



MDX 2040 Long Range Master Transportation Plan (LRMTP)



March 2016

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INTRODUCTION

The Miami-Dade Expressway Authority (MDX) is a local agency of the state, created in 1994 by the State of Florida and the Miami-Dade Board of County Commissioners. Effective December 10, 1996, MDX assumed responsibility of various non-interstate expressways operating in Miami-Dade County through a purchase agreement executed with the Florida Department of Transportation (FDOT). MDX is governed by its Board, comprised of 13 volunteer members appointed by the Board of County Commissioners and the Governor of the State of Florida. The District VI Secretary of Transportation sits on the Board as its 13th member.

In 1998, MDX adopted its first Long Range Master Transportation Plan (LRMTP) to address transportation improvements to its system serving the needs of Miami-Dade County through the year 2020.

The plan is updated regularly in order to provide input into the Miami-Dade Metropolitan Organization's (MPO) Long Range Transportation Plan (LRTP) process.

MDX has updated its plan every five years (2025; 2030; and 2035). This document encompasses the MDX 2040 LRMTP update. The plan outlines the agency goals and objectives, system characteristics and needs, and projects included in the regional MPO 2040 LRTP. This plan also identifies future potential improvements that have resulted from previous studies and analysis and also from the ongoing Strategic Master Plan process. The projects resulting from the Strategic Master Plan process will be the basis and guidance for future investment of MDX funds and resources to further develop transportation and mobility options within the Miami-Dade community. Any future projects identified for further development will be coordinated with the MPO's next update cycle. The 2040 LRMTP update also summarizes key systemwide project accomplishments and partnerships.

The plan:

- Summarizes key existing travel patterns on the MDX system
- Identifies completed steps in the expansion and improvement of the existing MDX system, inclusive of closing the system through Open Road Tolling (ORT).
- Identifies anticipated future growth over a 25-year timeframe consistent with other regional planning efforts.
- Identifies successful partnerships with other agencies that have contributed to improved mobility in the County.
- Summarizes on-going efforts that have identified new projects for further future evaluation and potential incorporation into the MPO LRTP.

1.0 GOALS AND OBJECTIVES

During a Board visioning process conducted in 2001-2002, the following mission and vision statements were established for the agency:

1.1 Mission and Vision Statements

“It is the mission of the Miami-Dade Expressway Authority (MDX) to be an innovative transportation agency dedicated to the enhancement of mobility in Miami-Dade County.”

“MDX’s transportation system (System) will provide safe, affordable choices for the movement of people and goods in Miami-Dade County. The System will support and sustain economic opportunities in the South Florida region. It will be equitably tolled, well maintained, reliable, multi-modal and aesthetically pleasing while also being environmentally sensitive. This System will be planned, delivered and operated in cooperation with the MDX’s partners in the public and private sectors.”

1.2 Miami-Dade Expressway Authority Goals and Objectives

During 2014, MDX embarked on the update of its Strategic Master Plan (SMP) to provide a new vision and specific goals to direct the future of the Agency. The work done to date on the SMP has been directed through three committees of MDX Board members that focused on three distinct areas which were deemed the most critical to the future of MDX:

- The Projects Committee – looking at potential new ideas for mobility;
- Financial Committee – looking at sources and mechanisms that MDX could use;
- Technology Committee – focused on the impact that technology will have on mobility and financing.

During the Strategic Planning process, a framework for the future of MDX is evolving. The main points of this framework are:

- MDX must maintain and enhance its sustainability as an agency. The ability for MDX to generate sufficient revenues to finance expansion, improvements, and its operations is paramount if it is going to serve the public. As such, future projects must maintain a balance between them to make sure that the financial viability of the agency is enhanced.
- MDX needs to broaden its mission in order to serve the mobility needs of the community. Discussions have evolved beyond the current toll road system to consider other types of projects and in a broader geographical location.
- MDX is about improving the economic climate in Miami-Dade, and needs to provide special attention to projects that stimulate economic growth by improving commercial mobility and/or serving industrial areas of the County.
- MDX needs to work in partnership with the County, Municipalities and FDOT.
- MDX needs to focus on the ability to deliver the most effective transportation program to the community; delivering projects quickly and efficiently.

1.3 Description of Existing MDX System

MDX was established to provide local control over toll revenues along five major expressways in the County, to be invested locally to that would as a result, greater influence in easing traffic congestion throughout the County. MDX was tasked with maintaining, operating and enhancing this expressway system with the funding generated from tolls collected. MDX does not receive federal funds nor from the State’s Transportation Trust Fund, no gas tax, or local revenues from impact fees or any other tax. In fact, approximately 92% of its revenue comes from the tolls collected on its expressways and 8% from other minor investments or leases. Consistent with the original intent for establishing MDX, all tolls are fully dedicated to transportation

enhancement projects in Miami-Dade County. The MDX system, encompassing more than 35.2 center-lane miles, consists of the following tolled roadways:

- SR 836/Dolphin, 14 miles long, is the only east-west expressway in Miami-Dade County. Its western terminus is at NW 137th Avenue and its eastern terminus is at Interstate 95 in Downtown Miami.
- SR 112/Airport Expressway, 4.1 miles long, runs from Miami International Airport (MIA) east to Interstate 95 connecting with Miami Beach. The expressway parallels NW 36th Street - which runs to the south of the expressway for its entire length.
- SR 874/Don Shula Expressway, 7.2 miles long, runs diagonal from the Homestead Extension of Florida's Turnpike (SR 821/HEFT) northeast to SR 826/Palmetto Expressway. The entire freeway follows the South Florida Rail Corridor (SFRC).
- SR 878/Snapper Creek Expressway, 3 miles long, is an east-west expressway that parallels Snapper Creek between SR 874/Don Shula Expressway and U.S. 1/SR 5 (Dixie Highway). The expressway generally traverses through the north Kendall area SR 878 has interchanges with SW 72nd Avenue and SW 87th Avenue. It ends at an at-grade intersection at U.S. 1.
- SR 924/Gratigny Parkway), 5.4 miles long, is an east-west expressway that connects Interstate 75 and SR 826/Palmetto Expressway to NW 32nd Avenue. At this terminus, the parkway turns into Gratigny Drive/NW 119th Street which is a surface street. Interchanges are located at SR 953, the LeJeune/Douglas Connector, and at West 4th Avenue/NW 57th Avenue.
- In February 2012, a controlled access arterial, N.W. 138th Street, was transferred to MDX from Miami-Dade County and will constitute future partial western extension of Gratigny Parkway to the Turnpike. It is a 6 lane road, built to Miami-Dade County standards, that spans from Okeechobee

Road/SR 25 to the FDOT right-of-way at I-75. It constitutes an approximate 1.5 mile addition to the MDX system. The agency's intent is to connect this facility to Florida's Turnpike as part of the Gratigny West Extension project which is presently only funded for design. This 1.5 mile segment of the MDX system will not be tolled. Tolling components will be at the connection with the Turnpike on the west and I-75 on the east.

1.4 2040 LRMTP Study Process

MDX participates as one of the transportation partners in the development of the MPO's Long Range Transportation Plan process and was involved in the development of the most recent update to 2040. The MPO 2040 LRTP update was officially adopted in October 2014 by the MPO Board. The first five years of projects (Priority 1) listed in the plan constitute MDX's Five Year Work Program (see **Figure 1**). During yearly updates of the MDX Five Year Work Program, projects are advanced from later LRTP priorities based on available funding. If a new project is identified for inclusion in the MDX work program and it is not included in the MPO LRTP, then an MPO plan amendment is requested.

Significant MDX changes included in the MPO 2040 LRTP update comprised of the implementation of all electronic tolling on the MDX system, completed in 2015, and removal of projects that are not on the MDX system or were being studied by others. These projects that are no longer being considered for further evaluation or implementation by MDX include:

- Airport/Seaport Managed Lanes
- US-1 Managed Lanes (Dadeland to I-95)
- US 27 Okeechobee Road

Subsequent to the adoption of the MPO LRTP 2040 update, MDX normally completes an update of their plan to the year 2040 as well. This document constitutes the 2040 LRMTP update for MDX.

Figure 2 highlights the major MDX projects included in the MPO 2040 plan which are also part of the MDX 2040 plan.

