - FLL Airport (SR A1A/Dania Beach Blvd/US 1)	Premium Rapid Bus	10/15	1. New service, Improved Headway, Transit Signal Priority, articulated transit vehicle, Real time information, Connection to both Tri-Rail and FEC station	Future travel demand in the corridor
SR 84	Premium Rapid Bus	10/15	1. New Service (similar to the I-595 Express BRT route), Improved Headway, Transit Signal Priority, articulated transit vehicle, Real time information, Connection to FEC station	Future travel demand in the corridor
Oakland Park Blvd/NW 31st Ave/Sistrunk Blvd./Andrews Ave/17th St. Causeway/A1A	40 & 11 (Premium Rapid Bus)	10/15	1. Improved Headway, Transit Signal Priority, articulated transit vehicle, Real time information	Future travel demand in the corridor
Broward Blvd	Premium Rapid Bus	10/15	1. Improved Headway, Transit Signal Priority, articulated transit vehicle, Real time information 2. New limited stop service mimicking existing local service 3. Connection to both Tri-Rail and FEC station	New Service; Support in TDP
New LOCAL BUS Service				
Flamingo Rd	New LB Service	20/30	1. New local bus service (from Sawgrass Mall to Miramar Transit Center)	New Service; Support in TDP
Nob Hill Rd	New LB Service	15/20	1. New local bus service (from Heron Bay to West Terminal)	New Service; Support in TDP

Exhibit A-1: 2035 Transit Needs

11/24/2009

Corridor	Transit Mode	2035 Needs Assessment (Peak/Off Peak Headway in minutes)	Transit Improvements	Comments or Project Rationale
Palm Ave	New LB Service	15/20	1. New local bus service (from West Terminal to Miramar Transit Center)	New Service; Support in TDP
Douglas Rd	New LB Service	15/20	1. New local bus service (from West Terminal to NW 207th St)	New Service; Support in TDP
Rock Island Rd	New LB Service	15/20	1. New local bus service (from Sample Rd to Oakland Park Blvd)	New Service; Support in TDP
Wiles Rd	New LB Service	15/20	1. New local bus service (from US 1 to Heron Bay Plaza)	New Service; Support in TDP
McNab Rd	New LB Service	15/20	1. New local bus service (from US 1 to Commercial Blvd)	New Service; Support in TDP
Griffin Rd	New LB Service	20/30	1. New local bus service (from Airport to I-75)	New Service; Support in TDP
LOCAL BUS Service Headway Improvement				
Lyons Rd	31 (LB)	10/20	1. Improved Headway	Top 50% of best performing BCT routes
Andrews Ave	60 (LB)	10/20	1. Improved Headway	Top 50% of best performing BCT routes
U.S. 1	1 (LB)	10/15	1. Improved Headway	Top 50% of best performing BCT routes
	10 (LB)	15/20	1. Improved Headway	
Dixie Hwy	50 (LB)	10/20	1. Improved Headway	Top 50% of best performing BCT routes
Dixie Hwy/Hollywood Blvd	6 (LB)	10/20	1. Improved Headway	Future travel demand in the corridor
Copans Rd	83 (LB)	10/20	1. Improved Headway	Future travel demand in the corridor
Atlantic Blvd	42 (LB)	10/20	1. Improved Headway 2. Connection to both Tri-Rail and FEC station	Top 50% of best performing BCT routes, Improve intermodal connectivity
Broward Terminal/Riverland Rd/Davie Rd/Johnson St	9 (LB)	15/20	1. Improved Headway	Support in TDP
Sheridan St/Davie Rd/ University Dr	12 (LB)	15/20	1. Improved Headway	Support in TDP
NE 18th Ave	20 (LB)	15/20	1. Improved Headway	Support in TDP
Sunrise Blvd	36 (LB)	10/15	1. Improved Headway	Support in TDP
Hillsboro Blvd	48 (LB)	15/20	1. Improved Headway	Support in TDP
Commercial Blvd	55 (LB)	20/30	1. Improved Headway	Support in TDP

Exhibit A-1: 2035 Transit Needs

11/24/2009

Corridor	Transit Mode	2035 Needs Assessment (Peak/Off Peak Headway in minutes)	Transit Improvements	Comments or Project Rationale
Beach/Downtown FLL	40 (LB)	10/20	1. Improved Headway	Top 50% of best performing BCT routes
Davie Blvd	30 (LB)	10/15	1. Improved Headway 2. Connection to both Tri-Rail and FEC station	Top 50% of best performing BCT routes, Improve intermodal connectivity
Pembroke Rd	5 (LB)	15/15	1. Improved Headway	Top 50% of best performing BCT routes
Miramar Pkwy	28 (LB)	15/20	1. Improved Headway	Top 50% of best performing BCT routes
Central Broward (Broward Blvd/ Lauderhill Mall/ Oakland Park)	81 (LB)	10/20	1. Improved Headway	Land use & transit dependent population: TOCs, TOD, THOR & zero-car household maps, Top 50% of best performing BCT routes
			2. Restructuring bus route	Realign to connect to the residential area in the west along Oakland Park
SR-7	18 (LB)	10/15	1. Improved Headway 2. Extend onto Glades Rd to FAU	Top 50% of best performing BCT routes
Oakland Park Blvd	72 (LB)	10/15	1. Improved Headway	Top 50% of best performing BCT routes
University Dr	2 (LB)	10/15	1. Improved Headway 2. Extend to the County Line	Top 50% of best performing BCT routes
A1A	11 (LB)	15/30	1. Improved Headway	Top 50% of best performing BCT routes,
Sample Rd	34 (LB)	10/15	1. Improved Headway	Top 50% of best performing BCT routes,
Cypress Creek Rd	62 (LB)	10/20	1. Improved Headway	Future travel demand in the corridor, Connects large employment centers.
Pines Blvd /Hollywood Blvd	7 (LB)	20/30	1. Improved Headway	Top 50% of best performing BCT routes
Broward Blvd	22 (LB)	10/20	1. Improved Headway 2. Connection to both Tri-Rail and FEC station	Top 50% of best performing BCT routes
Community Buses & Shuttles				
Community Wide	Community Buses	20-30 minutes	1. Peak period improved headways	Better interface with BCT buses
Tri-Rail/I-95 Corridor	All Tri-Rail Shuttles	15/30	1. Time transfers between shuttle service and Tri-Rail	Better interface with Tri-Rail

Note:
LB: Local Bus, CRT: Commuter Rail Transit; Str: Streetcar; APM: Automated People Mover
*Premium Transit Service is defined as high capacity and high quality transit service. Specific transit technology to be determined at cost feasible stage.

Exhibit A-2: 2035 Mobility Hubs - Gateway

7/24/2009

Gateway Hubs

Gateway Hub ID	Name	General Location	High Station Activity1 (ons & offs)	Transit Oriented Areas and/or High Density	Two or more High Capacity Transit Lines
1	Ft. Lauderdale Tri-Rail Station (per steering committee and TCC recommendation)	Broward Blvd & I-95	> 2200	Central County CRA	Tri-Rail
2	Central Terminal, Ft. Lauderdale	Broward Blvd & NW/SW 1st Ave	> 4500	Downtown Ft. Lauderdale RAC, Broward Blvd THOR District,	> 5
3	Plantation Midtown	Broward Blvd & University Dr	> 2200	Plantation Midtown	2
4	Cypress Creek	Cypress Creek Tri-Rail Station	> 3500	Major Employment Center	3
5	Deerfield Beach (TOD)	Deerfield Beach Tri-Rail Station	> 2500	Deerfield Beach TOD	3
6	Dania Beach	Griffin Rd & CSX/Tri-Rail	> 2200	-	2
7	Hallandale Beach East	Hallandale Beach Blvd & US 1	> 2500	Hallandale CRA	2
8	Downtown Hollywood	Hollywood & Dixie Hwy	> 3000	Downtown Hollywood RAC, Hollywood Central CRA	2
9	Hollywood Tri-Rail Station	Hollywood Blvd & CSX/Tri-Rail	> 3000	-	2
10	Hollywood West	Hollywood Blvd & SR 7	> 2200	-	2
11	Sawgrass Mills/Bank Atlantic Center	NW 136th Ave & Sunrise Blvd	> 2200	City of Sunrise's initiatives for creating TOD/TOC and high density developments	3
12	Lauderdale Lakes Town Center	Oakland Park Blvd & SR 7	> 3000	Lauderdale Lakes CRA	2
13	Miramar TOC	Red Rd & Miramar Blvd	NA[2]	Miramar TOC	Miramar Pkwy BRT
14	Margate TOC/City Center	Sample Rd & SR 7	> 3000	Margate TOC/City Center	2
15	Coral Springs Downtown	Sample Rd & University Dr	> 3000	Coral Springs CRA	2
16	Pompano Beach/Light House Point	Sample Rd & US 1	> 2200	Pompano Beach CRA	2
17	Davie TOC	SR 7 & I-595	> 3000	Davie TOC	2
18	Lauderhill TOC	Sunrise Blvd & SR 7	> 3000	Lauderhill TOC, Lauderhill CRA, Sunrise TOC	2
19	SFEC	SW 30th St & University Dr	> 4500	Davie RAC, Davie CRA, and University Campuses	2

Gateway Hub ID	Name	General Location	High Station Activity1 (ons & offs)	Transit Oriented Areas and/or High Density	Two or more High Capacity Transit Lines
20	Miramar Terminal	University Dr & Miramar Pkwy	> 3000	-	2
21	Ft. Lauderdale-Hollywood Int. Airport	US 1 @ FLL Airport	> 2200	Intermodal Center	4

1 - Preliminary model run results, Feb 2009

Exhibit A-2: 2035 Mobility Hubs - Anchor

7/24/2009

Anchor Hubs

Hub ID	Location	Moderate Station Activity1 (ons & offs)	Close proximity to LAC/RAC and such land uses	At least one High Capacity Transit Line
1	Andrews/FEC & SE 17th St	NA[2]	Broward General Hospital (per City of Ft. Lauderdale request)	FEC Corridor
2	Broward Blvd & Pine Island Rd	NA[2]	BCT West Terminal	Broward Blvd Rapid Bus and/or Breeze
3	Commercial Blvd & SR 7	> 2500	Employment	Commercial Blvd Rapid Bus, SR 7 LRT
4	Dixie Hwy & MLK Blvd/Hammondville Rd	NA[2]	BCT Transit Center	Dixie Hwy BRT, FEC
5	Griffin Rd & I-75	NA[2]	I-75 PD&E Study (Alternative Land Use at Interchanges)	Griffin Rd Rapid Bus / I-75 BRT
6	Hollywood Blvd & SR A1A	> 1800	Hollywood Beach CRA	Pines Blvd BRT, SR A1A Rapid Bus
7	I-595 & Pine Island Rd	> 2200	Plantation Midtown	Central Broward Transit
8	Miramar Pkwy & I-75	900	I-75 PD&E Study (Alternative Land Use at Interchanges)	Miramar Pkwy/Hallandale Beach Blvd BRT /I-75 BRT
9	Oakland Park & US 1	NA[2]	Per City of Oakland Park request	Oakland Park LRT / US 1 BRT
10	Oakland Park Blvd & Andrews Ave	> 2200	Oakland Park CRA	Oakland Park Blvd LRT, Andrews Ave BRT
11	Oakland Park Blvd & Dixie Hwy	> 2200	Oakland Park CRA	Oakland Park Blvd LRT, Dixie Hwy BRT, FEC
12	Pines Blvd & I-75	1200	I-75 PD&E Study (Alternative Land Use at Interchanges)	Pines Blvd BRT / I-75 BRT

Hub ID	Location	Moderate Station Activity1 (ons & offs)	Close proximity to LAC/RAC and such land uses	At least one High Capacity Transit Line
13	Pines Blvd & University Dr	> 2500	Ridership capture point	Pines Blvd BRT, University Dr LRT
14	Sample Rd & Coral Ridge Dr	> 2500	Coral Springs CRA	Sample Rd BRT, Nob Hill Rd Rapid Bus
15	Sample Rd & CSX/Tri-Rail	> 2200	Employment	Sample Rd BRT, Tri-Rail
16	Sawgrass International Corp. Park	NA[2]	High density employment center	Central Broward Transit
17	Sheridan St & CSX/Tri-Rail	> 1500	Sheridan Station TOD	Tri-Rail
18	Sheridan St & I-75	NA[2]	I-75 PD&E Study (Alternative Land Use at Interchanges)	I-75 BRT
19	Sheridan St & US 1	> 1800	Sheridan Station TOD	US 1 BRT, FEC Corridor
20	SR 84 & Andrews Ave	900	Employment	Central Broward Transit
21	Sunrise Blvd & Andrews Ave	> 2500	Downtown Ft. Lauderdale	Sunrise Blvd LRT, Andrews Ave BRT, FEC
22	University Dr & Oakland Park Blvd	> 2500	Central Lauderhill CRA	Oakland Park Blvd LRT, University Dr LRT
23	University Dr & Sunrise Blvd	> 2500	Ridership capture point	University Dr LRT, Sunrise Blvd LRT

1 - Preliminary model run results, Feb 2009

2 - Data not available from preliminary model run.

Exhibit A-2: 2035 Mobility Hubs - Community

7/24/2009

Community Hubs

Hub ID	Location	Local Station Activity1 (or Local travel market)	Served by Rapid Bus Line or BRT or LRT
1	Atlantic Blvd & Dixie Hwy	1600	Dixie Hwy BRT, FEC
2	Atlantic Blvd & Powerline Rd	NA[2]	Atlantic Blvd Rapid Bus
3	Atlantic Blvd & SR 7	1200	SR 7 LRT
4	Atlantic Blvd & University Dr	1200	University Dr LRT
5	Broward Blvd & SR 7	900	SR 7 LRT
6	Commercial Blvd & A1A	900	SR A1A BRT, Commercial Blvd Rapid Bus
7	Commercial Blvd & Andrews Ave	NA[2]	Per City of Oakland Park request
8	Commercial Blvd & Dixie Hwy	NA[2]	Per City of Oakland Park request
9	Commercial Blvd & University Dr	1600	Commercial Blvd Rapid Bus, University Dr LRT
10	Copans Rd & Dixie Hwy	NA[2]	Dixie Hwy BRT / FEC
11	Copans Rd & US 1	NA[2]	Per City of Pompano Beach request
12	Coral Ridge Dr & Trails End Rd	NA[2]	Nob Hill Rd Rapid Bus
13	Cypress Creek Rd & Dixie Hwy	1600	Cypress Creek BRT, Dixie Hwy BRT, FEC
14	Griffin Rd & 172nd Ave	NA[2]	Griffin Rd Rapid Bus
15	Griffin Rd & Flamingo Rd	NA[2]	Griffin Rd Rapid Bus
16	Griffin Rd & SR 7	NA[2]	Griffin Rd Rapid Bus, SR 7 LRT
17	Griffin Rd & SW 160th Ave	NA[2]	Griffin Rd Rapid Bus / I-75 BRT
18	Griffin Rd & University Dr	NA[2]	Griffin Rd Rapid Bus, University LRT
19	Hallandale Beach Blvd & SR A1A	1200	Miramar Pkwy/Hallandale Beach Blvd BRT, SR A1A Rapid Bus
20	Hallandale Blvd & NE 14th Ave	NA[2]	Miramar Pkwy/Hallandale Beach Blvd BRT
21	Hillsboro Blvd & Powerline Rd	NA[2]	Powerline Rapid Bus and/or Breeze
22	Hillsboro Blvd & SR A1A	900	SR A1A BRT
23	Holmberg Rd & University Dr	NA[2]	University Dr LRT
24	I-595 & 136th Ave	900	Central Broward Transit
25	I-595 & College Ave	NA[2]	Central Broward Transit
26	I-595 & Hiatus Rd	1600	Central Broward Transit
27	I-595 & I-75	NA[2]	Central Broward Transit
28	I-595 & University Dr	NA[2]	University Dr LRT & Central Broward Transit
29	McNab Rd & Nob Hill Rd	1200	Cypress Creek BRT, Nob Hill Rd Rapid Bus
30	McNab Rd & Pine Island Rd	NA[2]	Cypress Creek Rd BRT

Exhibit A-2: 2035 Mobility Hubs - Community

7/24/2009

Community Hubs

Hub ID	Location	Local Station Activity1 (or Local travel market)	Served by Rapid Bus Line or BRT or LRT
31	McNab Rd & Rock Island Rd	NA[2]	Cypress Creek Rd BRT
32	Miramar Pkwy & Douglas Rd	NA[2]	Miramar Pkwy/Hallandale Beach Blvd BRT
33	Miramar Pkwy & Flamingo Rd	NA[2]	Miramar Pkwy/Hallandale Beach Blvd BRT
34	Miramar Pkwy & Palm Ave	NA[2]	Miramar Pkwy/Hallandale Beach Blvd BRT
35	Miramar Pkwy & SR 7	NA[2]	Miramar Pkwy/Hallandale Beach Blvd BRT / SR 7 LRT
36	Miramar Pkwy & SW 172 Ave	NA[2]	Miramar Pkwy/Hallandale Beach Blvd BRT
37	Oakland Park Blvd & Hiatus Rd	1200	Oakland Park Blvd LRT
38	Oakland Park Blvd & NW 31st Ave	NA[2]	Oakland Park Blvd LRT
39	Oakland Park Blvd & SR A1A	1200	Oakland Park Blvd LRT, SR A1A BRT
40	Pembroke Rd & SR 7	NA[2]	SR 7 LRT
41	Pembroke Rd & University Dr	NA[2]	University Dr LRT
42	Pembroke Rd & US 1	NA[2]	US 1 BRT, FEC Corridor
43	Peters Rd & SR 7	NA[2]	SR 7 LRT
44	Pine Island Rd & NW 57th St	NA[2]	Per City of Tamarac request
45	Pines Blvd & Douglas Rd	NA[2]	Pines Blvd BRT
46	Pines Blvd & Dykes Rd	NA[2]	Pines Blvd BRT
47	Pines Blvd & Flamingo Rd	NA[2]	Pines Blvd BRT
48	Pines Blvd & Palm Ave	NA[2]	Pines Blvd BRT, Nob Hill Rd/Palm Ave Rapid Bus
49	Royal Palm Blvd & University Dr	NA[2]	University Dr LRT
50	Sample Rd & Lyons Rd	1200	Sample Rd BRT
51	Sample Rd & Sportsplex Dr	NA[2]	Sample Rd BRT
52	Sheridan St & SR 7	900	SR 7 LRT
53	Sheridan St & University Dr	900	University Dr LRT
54	SR 7 & Hillsboro Blvd	NA[2]	SR 7 LRT
55	Stirling Rd & University Dr	NA[2]	University Dr LRT
56	Sunrise Blvd & Nob Hill Rd	1200	Sunrise Blvd LRT, Nob Hill Rd Rapid Bus
57	Sunrise Blvd & NW 31st Ave	NA[2]	Sunrise Blvd LRT
58	Sunrise Blvd & SR A1A	900	Sunrise Blvd LRT, SR A1A BRT
59	SW 10th St & Dixie Hwy	900	Dixie Hwy BRT / FEC
60	Wiles Rd & SR 7	NA[2]	SR 7 LRT

Exhibit A-2: 2035 Mobility Hubs - Community

7/24/2009

Community Hubs

Hub ID	Location	Local Station Activity1 (or Local travel market)	Served by Rapid Bus Line or BRT or LRT
61	Wiles Rd & University Dr	NA[2]	University Dr LRT
62	Wiles Rd/NE 49 St & US 1	NA[2]	US 1 BRT, FEC Corridor

1 - Preliminary model run results, Feb 2009

2 - Data not available from preliminary model run.

Exhibit A-3: 2035 Bicycle Needs

8/5/2009

Project ID	Project Name	From	To	Length in Miles
001	Nob Hill Road	McNab Road	Oakland Park Boulevard	2.7
002	McNab Road	Hiatus Road	Pine Island Road	1.4
003	Atlantic Boulevard/NW 8th Court	Lakeview Drive	Ramblewood Drive	3.6
004	Sample Road	NW 124th Avenue	NW 110th Ave	1.2
005	Coral Ridge Drive	Holmberg Road	Royal Palm Boulevard	3.3
006	University Drive	Holmberg Road	Sample Road	2.7
007	Wiles Road	Coral Ridge Drive	University Drive	2.0
008	Wiles Road	Rock Island Road	SR 7	1.1
009	Rock Island Road	Wiles Road	Royal Palm Boulevard	2.4
010	Lyons Road	Sawgrass Expressway	Copans Road	2.9
011	Ramblewood Drive	NW 105th Lane	Atlantic Boulevard	2.4
012	Coral Springs Drive	NW 106th Drive	Sample Road	2.4
013	Coral Springs Drive	Sample Road	NW 9th Manor / Atlantic Boulevard	2.3
014	Banks Road	Sample Road	Copans Road	1.3
015	SR 7	Sample Road	Copans Road	1.4
016	Riverside Drive	Holmberg Road	Sample Road	2.8
017	Riverside Drive	Sample Road	Atlantic Boulevard	2.6
018	Royal Palm Boulevard	University Drive	Rock Island Road	1.9
019	Royal Palm Boulevard	Rock Island Road	SR 7	1.3
020	Copans Road	SR 7	NW 42nd Avenue	1.3
021	NE 14th Street	NE 25th Avenue	Ocean Boulevard	0.8
022	NE 5th Avenue	Copans Road	Atlantic Boulevard	2.0
023	Hillsboro Boulevard	Federal Highway / US 1	NE 20th Avenue / Ocean Boulevard	0.9
024	Copans Road	I-95	Dixie Highway	0.9
025	Copans Road	Powerline Road	Andrews Avenue Extention	0.7
026	NW 9th Avenue/Military Trail	NW 49th Street / Green Street	Copans Road	2.2
027	NW 9th Avenue/Military Trail	NW 5th Street	NW 49th Court / 49th Street / Green Roa	2.5
028	NE 3rd Avenue	Sample Road	Copans Road	1.0
029	NE 3rd Avenue	48th Street	Sample Road	1.0
030	SW 11th Way / NE 3rd Avenue	10th Street	48th Street	1.2
031	Natura Boulevard	Hillsboro Boulevard	10th Street	1.2
032	Hillsboro Boulevard	Natura Boulevard	Federal Highway / US 1	1.2
033	Hillsboro Boulevard	Military Trail	Natura Boulevard	1.1
034	10th Street	Waterways Boulevard	Military Trail	2.0
035	10th Street	Military Trail	Natura Boulevard	0.8
036	10th Street	SW 11th Way	US 1 / Federal Highway	1.4
037	Federal Highway/US 1	Hillsboro Boulevard	SE 15th Street	1.4
038	SE 15th Street	SW 11th Avenue	Federal Highway / US 1	1.6
039	48th Street/49th Street	NE 3rd Avenue	Federal Highway / US 1	1.5

Exhibit A-3: 2035 Bicycle Needs

8/5/2009

Project ID	Project Name	From	To	Length in Miles
040	NE 15th Avenue	NE 48th Street	Sample Road	1.0
041	Sample Road	Andrews Avenue Extention / Military Trail	NE 3rd Avenue	1.0
042	Sample Road	NE 3rd Avenue	Federal Highway / US 1	1.4
043	Federal Highway/US 1	SE 15th Street	Sample Road	1.5
044	Hiatus Road	NW 44th Street	Oakland Park Boulevard	0.9
045	Nob Hill Road	Oakland Park Boulevard	Sunrise Boulevard	1.8
046	Hiatus Road	SR 84	Orange Drive	3.2
047	Hiatus Road	Oakland Park Boulevard	Sunrise Boulevard	1.6
048	Broward Boulevard	Flamingo Road	Nob Hill Road	1.8
049	SW 136th Avenue	Sunrise Boulevard	SR 84	1.9
050	Orange Drive	Flamingo Road	Hiatus Road	1.0
051	SW 154th Avenue/Shotgun Road	SW 14th Street	Orange Drive	2.8
052	Griffin Road	Weston Road / Dykes Road	I-75	0.5
053	Dykes Road	Griffin Road	Stirling Road	1.3
054	Orange Drive	Shotgun Road turn-off	Flamingo Road	2.2
055	Miramar Parkway	160th Avenue	I-75 Ramp	0.4
056	Palm Avenue	Johnson Street	Pines Boulevard	0.5
057	Sheridan Street	Pine Island Road	N 72nd Avenue	2.0
058	Davie Road Extension	University Drive	Stirling Road / Davie Road	1.5
059	Miramar Boulevard	Hiatus Road	Palm Avenue	1.1
060	Miramar Parkway	Flamingo Road	Palm Avenue	2.0
061	Oakland Park Boulevard	US 1 / Federal Highway	A1A / Ocean Boulevard	1.0
062	A1A / Ocean Boulevard	Commercial Boulevard	NE 40th Street	0.9
063	Commercial Boulevard	US 1 / Federal Highway	A1A / Ocean Boulevard	1.1
064	Atlantic Boulevard	NE 1st Avenue	US 1 / Federal Highway	1.3
065	Hammondville Road	NW 26th Avenue	Dixie Highway	2.2
066	Dixie Highway	Atlantic Boulevard	SW 3rd Street	0.4
067	SW 3rd Street	Andrews Avenue	Cypress Road	1.0
068	Andrews Avenue	Atlantic Boulevard	SW 3rd Street	0.4
069	McNab Road	Cypress Road	US 1 / Federal Highway	1.0
070	NW 62nd Street / Cypress Creek Road	Dixie Highway	US 1 / Federal Highway	1.5
071	Race Track Road/Palmetto Park Place	Powerline Road / SW 26th Avenue	SW 15th Avenue	0.8
072	Powerline Road	Atlantic Boulevard	NW 62nd Street / Cypress Creek Road	1.9
073	Powerline Road	NW 62nd Street / Cypress Creek Road	Commercial Boulevard	1.0
074	NE 18th Avenue	NW 62nd Street / Cypress Creek Road	Commercial Boulevard	1.0
075	NE 18th Avenue	McNab Road	NW 62nd Street / Cypress Creek Road	0.5
076	Floranada Road	Dixie Highway	Federal Highway / US 1	1.0
077	Andrews Avenue	NW 62nd Street / Cypress Creek Road	Prospect Road	1.6
078	Cypress Creek Road	Powerline Road	Andrews Avenue	0.4
079	NE 56th Street	Andrews Avenue	Dixie Highway	0.9
080	NE 56th Street	Dixie Highway	US 1 / Federal Highway	1.3

Exhibit A-3: 2035 Bicycle Needs

8/5/2009

Project ID	Project Name	From	To	Length in Miles
081	Commercial Boulevard	Dixie Highway	NE 19th Avenue	1.2
082	Commercial Boulevard	Powerline Road	Dixie Highway	1.3
083	Commercial Boulevard	Prospect Road	Powerline Road	1.2
084	Prospect Road	NW 31st Avenue	Powerline Road	2.7
085	Prospect Road	Powerline Road	Dixie Highway	1.3
086	Dixie Highway	Commercial Boulevard	Oakland Park Boulevard	1.6
087	NE 38th Street	Dixie Highway	Federal Highway / US 1	0.8
088	NW 38th Street	NW 21st Avenue	Powerline Road	1.1
089	NW 44th Street	NW 31st Avenue	NW 21st Avenue	1.0
090	NW 21st Avenue	Commercial Boulevard	Oakland Park Boulevard	1.6
091	Oakland Park Boulevard	NW 21st Avenue	NW 9th Avenue / Powerline Road	1.0
092	Oakland Park Boulevard	NE 6th Avenue	NE 16th Avenue	0.8
093	Oakland Park Boulevard	NE 16th Avenue	US 1 / Federal Highway	0.6
094	NE 16th Avenue	Oakland Park Boulevard	NE 21st Street	0.8
095	NE 26th Street	Andrews Avenue	Federal Highway / US 1	1.8
096	NE 6th Avenue	NE 61st Court	Prospect Road	1.5
097	Dixie Highway	Oakland Park Boulevard	NE 13th Street	1.8
098	NE 13th Street	Powerline Road	Federal Highway / US 1	2.1
099	NE 7th Street/Sunrise Boulevard Connector	Victoria Park Road	NE 24th Avenue	0.8
100	Victoria Park Road	Sunrise Boulevard	Broward Boulevard	1.1
101	Federal Highway / US 1	Sunrise Boulevard	Broward Boulevard	1.1
102	Broward Boulevard	Federal Highway / US 1	Victoria Park Road	0.8
103	Federal Highway / US 1	Broward Boulevard	SE 12th Street / Davie Boulevard	1.0
104	SE 17th Street	Federal Highway / US 1	SE 23rd Avenue	1.4
105	Federal Highway / US 1	SE 12th Street / Davie Boulevard	SE 30th Street	1.4
106	Davie Boulevard	Davie Boulevard Ramp	Federal Highway / US 1	1.9
107	Andrews Avenue	SE 5th Street	Davie Boulevard	0.6
108	Andrews Avenue	Davie Boulevard	Eller Drive	1.7
109	SW 4th Avenue	SW 23rd Street	Perimeter Road	0.8
110	Griffin Road	I 95	Old Griffin Road Ramp / Service Road	0.2
111	Eller Drive	Just south of SW 33rd Street	I 595 ramp / NE 7th Avenue	0.6
112	NE 7th Avenue	Eller Drive	Taylor Road	1.0
113	Taylor Road	Federal Highway/US 1	NE 7th Avenue	0.8
114	Perimeter Road	Perimeter Road Ramp	Perimeter Road Ramp	5.7
115	Dania Beach Boulevard	Federal Highway/US 1	Gulfstream Road	0.8
116	Ravenswood Road	SW 42nd Street	Stirling Road	1.5
117	SR 84	I 95	Federal Highway/US 1	2.0
118	SR 84	SR 7	I 95	2.0
119	SW 40th Avenue	Griffin Road	Stirling Road	1.1
120	Stirling Road	Ravenswood Road	Federal Highway/US 1	1.5
121	Stirling Road	Just west of the Florida Turnpike	Ravenswood Road	2.9

Exhibit A-3: 2035 Bicycle Needs

8/5/2009

Project ID	Project Name	From	To	Length in Miles
122	Powerline Road	Commercial Boulevard	Prospect Road	0.5
123	Powerline Road	Oakland Park Boulevard	Sunrise Boulevard	2.0
124	Oakland Park Boulevard	NW 9th Avenue / Powerline Road	NE 6th Avenue	1.0
125	NE 6th Avenue	Prospect Road	Oakland Park Boulevard	1.0
126	Andrews Avenue	Oakland Park Boulevard	NE 6th St	2.6
127	Andrews Avenue	NE 6th St	Las Olas Boulevard	0.7
128	NW 7th Avenue	Sunrise Boulevard	Broward Boulevard	1.0
129	SW 4th Avenue	Broward Boulevard	Davie Boulevard	1.1
130	NE 4th Avenue	NE 20th Street	Sunrise Boulevard	1.1
131	NE 3rd Avenue	Sunrise Boulevard	Las Olas Boulevard	1.2
132	Las Olas Boulevard	Andrews Avenue	SE 15th Avenue	0.9
133	Commercial Boulevard	NW 50th Avenue	NW 49th Avenue	0.2
134	Prospect Road	SR 7	NW 31st Avenue	1.0
135	SR 7	Bailey Road	Prospect Road	0.4
136	SR 7	Lakeside Drive	NW 53rd Street	0.1
137	SR 7	NW 37th Street	NW 34th Street	0.2
138	Oakland Park Boulevard	Rock Island Road	Florida's Turnpike Overpass	0.2
139	NW 56th Avenue	Oakland Park Boulevard	NW 27th Court	0.3
140	NW 56th Avenue	Blueberry Court	NW 19th Street	0.5
141	NW 64th Avenue / NW 19th Street	Oakland Park Boulevard	NW 56th Avenue	1.6
142	Commercial Boulevard	SR 7	Prospect Road	1.8
143	NW 31st Avenue	McNab Road	Commercial Boulevard	1.6
144	NW 31st Avenue	Commercial Boulevard	Oakland Park Boulevard	1.4
145	SR 7	NW 29th Street	Sunrise Boulevard	1.8
146	SR 7	Sunrise Boulevard	NW 3rd Street	0.8
147	NW 31st Avenue	Oakland Park Boulevard	Sunrise Boulevard	2.0
148	NW 31st Avenue	Sunrise Boulevard	Broward Boulevard	1.0
149	SW 31st Avenue	SW 2nd Street	SW 5th Court	0.4
150	Oakland Park Boulevard	SR 7	NW 21st Avenue	2.0
151	NW 19th Street	SR 7	NW 21st Avenue / NW 23rd Avenue	2.0
152	Sistrunk Boulevard	NW 27th Avenue	NE 3rd Avenue	2.3
153	NW 27th Avenue	Sunrise Boulevard	Broward Boulevard	1.0
154	SW 27th Avenue	Broward Boulevard	Davie Boulevard	1.0
155	Sunrise Boulevard	NW 47th Avenue	I 95	2.7
156	Sunrise Boulevard	NW 65th Avenue	Eastern Florida's Turnpike ramp	1.2
157	Sunset Strip	NW 64th Avenue	Sunrise Boulevard	1.4
158	Broward Boulevard	SR 7	I 95	2.1
159	Broward Boulevard	NW 70th Avenue	SR 7	2.4
160	Broward Boulevard	Pine Island Road	NW 70th Avenue	1.4
161	NW 70th Avenue	Sunrise Boulevard	Broward Boulevard	2.0
162	NW 5th Street	University Drive	Sunrise Boulevard	1.8

Exhibit A-3: 2035 Bicycle Needs

8/5/2009

Project ID	Project Name	From	To	Length in Miles
163	Commercial Boulevard	NW 105th Avenue	University Drive	2.4
164	University Drive	Commercial Boulevard	NW 44th Street	1.0
165	University Drive	NW 44th Street	Oakland Park Boulevard	0.9
166	Inverrary Boulevard	NW 44th Street	Oakland Park Boulevard	0.9
167	NW 44th Street	Pine Island Road	University Drive	1.0
168	Pine Island Road	NW 44th Street	Sunrise Boulevard	2.2
169	Sunset Strip	Nob Hill Road	NW 64th Avenue	3.0
170	Cleary Boulevard	Nob Hill Road	NW 80th Way	2.0
171	Peters Road	Pine Island Road	Tropical Way	1.8
172	Peters Road	Tropical Way	SR 7	2.1
173	SW 31st Avenue	Jackson Boulevard	Riverland Road	1.0
174	Riverland Road	SR 7	SW 13th Street	2.5
175	Pine Island Road	SR 84	Griffin Road	2.7
176	Nova Drive	Pine Island Road	Davie Road	2.3
177	Davie Road	SR 84	Orange Drive	2.0
178	Davie Road	Orange Drive	Stirling Road	1.4
179	Orange Drive	Nob Hill Road	University Drive	1.7
180	Orange Drive	University Drive	Davie Road	1.2
181	Orange Drive	Davie Road	SR 7	1.5
182	University Drive	Orange Drive	Griffin Road	0.0
183	N 14th Avenue	Sheridan Street	Johnson Street	1.1
184	N 14th Avenue	Johnson Street	Washington Street	1.1
185	N 14th Avenue	Washington Street	Hallandale Beach Boulevard	1.3
186	Washington Street	Dixie Highway	S 14th Avenue	0.9
187	Pembroke Road	I 95	Federal Highway / US 1	1.5
188	Park Road	Stirling Road	Sheridan Street	1.0
189	N 46th Avenue	Stirling Road	Sheridan Street	1.0
190	Dixie Highway	Federal Highway/US 1	Sheridan Street	0.7
191	Johnson Street	Federal Highway/US 1	N 8th Avenue	1.4
192	A1A	Hallandale Beach Boulevard	South County line	0.8
193	S 26th Avenue	Hollywood Boulevard	Pembroke Road	0.9
194	Dixie Highway	Hollywood Boulevard	SW 11th Street	2.5
195	Dixie Highway	Sheridan Street	Hollywood Boulevard	1.5
196	N 26th Avenue	Sheridan Street	Polk Street	1.5
197	Federal Highway/US 1	Sheridan Street	Young Circle	1.4
198	Sheridan Street	N 26th Avenue / Oakwood Boulevard	Federal Highway / US 1	1.0
199	Taft Street	N 26th Avenue	Federal Highway / US 1	1.0
200	Johnson Street	N 26th Avenue	Federal Highway / US 1	1.0
201	Hollywood Boulevard	City Hall Circle	17th Avenue	1.6
202	Hallandale Beach Boulevard	Country Club Lane	Eastern I 95 ramp	0.1
203	Park Road	Sheridan Street	Hollywood Boulevard	1.5

Exhibit A-3: 2035 Bicycle Needs

8/5/2009

Project ID	Project Name	From	To	Length in Miles
204	N 46th Avenue	Sheridan Street	Washington Street	2.1
205	56th Avenue	Stirling Road	Washington Street	3.0
206	SR 7	Osceola Drive	Washington Street	2.6
207	Park Road	N 56th Avenue	Park Road turn-off	1.6
208	Park Road	Hollywood Boulevard	Pembroke Road	1.1
209	Washington Street	SR 7	Park Road	1.9
210	N 64th Avenue	Hood Street	Hollywood Boulevard	1.6
211	Sheridan Street	N 46th Avenue	N 26th Avenue	1.9
212	Taft Street	N 46th Avenue	N 26th Avenue	1.9
213	Johnson Street	N 46th Avenue	N 26th Avenue	1.9
214	Hollywood Boulevard	N 46th Avenue	Eastern I 95 ramp	1.7
215	Hollywood Boulevard	N 64th Avenue	N 46th Avenue	1.6
216	Johnson Street	N 72nd Avenue	N 46th Avenue	2.6
217	Taft Street	N 72nd Avenue	N 46th Avenue	2.6
218	Sheridan Street	N 72nd Avenue	N 46th Avenue	2.6
219	SW 72nd Avenue	Sheridan Street	Pembroke Road	2.5
220	Taft Street	Douglas Road / Pine Island Road	Just east of NW 72nd Avenue	2.0
221	Johnson Street	Douglas Road / Pine Island Road	Just east of NW 72nd Avenue	2.0
222	Pembroke Road	Douglas Road / Pine Island Road	Just east of NW 72nd Avenue	2.0
223	Pembroke Road	NW 72nd Avenue	SR 7	1.5
224	SW 56th Avenue	Washington Street	County Line Road	2.0
225	SR 7	Washington Street	County Line Road	2.1
226	County Line Road/SW 41st ST	University Drive	SW 40th Avenue	4.0
227	Miramar Parkway	Palm Avenue	Utopia Drive	2.0
228	Miramar Parkway	Utopia Drive	Miramar Parkway / SW 67th Avenue	1.7
229	Miramar Parkway / Hallandale Beach Boulevard	SW 67th Avenue	SW 40th Avenue	2.4
230	Powerline Road	Prospect Road	Oakland Park Boulevard	1.0
231	NE 38th Street	Andrews Avenue	Dixie Highway	0.9
232	Coconut Creek Parkway / MLK Boulevard	Lyons Road	NW 26th Avenue	1.8
233	NE 11th Avenue	NE 10th Street	Atlantic Boulevard	0.7
234	Cypress Road	Atlantic Boulevard	McNab Road	1.4
235	Atlantic Boulevard	US 1 / Federal Highway	Briny Avenue	0.8
236	US 1 / Federal Highway	Atlantic Boulevard	SE 7th Street	0.5
237	Lyons Road	Access Road just north of NW 74th Street	Sawgrass Expressway	1.6
238	Copans Road	NW 36th Avenue	Florida's Turnpike	0.4
239	Atlantic Boulevard	Lyons Road	NW 31st Avenue	1.3
240	Coconut Creek Parkway	US 441/ SR 7	Lyons Road	0.9
241	Atlantic Boulevard	US 441/ SR 7	Lyons Road	1.2
242	Lyons Road	Copans Road	Atlantic Boulevard	1.9
243	Banks Road	Copans Road	Atlantic Boulevard	1.5
244	US 441/ SR 7	Copans Road	Atlantic Boulevard	1.4

Exhibit A-3: 2035 Bicycle Needs

8/5/2009

Project ID	Project Name	From	To	Length in Miles
245	Atlantic Boulevard	Ramblewood Drive	US 441/SR 7	2.0
246	Southgate Boulevard	SW 81st Avenue	US 441/SR 7	2.0
247	Kimberly Boulevard	SW 81st Avenue	US 441/SR 7	2.1
248	McNab Road	University Drive	NW 31st Avenue	4.2
249	Baily Road	SW 81st Avenue	US 441/SR 7	2.0
250	Rock Island Road	McNab Road	Commercial Boulevard	1.0
251	SW 81st Avenue/NW 64 Avenue	McNab Road	Commercial Boulevard	1.0
252	SW 81st Avenue	Southgate Boulevard	McNab Road	1.4
253	Southgate Boulevard	Coral Ridge Drive	SW 81st Avenue	2.8
254	Coral Ridge Drive	Royal Palm Blvd	Atlantic Boulevard	1.4
255	Pine Island Road	Atlantic Boulevard	McNab Road	2.5
256	Nob Hill Road	Atlantic Boulevard	McNab Road	2.4
257	Pine Island Road	McNab Road	NW 44th Street	2.0
258	NW 50th Street	Pine Island Road	University Drive	1.0
259	Riverside Drive	Atlantic Boulevard	Atlantic Boulevard	2.5
260	NW 44th Street	Hiatus Road	Pine Island Road	1.4
261	Hiatus Road	McNab Road	Just south of NW 67th Street	0.4
262	Hiatus Road	Commercial Boulevard	NW 44th Street	1.1
263	SW 40th Avenue	Hallandale Beach Boulevard	County Line Road	0.8
264	N 72nd Avenue	Davie Road Extension	Sheridan Street	0.8
265	Stirling Road	Pine Island Road	Davie Road / Davie Road Extension	1.8
266	Stirling Road	Palm Avenue / Nob Hill Road	Pine Island Road	1.3
267	Stirling Road	Flamingo Road	Palm Avenue / Nob Hill Road	2.0
268	Hiatus Road	Sheridan Street	Pines Boulevard	1.6
269	Stirling Road	Dykes Road	Flamingo Road	3.0
270	SW 160th Avenue	Stirling Road	Sheridan Street	1.0
271	Sheridan Street	Volunteer Road	Flamingo Road	2.0
272	Sheridan Street	Flamingo Road	Palm Avenue	2.0
273	Hiatus Road	Stirling Road	Sheridan Street	1.0
274	Sheridan Street	Palm Avenue	Douglas Road	1.0
275	Taft Street	Palm Avenue	Douglas Road	1.0
276	Taft Street	Flamingo Road	Palm Avenue	2.1
277	Johnson Street	Flamingo Road	Palm Avenue	2.1
278	Johnson Street	Palm Avenue	Douglas Road	1.0
279	Palm Avenue	Pines Boulevard	Pembroke Road	1.0
280	Hiatus Road	Pines Boulevard	Pembroke Road	1.0
281	Palm Avenue	NW 29th Court	Sheridan Street	0.2
282	SW 100th Avenue / Nob Hill road	Griffin Road	Stirling Road	1.4
283	Orange Drive	Hiatus Road	Nob Hill Road	1.1
284	SW 14th Street / Indian Trace	Weston Road	SW 136th Avenue	2.3
285	Weston Road	SR 84	Indian Trace	1.7

Exhibit A-3: 2035 Bicycle Needs

8/5/2009

Project ID	Project Name	From	To	Length in Miles
286	Saddle Club Road	Just west of Lakeview Drive	Weston Road	1.7
287	Bonaventure Boulevard	SR 84	Saddle Club Road	1.0
288	Griffin Road	US 27	SW 184th Avenue	2.6
289	SW 184th Avenue	Sheridan Street	Pines Boulevard	1.5
290	SW 184th Avenue	Pines Boulevard	Miramar Parkway	2.0
291	SW 172nd Avenue	Pines Boulevard	Miramar Parkway	2.0
292	SW 172nd Avenue	Sheridan Street	Pines Boulevard	1.5
293	SW 172nd Avenue	Griffin Road	Sheridan Street	2.3
294	Nob Hill Road	Broward Boulevard	Just north of SR 84	0.9
295	Nob Hill Road	Sunrise Boulevard	Broward Boulevard	1.8
296	NW 19th Street	NW 21st Avenue / NW 23rd Avenue	Powerline Road	1.0
297	Indian Trace	SR 84 (west bound)	SR 84 (east bound)	0.1
298	NE 26th Street	Federal Highway/US 1	Bayview Drive	0.5
299	A1A	Oakland Park Boulevard	Just south of NE 20th Street	1.0
300	Wiles Road	University Drive	Rock Island Road	1.9
301	NW 15th Street	Powerline Road / Hammondville Road	Dixie Highway	2.0
302	NE 10th Street	Dixie Highway	US 1 / Federal Highway	1.4
303	Johnson Road	SR 7	Lyons Road	1.0
304	SR 7	Hillsboro Boulevard	North County Line	0.7
305	Powerline Road	North County Line Road	Hillsboro Boulevard	0.7
306	Dixie Highway	Hillsboro Boulevard	NE 3rd Street	0.3
308	Federal Highway/US 1	Hillsboro Boulevard	North County Line	0.7
309	NE 21st Ave / NE 2nd Street / NE 20th Ave	NE 7th Street	Hillsboro Boulevard	0.5
310	Wiles Road	Lyons Road	East end of Wiles Road	0.9
311	NW 48th Street / NW 49th Court	West end of NW 48th Street	Military Trail	2.0
312	NW 31st Avenue	Hammondville Road	Atlantic Boulevard	1.0
313	NE 15th Avenue	NE 13th Street	Sunrise Boulevard	0.4
314	NW 21st Avenue / NW 23rd Avenue	Oakland Park Boulevard	Service Road at Sunrise Boulevard	2.0
315	SW 26th Terrace-SW 32nd Avenue Connector	SR 84	Ravenswood Road	0.7
316	Lee Wagener Boulevard / SW 42nd Street	SW 30th Avenue	Perimeter Road	1.2
317	S 2nd Street	SW 7th Avenue	SE 3rd Avenue	0.6
318	SE 3rd Avenue	Las Olas Boulevard	SE 17th Street	1.3
319	SW 9th Avenue	Davie Boulevard	SR 84	1.0
320	SE 17th Street	SW 9th Avenue	US 1 / Federal Highway	1.0
321	SE 30th Street	Andrews Avenue	US 1 / Federal Highway	0.2
322	SE 24th Street / Spangler Boulevard	US 1 / Federal Highway	Eisenhower Boulevard	0.8
323	Eisenhower Blvd / SE 32nd Street / Eller Drive	SE 17th Street	Eller Drive / NE 7th Avenue	2.4
324	SW 62nd Avenue	Hollywood Boulevard	County Line Road / SW 41st Street	2.6
325	Flamingo Road	Taft Street	Johnson Street	0.5
326	Hiatus Road	Pembroke Road	Red Road	0.7
327	Sheridan Street	US 27	NW 184th Avenue	2.5

Exhibit A-3: 2035 Bicycle Needs

8/5/2009

Project ID	Project Name	From	To	Length in Miles
328	College Ave-SR 84 Connector	Nova Drive	Davie Road	1.0
329	SW 30th Street	Pine Island Road	College Avenue	1.7
330	College Avenue	SW 30th Street	SW 39th Street	0.6
331	SW 39th Street	University Drive	Davie Road	1.3
332	SW 136th Avenue	SR 84 (West bound)	SW 14th Street	1.1
333	Broward Boulevard	Commodore Drive	Flamingo Road	0.7
334	NW 120th Way-NW 44th Street Connector	Oakland Park Boulevard	Hiatus Road	1.7

Exhibit A-4: 2035 Pedestrian (Sidewalk) Needs

11/24/2009

Project ID	Project Name	From	To	Length in Miles
003	SW 160th Avenue / Weston Road	Blatt Boulevard	Arvida Parkway	2.5
004	Sawgrass Exit Ramp / Sunrise Boulevard	Sawgrass Expy	Midpoint of Sawgrass Corporate Parkway and NW 136th Avenue	0.4
005	SW 130th Av	I 595	SW 14th Street	1.0
006	SW 130th Av	SW 14th Street	SW 33rd Place	1.5
007	Shotgun Road / Orange Drive	SW 14th Street	SW 143nd Avenue	3.5
008	SW 185th/ SW 186th Way	Griffin Road	Sheridan Street	2.4
009	SW 172nd Avenue	Griffin Road	Sheridan Street	2.2
010	Sheridan Street	Just west of 193rd Avenue	SW 172nd Avenue	1.7
011	Sheridan Street	US 27	NW 196th Avenue	1.5
012	Pines Boulevard	Just east of Dykes Road	North bound on-ramp east of Interstate 75	1.6
013	SW 136th Avenue	Pines Boulevard	SW 10th Street	0.6
016	SW 48th Court	SW 160th Avenue	SW 148th Avenue	1.1
017	Miramar Parkway	Dykes Road	SW 148th Avenue	1.0
018	SW 148th Avenue	Miramar Parkway	SW 48th Court	1.0
019	SW 148th Avenue	North of SW 27th Street	Miramar Parkway	0.5
020	Flamingo Road	Miramar Parkway	Homestead Turnpike Ext	0.6
021	Flamingo Road	Pembroke Road	Miramar Parkway	1.0
022	Pembroke Road	SW 127th Avenue	Flamingo Road	0.2
023	Miramar Parkway	Flamingo Road	Red Road	1.0
024	Miramar Parkway	Red Road	Executive Way	0.6
025	SW 101st Avenue / Palm Avenue	Miramar Parkway	Homestead Turnpike Ext	0.6
026	SW 101st Avenue / Palm Avenue	Pembroke Road	Miramar Parkway	0.9
027	SW 101st Avenue / Palm Avenue	Pines Boulevard	Pembroke Road	1.0
028	SW 101st Avenue / Palm Avenue	Taft Street	Pines Boulevard	1.0
029	SW 101st Avenue / Palm Avenue	Sheridan Street	Taft Street	0.5
030	Sheridan Street	Lake Boulevard	Palm Avenue	1.7
031	Hiatus Road	Lakeview North Drive	Pines Boulevard	0.1
032	Stirling Road	Hiatus Road	SW 106th Avenue	0.6
033	S Douglas Road	Access Road	Pembroke Road	0.9
034	Johnson Street	Douglas Road	University Drive	1.0
035	NW 2nd Street	Just east of NW 2nd Street	Douglas Road	0.1
036	Taft Street	Hiatus Road	NW 93rd Avenue	1.9
037	Stirling Road	Just east of NW 90th Avenue	University Drive	0.9
038	Pine Island Road	Griffin Road	SW 57th Street	1.0
039	S University Drive	Just of Southwood Circle	Stirling Road	0.9
040	N University Drive	Stirling Road	Sheridan Street	1.0
041	Davie Road Ext	University Drive	Stirling Road	1.3
042	SW 58th Avenue	North of SW 48th Street	Stirling Road	1.1

