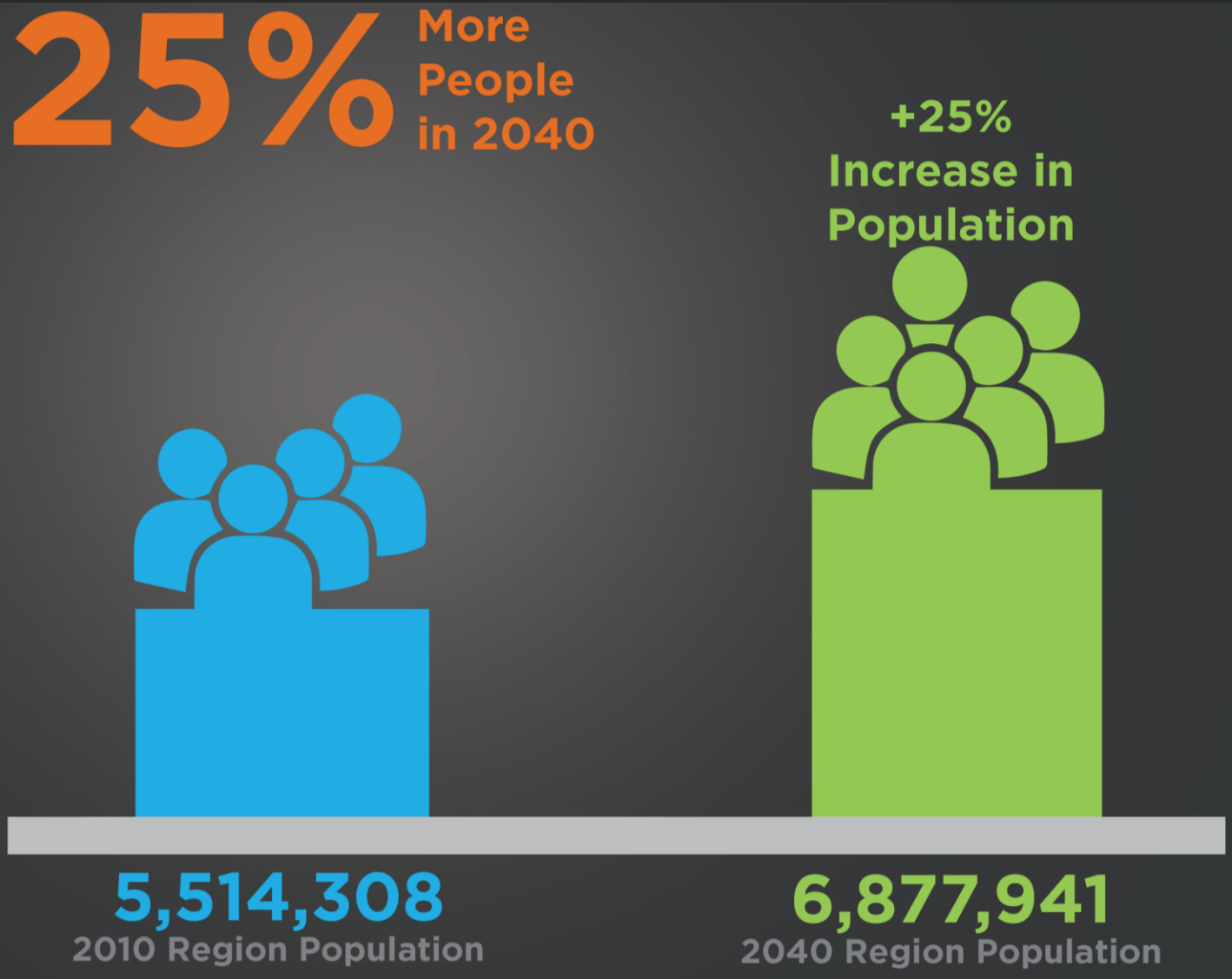
Application of Mobility Performance Measures in South Florida