- US 1 express lanes (20003)

The following seven (7) major projects are Priority 1 (first five years):

- SR 836 widening from 17th Avenue to I-95 Interchange (83611)
- SR 836 operational, capacity and interchange improvements (83628)
- SR 836 interchange modifications at 87th Avenue (83629)
- SR 874 ramp connector to SW 128th Street (87410)
- SR 924 extension west to Florida's Turnpike (92404)

The following Priority 1 projects were included as amendments (February 2016) to the 2040 MPO plan:

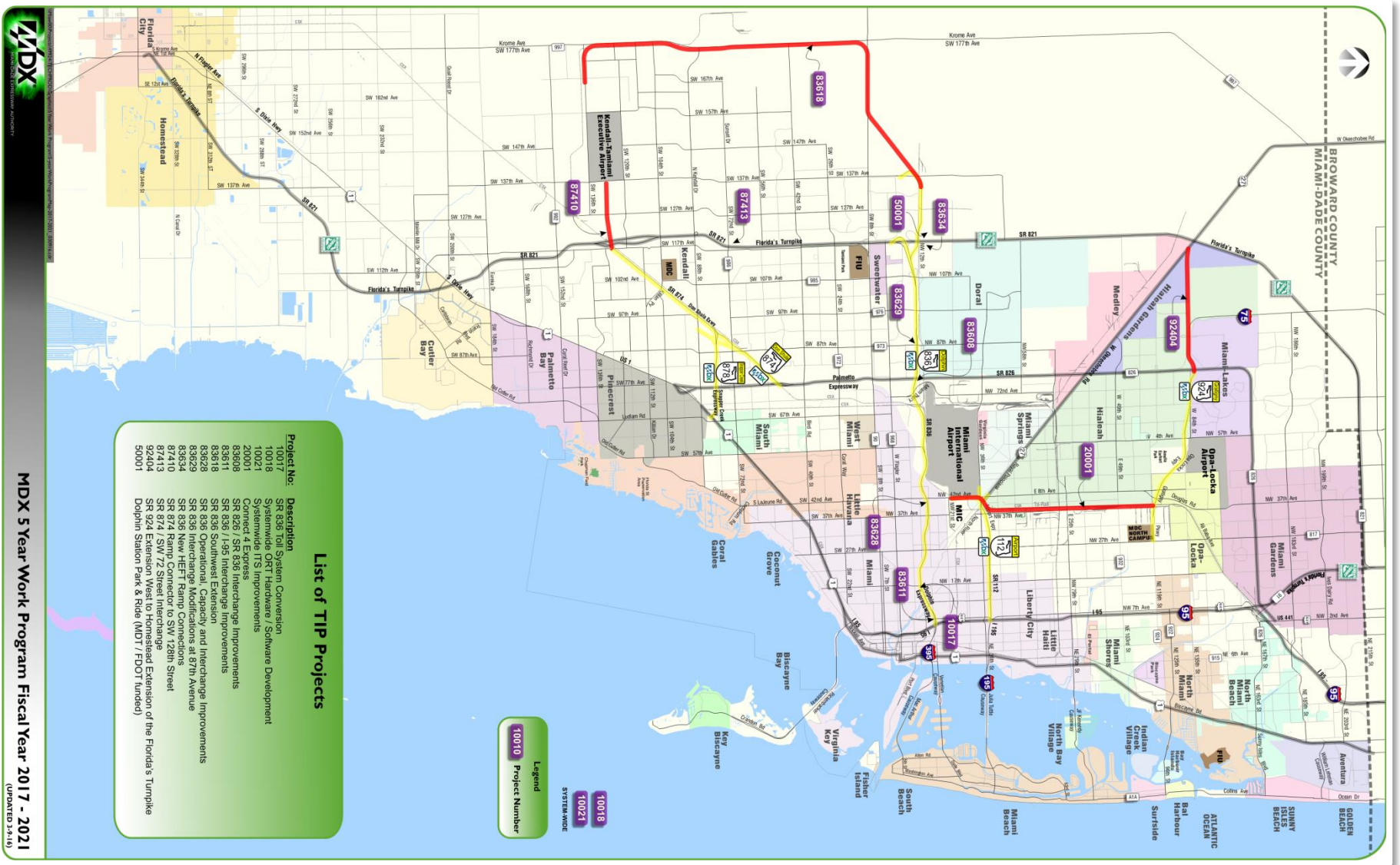
- Addition of ramps at SR 836 and Florida's Turnpike (83634)
- Addition of ramps at SR 874 and SW 72nd Street (87413)

All other projects are longer term Priorities III and IV (beyond 2026). However, as funding becomes available and priorities change, the MDX projects can move forward in schedule.

Long Term projects under evaluation include:

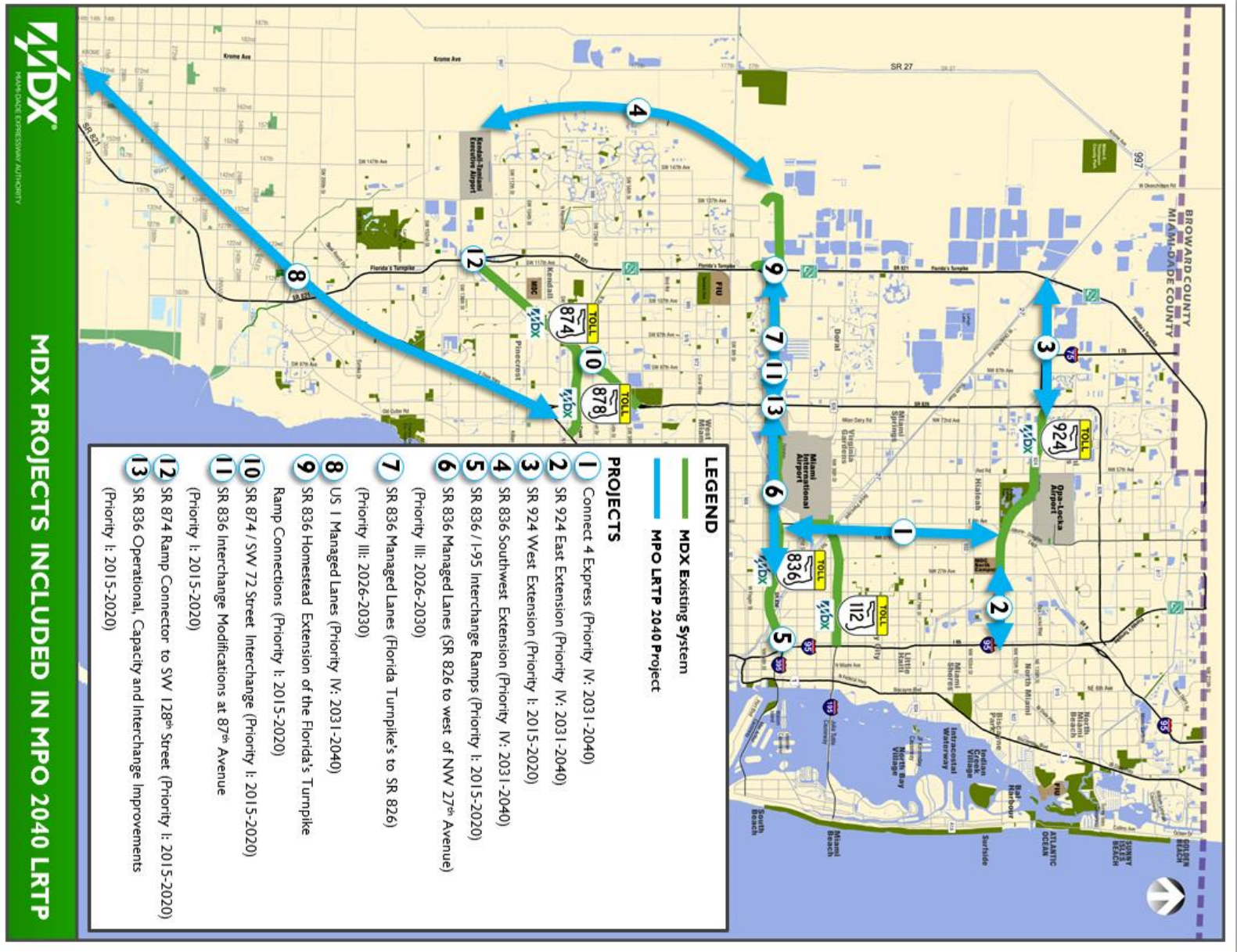
- SR 836 managed lanes
- SR 836 southwest extension (83618)
- SR 924 extension east to I-95 (92407)
- Connect 4 Express (20001)

Figure 1: MDX Short Term Five Year Work Program



Source: MDX Five Year Work Program Map 2016

Figure 2: MDX Projects included in MPO 2040 LRTP



Source: MDX / Miami-Dade MPO Transportation Plan 2040

In addition, as MDX completes its Strategic Master Plan process, it may identify additional projects and multi-agency partnerships that would need to be incorporated to the MDX LRMTP.

In this MDX 2040 LRMTP update, the short-term projects currently identified in the Strategic Master Plan are presented for information and discussion in Chapter 3. Some of these projects will require further evaluation to determine their feasibility and project development studies will be required. Exploratory projects identified in the Strategic Master Plan process, such as the development of intermodal centers, will not be included in this update as they are still part of continuing MDX Board discussion and decisions.

The 2040 update to the MDX LRMTP is consistent with the MDX vision statement, directives and specific goals and objectives previously outlined. This new 2040 MDX Plan will guide future MDX project implementation throughout the County.

2.0 MDX SYSTEM CHARACTERISTICS AND NEEDS

This chapter summarizes technical information related to traffic conditions and general operating characteristics of the existing MDX expressway system.

In 2006, the MDX Board approved the Open Road Tolling (ORT) Master Plan. ORT is an all- electronic toll collection system without toll booths where traffic flows unimpeded at highway speeds and tolls are collected electronically through transponders (Sunpass) or by video scanning of a license plate. Because MDX’s system was basically open, not all users paid a toll. In fact prior to the implementation of ORT only 42% of the users paid a toll. In order to establish a more equitable tolling scenario, where all users paid for the segment they used, as electronic toll collection was deployed, all expressways were closed similar to the Turnpike system. SR 924/Gratigny Parkway and SR 874/Don Shula and SR 878/Snapper Creek Expressway were converted to ORT in 2010. The two additional expressways, SR 836/Dolphin Expressway and SR 112/Airport Expressway were converted to ORT on November 2014. Presently the MDX Expressway system is an Open Road Tolling closed system where its users pay a toll only for the segment they drive (for more information on ORT go to www.mdxway.com).