Exhibit A-4: 2035 Pedestrian (Sidewalk) Needs

11/24/2009

Project ID	Project Name	From	To	Length in Miles
043	State Road 7	SW 45th Street/Orange Drive	Stirling Road	1.4
044	SW 40th Avenue	Griffin Road	Stirling Road	1.1
045	N 69th Way / N 66th Terrace Loop	Johnson Street	Arthur Street	0.9
046	Johnson Street	N 73rd Avenue	N 62nd Avenue	1.4
047	Sheridan Street	N 72nd Avenue	N 66th Avenue	0.7
048	N 72nd Avenue / N 70th Terrace Loop	Sheridan Street	Lee Street	0.5
049	N 68th Avenue	Taft Street	Douglas Road	1.5
050	Taft Street	N 64th Avenue	State Road 7 / 441	0.5
051	N 68th Avenue	Stirling Road	Greene Street	0.6
052	State Road 7	Taft Street	Taylor Street	0.8
053	State Road 7	Hollywood Boulevard	Dewey Street	0.6
054	State Road 7	Plunkett Street	SW 25th Street	0.8
055	SW 25th Street	SW 68th Avenue	State Road 7 / 441	1.2
056	State Road 7	SW 25th Street	SW 40th Court	0.9
057	Miramar Parkway	SW 64th Avenue	SW 58th Avenue	0.8
058	W Hallandale Beach Boulevard	SW 56th Avenue	SW 38th Avenue	0.9
059	SW 56th Av	SW 38th Street	Just north of SW 41st Street	0.2
060	Diplomat Parkway	Washington Street	Hallandale Beach Boulevard	1.3
061	Sheridan Street	Just west of Watermark Boulevard	Just west of SR A1A	0.9
062	N Ocean Drive	Palm Street	Sheridan Street	0.7
063	E Dania Beach Boulevard	Gulfstream Road	Just west of SR A1A	0.9
064	Bryan Road	Old Griffin Road	Stirling Road	0.8
065	Old Griffin Road / NW 4th Street	Griffin Road	Federal Highway	1.1
066	Griffin Road / Taylor Road	Just west of NW 14th Avenue	NE 7th Avenue	1.7
067	NE 7th Avenue	Eller Drive	Just south of Taylor Lane	1.5
068	S Miami Road	SE 17th Street	Andrews Avenue	1.1
069	Eller Drive	Andrews Avenue Intersection	I 595 Ramp	0.6
070	Eller Drive	NE 7th Avenue	Just north of Access Road	1.3
071	Perimeter Road Loop	Terminal Drive Ramp	Terminal Drive Ramp	5.7
072	SW 26th Terrac	SR 84	SW 32nd Street	0.3
073	SW 18th Avenue / Lauder Way	SW 20th Street	Just south of SW 32nd Street	0.8
074	SW 28th Street	SW 15th Avenue	SW 2nd Avenue	1.2
075	SW 15th Avenue	SW 7th Street	SW 16th Street	0.8
076	SW 19th Avenue / SW 16th Street	Just north of Davie Boulevard	SW 15th Avenue	0.7
077	NW 11th Avenue	NW 4th Street	SW 5th Place	0.7
078	NW 7th Avenue	NW 18th Street	Sunrise Boulevard	1.0
079	NW 16th Street	Powerline Road	NE 5th Terrace	1.0
080	NE 18th Street	NE 15th Avenue	Federal Highway	0.6
081	Bayview Drive	NE 30th Pl	Middle River Drive	1.9
082	NE 12th Street / Middle River Drive	Oakland Park Boulevard	NE 11th Street	2.0
083	Bayview Drive	NE 44th Street	NE 32nd Street	1.0

Exhibit A-4: 2035 Pedestrian (Sidewalk) Needs

11/24/2009

Project ID	Project Name	From	To	Length in Miles
084	Oakland Park Boulevard	Federal Highway	Access Road	0.8
085	NE 45th Street / Floranada Road	NE 12th Terrace	Federal Highway	0.7
086	NE 18th Avenue	NE 49th Street	NE 45th Street / Floranada Road	0.3
087	Bougainvilla Drive/Ocean Drive	Commercial Boulevard	Fort Royal Isle	0.6
088	Bayview Drive	Bay Colony Drive	Commercial Boulevard	1.0
089	Commercial Boulevard	Federal Highway	Dupont Boulevard	0.6
090	N Federal Highway	Bayview Drive	NE 57th Street	0.4
091	NE 62nd Street / Cypress Creek Road	Dixie Highway	Federal Highway	1.4
092	N Dixie Highway	Mcnab Road / SW 15th Street	NE 51st Street	1.4
093	NE 6th Avenue	NE 56th Street	NE 46th Court	0.8
094	SE 6th Street / SE 5th Court	Cypress Road	Just east of SE 10th Avenue	1.4
095	SE 7th Drive / SE 28th Avenue	Federal Highway	Atlantic Boulevard	1.0
096	NE 26th Av / Harbor Drive	NE 12th Street	Atlantic Boulevard	1.2
097	SE 2nd Street	SE 11th Avenue	Federal Highway	0.7
099	NE 26th Av / NE 23rd Avenue	NE 24th Street	NE 12th Street	1.3
100	NE 23rd Av	NE 22nd Avenue	NE 24th Street	2.6
101	NE 49th Street	NE 17th Drive	NE 21st Terrace	0.4
102	SE 12th Av	Hillsboro Boulevard	NE 49th Street	1.6
103	Hillsboro Boulevard / NE 2nd Street Loop	Ocean Boulevard	Ocean Way	0.6
104	SE 15th Street NE 54th Street	NE 15th Avenue	Federal Highway	0.4
105	N Dixie Highway	SW 15th Street	Just north of NE 48th Street	0.4
106	N Dixie Highway	NE 48th Street	Sample Road	1.0
107	N Dixie Highway	Sample Road	Copans Road	1.0
108	N Dixie Highway	Copans Road	NE 10th Street	1.4
109	NE 11th Avenue	NE 10th Street	Atlantic Boulevard	0.7
110	NW 6th Avenue	NW 4th Street	Atlantic Boulevard	0.2
111	N Dixie Highway	NE 10th Street	Atlantic Boulevard	0.7
112	E Atlantic Boulevard	NE 22nd Avenue	SR A1A	0.7
114	W Atlantic Boulevard	Interstate 95	Dixie Highway	0.6
115	W Atlantic Boulevard	Powerline Road	Interstate 95	1.3
116	Atlantic Boulevard	NW 31st Road	Powerline Road	0.5
117	N Powerline Road	NW 15th Street	NW 2nd Street	0.9
118	Hammondville Road	NW 31st Avenue	Powerline Road	0.9
119	Coconut Creek Parkway	NW 45th Avenue	NW 31st Avenue	1.2
120	Banks Road	Copans Road	Coconut Creek Parkway	0.8
121	State Road 7 / Coconut Creek Pky	Margate Boulevard	Lakeside Drive	0.5
122	Atlantic Avenue / NW 31st Avenue	Just east of Hemingway Cir	Florida Turnpike Overpass	1.4
123	SW 36th Avenue / N Palm Aire Drive	Mcnab Road	Powerline Road	1.8
124	W Mcnab Road	NW 31st Avenue	NW 21st Avenue	1.1
125	Pompano Parkway / Powerline Road	Atlantic Boulevard	Mcnab Road	1.2
126	W Mcnab Road	NW 21st Avenue	Powerline Road	1.0

Exhibit A-4: 2035 Pedestrian (Sidewalk) Needs

11/24/2009

Project ID	Project Name	From	To	Length in Miles
127	NW 21st Avenue	Mcnab Road	NW 62nd Street / Cypress Creek Road	0.5
128	NW 15th Avenue	Mcnab Road	NW 62nd Street / Cypress Creek Road	0.5
129	NW 12th Avenue	Mcnab Road	NW 62nd Street / Cypress Creek Road	0.5
130	NW 12th Avenue	NW 10th Terrace	NW 51st Street	0.6
131	Perimeter Road	NW 21st Avenue	Commercial Boulevard	0.6
132	W Prospect Road	NW 31st Avenue	NW 52nd Court	1.0
133	NW 21st Avenue	Just south of Perimeter Road	Prospect Road	0.3
134	Southside of Basin / NW 339th Street	NW 39th Avenue	NW 31st Avenue	0.9
135	NW 31st Av	Commercial Boulevard	NW 39th Avenue	0.8
136	NW 31st Av	NW 62nd Street / Cypress Creek Road	Commercial Boulevard	1.1
137	NW 33rd Avenue	Prospect Road	Commercial Boulevard	0.6
138	W Prospect Road	State Road 7 / US 441	NW 31st Avenue	1.0
139	SW 15th Street	Rock Island Road	NW 29th Avenue	2.4
140	Access Road	State Road 7 / US 441	Mcnab Road	0.2
141	Brookwood Boulevard	Mcnab Road	NW 57th Street	1.0
142	Inverrary Drive	NW 44th Street	Inverrary Boulevard	0.8
143	NW 44th Street	NW 65th Avenue	Rock Island Road	1.1
144	W Inverrary Boulevard	Just south of NW 42nd Street	Oakland Park Boulevard	0.8
145	Inverrary Boulevard	Inverrary Drive	Lime Hill Road	0.4
146	Rock Island Road	NW 44th Street	Oakland Park Boulevard	1.1
147	Rock Island Road	Commercial Boulevard	NW 44th Street	1.0
148	NW 57th Street	Just west of NW 73rd Avenue	NW 64th Avenue	0.8
149	NW 57th Street	NW 94th Avenue	University Drive	1.5
150	NW 84th Terrace	Lagos De Campo Boulevard	Commercial Boulevard	0.7
151	NW 80th Avenue / Lagos De Campo Boulevard	Nob Hill Road	Pine Island Road	3.5
152	NW 70th Street	Pine Island Road	NW 80th Avenue	0.7
153	NW 75th Street	Pine Island Road	NW 80th Avenue	0.7
154	NW 70th Av	NW 78th Street	Mcnab Road	1.0
155	NW 76th Street	University Drive	NW 70th Avenue	0.5
156	Southgate Boulevard	Just west of SW 79th Avenue	SW 73rd Terrace	0.6
157	Southgate Boulevard	University Drive	Just east of SW 83rd Avenue	0.9
158	Southgate Boulevard	Pine Island Road	Just east of SW 81st Avenue	0.8
159	Southgate Boulevard	Just west of Sanibel Drive	Pine Island Road	1.6
160	W Atlantic Boulevard	Sawgrass Expressway Ramp	Lake View Drive	0.1
161	Riverside Drive	Royal Palm Boulevard	Shadowwood Boulevard	0.9
162	Shadow Wood Boulevard	University Drive	NW 82nd Avenue	1.3
163	Coral Hills Drive	Sample Road	NW 25th Court	0.7
164	Coral Hills Drive	Wiles Road	Sample Road	1.1
165	NW 39th Street	West of NW 126th Avenue	Coral Ridge Drive	0.8
166	Wiles Road	West of NW 126th Avenue	Coral Ridge Drive	0.8
167	NW 40th Street	NW 90th Avenue	Woodside Drive	1.1

Exhibit A-4: 2035 Pedestrian (Sidewalk) Needs

11/24/2009

Project ID	Project Name	From	To	Length in Miles
168	University Drive	South of Wiles Road	Caroadinal Road	0.4
169	Parkside Drive	Loxahatchee Road	Holmberg Road	1.1
170	Holmberg Road	Riverside Drive	Just west of Access Road	1.9
171	N State Road 7	North of Loxahatchee Road	Johnson Road	1.1
172	Loxahatchee Road	West end of Loxahatchee Road	State Road 7 / US 441	1.8
173	N Powerline Road	North End of Powerline Road	Hillsboro Boulevard	0.7
174	S Military Trl	Hillsboro Boulevard	SW 10th Street	1.0
175	SW Natura Boulevard	Hillsboro Boulevard	Tivoli Park Boulevard	0.8
176	NW 49th Court	Powerline Road	Military Trail	1.1
177	S Powerline Road	SW 4th Street	SW 10th Street	0.5
178	S Powerline Road	SW 10th Street	NW 48th Street	0.9
179	S Powerline Road	NW 48th Street	Sample Road	1.0
180	W Sample Road	Sample Road Ramp	Powerline Road	0.9
181	N Powerline Road	NW 33rd Court	Copans Road	0.8
182	W Copans Road	Powerline Road	NW 15th Avenue	0.5
183	W Copans Road	Andrews Avenue	NW 1st Avenue	1.0
184	Johnson Street	Knights Road	N 19th Avenue	1.5
185	Holatee Trail	Stirling Road	Sheridan Street	1.0
186	Holatee Trail	Palomino Drive	Stirling Road	0.9
187	Hancock Road	Griffin Road	Stirling Road	1.3
188	Hancock Road	Stirling Road	Sheridan Street	1.0
189	SW 148th Av	Stirling Road	Sheridan Street	1.0
190	SW 148th Av	Griffin Road	Stirling Road	1.3
191	Weston Road	Griffin Road	SW 66th Street	1.8
192	Sheridan Street	Just west of Interstate 75 West ramps	Flamingo Road	2.8
193	N Flamingo Road	Sheridan Street	Pines Boulevard	1.0
194	N Nob Hill Road	Just north of Central Park Pl	State Road 84	1.4
195	W Broward Boulevard	Just east of NW 122nd Terrace	Just east of Wimbledon Lakes Drive	2.3
196	Commodore Drive	NW 8th Street	State Road 84	1.2
197	Sawgrass Mills Cir	Orange Grove Ln	Just south of Green Toad Road	0.6
198	Flamingo Road	Oakland Park Boulevard	Panther Parkway	0.6
199	Hiatus Road	Washington Street	Pembroke Road	0.5
200	S University Drive	Miramar Parkway	Homestead Turnpike Ext	0.7
201	S University Drive	Pembroke Road	Miramar Parkway	0.9
202	S University Drive	Pines Boulevard	Pembroke Road	1.0
203	N University Drive	Just south of University Drive	Pines Boulevard	0.3
204	N University Drive	Sheridan Street	Johnson Street	1.0
205	Pasadena Boulevard	NW 88th Terrace	University Drive	0.9
206	Taft Street	NW 88th Terrace	University Drive	0.9
207	NW 85th Way	Pasadena Boulevard	Taft Street	0.3
208	N Douglas Road	Pasadena Boulevard	Taft Street	0.3

Exhibit A-4: 2035 Pedestrian (Sidewalk) Needs

11/24/2009

Project ID	Project Name	From	To	Length in Miles
209	Sheridan Street	NW 94th Avenue	NW 78th Avenue	1.7
210	SW 142nd Av	SW 26th Street	Orange Drive	1.6
211	SW 26th Street	SW 148th Avenue	Just east of 139th Avenue	0.8
212	N State Road 7	Johnson Road	Just south of Access Road	1.1
213	N State Road 7	Just south of Access Road	Cullum Road	0.4
214	W Sample Road	Turtle Creek Road	Just west of Lyons Road	0.8
215	Lyons Road	Just south of Access Road	NW 30th Street	0.4
216	Wiles Road	E Leitner Drive	Just east of Turtle Run Boulevard	0.5
217	Rock Island Road	Royal Palm Boulevard	NW 10th Court	0.6
218	NW 63rd Av	Winfield Boulevard	Royal Palm Boulevard	0.3
219	NW 82nd Street	NW 80th Avenue	Just west of University Drive	0.3
220	NW 78th Street	NW 80th Avenue	University Drive	0.4
221	Pine Island Road	Commercial Boulevard	NW 52nd Street	0.4
222	NW 44th Street	Pine Island Road	Access Road	0.9
223	NW 49h Avenue / NW 26th Street	Access Road	NW 47th Avenue	0.7
224	NW 47th Avenue	NW 21st Avenue	NW 16th Street	0.6
225	NW 38th Street	NW 19th Street	NW 16th Street	0.3
226	NW 16th Street	NW 47th Avenue	NW 38th Avenue	0.8
227	State Road 7 / 441	NW 16th Street	Just north of State Road 7 Ramp	0.6
228	NW 12th Street	NW 43rd Terrace	State Road 7 / US 441	0.3
229	NW 33rd Avenue / NW 16th Street	NW 16th Street	NW 31st Avenue	0.8
230	W Sunrise Boulevard	State Road 7 / US 441	NW 34th Avenue	0.6
231	W Sunrise Boulevard	Florida's Turnpike	State Road 7 / US 441	1.0
232	W Sunrise Boulevard	NW 65th Avenue	Florida's Turnpike	1.1
234	W Broward Boulevard	University Drive	Holly Lane	1.2
236	Cypress Road / NW 69th Avenue	NW 70th Avenue	NW 69th Avenue	0.4
237	NW 5th Street	University Drive	NW 70th Avenue	0.7
239	N University Drive	Marcano Boulevard	NW 11th Street	0.4
240	Cleary Boulevard	American Expy	University Drive	0.3
242	NW 72nd Avenue	NW 13th Street	NW 11th Place	0.2
243	NW 70th Av	NW 13th Street	NW 11th Place	0.2
244	NW 16th Street	NW 70th Av	Sunrise Boulevard	0.2
245	SW 46th Avenue / E Country Club Circle	Broward Boulevard	Peters Road	1.4
246	Peters Road / SW 42nd Avenue	SW 12th Street	SW 42nd Avenue	0.5
247	SW 46th Av / SW 43rd Way Loop	Peters Road	SW 21st Mnr	1.7
248	SW 44th Terrace	Davie Boulevard Ext	SW 21st Street	0.6
249	Peters Road	SW 51st Avenue	SW 46th Avenue	0.4
250	SW 16th Street/SW 63rd Avenue	SW 66th Avenue	SW 63rd Avenue	0.2
251	Peters Road	SW 63rd Avenue	SW 13th Street	0.1
252	Riverland Road	SW 38th Avenue	SW 27th Avenue	0.7
253	Ravenswood Road	Interstate 95	Griffin Road	1.4

Exhibit A-4: 2035 Pedestrian (Sidewalk) Needs

11/24/2009

Project ID	Project Name	From	To	Length in Miles
254	SW 9th Street	SW 9th Avenue	Federal Highway	1.0
255	NE 4th Street	NW 1st Avenue	NE 12th Avenue	0.6
256	S State Road 7	Ramp North of I 595	Orange Drive	1.7
257	SW 45th Street	Florida's Turnpike	State Road 7 / US 441	0.5
258	SW 30th Street	SW 76th Avenue	College Avenue	0.7
259	Pine Island Road	I 595	SW 36th Street	1.8
260	State Road 84	Davie Road	State Road 7 / US 441	1.8
261	I 595	University Drive	Davie Road	1.5
262	State Road 84	College Avenue	Davie Road	0.5
263	Nova Drive	College Avenue	Davie Road	0.5
264	S University Drive	SW 13th Pl	State Road 84	0.3
265	SW 45th Street	SW 142nd Av	Flamingo Road	1.5
266	SW 45th Street	Flamingo Road	Hiatus Road	1.0
267	SW 45th Street	Just east of Hiatus Road	Nob Hill Road	0.9
268	SW 45th Street	Nob Hill Road	Pine Island Road	1.2
269	SW 45th Street	Pine Island Road	Just east of 66th Avenue	1.5
270	Griffin Road	Davie Road	Florida's Turnpike	1.0
271	Griffin Road	University Drive	Davie Road	1.2
272	Griffin Road	Nob Hill Road	University Drive	1.9
273	Griffin Road	Flamingo Road	Nob Hill Road	2.2
274	Griffin Road	Interstate 75 Ramp	Just west of Flamingo Road	2.5
275	W Palomino Drive	SW 148th Avenue	SW 142nd Avenue	0.5
276	Stirling Road	SW 148th Avenue	Flamingo Road	2.0
277	Stirling Road	Hawkes Bluff Avenue	Interstate 75	0.3
278	Taft Street / 186th Avenue	NW 196th Avenue	Pines Boulevard	1.4
279	NW 196th Avenue	Sheridan Street	Taft Street	0.7
280	Pines Boulevard	US 27	SW 186th Avenue	1.3
281	Johnson Street	NW 208th Avenue	Pines Boulevard	0.8
282	Taft Street	US 27	NW 209th Avenue	0.2
283	SW 68th Avenue	SW 27th Court	Miramar Parkway	0.2
285	NE 1st Avenue	Pembroke Road	Hallandale Beach Boulevard	0.8
286	S Dixie Highway	Washington Street	Mayo Street	0.4
287	NE 3rd Street	NE 1st Avenue	Federal Highway	0.3
288	Ravenswood Road	SW 51st Court	Tigertail Boulevard	0.4
289	Phippen Road	Dixie Highway	Just south of SW 10th Street	0.2
290	Taft Street	N 20th Avenue	Just east of N 14th Avenue	0.4
291	N 14th Avenue	Arthur Street	Grant Street	0.2
292	N 14th Avenue	Sheridan Street	Harding Street	0.4
293	E Sheridan Street	Federal Highway	East of SE 3rd Avenue	0.3
294	SW 4th Avenue	SW 34th Street	Just north of SW 33rd Street	0.3
295	SW 4th Avenue	State Road 84	Park Lane	0.5

Exhibit A-4: 2035 Pedestrian (Sidewalk) Needs

11/24/2009

Project ID	Project Name	From	To	Length in Miles
296	SW 2nd Avenue	State Road 84	SW 26th Street	0.1
297	SW 2nd Avenue	SW 17th Street	South End of SW 2nd Avenue	0.1
298	SE 16th Street Ext	SE 15th Street	SE 16th Street	0.1
299	Cordova Road	SE 9th Street	SE 15th Street	0.6
300	Eisenhower Boulevard / Marriot Drive	SE 17th Street	East end of Portside Drive	0.3
301	SW 4th Avenue	SW 9th Street	SW 10th Street	0.1
302	Andrews Avenue	SE 7th Street	SE 9th Street	0.1
303	SE 12th Street	Miami Road	SE 10th Avenue	0.2
304	SE 10th Av	SE 12th Street	SE 17th Street	0.5
305	S Miami Road	SE 12th Street	SE 17th Street	0.5
306	SE 16th Court	Miami Road	SE 10th Avenue	0.1
307	Mayan Drive / Grace Drive / Ocean Drive Loop	SE 17th Street	SE 20th Street	0.8
308	NE 15th Av	NE 9th Street	NE 6th Street	0.4
309	NE 6th Street	Andrews Avenue	Federal Highway	0.4
310	Progresso Drive / NE 3rd Avenue	NE 9th Street	Flagler Drive	0.1
311	N Dixie Highway	NE 38th Street	NE 26th Street	0.4
312	NE 6th Av	NE 33rd Street	Oakland Park Boulevard	0.1
313	NE 6th Av	Prospect Road	NE 43rd Street	0.1
314	N Andrews Avenue	Commercial Boulevard	NE 45th Street / Floranada Road	0.5
315	N Andrews Avenue	NW 56th Court	Commercial Boulevard	0.6
317	NE 53rd Court	Andrews Avenue	NE 6th Avenue	0.5
318	NE 56th Street	NE 3rd Avenue	Dixie Highway	0.7
319	NE 56th Street	Just west of Ne 15th Avenue	Just west of NE 21st Drive	0.7
320	NE 18th Avenue	NE 59th Street	NE 55th Street	0.2
321	E Commercial Boulevard	Just west of Ne 15th Terrace	NE 17th Avenue	0.2
322	NE 14th Way / NE 13th Avenue	NE 53rd Street	Commercial Boulevard	0.4
323	NE 58th Street	NE 9th Terrace	Dixie Highway	0.1
324	NW 9th Avenue	Mcnab Road	Just south of Cypress Creek Road	0.5
325	NW 62nd Street	NW 10th Terrace	Powerline Road	0.1
327	SW 71st Avenue	Southgate Boulevard	SW 7th Street	0.4
328	Coral Ridge Drive	North Sawgrass Ramp	South Sawgrass Ramp	0.1
329	W Commercial Boulevard	Eastern Sawgrass Ramp	Just east of Hiatus Road	0.3
330	Nob Hill Road	Commercial Boulevard	NW 53rd Street	0.3
331	Sheridan Street	Just west of SW 166th Avenue	Just east of SW 166th Avenue	0.1
332	SW 36th Court	West End of The Road	Flamingo Road	0.5
333	SW 26th Street / Hiatus Road	Flamingo Road	Hiatus Road	1.8
334	Sheridan Street	N 64th Avenue	N 61st Avenue	0.4
335	N 72nd Avenue	Mckinley Street	Hayes Street	0.3
336	N State Road 7	Midpoint Between Sunset Drive and N 59th Terrace	Farragut Street	0.2
337	N 56th Av	N 33rd Street	Douglas Street	0.2
338	N 63rd Avenue / Hollywood Boulevard	Polk Street	Hollywood Boulevard	0.2

Exhibit A-4: 2035 Pedestrian (Sidewalk) Needs

11/24/2009

Project ID	Project Name	From	To	Length in Miles
339	N 64th Avenue	Taylor Street	Pines Boulevard	0.2
340	Hallandale Beach Boulevard	Dixie Highway	NE 8th Avenue	0.2
341	Atlantic Shores Boulevard	NE 8th Avenue	NE 10th Avenue	0.1
342	N Dixie Highway	Tyler Street	Hollywood Boulevard	0.1
343	S 35th Av	Hollywood Boulevard	Van Buren Street	0.1
344	N Park Road	Lee Street	Harding Street	0.2
345	SE 19th Av	Just north of Eller Drive	SE 32nd Street	0.1
346	SW 20th Street	SW 19th Avenue	SW 12th Avenue	0.6
347	SW 15th Av	SW 20th Street	State Road 84	0.4
348	NW 27th Av	NW 15th Court	NW 11th Court	0.4
349	NW 15th Court	NW 27th Avenue	NW 23rd Avenue	0.4
350	Oakland Park Boulevard	NW 46th Avenue	Just west of NW 43rd Avenue	0.3
351	NW 36th Street	NW 43rd Avenue	State Road 7 / US 441	0.2
352	NW 34th Avenue	NW 6th Court	NW 4th Street	0.3
353	NW 31st Av	NW 2nd Street	NW 1st Street	0.1
354	NW 35th Avenue	Just south of NW 1st Court	Broward Boulevard	0.1
355	NW 5th Street	State Road 7 / US 441	East end of NW 5th Street	0.3
356	N State Road 7	NW 8th Place	NW 3rd Street	0.7
357	NW 36th Terrace / NW 8th Place	NW 8th Street	NW 35th Terrace	0.2
358	NW 13th Terrace / NW 9th Place	Sunrise Boulevard	NW 13th Avenue	0.1
359	NW 12th Court	NW 24th Avenue	NW 23rd Avenue	0.2
360	NW 8th Court	NW 27th Avenue	NW 8th Street	0.2
361	NW 22nd Avenue	NW 6th Pl	Sistrunk Boulevard	0.1
362	NW 13th Avenue	Sunrise Boulevard	NW 9th Street	0.1
363	NW 5th Street	Powerline Road	NW 7th Avenue	0.2
364	S Andrews Avenue	Las Olas Boulevard	New River Drive	0.1
365	NW 2nd Avenue	NW 2nd Street	Broward Boulevard	0.1
366	NW 2nd Street	NW 3rd Avenue	NW 1st Avenue	0.1
367	W Commercial Boulevard	NW 64th Avenue	Rock Island Road	1.0
368	S University Drive	SW 39th Street	Orange Drive	0.2
369	SW 71st Avenue	Just north of Sportsman Drive	NW 62nd Street / Bailey Road	0.4
370	W Mcnab Road	Just west of Belmont Lane	Avon Lane	0.3
371	Bailey Road	NW 42nd Avenue	State Road 7 / US 441	0.2
372	SW 81st Avenue	Kimberly Boulevard	SW 12th Street	0.2
373	Kimberly Boulevard	SW 75th Avenue	SW 73rd Avenue	0.2
374	NW 10th Street	Banks Road	NW 49th Way	0.1
375	NW 45th Avenue	Coconut Creek Parkway	Coconut Creek Boulevard	0.4
376	NW 43rd Avenue	NW 12th Street	NW 4th Court	0.8
377	Coconut Creek Boulevard	Coconut Creek Parkway	NW 11th Street	0.2
378	Lyons Road	NW 15th Street	Just south of NW 15th Street	0.1
379	SW 3rd Street	SW 19th Avenue	Just east of SW 19th Avenue	0.1

Exhibit A-4: 2035 Pedestrian (Sidewalk) Needs

11/24/2009

Project ID	Project Name	From	To	Length in Miles
380	NE 62nd Street	Interstate 95 Ramp	Just east of Corporate Drive	0.1
381	NW 60th Street / Andrews Avenue	NW 60th Street	Interstate 95 Ramp	0.2
382	Park and Ride Lot	NE 62nd Street	Interstate 95 Ramp	0.1
383	SW 6th Street	Dixie Highway	Flagler Avenue	0.1
384	SE 11th Avenue	Atlantic Boulevard	Just south of Pine Drive	0.4
385	NE 6th Street	Just west of Flagler Avenue	NE 3rd Avenue	0.2
386	NW 15th Street	NW 3rd Avenue	Dixie Highway	0.3
387	NE 12th Street	Federal Highway	NE 26th Avenue	0.2
388	NE 36th Street	NE 26th Avenue	NE 31st Avenue	0.4
389	NE 48th Street	Dixie Highway	NE 14th Avenue	0.3
390	NE 33rd Street	NE 3rd Avenue	NE 5th Avenue	0.2
391	NE 3rd Av	NE 45th Street	NE 38th Street	0.6
392	E Sample Road	NW 5th Terrace	Sample Road Ramp	0.3
393	N Andrews Avenue Ext	Sample Road	NW 33rd Street	0.3
394	NW 15th Street	NW 18th Avenue	NW 13th Avenue	0.4
395	W Hillsboro Boulevard	Just west of Century Boulevard	Just east of Century Boulevard	0.1
396	SW 4th Street	SW 3rd Avenue	SW 1st Terrace	0.2
397	NW 2nd Street	Just east of NW 3rd Avenue	NW 1st Terrace	0.2
398	SE 2nd Avenue	Hillsboro Boulevard	SE 2nd Street	0.1
399	NE 2nd Street	NE 8th Avenue	Federal Highway	0.2
400	NW 31st Avenue	Hammondville Boulevard	Atlantic Boulevard	1.0
401	196th Avenue	Pines Boulevard	SW 55th Street	3.5
402	Nova Drive	SW 83rd Terrace	SW 81st Terrace	0.3
403	NW 31st Avenue	Just north of NW 24th Street	NW 24th Street	0.1
405	Bcc	College Avenue	BCC Entrance	0.4
406	NW 70th Avenue	NW 6th Street	NW 5th Street	0.1
407	Cross Street	Pine Island Road	NW 84th Avenue	0.2
408	NW 82nd Terracerace	North End of Road	Broward Boulevard	0.1
409	SW 3rd Street	SW 84th Avenue	SW 82nd Avenue	0.2
410	SW 82nd Avenue	Broward Boulevard	University Drive	0.8
412	NW 47th Avenue	NW 16th Street	Sunrise Boulevard	0.7
413	SW 8th Street	Flagler Avenue	SW 3rd Avenue	0.1
414	SW 3rd Avenue	SW 8th Street	SW 9th Street	0.1
415	NW 45th Street	Crystal Lake Drive	Military Trail	0.6
416	NW 8th Avenue	Sample Road	NW 33rd Street	0.2
417	NE 5th Avenue	Sample Road	NE 33rd Street	0.2
418	NE 2nd Avenue	NE 40th Street	NE 39th Court	0.1
419	NE 40th Street	NE 2nd Avenue	NE 3rd Avenue	0.2
420	NW 1st Avenue	NW 25th Court	Copans Road	0.1
421	NE 1st Avenue	NE 25th Court	Copans Road	0.1
422	NE 3rd Avenue	NE 26th Street	NE 25th Court	0.0

Exhibit A-4: 2035 Pedestrian (Sidewalk) Needs

11/24/2009

Project ID	Project Name	From	To	Length in Miles
423	NE 26th Court	Cypress Road	NE 3rd Avenue	0.3
424	NE 26th Street	Cypress Road	NE 3rd Avenue	0.3
425	NE 25th Court	Cypress Road	NE 3rd Avenue	0.3
426	Bcc Entrance	BCC	Davie Road	0.2
427	Bcc	BCC Entrance	BCC	0.1
428	Peters Road	Pine Island Road	SW 82nd Avenue	0.3
429	University Drive	Federated Road	Peters Road	0.7
430	Flagler Avenue	SW 6th Street	SW 8th Street	0.2
432	SW 9th Street	SW 3rd Avenue	Cypress Road	0.2
433	NE 13th Avenue	NE 1st Street	Atlantic Boulevard	0.1
434	NE 4th Avenue	NE 2nd Street	Atlantic Boulevard	0.1
435	NE 4th Street	Flagler Avenue	NE 5th Avenue	0.4
436	NE 4th Street	NE 14th Avenue	US 1 / Federal Highway	0.5
437	Flagler Avenue	NE 4th Street	NE 1st Street	0.2
438	Hammondville Road	NW 5th Avenue	NW 2nd Avenue	0.2
439	NW 33rd Street	Andrews Avenue	NW 8th Avenue	0.1
440	Crystreetal Lake Drive	NW 45th Street	Just west of NW 9th Avenue	0.7
441	NE 1st Terracerace	Just south of NE 42nd Street	NE 39th Court	0.2
442	NE 39th Court	NE 2nd Avenue	NE 2nd Way	0.1
443	Park Center Court	Park Center Place	Broward Boulevard	0.3
444	NW 3rd Avenue	Copans Road	NW 19th Court	0.4

Exhibit A-5: Greenways

9/17/2009

Greenway Name	Reference street/landmark	Project Limits	Length (mile)
BARRIER ISLAND CENTRAL	SR A1A	HILLSBORO INLET - US-1	13.19
BARRIER ISLAND NORTH	SR A1A	NORTH COUNTY LINE - HILLSBORO INLET	4.10
BARRIER ISLAND SOUTH	SR A1A	DANIA BEACH BLVD - SOUTH COUNTY LINE	5.40
BARRIER ISLAND SOUTH	SR A1A	US 1- SR-A1A	1.83
BIRIAN PICOLLO	FPL	FLAMINGO RD -PINE ISLAND RD	3.25
C-12 EAST	C-12	SR7 - DELEVOE PARK	1.99
C-12 WEST	C-12	C-42 CANAL - SR 7	5.01
C-13 EAST	C-13	NW 31ST AVE - NW 21ST AVE	0.98
C-13 WEST	C-13	C-42 CANAL - FLORIDA TURNPIKE	4.90
C-9	C-9	CONSERVATION LEVEE - FLAMINGO RD	8.61
C-9	C-9	FLAMINGO RD - RED RD	0.99
DIXIE HIGHWAY - CENTRAL	DIXIE HIGHWAY	ATLANTIC BLVD - COMMERCIAL BLVD	3.03
DIXIE HIGHWAY - CENTRAL	DIXIE HIGHWAY	COMMERCIAL BLVD - SUNRISE BLVD	3.93
DIXIE HIGHWAY - CENTRAL	DIXIE HIGHWAY	SUNRISE BLVD - ELLER DRIVE	3.81
DIXIE HIGHWAY - NORTH	DIXIE HIGHWAY	PIONEER PARK - ATLANTIC BLVD	6.59
DIXIE HIGHWAY SOUTH	DIXIE HIGHWAY	DANIA BEACH BLVD - BLUESTONE PARK	5.55
DIXIE HIGHWAY SOUTH	DIXIE HIGHWAY	ELLER DRIVE - DANIA BEACH BLVD	3.09
FPL NORTH CENTRAL	FPL	SUNRISE BLVD TO NEW RIVER GREENWAY	3.27
HILLSBORO CANAL WEST	LOX RD	SR 7 - LOXAHATCHEE WILDLIFE REFUGE	4.88
POND APPLE - WALDREP CONNECTOR	FPL	STIRLING RD - FLORIIDA TURNPIKE	3.07
POND APPLE	C-11	ORANGE DR - SR 84	2.79
POND APPLE CONNECTOR	FPL	ORANGE DR - FPL ROW .5 MILES SOUTH	0.81
ROCK ISLAND CENTRAL	ROCK ISLAND	SOUTHGATE BLVD TO COMMERCIAL BLVD	2.48
ROCK ISLAND NORTH	ROCK ISLAND	LOX RD - SOUTHGATE BLVD	7.41
ROCK ISLAND SOUTH	FPL	COMMERCIAL BLVD TO SUNRISE BLVD	4.18
TRADEWINDS	FPL	SR7 - TRADEWINDS PARK	3.03
VISTA VIEW	FPL	GRIFFIN RD - NEW RIVER GREENWAY	4.21
WALDREP TO C-9 CONNECTOR	FPL	MIRAMAR PARKWAY -SOUTH COUNTY LINE	1.92
WALDREP TO C-9 CONNECTOR	FPL	PINES BLVD - MIRAMAR PARKWAY	2.46
WALDREP TO C-9 CONNECTOR	FPL	SHERIDAN - PINES BLVD	1.78
WALDREP TO GRIFFIN CONNECTOR	FPL	N DOUGLAS RD - GRIFFIN RD	6.59
WILES RD	FPL	CONSERVATION LEVEE - SR 7	4.67
C-11 WEST	C-11	I-75 - US 27	5.05
CSX TRAIL	CSX ROW	GRIFFIN RD - HALLNDALE BEACH BLVD	6.08
CYPRESS CREEK CONNECTOR PALM AIRE	PALM AIRE	ATLANTIC BLVD - EXISTING PATH	0.24

Exhibit A-5: Greenways

9/17/2009

Greenway Name	Reference street/landmark	Project Limits	Length (mile)
CYPRESS CREEK NORTH SPUR	RIVERSIDE DR CANAL	C-14 CANAL - SAMPLE RD	2.89
CYPRESS CREEK SOUTH SPUR	N. LAUDERDALE	MCNAB RD - SOUTHGATE BLVD	1.40
HILLSBORO CANAL CENTRAL	HILLSOBORO	SR 7 - POWERLINE RD	4.09
HILLSBORO CANAL EAST	HILLSBORO CANAL	POWERLINE RD - PIONEER PARK	3.72
HOLLYWOOD BLVD	HOLLYWOOD BLVD	FTPK - SR 7	0.38
HOLLYWOOD BLVD	HOLLYWOOD BLVD	SR 7 - US 1	4.62
HOLLYWOOD BLVD	HOLLYWOOD BLVD	US 1 - A1A	1.45
LAS OLAS	LAS OLAS	US 1 - SR A1A	2.24
MIRAMAR PKY	MIRAMAR PKY	FLAMIMGO RD - FTPK	5.07
MIRAMAR PKY	MIRAMAR PKY	SW 172ND AVE - FLAMINGO RD	4.02
NOB HILL TRAIL	NOB HILL TRAIL	GRIFFIN RD - NEW NEW RIVER	3.03
PINES BLVD EAST	PINES BLVD	FLAMINGO RD - UNIVERSITY DR	3.97
PINES BLVD EAST	PINES BLVD	UNIVERSITY DR - SR-7	2.14
PINES BLVD WEST	PINES BLVD	US 27 - FLAMINGO RD	7.52
PORT EVERGLADES	FPL	US 1 - SE 17 ST	4.08
RIVERSIDE DR	RIVERSIDE DR	HOLMBERG RD - LOX RD	1.70
SHERIDAN St EAST	SHERIDAN ST	US 1 - SR A1A	1.72
SHERIDAN St WEST	SHERIDAN ST	FLAMINGO RD - PINE ISLAND	2.90
SHERIDAN St WEST	SHERIDAN ST	US 27 - FALMINGO RD	7.50
SNOOK CREEK	MCNAB	POWERLINE RD - I 95	0.51
SNOOK CREEK GREENWAY	MCNAB	POWERLINE RD - I-95	1.04
SW 172ND AVE	SW 172 AVE	MIRAMAR PARKWAY - GRIFFIN RD	5.82
SW 39 AVE	SW 39 AVE	BROWARD BLVD - DAVIE BLVD	1.15
WYNMOR BRIDAL PATH	BRIDAL PATH	COCONUT CREEK PARKWAY - COPANS RD	1.01

Exhibit A-5: Greenways

9/17/2009

Greenway Name	Reference street/landmark	Project Limits	Length (mile)
CYPRESS CREEK CONNECTOR	ATLANTIC BLVD	NW 31 AVE - N DIXIE HIGHWAY	2.73
CYPRESS CREEK CONNECTOR	ATLANTIC BLVD	PALM AIRE CANAL - NW 31 AVE	0.81
FPL SOUTH CENTRAL	FPL	NEW RIVER - GRIFFIN RD	2.65
FPL SOUTH CENTRAL	FPL	ORANGE DR - SW 42 AVE	0.98
NW 5TH ST	NW 5TH ST	UNIVERSITUY DR - EAST ACRE DR	2.36
PORT EVERGLADES CONNECTOR	FPL	OAKRIDGE AVE - US 1	3.36
SUNSET STRIP	SUNSET DR	SUNRISE BLVD - HIATUS RD	5.45
TURNPIKE	FTP	OAKLAND PARK BLVD - SUNRISE BLVD	2.56
TURNPIKE	FTP	SUNRISE BLVD - SR 84	3.05
TURNPIKE NORTH	FTP	MLK BLVD - OAKLAND PARK BLVD	4.78
TURNPIKE NORTH	FTP	NORTH COUNTY LINE - MLK BLVD	7.42

Exhibit A-6: 2035 Roadway Needs

8/17/2009

Project ID	Project Name	From	To	Miles	Project Description	Comments or Project Rationale
1	Andrews Ave	Pomp. Pk./SW 3 St	Atlantic Blvd	0.4	New (4LD)	improves network connectivity
2	Andrews Ave Extension	NW 18 St	Copans Rd	0.7	From 2 to 4 lanes (4LD)	supports freight and good movement, project identified in Urban Freight/Intermodal Mobility Study (Broward MPO, 2007/08)
3	Atlantic Blvd	Cypress Rd	US-1	1.1	Restripe for 6LD	enhances safety and improves traffic operations
4	Bass Creek Rd	SW 184 Ave	SW 172 Ave	1.0	New 4 lanes	improves network connectivity and relieves pressure on SIS facilities
5	Bass Creek Rd	SW 172nd Ave	SW 148 Ave	2.3	From 2 to 4 lanes	improves network connectivity and relieves pressure on SIS facilities
6	Blount Rd	Hammondville Rd	Copans Rd	1	From 2 to 4 lanes (4LD)	relieves congestion
7	County Line Rd	University Dr	Hillsboro Blvd Ext.	2.8	New (4LD)	improves network connectivity
8	County Line Rd (HEFT Ext)	Florida's Turnpike	I-95	3.9	Feasibility Study	enhances network supporting SIS facilities
9	Davie Rd	Nova Dr	I-595	0.5	From 4 to 6 lanes (6LD)	relieves congestion
10	Davie Rd Ext.	University Dr	East of University Dr	0.3	From 2 to 4 lanes	relieves congestion
11	Davie Rd Ext.	East of University Dr	SW 72 Ave	0.9	From 2 to 3 lanes	relieves congestion
12	Griffin Rd	I-75	Flamingo Rd	2.5	From 4LD to 6LD	help relieve congestion, supports freight and good movement, project identified in Urban Freight/Intermodal Mobility Study (Broward MPO, 2007/08)
13	Hiatus Rd	Sheridan Rd	Stirling Rd	1.0	From 2 to 4 lanes (4LD)	relieves congestion
14	NE 3rd Ave	Copans Rd	Sample Rd	1.0	From 2 to 4 lanes (4LD)	relieves congestion
15	Nova Drive	College Ave	University Dr	1.0	From 2 to 3 lanes (Upgrade to major collector)	support in Town of Davie's Plan Local Road Master Plan
16	Nova Drive	University Dr	Pine Island Rd	0.9	From 2 to 3 lanes	support in Town of Davie's Plan Local Road Master Plan
17	NW 7th/9th Connector	S. of Sunrise Blvd	NW 6th Ct	0.5	From 2 to 4 lanes (4LD)	improves network connectivity
18	NW 21 Ave	Oakland Park Blvd	Commercial Blvd	1.3	From 2 to 4 lanes (4LD)	relieves congestion
19	Oakes Rd	Davie Rd	SR 7 / US 441	1.72	New 4LD including an overpass at Florida's' Turnpike	support in Town of Davie's Plan, completed a feasibility study in September 2008, supports Town of Davie's TOC plan
20	Oakland Park Blvd	I-95	Powerline Rd	NA	Intersection Improvements	enhances capacity, improves traffic operations, and could potentially benefit transit projects, demand exceeds capacity (screen line analysis)
21	Pembroke Rd	SW 160th Ave	SW 184th Ave	1.9	From 2 to 4 lanes (4LD)	network connectivity and potential bottleneck
22	Pembroke Rd	SW 184 Ave	SW 200th Ave	1.0	New (4LD)	improve network connectivity
23	Pembroke Rd	W of Florida's Turnpike	SR 7 / US 441	1.4	Restripe for 6LD	enhances safety and improves traffic operations
24	Pembroke Rd.	University Dr	Douglas Rd	1.0	From 4 to 6 lanes (6LD)	relieves congestion
25	Pembroke Rd.	SW 200th Ave	US Hwy 27	1.5	New (4LD)	improve network connectivity
26	Pines Blvd	At Flamingo Rd	-	NA	Intersection Improvements	enhances capacity, improves traffic operations, and could potentially benefit transit projects, demand exceeds capacity (screen line analysis)
27	Pines Blvd	At University Dr	-	NA	Intersection Improvements	enhances capacity, improves traffic operations, and could potentially benefit transit projects, demand exceeds capacity (screen line analysis)
28	Powerline Rd	SW 10 St	Palm Beach County Line	1.6	From 4 to 6 lanes (6LD)	relieves congestion
29	Ravenswood Rd	Griffin Rd	SW 42 St	1.0	From 2 to 4 lanes (4LD)	relieves congestion
30	Sample Rd	At Military Trail	-	NA	Intersection Improvements	enhances capacity, improves traffic operations, and could potentially benefit transit projects
31	Sheridan St	Dixie Hwy	US-1	0.4	From 4 to 6 lanes (6LD)	relieves congestion
32	Sheridan St	SW 148th Ave	Douglas Rd	5	From 4 to 6 lanes (6LD)	relieves congestion
33	SR A1A	Oakland Park Blvd	Flamingo Dr	1.1	Lane reduction (Streetscape) from 6 to 4 lanes	supported in A1A greenway plan
34	SR 7 / US 441	N. Fillmore St	Stirling Rd	2.4	From 4 to 6 lanes (6LD)	bottleneck, project identified in Urban Freight/Intermodal Mobility Study (Broward MPO, 2007/08)
35	SR 7 / US 441	At Oakland Park Blvd	-	NA	Intersection Improvements	enhances capacity, improves traffic operations, and could potentially benefit transit projects, demand exceeds capacity (screen line analysis)
36	SR 7 / US 441	At Hollywood Blvd	-	NA	Intersection Improvements	enhances capacity, improves traffic operations, and could potentially benefit transit projects, demand exceeds capacity (screen line analysis)
37	SR 7 / US 441	At Atlantic Blvd	-	NA	Intersection Improvements	enhances capacity, improves traffic operations, and could potentially benefit transit projects, demand exceeds capacity (screen line analysis)
38	SW 10th St	At I-95 Interchange	-	NA	Interchange Modification	enhances capacity, improves traffic operations, and enhances safety
39	SW 10th St	Florida's Turnpike	I-95	3.1	Convert to 6LD Exwy (includes new interchanges at Powerline Rd and Military Trail)	improves network connectivity and enhances highway capacity
40	SW 10th St	Powerline Rd	Military Trail	1.4	From 4 to 6 lanes (6LD)	bottleneck, heavy travel demand
41	SW 148th Ave	Bass Creek Rd	Miramar Pkwy	1.0	From 2 to 4 lanes (4LD)	divert local trips from SIS facilities to local streets, help relieve pressure on SIS facilities
42	SW 184th Ave	Sheridan St	Miramar Pkwy	3.5	From 2 to 4 lanes (4LD)	divert local trips from SIS facilities to local streets, help relieve pressure on SIS facilities

Exhibit A-6: 2035 Roadway Needs

8/17/2009

Project ID	Project Name	From	To	Miles	Project Description	Comments or Project Rationale
43	SW 184th Ave	Sheridan St	Griffin Rd	2.2	New (4LD)	improve network connectivity, may divert local trips from SIS facilities to local streets, help relieve pressure on SIS facilities
44	SW 196th Ave	Miramar Pkwy	Pines Blvd	2.0	From 2 to 4 lanes (4LD)	divert local trips from SIS facilities to local streets, help relieve pressure on SIS facilities
45	SW 30th Ave	Griffin Rd	SW 45th St	0.3	From 2 to 4 lanes (4LD)	help relieve congestion
46	Trails End Rd	University Dr	County Line Rd	0.7	New (4LD)	improve network connectivity, may divert local trips from SIS facilities to local streets, help relieve pressure on SIS facilities
47	University Dr	Holmberg Rd	County Line Rd	1.5	From 2 to 4 lanes (4LD)	improve network connectivity
48	University Dr	NW 40 St (Cardinal)	Sawgrass Exwy	1.7	From 4 to 6 lanes (6LD)	relieves congestion
49	Wiles Rd	Rock Island Rd	SR 7 / US 441	1.3	From 4 to 6 lanes (6LD)	relieves congestion
FISH/SIS Projects						
50	FTPK Homestead Ext.	Miami-Dade County Line	NW 57th Ave/Red Road	3.0	From 4LD to 8LD	FTPK master plan, project consistent with Miami-Dade MPO
51	I-95	All I-95 Interchanges in Broward County	-	NA	Interchange Improvements	Improvements to support SIS/Transit operations. Requested by FDOT Dist. 4
52	I-595	Reimbursement	-	NA	Ultimate Plan*	project identified in SIS 2035 CFP
53	I-595 Causeway	SR 7 / US 441	I-95	2.2	Ultimate Plan*	project identified in SIS 2035 CFP
54	I-75 Express Lanes	HEFT	I-595	12.4	Ultimate Plan* including 2 managed lanes	project identified in SIS 2035 CFP, PD&E Study in progress, supports transit
55	Florida's Turnpike	Griffin Rd	Palm Beach County Line	18.8	Implement Open Road Tolling	increases capacity without adding lanes, enhances safety
56	Florida's Turnpike	At Sawgrass Exwy Interchange	-	0.2	Interchange Modification	unfunded need (Florida's Turnpike Enterprise)
57	Florida's Turnpike	HEFT	N of Johnson St	3.7	From 6LD to 8LD**	unfunded need (Florida's Turnpike Enterprise)
58	Florida's Turnpike	N of Johnson St	Griffin Rd	3.4	From 6LD to 8LD**	unfunded need (Florida's Turnpike Enterprise)
59	Florida's Turnpike	N of Atlantic Blvd	Sawgrass Exwy	5.3	From 6LD to 8LD**	unfunded need (Florida's Turnpike Enterprise)
60	Florida's Turnpike	Sawgrass Exwy	Palm Beach County Line	1.9	From 6LD to 8LD**	unfunded need (Florida's Turnpike Enterprise)
61	Florida's Turnpike	At Hollywood Blvd	-	NA	Interchange Modification**	unfunded need (Florida's Turnpike Enterprise), project identified in Urban Freight/Intermodal
62	Florida's Turnpike	At Oakland Park Blvd	-	NA	New Interchange	Requested by City of Lauderhill
63	Florida's Turnpike	At Sunrise Blvd	-	NA	Interchange Modification	unfunded need (Florida's Turnpike Enterprise)
64	I-95 Managed Lanes	Broward Blvd	Palm Beach County Line	15	4 Managed Lanes	supports alternative mode(s) of transportation
65	I-95 Managed Lanes	Broward Blvd	Miami-Dade County Line	10.4	4 Managed Lanes	supports alternative mode(s) of transportation
66	Sawgrass Expwy	Sunrise Blvd	FTPK Main Line	22.1	Implement Open Road Tolling	increases highway capacity without adding lanes, enhances safety
67	FTPK Homestead Ext.	NW 57th Ave/Red Road	FTPK Mainline	4.0	From 4LD to 8LD	FTPK master plan, project consistent with Miami-Dade MPO
68	Florida's Turnpike	At Commercial Blvd	-	NA	Interchange Modification	unfunded need (Florida's Turnpike Enterprise)
69	I-595	I-75	West of I-95	11.7	P3/CEI	project identified in SIS 2035 CFP
70	I-595	East of I-75	West of I-95	11.7	P3/GEO TECH	project identified in SIS 2035 CFP
71	I-595	I-75/Sawgrass	SR-5/US-1	NA	P3	project identified in SIS 2035 CFP
72	I 595/SR 862	East of I-75	East of I-95	11.7	Ultimate Plan	project identified in SIS 2035 CFP
73	I-595	I-75	SR-7	9.5	Ultimate Plan	project identified in SIS 2035 CFP