Jessica Josselyn

August 18, 2015

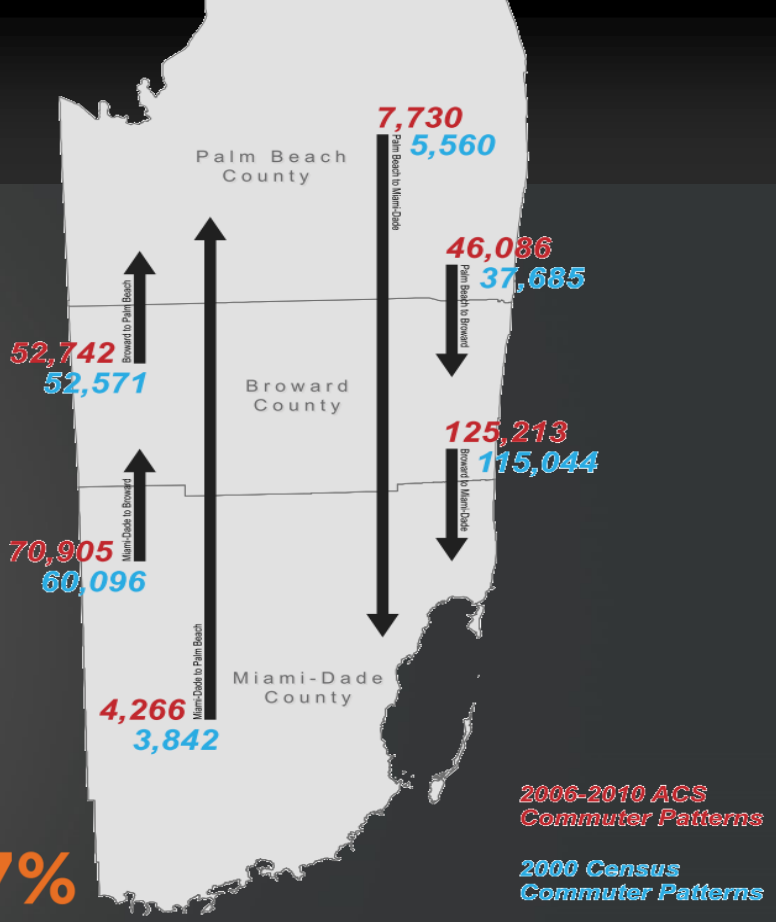
Planning for the Next 25 Years

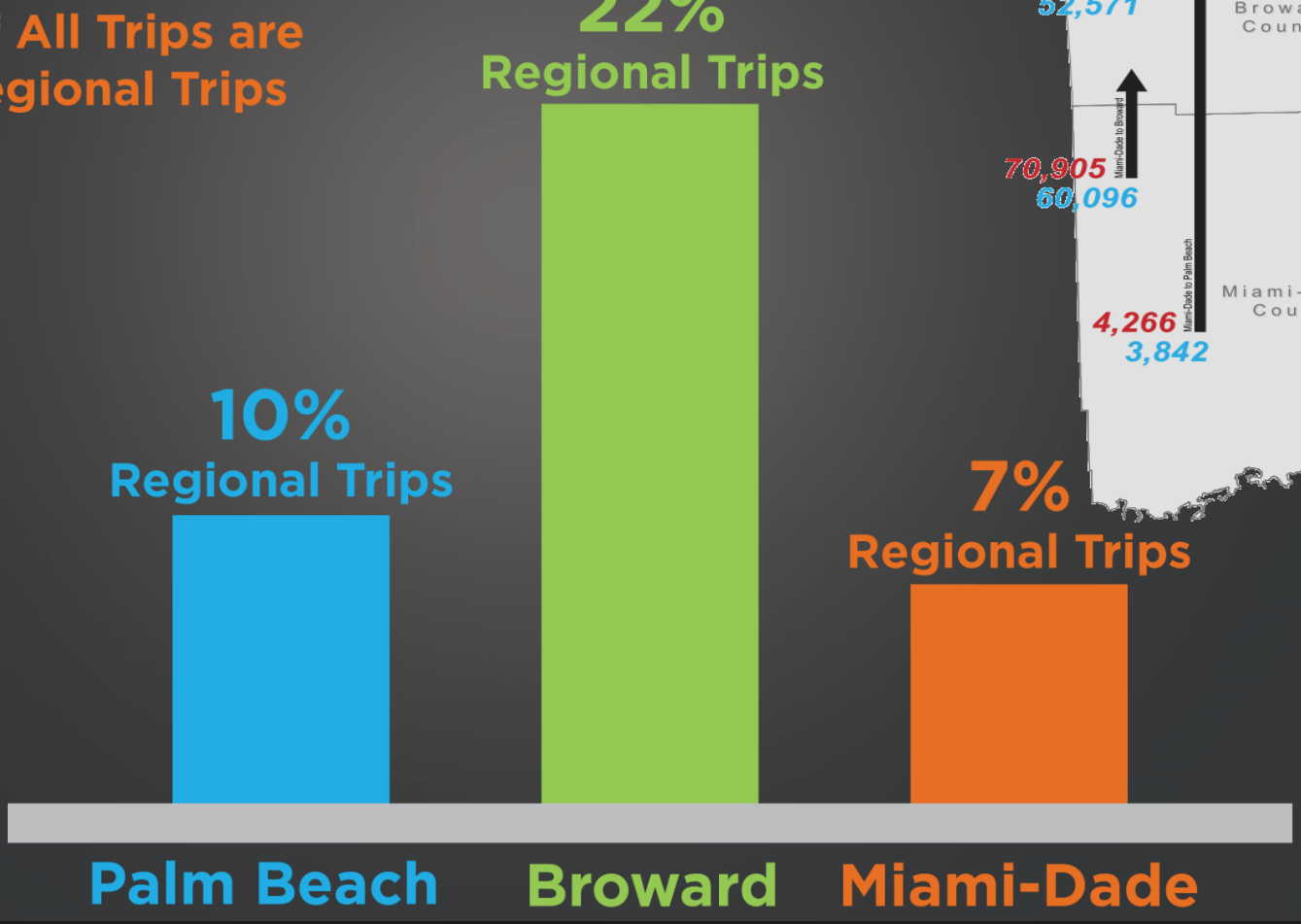


How We Travel Today

12%

Of All Trips are Regional Trips





Metropolitan Planning Organizations

- Miami-Dade
- Broward
- Palm Beach

Department of Transportation

- Districts 4 and 6
- Turnpike

Regional Planning Councils

- South Florida
- Treasure Coast

Transit Agencies

- MDT
- BCT
- Palm Tran
- SFRTA

SEFTC
Southeast Florida Transportation Council

metropolitan planning organization PALM BEACH MPO

broward MPO metropolitan planning organization

MPO MIAMI-DADE METROPOLITAN PLANNING ORGANIZATION

Performance Measurement required by Southeast Florida Transportation Council Interlocal Agreement

INTERLOCAL AGREEMENT CREATING THE SOUTHEAST FLORIDA TRANSPORTATION COUNCIL FOR REGIONAL TRANSPORTATION PLANNING AND COORDINATION IN SOUTH FLORIDA

The duties of the SEFTC entity shall include the development of:

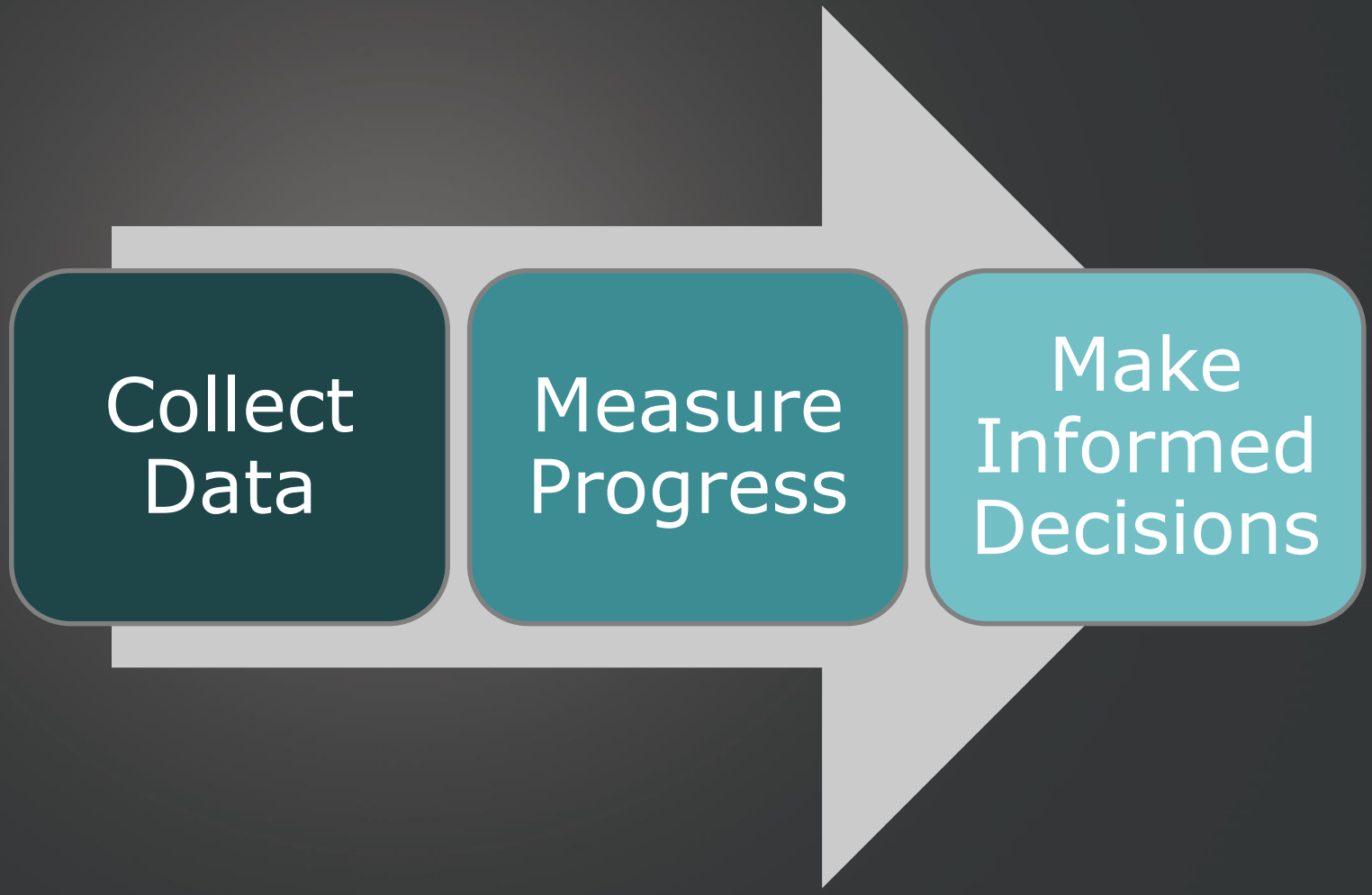
- a Regional Long Range Transportation Plan;
- a process for prioritization of regional projects;
- a regional public involvement process; and
- performance measures to assess the effectiveness of regional coordination activities.

In performing the duties of the SEFTC, agreement of all voting members shall be required for adoption of recommendations to the MPO's for inclusion in their

"A process of assessing progress toward achieving predetermined goals."

http://www.ops.fhwa.dot.gov/perf_measurement/fundamentals/index.htm

The Link Between Data and Decision-Making



Why Use a Performance Based Approach to Planning and Programming?

- Improved system performance
- Improved investment decision making
- Better return on investment
- Effective resource allocation
- Increase accountability and transparency
- Demonstrate linkage between funding and performance

Steps in Performance Based Planning

1. Goal Setting and Development of Objectives
2. Establishment of Performance Measures
   - National Performance Measures
   - State Performance Measures (consulting MPOs and transit)
3. Development of Appropriate Targets
   - Fiscally constrained targets
   - Aspirational targets
4. Strategy Identification and Analysis
5. Ongoing Monitoring, Performance Reporting, and Evaluation

www.SEFTC.org

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Guiding Criteria

Developed by Regional Transportation Technical Advisory Committee

- Applicable/Compatible with LRTP process
- Readily available data
- Minimal staff time to calculate/report measures
- Easily replicable and simple to understand

Mobility Performance Measures from the Sourcebook

Context Measures

CONTEXT MEASURE	2006 TO 2010 FIVE YEAR CHANGE	2006 TO 2010 FIVE YEAR TREND
Regional Investments	$9B in the 2006-2010 TIP to $11.2B in the 2010-2014 TIP	
Regional Population	From 5.46M people in 2006 to 5.58M people in 2010	
Gross Domestic Product	From $254B in 2006 to $256B in 2010	
Total Non-farm Employment	From 2.40M employees in 2006 to 2.18M employees in 2010	
System Lane Miles	From 9,550 lane-miles in 2006 to 9,764 lane-miles in 2010	
Vehicle Miles Traveled	From 34.8B miles/year in 2006 to 34.5B miles/year in 2010	
Fuel Tax Sales	From $885M collected fuel tax sales in 2006 to $831M collected fuel tax sales in 2010	
Truck Miles Traveled	From 2.3B miles/year in 2006 to 1.6B miles/year in 2010	
Transit Revenue Hours	From 6.31M hours in 2006 to 6.37M hours in 2010	
Vehicle Registrations	From 4.50M vehicles in 2006 to 4.19M vehicles in 2009	