In 2014, MDX completed an Investment Grade Traffic and Revenue Study (T&R study) to accompany a bond issuance. The following table from the T&R study summarizes the existing Level of Service (LOS) for the MDX system roadways. Estimated roadway capacity and generalized LOS guidelines were established from FDOT’s 2013 Quality/Level of Service Handbook. LOS for highways describes a quantitative stratification of the quality of service to a typical traveler on a facility into six letter grade levels with “A” describing the highest quality and “F” describing the lowest quality. LOS standards designate the lowest acceptable operating conditions for the 100th highest volume hour of the year in the predominant traffic flow direction. The 100th highest volume hour represents the typical peak hour during the peak season. Definitions and measurement criteria used for minimum LOS standards are based on the Transportation

Research Board Highway Capacity Manual 2000. **Table 1** presents the LOS criteria for MDX roadways that can be used to identify critical needs and help prioritize projects.

Table 1: LOS Criteria for MDX Roadways

Existing System Level of Service (LOS) Summary

Roadway ⁽¹⁾	Existing Conditions			Generalized Level of Service	
	No. of Lanes (mainline+aux.)	Maximum Daily Service Volume (veh/day)	AADT ⁽²⁾ 2012	Volume to Capacity Ratio	LOS
Dolphin Expressway / SR 836					
Bet. NW 137 Avenue - HEFT	4+0	84,600	24,000	0.28	A
Bet. NW 107 Avenue - NW 87 Avenue	8+0	176,600	125,427	0.71	C
Bet. NW 72 Avenue - NW 57 Avenue	8+0	158,940 ⁽⁴⁾	184,500	1.16	F
Bet. NW 27 Avenue - NW 17 Avenue	6+0	117,540 ⁽⁴⁾	147,500	1.26	F
Airport Expressway / SR 112					
Bet. LeJeune Road - NW 27 Avenue	6+0	130,600	100,500	0.77	D
Bet. NW 17 Avenue - NW 12 Avenue	9+0	199,650	100,500	0.50	A
Don Shula Expressway / SR 874					
Bet. HEFT - Killian Parkway	6+0	130,600	77,000	0.59	C
Bet. Killian Parkway - Kendall Drive	6+4	210,600 ⁽³⁾	107,500	0.51	A
Bet. SR 878 - SR 826 ⁽⁵⁾	4+0	76,140 ⁽⁴⁾	76,500	1.00	F
Gratigny Parkway / SR 924					
Bet. SR 826 - NW 57 Avenue	6+0	130,600	47,000	0.36	A
Bet. NW 57 Avenue - LeJeune Road	6+0	130,600	27,000	0.21	A
Snapper Creek Expressway / SR 878					
Bet. SR 874 - SW 87 Avenue	4+0	84,600	40,000	0.47	A
Bet. SW 87 Avenue - SW 72 Avenue	4+0	84,600	41,500	0.49	A

Notes:

- 1) All data presented in this table pertains to mainline sections of the designated roadways in the vicinity of each existing or proposed toll gantry/plaza.
- 2) Annual average daily traffic volumes (“AADT”) for calendar year 2012 obtained from the 2012 FDOT Traffic Information DVD.
- 3) Based on the 2012 FDOT Generalized Level of Service table, Max. Daily Service Volume adjusted by (+20,000 veh/day) for auxiliary lane.
- 4) Based on the 2012 FDOT Generalized Level of Service table, Max. Daily Service Volume adjusted by (-10%) for oversaturated conditions.
- 5) MDX is currently completing the expansion of this section of roadway to 6 + 0. As a result, the LOS will improve.

Source: MDX Toll System Revenue Bonds Series 2014A, 2014 (2012 Traffic data)

As indicated, demand exceeds capacity on segments of SR 836. Several roadway projects in the MDX work program will specifically address this capacity issue.

2.1 MDX Trip Patterns and Characteristics

Data collected from the Traffic and Revenue Study was further analyzed to document travel patterns and characteristics of MDX customers. General findings were as follows:

- The top three areas that contribute trips to the MDX system are Doral/Sweetwater areas, the Airport/Blue Lagoon areas and the Brickell/Flagler areas, in that respective order
- Trips on the MDX system represent 10.8% of all trips within Miami-Dade County
- Under congested conditions, the average MDX trip using the MDX system takes 26.5 minutes and the average trip using other roads takes 32.6 minutes
- The average trip using the MDX system is 13.2 miles consisting of 7.4 miles of expressways, 2.5 miles on arterials, 1.9 miles on local streets and 1.3 miles on freeway ramps. Of this trip, only 4.8 miles are on MDX facilities
- The average trip not using the MDX system is 12.6 miles and uses more arterials and local streets

Where total trip costs are estimated as Distance costs + Value of time + Tolls paid; the average MDX total trip cost is \$10.79, whereas a non-MDX total trip cost is \$11.67.

2.2 Miami-Dade County Characteristics and Needs

As mentioned previously, MDX's main goal is to provide mobility and ease congestion in Miami-Dade County. Growth, employment, and transportation data is regularly used by MDX to determine the need and the most efficient use of its capital investments. For example in the recent Five Year Work Program, 85% of the investment has been allocated to improvements to the most critical and most congested segments of SR 836, as it serves major employment centers within Miami-Dade County and it connects the

Port Miami and the Miami International Airport. In addition, studies and design plans are on-going in order to provide additional east west expressway connections along the SR 924 Gratigny Expressway as well as the provision of a new ramp on SR 874 reaching out to the most congested portions of West Kendall. This section contains a summary of regional information from the County and the MPO 2040 LRTP that supports MDX future program needs. The MPO 2040 LRTP uses updated growth and employment information developed by the County incorporating the most recent available U.S. Census information.

2.2.1 Miami-Dade County Comprehensive Development Master Plan (CDMP)

Similar to many American cities, Miami-Dade County experienced a significant amount of growth in the early 1920's. Moreover, the mobility provided by the emergence of the automobile resulted in predominantly dispersed land use patterns throughout Miami-Dade County and created a city model with many centers. During the late 1950's and early 1960's, the first two major expressways constructed in Miami-Dade County were the Palmetto Expressway (SR826) and the Airport Expressway (SR 112) to Miami Beach; the latter one as a toll road. These increases in transportation capacity addressed the accessibility need of the western fringes of the County. In the 1960s, the development of the area of Kendall created a major residential area in conjunction with the development of Dadeland Mall as its major commercial center.

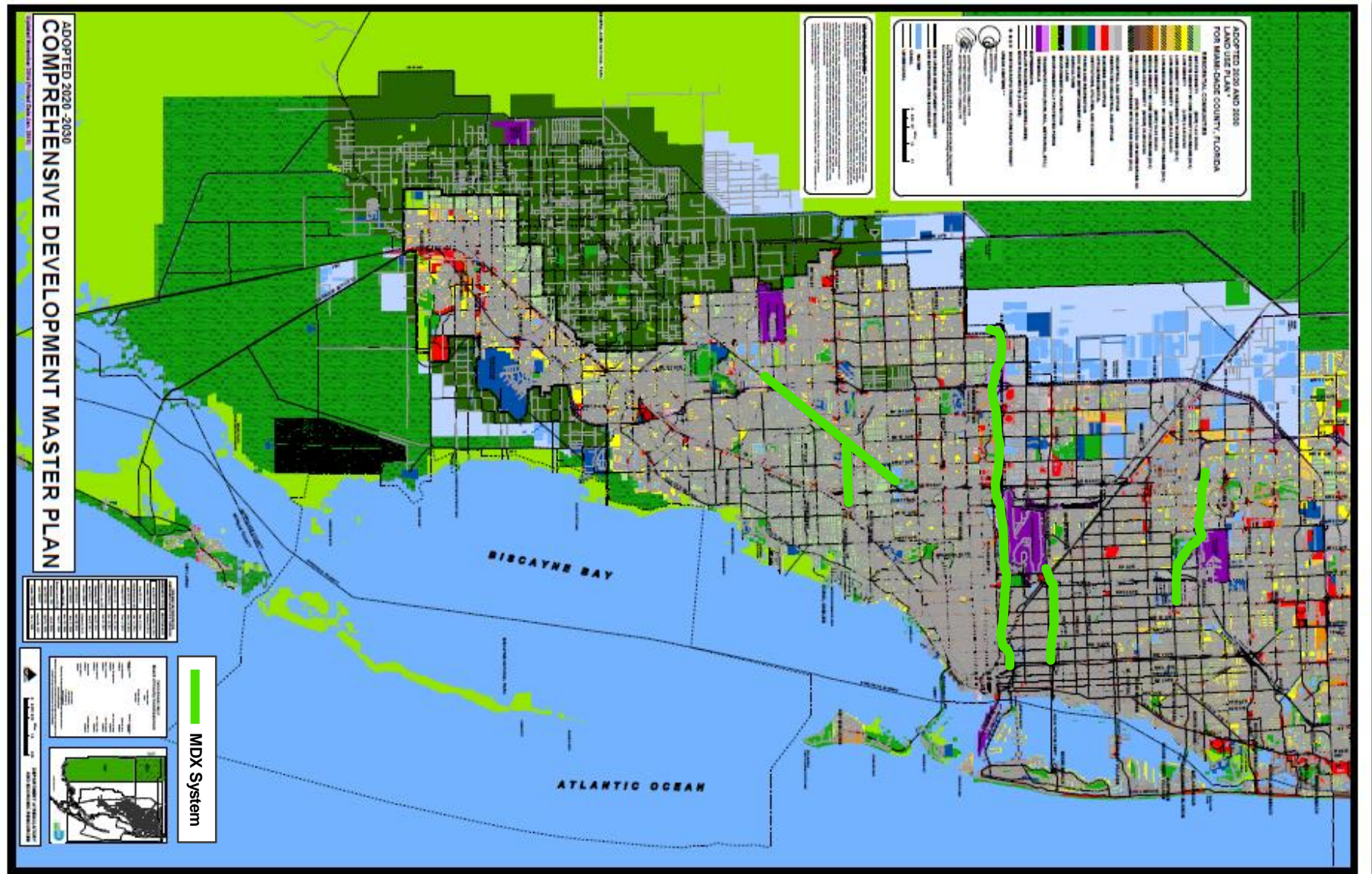
As air travel increased and air cargo grew, Miami International Airport (MIA) became a major employment hub. Major industrial and distribution uses migrated from the area near the old Port of Miami, in what is now Park West, to the NW 37th Avenue corridor adjacent to the CSX rail line. Expressway access from SR 826 and SR 112 provided the opportunity to develop easily accessible vacant lands for industrial use in close proximity to the airport.