Notes:

* Per SIS 2035 Cost Feasible Plan, Ultimate Plan is defined as, "An ultimate improvement for a transportation corridor; May include special use lanes, truck lanes, transit

** May already be in the E+C but were delayed

Exhibit A-7: 2035 Freight/Seaport/Airport Needs

11/24/2009

Project ID	Project Name	From	To	Miles	Project Description	Comments
1	Aggregate Terminal and Rail Yard	-	-	-	Development of aggregate facility and rail	FY 10-11 Port Everglades Unfunded Projects List, June 2009 (P#9)
2	Andrews Ave	S of SW 33 St	SE 28th St	0.5	Roadway Improvements	project identified in *Urban Freight/Intermodal Mobility Study (Broward MPO, 2007/08)*
3	AVI - Ground Transportation Management System (AVI)	-	-	-	AVI system within the airport roadway system	Unfunded Aviation Project Priority List, Broward County Aviation Department, 2009 (CIP#3689)
4	Cruise Passenger & Baggage Processing Facility	-	-	-	Plan, design, and implement facility to handle disembarking cruise passengers at terminals	Unfunded Aviation Project Priority List, Broward County Aviation Department, 2009
5	Cruise Terminal 21/22 Expansion	-	-	-	Terminal expansion	FY 10-11 Port Everglades Unfunded Projects List, June 2009 (P#11)
6	Cruise Terminal No. 4 Redevelopment/ Expansion	-	-	-	Terminal expansion	FY 10-11 Port Everglades Unfunded Projects List, June 2009 (P#5)
7	Database integration	-	-	-	Integrate Available Databases into Centralized System	Project identified in the 2030 Cost Feasible Plan (Project ID 16, Table 8-8, Cost Feasible Freight Projects)
8	Delivery appointment system for cruise ships	-	-	-	Web-based appointment system	Project identified in the 2030 Cost Feasible Plan (Project ID 15, Table 8-8, Cost Feasible Freight Projects)
9	Directional Dynamic Message Signs (DMS)*	Within Port Limits	-	-		Project identified in the 2030 Cost Feasible Plan (Project ID 10, Table 8-8, Cost Feasible Freight Projects)
10	Eisenhower Blvd	At Port Entrance	-	-	Access Improvements	Project identified in the 2030 Cost Feasible Plan (Project ID 7, Table 8-8, Cost Feasible Freight Projects)
11	Eller Dr./ICTF	At 7th Ave	-	-	New overpass (7th Ave goes over Eller Dr)	project identified in *Urban Freight/Intermodal Mobility Study* (Broward MPO, 2007/08). Project also identified by Port Everglades
12	Eller Dr.	At McIntosh Rd	-	-	Intersection Improvements (traffic signal timing, road and lane widths, and turning radii)	project identified in *Urban Freight/Intermodal Mobility Study (Broward MPO, 2007/08)*
13	Eller Dr.	At SR 84	-	-	Intersection Improvements (traffic signal timing, road and lane widths, and turning radii)	project identified in SIS Connector Study (FDOT, Dist. 4, Feb. 2007)
14	Eller Dr./Eller Dr. Extension	At I-595	-	-	Intersection Improvements (signal time modifications to improve left-turn phase access to Port Everglades)	project identified in *Urban Freight/Intermodal Mobility Study (Broward MPO, 2007/08)*
15	Eller Drive	At Port Entrance	-	-	Roadway Capacity Improvement	Project identified in the 2030 Cost Feasible Plan (Project ID 6, Table 8-8, Cost Feasible Freight Projects)
17	ICTF	At Southport	-	-	Initial Rail Spur Construction and construction of near-dock railroad yard in Southport (Design & Construction)	project identified in the Port Everglades Master Plan; Project identified in the 2030 Cost Feasible Plan (Project ID 5, Table 8-8, Cost Feasible Freight Projects)
18	Inventory Clearance Equipment	FDOT and FTPK accessible	-	-	-	Project identified in the 2030 Cost Feasible Plan (Project ID 12, Table 8-8, Cost Feasible Freight Projects)
19	Long Term Remote Parking Facilities	-	-	-	-	Unfunded Aviation Project Priority List, Broward County Aviation Department, 2009 (CIP#3832)
20	McIntosh Rd.	N of SE 46th St	N of SE 36th St	0.75	Roadway Improvements (queuing and signage improvements)	project identified in *Urban Freight/Intermodal Mobility Study (Broward MPO, 2007/08)*
21	McIntosh Loop Rd.	-	-	-	Realignment of existing road (Construction)	FY 10-11 Port Everglades Unfunded Projects List, June 2009 (P#29)
22	Midport Cruise/Cargo Programming & Plan Development	-	-	-	Cruise and cargo development	FY 10-11 Port Everglades Unfunded Projects List, June 2009 (P#12)
23	Midport Parking Garage	-	-	-	Construct new parking garage facility	FY 10-11 Port Everglades Unfunded Projects List, June 2009 (P#4)

Project ID	Project Name	From	To	Miles	Project Description	Comments
24	On-Port circulation Improvements	-	-	-	-	project identified in the Atlantic Commerce Corridor Study, Nov 2003; Project identified in the 2030 Cost Feasible Plan (Project ID 3, Table 8-8, Cost Feasible Freight Projects)
26	Powerline Rd	At NW 15th Street	-	-	Install new traffic signal	project identified in Urban Freight/Intermodal Mobility Study (Broward MPO, 2007/08)
27	Real Time Train Locations	-	-	-	Upgrade/expand current FEC program; add SFRC	Project identified in the 2030 Cost Feasible Plan (Project ID 14, Table 8-8, Cost Feasible Freight Projects)
28	Sawgrass Exwy	At Commercial Blvd	-	-	Install traffic signal (for safe truck access at this interchange)	project identified in *Urban Freight/Intermodal Mobility Study* (Broward MPO, 2007/08)
29	Shuttle Bus Maintenance/Operation Facility	-	-	-	Facility appropriate for 50+ bus fleet operation,5 bay maintenance, fueling station, dispatch center and other appropriate functions.	Unfunded Aviation Project Priority List, Broward County Aviation Department, 2009
30	Southport rail connector	Southport	FEC mainline	-	Rail Connector between Southport and FEC mainline	project identified in the Atlantic Commerce Corridor Study, Nov 2003; Project identified in the 2030 Cost Feasible Plan (Project ID 2, Table 8-8, Cost Feasible Freight Projects)
32	Spangler Rd	Miami Rd	Eisenhower Blvd	0.72	Roadway Improvements (queuing and signage improvements)	project identified in *Urban Freight/Intermodal Mobility Study* (Broward MPO, 2007/08)
33	SR 84	At FEC rail crossing	-	-	Study to evaluate a roadway tunnel under FEC RR	project identified in SIS Connector Study (FDOT, Dist. 4, Feb. 2007)
34	SR 84	At Andrews Ave	-	-	Intersection Improvements	project identified in SIS Connector Study (FDOT, Dist. 4, Feb. 2007); Project identified in the 2030 Cost Feasible Plan (Project ID 9, Table 8-8, Cost Feasible Freight Projects)
35	SR 84	At I-95	-	-	Interchange modification (improve turning radii at ramps)	project identified in SIS Connector Study (FDOT, Dist. 4, Feb. 2007)
36	SR 84	At US 1	-	-	Intersection Improvement Study	project identified in SIS Connector Study (FDOT, Dist. 4, Feb. 2007)
37	SR 84	At SW 15th Ave	-	-	Intersection Improvements	project identified in SIS Connector Study (FDOT, Dist. 4, Feb. 2007)
38	SW 4th Ave	At 28th St	-	-	Install new traffic signal	project identified in SIS Connector Study (FDOT, Dist. 4, Feb. 2007)
39	Terminal 4 Parking Garage	-	-	-	New parking structure	FY 10-11 Port Everglades Unfunded Projects List, June 2009 (P#6)
40	Terminal 4 Second Loading Bridge	-	-	-	New passenger loading bridge	FY 10-11 Port Everglades Unfunded Projects List, June 2009 (P#13)
41	Traveler Information via DMS	At Port exit		-	Information on major incidents; security	Project identified in the 2030 Cost Feasible Plan (Project ID 13, Table 8-8, Cost Feasible Freight Projects)
42	US 27 Rail Corridor Study	Miami-Dade/Broward Co. Line	Palm Beach/Broward Co. Line	-	Freight Corridor Feasibility Study	project identified in the Regional Freight Mobility Study (FDOT, Dist. 4) and requested by FDOT Dist. 4
43	Southport Turning Notch Expansion (Phase I)	-	-	-	Turning Notch Design, Bulkhead construction, and Mitigation for Westlake Improvement	FY 10-11 Port Everglades Unfunded Projects List, June 2009 (P#1)
44	ACOE Dredging Project	-	-	-	Portwide Dredging	FY 10-11 Port Everglades Unfunded Projects List, June 2009 (P#2)
45	Slip 2 Expansion	-	-	-	Increase length to accommodate mega cruise ships	FY 10-11 Port Everglades Unfunded Projects List, June 2009 (P#17)

Exhibit A-8: 2035 ITS Needs

8/24/2009

Project	Limits	Description	Cost (2009 dollars)	Notes
ATMS Design Group 2	Area 2: West Central Broward	Signal System Upgrade/ITS	$21,000,000	Incl. Transit Signal Priority
ATMS Design Group 3	Area 3: Northeast Broward	Signal System Upgrade/ITS	$25,000,000	Incl. Transit Signal Priority
ATMS Design Group 4	Area 4: Southeast Broward	Signal System Upgrade/ITS	$25,000,000	Incl. Transit Signal Priority
ATMS Design Group 5	Area 5: Northwest Broward	Signal System Upgrade/ITS	$25,000,000	Incl. Transit Signal Priority
ATMS Design Group 6	Area 6: Southwest Broward	Signal System Upgrade/ITS	$25,000,000	Incl. Transit Signal Priority
Total			**$121,000,000**	

Source: FY 10-11 Unfunded Multimodal Surface Transportation Priorities

ITS Technology	Brief Technology Description	Application in Broward County	Potential Benefits	Comments
Ramp Signaling	Ramp Signals to manage traffic flow along I-95 corridor.	I-95, 595	reduce travel times, reduce congestion, improve safety	This could correspond to the I-95 Ramp signaling project now operating in FDOT district 6. Average speeds increased from 33 to 41 MPH during rush hour. Travel times decreased from 12 to 9.5 minutes on the 6 mile stretch.
Arterial DMS signs	DMS signs to alert traveling public as they approach major interchange areas along arterial streets.	All arterials that have major interchanges, TPK, I-95, etc.	reduce congestion, support amber alert, help the motorist find alternative routes, support hurricane evacuation.	These are extra tools that are used to interface with the public so that the data collected through technology can be a visible asset to them.
Travel time system	There are two methods to develop travel time through License Plate Readers and AVI technology. This could be used to determine travel times at all major arterial intersections and can also be used on freeway applications.	All major arterial intersections and Freeway sections	Provide accurate data collection for travel times.	Accurate method to compute travel time on a real-time basis.
Roadway Weather Information System	ITS technology to have weather station along any corridor that records the weather at that location.	strategic locations that experience high traffic volume or on bridges	Improve Safety data, can be collected and distributed to the public when needed.	A good example may be to place at the apex of a long bridge to let the Traffic Management Center know about the weather conditions.

Exhibit A-9: Needs Plan Project Cost - Rapid Bus Scenario

Cost Category	Project/Corridor Length (miles)	Capital Cost		O&M Cost
		Cost (2009 dollars)	Cost Per Mile (in millions)	Annual O&M Cost (2009 dollars)
Local Bus (BCT)				
Broward County Transit* (BCT) Fixed Route Bus Service	-not applicable-	$211,775,223	-not applicable-	$184,714,087
Broward County Intermodal Center (IMC)	-not applicable-	$83,811,100	-not applicable-	$1,060,900
Broward County Administration Building	-not applicable-	$18,000,000	-not applicable-	-not applicable-
Premium Transit Service				
University Drive Rapid Bus	24	$16,564,926	$0.69	$4,731,085
SR 7/ US 441 Rapid Bus	38	$25,302,140	$0.67	$7,405,450
Oakland Park Blvd Rapid Bus	14	$10,100,903	$0.70	$2,820,824
Sunrise Blvd Rapid Bus	15	$10,905,079	$0.71	$3,011,850
Andrews Ave Rapid Bus	6	$4,168,638	$0.75	$1,292,615
I-75 Rapid Bus	12	9,040,386	$0.73	2,438,772
Dixie Highway Rapid Bus	16	$10,898,821	$0.68	$3,202,876
US 1 Rapid Bus	28	$18,868,955	$0.67	$5,495,189
SR A1A Rapid Bus	14	$9,958,548	$0.73	$2,820,824
Sample Rd Rapid Bus	12	$8,313,099	$0.72	$2,438,772
Cypress Creek Rd Rapid Bus	10	$7,391,375	$0.77	$2,056,720
Pines/Hollywood Blvd Rapid Bus	15	$16,784,153	$1.13	$4,938,849
Central Broward Loop Rapid Bus	16	$10,809,096	$0.68	$3,173,584
Broward Blvd (SR 7 to Ft. Lauderdale Downtown) Rapid Bus	3.7	$3,494,525	$0.94	$853,255
Miramar Pkwy/Hallandale Bch Blvd Rapid Bus	15	$10,561,484	$0.71	$3,011,850
Total - Rapid Bus	**238**	**$173,162,128**	**$0.73**	**$49,692,516**
Nob Hill Rd Rapid Bus	22	14,925,735	$0.68	4,319,741
Powerline Rd Rapid Bus	15.5	10,737,918	$0.69	3,078,071
Hollywood Beach-FLL Airport Rapid Bus	8	5,761,458	$0.72	1,645,376
Commercial Blvd Rapid Bus	12	8,418,357	$0.70	2,409,480
Broward Blvd Rapid Bus	14	9,915,194	$0.71	2,791,532
Griffin Rd Rapid Bus	15.5	10,737,918	$0.69	3,078,071
Lauderhill - Fort Lauderdale Rapid Bus	9.5	6,621,279	$0.70	1,931,915
Atlantic Blvd Rapid Bus	12.5	9,083,195	$0.73	2,504,993
Total - Premium Rapid Bus	**109**	**$76,201,055**	**$0.70**	**$21,759,179**
On-going Studies				
South Florida East Cost Corridor (FEC)	24	$1,098,240,000	$45.76	3,481,549
Central Broward East-West Transit	21.5	$902,988,269	$42.00	$9,639,062
City of Ft. Lauderdale Downtown Circulator - The Wave	2.7	$124,340,000	46.05	$2,488,480
People Mover - SunPort (Airport/Seaport)	2.9	$806,284,000	$278.03	$17,717,030
Total		**$2,931,852,269**		**$33,326,121**

Exhibit A-9: Needs Plan Project Cost - Rapid Bus Scenario

Cost Category	Project/Corridor Length (miles)	Capital Cost		O&M Cost
		Cost (2009 dollars)	Cost Per Mile (in millions)	Annual O&M Cost (2009 dollars)
Mobility Hub				
Gateway Hub	21	$172,119,729	$8.20	$55,000
Anchor Hub	23	$44,409,408	$1.93	$41,250
Community Hub	62	$3,530,757	$0.06	$27,500
Total	**106**	**$220,059,894**		**$123,750**
Bike/Pedestrian	-not applicable-	**226,144,919**		-not applicable-
Greenways	-not applicable-	**309,462,651**		-not applicable-
Roadways	-not applicable-	**4,563,000,000**		**$125,000,000**
Freight/Seaport/Airport	-not applicable-	**477,331,626**		-not applicable-
Intelligent Transportation System (ITS)	-not applicable-	**182,350,000**		-not applicable-
Rapid Bus Scenario Total		**$9,473,150,865**		**$415,676,553**

Notes:

All cost are in 2009 dollars. Projects costs borrowed from various agencies have been adjusted for inflation.

Capital cost estimate for Premium High Capacity transit projects do not include right-of-way (ROW) cost.

* BCT capital costs include cost for Third Operations/Maintenance Facility ($57 million), Park-n-Ride Facilities ($29 million), Bus Shelters/Bus Bays/Bus Stop Upgrades($26 million), BCT Bus Capital-Maintenance Needs ($4 million), and additional (149) new buses ($113 million)by 2018.

Premium High Capacity transit projects include capital cost (approximately $1.2 billion) for the six strategic service initiatives identified in the TDP (FY 2009 -FY 2018).

Premium High Capacity transit projects include capital cost (approximately $38 million) for 95 buses needed for the six strategic service initiatives identified in the TDP (FY 2009 - FY 2018).

BCT Transit ITS countywide improvements estimated at approximately $26 million) in the TDP (FY 2009 - FY 2018) are integrated with the Mobility Hub and Premium Transit Service capital costs.

Mobility hub capital cost estimate includes BCT/Transit Intermodal Center costs (approximately $26 million) identified in the TDP (FY 2009- FY 2018).

Project cost for SunPort (Airport/Sea port People Mover) and Broward County Intermodal Center (IMC) are based on PE Report (Lea + Elliot), June 2009.

Project cost for The Wave (Downtown Ft. Lauderdale Circulator) is based on Ft. Lauderdale Downtown Development Authority (DDA) estimates, 2008.

South Florida East Coast Corridor (FEC) capital cost and I-75 capital cost (Rapid Bus) are for Broward County portion only. This cost is based on average cost for LRT/Rapid Bus projects, which were derived from the cost model developed for Broward 2035 LRTP.

Based on the technology chosen for the Premium Transit Service projects identified in the 2035 Broward LRTP, approximately 318 to 493 new transit vehicles will be added by 2035. The new transit vehicles includes the 255 additional BCT buses (approximately $111 million) required between 2018 and 2035. The 255 buses are based on the TDP (FY 2009 - FY 2018) assumption that 15 buses would be added per year for 17 years beyond the 2018 TDP planning horizon .

BCT annual O&M cost is based on TDP (FY 2009 - FY 2018). The annual O&M cost includes operating costs for route expansion, service enhancements, and new routes identified in the TDP until 2018. Beyond 2018 BCT operating costs are included in the annual O&M cost for Premium Transit Service project (ranging from $84 million to 165 million based on transit technology).

Exhibit A-10: Needs Plan Project Cost - Bus Rapid Transit Scenario

Cost Category	Project/Corridor Length (miles)	Capital Cost		O&M Cost
		Cost (2009 dollars)	Cost Per Mile (in millions)	Annual O&M Cost (2009 dollars)
Local Bus (BCT)				
Broward County Transit* (BCT) Fixed Route Bus Service	-not applicable-	$211,775,223	-not applicable-	$184,714,087
Broward County Intermodal Center (IMC)	-not applicable-	$83,811,100	-not applicable-	$1,060,900
Broward County Administration Building	-not applicable-	$18,000,000	-not applicable-	-not applicable-
Premium Transit Service				
University Drive BRT	24	440,357,184	$18.37	10,713,366
SR 7/ US 441 BRT	38	654,041,369	$17.41	16,736,009
Oakland Park Blvd BRT	14	279,232,889	$19.36	6,411,479
Sunrise Blvd BRT	15	286,785,744	$18.60	6,841,667
Andrews Ave BRT	6	98,425,967	$17.70	2,970,294
I-75 BRT	12	444,000,000	$35.85	5,551,753
Dixie Highway BRT	16	276,943,857	$17.31	7,272,725
US 1 BRT	28	461,579,605	$16.34	12,435,642
SR A1A BRT	14	234,334,731	$17.16	6,412,239
Sample Rd BRT	12	200,231,773	$17.38	5,551,753
Cypress Creek Rd BRT	10	163,670,000	$17.06	4,691,267
Pines/Hollywood Blvd BRT	15	268,281,581	$18.14	11,189,351
Central Broward Loop BRT	16	299,296,746	$18.71	7,272,725
Broward Blvd (SR 7 to Ft. Lauderdale Downtown) BRT	3.7	77,568,550	$20.96	1,980,735
Miramar Pkwy/Hallandale Bch Blvd BRT	15	241,350,806	$16.27	6,842,482
Total - Bus Rapid Transit (BRT)	**238**	**$4,426,100,800**	**$18.62**	**$112,873,487**
Nob Hill Rd Rapid Bus	22	14,925,735	$0.68	4,319,741
Powerline Rd Rapid Bus	15.5	10,737,918	$0.69	3,078,071
Hollywood Beach-FLL Airport Rapid Bus	8	5,761,458	$0.72	1,645,376
Commercial Blvd Rapid Bus	12	8,418,357	$0.70	2,409,480
Broward Blvd Rapid Bus	14	9,915,194	$0.71	2,791,532
Griffin Rd Rapid Bus	15.5	10,737,918	$0.69	3,078,071
Lauderhill - Fort Lauderdale Rapid Bus	9.5	6,621,279	$0.70	1,931,915
Atlantic Blvd Rapid Bus	12.5	9,083,195	$0.73	2,504,993
Total - Rapid Bus	**109**	**$76,201,055**	**$0.70**	**$21,759,179**
On-going Studies				
South Florida East Cost Corridor (FEC)	24	$1,098,240,000	$45.76	3,481,549
Central Broward East-West Transit	21.5	$902,988,269	$42.00	$9,639,062
City of Ft. Lauderdale Downtown Circulator - The Wave	2.7	$124,340,000	46.05	$2,488,480
People Mover - SunPort (Airport/Seaport)	2.9	$806,284,000	$278.03	$17,717,030
Total		**$2,931,852,269**		**$33,326,121**

Exhibit A-10: Needs Plan Project Cost - Bus Rapid Transit Scenario

Cost Category	Project/Corridor Length (miles)	Capital Cost		O&M Cost
		Cost (2009 dollars)	Cost Per Mile (in millions)	Annual O&M Cost (2009 dollars)
Mobility Hub				
Gateway Hub	21	$172,119,729	$8.20	$55,000
Anchor Hub	23	$44,409,408	$1.93	$41,250
Community Hub	62	$3,530,757	$0.06	$27,500
Total	**106**	**$220,059,894**		**$123,750**
Bike/Pedestrian	-not applicable-	**226,144,919**		-not applicable-
Greenways	-not applicable-	**309,462,651**		-not applicable-
Roadways	-not applicable-	**4,563,000,000**		**$125,000,000**
Freight/Seaport/Airport	-not applicable-	**477,331,626**		-not applicable-
Intelligent Transportation System (ITS)	-not applicable-	**182,350,000**		-not applicable-
Rapid Bus Scenario Total		**$13,726,089,537**		**$478,857,525**

Notes:

All cost are in 2009 dollars. Projects costs borrowed from various agencies have been adjusted for inflation.

Capital cost estimate for Premium High Capacity transit projects do not include right-of-way (ROW) cost.

* BCT capital costs include cost for Third Operations/Maintenance Facility ($57 million), Park-n-Ride Facilities ($29 million), Bus Shelters/Bus Bays/Bus Stop Upgrades($26 million), BCT Bus Capital-Maintenance Needs ($4 million), and additional (149) new buses ($113 million)by 2018.

Premium High Capacity transit projects include capital cost (approximately $1.2 billion) for the six strategic service initiatives identified in the TDP (FY 2009 -FY 2018).

Premium High Capacity transit projects include capital cost (approximately $38 million) for 95 buses needed for the six strategic service initiatives identified in the TDP (FY 2009 - FY 2018).

BCT Transit ITS countywide improvements estimated at approximately $26 million) in the TDP (FY 2009 - FY 2018) are integrated with the Mobility Hub and Premium Transit Service capital costs.

Mobility hub capital cost estimate includes BCT/Transit Intermodal Center costs (approximately $26 million) identified in the TDP (FY 2009- FY 2018).

Project cost for SunPort (Airport/Sea port People Mover) and Broward County Intermodal Center (IMC) are based on PE Report (Lea + Elliot), June 2009.

Project cost for The Wave (Downtown Ft. Lauderdale Circulator) is based on Ft. Lauderdale Downtown Development Authority (DDA) estimates, 2008.

I-75 BRT cost is based on I-75 PD&E study, FDOT District 4 (May 2009).

South Florida East Coast Corridor (FEC) capital cost is for Broward County portion only. This cost is based on average cost for LRT projects, which was derived from the cost model developed for Broward 2035 LRTP.

Based on the technology chosen for the Premium Transit Service projects identified in the 2035 Broward LRTP, approximately 318 to 493 new transit vehicles will be added by 2035. The new transit vehicles includes the 255 additional BCT buses (approximately $111 million) required between 2018 and 2035. The 255 buses are based on the TDP (FY 2009 - FY 2018) assumption that 15 buses would be added per year for 17 years beyond the 2018 TDP planning horizon .

BCT annual O&M cost is based on TDP (FY 2009 - FY 2018). The annual O&M cost includes operating costs for route expansion, service enhancements, and new routes identified in the TDP until 2018. Beyond 2018 BCT operating costs are included in the annual O&M cost for Premium Transit Service project (ranging from $84 million to 165 million based on transit technology).

Exhibit A-11: Needs Plan Project Cost - Light Rail Transit Scenario

Cost Category	Project/Corridor Length (miles)	Capital Cost		O&M Cost
		Cost (2009 dollars)	Cost Per Mile (in millions)	Annual O&M Cost (2009 dollars)
Local Bus (BCT)				
Broward County Transit* (BCT) Fixed Route Bus Service	-not applicable-	$211,775,223	-not applicable-	$184,714,087
Broward County Intermodal Center (IMC)	-not applicable-	$83,811,100	-not applicable-	$1,060,900
Broward County Administration Building	-not applicable-	$18,000,000	-not applicable-	-not applicable-
Premium Transit Service				
University Drive LRT	24	1,037,044,724	$43.27	11,866,790
SR 7/ US 441 LRT	38	1,547,363,482	$41.19	18,511,588
Oakland Park Blvd LRT	14	659,421,047	$45.71	7,120,505
Sunrise Blvd LRT	15	684,067,069	$44.36	7,595,134
Andrews Ave LRT	6	305,398,009	$54.93	3,323,478
I-75 LRT	12	566,696,000	$45.76	6,171,249
Dixie Highway LRT	16	738,454,341	$46.15	8,069,762
US 1 LRT	28	1,217,349,146	$43.09	13,765,304
SR A1A LRT	14	643,294,375	$47.11	7,120,505
Sample Rd LRT	12	549,065,769	$47.65	6,171,249
Cypress Creek Rd LRT	10	456,579,476	$47.58	5,221,992
Pines/Hollywood Blvd LRT	15	726,815,546	$49.14	12,341,418
Central Broward Loop LRT	16	726,996,903	$45.44	8,069,762
Broward Blvd (SR 7 to Ft. Lauderdale Downtown) LRT	3.7	177,495,852	$47.97	2,231,832
Miramar Pkwy/Hallandale Bch Blvd LRT	15	659,655,633	$44.46	7,595,134
Total - Light Rail Transit (LRT)	**238**	**$10,695,697,373**	**$45.00**	**$125,175,702**
Nob Hill Rd Rapid Bus	22	14,925,735	$0.68	4,319,741
Powerline Rd Rapid Bus	15.5	10,737,918	$0.69	3,078,071
Hollywood Beach-FLL Airport Rapid Bus	8	5,761,458	$0.72	1,645,376
Commercial Blvd Rapid Bus	12	8,418,357	$0.70	2,409,480
Broward Blvd Rapid Bus	14	9,915,194	$0.71	2,791,532
Griffin Rd Rapid Bus	15.5	10,737,918	$0.69	3,078,071
Lauderhill - Fort Lauderdale Rapid Bus	9.5	6,621,279	$0.70	1,931,915
Atlantic Blvd Rapid Bus	12.5	9,083,195	$0.73	2,504,993
Total - Rapid Bus	**109**	**$76,201,055**	**$0.70**	**$21,759,179**
On-going Studies				
South Florida East Cost Corridor (FEC)	24	$1,098,240,000	$45.76	3,481,549
Central Broward East-West Transit	21.5	$902,988,269	$42.00	$9,639,062
City of Ft. Lauderdale Downtown Circulator - The Wave	2.7	$124,340,000	46.05	$2,488,480
People Mover - SunPort (Airport/Seaport)	2.9	$806,284,000	$278.03	$17,717,030
Total		**$2,931,852,269**		**$33,326,121**

Exhibit A-11: Needs Plan Project Cost - Light Rail Transit Scenario

Cost Category	Project/Corridor Length (miles)	Capital Cost		O&M Cost
		Cost (2009 dollars)	Cost Per Mile (in millions)	Annual O&M Cost (2009 dollars)
Mobility Hub				
Gateway Hub	21	$172,119,729	$8.20	$55,000
Anchor Hub	23	$44,409,408	$1.93	$41,250
Community Hub	62	$3,530,757	$0.06	$27,500
Total	**106**	**$220,059,894**		**$123,750**
Bike/Pedestrian	-not applicable-	**226,144,919**		-not applicable-
Greenways	-not applicable-	**309,462,651**		-not applicable-
Roadways	-not applicable-	**4,563,000,000**		**$125,000,000**
Freight/Seaport/Airport	-not applicable-	**477,331,626**		-not applicable-
Intelligent Transportation System (ITS)	-not applicable-	**182,350,000**		-not applicable-
Rapid Bus Scenario Total		**$19,995,686,110**		**$491,159,740**

Notes:

All cost are in 2009 dollars. Projects costs borrowed from various agencies have been adjusted for inflation.

Capital cost estimate for Premium High Capacity transit projects do not include right-of-way (ROW) cost.

* BCT capital costs include cost for Third Operations/Maintenance Facility ($57 million), Park-n-Ride Facilities ($29 million), Bus Shelters/Bus Bays/Bus Stop Upgrades($26 million), BCT Bus Capital-Maintenance Needs ($4 million), and additional (149) new buses ($113 million)by 2018.

Premium High Capacity transit projects include capital cost (approximately $1.2 billion) for the six strategic service initiatives identified in the TDP (FY 2009 -FY 2018).

Premium High Capacity transit projects include capital cost (approximately $38 million) for 95 buses needed for the six strategic service initiatives identified in the TDP (FY 2009 - FY 2018).

BCT Transit ITS countywide improvements estimated at approximately $26 million) in the TDP (FY 2009 - FY 2018) are integrated with the Mobility Hub and Premium Transit Service capital costs.

Mobility hub capital cost estimate includes BCT/Transit Intermodal Center costs (approximately $26 million) identified in the TDP (FY 2009- FY 2018).

Project cost for SunPort (Airport/Sea port People Mover) and Broward County Intermodal Center (IMC) are based on PE Report (Lea + Elliot), June 2009.

Project cost for The Wave (Downtown Ft. Lauderdale Circulator) is based on Ft. Lauderdale Downtown Development Authority (DDA) estimates, 2008.

South Florida East Coast Corridor (FEC) capital cost and I-75 capital cost (LRT) are for Broward County portion only. This cost is based on average cost for LRT projects, which was derived from the cost model developed for Broward 2035 LRTP.

Based on the technology chosen for the Premium Transit Service projects identified in the 2035 Broward LRTP, approximately 318 to 493 new transit vehicles will be added by 2035. The new transit vehicles includes the 255 additional BCT buses (approximately $111 million) required between 2018 and 2035. The 255 buses are based on the TDP (FY 2009 - FY 2018) assumption that 15 buses would be added per year for 17 years beyond the 2018 TDP planning horizon .

BCT annual O&M cost is based on TDP (FY 2009 - FY 2018). The annual O&M cost includes operating costs for route expansion, service enhancements, and new routes identified in the TDP until 2018. Beyond 2018 BCT operating costs are included in the annual O&M cost for Premium Transit Service project (ranging from $84 million to 165 million based on transit technology).

Exhibit A-12: Broward County Transit (BCT) Capital and O&M Cost

Item Number	Description	Capital Cost (2009 dollars)	Annual O&M Cost (2009 dollars)
1	**Capital Program**		
1.1	Third Operations/Maintenance Facility	$58,710,000	-not applicable-
1.2	Park-n-Ride Facilities	$29,870,000	-not applicable-
1.3	Bus Shelters/Bus Bays/Bus Stop Upgrades	$54,590,000	-not applicable-
1.4	Additional New Buses up to 2018 (40' diesel bus)[1]	$64,815,000	-not applicable-
1.5	BCT Bus Capital-Maintenance Needs	$3,790,223	-not applicable-
	Total Capital Program	**$211,775,223**	-not applicable-
	Intermodal Centers/Hubs[2]	$26,780,000	-not applicable-
2	**Operation & Maintenance (O&M) Expense**		
21	BCT Operation & Maintenance (O&M) Cost (total for 10 years)	-not applicable-	$2,051,261,359
2.2	System Strategic Initiatives O&M Cost (total for 10 years)	-not applicable-	$204,120,487
2.3	**Annual O&M Cost**	-not applicable-	**$184,714,087**
	Fiscal Year (FY) 2010 O&M Cost[3]	-not applicable-	**$121,967,960**

Source: FY 2009-2018 Transit Development Plan (TDP), Broward County Transit (BCT)

[1] Includes buses for service extension, reduced headways, and new local bus routes

[2] Cost of Intermodal Centers/Hubs is included in the Mobility Hubs cost

[3] O&M cost based on Broward County FY 2010 Budget

Notes:

Premium High Capacity transit projects include capital cost (approximately $1.2 billion) for the six strategic service initiatives identified in the TDP (FY 2009 - FY 2018).

Premium High Capacity transit projects include capital cost (approximately $38 million) for 95 buses needed for the six strategic service initiatives identified in the TDP (FY 2009 - FY 2018).

BCT Transit ITS countywide improvements estimated at approximately $26 million) in the TDP (FY 2009 - FY 2018) are integrated with the Mobility Hub and Premium Transit Service capital costs.

Exhibit A-13: Unit Cost for Light Rail Transit System Elements

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	**Guideway (including Track elements)**		
10.1	Guideway: At-grade exclusive right-of-way (double ballasted track)	$4,104,058	MI
10.3	Guideway: At-grade mostly exclusive (allows cross-traffic in certain locations) (embedded tracks-paved)	$6,306,610	MI
10.4	Guideway: At-grade in mixed traffic (embedded tracks-paved)	$5,607,961	MI
20	**Stations**		
20.1	At-grade station	$1,864,648	EA
20.3	Parking garage	$15,862	per space
20.4	Surface parking	$6,825	per space
30	**Support Facilities: Maintenance Facility & Yards**		
30.1	Light Maintenance Facility	$182,586	per vehicle
30.2	Storage or Maintenance of Way Building	$200,297	per vehicle
30.3	Yard and Yard Track	$236,758	per vehicle
40	**Site Work & Special Conditions**		
40.01.01	Reconstruct Existing Roadway (2 lanes and parking)	$795,726	MI
40.01.02	Reconstruct Existing Roadway (3 lanes)	$875,298	MI
40.04	Grade Separations w/MSE - 2300 x 60 ft w/100 ft center spans	$7,191,805	EA
50	**Systems**		
50.01	Train control and signals	$2,042,150	MI
50.02	Traffic signals and crossing protection	$354,088	EA
50.03	Traction power supply: substations	$710,273	EA
50.04	Traction power distribution: catenaries and third rail	$1,866,895	MI
50.05	Communications	$899,782	MI
50.06	Fare collection system and equipment	$54,316	EA
50.07	Transit Signal Priority (TSP)	$9,274	Xing
A	**Construction Sub-total**		
A1	Drainage	5.0%	percentage of construction cost only (A)
A2	Utility Relocation	7.0%	
A3	Urban Design/Landscaping	1.5%	
A4	Noise and Vibration	1.0%	
A5	Signing and Striping	1.0%	
A6	Method of Handling Traffic	2.0%	
B	**Construction Total**		
60	**Right-of-Way (ROW)**	-NA-	Acre
70	**Vehicles**		
70.01	Light Rail (double articulated, 1 level 2 cabs)	$3,950,000	EA
C	**Construction Total W/Vehicles**		
80	**Professional Services**		
80.01	Preliminary Engineering	2.0%	percentage of construction cost only (B)
80.02	Final Design	10.0%	
80.03	Project Management for Design and Construction	6.0%	
80.04	Construction Administration & Management	15.0%	
80.05	Insurance	1.5%	
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	1.5%	
D	**Construction Cost Total (including Professional Services)**		
90	**Unallocated Contingency**		
90.1	Design Contingency - 30 %	30%	percentage of construction cost plus professional services (D)
90.2	Construction Contingency - 10 %	10%	percentage of construction cost only (D)

Sources:

FasTracks Program, Denver (2008)

Characteristics of Bus Rapid Transit for Decision-Making, Feb. 2009 (FTA)

Provo/Orem Rapid Transit Corridor Alternatives Analysis, April 2005 (Carter & Burgess, Inc)

Central Broward East-West Transit Analysis (AA), April 2004 (Carter & Burgess, Inc)

Miami-Dade South Link Alternative Analysis, 2006 (Corradino Group)

East-West Rapid Transit Corridor Study (AA), Jacksonville, 2004 (Parsons Brinckerhoff)

Florida-Specific Intelligent Transportation System Deployment Costs - Tech. Memo 4, Aug. 2005 (FDOT)

Exhibit A-14: Unit Cost for Bus Rapid Transit System Elements

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	**Guideway**		
10.12	Double Guideway		
.01	At Grade - Mixed Flow Busway (in mixed traffic)	$882,643	MI
.02	At Grade - Dedicated Busway (semi-exclusive, allows cross-traffic)	$2,647,930	MI
0.03	At Grade - Dedicated Busway in Median (semi-exclusive, allows cross-traffic)	$3,656,666	MI
20	**Stations, Stops, Terminals, Intermodal (number)**		
20.02	Double Guideway		
.02	Low Volume Arterial (Double Guideway Station)	$347,782	EA
.03	High Volume Arterial (Double Guideway Station)	$985,383	EA
20.3	Parking garage	$15,862	Per Space
20.4	Surface parking	$6,825	Per Space
30	**Support Facilities: Maintenance Facility & Yards**		
30.1	Maintenance Facility	$163,909	per vehicle
30.2	Storage or Maintenance of Way Building	$120,200	per vehicle
40	**Sitework & Special Conditions**		
40.08	Grade Separations w/MSE - 2100 x60 ft w/100 ft center spans	$2,670,406	EA
50	**Systems**		
50.05.01	Traffic signals and intersection improvements (Double Guideway)	$173,891	EA
50.05.02	Communications, Line (Double Guideway)	$655,636	MI
50.06	Fare collection system and equipment	$54,316	EA
50.07	Transit Signal Priority (TSP)	$9,274	Xing
A	**Construction Sub-total**		
A1	Drainage	5.0%	percentage of construction cost only (A)
A2	Utility Relocation	7.0%	
A3	Urban Design/Landscaping	1.5%	
A4	Noise and Vibration	1.0%	
A5	Signing and Striping	1.0%	
A6	Method of Handling Traffic	2.0%	
B	**Construction Total**		
60	**Right-of-Way (ROW)**	-NA-	Acre
70	**Vehicles**		
70.01	Articulated Bus	$725,000	EA
C	**Construction Total W/Vehicles**		
80	**Professional Services**		
80.01	Preliminary Engineering	2.0%	percentage of construction cost only (B)
80.02	Final Design	10.0%	
80.03	Project Management for Design and Construction	6.0%	
80.04	Construction Administration & Management	15.0%	
80.05	Insurance	1.5%	
80.06	Legal; Permits; Review Fees by other agencies, cities, etc.	1.5%	
D	**Construction Cost Total (including Professional Services)**		
90	**Unallocated Contingency**		
90.1	Design Contingency - 30 %	30%	percentage of construction cost plus professional services (D)
90.2	Construction Contingency - 10 %	10%	percentage of construction cost only (D)

Sources:

FasTracks Program, Denver (2008)

Characteristics of Bus Rapid Transit for Decision-Making, Feb. 2009 (FTA)

Provo/Orem Rapid Transit Corridor Alternatives Analysis, April 2005 (Carter & Burgess, Inc)

Central Broward East-West Transit Analysis (AA), April 2004 (Carter & Burgess, Inc)

Miami-Dade South Link Alternative Analysis, 2006 (Corradino Group)

East-West Rapid Transit Corridor Study (AA), Jacksonville, 2004 (Parsons Brinckerhoff)

Florida-Specific Intelligent Transportation System Deployment Costs - Tech. Memo 4, Aug. 2005 (FDOT)

Exhibit A-15: Unit Cost for Rapid Bus Elements

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
20	**Stations, Stops, Terminals, Intermodal (number)**		
20.1	At-grade bus stop (w/shelter)	$61,903	EA
50	**Systems**		
50.06	Electronic Fare Payment (EFP) System	$15,302	per vehicle
50.07	Transit Signal Priority (TSP)/Queue Jumper	$9,274	Intersection
50.08	Real time passenger information (AVL)	$17,969	EA
	LCD screen	$11,255	Monitor
	LED screen	$5,628	Monitor
	On-board equipment	$2,550	Vehicle
	On-board CCTV camera	$9,274	EA
70	**Vehicles**		
70.01	Articulated Bus	$725,000	EA
70.02	Bus, Intercity (>=32'6", 1 door, luggage bays)	$435,000	EA

Sources:

FasTracks Program, Denver (2008)

Characteristics of Bus Rapid Transit for Decision-Making, Feb. 2009 (FTA)

Provo/Orem Rapid Transit Corridor Alternatives Analysis, April 2005 (Carter & Burgess, Inc)

Central Broward East-West Transit Analysis (AA), April 2004 (Carter & Burgess, Inc)

Miami-Dade South Link Alternative Analysis, 2006 (Corradino Group)

East-West Rapid Transit Corridor Study (AA), Jacksonville, 2004 (Parsons Brinckerhoff)

Florida-Specific Intelligent Transportation System Deployment Costs - Tech. Memo 4, Aug. 2005 (FDOT)

Exhibit A-16: Unit Cost for Mobility Hub Elements

Item Number	Mobility Hubs	Unit Cost (2009 dollars)	Unit
10	**Shelters**		
10.1	Station w/ enhanced amenities	$1,425,016	EA
10.2	Superstop w/ preferred amenities	$324,597	EA
10.3	Bustop w/ value amenities	$61,903	EA
20	Restrooms, Community Space, Public Art, Structure	$1,200,000	EA
20.1	Semi enclosed structure	$250,000	EA
30	Bike share (bike racks)	$10,000	EA
40	Car share		
40.1	Parking garage	$15,862	Space
40.2	Surface parking	$6,825	Space
50	Taxi bays	$7,875	Space
50.1	Kiss-n-Ride	$7,375	Space
60	**Systems**		
60.1	Ticket Vending Machine (TMV)	$54,316	EA
60.2	Communications infrastructure		
60.2.1	Telephone line lease	$2,319	per year
60.2.2	T1 telephone line lease	$9,042	per year
60.2.3	T3 telephone line lease	$91,003	per year
60.2.4	Fiber optic cable (New Conduit)	$107,001	per mile
60.2.05	Fiber optic cable (Existing Conduit)	$24,345	per mile
60.2.06	Fiber optic cable (Branch)	$13,911	per mile
60.2.07	Fiber optic receiver/transceivers (Internet Café plus)	$4,057	per location
60.2.08	Wireless receiver/transceivers (Wi Fi)	$4,057	per location
60.2.09	Hub switch	$162,298	per location
60.2.10	Transit Center Software Cost (COTS)	$405,746	One time
60.3	Real time passenger information		
60.3.1	LCD panel	$11,255	EA
60.3.2	LED panel	$5,628	EA
70	**Security**		
70.1	CCTV Camera at Remote Locations	$14,491	EA
	Construction Subtotal		
A	**Total cost w/ shelter (except for community hub)**		
	Add-on allowances (Drainage, utility relocation, urban design/landscaping, signage and striping, way finding, MOT)	percentage of total cost (A)	17.5%
B			
80	Professional Services (Planning, engineering, environmental, permitting, outreach, plus)	percentage of total cost (B)	33%
C			
90	**Unallocated Contingency**		
90.1	Design Contingency - 30 %	percentage of total cost (C)	30%
90.2	Construction Contingency - 10 %	percentage of total cost (C)	10%

Sources:

FasTracks Program, Denver (2008)

Characteristics of Bus Rapid Transit for Decision-Making, Feb. 2009 (FTA)

Provo/Orem Rapid Transit Corridor Alternatives Analysis, April 2005 (Carter & Burgess, Inc)

Central Broward East-West Transit Analysis (AA), April 2004 (Carter & Burgess, Inc)

Miami-Dade South Link Alternative Analysis, 2006 (Corradino Group)

East-West Rapid Transit Corridor Study (AA), Jacksonville, 2004 (Parsons Brinckerhoff)

Florida-Specific Intelligent Transportation System Deployment Costs - Tech. Memo 4, Aug. 2005 (FDOT)

Exhibit A-17: Bike Lane - Striping Road w/o sidewalk on both sides of the road

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
20	**STRIPING**		
20.1	6" Solid Traffic Stripe (White) (Thermoplastic) (4 stripes)	$19,386	MI
20.2	Bikelane Pavement Symbol (Thermoplastic) (Every 200 feet)	$10,097	MI
20.3	Signage (R3-17) (30X24) (Every 200 feet)	$63,466	MI
A	**Sub-Total**	$92,948	MI
	Contingency Items (for misc. items)	20%	percentage of Sub-Total (A)
B	**Sub-Total**	$111,538	MI
	Mobilization, Insurance, Bonding	15%	percentage of Sub-Total (B)
C	**Sub-Total**	$128,269	MI
	Surveying, Engineering and Permitting	20%	percentage of Sub-Total (C)
	TOTAL	**$153,922**	**MI**

Source: FDOT Item Average Unit Cost From January 2006 to December 2006 for Broward County (Area 12)

Exhibit A-18: Bike Lane - Paving 5' bikelane w/o sidewalk on both sides of the road

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	**PAVING**		
10.1	1 1/4" Asphalt (TYPE SP-9.5)	$22,027	MI
10.2	12" Limerock Base	$62,536	MI
10.3	12" Stabilized Subgrage	$9,680	MI
20	**STRIPING**		
20.1	6" Solid Traffic Stripe (White) (Thermoplastic) (4 stripes)	$19,386	MI
20.2	Bikelane Pavement Symbol (Thermoplastic) (Every 200 feet)	$10,097	MI
20.3	Signage (R3-17) (30X24) (Every 200 feet)	$63,466	MI
A	**Sub-Total**		
	Contingency Items (for misc. items)	20%	percentage of Sub-Total (A)
B	**Sub-Total**	$224,629	
	Mobilization, Insurance, Bonding	15%	percentage of Sub-Total (B)
C	**Sub-Total**	$258,324	
	Surveying, Engineering and Permitting	20%	percentage of Sub-Total (C)
	TOTAL	**$309,988**	**MI**

Source: FDOT Item Average Unit Cost From January 2006 to December 2006 for Broward County (Area 12)

Exhibit A-19: Sidewalk construction on one side of the road - 5' wide and 4" inch in depth

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	Construction Costs[1]	$141,625	MI
20	Maintenance of Traffic (MOT)[2]	10%	percentage of construction cost
30	Mobilization[2]	7%	percentage of construction cost
40	Contingency - Scope	25%	percentage of construction cost
	Sub-Total	$177,031	
50	Soft Cost[3]		
50.01	CEI	15%	percentage of Sub-Total
50.02	PE Design	20%	percentage of Sub-Total
	Total Cost	**$238,992**	**MI**

[1] FDOT Long Range Estimation (LRE) System - Production, Project Details Composite Report, July 2009.

[2] Maintenance of Traffic (MOT) and Mobilization are included in Construction Cost. Percentage are shown for information only.

[3] FDOT District 7 Roadway Cost Per Centerline Mile, Revised June 2008.

Exhibit A-20: Sidewalk construction on both sides of the road - 5' wide and 4" inch in depth

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	Construction Costs[1]	$283,250	MI
20	Maintenance of Traffic (MOT)[2]	10%	percentage of construction cost
30	Mobilization[2]	7%	percentage of construction cost
40	Contingency - Scope	25%	percentage of construction cost
	Sub-Total	$354,062	
50	Soft Cost[3]		
50.01	CEI	15%	percentage of Sub-Total
50.02	PE Design	20%	percentage of Sub-Total
	Total Cost	**$477,984**	**MI**

[1] FDOT Long Range Estimation (LRE) System - Production, Project Details Composite Report, July 2009.

[2] Maintenance of Traffic (MOT) and Mobilization are included in Construction Cost. Percentage are shown for information only.

[3] FDOT District 7 Roadway Cost Per Centerline Mile, Revised June 2008.

Exhibit A-21: Unit Cost for Greenways

Priority/ Group	Description	Unit Cost (2009 dollars)	Unit
0	Funded and existing greenways	-not applicable-	-not applicable-
Tier 1	Along canal and utility easements[1]	$1,000,000	MI
Tier 2	Provide connection to the Tier 1 Greenways[2]	$1,000,000	MI
Tier 3	Provide connections[3]	> $1,000,000	MI

Souce: Broward MPO, Bike/Ped Coordinator, July 2009

[1]Most likely the easiest to do, or are priority corridors on the County's Master Plan (Dixie and A1A)

[2]May have some ROW or NIMBY issues

[3]Have major barriers and are either road right of way or FPL corridors

Exhibit A-22: Urban Road - New 4 Lane Rd (4LD) -New Construction 4 Lane Urban Road with 22' Median and 4' Bike Lanes

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	Construction Costs[1]	$7,482,557	MI
20	Maintenance of Traffic (MOT)[2]	10%	percentage of construction cost
30	Mobilization[2]	7%	percentage of construction cost
40	Contingency - Scope	25%	percentage of construction cost
	Sub-Total	$9,353,196	
50	Soft Cost[3]		
50.01	CEI	15%	percentage of Sub-Total
50.02	PE Design	15%	percentage of Sub-Total
	Total Cost[4]	**$12,159,155**	**MI**

[1] FDOT Long Range Estimation (LRE) System - Production, Project Details Composite Report, July 2009.

