



**Broward Metropolitan Planning Organization  
Commitment 2045  
Metropolitan Transportation Plan**

**Technical Report #12  
Travel Demand  
Model Support**

**January 31, 2020**

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## MPO MISSION STATEMENT

To collaboratively plan, prioritize, and fund the delivery of diverse transportation options.

## MPO VISION STATEMENT

Our work will have measurable positive impact by ensuring transportation projects are well selected, funded, and delivered.

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## Core Products of the Broward MPO



# Introduction

This technical report reviews the travel demand modeling efforts associated with the MTP, excluding the Scenario Planning Analysis which is covered by Technical Report #13, Needs Assessment. This memorandum first reviews the inputs of the 2045 Existing plus Committed (E+C) network. The 2045 E+C inputs are compared against the 2015 Base model inputs, and differences are highlighted. Then, travel patterns in 2045 E+C are explored in details. Attributes such as mode share, trip length, tour formation, and trip flows are examined. Finally, the Cost Feasible Plan is evaluated in this memorandum. The transportation improvements proposed in the CFP are analyzed using the Southeast Florida Regional Planning Model, Version 8 (SERPM8). The plan is compared against 2045 E+C to understand its impact on parameters such as accessibility, mobility, safety and environment.

## 2045 E+C Review

This section provides an overview of the 2045 E+C network (released January 30, 2019, Cambridge Systematics) in relation to existing conditions, as represented in the SERPM8 2015 network.

### Highway Capacity

Relative to the 2015 network, the number of lane-miles in the 2045 E+C network increased by 4% (see Table 1). Among all the facility type classes, the Managed Lane class exhibits the highest increase; more than 250 lane-miles of managed lanes will be added by 2045, including 51 lane-miles from converting existing HOV lanes to managed lanes.

Table 1: Lane-miles by Facility Type Class

Facility Type Class 1 (FCT1), Major		Facility Type Class 2 (FCT2), Minor		2015 Base	2045 E+C	% Difference
10	Freeway	11	Freeway Segment	422.4	424.7	0.5%
		12	Freeway Segment (I-595 Broward)	36.0	37.2	3.4%
20	Uninterrupted Roadway	21	Uninterrupted Roadway	87.8	87.8	0.0%
40	Higher Speed Interrupted Facility	41	Higher Speed Interrupted Facility	3157.4	3171.0	0.4%
60	Lower Speed & Collector Facility	61	Lower Speed Facility & Collector	609.5	607.5	-0.3%
70	Ramps	71	On	47.7	48.6	1.8%
		72	Loop On	0.7	0.9	28.6%
		73	Off	45.8	47.2	2.9%
		74	Loop Off	5.6	4.5	-19.6%
		75	Freeway to Freeway	40.3	46.1	14.4%
80	HOV Lanes	81	2+ Person HOV Segment	51.1	0.0	-100.0%
		83	AM & PM Peak-Only Ramps	1.9	0.0	-100.0%
90	Toll Roads	91	Freeway Segment	341.1	357.7	4.9%
		92	Uninterrupted Segment	8.0	10.6	32.8%
		93	On Ramp	24.1	22.6	-6.1%
		94	Off Ramp	26.9	25.4	-5.7%
		95	Toll Plaza	3.5	4.4	26.3%
		96	Managed Lane	48.9	254.8	421.3%
<b>Total</b>				<b>4958.6</b>	<b>5151.0</b>	<b>3.9%</b>

Table A-1 in Appendix A provides a list of the projects coded into the highway network, and Figure 1 displays the scope of the highway projects. As noted, the focus of 2045 E+C is on creating an extensive network of managed lanes, including I-95, Sawgrass Expressway, I-75, and the Homestead Extension of Florida's Turnpike.

Figure 1: 2045 E+C Highway Projects



## Socioeconomics

Table 2 summarizes the control total for the major socio-economic (SE) categories used by the SERPM8 model. More than 30% growth for Broward's population, households, and employment is considered in the 2045 E+C network relative to the 2015 Base. Based on the expected growth rate across all age groups, the county's population aging will accelerate by 2045. Although the age groups younger than age 50 are expected to grow by less than 26%, the age 65+ population will grow more than 55%<sup>1</sup>.

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<sup>1</sup> This is based on the population projections developed for use in SERPM8. The Bureau of Economic and Business Research projects even higher growth for the 65+ population in Broward by the year 2045.

Table 2: Growth of Demographic Classes from 2015 to 2045

Demographics	2015 Base	2045 E+C	Difference	% Growth
POP	5,775,163	7,545,810	1,770,647	31%
HH	2,220,415	2,953,103	732,688	33%
EMP_TOTAL	3,035,753	4,021,391	985,638	32%
HHSIZE_1	641,159	826,593	185,434	29%
HHSIZE_2	713,956	952,138	238,182	33%
HHSIZE_3	365,474	470,606	105,132	29%
HHSIZE_4PLUS	499,826	703,766	203,940	41%
INCOME_25K	582,867	754,683	171,816	29%
INCOME_50K	550,592	724,615	174,023	32%
INCOME_75K	378,477	531,201	152,724	40%
INCOME_100K	237,755	329,550	91,795	39%
INCOME_100KPLUS	470,724	613,054	142,330	30%
WORKERS_0	608,783	790,815	182,032	30%
WORKERS_1	877,805	1,139,817	262,012	30%
WORKERS_2	586,892	814,243	227,351	39%
WORKERS_3PLUS	146,935	208,228	61,293	42%
SINGLE_FAMILY	1,183,665	1,538,035	354,370	30%
MULTI_UNIT	987,164	1,347,570	360,406	37%
MOBILE_HOME	49,586	67,498	17,912	36%
AGE0TO17	1,205,985	1,524,832	318,847	26%
AGE18TO24	506,080	611,723	105,643	21%
AGE25TO34	764,740	913,550	148,810	19%
AGE35TO49	1,208,990	1,500,935	291,945	24%
AGE50TO64	1,122,875	1,493,486	370,611	33%
AGE65TO79	670,295	1,034,373	364,078	54%
AGE80PLUS	296,198	466,911	170,713	58%
CHILDREN_0	1,533,026	2,073,926	540,900	35%
CHILDREN_1PLUS	687,389	879,177	191,788	28%
MALE	2,800,269	3,630,530	830,261	30%
FEMALE	2,974,894	3,915,280	940,386	32%
HOTEL_ROOM	103,335	139,423	36,088	35%

## Vehicle Miles Traveled

As shown in Table 3, the countywide vehicle miles traveled (VMT) in the 2045 E+C network increases by 28% relative to the 2015 network, which is consistent with population growth. About 80% of the total 10.8 million VMT increase comes from the Uninterrupted Roadway and Freeway classes.

Table 3: Growth of VMT by Facility Type from 2015 to 2045

Facility Type Class 1 (FCT1) Major	2015 Base	2045 E+C	Difference	Relative Difference	% Growth
10 Freeway	8,748,617	12,063,997	3,315,380	31%	38%
20 Uninterrupted Roadway	692,140	967,318	275,178	3%	40%
40 Higher Speed Interrupted Facility	19,942,532	25,277,337	5,334,806	49%	27%
60 Lower Speed & Collector Facility	1,786,562	2,403,232	616,670	6%	35%
70 Ramps	1,209,323	1,535,680	326,357	3%	27%
80 HOV Lanes	891,981	0	-891,981	-8%	-100%
90 Toll Roads	4,851,632	6,695,532	1,843,900	17%	38%
<b>Total</b>	<b>38,122,786</b>	<b>48,943,096</b>	<b>10,820,310</b>	<b>100%</b>	<b>28%</b>

## Transit Network

Consistent with population growth, the countywide daily transit boardings in the 2045 E+C network increases by 29% relative to the 2015 network, as shown in Table 4.

Table 4: Change in Transit Performance from 2015 to 2045

Performance Measure	2015 Base	2045 E+C	Difference	% Growth
Distance (mi)	1,931	2,030	99	5%
AM Peak Travel Time (min)	8,094	8,701	606	7%
AM Peak Boarding	20,668	26,437	5,769	28%
Off-Peak Travel Time (min)	8,148	8,730	583	7%
Off-Peak Boarding	63,735	84,549	20,814	33%
PM Peak Travel Time (min)	8,494	96,84	1,189	14%
PM Peak Boarding	33,963	42,269	8,306	24%
Daily Boarding	118,366	153,255	34,889	29%

# E+C Trip Patterns Review

## Mode

Figure 2 compares trip mode shares across Broward. As expected, the Auto mode dominates with 88% share, and Transit accounts for an approximately 2% share.