Sprawling westward growth to the airport and Kendall areas contributed to a process of decentralization of employment centers with increased spatial separation between residential areas and work places. These trends in growth patterns that started in the late 1950's

and 1960's established the present land use pattern of Miami-Dade County and the multi-centers that shape its urban form today.

As evidenced by the County's Comprehensive Development Master Plan (**Figure 3**), the urban development pattern is characterized by high-density (commercial and residential) urban areas on the eastern edges along the bay, on nearby barrier islands, major commercial corridors, and employment centers, with lower density residential development to the west.

Figure 3: Adopted 2020 and 2030 Land Use Plan



Source: Miami-Dade County Comprehensive Development Master Land Use Plan 2020 - 2030

The CDMP is a document that outlines land use policy including the urban development and public infrastructure in Miami-Dade County. The CDMP defines the need to have a supply of vacant land for residential, office and commercial development to accommodate the growing population of Miami-Dade County. It also guides the preservation of natural resources. The Urban Development Boundary (UDB) defines the westernmost limit where urban development may occur by 2015. The plan also defines a 2025 Expansion Area Boundary. Both boundary lines are represented in **Figure 4**. Applications for changes to the CDMP are subject to approval by a majority vote of the Miami-Dade Board of County Commissioners with the input from the State of Florida. Most major activity centers in Miami-Dade County have expressway and/or transit access. The CDMP states that “diversified urban centers are encouraged to become future hubs for future urban development intensification. Regional and metropolitan centers should also have convenient, preferably direct connections to a nearby expressway or major roadways to ensure a high level of countywide accessibility.”

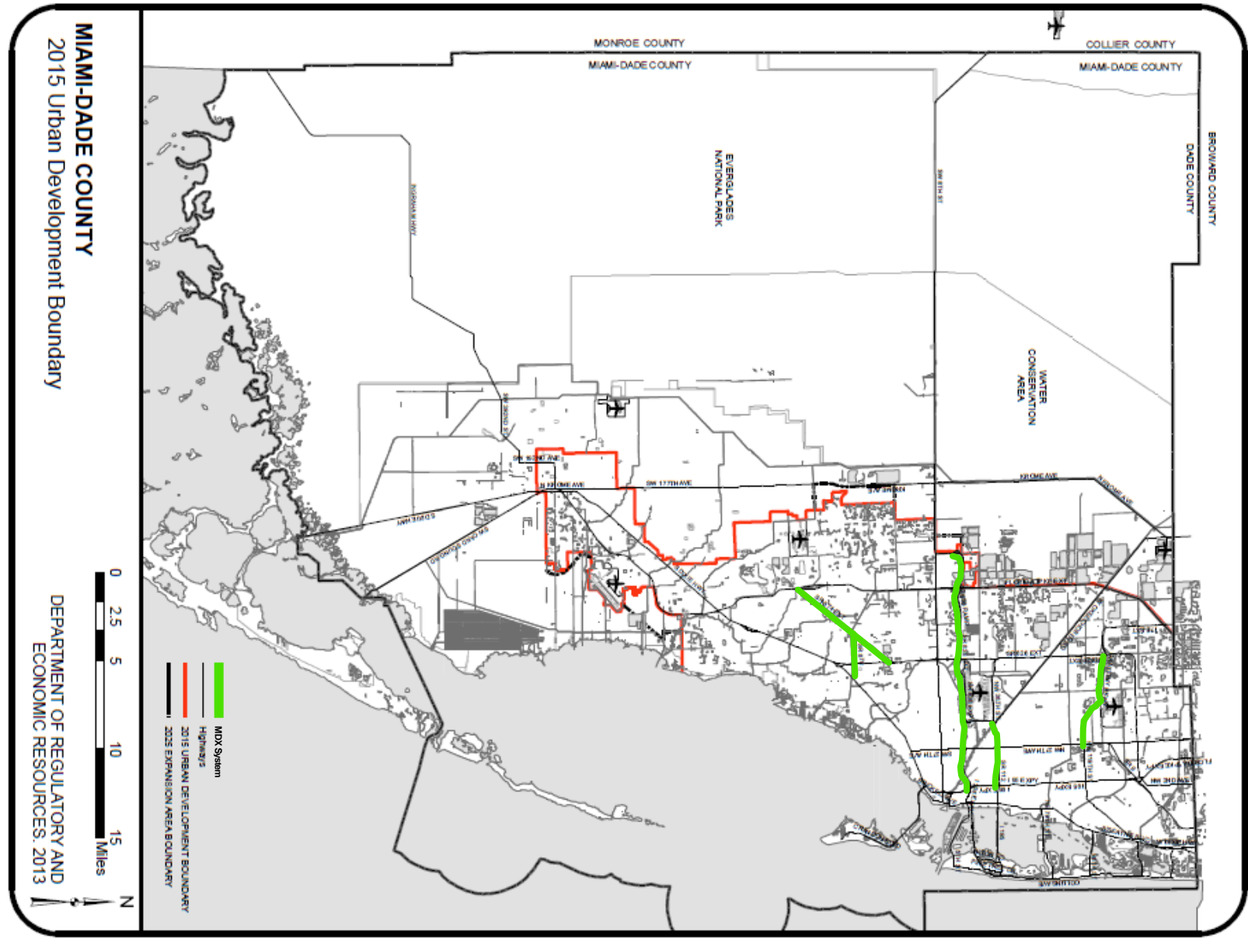
Current development trends support the case for better transportation service via expressway and transit access to serve the communities of Miami-Dade County. Providing these vital transportation services will support the CDMP goal of diversification of urban centers and assist them in becoming regional centers.

2.2.2 Role of MDX in Economic Development

The MDX system strategically links major economic and employment centers with the population it serves and the visiting public. SR 836 is the economic artery of Miami-Dade County providing access to the interstate system, Port Miami and MIA and major distribution centers located in western Miami-Dade County. The MDX system also serves tourism industry by providing connections to MIA via SR 836 and SR 112 as well as access to tourist attractions and major hotel and convention areas on the Beaches and in Downtown Miami.

Following MDX Board directives from visioning processes, master planning efforts are to make a conscious effort to identify projects that provide improved access to employment centers in Miami-Dade County and generate economic opportunities for disadvantaged communities. Improved transportation has a direct link to attracting investment and redevelopment opportunities to Miami-Dade County.