[2] Maintenance of Traffic (MOT) and Mobilization are included in Construction Cost. Percentage are shown for information only.

[3] FDOT District 7 Roadway Cost Per Centerline Mile, Revised June 2008.

[4] Total cost does not include right-of-way (ROW) cost. MPO staff developed ROW cost estimates.

Exhibit A-23: Arterial - New 4 Lane Rd (UND) - New Construction Undivided Urban Arterial with 4' Bike Lanes

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	Construction Costs[1]	$5,850,289	MI
20	Maintenance of Traffic (MOT)[2]	10%	percentage of construction cost
30	Mobilization[2]	7%	percentage of construction cost
40	Contingency - Scope	25%	percentage of construction cost
	Sub-Total	$7,312,862	
50	Soft Cost[3]		
50.01	CEI	15%	percentage of Sub-Total
50.02	PE Design	15%	percentage of Sub-Total
	Total Cost[4]	**$9,506,720**	**MI**

Exhibit A-24: Arterial - Widening 2 to 4 Lane (4LD) - Widen 2 Lane Urban Arterial to 4 Lane Divided with 22' Median & 4' Bike Lanes

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	Construction Costs[1]	$5,134,025	MI
20	Maintenance of Traffic (MOT)[2]	10%	percentage of construction cost
30	Mobilization[2]	10%	percentage of construction cost
40	Contingency - Scope	25%	percentage of construction cost
	Sub-Total	$6,417,532	
50	Soft Cost[3]		
50.01	CEI	15%	percentage of Sub-Total
50.02	PE Design	15%	percentage of Sub-Total
	Total Cost[4]	**$8,342,791**	**MI**

Exhibit A-25: Arterial - Widening 2 to 4 Lane (UND) - Add 2 Lanes to Existing 2 Lane Undivided Arterial (1 Lane Each Side), with 4' Bike Lanes

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	Construction Costs[1]	$4,007,107	MI
20	Maintenance of Traffic (MOT)[2]	10%	percentage of construction cost
30	Mobilization[2]	10%	percentage of construction cost
40	Contingency - Scope	25%	percentage of construction cost
	Sub-Total	$5,008,884	
50	Soft Cost[3]		
50.01	CEI	15%	percentage of Sub-Total
50.02	PE Design	15%	percentage of Sub-Total
	Total Cost[4]	**$6,511,549**	**MI**

Exhibit A-26: Arterial - Widening 4 to 6 Lane (6LD) - Widen 4 Lane Urban Divided Arterial to 6 Lane Urban Divided with 22' Median and 4' Bike Lanes

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	Construction Costs[1]	$4,522,407	MI
20	Maintenance of Traffic (MOT)[2]	10%	percentage of construction cost
30	Mobilization[2]	10%	percentage of construction cost
40	Contingency - Scope	25%	percentage of construction cost
	Sub-Total	$5,653,009	
50	Soft Cost[3]		
50.01	CEI	15%	percentage of Sub-Total
50.02	PE Design	15%	percentage of Sub-Total
	Total Cost[4]	**$7,348,912**	**MI**

Exhibit A-27: Arterial - Additional Lane - New Construction Extra Cost for Additional Lane on Urban Arterial

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	Construction Costs[1]	$628,410	MI
20	Maintenance of Traffic (MOT)[2]	10%	percentage of construction cost
30	Mobilization[2]	10%	percentage of construction cost
40	Contingency - Scope	25%	percentage of construction cost
	Sub-Total	$785,513	
50	Soft Cost[3]		
50.01	CEI	15%	percentage of Sub-Total
50.02	PE Design	15%	percentage of Sub-Total
	Total Cost[4]	**$1,021,167**	**MI**

Exhibit A-28: Interstate - Widening 6 to 8 Lane (8LD) - Widen 6 Lane Urban Interstate with Closed Median to 8 Lanes (Outside); Mill & Resurface Existing; 10' Shoulders Outside

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	Construction Costs[1]	$7,880,092	MI
20	Maintenance of Traffic (MOT)[2]	10%	percentage of construction cost
30	Mobilization[2]	10%	percentage of construction cost
40	Contingency - Scope	25%	percentage of construction cost
	Sub-Total	$9,850,115	
50	Soft Cost[3]		
50.01	CEI	15%	percentage of Sub-Total
50.02	PE Design	15%	percentage of Sub-Total
	Total Cost[4]	**$12,805,149**	**MI**

Per Florida's Turnpike the cost for the 7-mile widening of Florida's Turnpike (Sunrise to Atlantic) is 153,526,446, or approximately 22 Million per mile. Higher cost due to bridge widening.

Exhibit A-29: Interstate - Additional Lane - New Construction Extra Cost for Additional Lane on

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	Construction Costs[1]	$702,490	MI
20	Maintenance of Traffic (MOT)[2]	10%	percentage of construction cost
30	Mobilization[2]	10%	percentage of construction cost
40	Contingency - Scope	25%	percentage of construction cost
	Sub-Total	$878,113	
50	Soft Cost[3]		
50.01	CEI	15%	percentage of Sub-Total
50.02	PE Design	15%	percentage of Sub-Total
	Total Cost[4]	**$1,141,547**	**MI**

Exhibit A-30: Urban Road - Mill & Resurface 6 Lane Divided Urban Arterial with 4' Bike Lanes (includes

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	Construction Costs[1]	$1,634,300	MI
20	Maintenance of Traffic (MOT)[2]	10%	percentage of construction cost
30	Mobilization[2]	10%	percentage of construction cost
40	Contingency - Scope	25%	percentage of construction cost
	Sub-Total	$2,042,875	
50	Soft Cost[3]		
50.01	CEI	15%	percentage of Sub-Total
50.02	PE Design	15%	percentage of Sub-Total
	Total Cost[4]	**$2,553,594**	**MI**

Exhibit A-31: Interstate - New Construction - Divided 6 Lane Urban Interstate with 22' Closed Median with Barrier Wall 10' Shoulders Inside + Out

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	Construction Costs[1]	$11,581,715	MI
20	Maintenance of Traffic (MOT)[2]	10%	percentage of construction cost
30	Mobilization[2]	10%	percentage of construction cost
40	Contingency - Scope	25%	percentage of construction cost
	Sub-Total	$14,477,144	
50	Soft Cost[3]		
50.01	CEI	15%	percentage of Sub-Total
50.02	PE Design	15%	percentage of Sub-Total
	Total Cost[4]	**$18,820,287**	**MI**

[1] FDOT Long Range Estimation (LRE) System - Production, Project Details Composite Report, July 2009.

[2] Maintenance of Traffic (MOT) and Mobilization are included in Construction Cost. Percentage are shown for information only.

[3] FDOT District 7 Roadway Cost Per Centerline Mile, Revised June 2008.

[4] Total cost does not include right-of-way (ROW) cost. MPO staff developed ROW cost estimates.

Exhibit A-32: Open Road Tolling

Item Number	Cost Category	Unit Cost (2009 dollars)	Unit
10	Open Road Tolling	$1,500,000	MI

Source: Broward 2030 LRTP

Exhibit A-33: Capital Cost for Freight/Seaport/Airport Projects

Project ID	Project Name	From	To	Miles	Project Description	Capital Cost (2009 dollars)
1	Aggregate Terminal and Rail Yard	-	-	-	Development of aggregate facility and rail	$48,866,788
2	Andrews Ave	S of SW 33 St	SE 28th St	0.5	Roadway Improvements	$350,000
3	AVI - Ground Transportation Management System (AVI)	-	-	-	AVI system within the airport roadway system	$1,857,535
4	Cruise Passenger & Baggage Processing Facility	-	-	-	Plan, design, and implement facility to handle disembarking cruise passengers at terminals	$38,810,401
5	Cruise Terminal 21/22 Expansion	-	-	-	Terminal expansion	$17,381,567
6	Cruise Terminal No. 4 Redevelopment/ Expansion	-	-	-	Terminal expansion	$12,621,359
7	Database integration	-	-	-	Integrate available databases into centralized system	$5,627,544
8	Delivery appointment system for cruise ships	-	-	-	Web-based appointment system	$7,878,562
9	Directional Dynamic Message Signs (DMS)*	Within Port Limits	-	-		$87,789,687
10	Eisenhower Blvd	At Port Entrance	-	-	Access improvements	$562,754
11	Eller Drive/ICTF	At 7th Ave	-	-	New overpass (7th Ave goes over Eller Drive)	$3,000,000
12	Eller Drive	At McIntosh Rd	-	-	Intersection Improvements (traffic signal timing, road and lane widths, and turning radii)	$350,000
13	Eller Drive	At SR 84	-	-	Intersection improvements (traffic signal timing, road and lane widths, and turning radii)	$350,000
14	Eller Drive/Eller Drive Extension	At I-595	-	-	Intersection improvements (signal time modifications to improve left-turn phase access to Port Everglades)	$350,000
15	Eller Drive	At Port Entrance	-	-	Roadway Capacity Improvement	$562,754
17	ICTF	At Southport	-	-	Initial Rail Spur Construction and construction of near-dock railroad yard in Southport (Design & Construction)	$5,919,101
18	Inventory Clearance Equipment	FDOT and FTPK accessible	-	-	-	$11,255,088
19	Long Term Remote Parking Facilities	-	-	-	-	$19,905,342
20	McIntosh Rd.	N of SE 46th St	N of SE 36th St	0.75	Roadway Improvements (queuing and signage improvements)	$350,000
21	McIntosh Loop Rd.	-	-	-	Realignment of existing road (construction)	$137,000
22	Midport Cruise/Cargo Programming & Plan Development	-	-	-	Cruise and cargo development	$888,487
23	Midport Parking Garage	-	-	-	Construct new parking garage facility	$24,790,272
24	On-Port circulation Improvements	-	-	-	-	$5,064,790

Exhibit A-33: Capital Cost for Freight/Seaport/Airport Projects

Project ID	Project Name	From	To	Miles	Project Description	Capital Cost (2009 dollars)
26	Powerline Rd	At NW 15th Street	-	-	Install new traffic signal	$40,000
27	Real Time Train Locations	-	-	-	Upgrade/expand current FEC program; add SFRC	$2,800,000
28	Sawgrass Exwy	At Commercial Blvd	-	-	Install traffic signal for safe truck access at interchange	$20,000
29	Shuttle Bus Maintenance/Operation Facility	-	-	-	Facility appropriate for 50+ bus fleet operation,5 bay maintenance, fueling station, dispatch center and other appropriate functions	$5,572,604
30	Southport rail connector	Southport	FEC mainline	-	Rail Connector between Southport and FEC mainline	$3,714,179
32	Spangler Rd	Miami Rd	Eisenhower Blvd	0.72	Roadway Improvements (queuing and signage improvements)	$350,000
33	SR 84	At FEC rail crossing	-	-	Study to evaluate a roadway tunnel under FEC RR	$750,000
34	SR 84	At Andrews Ave	-	-	Intersection Improvements	$225,102
35	SR 84	At I-95	-	-	Interchange modification (improve turning radii at ramps)	$15,000,000
36	SR 84	At US 1	-	-	Intersection Improvement Study	$125,000
37	SR 84	At SW 15th Ave	-	-	Intersection Improvements	$350,000
38	SW 4th Ave	At 28th St	-	-	Install new traffic signal	$40,000
39	Terminal 4 Parking Garage	-	-	-	New parking structure	$888,487
40	Terminal 4 Second Loading Bridge	-	-	-	New passenger loading bridge	$1,319,634
41	Traveler Information via DMS	At Port exit		-	Information on major incidents; security	$28,137,720
42	US 27 Rail Corridor Study	Miami-Dade/Broward Co. Line	Palm Beach/Broward Co. Line	-	Freight Corridor Feasibility Study	$1,000,000
43	Southport Turning Notch Expansion (Phase I)	-	-	-	Turning Notch Design, Bulkhead construction, and Mitigation for Westlake Improvement	$24,630,798
44	ACOE Dredging Project	-	-	-	Portwide Dredging	$96,405,158
45	Slip 2 Expansion	-	-	-	Increase length to accommodate mega cruise ships	$1,293,913

Exhibit A-34: Capital Cost for ITS Projects

Project	Limits	Description	Capital Cost [1] (2009 dollars)
ATMS Design Group 2	Area 2: West Central Broward	Signal System Upgrade/ITS	$21,000,000
ATMS Design Group 3	Area 3: Northeast Broward	Signal System Upgrade/ITS	$25,000,000
ATMS Design Group 4	Area 4: Southeast Broward	Signal System Upgrade/ITS	$25,000,000
ATMS Design Group 5	Area 5: Northwest Broward	Signal System Upgrade/ITS	$25,000,000
ATMS Design Group 6	Area 6: Southwest Broward	Signal System Upgrade/ITS	$25,000,000
Total			**$121,000,000**

Source: FY 2010/2011 Unfunded Multimodal Surface Transportation Priorities

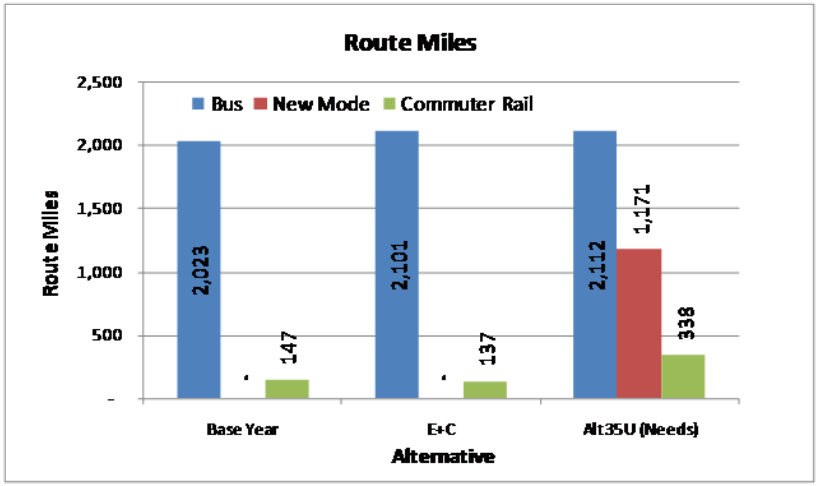
[1] Includes cost for transit signal priority

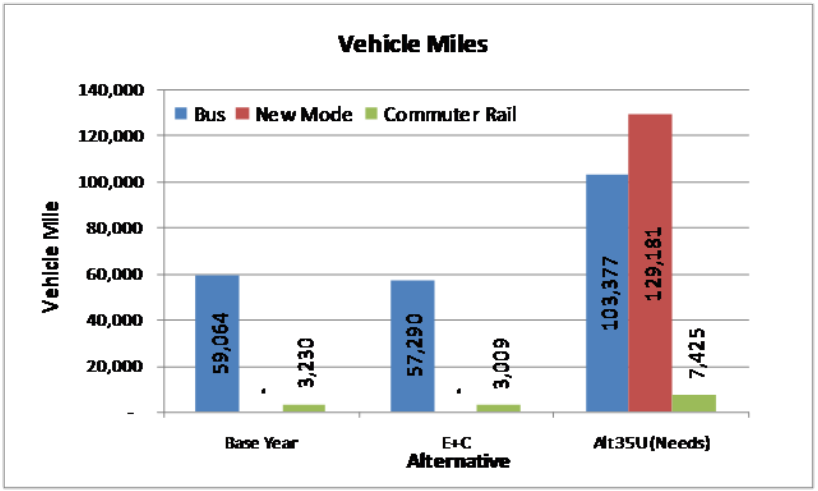
Exhibit A-35: Needs Plan Performance Results

Broward County LRTP

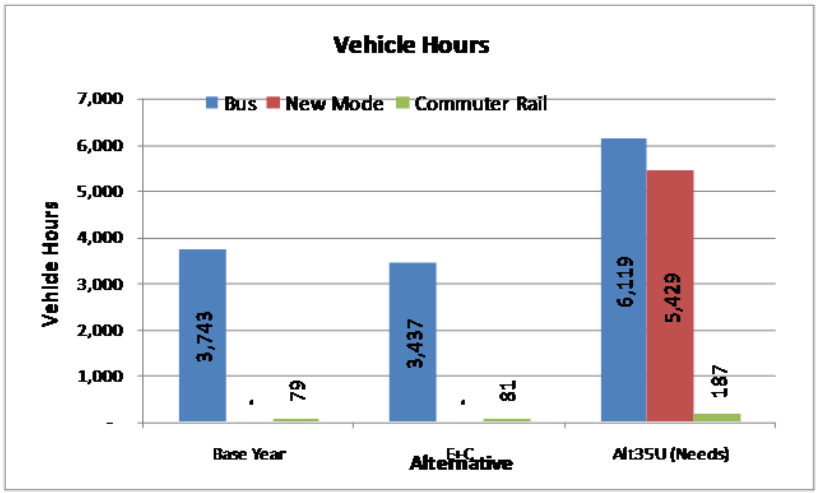
August 8, 2009

Supply Parameters (1)

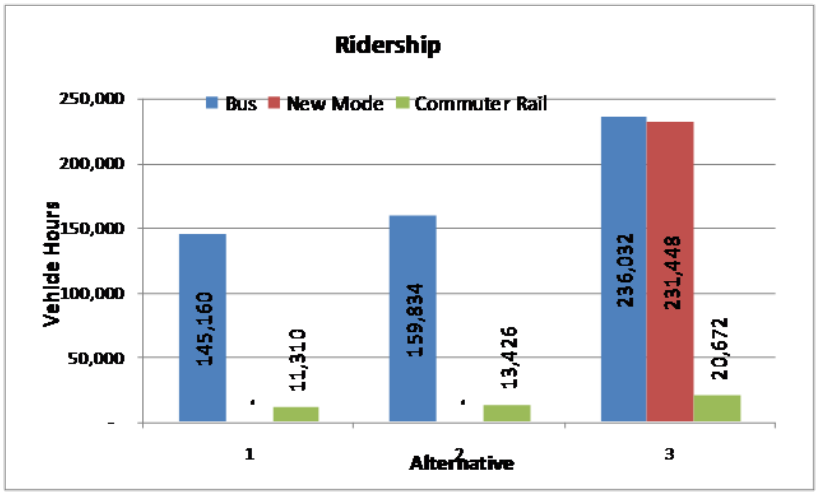


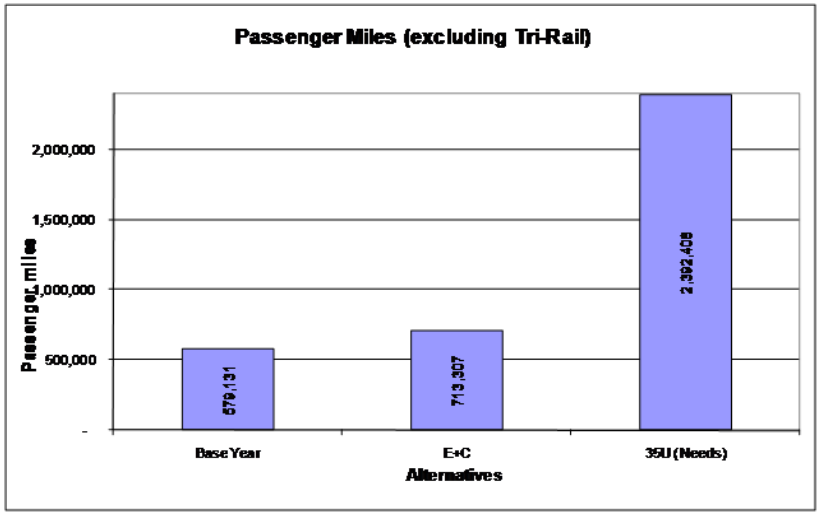


Supply Parameters (2)

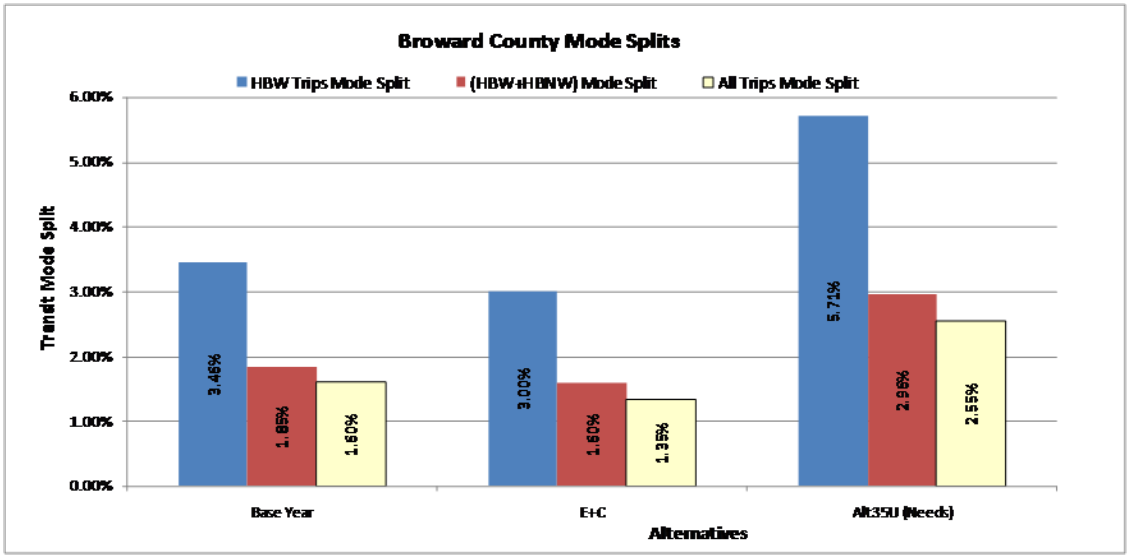


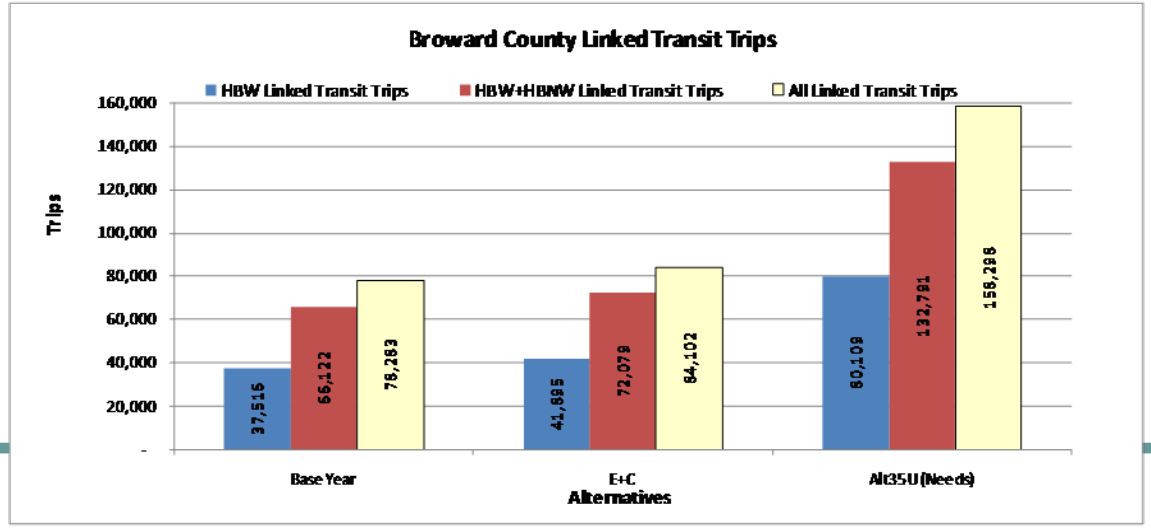
Demand Parameters (1)



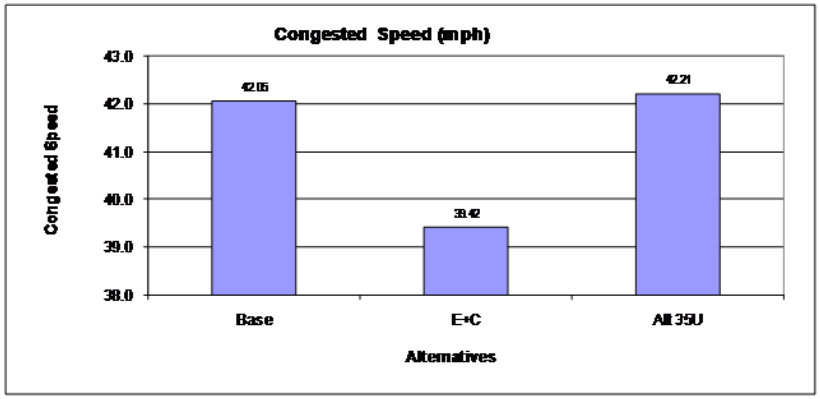


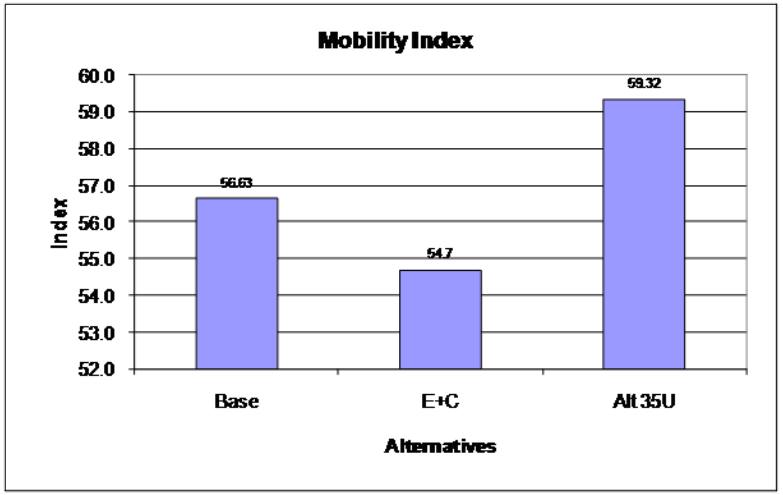
Mode Splits


Broward County Mode Splits
HBW Trips Mode Split
(HBW+HBNW) Mode Split
All Trips Mode Split
Transit Mode Split
6.00%
5.00%
4.00%
3.00%
2.00%
1.00%
0.00%
3.46%
1.85%
1.60%
3.00%
1.60%
1.35%
5.71%
2.98%
2.55%
Base Year
E+C
Alt35U (Needs)
Alternatives

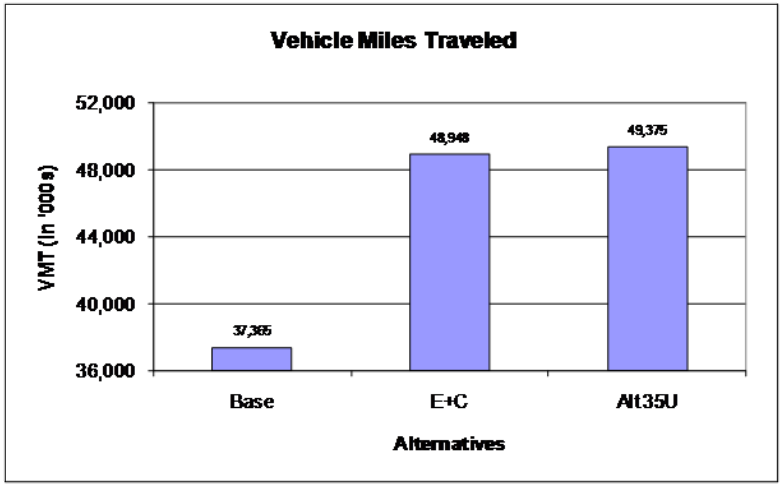

Broward County Linked Transit Trips
HBW Linked Transit Trips
HBW+HBNW Linked Transit Trips
All Linked Transit Trips
Trips
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
-
37,516
66,122
78,283
41,685
72,079
84,102
80,108
132,791
158,286
Base Year
E+C
Alt35U (Needs)
Alternatives

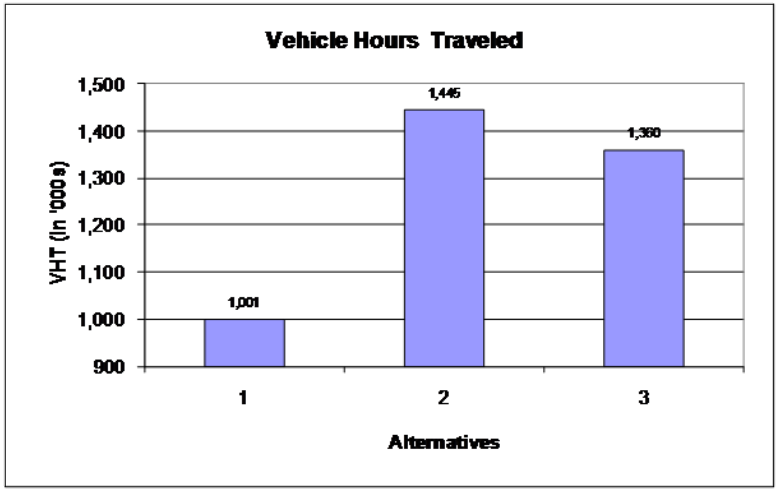
Roadways (1)


Congested Speed (mph)
Congested Speed
43.0
42.0
41.0
40.0
39.0
38.0
42.05
39.42
42.21
Base
E+C
Alt 35U
Alternatives

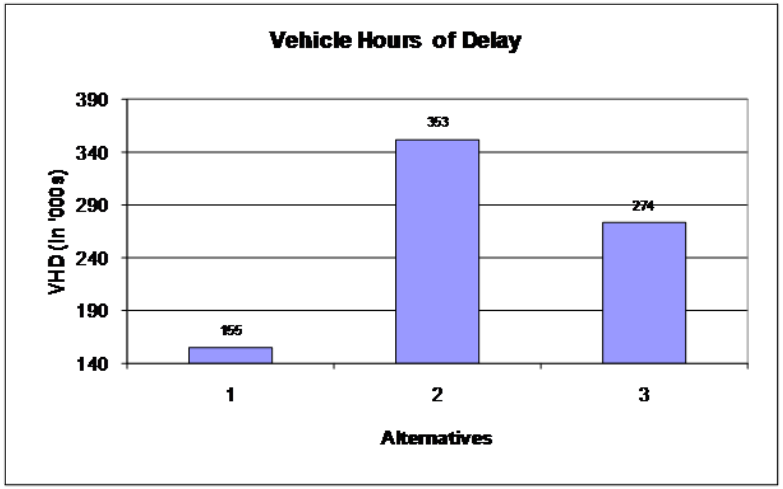

Mobility Index
Index
60.0
59.0
58.0
57.0
56.0
55.0
54.0
53.0
52.0
56.63
54.7
59.32
Base
E+C
Alt 35U
Alternatives

Roadways (2)


Vehicle Miles Traveled
VMT (In '000s)
52,000
48,000
44,000
40,000
36,000
37,365
48,948
49,375
Base
E+C
Alt35U
Alternatives


Vehicle Hours Traveled
VHT (In '000s)
1,500
1,400
1,300
1,200
1,100
1,000
900
1,001
1,445
1,360
1
2
3
Alternatives

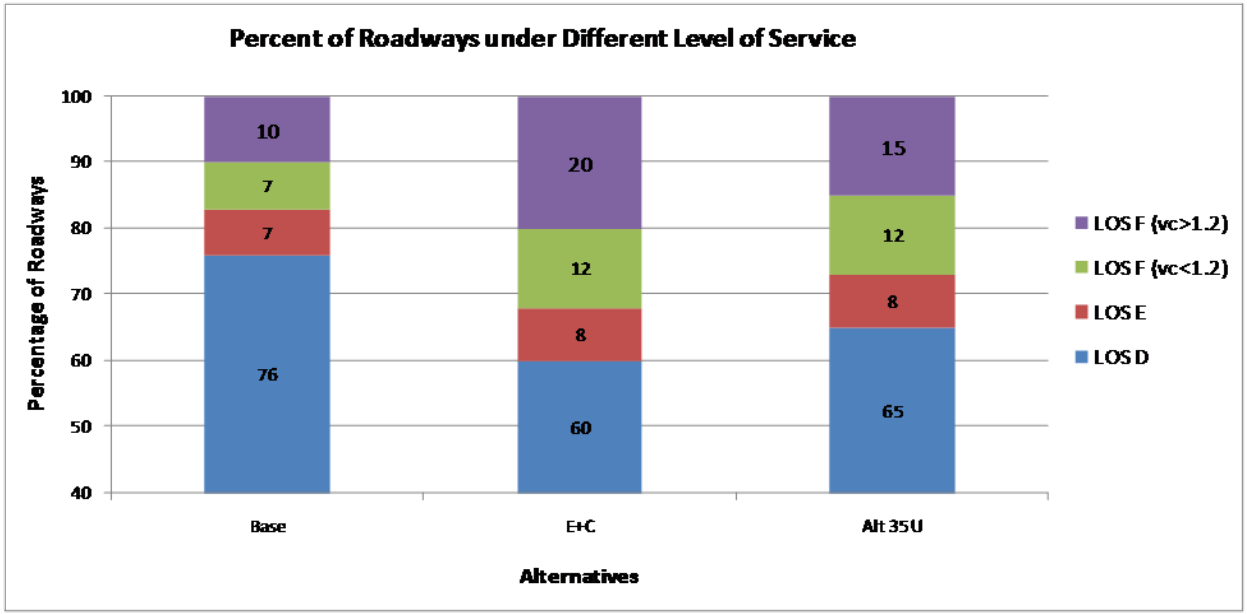
Roadways (3)



Lane Miles

Parameter	Description	2005	E+C	35U
Total Lane Miles	*Broward County*	*4,572*	*4,772*	5060
Freeway	General purpose lanes on I-75, I-595 and I-95	439	457	500
Arterials/Collectors	Undivided / divided arterials and collectors	3,787	3,866	4003
HOV	HOV lanes on I-95	51	51	0
HOT	I-595/I-75/I-95 managed lanes	0	27	156
TOLL	Florida's Turnpike and Sawgrass Expressway	295	368	401

Roadway LOS


Percent of Roadways under Different Level of Service
Percentage of Roadways
100
90
80
70
60
50
40
10
7
7
76
20
12
8
60
15
12
8
65
Base
E+C
Alt 35U
Alternatives
LOS F (vc>1.2)
LOS F (vc<1.2)
LOS E
LOS D

Broward County 2035 LRTP

November 19th, 2008

Topics

- Background
- 2035 Characteristics
- Transportation System Deficiency Analysis
- Preliminary Needs Assessment Information

Background

- Model specifications
- E+C transit network assumptions

LRTP Model

- Using the SERPM v6.5 TOD with the following revisions:
  - Reversible lane modeling on I-595
  - Revised PT2TRNB program to address new modes
  - Future year fares file represents the existing (October 2008) fare structure
  - Open road toll modeling logic
  - Extremely slow (<5 mph) congested streets defaulted to 5 mph during transit speed calculations

LOS Tables

- Used **annual average daily volumes two-way LOS "D"** capacities for deficiency analysis (Table 4-1)
- Used **2007** FDOT LOS tables

Broward County Links

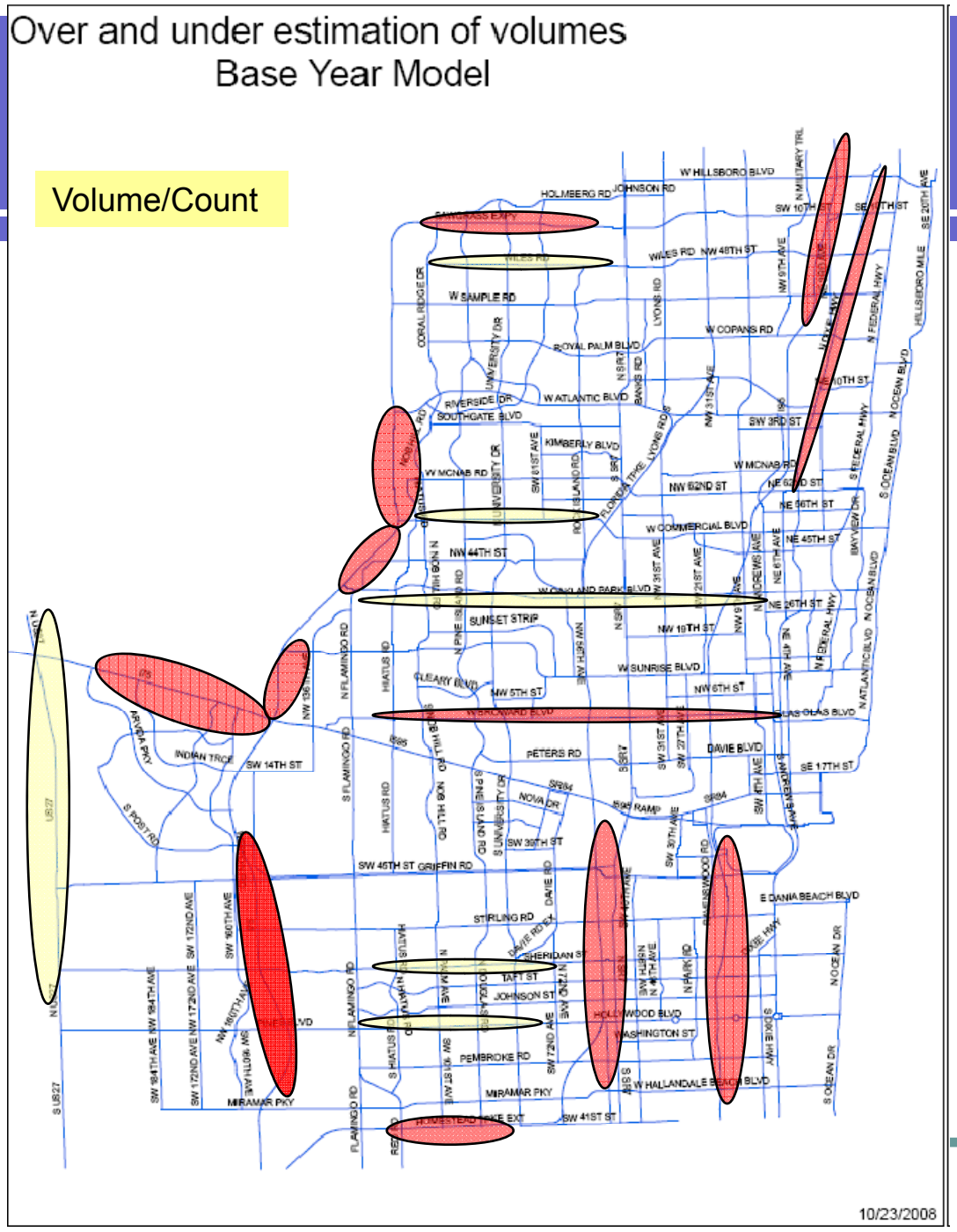
- Links with 2005 AADT in BO: 2,145 (out of ~7,750) with ~1,060 counting stations
- Volume adjustments needed on links based on the NCHRP 255: 1,652
- Assumptions:
  - AOC for 3+ shared ride: 3.2 for all purposes
  - LOS comparison done only on links with 2005 AADT

Estimated Volume Adjustments

- E+C estimated volumes were adjusted based on the model estimations for the base year and the observed AADT (year 2005)
- Adjustment procedure is based on procedure explained in the NCHRP Report 255

Over and under estimation of volumes
Base Year Model

Volume/Count



Under-estimation

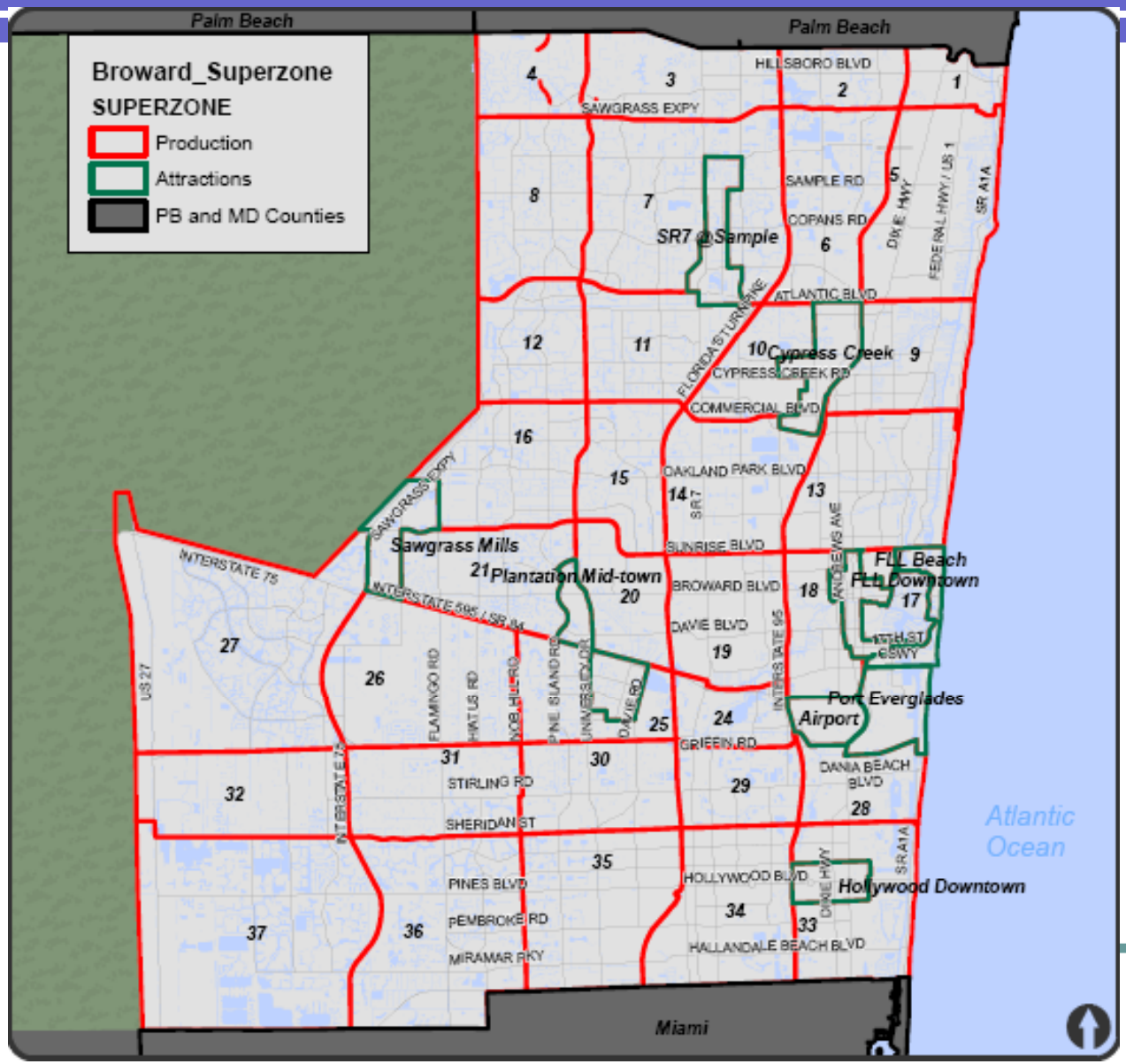
Over-estimation

In general, LRTP model

1) over-estimates volume on north-south streets

2) under-estimates volume on east-west streets

Superzones



45 Superzones with 10 Attractions Superzones

E+C Transit Network

- Only existing and committed projects; does not follow the TDP
- Includes US 1 Breeze, Rte 2 Breeze, Rte 7 Breeze serving Miami Downtown
- Does not include:
  - Express buses on I-595
  - Downtown Ft. Lauderdale streetcar
  - Extension of bus service into Palm Beach County

2035 Characteristics

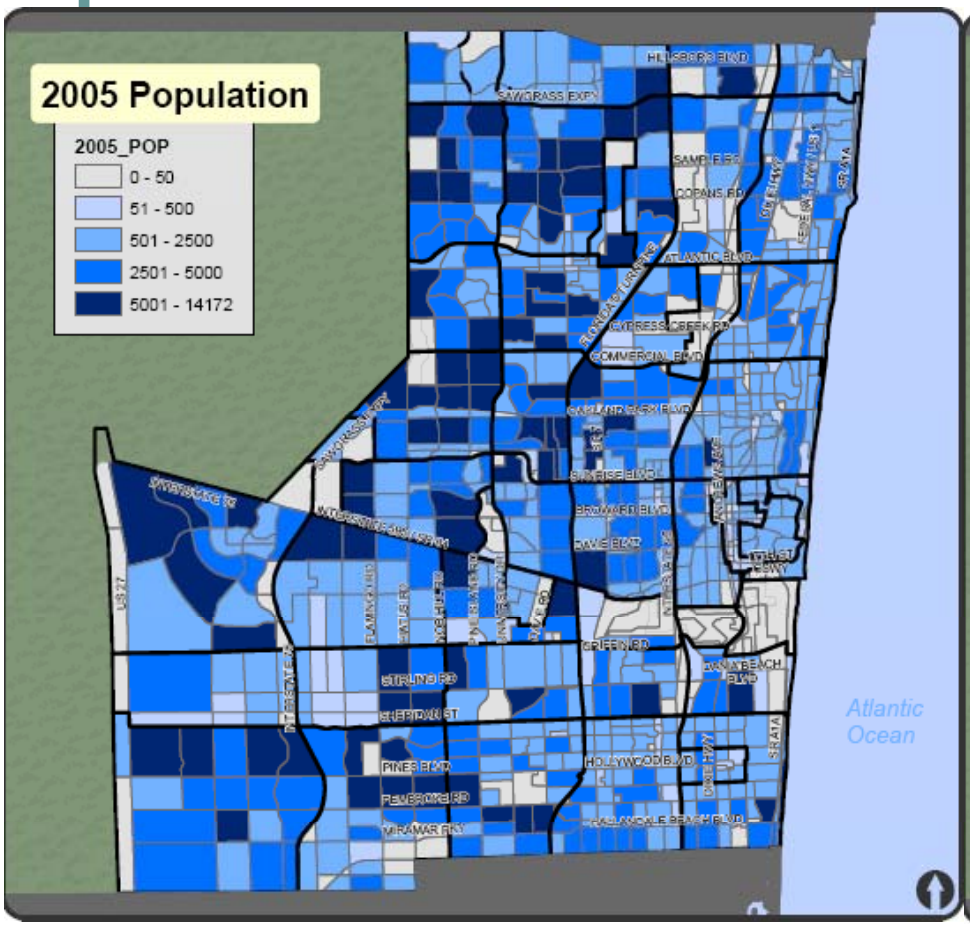
- Socio-economic data
- Travel patterns

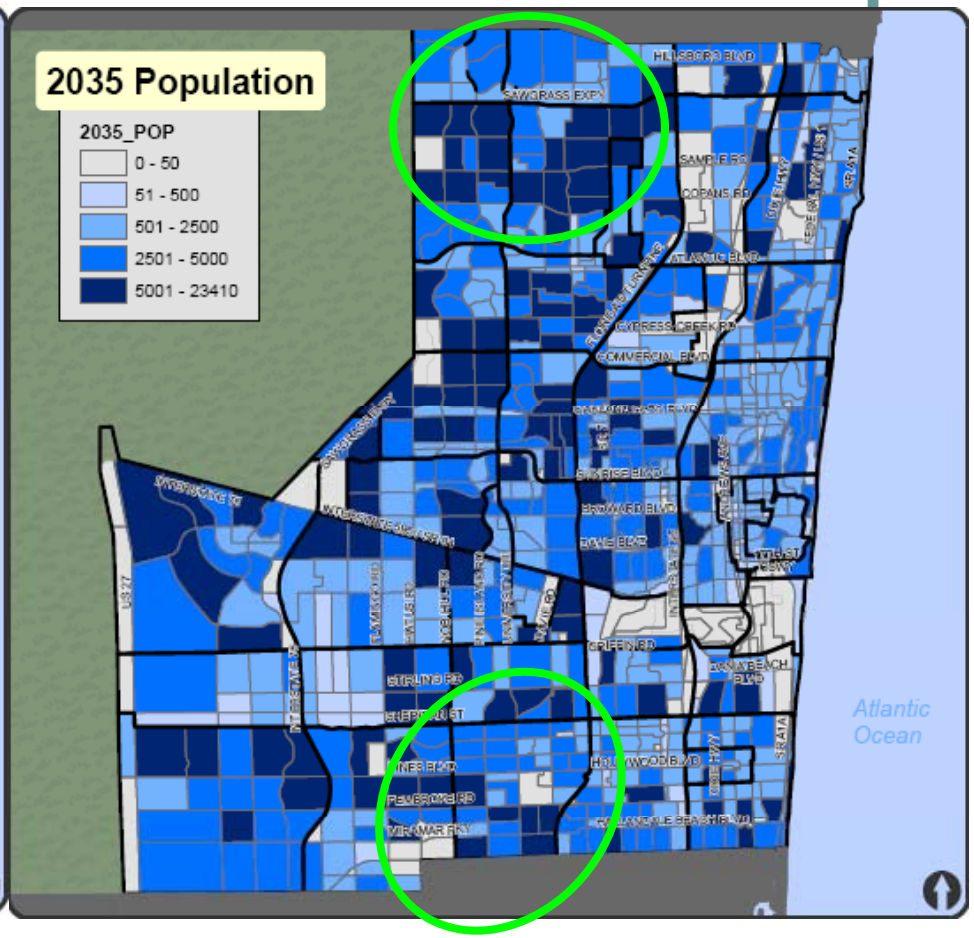
Aggregate Socio-Economic Data

	2005	2035	Growth	%Growth
Population	1,747	2,251	503	29%
Households	694	839	144	21%
Vehicles	1,099	1,342	243	22%
Workers	846	1,052	206	24%
Hotel Rooms	32	32	-	-
Employment				
Total	736	1,011	276	37%
Industrial	86	132	51	59%
Commercial	227	330	113	50%
Service	423	519	112	26%