Figure 2: Trip Mode Share in 2045 E+C

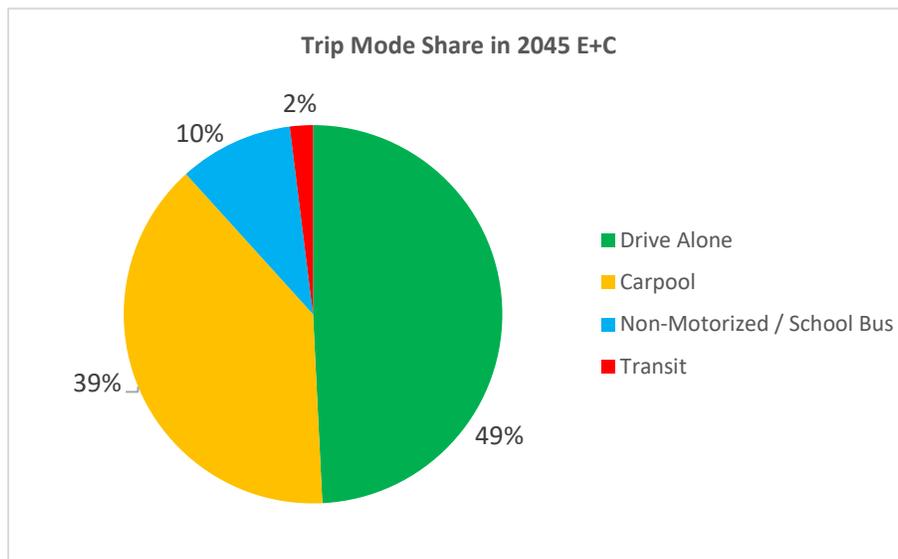
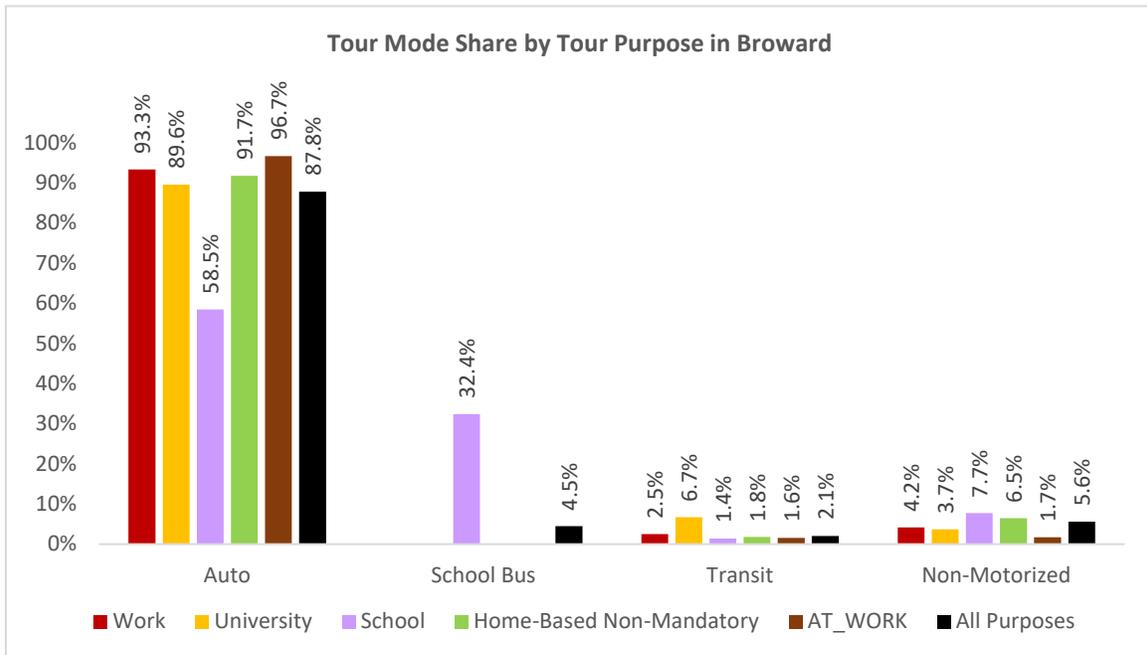


Figure 3 displays tour mode shares across different tour purposes. Auto dominates, with more than 90% of the mode share across all tours, except for School tours, which exhibits a 59% auto share. University tours exhibit the highest transit share, followed by Work tours.

Figure 3: Broward's Tour Mode Share in 2045 E+C



## Trip Length

Figure 4 and Figure 5 show the distribution of distance and duration of trips with origins in Broward. Half of the trips last less than 11.4 minutes (not counting terminal time) and are shorter than 5.3 miles. A very similar pattern is observed in the 2015 network.

Figure 4: Distribution of Trip Duration in Broward (2045 E+C)

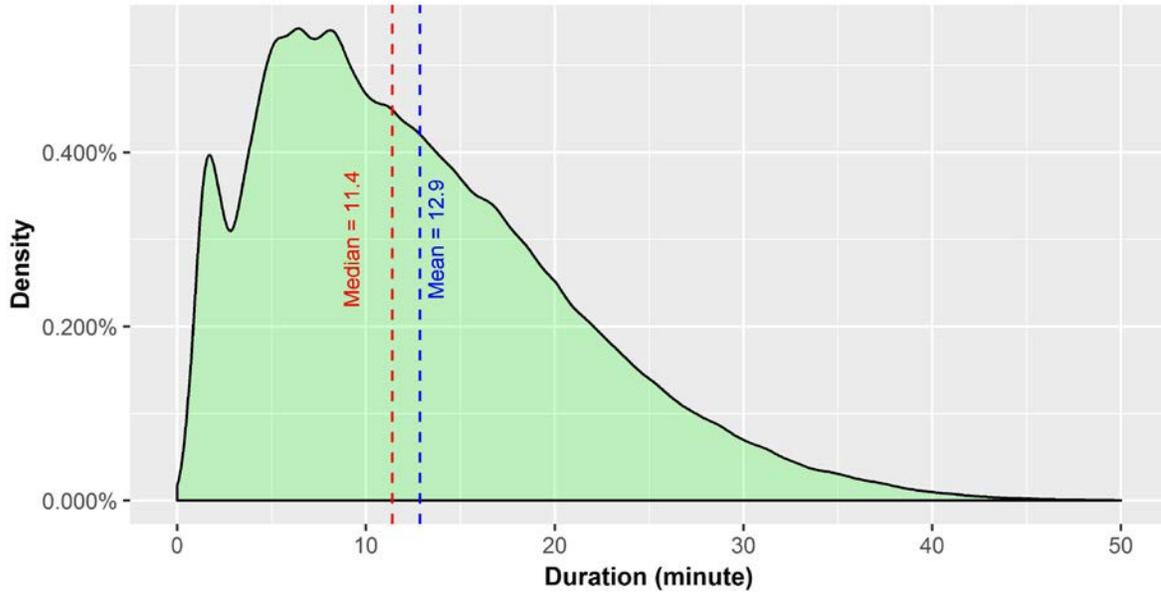
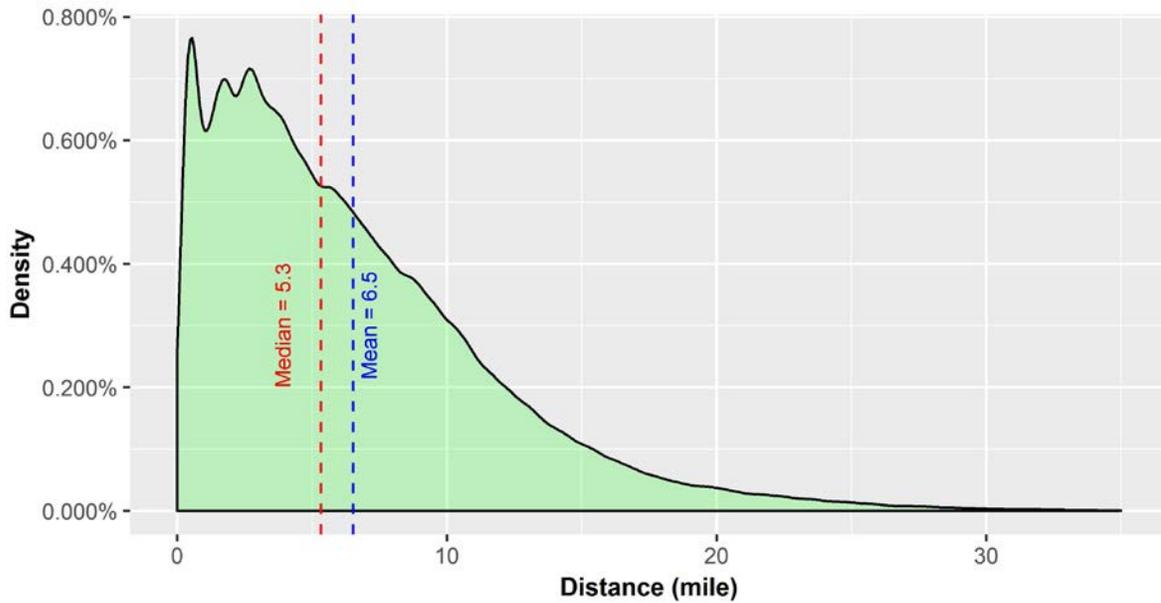


