



MIAMI-DADE TRANSPORTATION PLANNING ORGANIZATION

2045 LRTP

SUPPORTING DOCUMENTS

TECHNICAL REPORT 7

**LRTP SUB-ELEMENTS**

SEPTEMBER 2019

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2045

# LONG RANGE TRANSPORTATION PLAN (LRTP)

## TECHINCAL REPORT 7 LRTP SUB-ELEMENTS

This document was prepared by the Miami-Dade Transportation Planning Organization (TPO) in collaboration with the Florida Department of Transportation (FDOT) District Six, Miami-Dade Expressway Authority (MDX), Florida's Turnpike Enterprise (FTE), South Florida Regional Transportation Authority (SFRTA), Miami-Dade Department of Transportation and Public Works (DTPW), Miami-Dade Regulatory and Economic Resources (RER) Department, Miami-Dade Aviation Department (MDAD), Miami-Dade Seaport Department, Miami-Dade County Office of Strategic Business Management, City of North Miami, City of Hialeah, City of Miami, City of Miami Beach, City of Miami Gardens, City of Homestead, Miami-Dade County Public Schools, Miami-Dade TPO Citizens' Transportation Advisory Committee (CTAC), Miami-Dade TPO Bicycle/ Pedestrian Advisory Committee (BPAC), Miami-Dade TPO Freight Transportation Advisory Committee (FTAC), Transportation Aesthetics Review Committee (TARC), Broward County Metropolitan Planning Organization (MPO), Palm Beach County Transportation Planning Agency (TPA), and the South Florida Regional Planning Council (SFRPC).

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# L RTP SUB-ELEMENTS

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This Technical Report, document the activities undertaken under Task 7: LRTP Sub-Elements and consists of:

## **FUTURE TECHNOLOGY & AUTONOMOUS VEHICLES**

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Technology continues rapidly to influence our society from the way we communicate, shop, and provide mobility options, all which affect the transportation system. Technological changes that the world is experiencing have a direct impact on the transportation system and society as a whole. We are currently in the Fourth Industrial Revolution; the emerging technological advancements of the next decade will drastically alter the way we live, work, travel, and relate to one another. The future of transportation planning will feature increased automation, optimization, and connectivity through the Internet of Things (IoT). Technological changes are shaping the ways in which transportation infrastructure is developed and used as well as affecting the mobility decisions people make. It is important to consider the impact future technologies will have in the Miami-Dade County region. Much research was conducted to identify emerging technologies that will affect the transportation system. These technologies are documented in the Miami-Dade 2045 LRTP document and can be grouped into three categories:

### **TECHNOLOGY**

Technological innovations will have a significant impact on transportation systems. Disruptive technology will change the way people travel and will influence traditional transportation modes such as Transportation Network Companies (TNCs). Connectivity, communication, and automation are three core concepts common to emerging future technologies. Two-way communication and data sharing will allow for increased productivity and efficiency. Currently, there are many opportunities and ideas related to innovative transportation improvements.

### **ENERGY**

Technological changes and developments are impacting the way in which energy is generated and used in Miami-Dade County. The County is already promoting energy conservation through its participation in the Southeast Florida Clean Cities Coalition.

### **AGRICULTURE**

Technological changes are also impacting food production and distribution on a global scale. In Miami-Dade County, the agricultural industry is one of the most diverse in the county, due to its tropical climate and the ability to grow food year-round.



New and emerging technologies do and will change the way we do things. There are a multitude of emerging technologies that will become staples over the next few decades. The Miami-Dade TPO embraces emerging technologies and is excited about these technologies that will:

- » Provide new mobility choices for Miami-Dade residents and visitors,
- » Increase the safety,
- » Improve the efficiency of our transportation system,
- » Minimize environmental impacts and conserve energy,
- » Connect our communities to essential services,
- » Increase accessibility,
- » Provide services for all,
- » Provide economic benefits.

At this time the effects of technology on transportation are not completely known. For example, connected and autonomous vehicles will improve safety and efficiency but also may increase the demand putting additional vehicles on already congested roadways. As technologies continue to evolve policies and guidance will be developed for implementation. Meanwhile, the TPO recognizes that the planning process must be agile and adaptable with the implementation of new technologies, as policy and funding permit. The TPO will work collaboratively with federal, state, and local agencies and private sector to identify technologies that will improve the transportation system and create innovative mobility choices for all.

Future technologies and autonomous vehicles are addressed in Chapter 9 Emerging Technology. This chapter was reviewed by the Miami-Dade Department of Regulatory and Economic resources, Office of Resilience. No comments were received on this chapter.