Figure 4: 2015 Urban Development and 2025 Expansion Area Boundaries



Source: Miami-Dade County Department of Regulatory and Economic Resources 2013

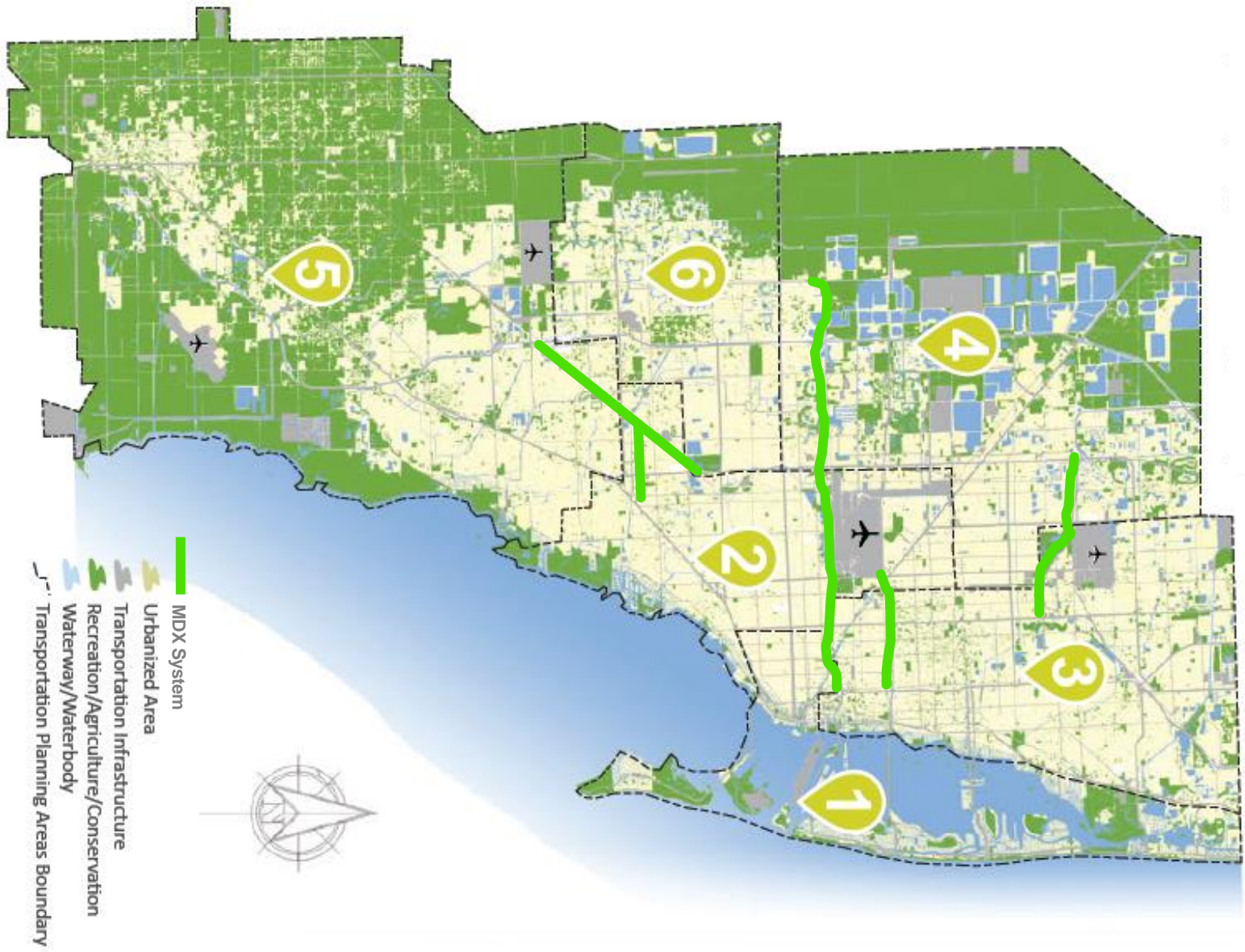
2.2.3 Growth and Development Forecasts

Information gathered from the 2010 U.S. Census indicates that from 2000 to 2010, population in Miami-Dade County grew by almost 11 percent, from 2.3 million people in 2000 to 2.5 million people in 2010.

According to the most recent 2040 Miami-Dade County LRTP estimates developed by the MPO, the population of Miami-Dade County is expected to exceed three million, with a 33% growth from 2010 to 2040. Between 2010 and 2040, employment will increase by 45% to almost 2 million employees, up from 1.4 million in 2010.

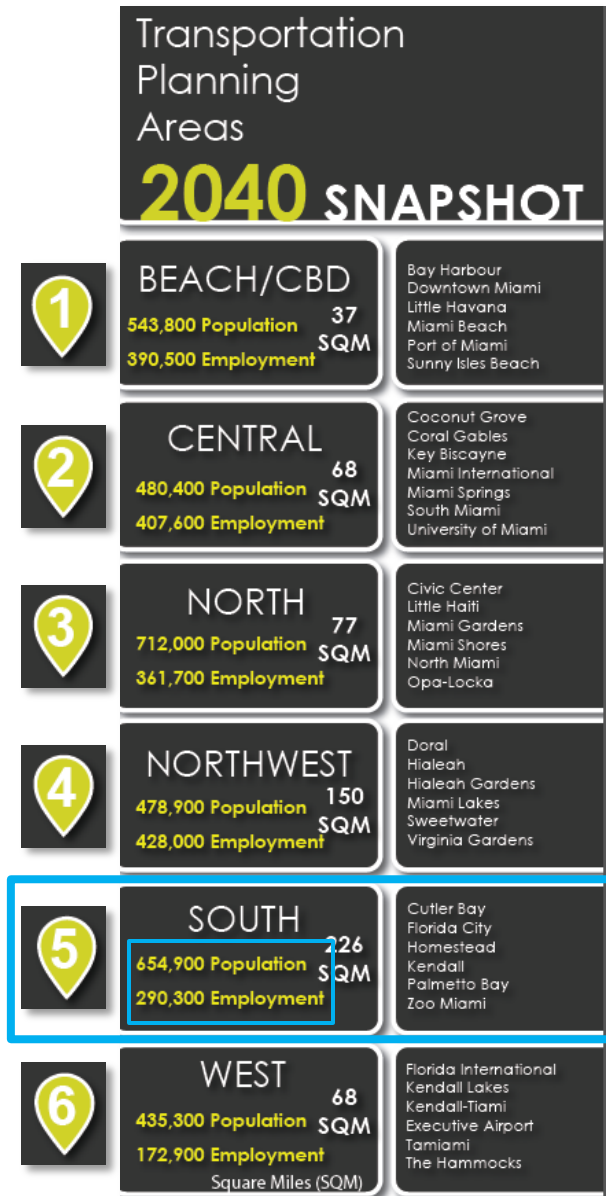
The Miami-Dade MPO utilizes transportation planning areas for expressing more detailed information which is provided as **Figure 5**. A summary of statistics by planning area is included in **Figure 6**.

Figure 5: Transportation Planning Areas Map



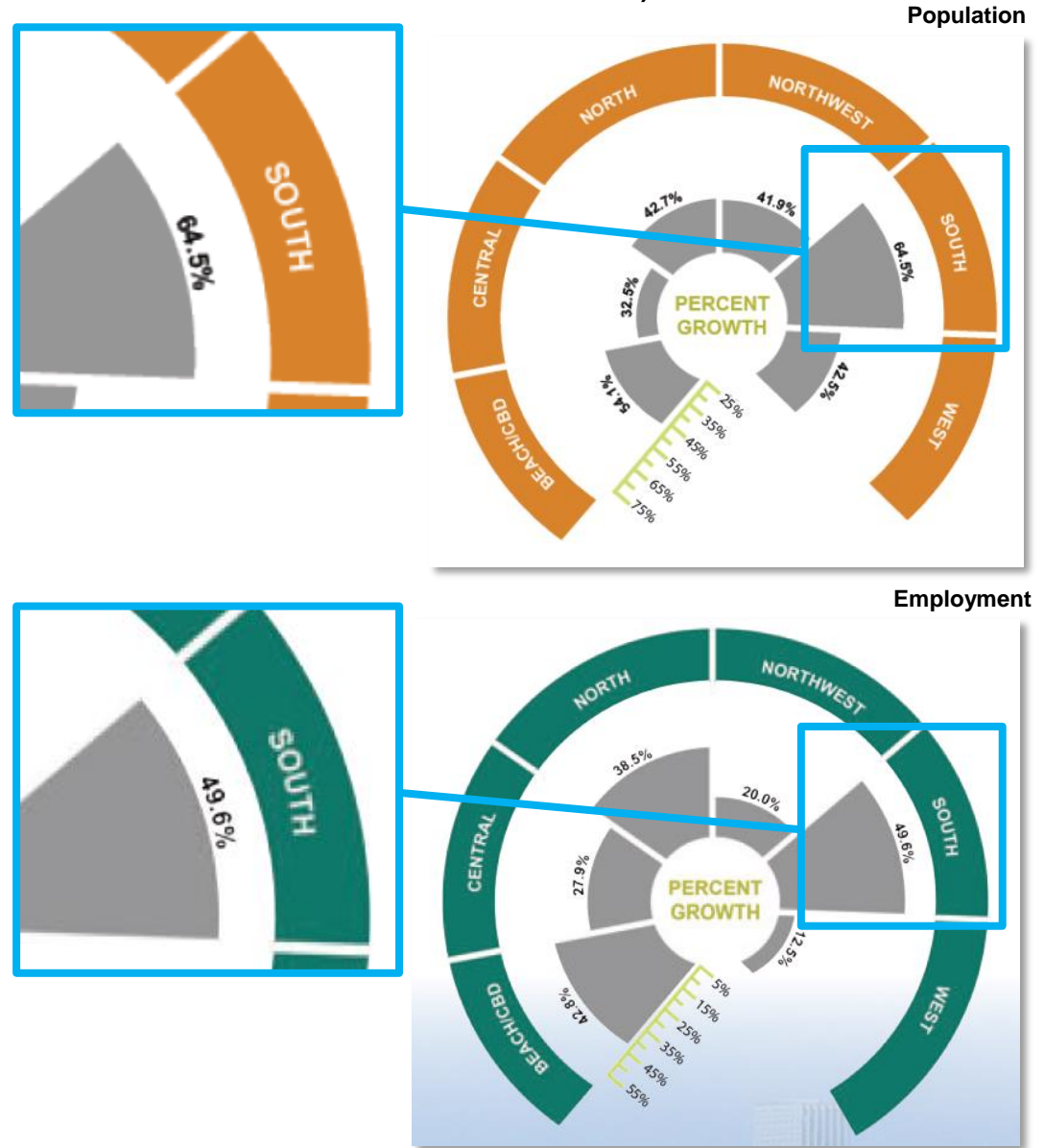
Source: Miami-Dade MPO Transportation Plan 2040

Figure 6: Transportation Planning Areas Summaries (2040)



Source: Miami-Dade MPO Transportation Plan 2040

Figure 7: Projected Population & Employment Growth (2010 - 2040)



Source: Miami-Dade MPO Transportation Plan 2040

According to the MPO 2040 LRTP, population and employment growth is expected to be mostly concentrated in the south planning area. The area is composed mostly of residential development and this trend is forecasted to continue.

As indicated in **Figure 6**, the total population in 2040 in the south planning area is anticipated to be approximately 654,900, a substantial increase of 65% in population from 2010 (**Figure 7**). Also shown in **Figure 6**, employment in the south planning area is expected to be 290,300 by 2040, a 50% increase in employment from 2010 (**Figure 7**) which is also a considerable increase.