Figure 5: Distribution of Trip Distance in Broward (2045 E+C)



## Trip Origin and Destination Flows

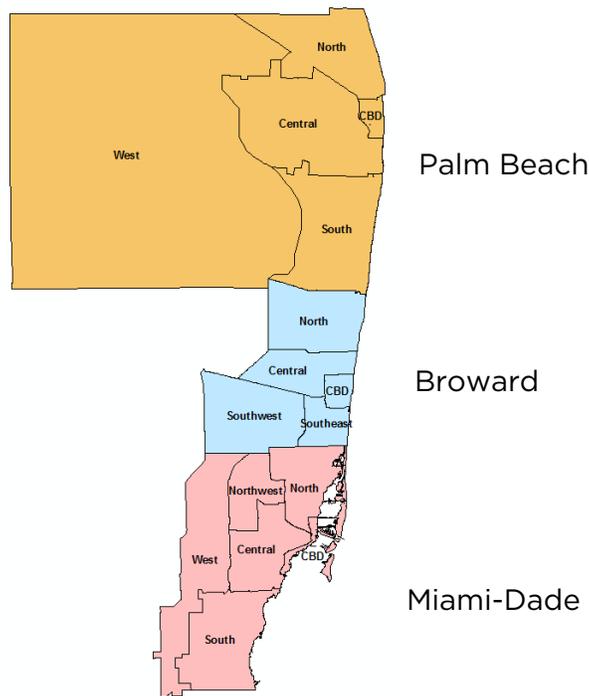
Table 5 displays the distribution of trips between the three counties in Southeast Florida. Around 15% of the trips in Broward are external trips; that is, they start or end outside Broward.

Table 5: Trip Distribution Across Southeast Florida

From / To	Palm Beach	Broward	Miami-Dade	Total
Palm Beach	5,471,600	389,513	27,385	5,888,498
Broward	390,569	6,466,954	729,453	7,586,976
Miami-Dade	26,329	730,509	10,599,354	11,356,193
Total	5,888,498	7,586,976	11,356,193	24,831,667

Table 6 breaks down trip flows in Table 5 by Super Districts (Figure 6). The majority of Broward’s external trips start or end in adjacent districts. About 80% of all external trips have an end in the Palm Beach South, Miami-Dade North, and Miami-Dade Northwest districts.

Figure 6: SERPM8 Super Districts



**Table 6: Trip Distribution Across Southeast Florida between Super Districts**

2045 E+C		Palm Beach					Broward					Miami-Dade					Total	
		North	CBD	Central	West	South	North	CBD	Central	SW	SE	North	CBD	NW	Central	West		South
Palm Beach	North	755,140	71,276	153,330	5,421	33,188	5,688	814	1,469	640	552	748	404	476	540	132	176	1,029,993
	CBD	70,900	165,784	156,382	1,488	32,484	4,612	484	1,072	376	244	308	168	152	156	68	100	434,778
	Central	152,710	155,666	1,327,951	12,011	265,461	24,941	2,600	6,348	2,779	1,676	1,738	765	1,248	964	292	392	1,957,541
	West	5,489	1,544	11,735	139,832	2,816	912	180	580	640	152	344	132	532	624	116	120	165,748
	South	34,028	32,608	264,401	2,724	1,617,232	254,440	15,034	36,492	18,576	8,212	8,184	1,872	3,172	2,410	432	620	2,300,437
Broward	North	5,680	4,700	25,141	816	254,920	1,536,256	86,059	333,724	76,660	38,800	28,804	5,760	12,304	6,910	880	1,200	2,418,614
	CBD	838	440	2,580	156	14,634	85,623	352,439	170,750	43,897	86,193	33,629	5,678	6,192	4,252	346	371	808,019
	Central	1,601	1,156	6,596	668	36,976	334,148	168,850	803,616	189,584	78,980	42,492	7,190	18,468	9,499	1,420	1,128	1,702,372
	SW	592	324	2,727	672	18,740	77,668	44,361	189,580	914,444	137,720	133,160	14,684	127,896	36,375	5,244	3,908	1,708,095
	SE	560	308	1,556	128	8,060	38,744	86,337	78,772	138,032	375,716	162,076	17,677	25,780	13,794	1,152	1,184	949,876
Miami-Dade	North	732	348	1,790	292	7,684	28,872	33,817	42,624	132,688	163,180	1,273,920	274,620	269,784	295,172	21,620	24,324	2,571,468
	CBD	488	140	701	176	1,912	5,636	5,822	7,394	14,808	17,493	273,544	757,796	63,647	281,906	22,617	28,880	1,482,960
	NW	456	120	1,024	576	2,920	11,804	6,132	17,748	129,264	24,916	270,436	62,519	912,492	346,198	75,112	46,108	1,907,825
	Central	488	200	984	572	2,306	7,026	4,272	9,751	36,407	13,666	292,504	280,306	345,918	1,642,823	242,956	222,297	3,102,475
	West	104	76	256	68	440	1,020	402	1,288	5,452	1,228	22,776	23,317	73,428	240,720	383,656	121,636	875,866
	South	188	88	388	148	664	1,224	415	1,164	3,848	1,148	26,804	30,072	46,336	220,133	119,824	963,156	1,415,600
<b>Total</b>		<b>1,029,993</b>	<b>434,778</b>	<b>1,957,541</b>	<b>165,748</b>	<b>2,300,437</b>	<b>2,418,614</b>	<b>808,019</b>	<b>1,702,372</b>	<b>1,708,095</b>	<b>949,876</b>	<b>2,571,468</b>	<b>1,482,960</b>	<b>1,907,825</b>	<b>3,102,474</b>	<b>875,866</b>	<b>1,415,600</b>	<b>24,831,667</b>

## Temporal Distribution of Tours

Figure 7 and Figure 8 compare the distribution of departure and arrival times of tours in the 2045 E+C network with the distributions in the 2015 network. The figures show that the distributions do not vary across the scenarios.