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Performance Measures

REGIONAL PERFORMANCE MEASURES	2006 TO 2010 PROGRESS	2006 TO 2010 FIVE YEAR CHANGE**	2006 TO 2010 FIVE YEAR TREND
MOBILITY			
Time Spent Traveling (per capita)		From 0.59 hours in 2006 to 0.56 hours in 2010 (a 5% decrease)	
Truck Congestion Cost per Truck Mile Traveled*		From $0.31/mile in 2007 to $0.38/mile in 2010 (a 22% increase)	
Uncongested Peak Vehicle Miles Traveled per lane-mile		From 517 VMT/lane-mile in 2006 to 531 VMT/lane-mile in 2010 (a 3% increase)	
Delay per Auto Commuter		From 44 hours/year in 2006 to 38 hours/ year in 2010 (a 14% decrease)	
Proportion of Travel Congested		From 43% in 2006 to 39% in 2010 (a 9% decrease)	

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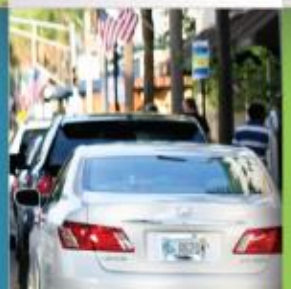
SOUTHEAST FLORIDA REGIONAL TRANSPORTATION PLAN 2040

Miami-Dade • Broward • Palm Beach





SOUTHEAST FLORIDA REGIONAL TRANSPORTATION PLAN 2040

Miami-Dade • Broward • Palm Beach

Many Partners, one Unified voice

Metropolitan Planning Organizations
- Miami-Dade
- Broward
- Palm Beach

Department of Transportation
- Districts 4 and 6
- Turnpike

Regional Planning Councils
- South Florida
- Treasure Coast

Transit Agencies
- MDT
- BCT
- Palm Tran
- SFRTA

One Vision Investing in Many Components

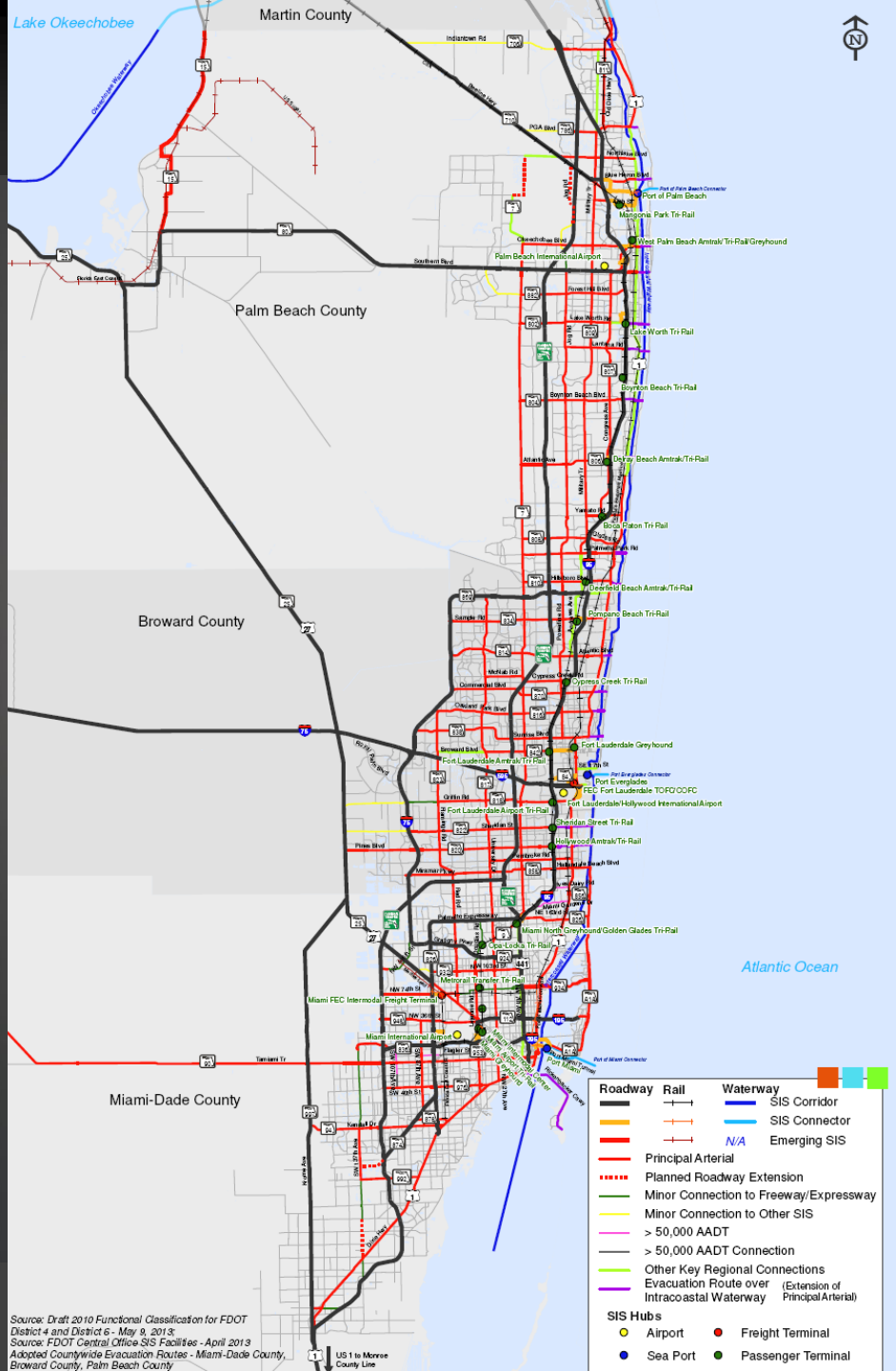
- Agreed to **Goals and Objectives**
- Identified **regionally significant** facilities
- Developed a **Transit Vision**
- Developed a **Highway Network**
- Identified **Pedestrian & Bicycle** Emphasis Areas
- Incorporates **Freight** Needs & Investments