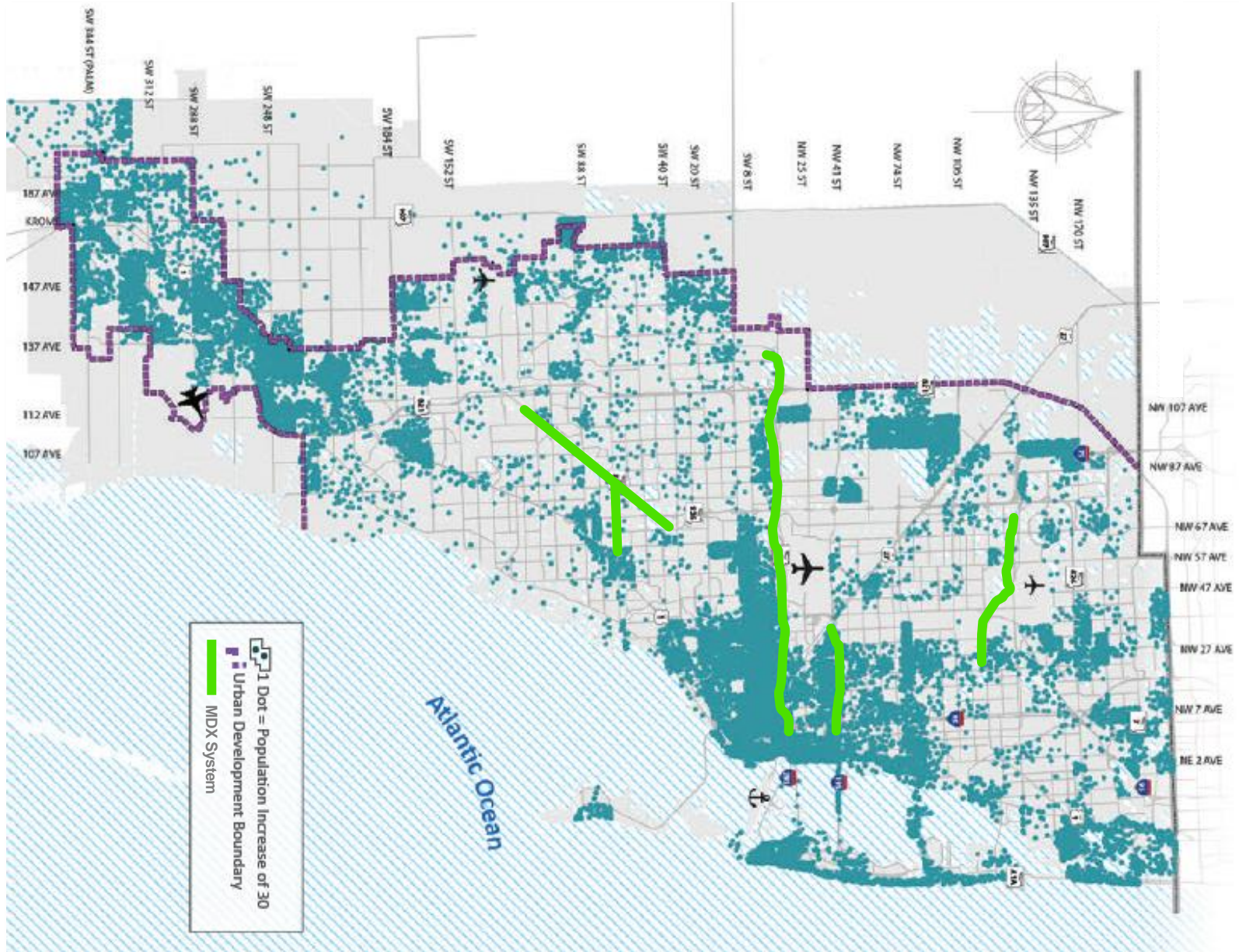
All areas of the County are seeing continued development and population growth, resulting in significant traffic volumes that are surpassing the expressway facilities capacity throughout Miami-Dade County. As expressed in the MPO 2040 LRTP, congestion in Miami-Dade County roadways causes over 174 million hours of delay per year, which in turn costs \$4 billion in lost time in the workforce, including productivity.

Miami-Dade County residents and visitors exact a large demand on the existing transportation system. Estimated growth is expected to further exacerbate already congested County roadways without improvements to the transportation system.

MDX's continued planning efforts are focused on serving population and employment growth and congestion with new projects that can provide opportunities for system linkage to existing expressway and existing transit corridors, resolving the issue of congestion, and continued accessibility to the growing areas.

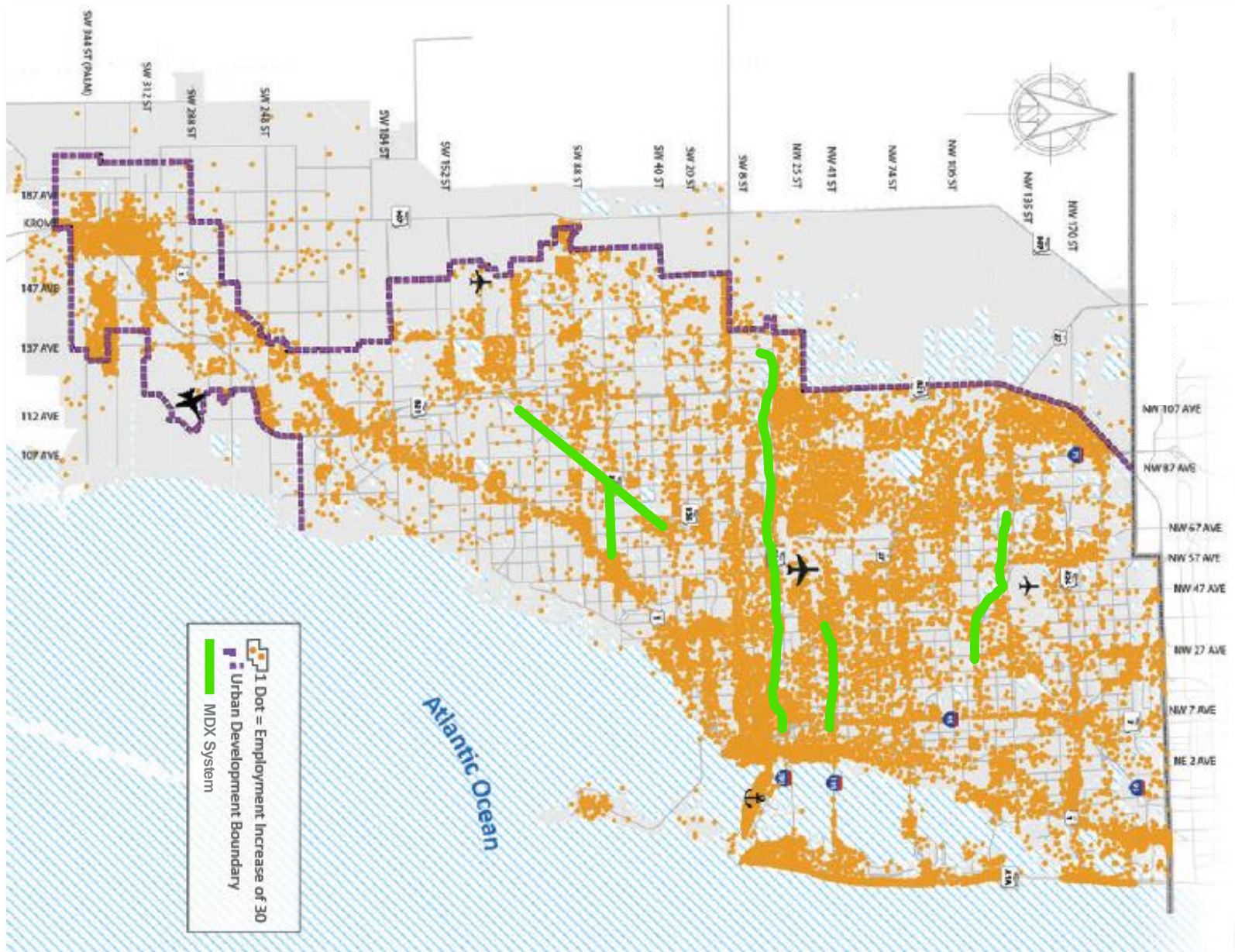
The Miami Dade MPO total population and employment growth projections developed for the 2040 LRTP are shown in **Figures 8 and 9**.

Figure 8: Miami-Dade County Population Growth 2010-2040



Source: Miami-Dade MPO Transportation Plan 2040

Figure 9: Miami-Dade Employment Growth 2010-2040

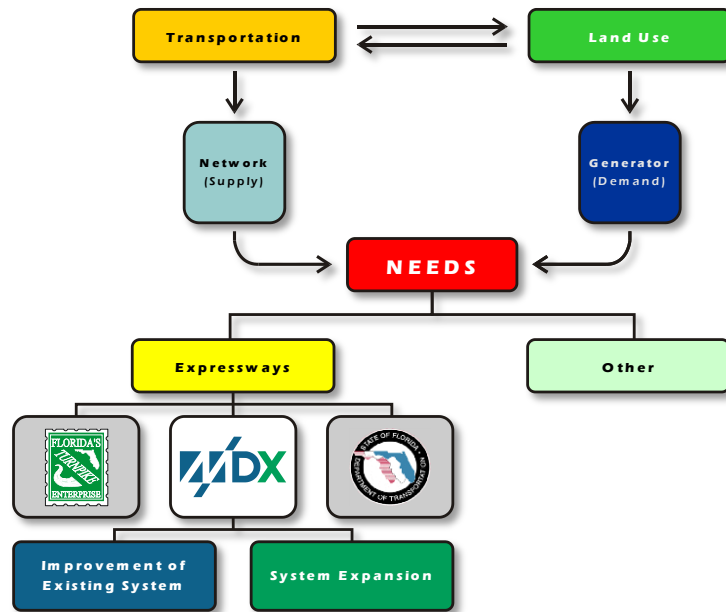


Source: Miami-Dade MPO Transportation Plan 2040

2.3 Potential Expansion of the System Needs

As a result of growth and development trends and continuous assessment of the existing operations, potential expansion of the MDX system is geared toward providing mobility, serving the needs of the community and addressing opportunities for connecting key destinations and traffic generators throughout the County. **Figure 10** illustrates the generic process that MDX follows in assessing the strategic importance of potential improvements, weighing their relative merits and deciding on how to plan and program expressway improvements on an ongoing basis.