Figure 7: Distribution of Tour Departure Time in Broward

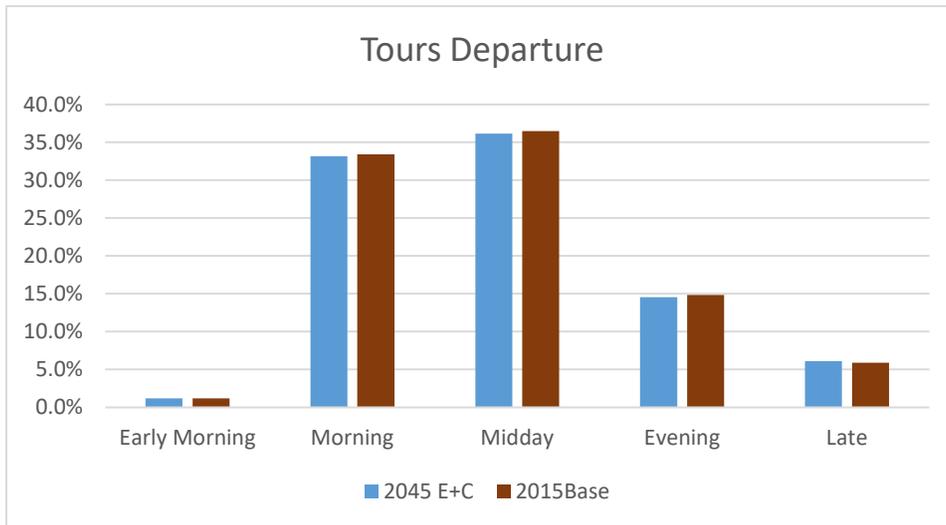


Figure 8: Distribution of Tour Departure Time in Broward

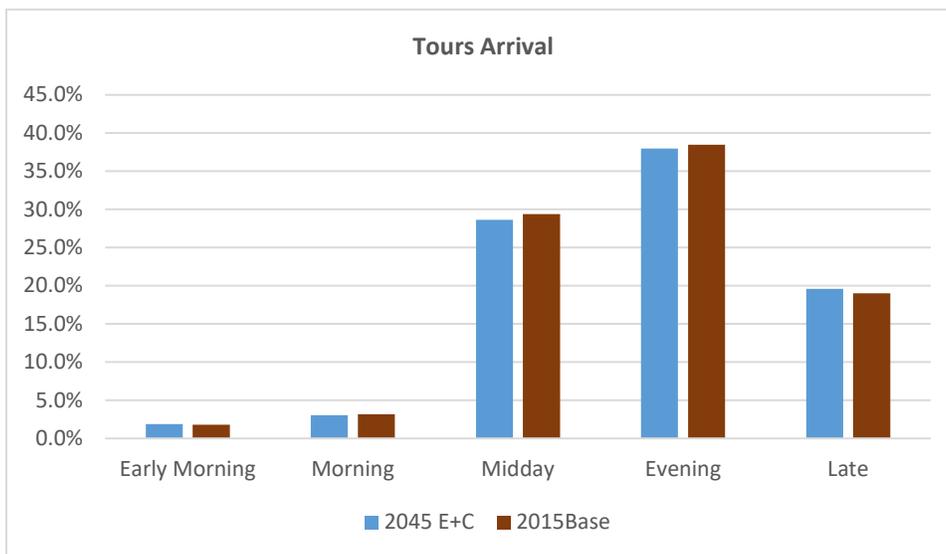
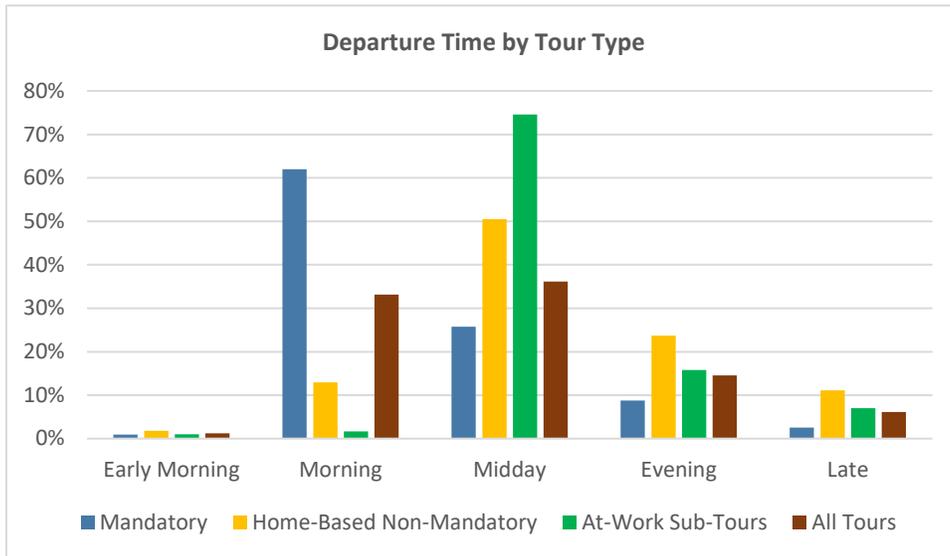
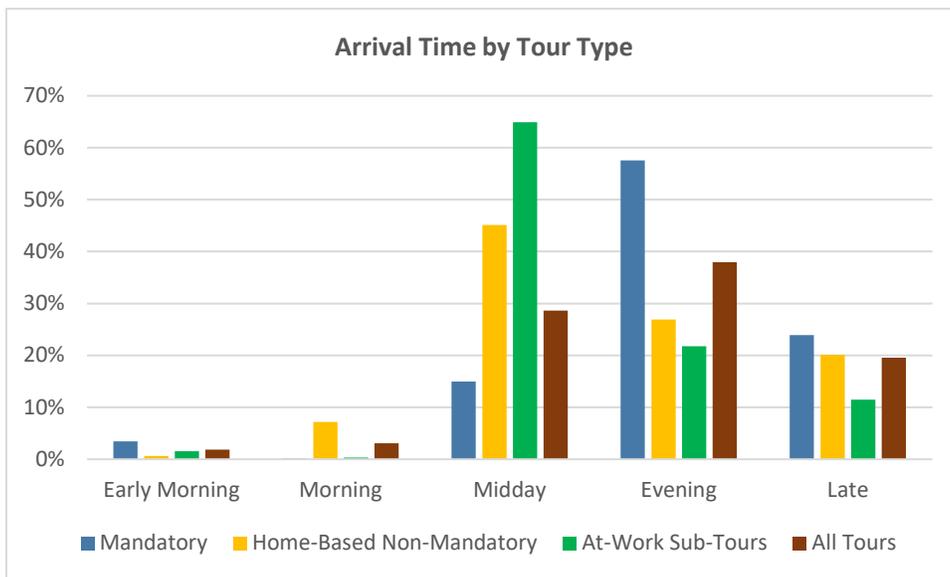


Figure 9 and Figure 10 break down the distribution of departure and arrival times of tours by tour type. The distributions of arrival and departure are very alike for home-based non-mandatory and at-work subtours, meaning that tours begin and end in the same time period.

**Figure 9: Distribution of Tour Departure Time in Broward**



**Figure 10: Distribution of Tour Arrival Time in Broward**



# 2045 Cost Feasible Plan

This section evaluates the transportation improvements proposed in the 2045 Cost Feasible Plan. The analysis was performed for the entire county as well as for residents of equity areas within the county. The equity area analysis is documented in Technical Report #16. This portion of the document will focus on the countwide results.

Table 6 provides an overview of the major improvements proposed in the Cost Feasible Plan relative to the 2045 E+C network. The focus of the Cost Feasible Plan is on highway capacity improvements. Transit system improvement is minimal— only two new bus routes are added to the network. Table A-2 in Appendix A provides a list of the projects coded into the Cost Feasible Plan highway and transit networks.

Table 7: 2045 LRTP Scenario Major Improvements Relative to 2045 E+C Network

Scenario	Highway Network	Transit Network	Population and Employment
Cost Feasible Plan	170 lane-miles added to network (+3.3%)	2 new bus routes	No change
	Conversion of five signalized intersections to signalized center turn overpass intersections		

## COST FEASIBLE PLAN EVALUATION

Appendix B provides detailed information on the SERPM8 modeling results. The E+C and Cost Feasible networks are compared against each other with different performance measures such as mobility, accessibility, safety, environment, and economic development. It should be noted that the county-wide performance measures account for all trips predicted on Broward roadways, including trips made by Broward residents and those by residents of Palm Beach, Miami-Dade, and other counties outside the SERPM region. As shown in Table 7, 12.4% of vehicle trips on Broward roadways are made by residents of Palm Beach and Miami-Dade counties.

Table 8: Regionwide Vehicle Trip Distribution (E+C Network)