2015 ADOPTION

SOUTHEAST FLORIDA 2040 REGIONAL TRANSPORTATION PLAN

Miami-Dade • Broward • Palm Beach

REGIONAL CORRIDOR NETWORK



1. PRINCIPAL ARTERIALS

Definition: Interstate, Freeway/Expressway and all other Principal Arterials

Source: Draft 2010 Functional Classification for FDOT Districts 4 and 6, May 9, 2013

2. PLANNED PHYSICAL EXTENSIONS OF PRINCIPAL ARTERIALS

Definition: Interstate, Freeway/Expressway and all other Principal Arterials that are in the adopted LRTP Cost Feasible Plans for future expansion

Source: 2035 LRTP Cost Feasible Plan for Broward, Miami-Dade and Palm Beach County MPOs

3. STRATEGIC INTERMODAL SYSTEM (SIS) NETWORK

Definition: SIS and Emerging SIS Corridors, Hubs, Connectors, Railways and Waterways

Source: FDOT Central Office SIS facilities, April 2013

4. PRINCIPAL ARTERIAL CONNECTIONS

Definition: (1) Minor Arterials connecting to a Freeways/Expressways and/or SIS Corridors; (2) extensions of Principal Arterials that cross the intercoastal for evacuation purposes; (3) key connections of 'gaps' in the network; (4) Non-principal Arterials carrying 50,000 AADT or greater; and (5) extensions of facilities carrying 50,000 AADT or greater to complete a regional network connection.

Source: Draft 2010 Functional Classification for FDOT Districts 4 and 6, May 9, 2013; FDOT Central Office SIS facilities, April 2013; and Adopted Countywide Evacuation Routes – Broward, Miami-Dade and Palm Beach County.

Performance Measurement Tools

Performance Assessment Requiring Various Tools, Utilizing Readily Available Data

- Travel Demand Modeling
  - Used in a Predictive Capacity
- Mobility Performance Measures from Sourcebook
  - Used as a Monitoring Tool

South Florida MPM Extraction Pilot Process

1. Collect boundary and corridor data
2. Test , evaluate, and refine MPM extraction process
3. Summarize the MPM extraction results and procedures