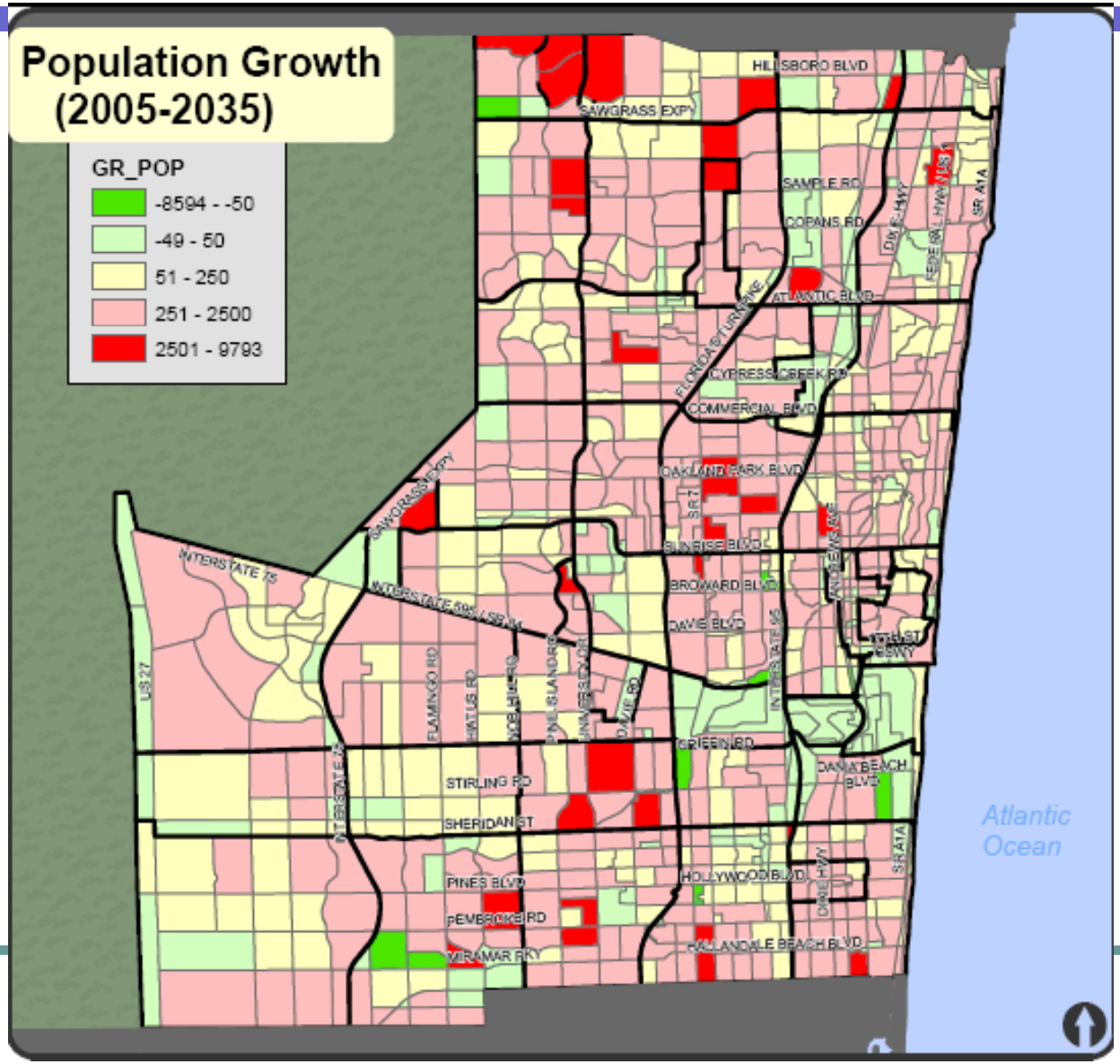
All numbers are in ‘000s

Population Maps (Aggregate by Zone)

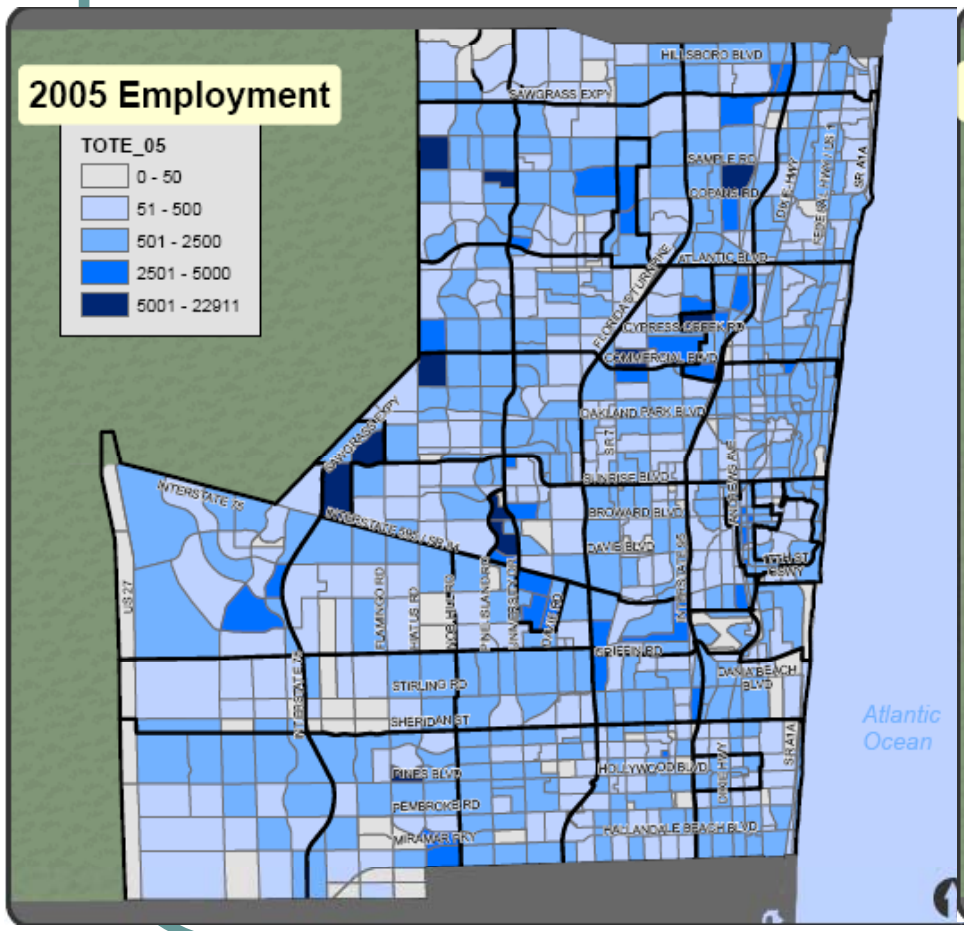


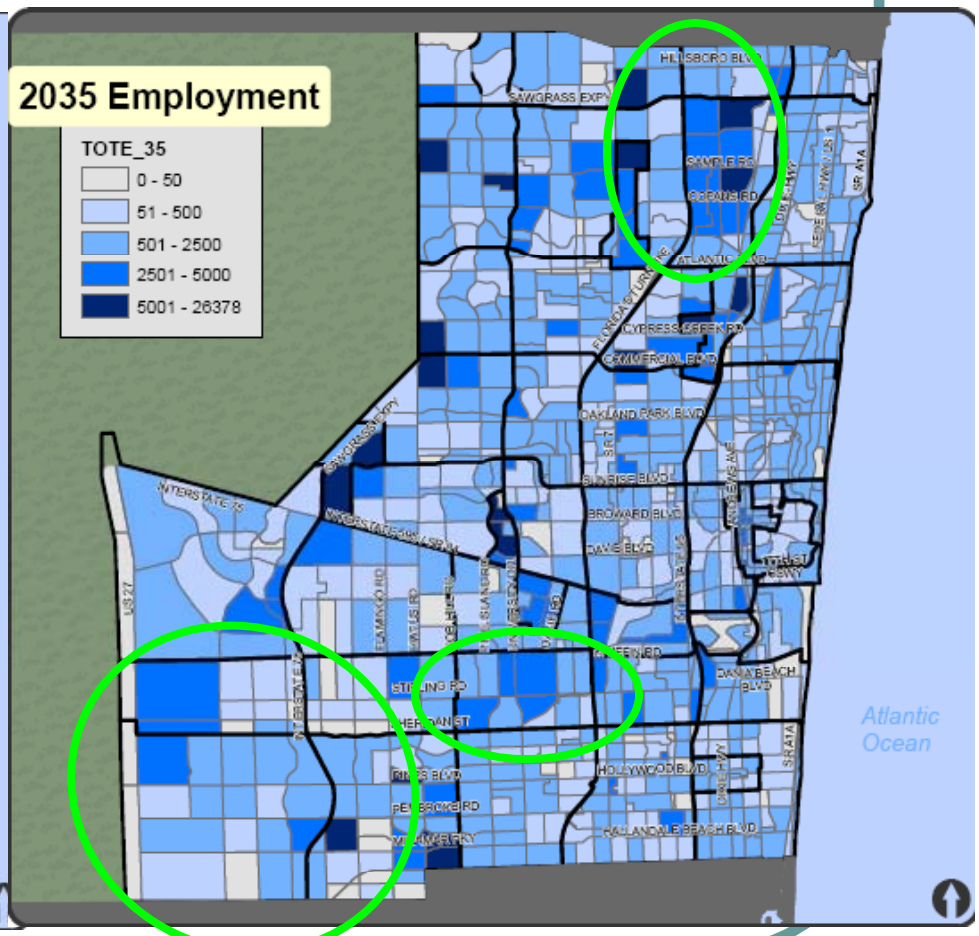


Population Growth (Aggregate by Zone)

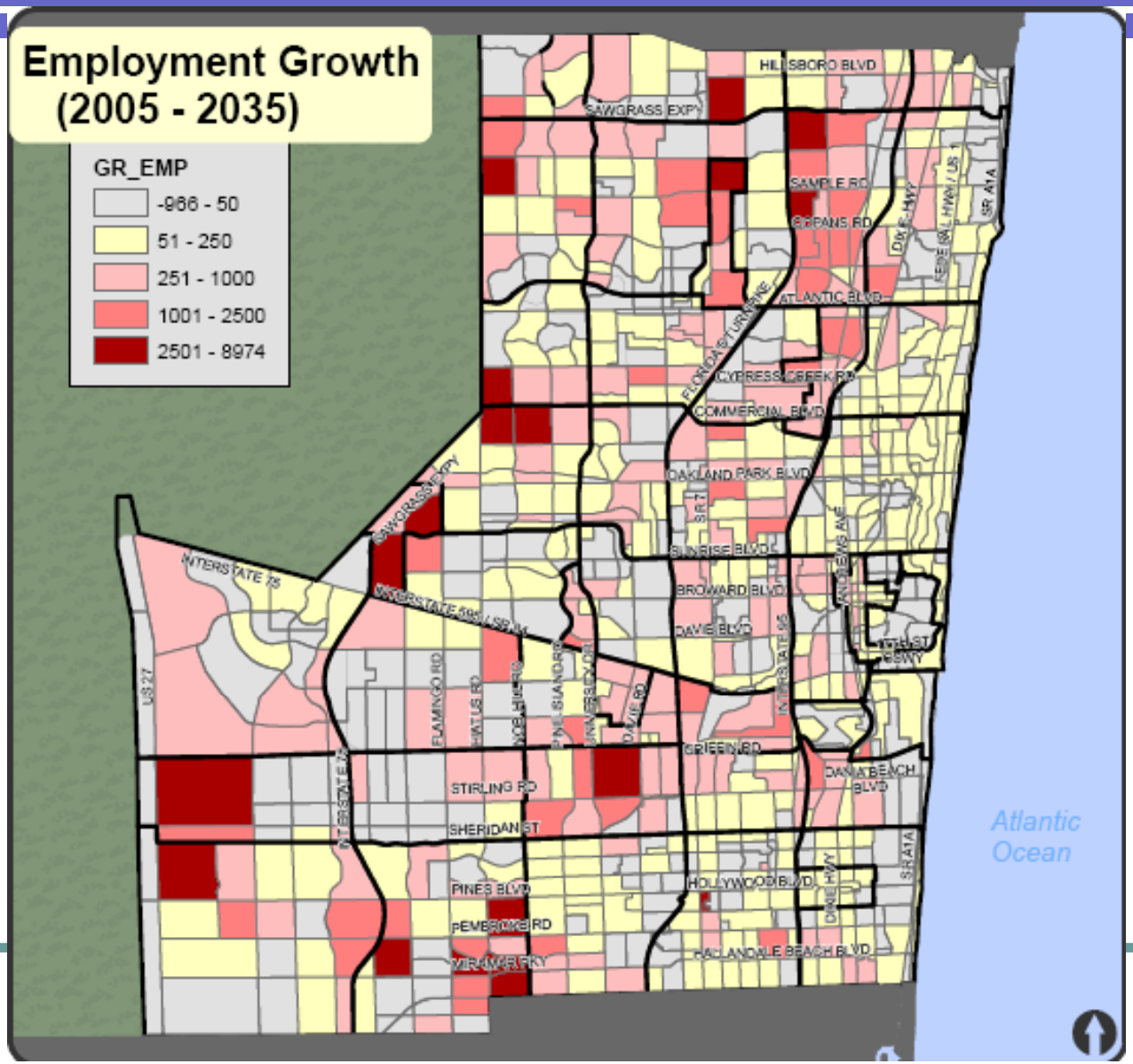


Employment Maps (Aggregate by Zone)

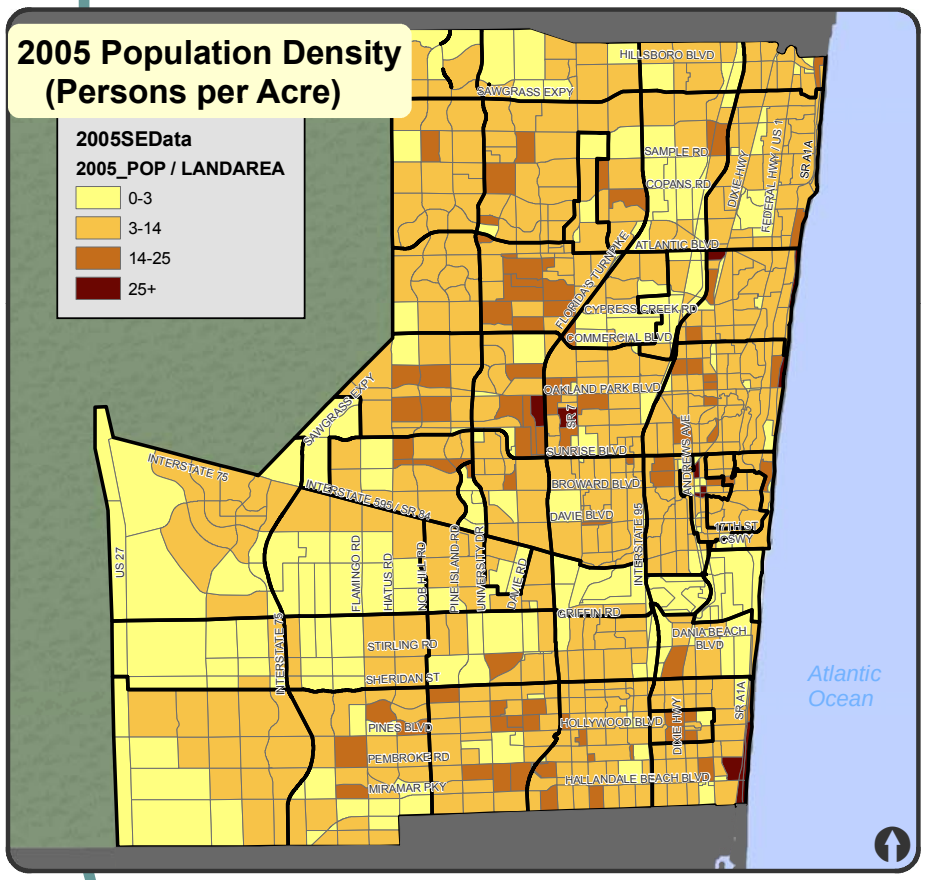


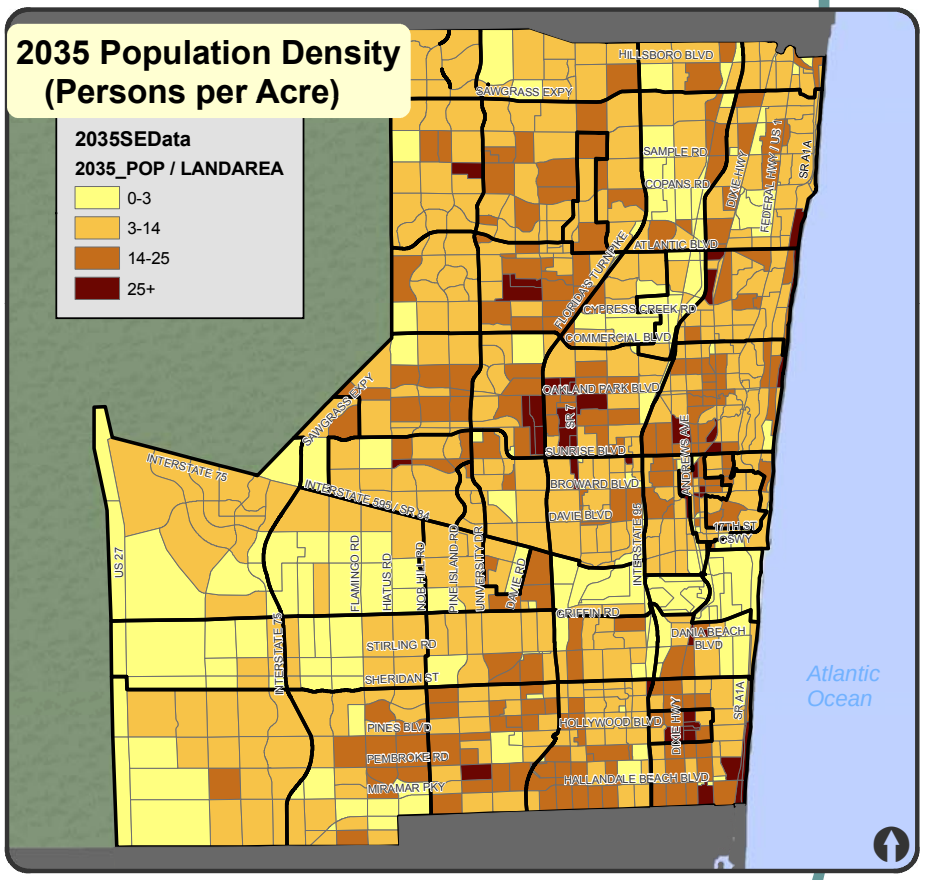


Employment Growth (Aggregate by Zone)



Population Density Maps





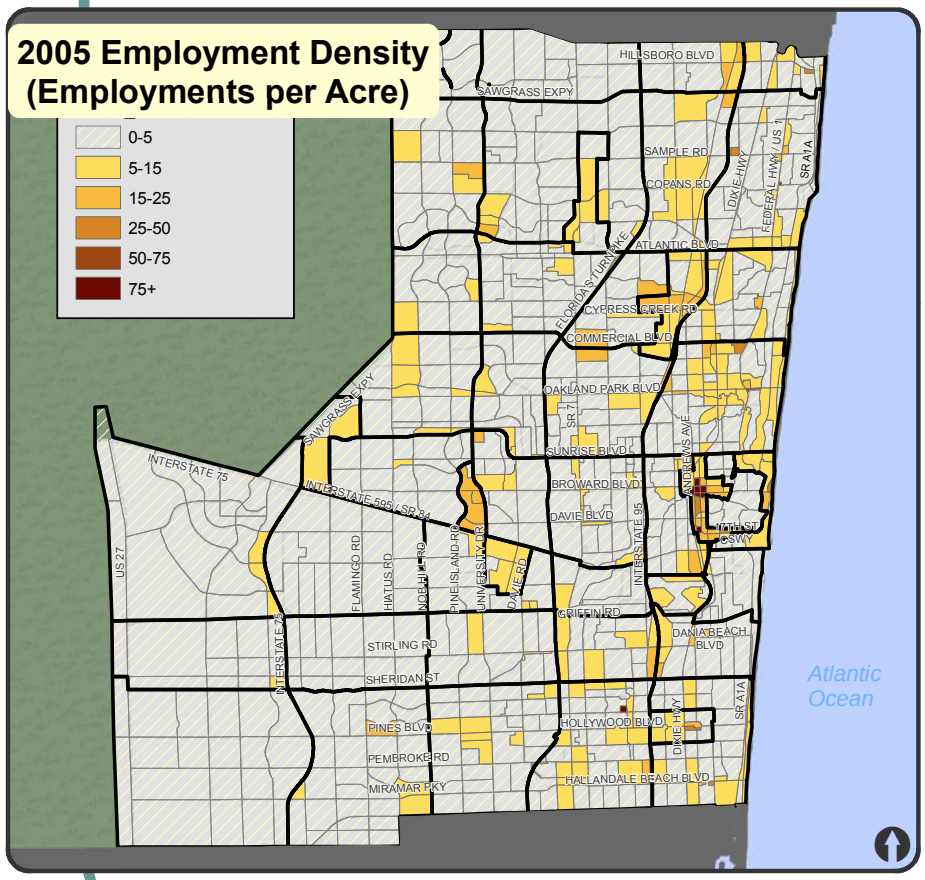
Legend

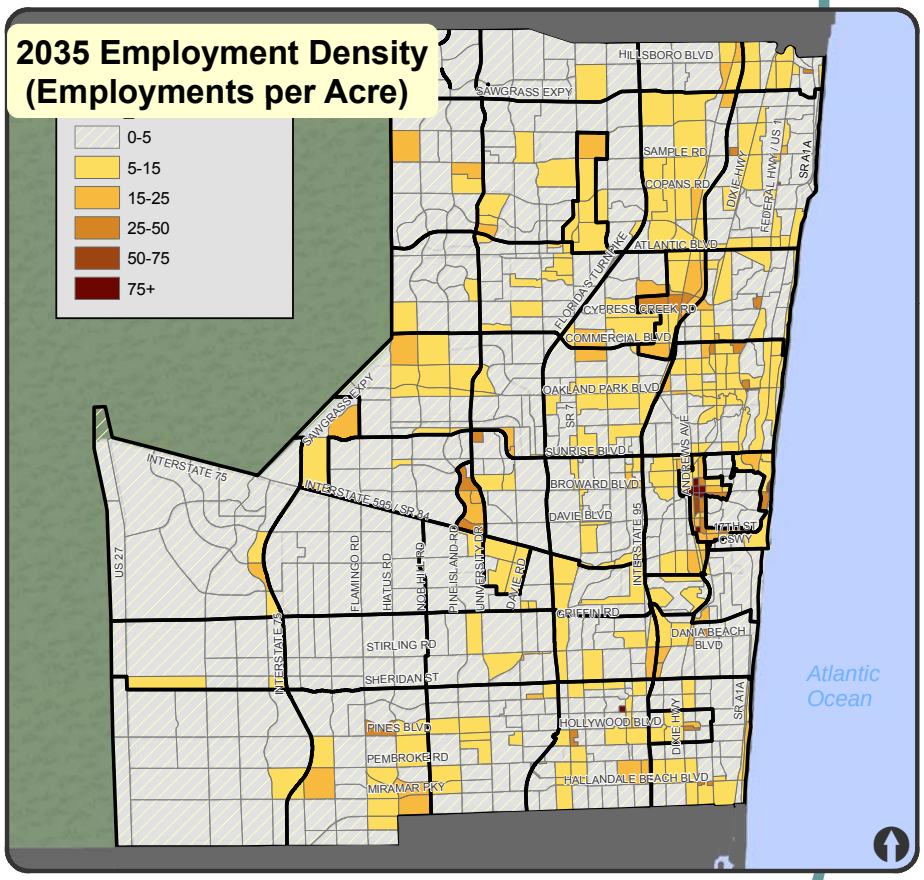
- Broward County Major Roads
- Urbanized Broward County
- Undevelopable Broward County
- Miami-Dade and Palm Beach Counties
- Water Bodies
- Superzones

Legend

- Broward County Major Roads
- Urbanized Broward County
- Undevelopable Broward County
- Miami-Dade and Palm Beach Counties
- Water Bodies
- Superzones

Employment Density Maps





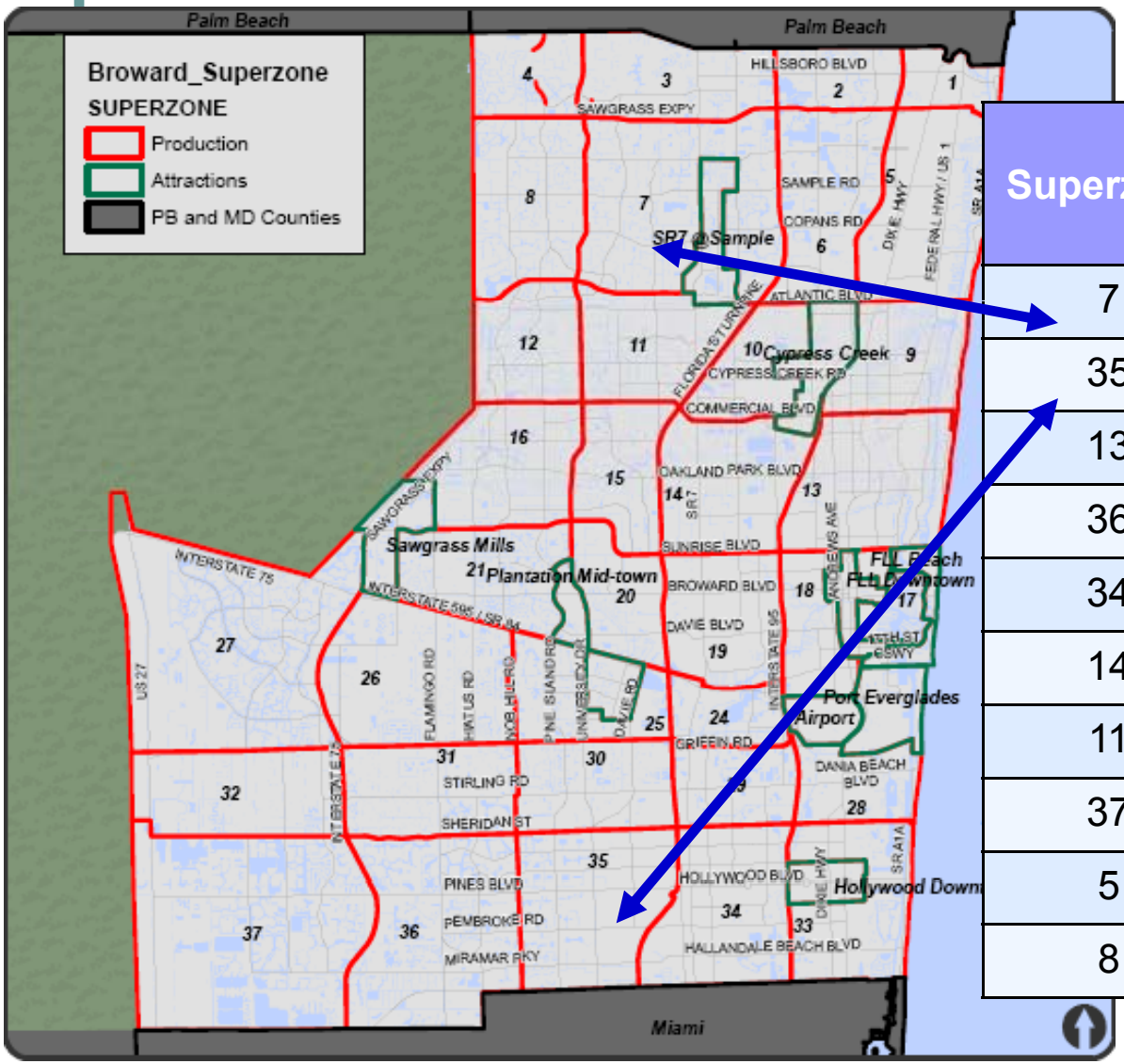
Socio-Economic Data Summary

- Population growth is fairly even across the County
  - Compared to other areas, higher growth is expected in northwest, south-central, and central (between Commercial and Sunrise Blvd) part of the County
- Employment growth is mainly on the western part of the County (west of I-95)

2035 Characteristics

- Socio-economic data
- Travel patterns

Trip Production (Work Trips)

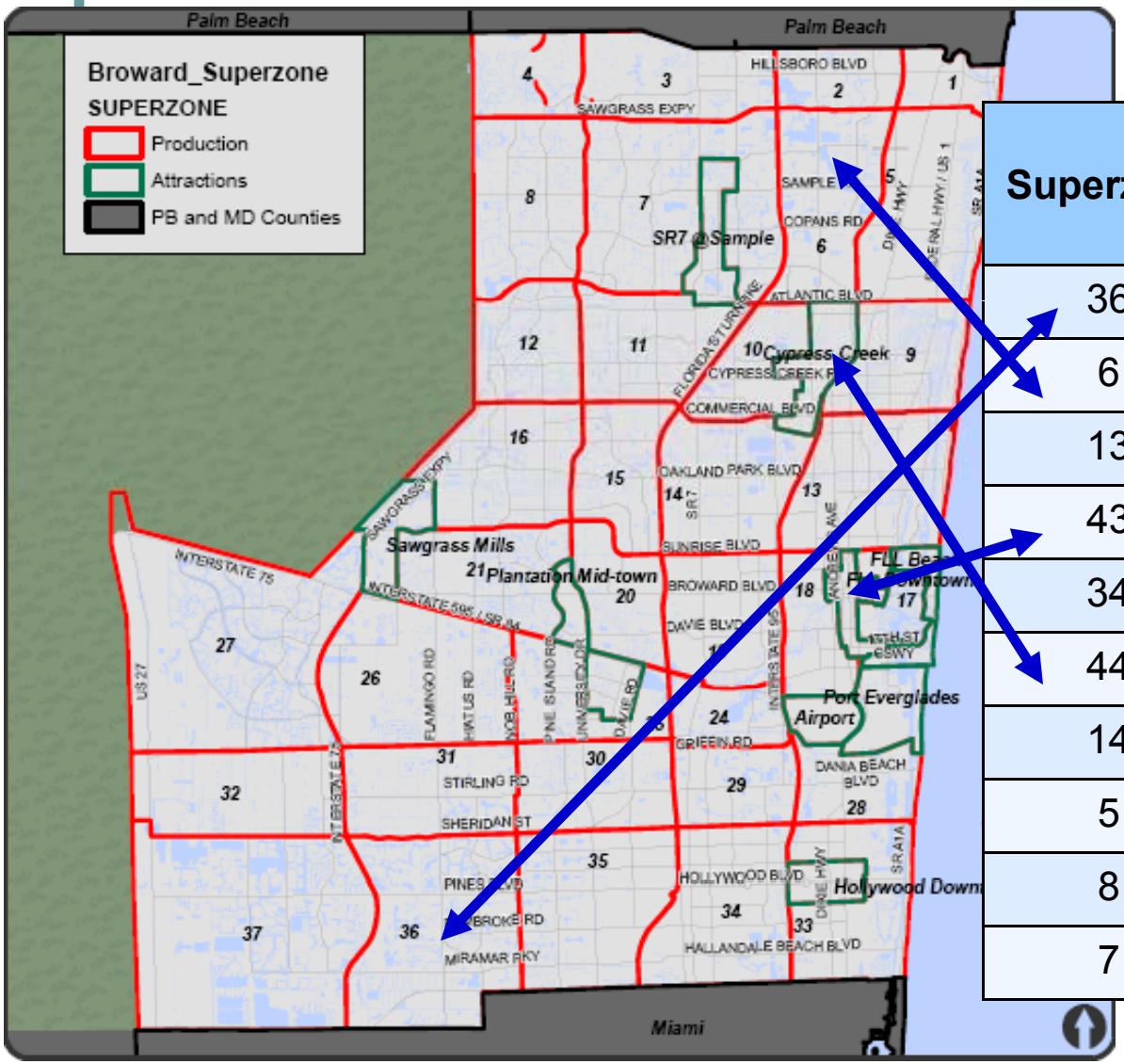


Top 10 Superzones

Superzone	Trip Production in '000s	Trip Production per Acre
7	112	9.4
35	104	11.5
13	89	10.0
36	88	8.1
34	85	10.1
14	83	11.8
11	81	13.0
37	79	4.5
5	79	8.7
8	77	10.3

HBW Trips only
Includes trips to neighboring counties

Trip Attraction (Work Trips)



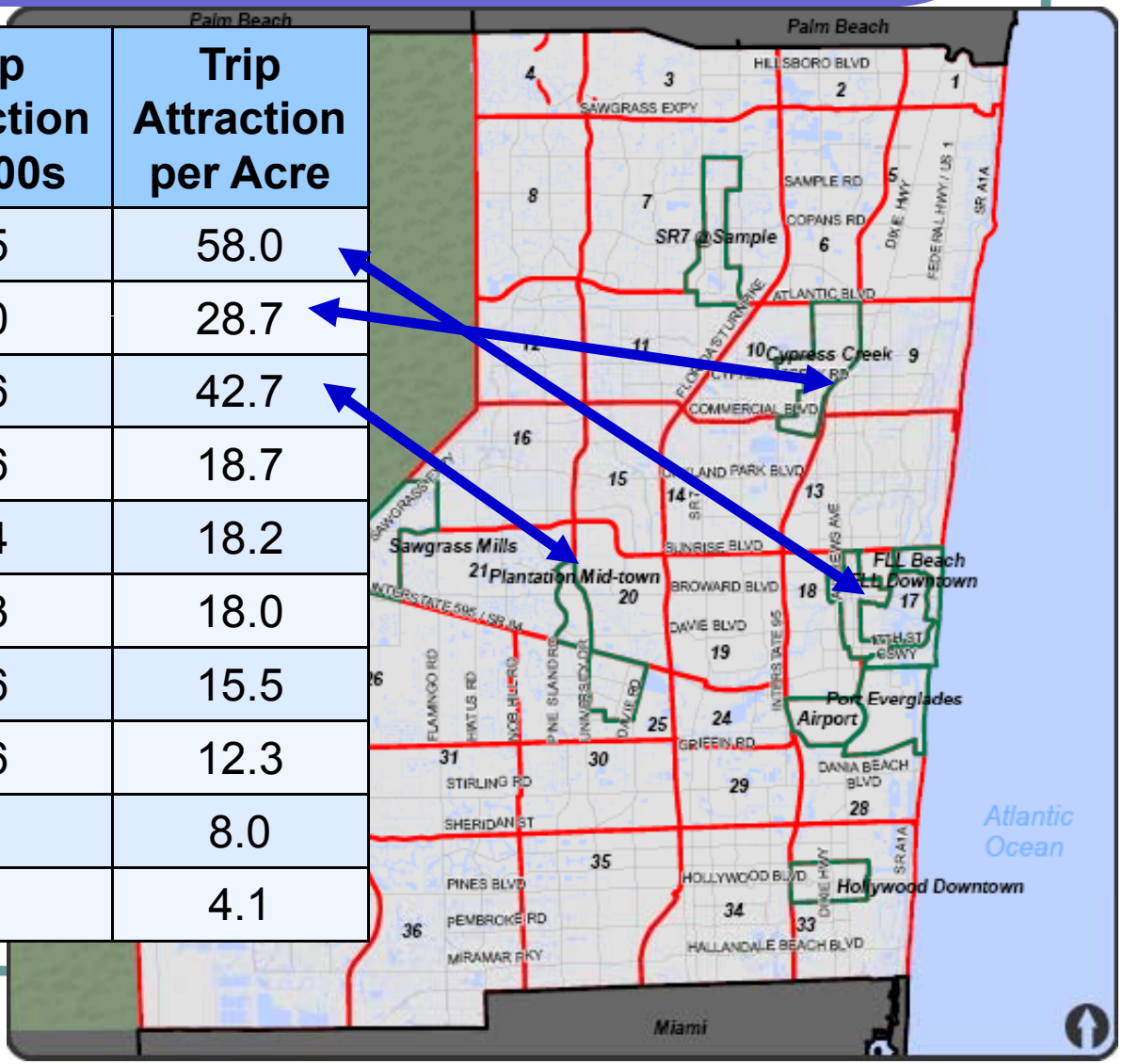
Top 10 Superzones

Superzone	Trip Attraction in '000s	Trip Attraction per Acre
36	98	8.9
6	95	13.0
13	89	10.7
43	85	58.0
34	76	9.0
44	70	28.7
14	60	8.5
5	59	6.6
8	56	7.6
7	55	5.6

HBW Trips only
Includes trips from neighboring counties

At Attraction Superzones…

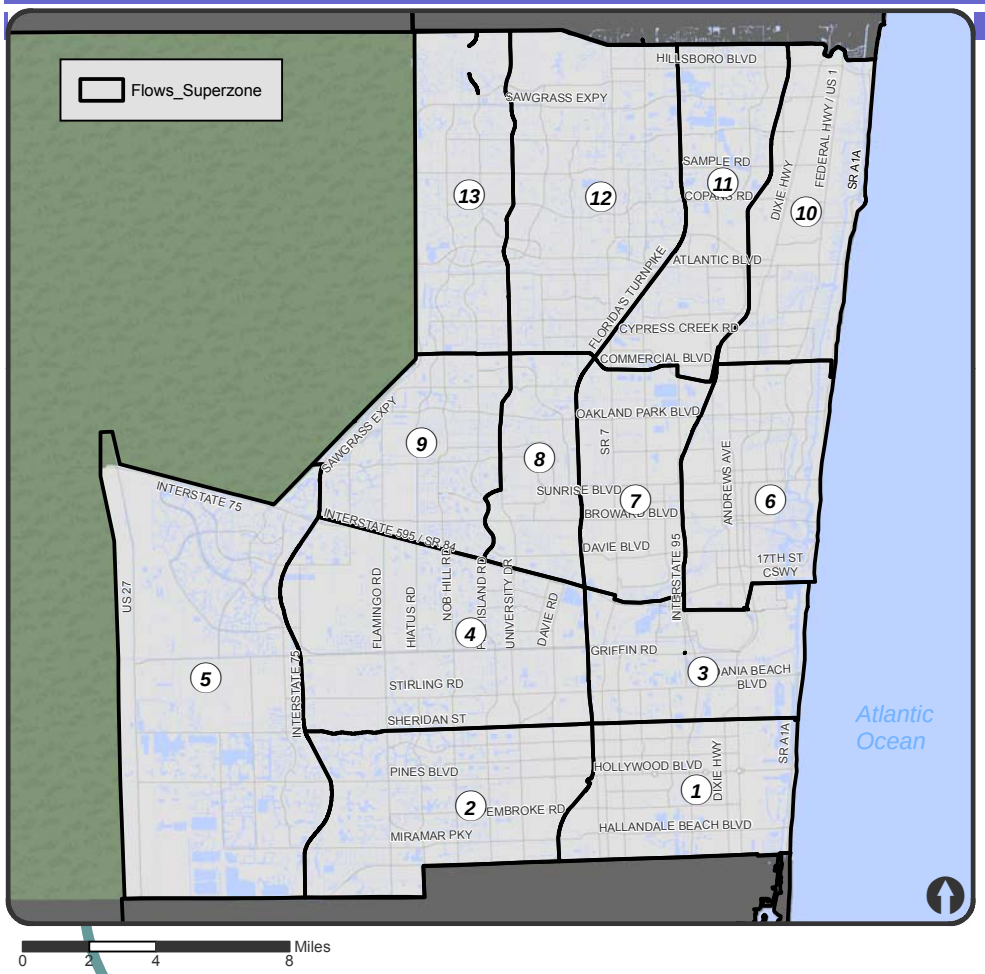
Superzone	Trip Attraction in '000s	Trip Attraction per Acre
43 (Downtown Ft. Lauder.)	85	58.0
44 (Cypress Creek)	70	28.7
39 (Plantation Mid-Town)	36	42.7
45 (S.R.7 at Sample)	36	18.7
38 (Sawgrass Mills)	34	18.2
40 (Education Center)	23	18.0
47 (Ft. Lauderdale Beach)	16	15.5
46 (Downtown Hollywood)	16	12.3
41 (Airport)	11	8.0
42 (Port Everglades)	9	4.1



HBW Trips only
Includes trips from neighboring counties

Flows Across Superzones

Flows Across Superzones



45 Superzones further aggregated into 13 bigger superzones for reporting traffic flows

Superzone	Name
1	Hollywood
2	Pembroke Pines Area
3	Dania Beach Area
4	Davie Area
5	South West Broward
6	Ft. Lauderdale
7	Lauderdale Lakes
8	Plantation Area
9	Sawgrass Mall
10	North East Broward
11	Cypress Creek Area
12	Coconut Creek Area
13	North West Broward

Work Trip Flows

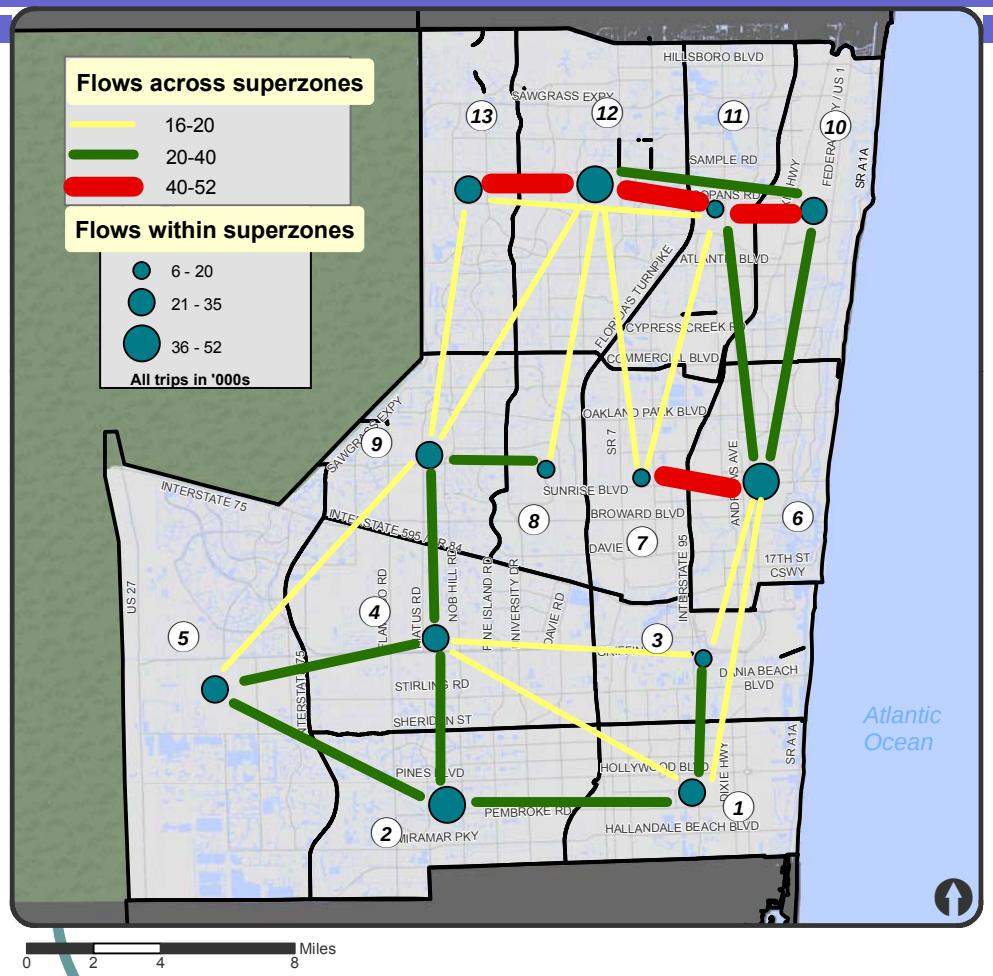
2035 Work Trips in '000s

	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
1.Hollywood	30	15	11	8	4	9	5	3	3	2	3	2	1	96
2.Pembroke Pines Area	15	38	6	16	16	4	3	4	6	1	1	2	2	113
3.Dania Beach Area	11	6	9	9	3	9	6	3	4	2	2	2	1	67
4.Davie Area	8	16	9	21	11	8	6	7	11	2	2	3	3	107
5.SouthWest Broward	4	16	3	11	29	4	2	4	8	1	1	2	3	89
6.Ft. Lauderdale	9	4	9	8	4	52	20	8	8	18	13	10	4	164
7.Lauderdale Lakes	5	3	6	6	2	20	16	8	7	7	10	10	4	102
8.Plantation Area	3	4	3	7	4	8	8	9	12	3	4	7	5	75
9.Sawgrass Mall	3	6	4	11	8	8	7	12	22	3	4	10	10	106
10.NorthEast Broward	2	1	2	2	1	18	7	3	3	29	21	14	5	107
11.Cypress Creek Area	3	1	2	2	1	13	10	4	4	21	17	26	9	114
12.Coconut Creek Area	2	2	2	3	2	10	10	7	10	14	26	47	24	160
13.NorthWest Broward	1	2	1	3	3	4	4	5	10	5	9	24	25	96
Total	96	113	67	107	89	164	102	75	106	107	114	160	96	1,396

Yellow cells are trips with the superzones.
Red cells are top 25 flows between superzones (represented graphically on the next slide).

HBW Trips only in OD format

Top 25 Flows Across Superzones



2035 Bi-directional (twice of the highlighted one-way trips in the table on previous slide) work trips

All trips are in '000s

- Broward County Major Roads
- Urbanized Broward County
- Undevelopable Broward County
- Miami-Dade and Palm Beach Counties
- Water Bodies
- Superzones for Modeling
- 10 Superzones number

Total Person Trip Flows

2035 Total Person Trips in '000s

	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
1.Hollywood	192	53	61	27	10	30	15	9	8	7	8	6	3	428
2.Pembroke Pines Area	53	249	23	65	60	10	8	11	17	3	3	5	5	511
3.Dania Beach Area	61	23	81	37	10	52	26	14	14	13	13	11	5	360
4.Davie Area	27	65	37	176	44	24	24	33	48	6	7	14	13	519
5.SouthWest Broward	10	60	10	44	234	8	6	11	29	2	3	7	9	432
6.Ft. Lauderdale	30	10	52	24	8	326	76	24	20	70	49	29	10	727
7.Lauderdale Lakes	15	8	26	24	6	76	133	39	24	21	35	34	11	453
8.Plantation Area	9	11	14	33	11	24	39	71	55	7	12	24	18	326
9.Sawgrass Mall	8	17	14	48	29	20	24	55	155	6	11	29	35	451
10.NorthEast Broward	7	3	13	6	2	70	21	7	6	202	87	43	12	478
11.Cypress Creek Area	8	3	13	7	3	49	35	12	11	87	117	87	24	456
12.Coconut Creek Area	6	5	11	14	7	29	34	24	29	43	87	299	100	689
13.NorthWest Broward	3	5	5	13	9	10	11	18	35	12	24	100	173	417
Total	428	511	360	519	432	727	453	326	451	478	456	689	417	6,247

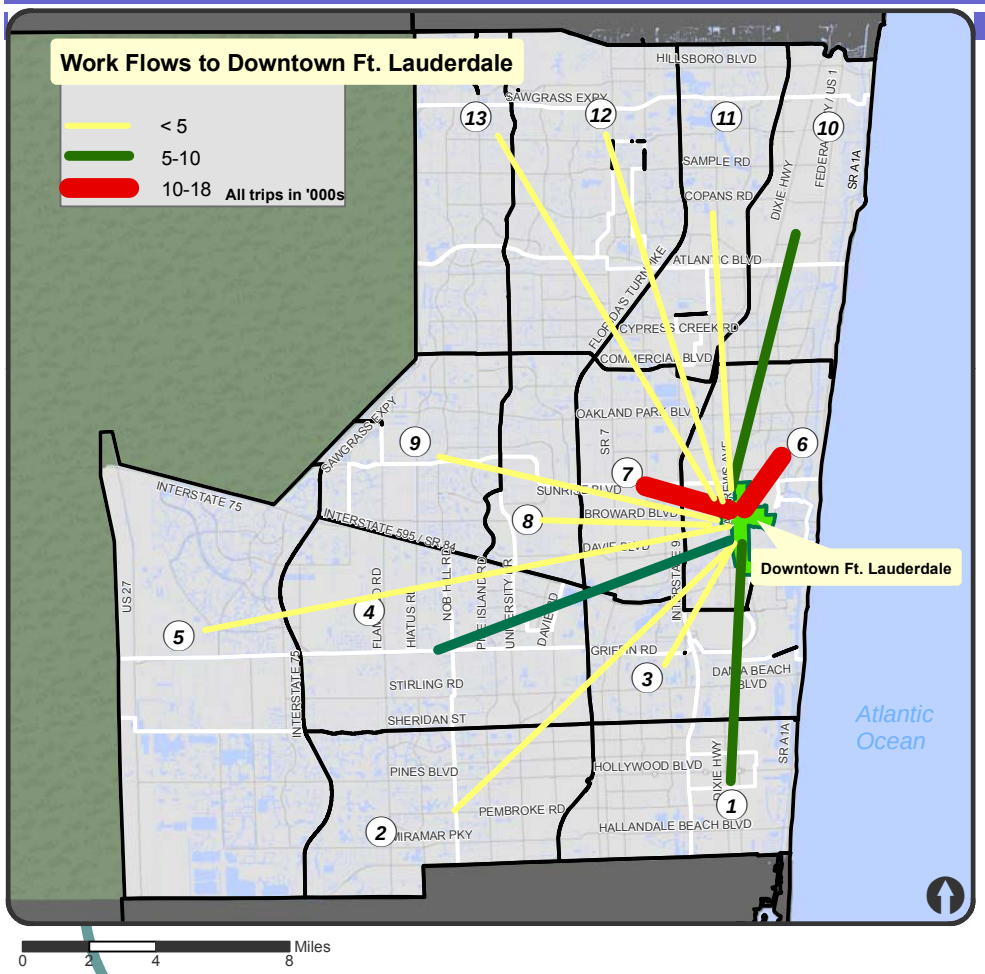
Yellow cells are trips with the superzones.
Red cells are top 25 flows between superzones (represented graphically on the next slide).