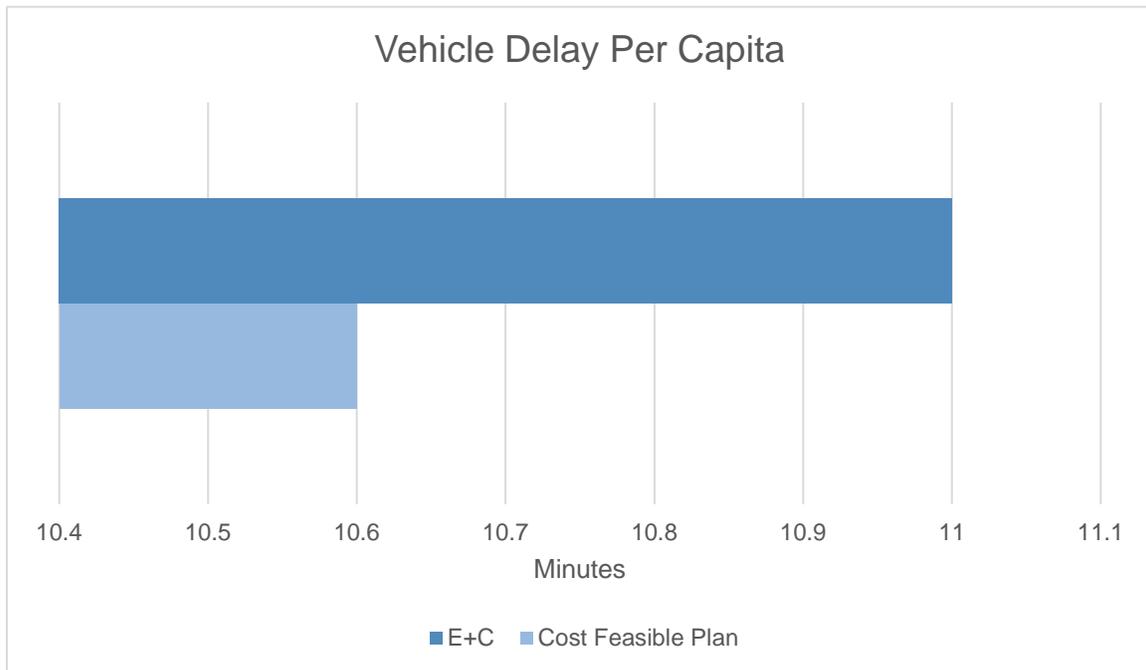
Trip Origin	Traveler Residence County			Total
	Palm Beach	Broward	Miami-Dade	
Palm Beach	93.9%	5.9%	0.3%	100.0%
Broward	5.1%	87.6%	7.3%	100.0%
Miami-Dade	0.5%	6.6%	92.9%	100.0%

The most important Cost Feasible Plan evaluation findings are highlighted below.

## Mobility

Vehicle delay was selected as the key mobility metric and is defined as excess travel time relative to free-flow conditions. Figure 11 shows that delay decreased by about 4% relative to the E+C network.

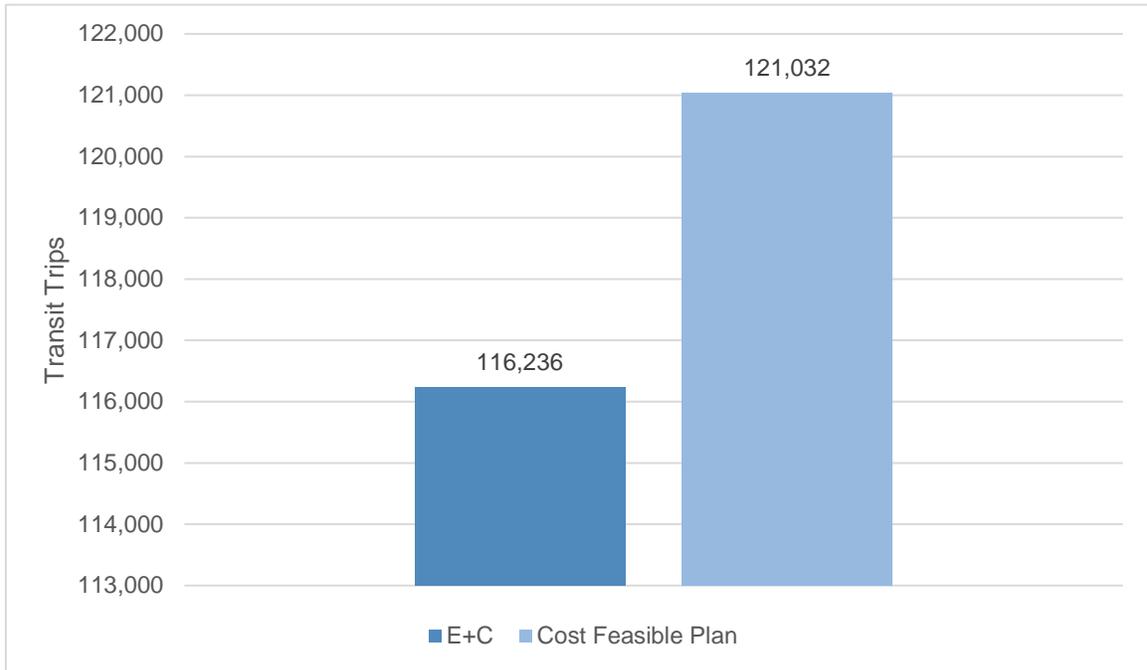
Figure 11: Peak-Period Vehicle Delay



## Transit Trips

As noted, the Cost Feasible Plan does not offer much improvements to transit systems; as a result, the number of transit trips increases by 4% only relative to the E+C network, as shown in Figure 12.

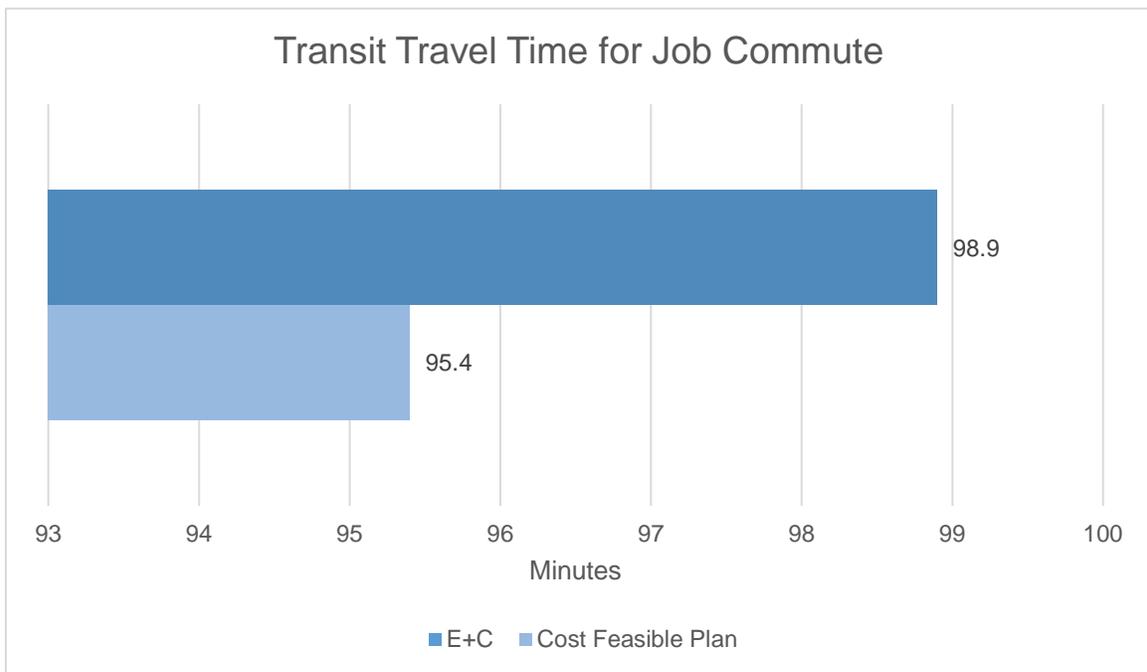
Figure 12: Transit Trips



## Accessibility

The Cost Feasible Plan improves the highway network by increasing capacity and decreasing travel times, which results in higher accessibility to jobs for both auto and transit users. Figure 13 shows average transit in-vehicle travel time (excluding access and egress times or wait time) to access jobs. Transit travel time drops by about 5% in all three analysis areas.