Figure 10: MDX Development Process



2.4 MDX Partnership Information

Since its inception, MDX has been a regional transportation partner with other agencies in the planning, design and construction of improvements to the County roadway and transit system. To date,

MDX has contributed over **\$500 million** in funding to help advance the following projects in partnership with other agencies:

- SR 836/SR 826 Interchange reconstruction
- Miami Intermodal Center construction and improvements
- SR 874/SR 826 Interchange reconstruction
- Central Boulevard (MIA entrance) reconstruction
- Right-of-way purchases to facilitate the MIC-Earlington Heights Connector (aka Miami Dade Transit (MDT) Airport Link)
- SR 874 and Florida Turnpike Interchange improvements

In addition, through an interlocal agreement, MDX partnered with MDT for the implementation of the “Buses on the Shoulder” program to allow buses to run on the shoulders of MDX facilities during congested time periods and improve transit performance.

2.4.1 Southeast Florida Express Lanes Network Regional Concept of Transportation Operations (RCTO)

In July of 2013, the FDOT completed a collaborative process with transportation toll agencies in the Southeast region, to identify a future vision of express lanes. MDX was part of this study process which developed a set of recommendations and best practices for moving forward to implement this vision. As part of the RCTO process, several MDX facilities were identified for potential variable pricing within an existing tolling component. Two segments of SR 836 identified in the RCTO for managed (express) lanes were included in the MPO 2040 LRTP in later priorities (Priority III-2026).

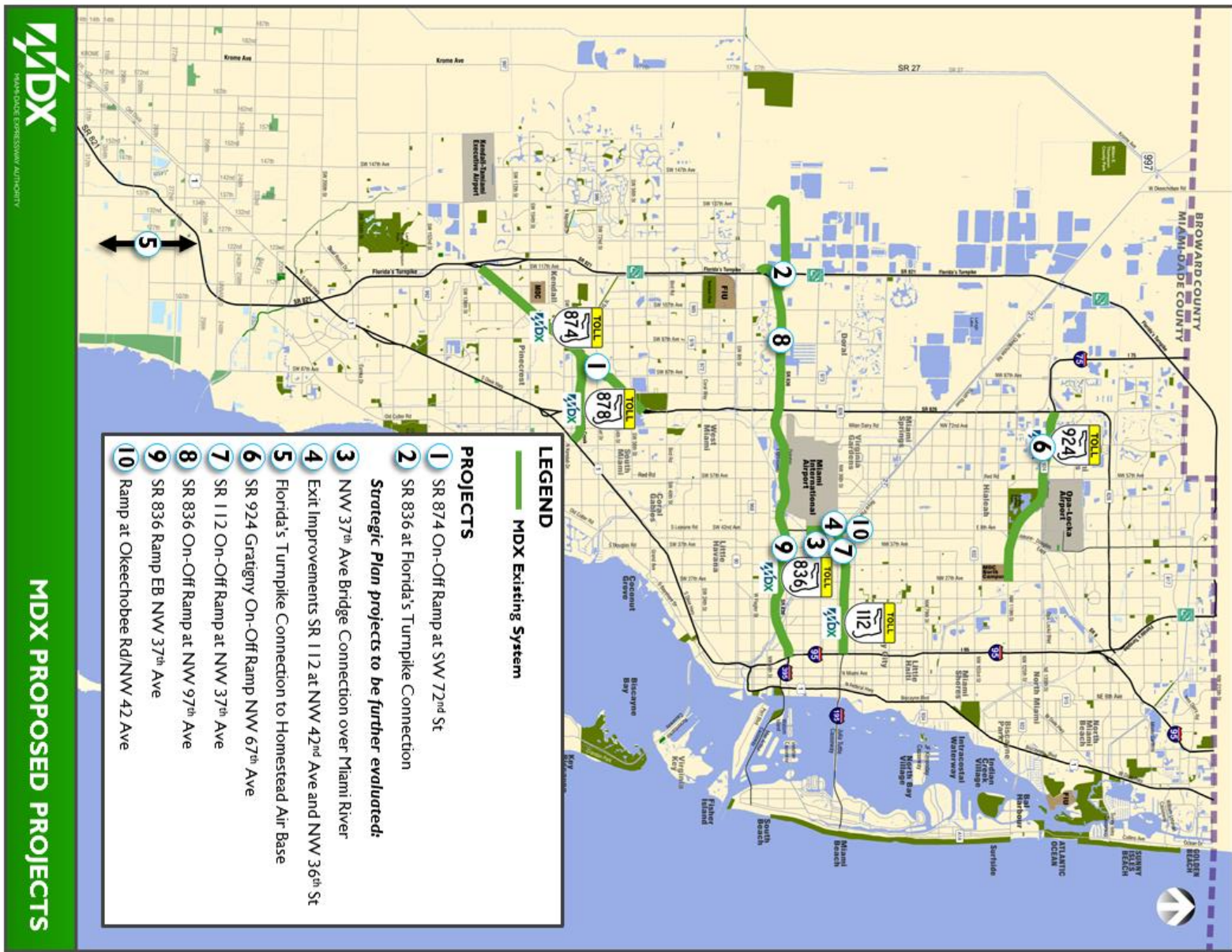
3.0 MDX SYSTEM IMPROVEMENTS

Improvements to the MDX System is a continuous process that aims at identifying projects to address the needs of the increasing transportation demand linked to the population/employment growth and the economic dynamic in the region.

The solutions encompass both long-term and short-term projects, including multimodal considerations and cutting-edge transportation technology.

While MDX continues the development process of major exploration projects identified in the previous Master Plan, the system improvements under evaluation focus on identified new short term projects as a result of previous feasibility analysis as well as the Board's on-going Strategic Planning process. They includes projects that will increase efficiencies on the MDX system, thereby maximizing opportunities for improved mobility, system linkage and reduced arterial roadway congestion (See **Figure 11**).

Figure 11: MDX Short Term Projects



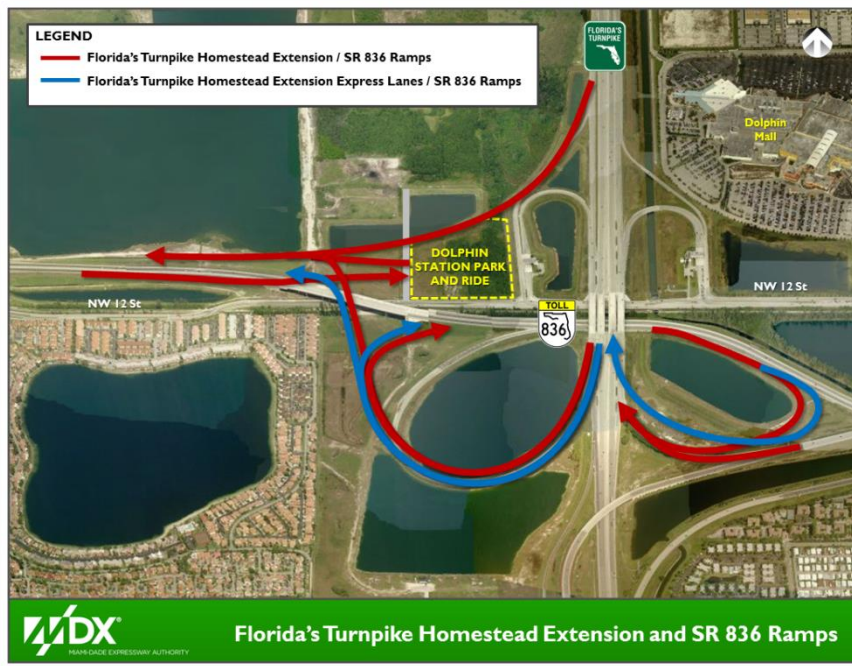
Source: MDX Short Term Proposed Projects 2015

3.1 Short Term Projects

The short term projects were identified through a collaborative effort with MDX Board members and MDX staff. Two of the projects are scheduled to be included in the MDX 2017-2021 work program and an amendment to the MPO LRTP has been completed. Other projects that are part of the Strategic Planning process will be further analyzed and discussed. MDX will decide whether to allocate future funding for the project development phase of these projects and update the regional MPO plan to include them. Based on the results of the project development phase, MDX would then decide whether to fund subsequent design, right-of-way and construction phases.

3.1.1 SR 836 Ramps at Florida's Turnpike

Figure 12: SR 836 Ramps at Florida's Turnpike



Description:

This project will be in coordination with Florida's Turnpike who is constructing express lanes along their roadway from SR 836 north to NW 106th Street. Currently, the existing SR 836/Turnpike interchange has the following movements:

- Southbound (SB) Turnpike to Eastbound (EB) SR 836
- Northbound (NB) Turnpike to Eastbound SR 836
- Westbound (WB) SR 836 to Southbound Turnpike
- Westbound SR 836 to Northbound Turnpike

The project development study will analyze the following potential new traffic movements:

- EB SR 836 to NB Turnpike general purpose (GP) lanes
- SB Turnpike GP lanes to WB SR 836
- SB Turnpike Express lanes (EP) to EB and WB SR 836
- SR 836 EB and WB to NB Turnpike EP lanes
- SR 836 EB and WB connections to Dolphin park and ride

This project will enhance access to the Doral and Kendall areas and provide additional mobility options. Project is in MDX Work Program and in MPO 2040 LRTP.