HBW+HBO+NHB Trips in OD format

Trips to Major Attractions

- Downtown Ft. Lauderdale
- Cypress Creek
- Plantation

Work Trips to/from Downtown Ft. Lauderdale



Superzone	Work Trips
1.Hollywood	6
2.Pembroke Pines Area	3
3.Dania Beach Area	4
4.Davie Area	6
5.SouthWest Broward	3
6.Ft. Lauderdale	21
7.Lauderdale Lakes	12
8.Plantation Area	5
9.Sawgrass Mall	5
10.NorthEast Broward	7
11.Cypress Creek Area	3
12.Coconut Creek Area	5
13.NorthWest Broward	2
14.Intra-Superzone	3
Total	**84**

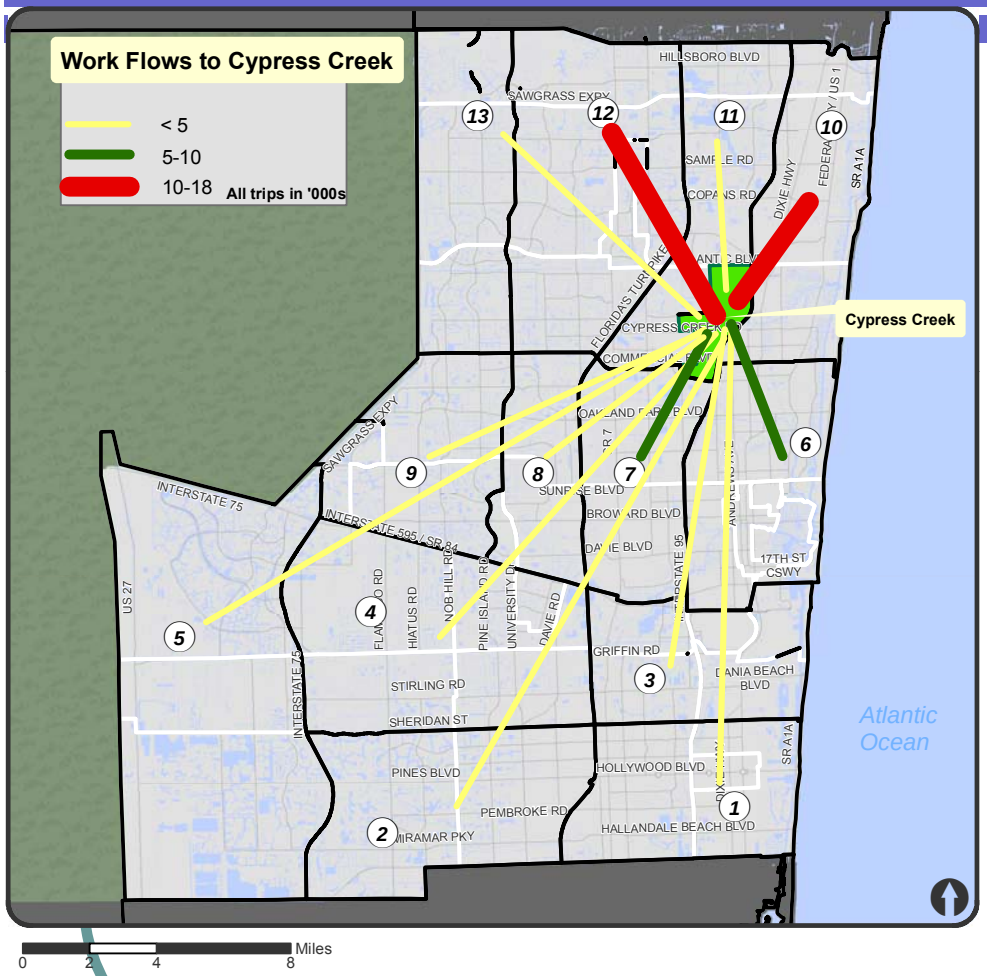
Broward County Major Roads
Urbanized Broward County
Undevelopable Broward County
Miami-Dade and Palm Beach Counties
Water Bodies

Superzones for Modeling

10 Superzones number

All trips in '000s
Intra-Broward work trips only

Work Trips to/from Cypress Creek



Superzone	Work Trips
1.Hollywood	2
2.Pembroke Pines Area	1
3.Dania Beach Area	1
4.Davie Area	2
5.SouthWest Broward	1
6.Ft. Lauderdale	9
7.Lauderdale Lakes	7
8.Plantation Area	3
9.Sawgrass Mall	3
10.NorthEast Broward	11
11.Cypress Creek Area	5
12.Coconut Creek Area	13
13.NorthWest Broward	4
14.Intra-Superzone	1
Total	**61**

Broward County Major Roads
Urbanized Broward County
Undevelopable Broward County
Miami-Dade and Palm Beach Counties
Water Bodies

Superzones for Modeling

10 Superzones number

All trips in '000s
Intra-Broward work trips only

Work Trips to/from Plantation

Superzone	Work Trips
1.Hollywood	2
2.Pembroke Pines Area	3
3.Dania Beach Area	1
4.Davie Area	6
5.SouthWest Broward	3
6.Ft. Lauderdale	3
7.Lauderdale Lakes	4
8.Plantation Area	4
9.Sawgrass Mall	7
10.NorthEast Broward	1
11.Cypress Creek Area	1
12.Coconut Creek Area	3
13.NorthWest Broward	2
14.Intra-Superzone	1
Total	**38**

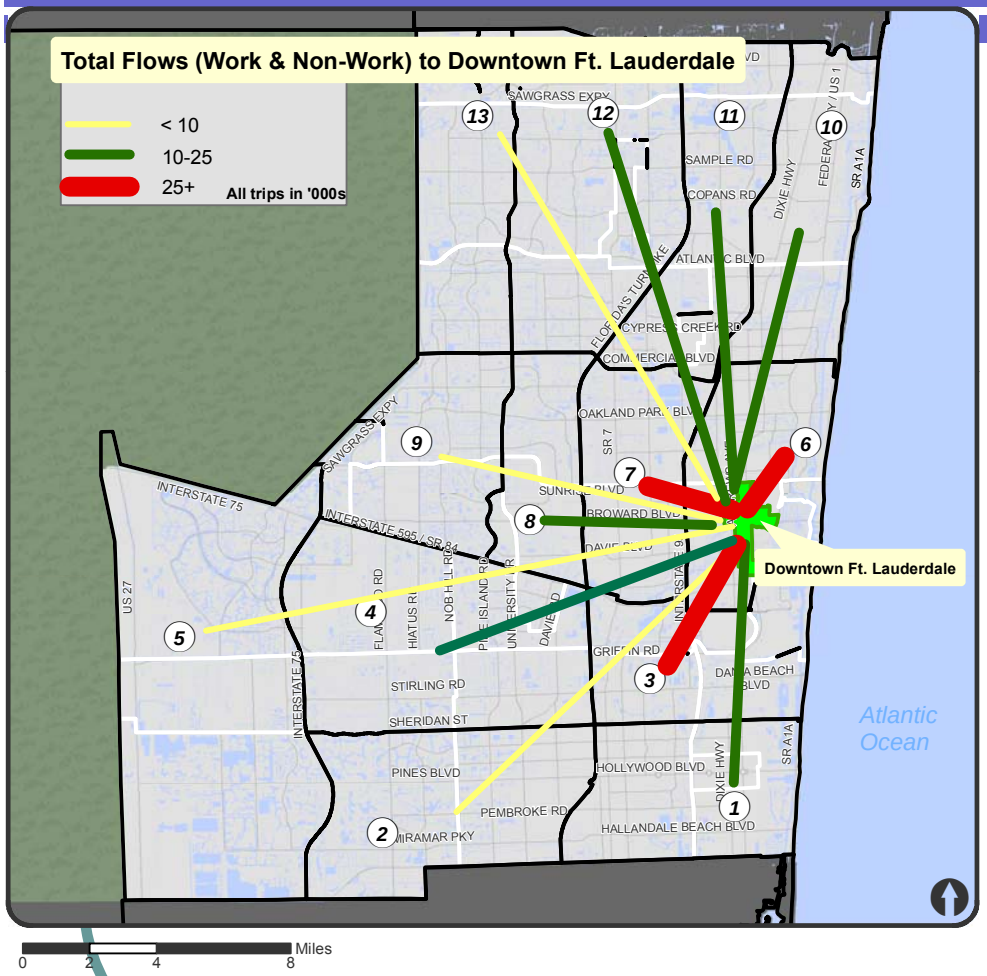
Broward County Major Roads
Urbanized Broward County
Undevelopable Broward County
Miami-Dade and Palm Beach Counties
Water Bodies

Superzones for Modeling

10 Superzones number

All trips in '000s
Intra-Broward work trips only

Total Trips (Work and Non-work) to/from Downtown Ft. Lauderdale



Superzone	Total Trips
1.Hollywood	20
2.Pembroke Pines Area	7
3.Dania Beach Area	32
4.Davie Area	16
5.SouthWest Broward	6
6.Ft. Lauderdale	109
7.Lauderdale Lakes	41
8.Plantation Area	15
9.Sawgrass Mall	12
10.NorthEast Broward	22
11.Cypress Creek Area	17
12.Coconut Creek Area	14
13.NorthWest Broward	5
14.Intra-Superzone	54
Total	**369**

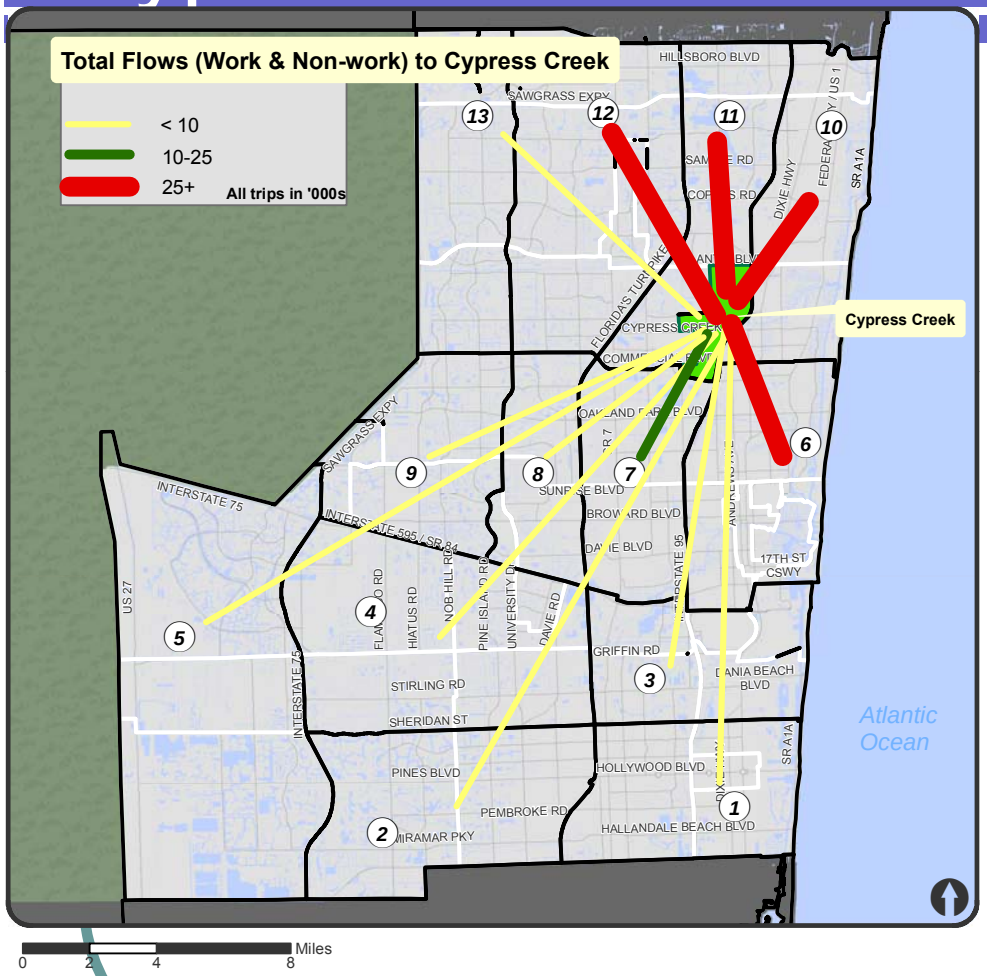
Broward County Major Roads
Urbanized Broward County
Undevelopable Broward County
Miami-Dade and Palm Beach Counties
Water Bodies

Superzones for Modeling

10 Superzones number

All trips in '000s
Intra-Broward work trips only

Total Trips (Work and Non-work) to/from Cypress Creek



Superzone	Total Trips
1.Hollywood	6
2.Pembroke Pines Area	2
3.Dania Beach Area	9
4.Davie Area	4
5.SouthWest Broward	2
6.Ft. Lauderdale	39
7.Lauderdale Lakes	24
8.Plantation Area	8
9.Sawgrass Mall	7
10.NorthEast Broward	44
11.Cypress Creek Area	31
12.Coconut Creek Area	36
13.NorthWest Broward	11
14.Intra-Superzone	19
Total	**241**

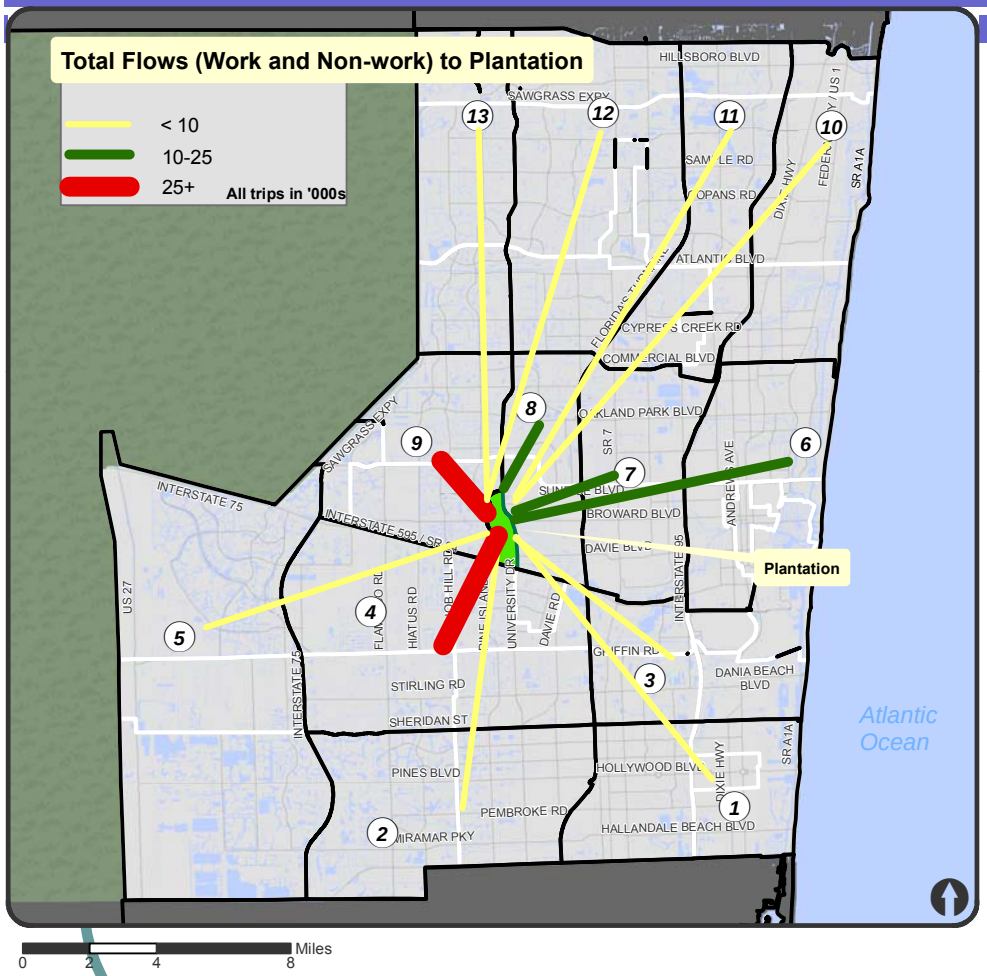
Broward County Major Roads
Urbanized Broward County
Undevelopable Broward County
Miami-Dade and Palm Beach Counties
Water Bodies

Superzones for Modeling

10 Superzones number

All trips in '000s
Intra-Broward work trips only

Total Trips (Work and Non-work) to/from Plantation



Superzone	Total Trips
1.Hollywood	7
2.Pembroke Pines Area	10
3.Dania Beach Area	9
4.Davie Area	27
5.SouthWest Broward	10
6.Ft. Lauderdale	11
7.Lauderdale Lakes	16
8.Plantation Area	22
9.Sawgrass Mall	31
10.NorthEast Broward	3
11.Cypress Creek Area	3
12.Coconut Creek Area	9
13.NorthWest Broward	8
14.Intra-Superzone	12
Total	**175**

Broward County Major Roads
Urbanized Broward County
Undevelopable Broward County
Miami-Dade and Palm Beach Counties
Water Bodies

Superzones for Modeling

10 Superzones number

All trips in '000s
Intra-Broward work trips only

Work Trips by County

Year 2035	Palm Beach	Broward	Miami-Dade	Total
Palm Beach	1,097	*122*	6	**1,225**
Broward	*120*	1,395	*300*	**1,815**
Miami-Dade	5	*152*	2,098	**2,255**
Total	**1,222**	**1,669**	**2,403**	**5,294**

~1.4 million intra-Broward work trips, a 29% increase from 2005

Trips between Broward and adjacent counties expected to grow 17% by 2035 to ~0.7 million trips/day

77% of all work trips originating in Broward County are intra-county, 23% are destined to Palm Beach or Miami-Dade

All trips are in '000s

Trips by County (All Purposes)

Year 2035	Palm Beach	Broward	Miami-Dade	Total
Palm Beach	5,816	486	26	**6,328**
Broward	358	6,247	1,003	**7,608**
Miami-Dade	15	616	11,033	**11,664**
Total	**6,190**	**7,349**	**12,062**	**25,600**

~6.3 million intra-Broward trips, a 28% increase from 2005

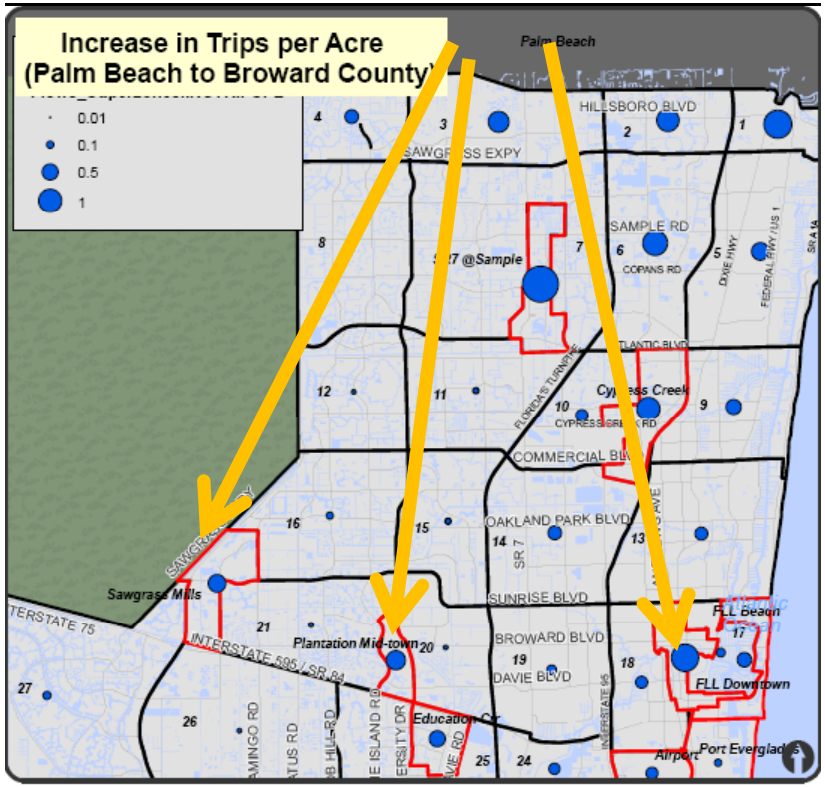
Trips between Broward and adjacent counties expected to grow 33% by 2035 to ~1.7 million trips/day

82% of all trips originating in Broward County are intra-county, 18% are destined to Palm Beach or Miami-Dade

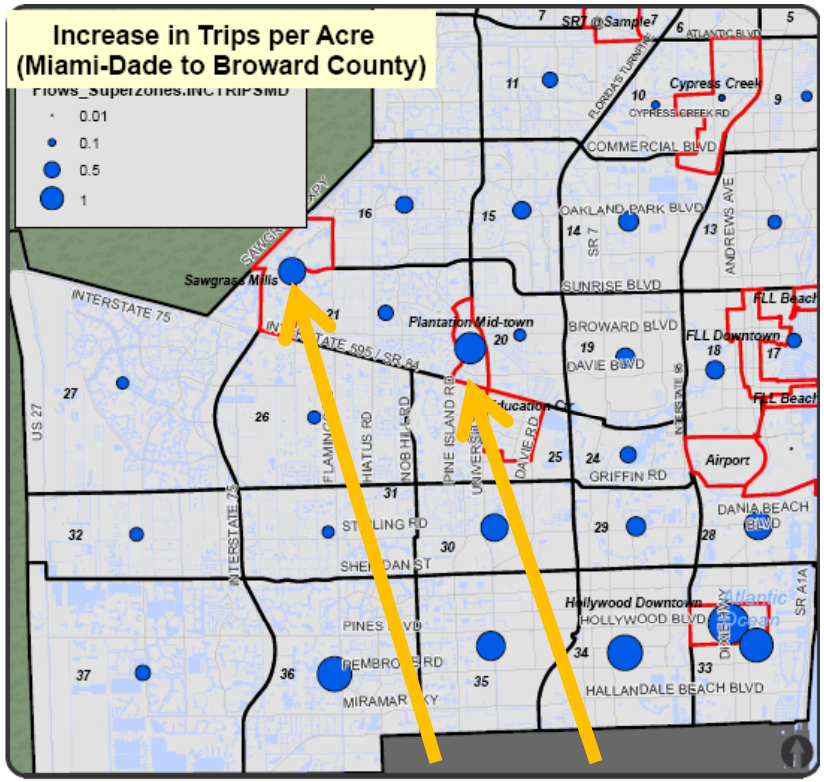
All trips are in '000s

Increase in Trips per Acre from PB and MD

Palm Beach To Broward



Miami-Dade To Broward



~65,000 Total Directional Trip Increase ~162,000

Does not include NHB trips
Directional Trips Only

Transportation System Deficiency Analysis

- Supply Parameters
- Highway LOS
- Transit LOS

Supply Parameters (Highway)

Parameter	Base year	E+C	Highway emphasis	Transit emphasis	Balanced
Total Lane Miles	4,572	4,772			
Freeway	439	457			
Arterial	3,787	3,866			
HOV	51	54			
HOT	0	27			
TOLL	295	368			
Highway Links	7,790	8,001			
Links with AADT	2,145	-			

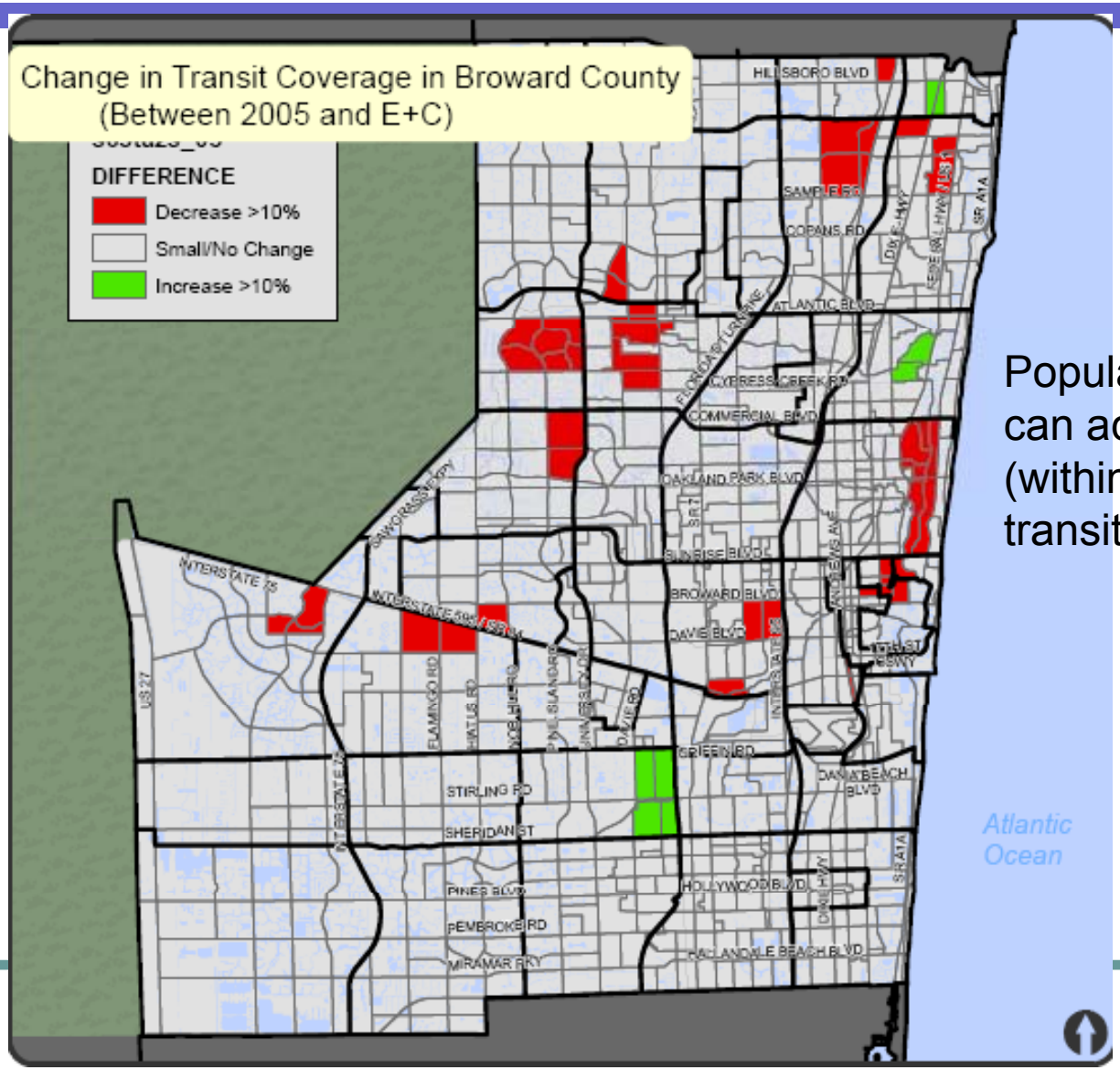
* Source: SERPM 6.5 model

Supply Parameters (Transit)

Parameter	Base year	E+C	Highway emphasis	Transit emphasis	Balanced
Total Route Miles	2,170	2,194			
Local	1,856	1,761			
Express	116	-			
Limited Stop	50	296			
New mode	-	-			
Total Vehicle Hours	3,822	3,486			
Local	3,582	3,104			
Express	37	-			
Limited Stop	124	301			
New mode	-	-			

•Assumed 6 hour peak period and 10 hour off-peak period

Change in Transit Coverage



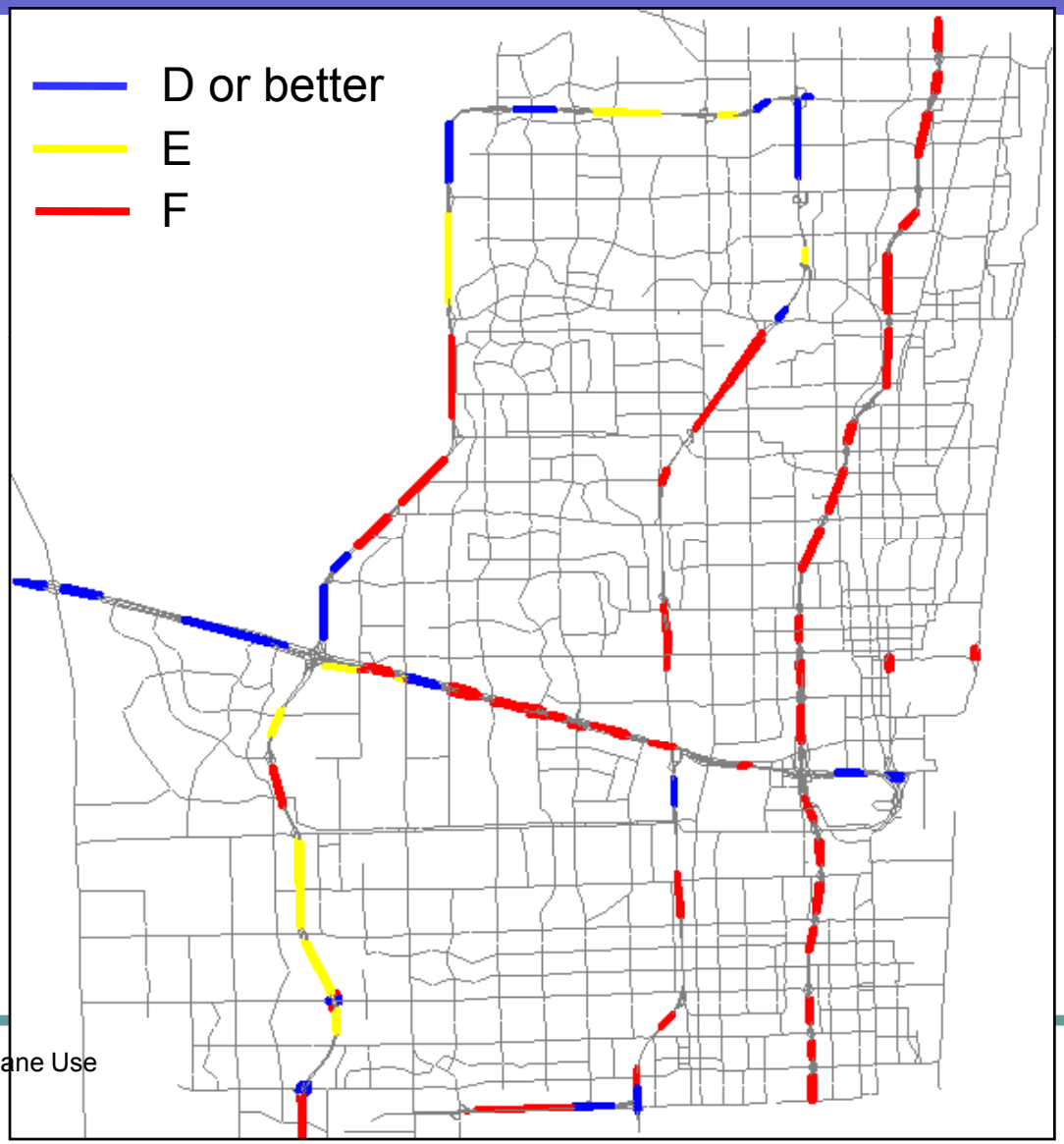
Population that can access transit (within ¼ mile of transit stops)

Supply Parameters (Transit)

Parameter	Base year	E+C	Highway emphasis	Transit emphasis	Balanced
% people within ¼ mile of transit*	59%	58%			
% employment within ¼ mile of transit*	70%	66%			

* Assumed uniform distribution within a zone

LOS Map SIS Roadway Facilities



E+C Network with 2035 Lane Use

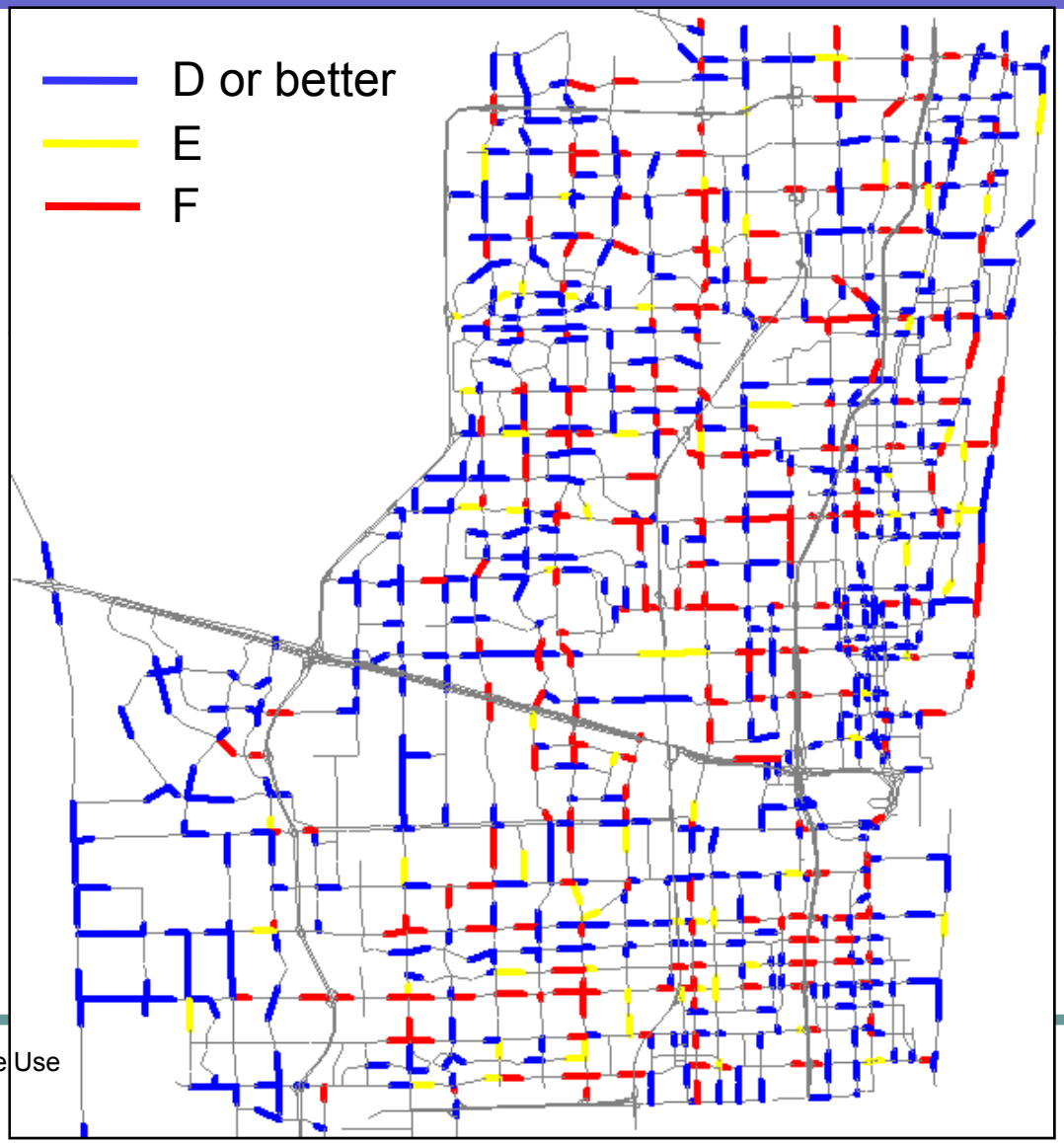
LOS on SIS/FHIS Roadways

SIS/FHIS Roadway	Roadway Segment	LOS Standard	AADT LOS	E+C LOS
FL Turnpike & HEFT	MD CL to PB CL	D	D/E	F
I-95	MD CL to PB CL	E	F	F
I-595	I-75 to US 1	D	F	F
Sawgrass Exwy	I-75 to SW 10th St	D	D	D/E/F
I-75	MD CL to west of US 27	D	D	E/F
I-75	West of US-27 to Collier CL	B	A	A
US 27	MD CL to I-75	D	D	D
US 27	I-75 to PB CL	B	B	D

CL: County Line

LOS standards from Broward County Comprehensive Plan Adopted: 12/12/06

LOS Map Arterials

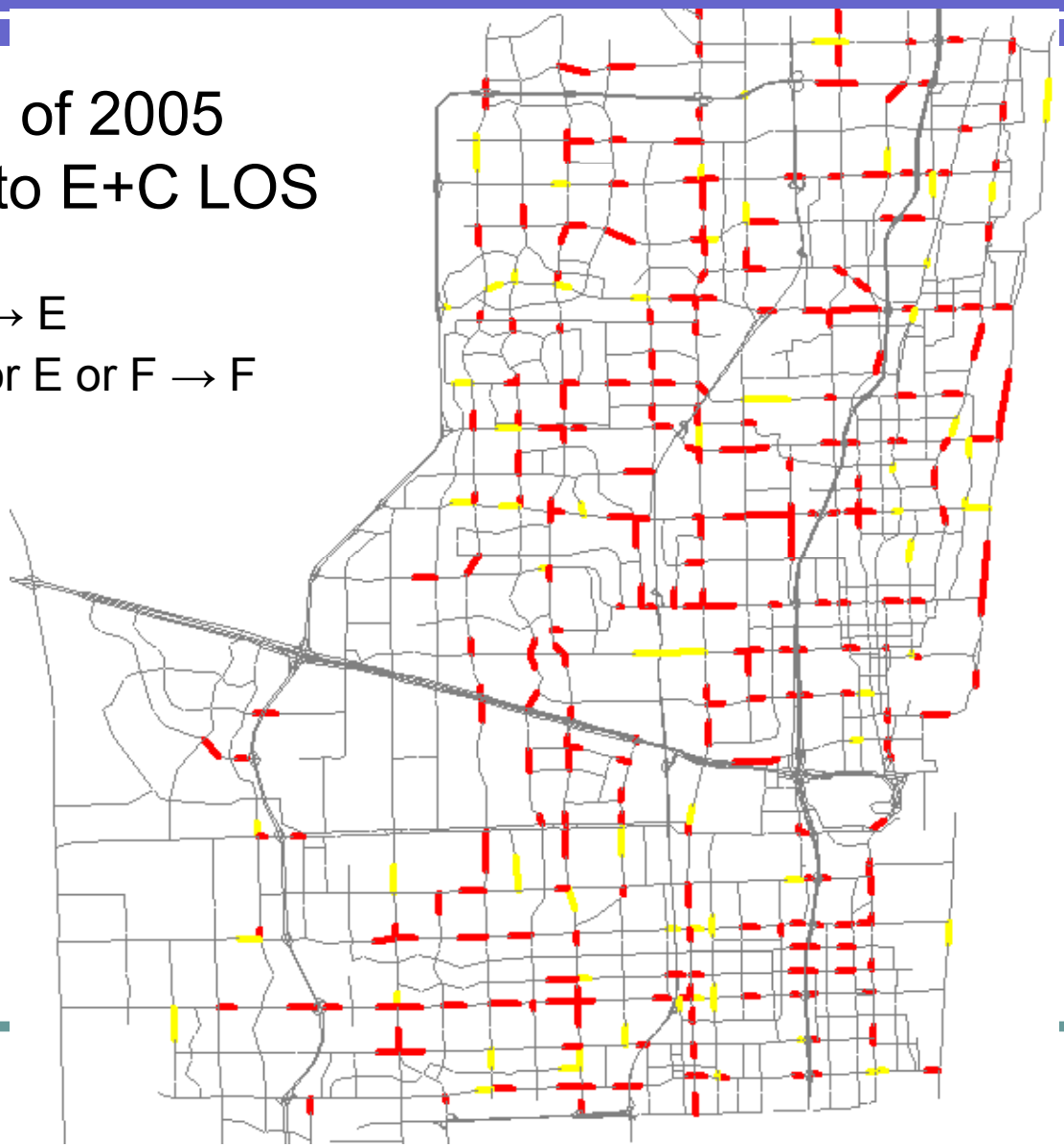


E+C Network with 2035 Lane Use

Delta LOS Map

Comparison of 2005
AADT LOS to E+C LOS

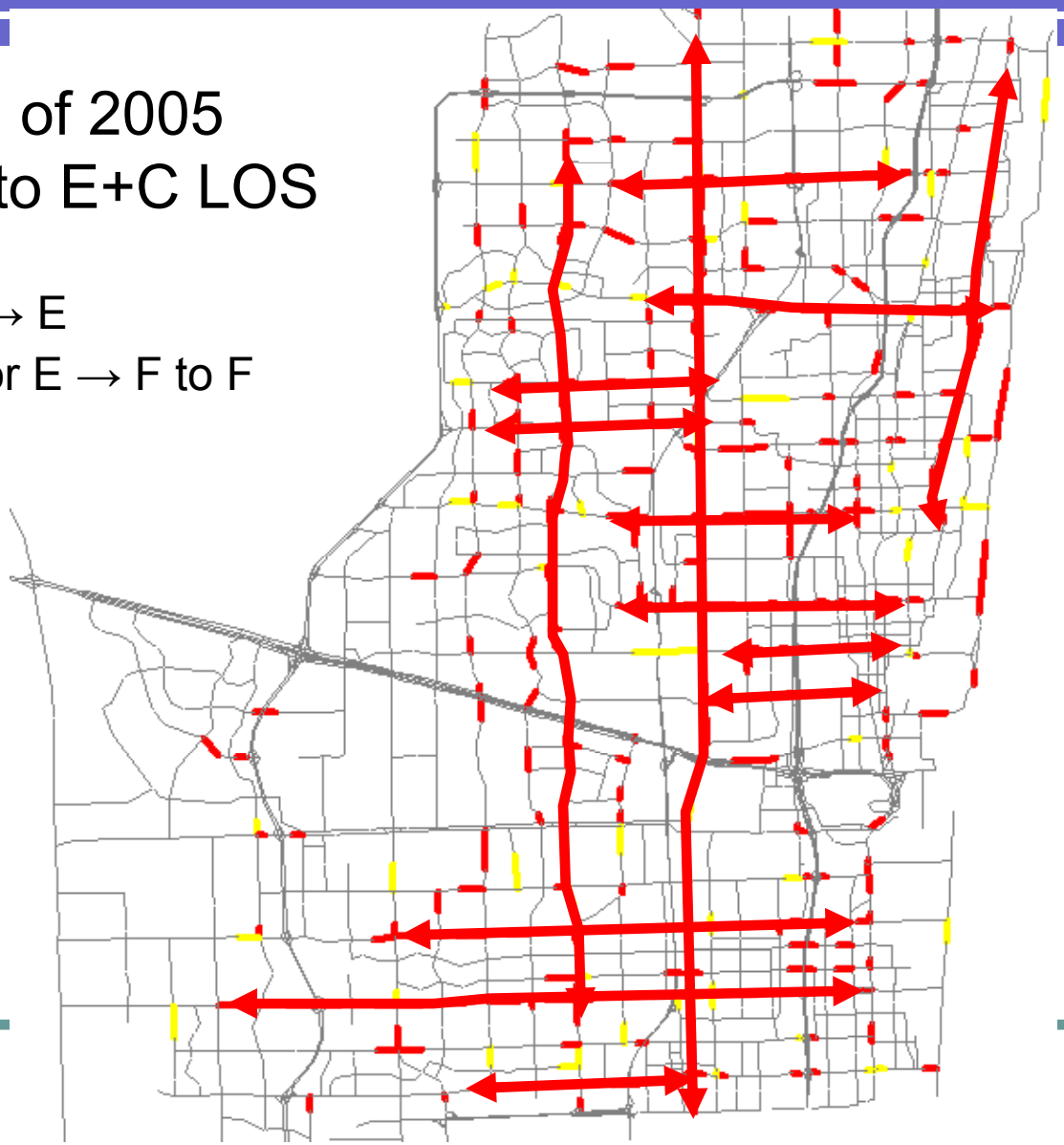
- D → E
- D or E or F → F



Delta LOS Map

Comparison of 2005
AADT LOS to E+C LOS

- D → E
- D or E → F to F



Proportion of Roadways in LOS F

LOS	AADT	Base	E+C	E+C Adjusted
D	76%	72%	51%	60%
E	7%	8%	10%	8%
F	17%	20%	39%	32%
Total	100%	100%	100%	100%

32% of the roadways are expected to be operating at LOS F under “No Build” scenario; almost double of 2005 AADT LOS F (17%)

“E+C Adjusted” represent s LOS figures using the adjusted E+C estimated volumes based on the procedure described earlier

Change in LOS Between 2005 and E+C

E+C LOS / AADT LOS	D	E	F	Total
D	59%	7%	10%	76%
E	1%	1%	5%	7%
F	1%	0%	17%	17%
Total	60%	8%	32%	100%

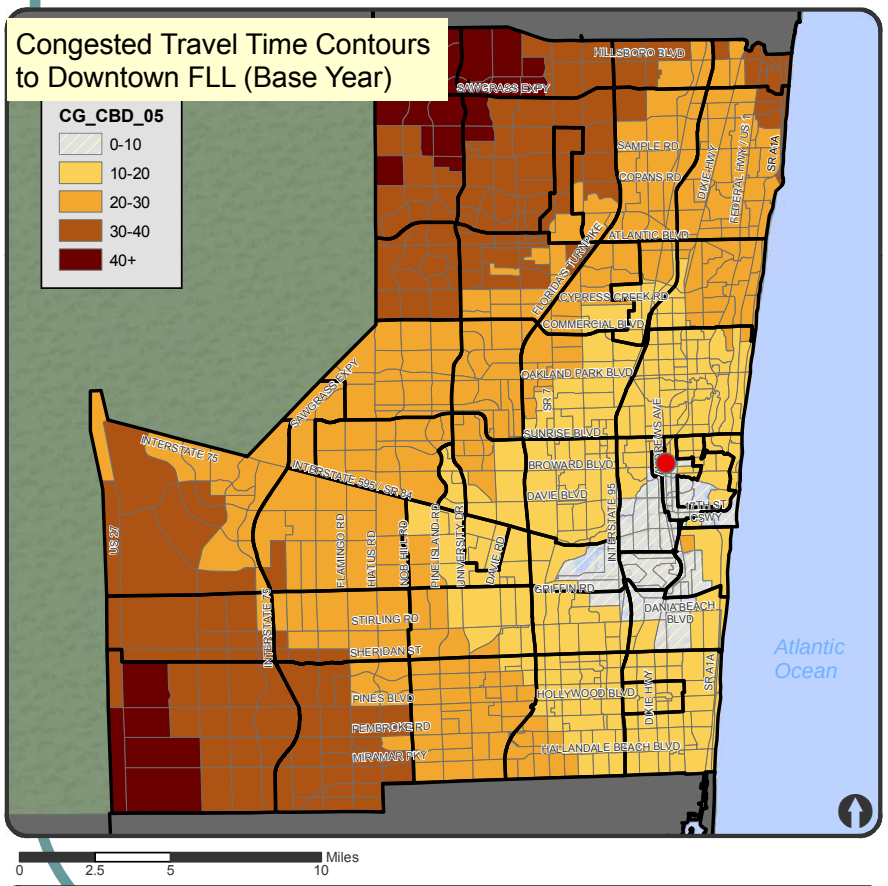
Red cells indicate roadways where operating LOS is expected to get worse or remain LOS F.

10% of the roadways operating at LOS D in 2005 are expected to be operate at LOS F under “No Build” scenario.