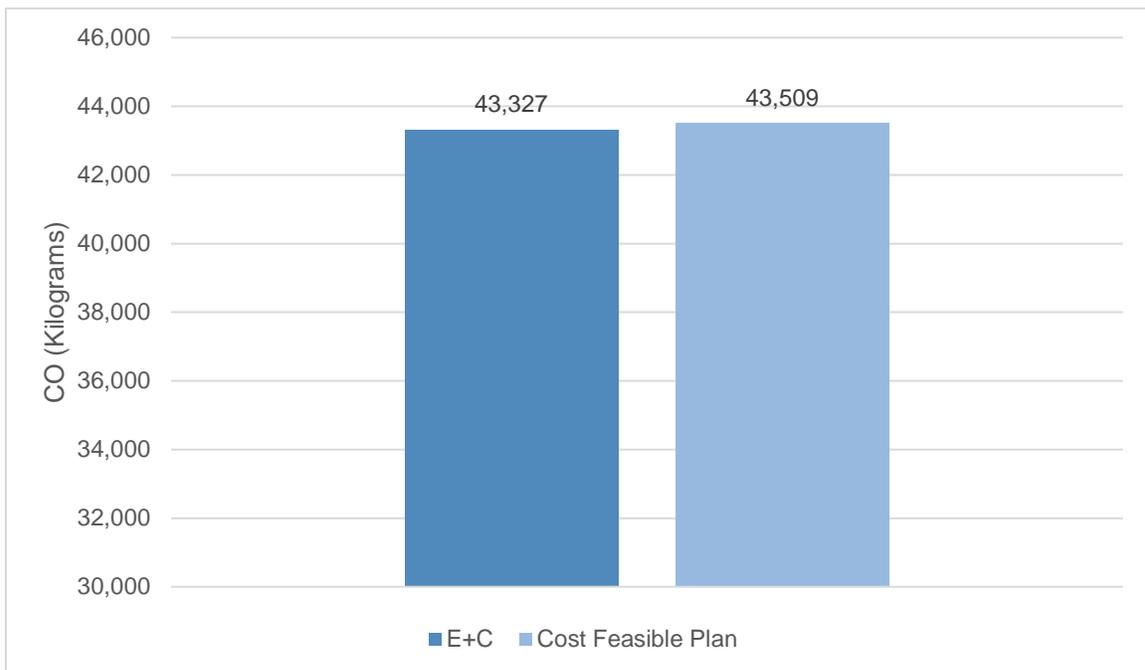
Figure 13: Average Travel Time to Access Jobs



## Environment

The environmental impact associated with these scenarios is measured by the quantity of mobile emissions. Figure 14 shows daily carbon monoxide (CO) emissions. The Cost Feasible Plan increases CO emissions by only 1%, a direct result of the fact that the Plan does not promote transit use. It is anticipated that this metric will improve with the implementation of Broward County's Mobility Action Plan, which includes investment in fixed guideway transit.

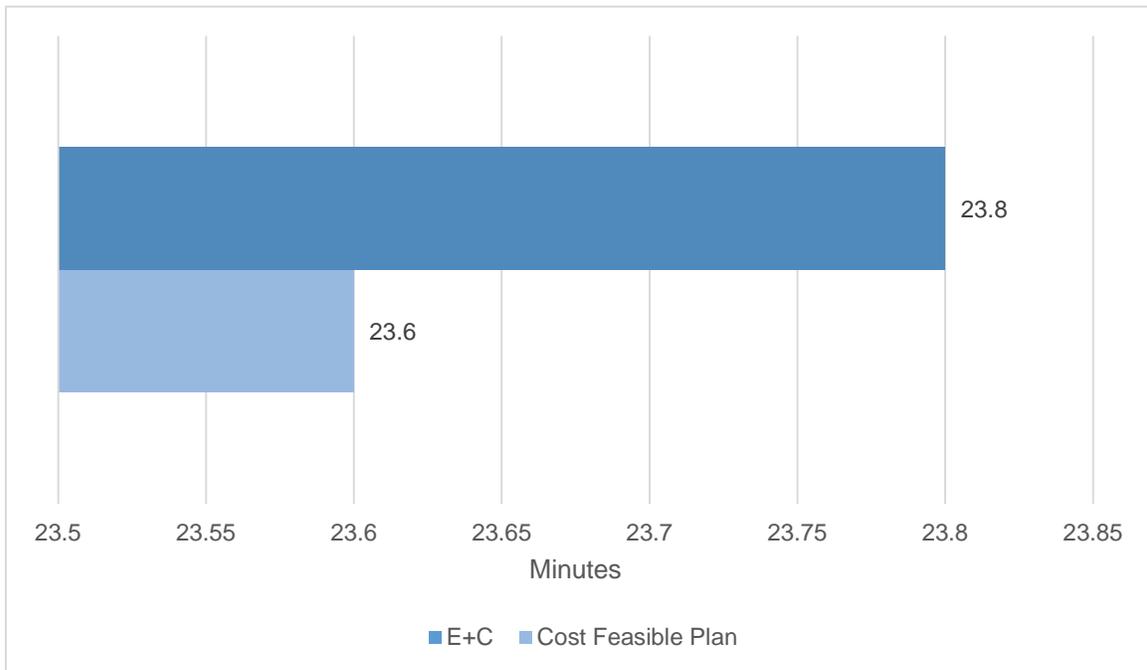
Figure 14: Daily Carbon Monoxide Emissions



## Economic Development

Similarly, economic development associated with the scenarios was measured by average travel time to major activity centers. Figure 15 shows the average auto travel time to activity centers with more than 5,000 employees per square mile. Activity centers become 1% more accessible in the Cost Feasible Plan.

Figure 15: Average Auto Travel Time to Major Activity Centers



# Summary

The review of the 2045 E+C network revealed that the committed projects in Broward are largely the expansion of the managed lane system. Also, a robust growth in population and employment is expected for Broward in 2045. The E+C transit routes remain the same as the 2015 Base, and only some modifications to headways, number of stops and stop locations are made. Review of some travel metrics such as mode share and trip length showed that travel patterns in the 2045 E+C is expected to remain unchanged relative to the 2015 network.

The focus of the Cost Feasible Plan is on highway capacity enhancements; improvement to the transit system is limited to only adding two new bus routes to the transit network. The Cost Feasible Plan does not have disproportionate adverse or beneficial effects on the equity population and is, therefore, neutral with respect to its impact on populations protected under Title VI and EJ.

# Appendix A: List of Projects

Table A-9: 2045 E+C Projects

Project ID*	Description	Work Mix	Scope of Work
4061031	Add on/off ramps	Interchange modification	SR-91 and Sunrise Blvd
4093542	Managed lanes direct connect	Interchange modification	I-95 and I-595
4117525	Add exclusive left-turn lane	Capacity expansion	Pembroke Rd from 145th Ave to 160th Ave
4215481	Add lane to ramps and loop	Interchange improvement	SR-93 and I-75
4215482	Add lane to each direction	Capacity expansion	Royal Palm Blvd from Bonaventure Blvd and Weston Rd
4258613	Two-lane road with divided median	New road construction	College Ave from Nova Dr to SR-84
4317561	Add lane to each direction	Capacity expansion	University Dr from NW 40th St to Sawgrass Exp
4317571	Add lane to each direction	Capacity expansion	SW 30th Ave from Griffin Rd to 45th St
4330621	Add lane to each direction	Capacity expansion	Wells Rd from Riverside Dr to Rock Island Rd
4331084	Convert existing HOV lane to Managed lane, add another Managed lane to each direction	HOV to Managed lane conversion; capacity improvement	I-95 from Broward Blvd to Commercial Blvd
4331085	Convert existing HOV lane to Managed lane, add another Managed lane to each direction	HOV to Managed lane conversion; capacity improvement	I-95 from Commercial Blvd to 10th St
4331086	Convert existing HOV lane to Managed lane, add another Managed lane to each direction	HOV to Managed lane conversion; capacity improvement	I-95 from 10th St to Palm Beach boarder
4363031	Add exclusive left-turn lane to ramps	Capacity expansion	I-95 and Pembroke Rd
4363081	Add on-ramp from SR-84 to I-75 S	Interchange modification	I-75 and SR-84
4382921	Add lane to each direction	Capacity expansion	Wiles Rd from University Dr to Riverside Drive
4417231	Add lane to a ramp	Interchange improvement	I-95 NB to I-595 EB
4419251	Add lane to each direction	Capacity expansion	Pine Island Rd from Griffin Rd to Nova Dr
DT4306373	Add lane to each direction	Capacity expansion	Palm Ave from Heft to Miramar Pkwy
I-595 & US-1	Add new ramps; add lane to some segments	Interchange modification	I-595 and US-1
I-95 ML	Convert existing HOV lane to Managed lane, add another Managed lane to each direction	HOV to Managed lane conversion; capacity improvement	I-95 from Miami-Dade County Blvd to Broward Blvd
I595DC	Managed lanes direct connect	Interchange modification	I-595 and I-75

Project ID*	Description	Work Mix	Scope of Work
I75ML	Construct new 4-lane Managed lane	Capacity expansion	I-75 from Heft to I-595
TP47-57, TP75-57	Construct new 2-lane Managed lane; add GP lane each direction	Capacity expansion	Heft from I-75 to Turnpike
TP Sawgrass	Add GP lane each direction	Capacity expansion	Sawgrass Expwy from I-595 to Atlantic Blvd
TP Sawgrass CD	Construct new Collector/Distributor	Capacity expansion	Sawgrass Expwy at Turnpike and from NW 8th St to Pat Salerno Dr
TP Sawgrass ML	Construct new 4-lane Managed lane	Capacity expansion	Sawgrass Expwy from I-595 to Turnpike

\* "RDNMAE" filed in highway network.