South Florida MPM Extraction Pilot Measures

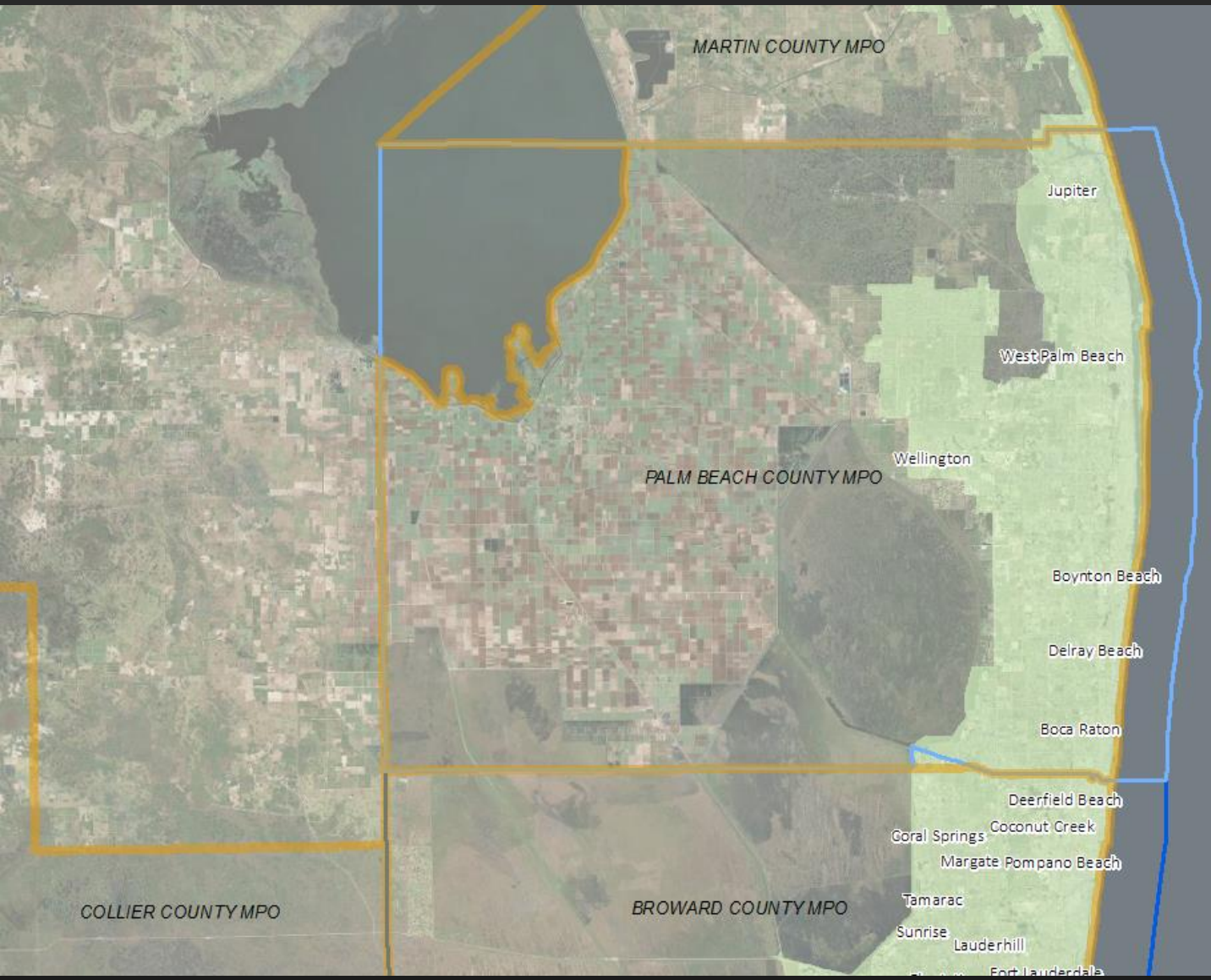
People

1. Vehicle miles traveled
2. % travel meeting LOS criteria
3. Travel time reliability
4. Vehicle hours of delay
5. % miles severely congested

Freight

1. Combination truck miles traveled
2. Travel time reliability
3. Combination truck hours of delay
4. % miles severely congested

Boundary and Corridor Data Collection



Testing, Evaluation and Refinement

VMT

Daily vehicle miles traveled (in 1,000s)

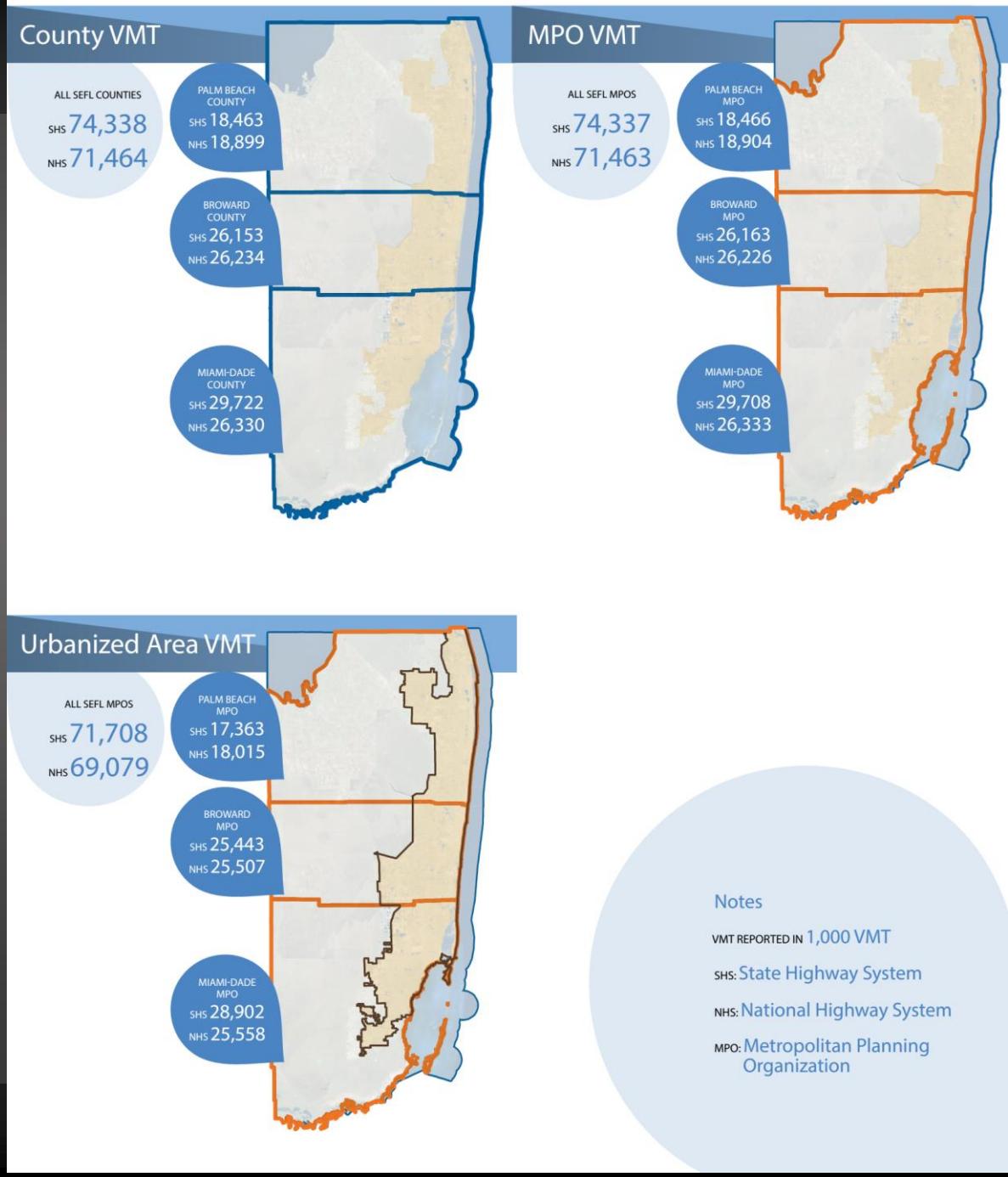
State Highway System

								Urbanized			
Facility Type	Palm Beach	Broward	Miami-Dade	All SEFL Co's	Palm Beach County MPO	Broward County MPO	Miami-Dade MPO	All SEFL MPOs	Palm Beach County MPO	Broward County MPO	Miami-Dade MPO	All SEFL MPOs
Freeways	10,946	15,400	17,070	43,416	10,948	15,394	17,072	43,415	10,299	14,675	16,292	41,266
Non-Freeways	7,517	10,753	12,652	30,923	7,518	10,768	12,635	30,922	7,064	10,768	12,609	30,442
All	18,463	26,153	29,722	74,338	18,466	26,163	29,708	74,337	17,363	25,443	28,902	71,708