## **SMART PLAN**

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The Strategic Miami-Area Rapid Transit (SMART) Plan is fully integrated into the 2045 LRTP. The 2045 LRTP Vision reinforces the SMART Plan, identifying the advancement of rapid transit projects as the Miami-Dade TPO's highest priority. The SMART Plan is identified as a new trend that has emerged since the adoption of the 2040 LRTP in October 2014 and is incorporated into the scenario planning process. Chapter 4 is devoted to the SMART Plan and provides updated information (as of LRTP adoption) addressing the Rapid Transit Corridors, BERT Corridors, Funding, Land Use Scenario Visioning and Planning, Preparing for the SMART Plan, and Achievements. This information was closely coordinated with the Miami-Dade TPO.

## **APPLICATION OF PERFORMANCE MEASURES AND TRANSPORTATION PERFORMANCE MANAGEMENT**

Performance-Based Planning and Programming (PBPP) is emphasized throughout the development of the Miami-Dade 2045 LRTP. The National Performance Management Measures (PM) are identified and explained in Chapter 2 of the LRTP document and include:

- » Safety (PM1)
- » Pavement and Bridge (PM2)
- » System and Freight (PM3)
- » Transit Asset Management
- » Transit Safety Performance

In addition, the PMs 1 – 3 were evaluated in the scenario planning process and for the Cost Feasible Plan. A Systems Performance Report addressing the Cost Feasible Plan is documented in Chapter 7 and incorporates requirements of the Florida MPO Handbook. In addition, projects in the Cost Feasible Plan that address the PMs are identified in the list of projects.

## **CONGESTION MANAGEMENT PROCESS UPDATE**

The Congestion Management Process (CMP) Update was coordinated with the TPO and done as a concentrated effort through this LRTP process. The CMP update is documented in a separate report.

## FREIGHT PLAN

The 2018 Miami-Dade Freight Plan was prepared prior to the onset of the Miami-Dade 2045 LRTP by Marlin Engineering, Inc. The Freight Plan provided a list of Freight “Direct,” projects that have an immediate and direct impact on freight mobility, prioritized by short-, Mid-, and long-term proposals for construction. Projects from the mid- and long-term freight direct list of projects were reviewed and prioritized based on the following criteria:

- » Annual Average Daily Truck Traffic (AADTT)
- » Inclusion within the FDOT SIS
- » Inclusion within the FDOT National Highway Freight Program
- » Inclusion of Freight Bottleneck segments as described in “Bottlenecks on Florida SIS” study (2015, FDOT) or the 2018 Miami-Dade Freight Plan Update
- » Inclusion of segments or intersections/interchanges in the High Crash List or High Truck Crash List
- » Location within industrial land use or warehouse district

Each project was ranked based on the AADTT and then assigned additional points based on the remaining criteria. Given “Safety and Security” and “Agile, Resilient, and Quality Infrastructure” are two of the top freight goals, the criterion of inclusion in the High Crash List or High Truck Crash List and Freight Bottleneck segments were assigned double the points than the rest. All other criteria were equally weighed.

Cost estimates were researched from previous reports and updated to 2018 dollars or developed based on project description. Cost estimates provided by modal partners or within 2018 Miami-Dade Freight Plan Update were adjustment using advisory inflation factors for previous years (1987-2018) provided by FDOT. Freight projects were incorporated into the freight portion of the Cost Feasible Plan by priority, and available freight set-aside funds identified.

## MIAMI-DADE 2045 BICYCLE PEDESTRIAN MASTER PLAN

The Miami-Dade 2045 Bicycle Pedestrian Master Plan was coordinated with the TPO and done as a concentrated effort through this LRTP process. The 2045 Bicycle Pedestrian Master Plan is document in a separate report.

## REGIONAL TRANSPORTATION PLAN (RTP)

The development of the Miami-Dade 2045 LRTP was coordinated with the development of the Southeast Florida Regional Transportation Plan (RTP). Coordination included model coordination with the RPT scenarios, participation in the Regional Transportation Technical Advisory Committee (RTTAC) – Modeling Subcommittee meetings, and information exchange. Information was provided to the regional consultant team as requested and included: the 2040 Cost Feasible Plan and corresponding Excel files, Existing plus Committed (E+C) projects (shapefiles), and 2045 Cost Feasible Plan and corresponding (shapefiles). The TRP is scheduled for adoption in 2020. The Miami-Dade 2045 LRTP consultant team will continue to provide information on the Miami-Dade 2045 LRTP as needed.