**Table A-10: Cost Feasible Plan Projects**

MPO No.	Project Name	Work Mix	Project Description/Scope of Work
1	W Hillsboro Blvd Extension	New road construction	New 4-lane divided roadway with bike lanes and 8-ft sidewalks
2	University Dr 4-Laning	Capacity expansion	Widen University Dr from 2 to 4 lanes with bike lanes and sidewalks
4	Hallandale Beach Blvd Improvements	Capacity expansion	Construct grade separation over railroad crossing and add EB to NB turn lane at US-1
26	Pat Salerno NB Ramps on Sawgrass Expwy (SR-869)	Interchange	Interchange improvements at Pat Salerno Drive to and from N at Sawgrass Expressway (SR-869)
27	Flyover from SB NW 136 Ave to EB I-595	Interchange	Interchange–flyover for NW 136 Avenue at SR-84/I-595
34	West Dania Beach Blvd Corridor Improvements	Capacity expansion	<ul style="list-style-type: none"> <li>• Potential ROW acquisition</li> <li>• Roadway improvements</li> <li>• Intersection Improvements on local roads</li> <li>• Bridge over C-10 Canal</li> <li>• Signalized intersection at Bryan Rd</li> <li>• Improvement to RR crossing</li> </ul>
39	Pembroke Rd	Capacity expansion	Widen from 2 to 4 lanes from SW 184 Ave to SW 196 Ave, construct new 4 lanes from SW 196 Ave to US-27 with bicycle lanes, sidewalks, lighting, landscaping, hardscape, irrigation systems
40	Pembroke Rd	Capacity expansion	Widen from 2 to 4 lanes with median, bicycle lanes, sidewalks, lighting, landscaping, hardscape, irrigation systems.
41	SW 148th Ave	Capacity expansion	Widen from 2 to 4 lanes with median, bicycle lanes, sidewalks, lighting, landscaping, hardscape, irrigation systems.
43	Bass Creek Rd	Capacity expansion	Widen from 2 to 4 lanes with bicycle lanes, sidewalks, lighting, landscaping, hardscape, irrigation systems.
44	County Line Rd	Capacity expansion	Widen from 2 to 4 lanes with median, bicycle lanes, sidewalks, lighting, landscaping, hardscape, irrigation systems

MPO No.	Project Name	Work Mix	Project Description/Scope of Work
45	Miramar Blvd	Capacity expansion	Widen from 4 to 6 lanes with bicycle lanes, sidewalks, lighting, landscaping, hardscape, irrigation systems
46	SW 184th Ave	Capacity expansion	Widen from 2 to 4 lanes with bicycle lanes, sidewalks, lighting, landscaping, hardscape, irrigation systems
47	Miramar Blvd	Capacity expansion	Widen from 2 to 4 lanes
48	Bass Creek Rd	New road construction	Construct new 2-lane roadway with median, noise walls, bicycle lanes, sidewalks, lighting, landscaping, hardscape, irrigation systems
50	Bass Creek Rd	New road construction	Construct new 4-lane roadway and widen existing 2 lanes to 4 with bicycle lanes, sidewalks, lighting, landscaping, hardscape, irrigation systems
59	SW 184th Ave	New road construction	Construct new 2-lane roadway from Griffin Rd south to Sheridan St (approximately 2 mi) to provide connectivity from Weston to Pembroke Pines
60	Griffin Rd Widening/Bike Lanes & Lighting from Bonaventure Blvd to US-27	Capacity expansion	Widen Griffin Rd from 2 to 4 lanes from US-27 to Bonaventure Blvd to connect to existing 4-lane roadway. Construct new bike lanes on Griffin Rd from US-27 to Bonaventure Blvd to connect to existing bike lanes on Griffin Rd and Bonaventure Blvd. Town desires to install solar lighting along Griffin Rd from I-75 to US-27 to illuminate intersections, which will improve wayfinding and safety along Griffin Rd W of I-75
61	Weston Rd Bridge Widening	Capacity expansion	Widen Weston Rd bridge, just N of Griffin Rd; traffic counts available
71	I95 & Sistrunk Blvd Interchange	Interchange	Construct interchange of I-95 at Sistrunk Blvd
85	SW 11th Way	Capacity expansion	2 to 4 lanes, FAU Research Pkwy
93	SR-7 Flyover/ Interchange (N-S)	Intersection	Construct elevated ramps to move traffic from N to S over SR-7 to alleviate congestion
107	Andrews & 3rd Avenues Mobility Improvements	Multimodal improvements	Implement feasibility study to reconfigure streets to be more one-way oriented, shared use path, transit-only lane, lighting, stormwater, transit and crosswalks
108	Rock Island Rd widening SB from McNab to Commercial Blvd	Capacity expansion	Widen from 4 to 6 lanes and buffered bike lanes on Rock Island Rd from McNab Rd SB to Commercial Blvd
132	West Davie Rd Improvements	Capacity expansion	Widen SW 130 Ave to add turn lane, widen SW 136 Ave from 2 to 4 lanes, add landscape medians, expand sidewalks, add bike lanes, roundabout construction, improve and install traffic light
135	SR-84/Davie Rd Turbo Lane	Intersection	Allow EB traffic lanes on SR-84 to have continuous flow through the SR-84/Davie Rd intersection
170	South Old Dixie Highway 2-way Conversion Project	Capacity expansion	Convert Dixie Hwy from 4 lanes one-way to 4 lanes two-way. Includes restriping, new signage, installation of traffic control devices, mini-medians, 7 ft wide

MPO No.	Project Name	Work Mix	Project Description/Scope of Work
			sidewalks, ADA upgrades, 12 ft wide shared use path along FEC
659	Widen Pines Blvd (186th Ave to US-27)	Capacity expansion	Widen Pines Blvd from 186th Ave to US-27 from 4 to 6 lanes
661	Widen Sheridan St (196th to US-27)	Capacity expansion	Widen Sheridan St from 196th to US-27 from 2 to 4 lanes, includes sidewalk on one side
662	Widen Stirling Rd (196th to US-27)	Capacity expansion	Widen Stirling Rd from 196th to US-27 from 2 to 4 lanes, sidewalk on one side
665	Construction of SW 208th Ave	New road construction	Construct 208th Ave from Pines Blvd to Pembroke Rd (2-lane road)
667	Add ramps from Pembroke Rd to I-75 Express Lanes	Interchange modification	Add ramps from Pembroke Rd to I-75 Express Lanes
713	Plantation Midtown N-S Spine Road Extension	Capacity expansion	Continuation of N-S spine road for Plantation Midtown Re-development District. City completed 2 roadway reconstruction projects to convert American Expressway (AMXPWY) and 84th Ave to 2-lane divided collectors with 8-ft-wide multi-purpose paths along both sides. Continuation of necessary to achieve more efficient multimodal transportation in Midtown District. Beginning at intersection of SW 84th Ave and SW 3rd St, roadway theme described for AMXPWY and 84th Ave is proposed for SW 3rd St E to Federated Rd (will include SW 3rd St W to Pine Island Rd for continuity). Acquire segment of Federated Rd private roadway from SW 3rd St to SW 78th Ave and extend south to private development at 8100 SW78th Ave. Acquire land along east property line of 8100 SW 78th Ave to extend roadway S to Peters Rd. Cross Peters Rd and extend project S along SW 80 Terr. Acquire land from 1601 SW 80th Terr to extend project to north ROW line for N New River Canal. Final piece will involve SFWMD approval for construction of a bridge crossing of New River Canal for connection to WB SR-84. Provide connectivity to existing Broward County New River Greenway along north ROW line of SFWMD New River Canal
740	Hollywood/Pines Blvd Rapid Bus	Transit Improvement	10-15 min. limited stop bus service, mixed traffic or semi-exclusive BAT lanes, level boarding stations, use of TSP & Queue Jump technologies, mobile ticketing.
743	University Dr Rapid Bus	Transit Improvement	10-15 min. limited stop bus service, mixed traffic or semi-exclusive BAT lanes, level boarding stations, use of TSP & Queue Jump technologies, mobile ticketing.
755	Oakland Park Blvd @ SR-7 – Center Turn Overpass	Intersection	
757	Pines Blvd @ Flamingo Rd – Center Turn Overpass	Intersection	
758	Atlantic Blvd @ Powerline Rd –	Intersection	