National Highway System

								Urbanized			
Facility Type	Palm Beach	Broward	Miami-Dade	All SEFL Co's	Palm Beach County MPO	Broward County MPO	Miami-Dade MPO	All SEFL MPOs	Palm Beach County MPO	Broward County MPO	Miami-Dade MPO	All SEFL MPOs
Freeways	10,949	15,400	17,070	43,418	10,951	15,394	17,073	43,418	10,299	14,675	16,297	41,271
Non-Freeways	7,951	10,834	9,260	28,045	7,953	10,832	9,261	28,045	7,716	10,832	9,261	27,808
All	18,899	26,234	26,330	71,464	18,904	26,226	26,333	71,463	18,015	25,507	25,558	69,079

Results Summary



I-95

From US 1 in Miami to Palm Beach/Martin County Line

Avg. AADT	Vehicle Miles Traveled (millions of miles)		Avg. Speed (mph)	Delay (thousands of vehicle-hours)			Freight/Combination Truck (CT) Daily:		
197,572	Peak Period:	Daily:	Peak Period:	Peak Hour:	Daily:	Yearly:	% CT:	CT VMT:	CT Delay:
With a max of: 328,000	2.87	17.49	54.8	16.36	43.3	15,809	4.9%	852 thousand miles	2,501 CT-hours

Corridor Length: 88.5 miles

Travel Time Reliability (TTR): % VMT at or above speed limit

Peak Hour/Period: 45.6%

Daily: 82.3%

Congestion Analysis

% of Travel Meeting LOS Criteria

Peak Period:	Daily:
43.1%	82.0%

% of Travel Severely Congested (SC)

Peak Hour:	Daily:
51.3%	12.2%

I-95 in Palm Beach County

Trip Length: 46.0 miles

Avg. AADT: 167,384

	TTR:	% of Travel SC:	Avg. Speed:
Peak Hour/Period:	79.0%	19.2%	64.7 mph
Daily:	91.6%	3.1%	

I-95 in Broward County

Trip Length: 25.3 miles

Avg. AADT: 254,920

	TTR:	% of Travel SC:	Avg. Speed:
Peak Hour/Period:	3.8%	100.0%	44.2 mph
Daily:	70.5%	26.2%	

I-95 in Miami-Dade County

Trip Length: 17.2 miles

Avg. AADT: 194,007

	TTR:	% of Travel SC:	Avg. Speed:
Peak Hour/Period:	49.1%	31.4%	52.5 mph
Daily:	83.8%	6.1%	

Sources: Kittelson & Associates, Inc. (2015)

“Coming to a Plan near you!”

I-95 Corridor Mobility Planning Project

Background

- Various partners involved
- Developed framework of facility types and place types emphasizing function
- Connected functions to land uses and developed aspirational transportation and land use vision
- Identified various strategies to help achieve vision and performance measures for assessing progress
- Initiated monitoring and evaluation phase to include reconvening of partners to:
  - review progress in implementing strategies and moving in desired directions on performance measures
  - identify next priority strategies

MPM Application

- In 2014, used data from Multimodal Mobility Performance Measures Source Book for these performance measures:
  - Travel Time Reliability Index
  - Percent Travel Meeting LOS Criteria
  - Percent Travel Severely Congested
  - Hours of Travel Severely Congested
  - Average Travel Speed
  - Truck On Time Arrival
- Produced performance dashboard capturing baseline and trend information for 26 key performance measures
- Updating dashboard as part of monitoring and evaluation phase
- Challenges included:
  - Lack of data for non-state roads
  - Parsing Source Book data for desired segments and to align with facility type designations

I-95 2014 OVERVIEW

corridor mobility plan

WWW.MYPLANSPACE.COM/I95 05/21/2014

Interstate 95 is a critical resource for South Florida's economic vitality. Residents, businesses, and freight operators depend on I-95 for daily transportation needs. I-95 is the backbone of the transportation system, but it is not the only element. The region's transportation system also includes primary arterials, secondary roads, transit systems, and infrastructure for walking and biking. Land use patterns generate travel demand, and heavily influence travel patterns, which in turn greatly affect the viability of the transportation system. The primary goal of the I-95 Corridor Mobility Planning Project is to envision a system of transportation and land use for the South Florida region that functions effectively both today and in the future. The solution must be as multi-faceted as the problem itself, and rests in making it easier for people to access jobs, housing, education, goods, and services without driving on I-95 by using different roads, different modes, and making shorter and fewer trips.

I-95 KEY STATISTICS (WITHIN STUDY AREA[AA])

CORRIDOR[1]

- 32 Mile Stretch of I-95 Corridor
- 23 Inter-changes

DAILY TRIPS[2]

- 233,000 Average Daily Trips on I-95 Corridor
- 6% Freight Traffic

Max AADT: 299,000 (between I-595 & Davie Blvd Interchanges)

TRAVEL DEMAND (VEHICLE MILES TRAVELED)[2]

- 8.5 million DAILY
- 1.3 million PEAK PERIOD

CONGESTION (PEAK PERIOD)[3]

- 32% Travel Speed Below 40 mph[B]
- 45 MPH Average Speed[C]

CONGESTION (DAILY)[2]

- 29% Travel Severely Congested[D]
- 4.1 HOURS Severely Congested[E]