## **RESILIENCY, TOURISM, ENVIRONMENT, SUSTAINABILITY, LIVABILITY, & CLIMATE CHANGE**

### **RESILIENCY, ENVIRONMENT, SUSTAINABILITY, AND CLIMATE CHANGE**

Resiliency, Environment, Sustainability, and Climate Change are addressed in Chapter 8 Sustainability of the LRTP document. Much research was done in these areas and the most recent work done in Miami-Dade County was reviewed and documented.

The Federal Highway Administration (FHWA) describes sustainability as a, “commitment that encompasses economic, environmental, and social considerations.”<sup>1</sup> Sustainability is a broad focus and a way of meeting basic needs, while protecting the environment and human health, and promoting a competitive economy that efficiently uses the earth’s resources. Climate change and extreme weather events present growing safety and sustainability risks to the community and affect the life-cycle and durability of transportation systems. When planning for the future, it is important to consider the impact infrastructure and technologies have on the environment as well as the ways in which the environment will impact infrastructure, the economy, and the way we live. Ensuring that the infrastructure and the community are resilient to extreme weather events is a primary goal when it comes to sustaining the Miami-Dade community.

Resiliency, Environment, Sustainability, and Climate Change are addressed by Goals 5 and 8 and their associated objectives as listed below:

#### **GOAL 5: PROTECT AND PRESERVE THE ENVIRONMENT AND QUALITY OF LIFE AND PROMOTE ENERGY CONSERVATION**

##### **OBJECTIVES**

- » Preserve agricultural land or critical habitat consumed by transportation projects
- » Minimize and mitigate air and water quality impacts of transportation facilities, services and operations
- » Promote projects that support urban infill and densification

#### **GOAL 8: IMPROVE AND PRESERVE THE EXISTING TRANSPORTATION SYSTEM**

##### **OBJECTIVES**

- » Improve the resiliency/reliability of the transportation system
- » Reduce the vulnerability and increase the resilience of critical infrastructure to the impacts of climate and events. Preserve infrastructure (sustainability and resilience)

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<sup>1</sup> *Success in Stewardship*. U.S. Department of Transportation Federal Highway Administration. [https://www.environment.fhwa.dot.gov/Pubs\\_resources\\_tools/publications/newsletters/nov12nl.aspx..](https://www.environment.fhwa.dot.gov/Pubs_resources_tools/publications/newsletters/nov12nl.aspx..)

- » Site and design new transportation infrastructure to minimize exposure to sea level rise within the infrastructure life span, based on the Southeast Florida Regional Climate Change Compact's 2015 Unified Sea Level Rise Projection
- » This chapter was reviewed by the Miami-Dade Department of Regulatory and Economic resources, Office of Resilience and their comments are included in the final 2045 LRTP documentation.

## TOURISM

As a major national and international tourist destination, and the Cruise Capital of the world, Miami-Dade County attracts millions of visitors each year. Tourism has always been a consideration in developing Miami-Dade LRTPs. Through the LRTP process the additional demand on the transportation system due to the large number of tourists is considered in the planning process along with improved connections to tourist destinations. Those responsible for tourist are part of the Miami-Dade TPO outreach list. The importance of tourism is seen through one of the two additional Federal Planning Factors implemented under the FAST Act – *enhance travel and tourism*. Tourism continues to be addressed in the development of the Miami-Dade LRTPs through:

### GOAL 4: SUPPORT ECONOMIC VITALITY

#### OBJECTIVE

- » Provide access to tourist destinations – seaports, airport, beaches, etc.

## LIVABILITY

Livability is addressed several times throughout the LRTP document. The implementation of the SMART Plan will improve livability in Miami-Dade County by providing additional mobility choices. The Sustainability efforts documented in Chapter 8 will also improve the livability in the County. The scenario planning process included an Alternative Land Use scenario which shifted the projected 2045 population and employment growth concentrated along the rapid transit corridors. However, additional land use is being addressed through separate initiatives that support the rapid transit corridors.

The development of the Bicycle/Pedestrian 2045 Master Plan, a two mile radius around proposed SMART Plan terminals/hubs were analyzed for proposed bicycle and pedestrian connections which will enhance livability.

Livability is addressed in the development of the Miami-Dade LRTP through:

### GOAL 8: PROTECT AND PRESERVE THE ENVIRONMENT AND QUALITY OF LIFE AND PROMOTE ENERGY CONSERVATION

#### OBJECTIVE

- » Improve the Quality of Life for all ages and abilities

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