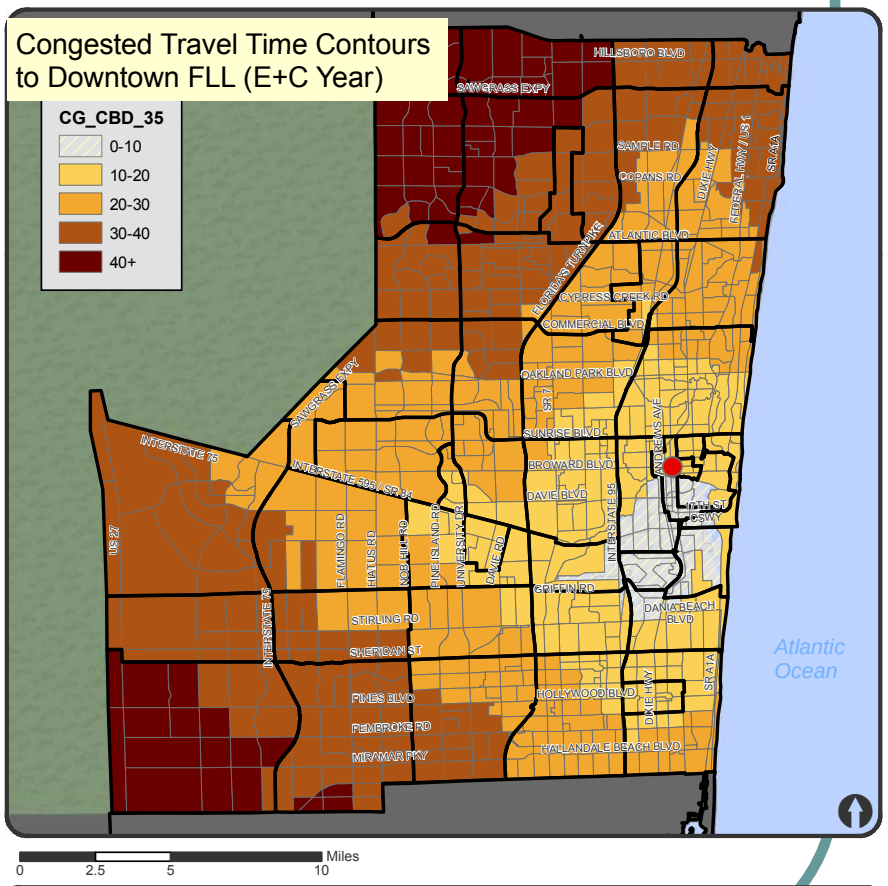
For E+C, adjusted volumes are used in the table on this slide

Travel Time Contours to FLL CBD

2005



E+C



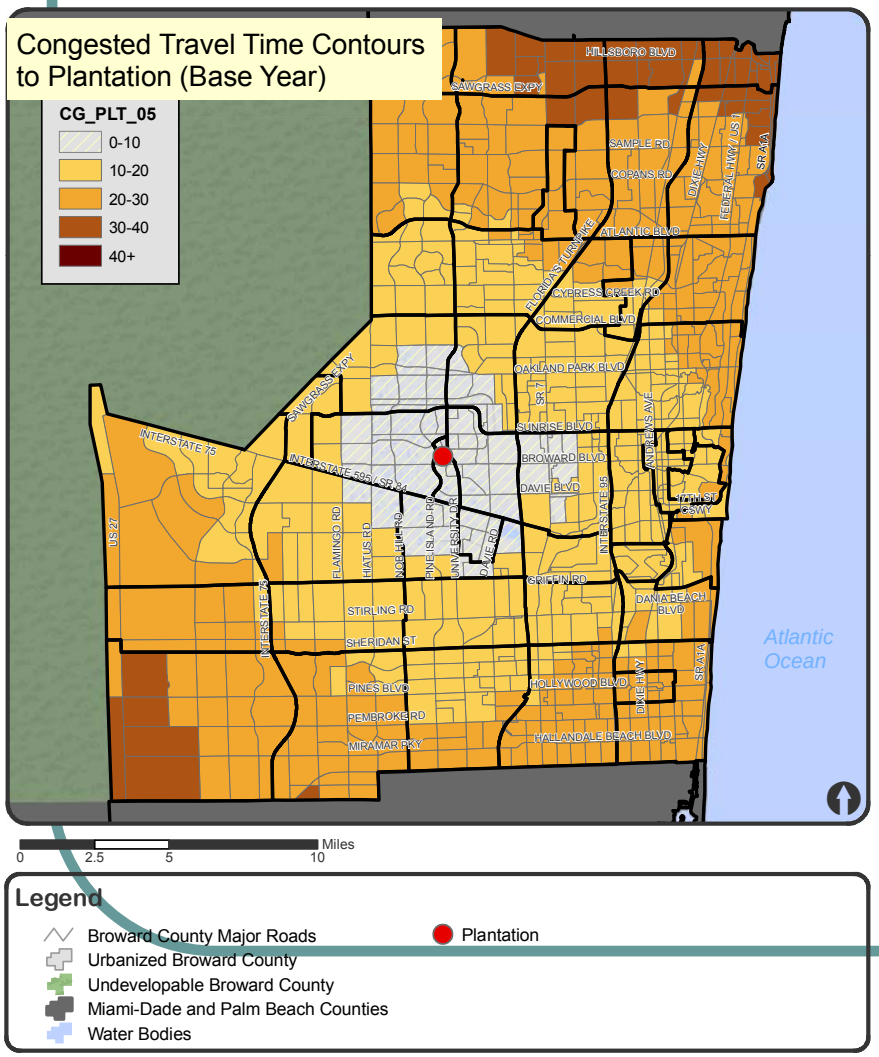
Legend

Brow
Urbar
Unde
Miami-Dade and Palm Beach Counties
Water Bodies

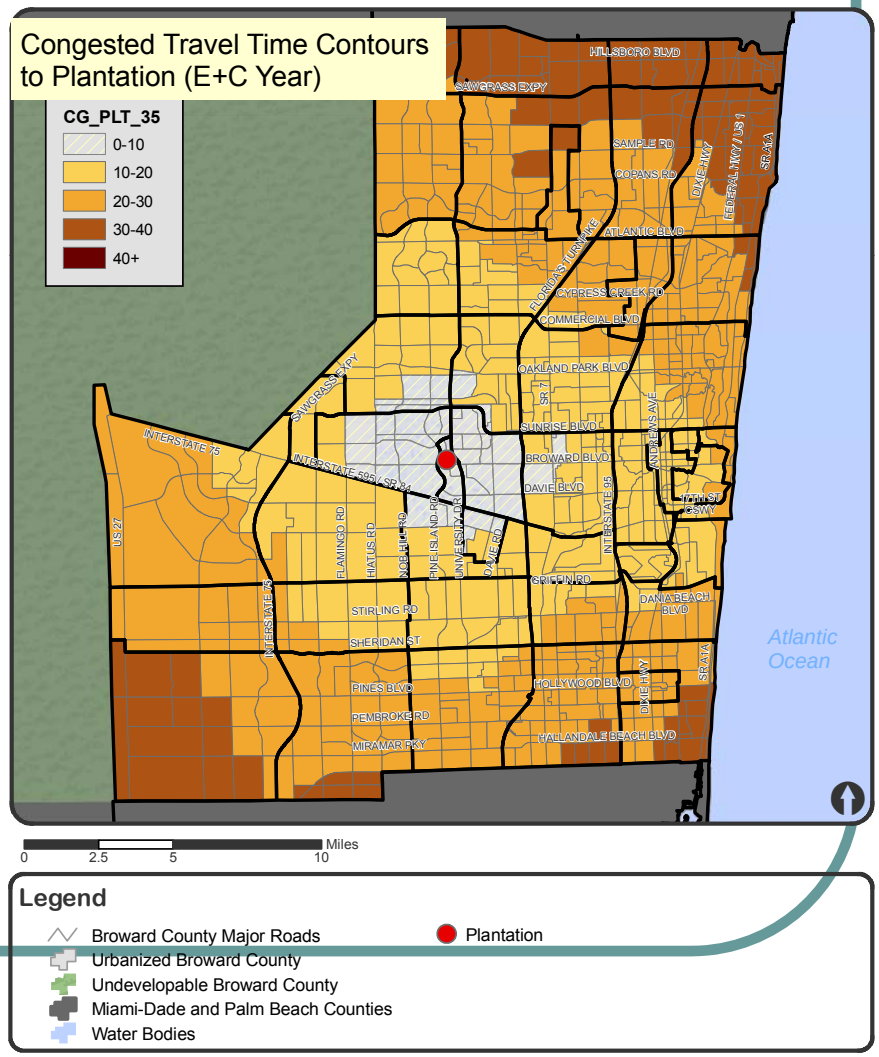
Percent of people in Broward County who would take more than 40 min to reach downtown Ft. Lauderdale increases from **4% to 15%**

Travel Time Contours to Plantation

2005

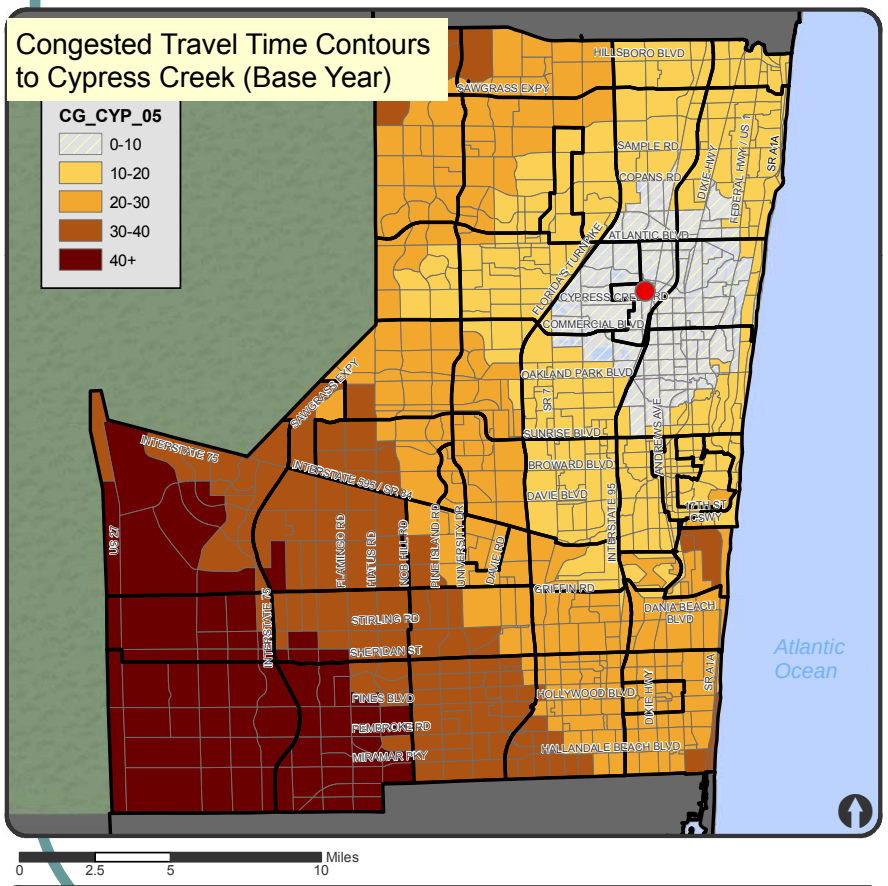


E+C



Travel Time Contours to Cypress Creek

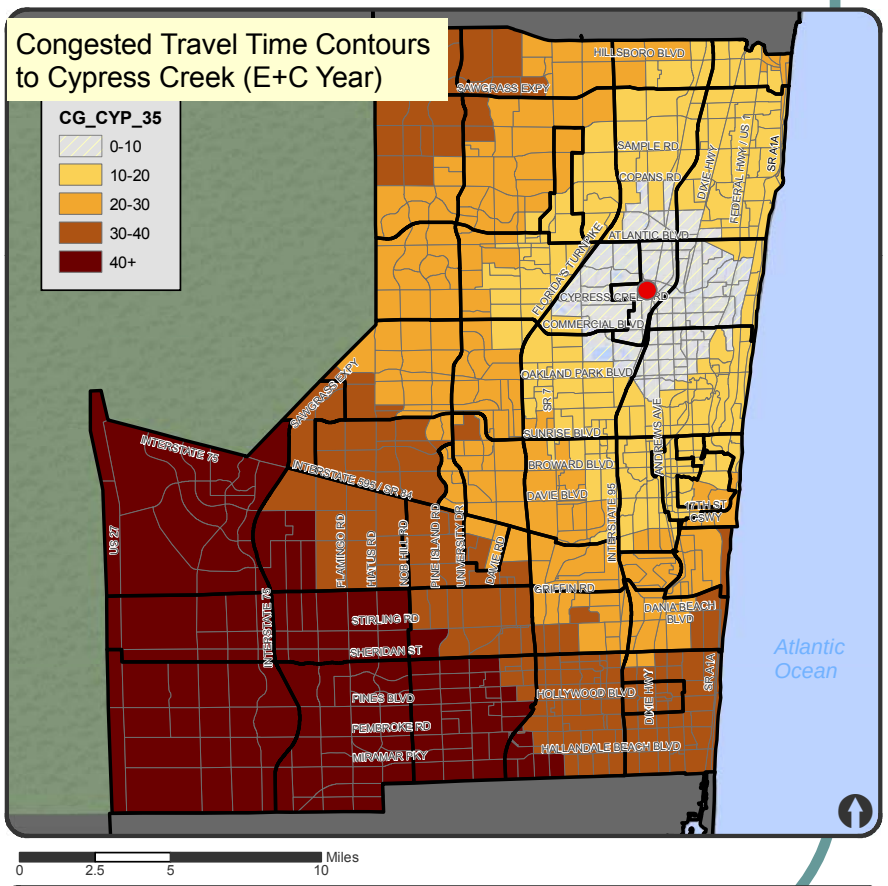
2005



Legend

- Broward County Major Roads
- Urbanized Broward County
- Undevelopable Broward County
- Miami-Dade and Palm Beach Counties
- Water Bodies
- Cypress Creek

E+C



Legend

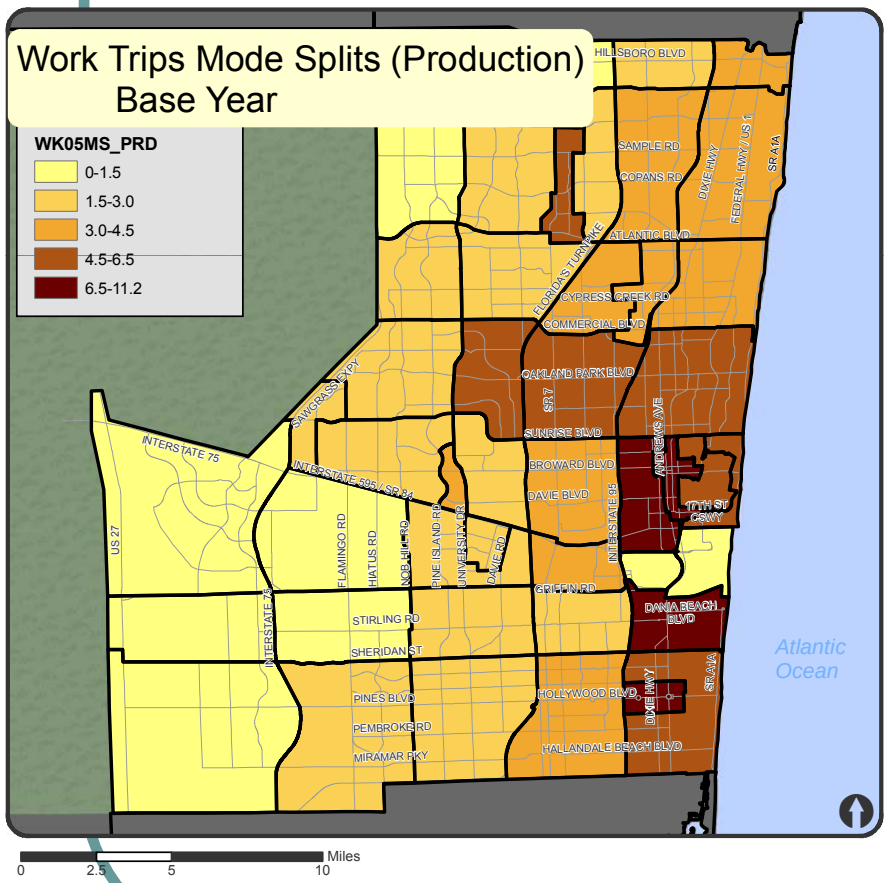
- Broward County Major Roads
- Urbanized Broward County
- Undevelopable Broward County
- Miami-Dade and Palm Beach Counties
- Water Bodies
- Cypress Creek

Transportation System Deficiency Analysis

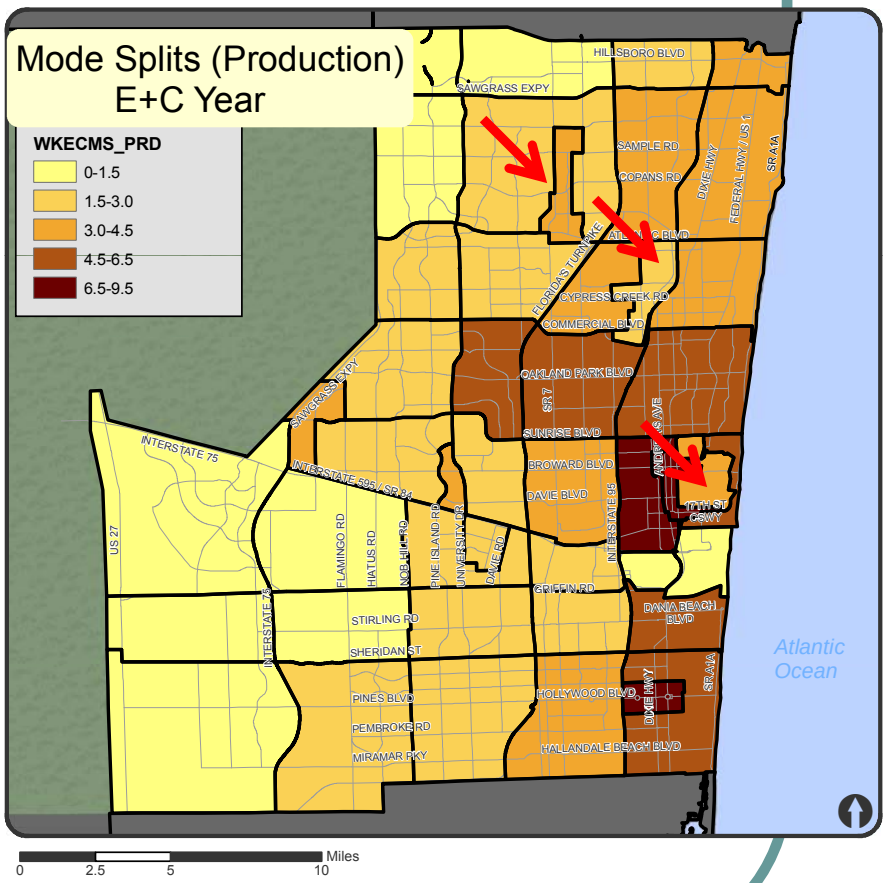
- Supply Parameters
- Highway LOS
- Transit LOS

Peak Period Mode Split (Production-End)

Base



E+C

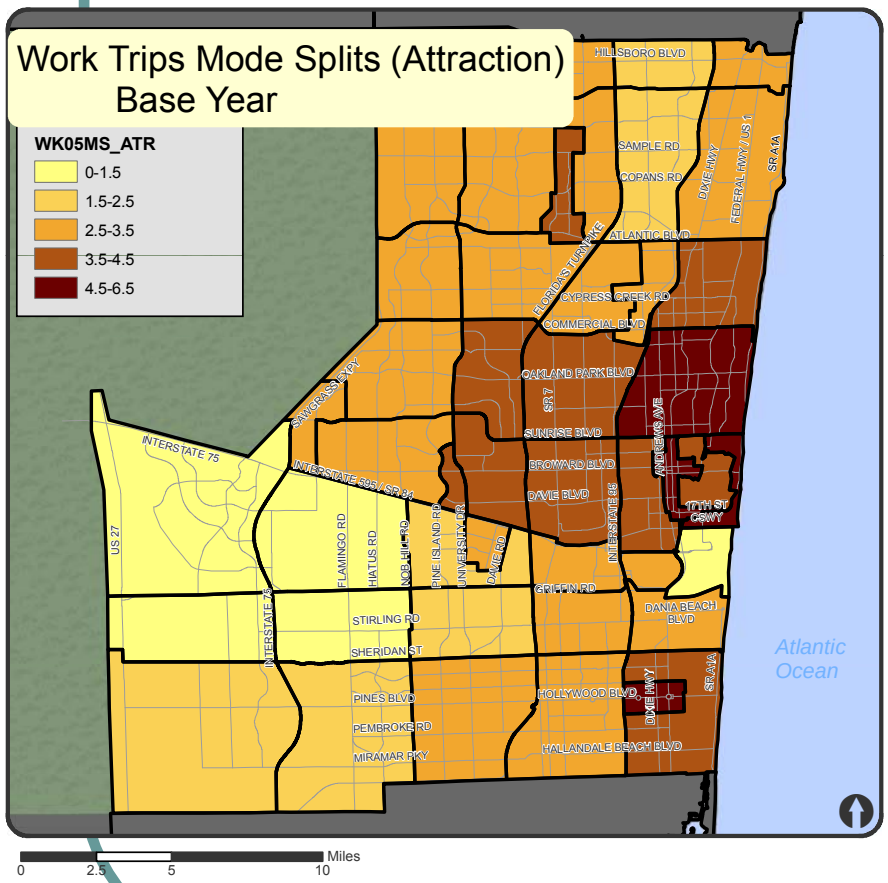


2.09	Broward County Mode Split	1.64%

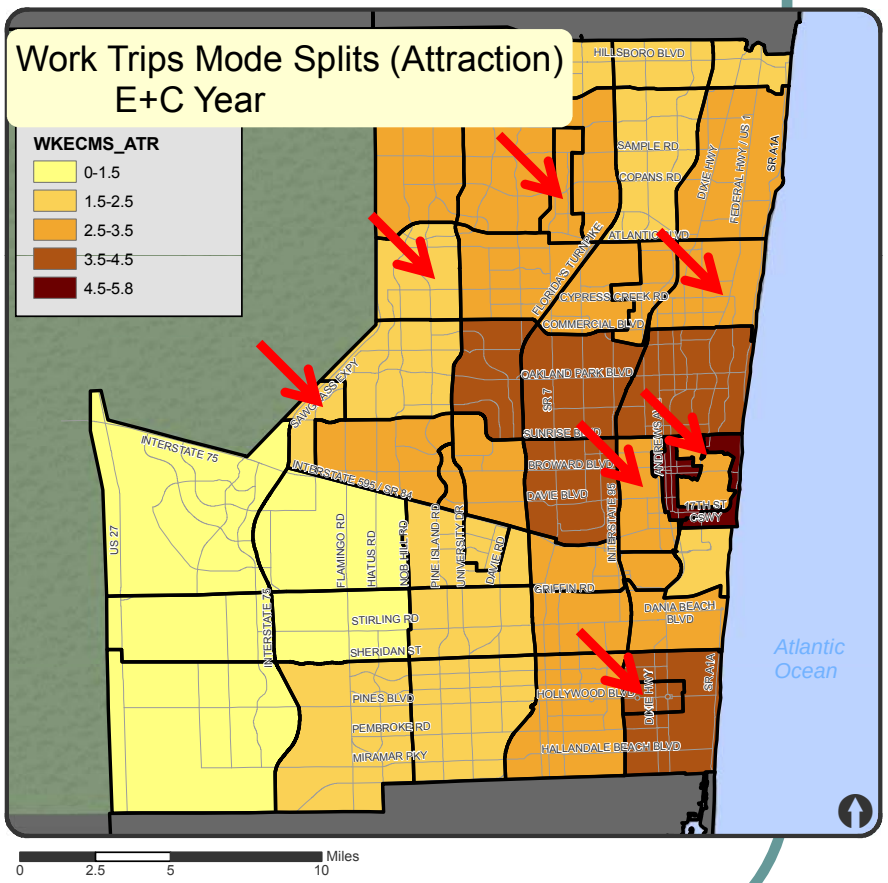
Overall Broward County mode split numbers include only intra-county trips

Peak Period Mode Split (Attraction-End)

Base



E+C



Legend

Legend

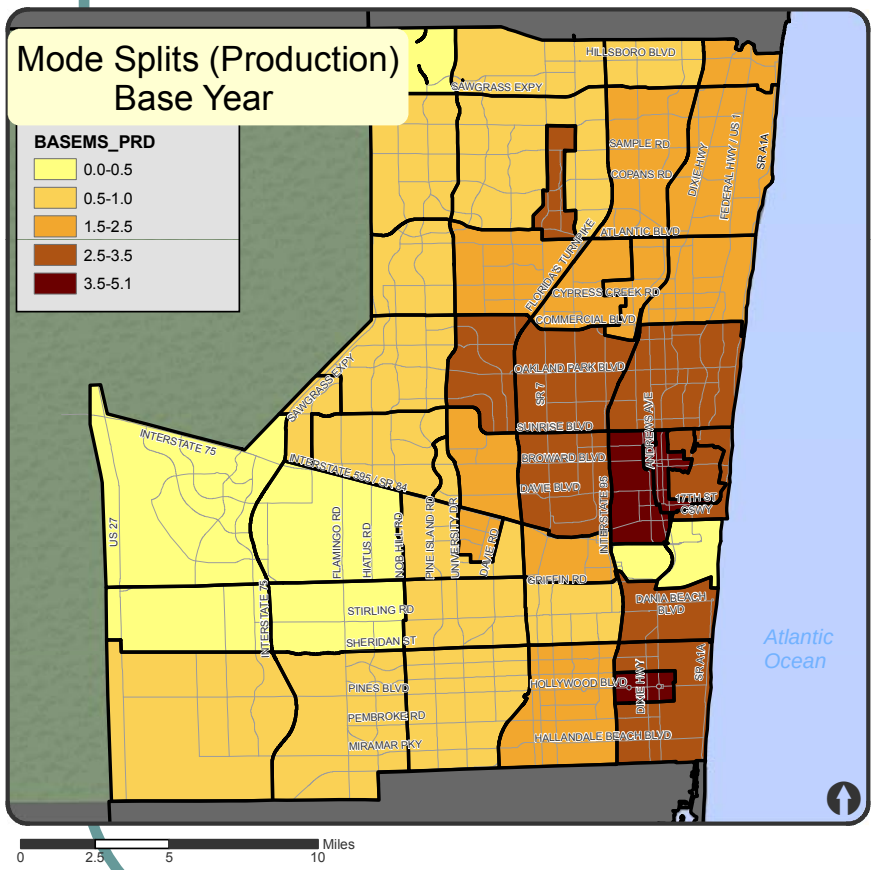
2.09% Broward County Mode Split **1.64%**

Overall Broward County mode split numbers include only intra-county trips

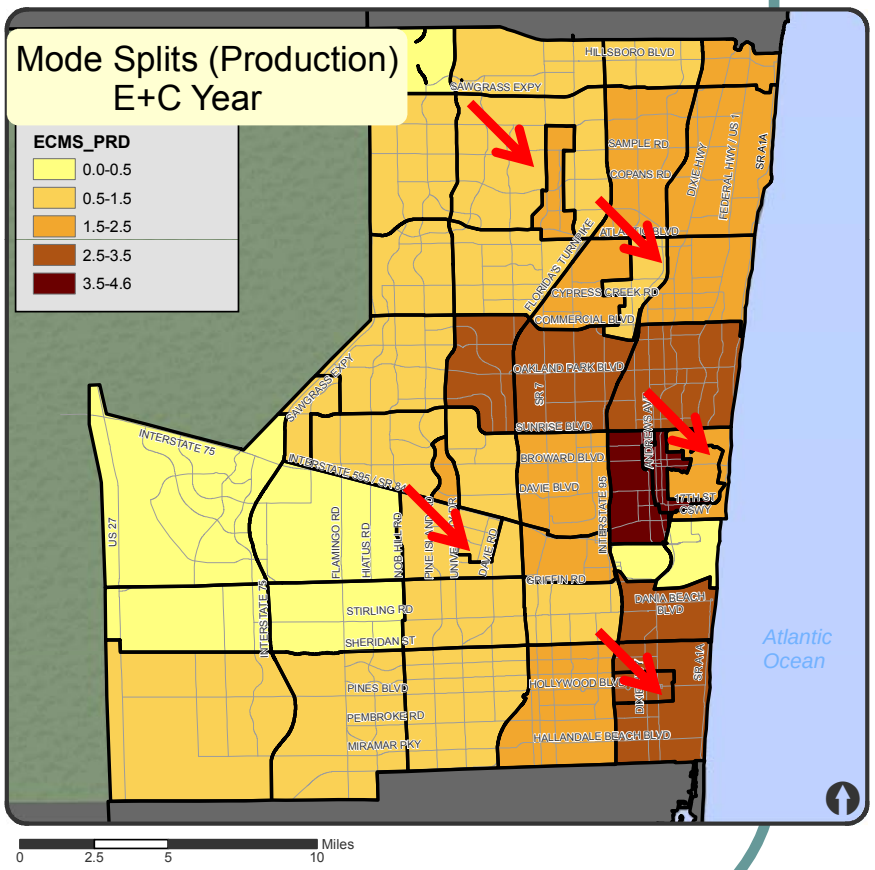
Undevelopable Broward County
Miami-Dade and Palm Beach Counties
Water Bodies

Daily Mode Split (Production-End)

Base



E+C



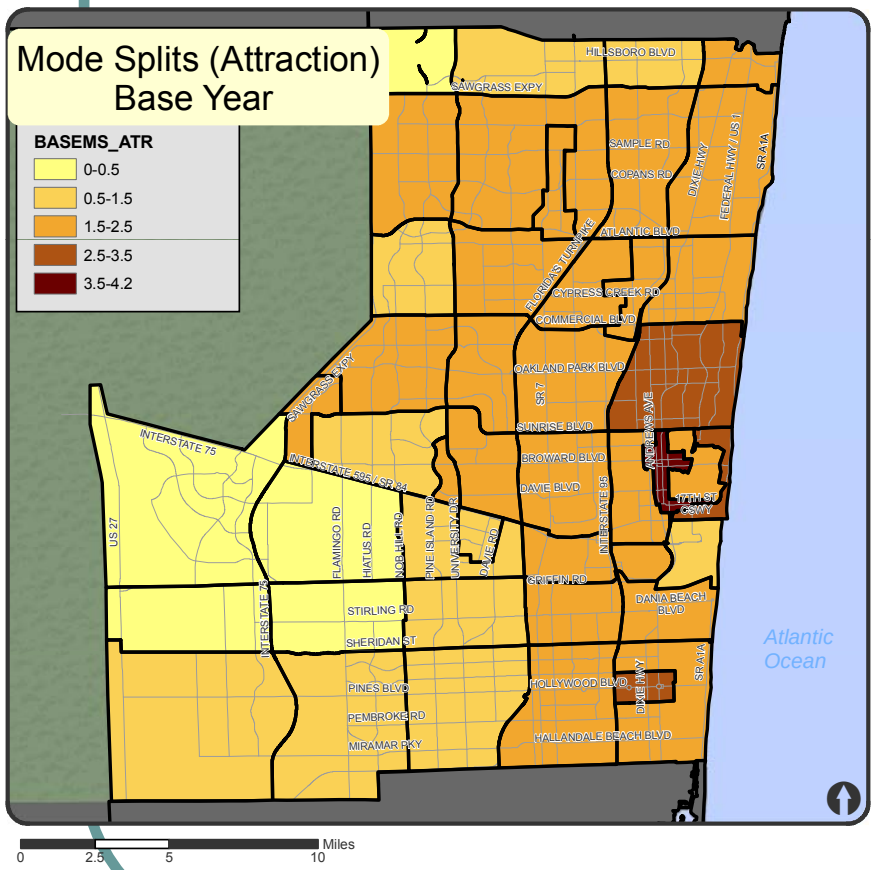
1.85% Broward County Mode Split **1.60%**

Does not include NHB trips
Overall Broward County mode split numbers include only intra-county trips

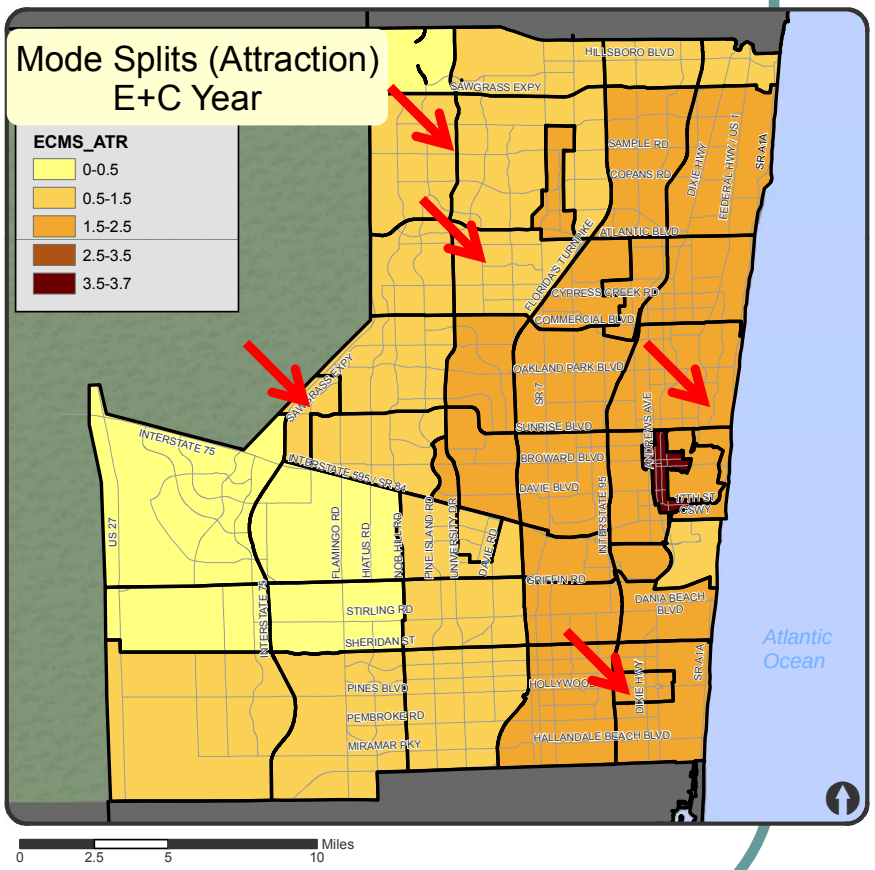
Undevelopable Broward County
Miami-Dade and Palm Beach Counties
Water Bodies

Daily Mode Split (Attraction-End)

Base



E+C



1.85% Broward County Mode Split **1.60%**

Does not include NHB trips
Overall Broward County mode split numbers include only intra-county trips

Undevelopable Broward County
Miami-Dade and Palm Beach Counties
Water Bodies

Mode Split at Major Attractions

Superzones	HBW		HBW+HBO	
	Base	E+C	Base	E+C
Sawgrass Mills Mall	3.0	2.5	1.7	1.4
Plantation Mid-Town	3.9	3.4	2.3	2.0
South FL Education Center	2.6	2.3	1.2	1.0
Airport	3.3	3.1	2.1	1.9
Port Everglades	1.3	2.2	0.7	1.3
Ft. Lauderdale Downtown	6.4	5.8	4.2	3.7
Cypress Creek	3.5	3.2	2.3	2.1
S.R. 7 at Sample Rd	4.1	3.5	2.2	2.0
Hollywood Downtown	4.6	4.3	2.8	2.4
Ft. Lauderdale Beach	5.0	4.5	2.9	2.5

*The increase in mode split @ Port is due to introduction of US 1 Breeze

Countywide Decrease in Mode Split

- Decline in transit service (9% less vehicle-hours of transit service in E+C reflecting the recent budget cuts) combined with increase in person trips (28%) results in decrease in mode split
- Provide more transit options for transit captive markets
- Provide better service for choice riders

Transit LOS on E-W Roadways

Roadway	Buses per Hour		LOS	
	Base	E+C	Base	E+C
Pines Blvd	3	4	D	C
Sheridan St	2	1.5	E	F
Griffin Rd	-	-	-	-
I-595	1.5	-	F	F
Broward Blvd	6	4	B	C
Sunrise Blvd	6	4	B	C
Oakland Park	6	4	B	C
Commercial Blvd	4	2.5	C	E
Cypress Creek	3	1.5	D	F
Atlantic Blvd	3	2	D	E
Sample Rd	3	2	D	E

Peak period service only
LOS using the FDOT LOS manual Table 4-1 (for Sidewalk Coverage 0-84%)

Transit LOS on N-S Roadways

Roadway	Buses per Hour		LOS	
	Base	E+C	Base	E+C
Sawgrass Exwy	-	-	F	F
I-75	1	-	F	F
Nob Hill Rd	-	-	F	F
University Dr	4	5	C	B
FL Turnpike	-	-	F	F
S.R 7	**10**	**6**	B	B
I-95 (S of Pines)	-	2	F	E
I-95 (N of Pines)	-	-	F	F
US 1	3	2	D	E
A1A	3	2	D	E

Peak period service only
LOS using the FDOT LOS manual Table 4-1 (for Sidewalk Coverage 0-84%)

LOS in Concurrency Districts

	Criteria	Base LOS	E+C LOS
Northeast	30 min (or less) headway on 90% of routes	X	X
	Establish one neighborhood transit center		
	Establish one additional community bus route		
North Central	30 min headway on 90% of routes	√	√
	Establish one neighborhood transit center		
	Establish one additional community bus route		
	Expand coverage area to 53%	√	√
Central	30 min headway on 80% of routes	√	√
	Establish one neighborhood transit center		
	Establish two additional community bus route		
Port / Airport	Establish one additional community bus route		

Broward County Comprehensive Plan Adopted: 12/12/06

LOS in Concurrency Districts

	Criteria	Base LOS	E+C LOS
Eastern Core	30 min headway on 90% of routes	√	√
	20 min headway on 40% of routes	√	√
	Establish one neighborhood transit center		
	Establish two additional community bus route		
Sawgrass	15 min headway on 50% of routes	√	√
	Establish one neighborhood transit center		
	Establish one additional community bus route		
Southeast	30 min headway on 80% of routes	√	√
	Establish one neighborhood transit center		
	Establish one additional community bus rte		

Broward County Comprehensive Plan Adopted: 12/12/06

LOS in Concurrency Districts

	Criteria	Base LOS	E+C LOS
South Central	30 min headway on 80% of routes	√	√
	Establish one neighborhood transit center		
	Establish one additional community bus route		
	Expand coverage area to 48%	√	√

Preliminary Needs Assessment Results

- Demand Parameters
- Lanes Needed
- I-595 HOT reversible facility volumes
- Trips from zero-car households

Demand Parameters (Highway)

Parameter	Base year	E+C	Highway emphasis	Transit emphasis	Balanced
VMT (in mil)	37.37	48.95			
VHT (in mil)	1.00	1.45			
VHD (in mil)	0.155	0.353			
Free flow Speed	39.74	40.23			
Congested Speed	35.80	33.80			
% Roadway operating under					
LOS D or better	76%	60%			
LOS E	7%	8%			
LOS F	17%	32%			

Highway Mobility Index

- Index used to determine the flow of passengers throughout the transportation system
- It takes into account the travel speeds and the vehicle occupancy (Speed x Average AOC)
- Higher the mobility index, more effective is the transportation system

	Base	E+C
Broward	***48.12***	***46.35***
Palm Beach	47.83	46.38
Miami-Dade	41.07	33.96
Region	44.93	40.94

Source: Los Angeles Metro 2008 LRTP

Demand Parameters (Transit)

Parameter	Base year	E+C	Highway emphasis	Transit emphasis	Balanced
Transit share	1.85%	1.60%			
BCT Boardings Total	145,160	159,124			
Local	143,000	151,344			
Express	156	-			
Limited Stop	1,213	7,780			
New mode	-	-			
Tri-Rail (within BO)	4,923	5,982			
Passenger Miles					
Passenger Hours					

Tri-Rail Boardings

Frequency			30/60	30/60	30/60			
	Cumulative		Observed	Model Estimates				
Station	Distance	Time	2005	Base	E+C	Highway	Transit	Balanced
Palm Beach Total	*26.5*	*35.1*	*4,343*	*3,434*	*4,967*			
Deerfield Beach	32.3	43.7	554	734	972			
Pompana Beach	35.3	48.8	587	636	748			
Cypress Creek	42.6	61.7	685	1,001	1,125			
Ft. Lauderdale	47.0	69.0	778	948	1,089			
FLL Airport	54.1	79.5	564	566	824			
Sheridan St.	54.5	80.3	364	380	470			
Hollywood	56.0	83.5	585	659	754			
Broward Total	*29.6*	*48.4*	*4,117*	*4,923*	*5,982*			
Miami Total	*17.4*	*24.7*	*2,920*	*2,951*	*3,306*			
Total	**73.4**	**108.2**	**11,380**	**11,308**	**14,254**			

Tri-Rail Stations in Broward County

~22% increase in Tri-Rail boarding within Broward County

Transit Linked Trips and Boardings

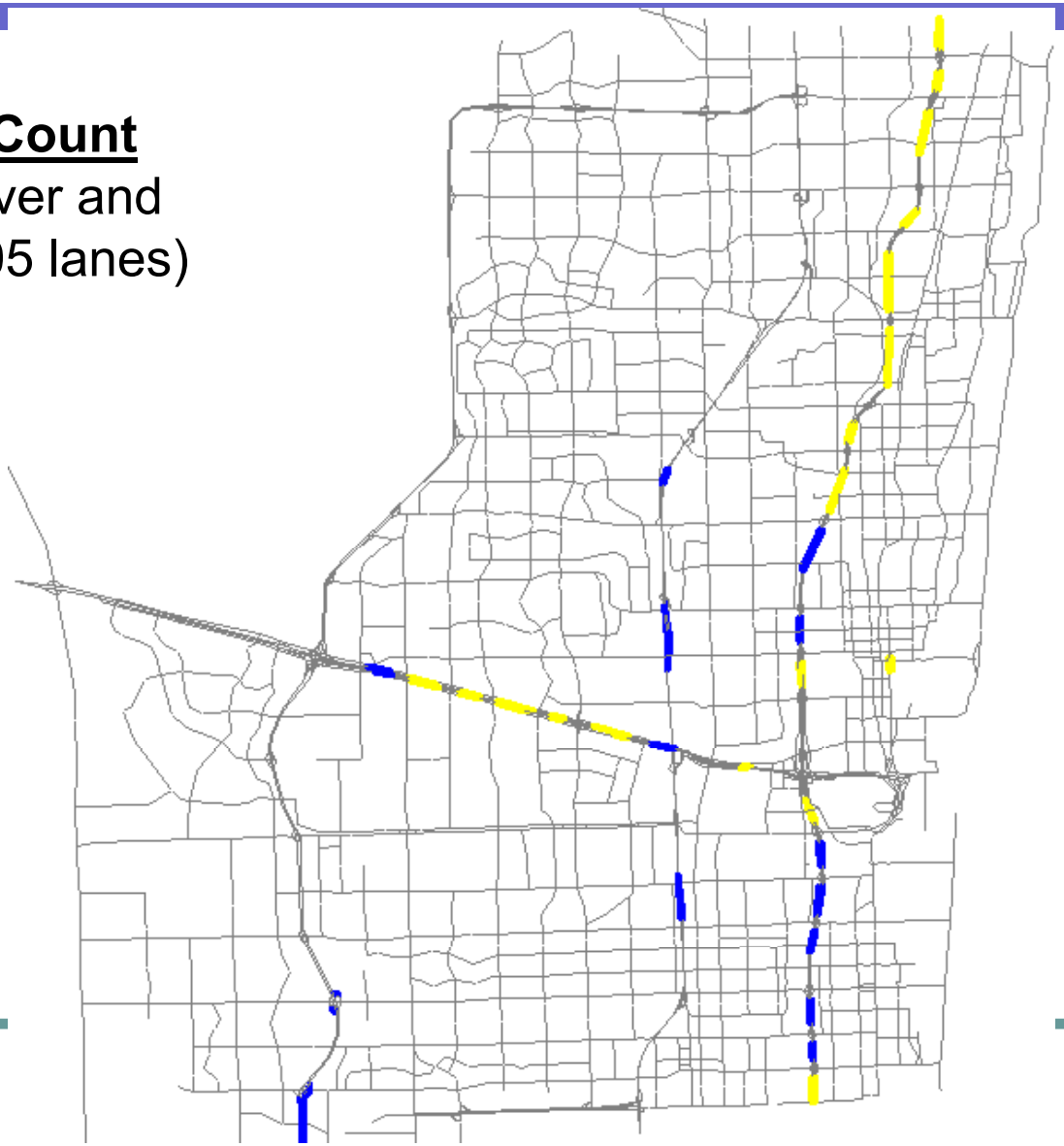
Linked Trips	Base	E+C
Total	66,100	72,300
Airport Superzone	580	500
Port Everglades Superzone	150	424

Preliminary Needs Assessment Results

- Demand Parameters
- Lanes Needed (Highway Needs)
- I-595 HOT reversible facility volumes
- Trips from zero-car households

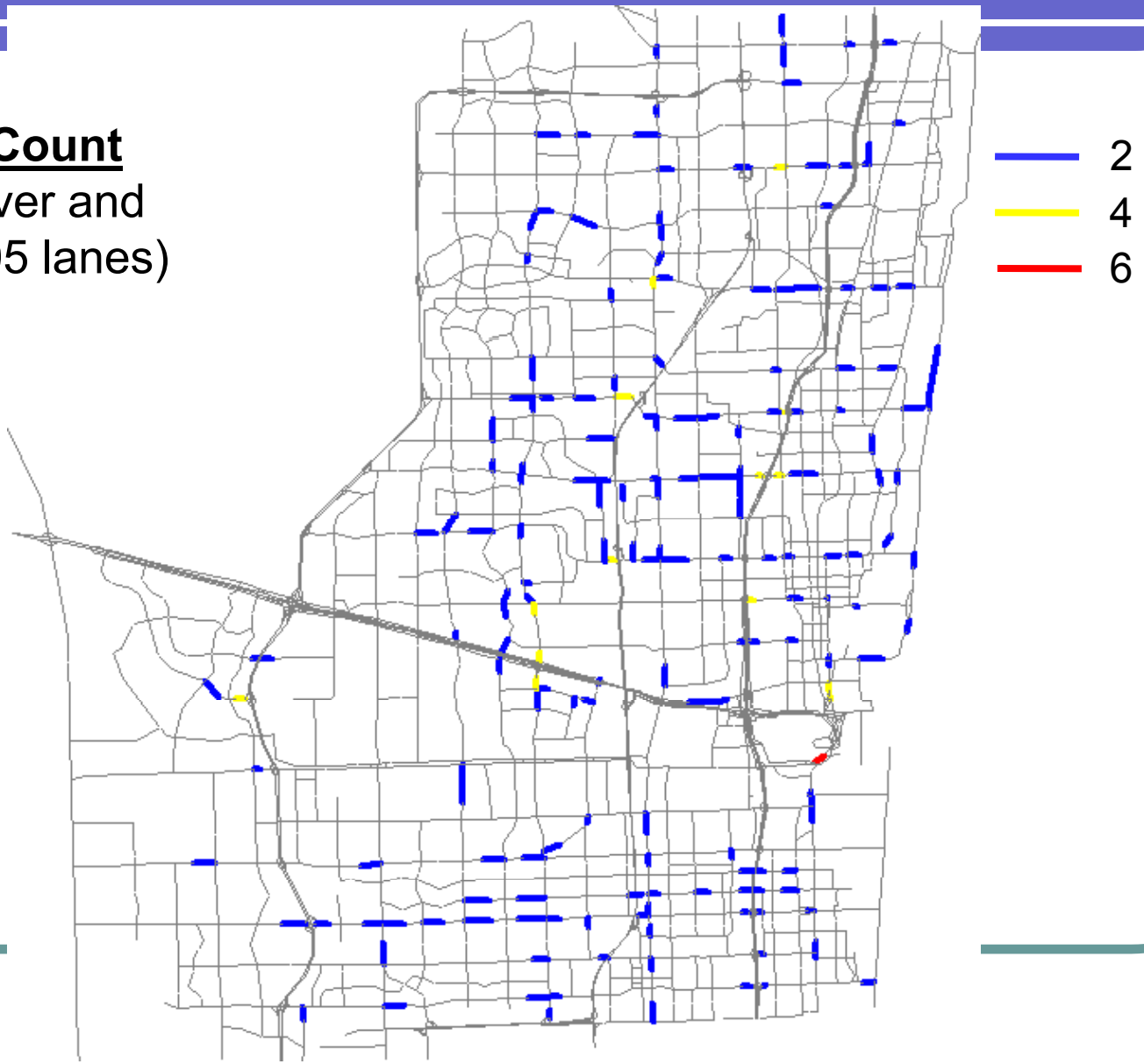
Lanes Need (SIS Roadways)

Actual Count
(needs over and above 2005 lanes)



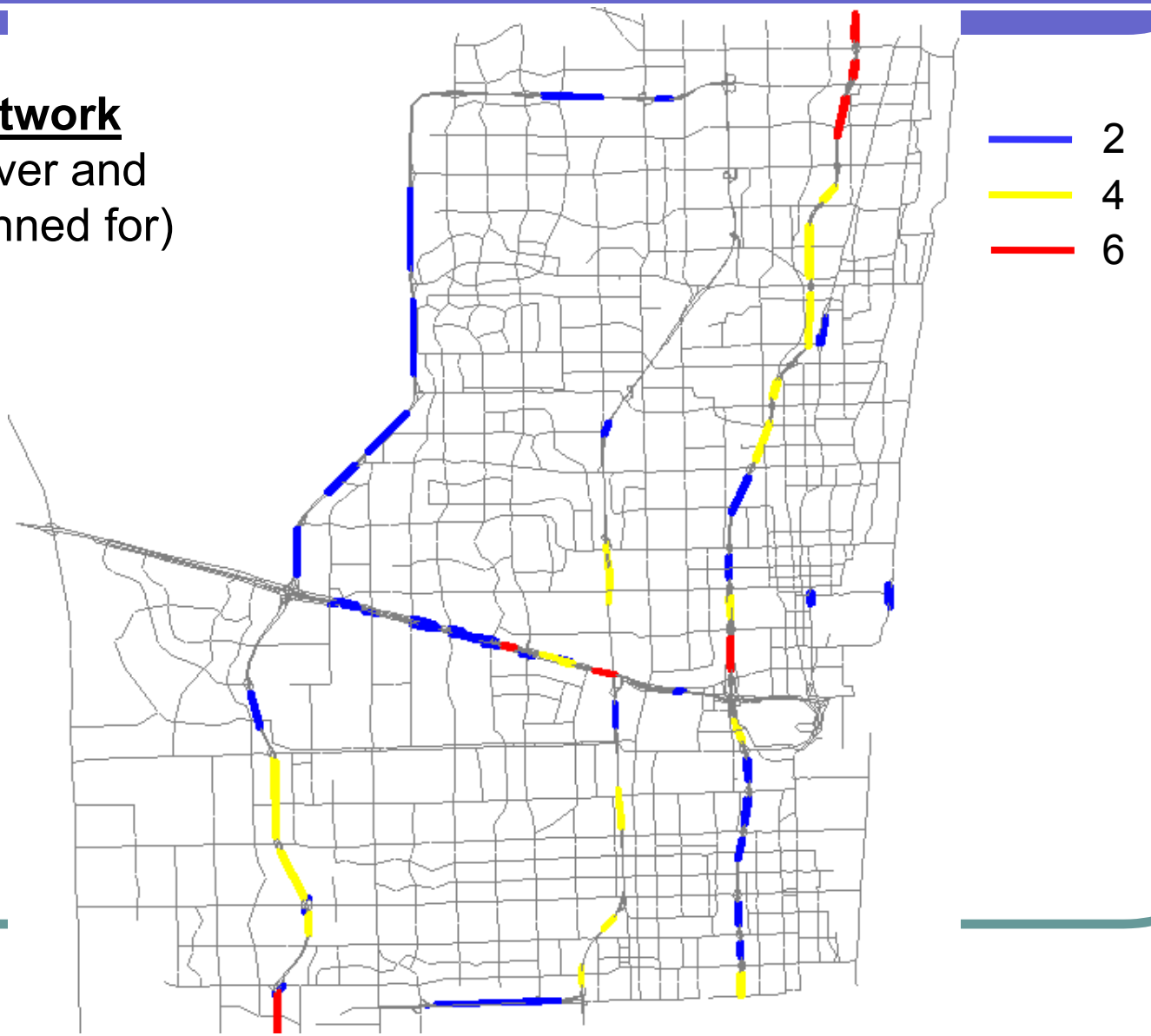
Lanes Need (Arterials)

Actual Count
(needs over and above 2005 lanes)



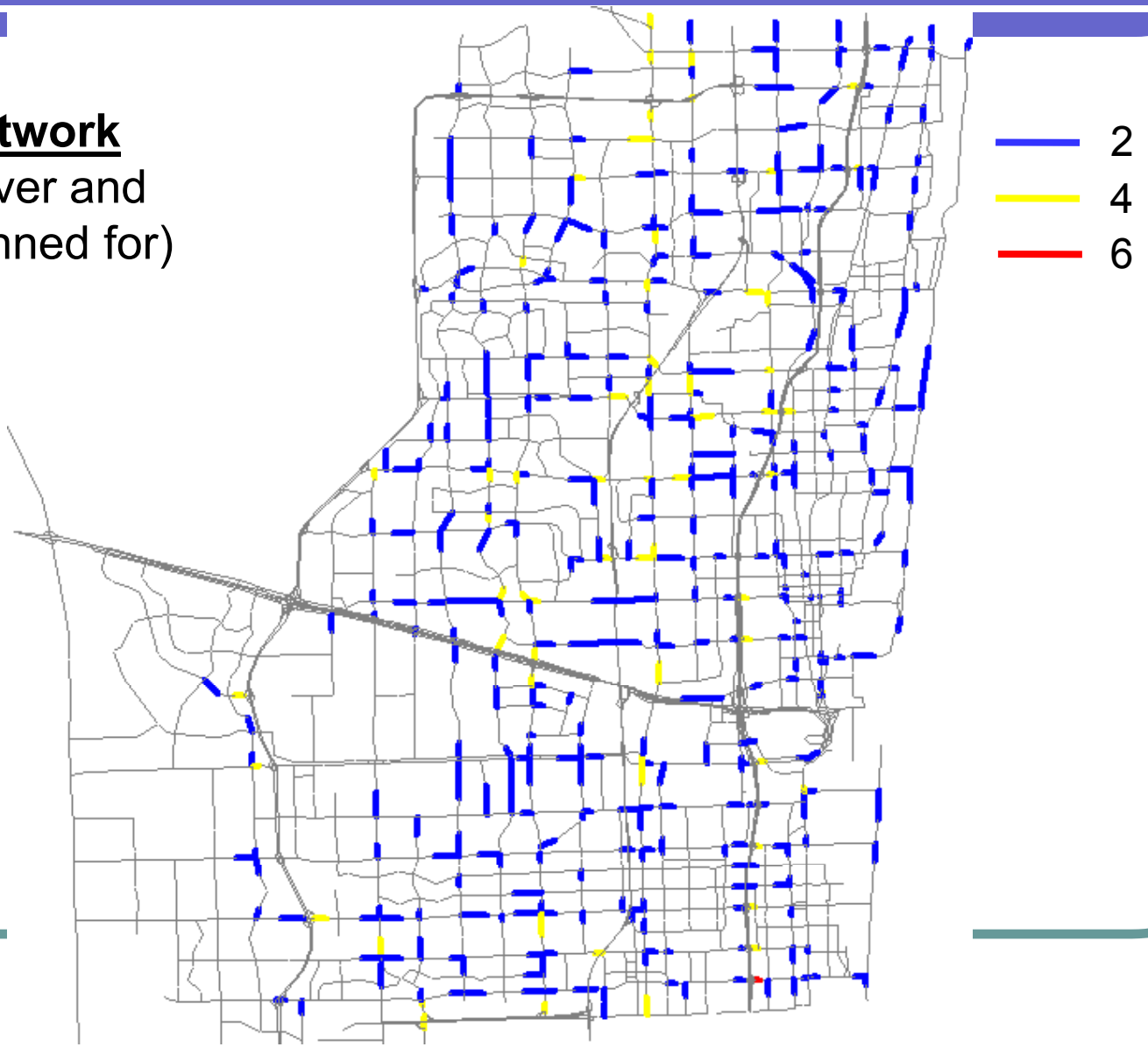
Lanes Need (SIS Roadways)