(1) FDOT GIS Data Directory: Basemap Routes with Measures Shapefile & Interchange Shapefile
(2) FDOT 2012 Multimodal Mobility Performance Measures Database (Data for State Highways Only)
(3) 2012 FDOT Reliability Database with TTI - update weather - 95th percentile
(4) 2010 US Census Block Group Data

STUDY AREA[A] KEY STATISTICS

POPULATION, EMPLOYMENT & HOUSING[4]

- 1.1 MILLION Total Population

FREIGHT

- 22.1 MILLION Tons of Cargo at Port Everglades (2013)[5]

TOURISM

- 3.8 MILLION Yearly Cruise Passengers at Port Everglades (2012)[5]

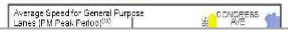
TRANSIT

- 4.2 million Annual Tri-Rail Ridership System Wide[7]
- 1.4 million Annual I-95 Express Ridership[8]

(A) Golden Glades Interchange in the south, the Atlantic Ocean in the east, and I-75 or S
(B) Percent of vehicle miles traveled at a sp
(C) Average travel speed of vehicle miles tra
(D) Percent of vehicle miles traveled on roa
(E) Average number of hours in which segm
(7) 2013 South Florida Regional Transportation A
(8) BCT 2013 Ridership Reports (Jan - Dec) & MI
(9) FY2015 to FY2019: Capital from Broward MPO

I-95 CORRIDOR

AVERAGE TRAVEL SPEED



I-95 2014 PERFORMANCE AT A GLANCE

corridor mobility plan

WWW.MYPLANSPACE.COM/I95 05/21/2014

To improve travel conditions on I-95, only a few options remain for optimizing and increasing capacity on the interstate. The rest must be done by influencing the demand on I-95, and making it easier for people to access jobs, housing, education, goods, and services by using different roads (other than I-95), different modes, and making shorter and fewer trips. A framework of facilities and places was created to show where and how the South Florida I-95 corridor drives economic growth so we can better understand how to efficiently move people and goods.

The snapshot below gives a baseline for key performance measures for use in future years to track mobility and accessibility in the study area.

PERFORMANCE MEASURES

CONGESTION & MOBILITY[1]

Based on State Highway System Only

	Study Area	Desired Trend	Primary Commerce	Desired Trend	Strategic Intermodal System	Desired Trend
% of Travel Severely Congested[A]	Daily 6%, Peak Period 16%	→	2%, 9%	→	16%, 42%	↘
% of Road Miles Meeting Level of Service Criteria	Peak Period 84%	→	15%	→	14%	↘

POPULATION, EMPLOYMENT DENSITY[2] & PROPERTY VALUES[3]

	Study Area	Desired Trend	Multimodal Districts	Desired Trend	Multimodal Nodes	Desired Trend
Average People + Jobs per Acre	10.9	↗	15.25	↗	16.6	↗
Total Assessed Property Value per Acre	$800,000	↗	$960,000	↗	$1,100,000	↗

MODE SHARE[4]

Desired Trend

- 8% NON-MOTORIZED* ↗
- 4% TRANSIT ↗
- 88% AUTO/TRUCK ↘

*Includes walk, bike, telecommute and other

TRANSPORTATION FUNDING BY MODE[5]

Desired Trend

- 69% HIGHWAY ↘
- 11.5% AIRPORT & SEAPORT →
- 8.5% BIKE, PEDESTRIAN & HYBRID** ↗
- 9% TRANSIT ↗
- 1.5% INTELLIGENT TRANS SYS OPERATIONS (NOT ON CHART) ↗

**Roadway projects with pedestrian and/or bicycle improvements

FACILITIES FOR WALKING & BIKING[6]

For Roads in Broward County Only

	Study Area	Desired Trend	Multimodal Facilities	Desired Trend	Roads within Place Types	Desired Trend
% Sidewalks	10%	↗	55%	↗	14% Multimodal Nodes	↗
% Bike Facilities	4%	↗	23%	↗	2% Multimodal Districts	↗

(1) FDOT 2012 Multimodal Mobility Performance Measures Database
(2) 2010 US Census Block Group Data (GIS Shapefile)
(3) Parcel layers and tax roll data from Florida Department of Revenue
(4) 2011 ACS Block Group Census data
(5) Broward MPO TIP FY2015 to FY2019 (Excluding Operations Phase Group Funding) Values for Broward County as a whole
(6) Broward MPO GIS Shapefile - Bike_Ped_Facilities.shp (2012)

FRAMEWORK LEGEND

FACILITY TYPES:

The roads, rail lines and trails that move people & goods.

	Purpose
Strategic Intermodal System (SIS) Corridors	High speed, uncongested regional travel
Primary Commerce	Reliable travel for autos & freight connections with access to auto-oriented primarily single-use commercial development
Primary Multimodal	Balanced travel among transit, walking, biking and auto access to higher intensity, mixed used development
Hybrid	Multimodal access to primary multimodal facilities with lower intensity, residentially oriented development

PLACE TYPES:

Areas with similar types of land use and urban form characteristics.

	Description
Multimodal Districts	Larger areas with a concentration of jobs & population where people can easily walk or bike to a variety of destinations
Freight/Goods/Special Use Districts	Large area of freight or special use activity and movement
Multimodal Nodes	Higher density of jobs & population within a walkshed of a transit station or other center of activity
Freight/Goods/Special Use Center	Smaller individual areas where one kind of freight/special movement occurs

(A) Percent of miles traveled occuring on roadway segments operating at LOS F during designated time period

A VISION FOR THE FUTURE

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Other Activities

Other MPM Application Related Activities

- Presentation to Broward County for consideration in their Comprehensive Plan update
- Part of Florida Performance Measurement Collaboration Task Force
- Part of the Target Setting Workshop group
- Formed Regional TSM&O Subcommittee to support the Southeast Florida Transportation Council

Thank you

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