MPO No.	Project Name	Work Mix	Project Description/Scope of Work
	Center Turn Overpass		
759	University Dr @ Pines Blvd. – Center Turn Overpass	Intersection	
760	Hammondville Rd @ Turnpike Entrance – On-Ramp to Turnpike	Intersection	Reconstruct intersection with grade separation
778	US-1/I-595 WB On-Ramp	Capacity expansion	To improve intersection alignments along US 1 and add additional lane to US 1/I-595 westbound on ramp to help reduce queuing on US 1.
817	SR-845/Powerline Rd	Capacity expansion	From 4 to 6 lanes (6LD)
818	Sheridan St	Capacity expansion	From 4 to 6 lanes (6LD)
820	SR-822/Sheridan St	Capacity expansion	From 4 to 6 lanes (6LD)
824	SW 184th Ave	Capacity expansion	From 4 to 6 lanes (6LD)
825	SW 196th Ave	Capacity expansion	From 2 to 4 lanes (4LD); road not built in Miramar
827	Hiatus Rd	Capacity expansion	From 2 to 4 lanes (4LD)
828	Ravenswood Rd	Capacity expansion	From 2 to 4 lanes (4LD)
829	County Line Rd/HEFT Extension	Roadway	Feasibility study
832	Wiles Rd	Roadway/freight	From 4 to 6 lanes (6LD)
858	Pines Bl/SR-820	Roadway	Overpass
861	Coconut Creek Pkwy/Hammondville Rd	Roadway	Overpass for EB and WB through movements only
865	Hiatus Rd	Capacity expansion	New 4-lane road connecting Stirling Rd to Griffin Rd
866	Stirling Rd	Capacity expansion	New 4 lane road to fill in gap on Stirling Rd from SW 193rd Way to SW 166th Ave
869	Griffin Road	Capacity expansion	4L to 6L/2L to 4L with guardrail enhancements, bike/ped infrastructure
4372 241	Sawgrass Expwy from SR-7 to Powerline Rd	Capacity expansion	Add 2 to build 8 lanes
4061 501	Turnpike from Atlantic Blvd to Wiles Rd	Capacity expansion	Add 2 to build 8 lanes
4060 951	Turnpike from HEFT to N of Johnson St	Capacity expansion	Add 2 to build 8 lanes
4060 954	Turnpike from N of Johnson St to Griffin Rd	Capacity expansion	Add 2 to build 8 lanes

# Appendix B: Performance Measures Estimates

Table B-11: Countywide Performance Measures

Measure Area	Performance Measure	2045 E+C Condition	2045 Cost Feasible Plan	% Difference
Reference Variables	Population	2,200,422	2,200,422	0.0%
	Employment	1,241,642	1,241,642	0.0%
System Safety	Annual Fatalities due to Motor Vehicle Crashes <sup>1</sup>	254	255	0.4%
	Annual Incapacitating Injuries due to Motor Vehicle Crashes <sup>2</sup>	1,872	1,881	0.5%
Congestion Management	Percent of Freeways Operating at or above LOS Standards (AM Peak, PM Peak, Off-Peak) <sup>3</sup>	(77%, 62%, 93%)	(78%, 65%, 94%)	(1.3%, 4.8%, 1.1%)
	Percent of Uninterrupted Roads and High-speed Arterials Operating at or above LOS Standards (AM Peak, PM Peak, Off-Peak) <sup>3</sup>	(92%, 69%, 99%)	(93%, 71%, 99%)	(1.1%, 2.9%, 0.0%)
	Percent of Other Roadways Operating at or above LOS Standards (AM Peak, PM Peak, Off-Peak) <sup>3</sup>	(93%, 77%, 98%)	(94%, 79%, 98%)	(1.1%, 2.6%, 0.0%)
	Percent of All Roadways Operating at or above LOS Standards <sup>3</sup>	(90%, 71%, 98%)	(91%, 73%, 98%)	(1.1%, 2.8%, 0.0%)
	Percent of National Highway Freight Network (NHFN) Operating at or above LOS Standards <sup>3</sup>	(53%, 39%, 82%)	(53%, 41%, 83%)	(0.0%, 5.1%, 1.2%)
Level of Delay	Total Daily Hours of Delay per Capita (Vehicle Hours) <sup>4</sup>	0.183	0.177	-3.3%
Mode Share	Percent of Single Occupancy Vehicles (SOV) Mode Share	49.77%	49.61%	-0.3%
	Percent of Transit Mode Share	1.49%	1.55%	4.0%
Transit Supplied	Average Transit System Service Headways (Minutes)	43.2	42.3	-2.1%
	Annual Revenue Hours of Service per Capita (working days <sup>5</sup> only)	0.48	0.51	6.3%
	Annual Revenue Miles of Service per Capita (working days only)	6.38	7.08	11.0%
Transit Consumed	Transit Passenger Trips	116,236	121,032	4.1%
	Annual Transit Passenger Trips per Capita (working days only)	13.79	14.36	4.1%
	Transit Passenger Trips per Revenue Hour	28.72	28.15	-2.0%
System Capacity	Miles of Dedicated Transitways <sup>6</sup>	25	25	0.0%
	Lane Miles	5,138	5300	3.2%

Measure Area	Performance Measure	2045 E+C Condition	2045 Cost Feasible Plan	% Difference
Access to Jobs	Percent of Employment within ¼ Mi of Transit Service	68.5%	68.6%	0.1%
	Percent of Employment within ¼ Mi of Premium Transit Service (>50% Fixed Guideway)	5.8%	5.8%	-0.1%
	Average Transit Travel Time <sup>7</sup> to Employment Activity Centers with >5,000 Employees per Square Mile <sup>2</sup>	119.0	114.3	-3.9%
	Average Auto Travel Time to Employment Activity Centers with >5,000 Employees per Sq. Mi <sup>2</sup>	23.8	23.6	-0.8%
	Average Total Transit Trip Time <sup>8</sup> for Daily Job Commute (Countywide)	98.9	95.4	-3.5%
	Average Vehicle Travel Time for Daily Job Commute (Countywide)	17.4	17.3	-0.6%
Transit System Access	Percent of Population within ¼ mi of Transit Service	59.2%	59.2%	0.0%
	Percent of Equity Area Population within ¼ mi of Transit Service	63.6%	63.6%	0.0%
VMT	Vehicle Miles Traveled (VMT) per Capita	22.2	22.4	0.5%
VHT	Vehicle Hours Traveled (VHT) per Capita	0.68	0.67	-1.5%
Air Quality / Pollutant Emissions	Total Daily Carbon Monoxide (CO) Emissions (kg)	43,327	43,509	0.4%
	Total Daily Nitrogen Oxide (NOx) Emissions (kg)	3,792	3,819	0.7%
Transportation Equity	Average Total Transit Trip Time <sup>9</sup> for Daily Job Commute (Equity Areas)	97.8	94.7	-3.2%
	Average Vehicle Travel Time for Daily Job Commute (Equity Areas)	17.4	17.3	-0.6%
Transportation System Vulnerability & Resiliency	Lane Miles of Evacuation Routes per 100,000 Population	78	78	0.3%
	Miles of Public Roads and Rail Forecasted to be Permanently Inundated by between 1 ft and 2 ft of Sea-Level Rise	29.3	30.1	2.7%
<p>Notes:</p> <p><sup>1</sup>Based on 1.42 annual fatalities per 100 million VMT (2015 Traffic Crash Facts, Florida Department of Highway Safety and Motor Vehicles)</p> <p><sup>2</sup>Based on 10.48 annual incapacitating injuries per 100 million VMT (2015 Traffic Crash Facts, Florida Department of Highway Safety and Motor Vehicles)</p> <p><sup>3</sup>Standard LOS for rural and urban areas are "C" and "D". <i>Highway Capacity Manual</i> (HCM) used to determine LOS. Total length of links operating at LOS standards divided by total length of all links to estimate percent of links operating at LOS standards.</p> <p><sup>4</sup>Delay defined as excess travel time relative to free-flow conditions</p> <p><sup>5</sup>Number of working days in 2018 used (261)</p> <p><sup>6</sup>Includes Tri-Rail, LRT, and BRT with &gt;50% Fixed Guideway</p> <p><sup>7</sup>Total travel time including in-vehicle and out-of-vehicle time (access/egress/transfer walk and drive time, wait time)</p> <p><sup>8</sup>Population-weighted average of travel time from a TAZ</p> <p><sup>9</sup>Total travel time including in-vehicle and out-of-vehicle time (access/egress/transfer walk and drive time, wait time)</p>				



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