E+C network
(needs over and above planned for)



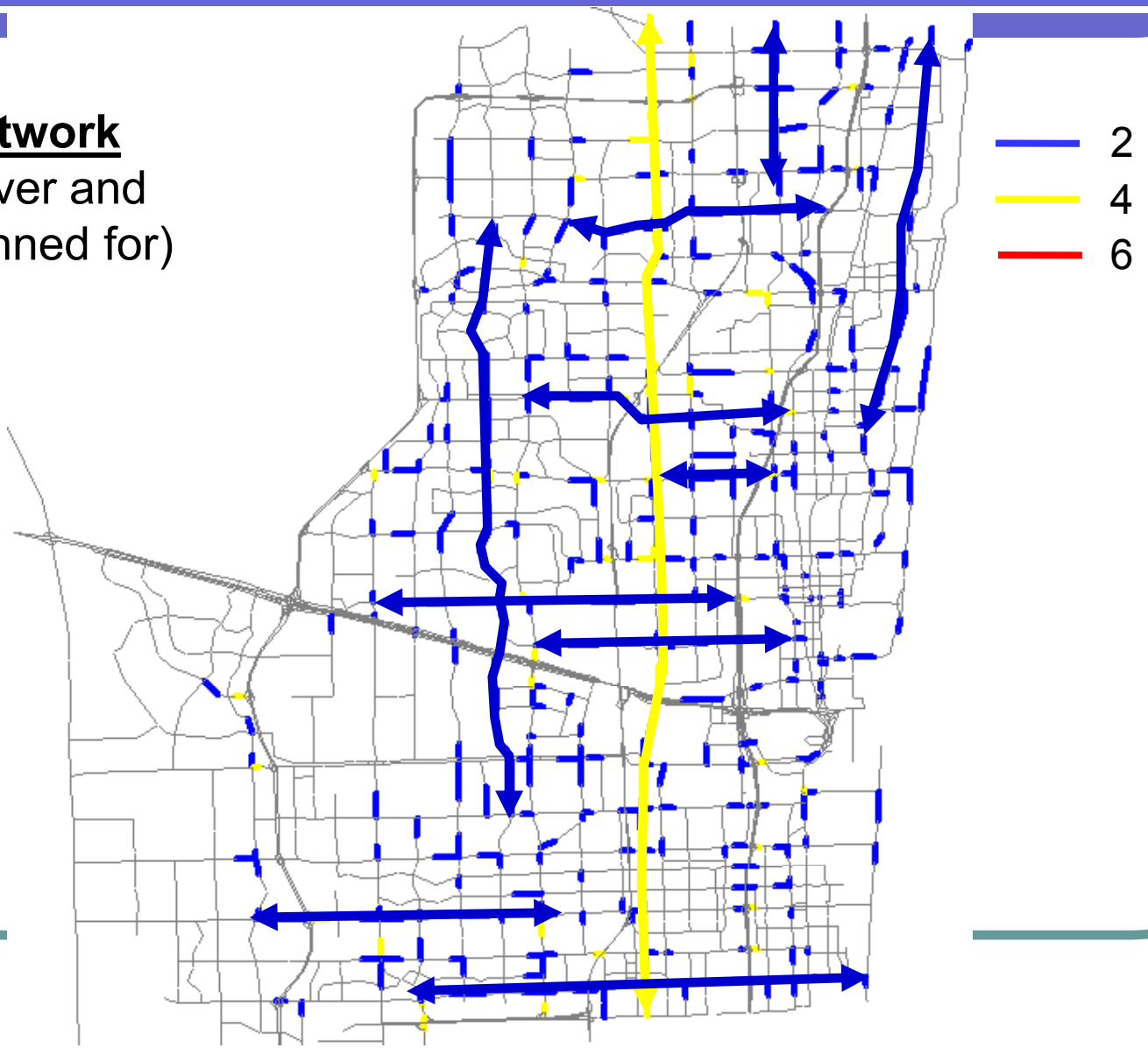
Lanes Need (Arterials)

E+C network
(needs over and above planned for)



Lanes Need (Arterials)

E+C network
(needs over and above planned for)



Preliminary Needs Assessment Results

- Demand Parameters
- Lanes Needed
- I-595 HOT reversible facility volumes
- Trips from zero-car households (Transit Needs)

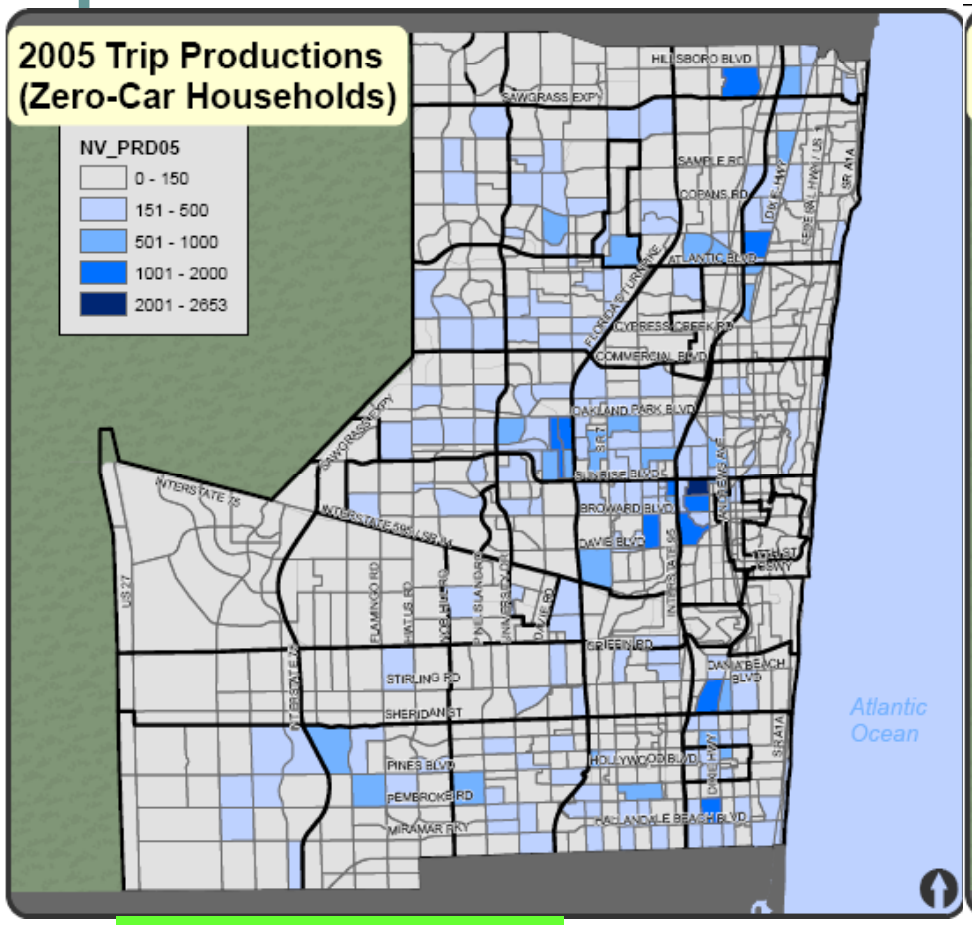
E+C Network (Highway)

- Reversible lanes on I-595 operate only in peak period (3 hours EB during AM peak and 3 hours WB during PM peak)
- Loadings estimated by the model on I-595 (between University Dr and Pine Island)

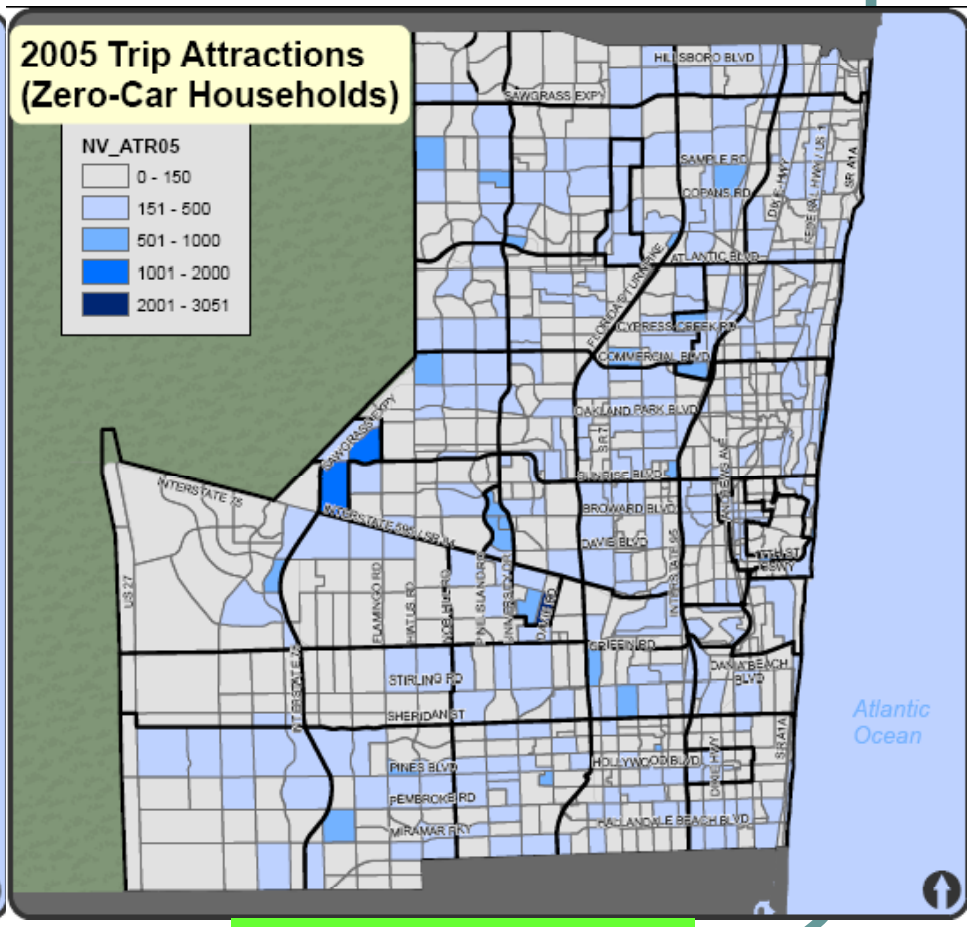
	2005	2005				E+C			
	AADT	Lanes	Vehicles	Persons	AOC	Lanes	Vehicles	Persons	AOC
I-595 GP	169,000	6	157,000	209,000	1.33	6	197,000	263,000	1.34
I-595 Reversible	-	-	-	-	-	3	9,900	16,500	**1.67**
SR84	n/a	4	15,400	20,700	1.34	4	9,900	13,500	1.36
Total		10	172,400	229,700	1.33	13	216,800	293,000	1.35

AOC: Average auto occupancy
Assumptions: AOC for SR3+ is 3.2 and for truck, it is 1

Zero-Car HH Trips (2005)



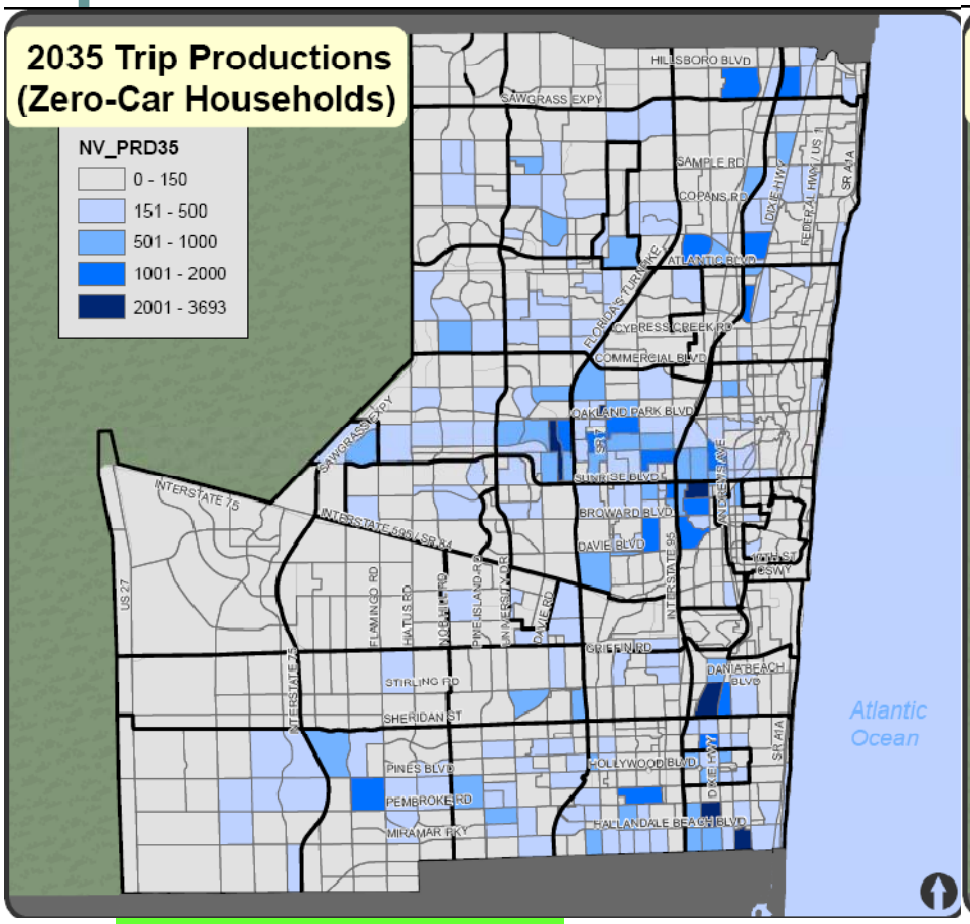
Where people live



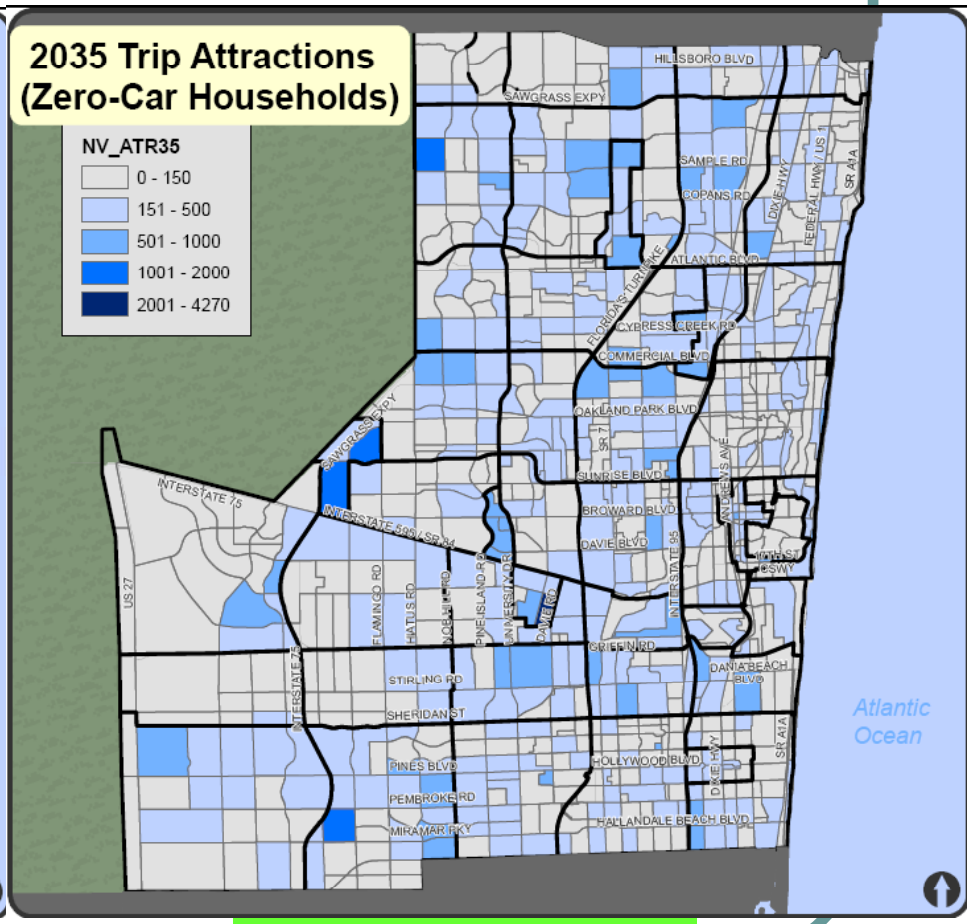
Where people work

HH: Households
Trips shown does not include NHB trips

Zero-Car HH Trips (2035)



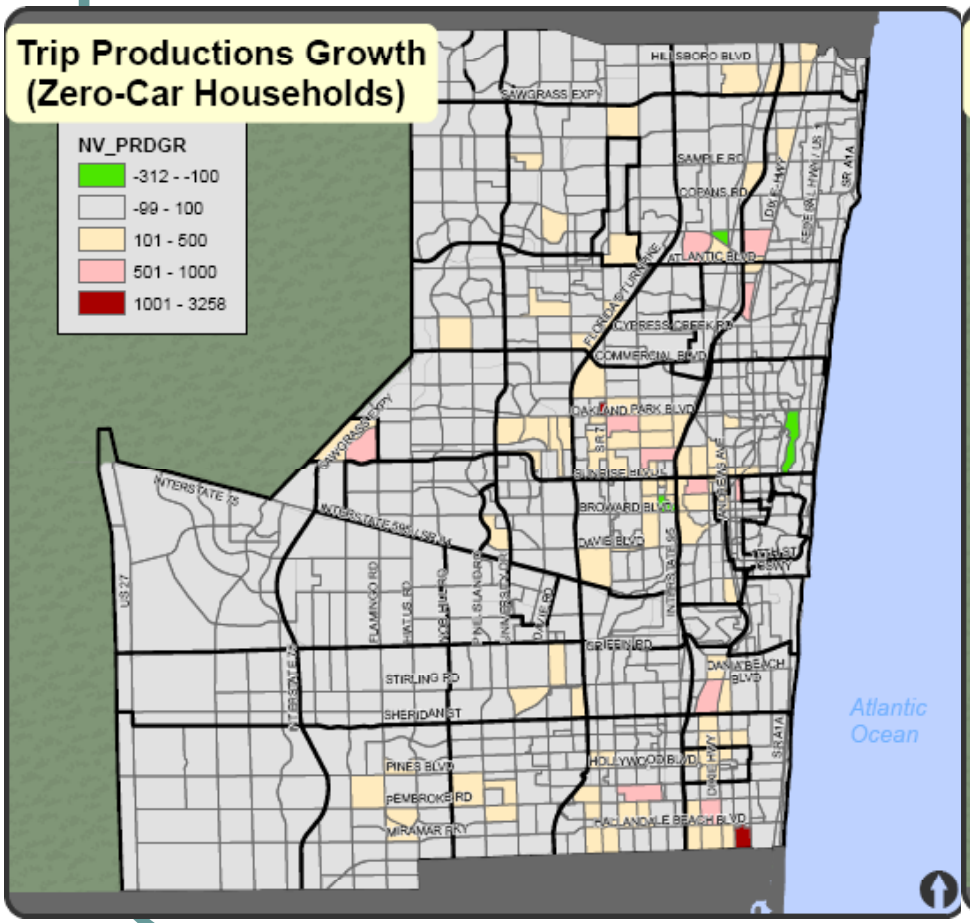
Where people live

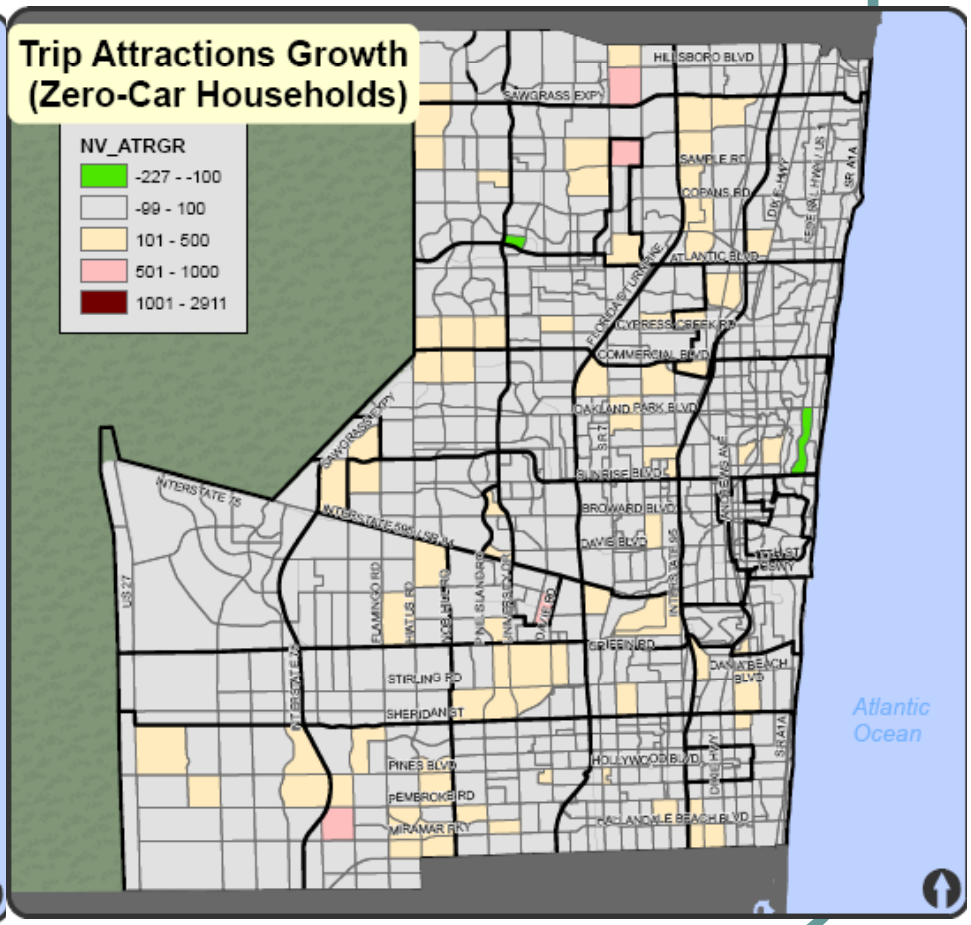


Where people work

HH: Households
Trips shown does not include NHB trips

Growth in Zero-Car HH Trips





HH: Households
Trips shown does not include NHB trips

- Technical Appendix

Performance Measure: *Transit*

- Modeling related performance measures are
  - Transit ridership and mode split in Broward County
  - Increase in service miles provided on transit
  - Transit service to 1) ports and airports 2) SIS and intermodal facilities
  - Improve modal options
    - Connecting high density residential areas and major employment centers
    - Provide improved transit service to existing and planned mixed use areas
  - Use of high capacity modes that are easily monitored
  - Single occupant vehicle miles traveled reduced by increased transit use
  - Number of households and employees within ¼ mile of transit routes weighted frequency of service
  - Number of persons from transit dependent, minority and low income populations within ¼ mile of transit routes weighted by frequency
  - Minimize petroleum fuel consumption

How to accomplish this in the model...

- Look at the flows (total and zero-car household) between superzones and identify potential transit markets
- Make sure transit serves major residential and employment areas
- Increase the level of transit service (frequency)
- Increase transit service coverage (route-miles, vehicle-hours)
- Provide/improve service to the airport and the seaport
- Provide better connectivity to SIS and intermodal facilities
- Look at the major transit corridors within the County
- Introduce high capacity modes

Performance Measure: *Roadway*

- Modeling related performance measures are
  - Expand lane miles of special use roadway lanes
  - Roadway level of service (LOS) to ports and airports
  - Percentage of regional trips on FIHS during peak periods
  - Improve V/C on designated truck routes
  - Supports airport and port master plans
  - Maintain acceptable V/C on designated evacuation routes
  - Minimize impact to air quality

How to accomplish this in the model...

- Provide laneage on streets where capacity is inadequate
  - LOS map
  - VHT, VMT, Congested speeds
  - Vehicle hour of delay
  - Mobility index (speed and auto occupancy)
- Special use roadways
  - Reversible lanes on I-595
  - Possibility of managed lanes on I-95
- More regional trips on FIHS

Work Trips by County

Base (2005)	Palm Beach	Broward	Miami-Dade	Externals	Total
Palm Beach	785,774	89,178	3,968	24,390	903,310
Broward	118,439	1,084,643	237,831	7,205	1,448,118
Miami-Dade	4,429	148,846	1,421,715	10,049	1,585,039
Externals	21,499	9,997	11,176	0	42,672
Total	930,141	1,332,664	1,674,690	41,644	3,979,139

Year 2035	Palm Beach	Broward	Miami-Dade	Externals	Total
Palm Beach	1,096,861	121,820	5,840	49,782	1,274,303
Broward	119,694	1,395,453	299,803	6,149	1,821,099
Miami-Dade	4,989	151,997	2,097,703	18,946	2,273,635
Externals	36,056	16,449	25,547	0	78,052
Total	1,257,600	1,685,719	2,428,893	74,877	5,447,089

Increase	Palm Beach	Broward	Miami-Dade	Externals	Total
Palm Beach	311,087	**32,642**	**1,872**	25,392	370,993
Broward	**1,255**	310,810	**61,972**	-1,056	372,981
Miami-Dade	**560**	**3,151**	675,988	8,897	688,596
Externals	14,557	6,452	14,371	0	35,380
Total	327,459	353,055	754,203	33,233	1,467,950

17% increase in inter-county trips

29% increase in trips within BO

37% increase in trips within the SERPM region

HBW Purpose Trips

Trips by County (All Purposes)

Base (2005)	Palm Beach	Broward	Miami-Dade	Externals	Total
Palm Beach	4,241,186	330,839	12,892	87,222	4,672,139
Broward	330,445	4,887,699	652,510	18,643	5,889,297
Miami-Dade	10,906	538,822	7,495,810	31,124	8,076,662
Externals	62,543	34,936	42,274	0	139,753
Total	4,645,080	5,792,296	8,203,486	136,989	18,777,851

Year 2035	Palm Beach	Broward	Miami-Dade	Externals	Total
Palm Beach	5,816,394	485,904	25,568	175,727	6,503,593
Broward	357,966	6,246,980	1,003,494	22,563	7,631,003
Miami-Dade	15,303	615,681	11,032,533	51,792	11,715,309
Externals	112,711	50,920	91,226	0	254,857
Total	6,302,374	7,399,485	12,152,821	250,082	26,104,762

Increase	Palm Beach	Broward	Miami-Dade	Externals	Total
Palm Beach	1,575,208	**155,065**	**12,676**	88,505	1,831,454
Broward	**27,521**	1,359,281	**350,984**	3,920	1,741,706
Miami-Dade	**4,397**	**76,859**	3,536,723	20,668	3,638,647
Externals	50,168	15,984	48,952	0	115,104
Total	1,657,294	1,607,189	3,949,335	113,093	7,326,911

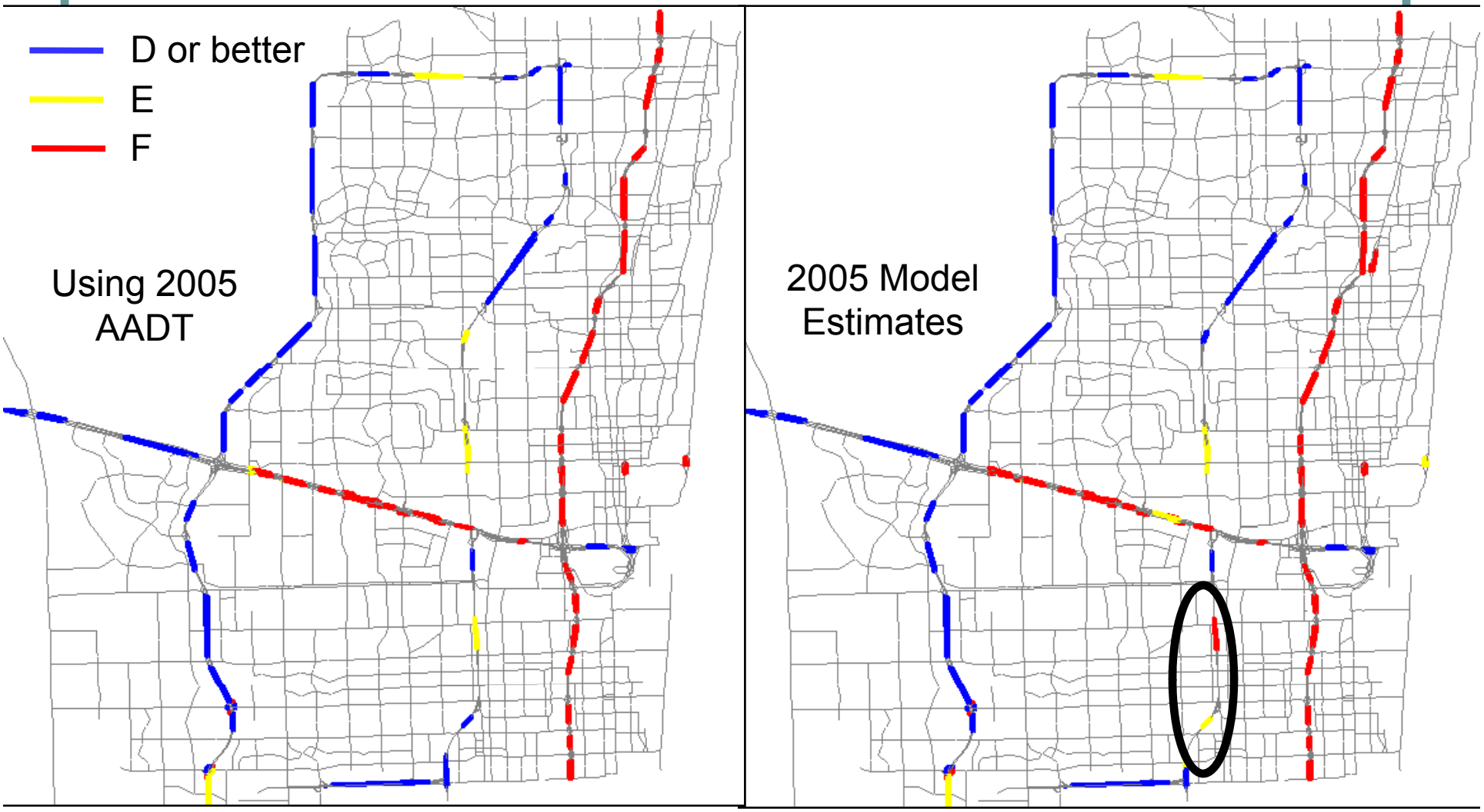
All Purpose Trips

~6.3 intra-Broward trips, a 28% increase from 2005

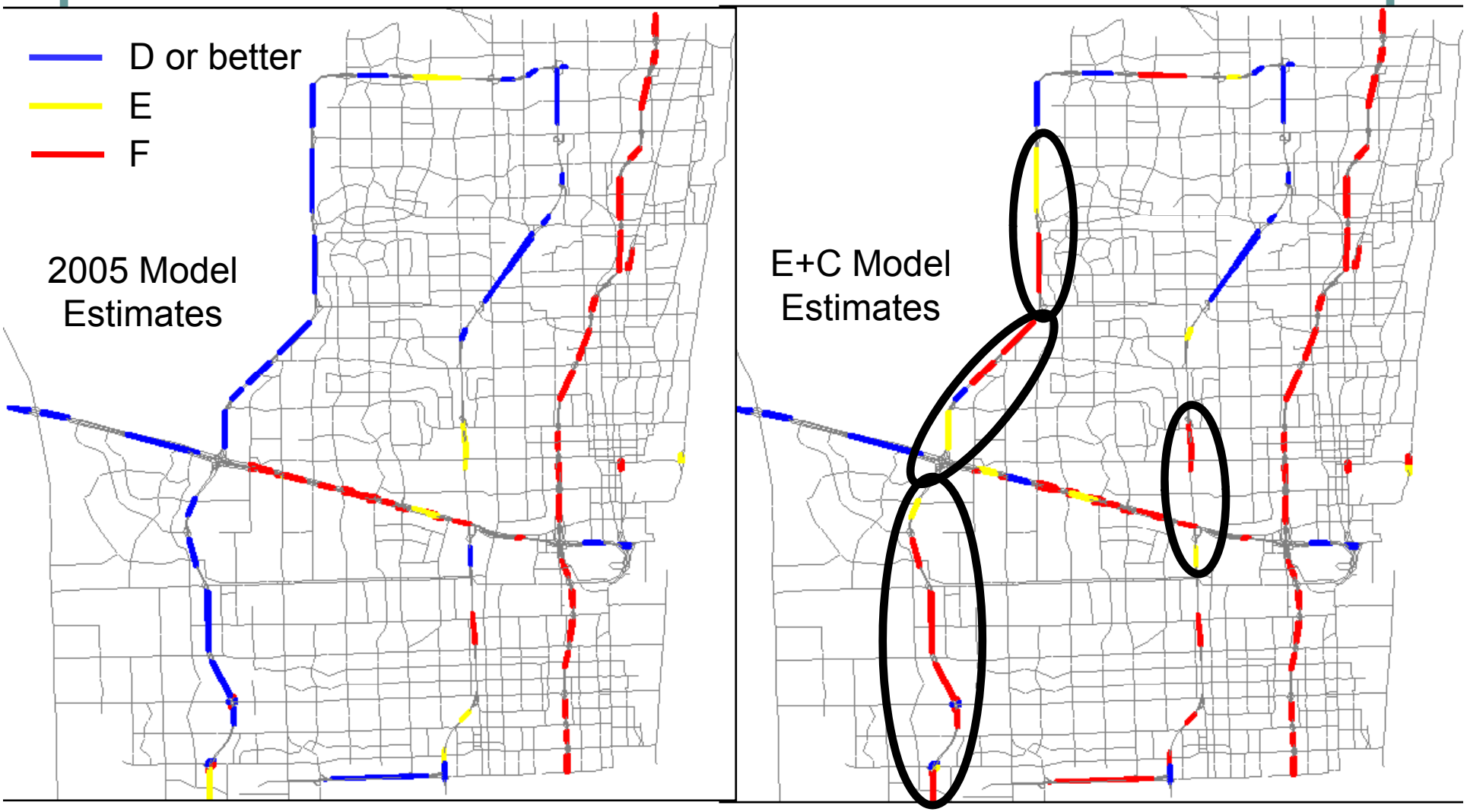
Trips between Broward and adjacent counties expected to grow 33% by 2035 to ~1.7 million trips/day

73% of trips in Broward County are intra-county, 27% are inter-county

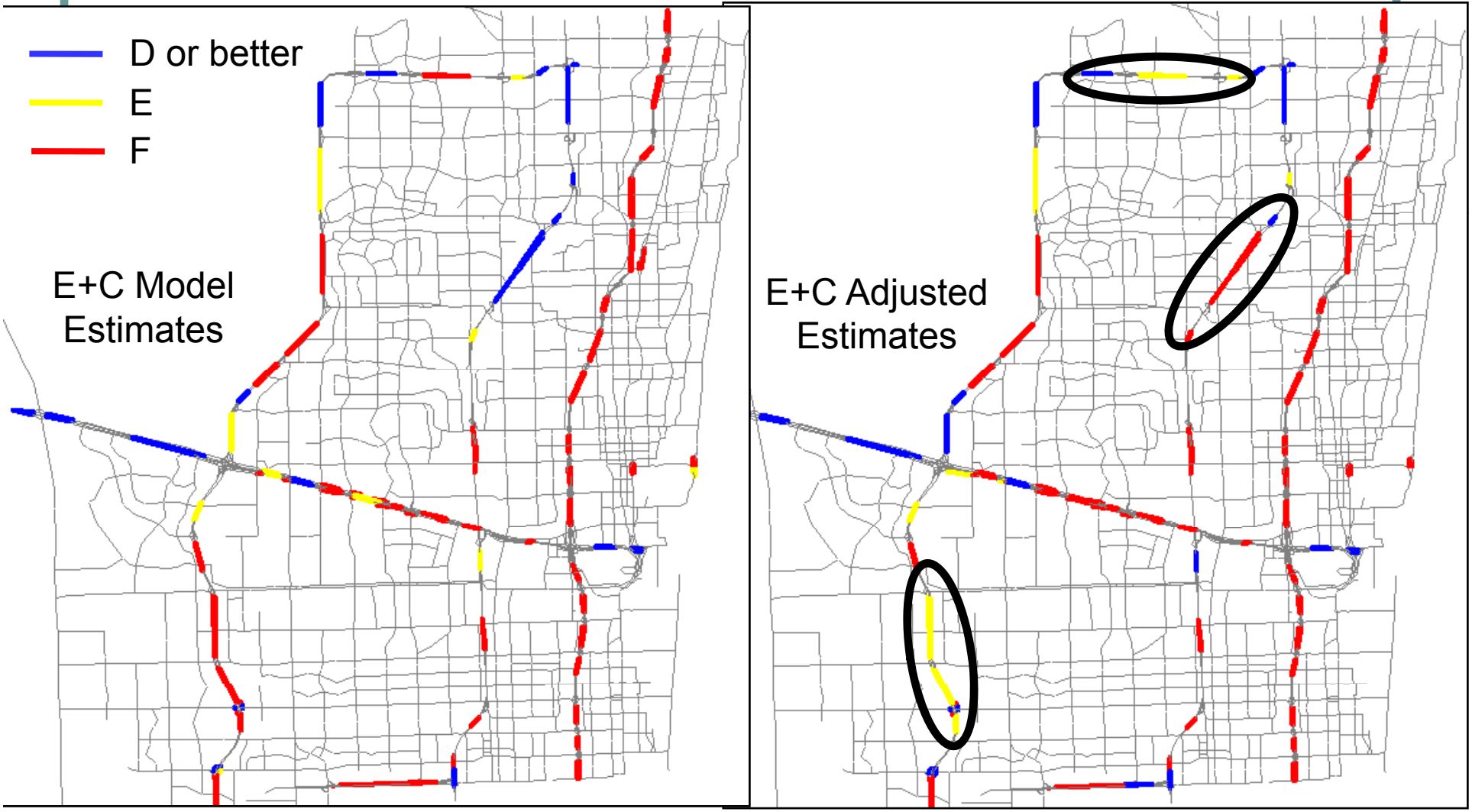
SIS Roadway Facilities



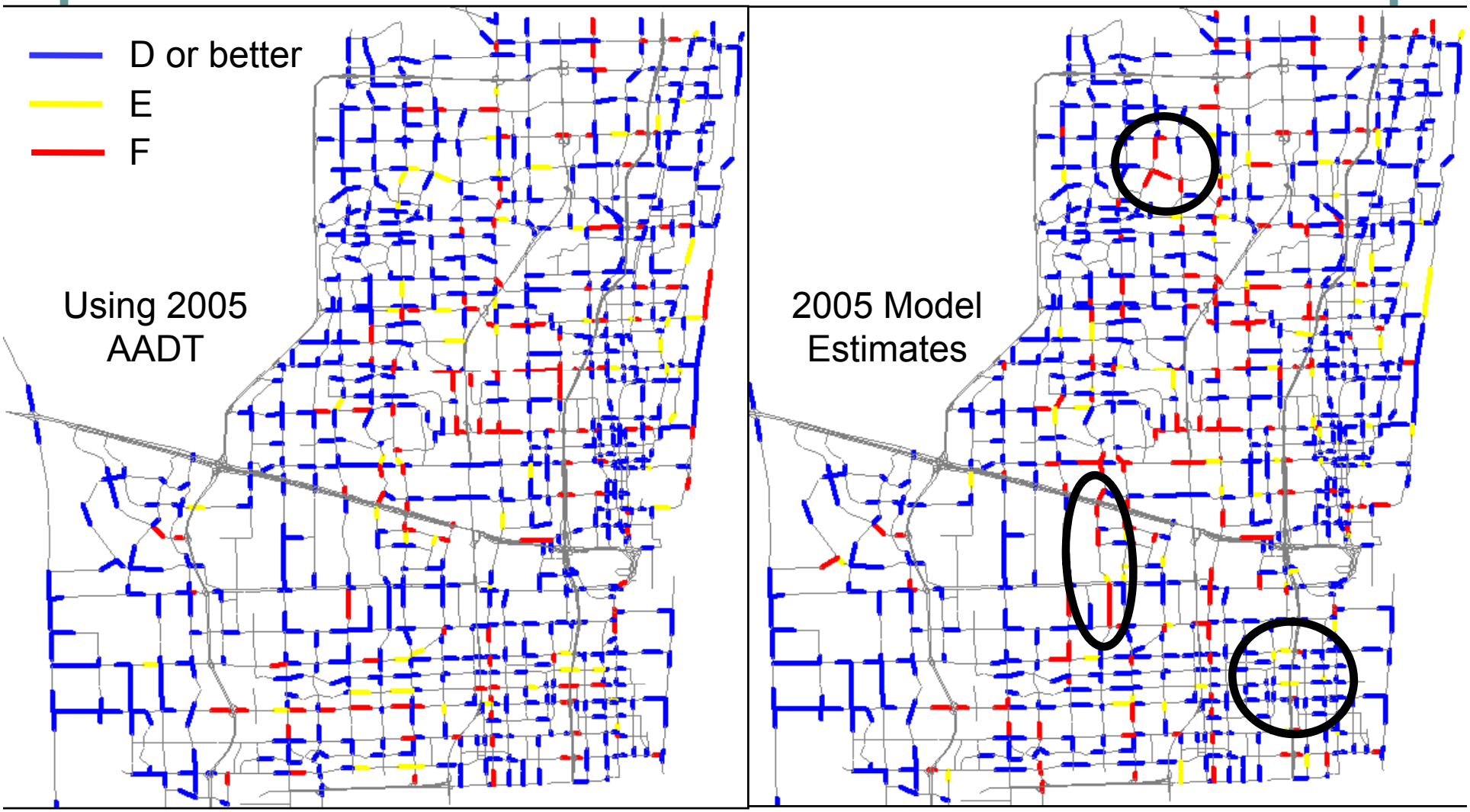
SIS Roadway Facilities



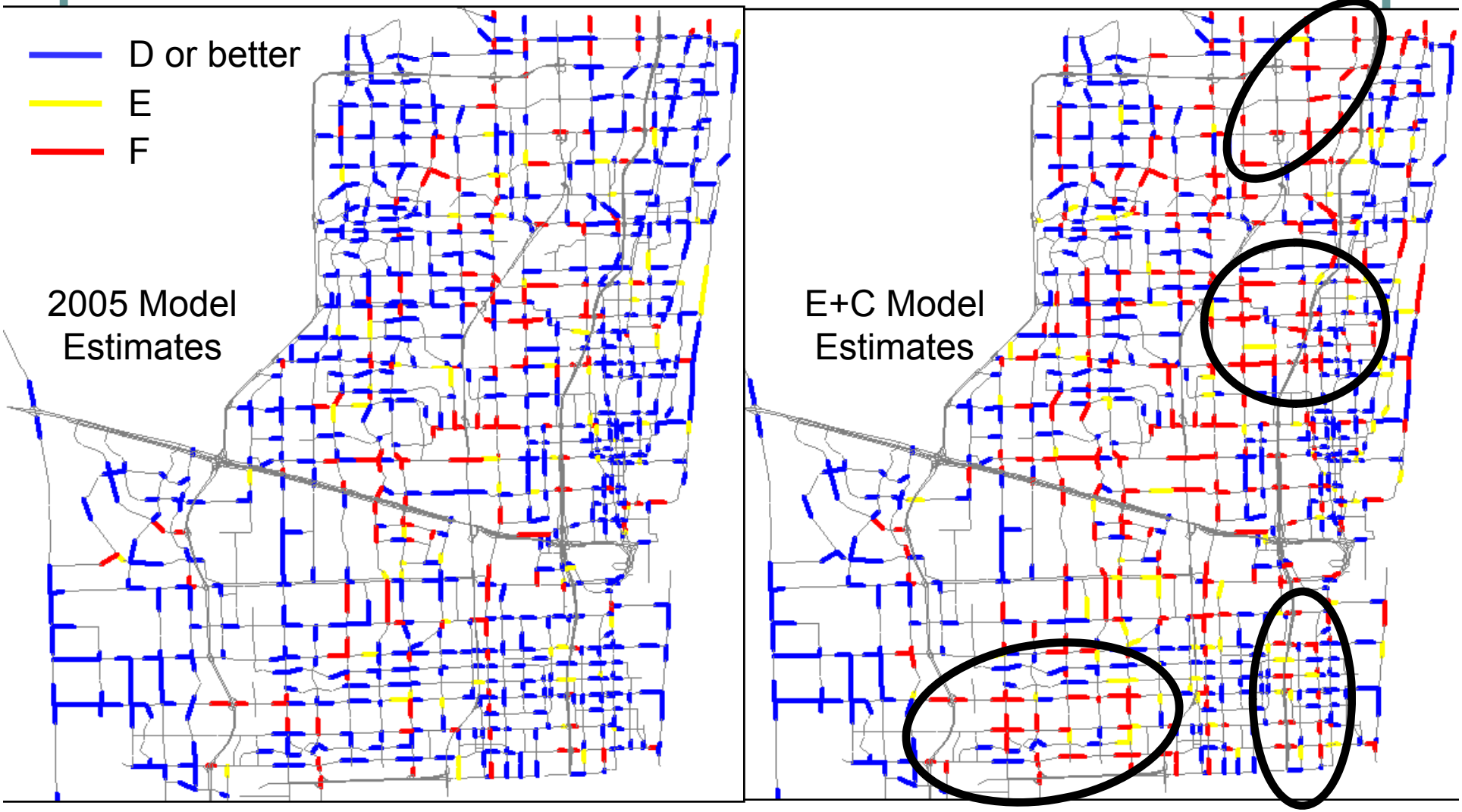
SIS Roadway Facilities



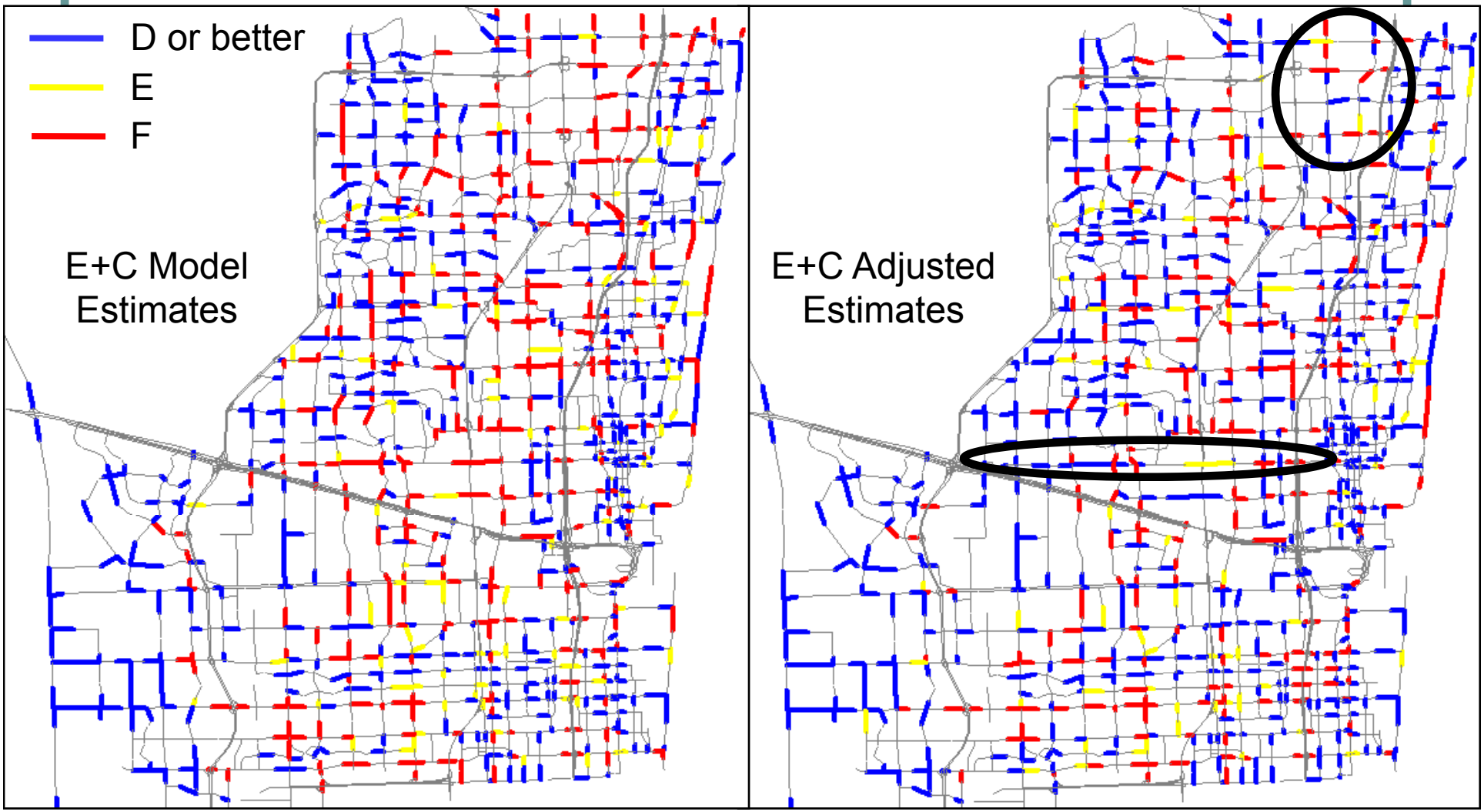
LOS Map Arterials



LOS Map Arterials



LOS Map Arterials



Proposed Method of Adjusting Volumes on I-595 Reversible Lanes

- Allow reversible lanes to run at capacity
  - Model seems to underestimate volume on the reversible lane
  - Move estimated vehicles from GP lanes to Reversible lanes
    - Propose to move DA, SR2, SR3+ vehicles from GP lanes in the same ratio as estimated by the model on Reversible lanes

Proposed Method of Adjusting Volumes on I-595 Reversible Lanes

- LOS D capacity on a 4 lanes freeway = 67,000
- => 3 lane freeway capacity = ~51,000
- Reversible lanes are for 6 hours in peak period and 6 during off-peak period
- Peak period capacity=36% of 51,000 (based on CONFAC values used in SERPM)
- 6 hour off-peak period capacity=(6/18)*64% of 51,000
- Total capacity of reversible lanes=~29,000