3.1.2 SR 874 Ramps at SW 72nd Street

Figure 13: SR 874 Ramps at SW 72nd Street

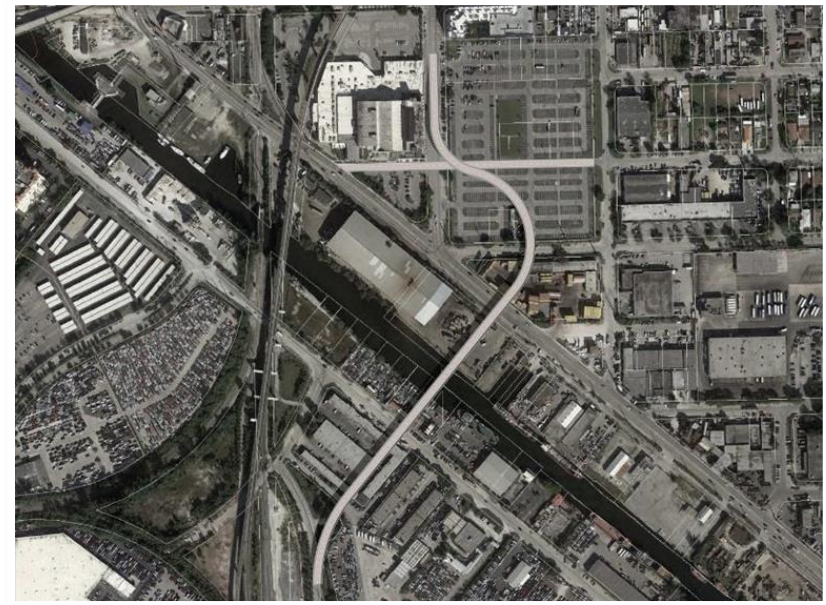


Description:

This project entails using existing MDX right-of-way to accommodate a new southbound ramp exit to SW 72nd Street and a new northbound on-ramp from SW 72nd Street to SR 874. Some initial planning and outreach was completed as part of a feasibility analysis in 2012. The project was included in the 2040 MPO LRTP and in the MDX 2017-2021 work program. During the project development process impacts to adjacent resources, traffic analysis, and public outreach to adjacent residents and businesses will be completed.

3.1.3 NW 37th Avenue Bridge Connection

Figure 14: NW 37th Avenue Bridge Connection



Description:

This project proposes to provide a new continuous north south connection along NW 37th Avenue through the construction of a new bridge over the Miami River. The new roadway connection would provide greater mobility in the area and greater access to both the SR 836 and SR 112 facilities. Only discussions during the on-going MDX Board strategic planning have been completed. Funds for a feasibility analysis and future project development have not been identified at this time.

3.1.4 SR 112 Exit Improvements at NW 42nd Avenue/NW 36th Street

Figure 15: SR 112 Exit Improvements at NW 42nd Avenue/NW 36th Street

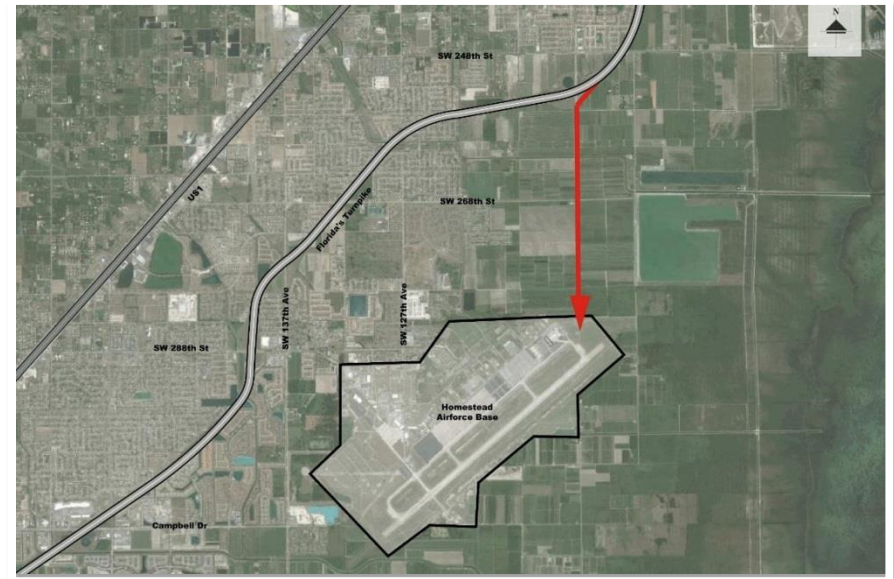


Description:

This project proposes to construct a bridge extension from the SR 112 exit at NW 36th Street to overpass the Lejeune Road (NW 42nd Avenue) intersection. This new overpass would alleviate congestion in the entire “Iron Triangle” area which is one of the most significant bottlenecks in the County. Only discussions during the on-going MDX Board strategic planning have been completed. Funds for a feasibility analysis and future project development have not been identified at this time.

3.1.5 Florida Turnpike Connection to Homestead Air Force Base

Figure 16: Florida Turnpike Connection to Homestead Air Force Base

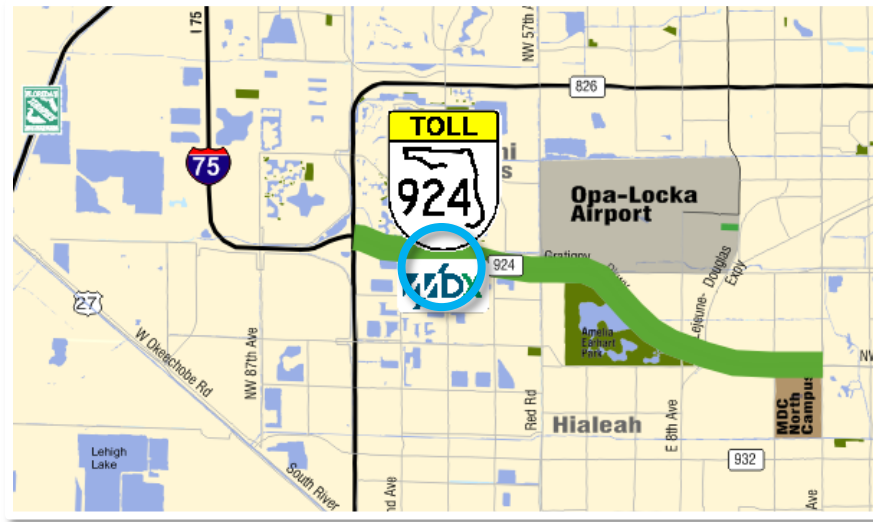


Description:

The project proposes the construction of an expressway extension from the Florida Turnpike to the Homestead Air Reserve Base. The alignment would generally parallel SW 112th Avenue. Homestead Air Force Base has been a major source of economic development and activity through the development history of South Miami-Dade County. After Hurricane Andrew, in August of 1992, Homestead Air Force Base was taken off active status and reopened as the Homestead Air Reserve Base in 1994. Since 1992, South Miami-Dade County and areas surrounding the base have experienced substantial growth. Only discussions during the on-going MDX Board strategic planning have been completed. Funds for a feasibility analysis and future project development have not been identified at this time.

3.1.6 SR 924 On-Off Ramp at N.W. 67th Avenue

Figure 17: SR 924 On-Off Ramp at NW 67th Avenue



Description:

This project proposes the construction of on and off ramps along SR 924 Gratigny Parkway to NW 67th Avenue. NW 67th Avenue is a major north-south arterial that serves the cities of Hialeah and Miami Lakes which are limited in their accessibility to expressway facilities. Only discussions during the on-going MDX Board strategic planning have been completed. Funds for a feasibility analysis and future project development have not been identified at this time.

3.1.7 SR 112 On-Off Ramp at NW 37th Avenue

Figure 18: SR 112 On-Off Ramp at NW 37th Avenue



Description:

This project proposes a west-bound exit ramp at SR 112 and NW 37th Avenue and an east-bound on ramp. Combined with the planned crossing of NW 37th Avenue at the Miami River, this project will provide direct access from SR 112 to the Miami Intermodal Center and surrounding development plans. Only discussions during the on-going MDX Board strategic planning have been completed. Funds for a feasibility analysis and future project development have not been identified at this time.

3.1.8 SR 836 On-Off Ramp at NW 97th Avenue

Figure 19: SR 836 On-Off Ramp at NW 97th Avenue



Description:

The project proposes the construction of on-off ramps in both the east and west direction on SR 836 at NW 97th Avenue. The implementation of Open Road Tolling (ORT) within the MDX system has rendered the east and west bound toll stations on SR 836 immediately to the west of NW 97th Avenue unnecessary. NW 97th Avenue is a major north-south arterial that serves residential sectors south of SR 836 and commercial and industrial sectors north of SR 836. The two exits serving the area are NW 87th Avenue and NW 107th Avenue. Providing on-off ramps in both directions at NW 97th Avenue will help alleviate traffic volumes at these two exits while providing a more convenient way to access the interstate expressway system. Only discussions during the on-going MDX Board strategic planning have been completed. Funds for a feasibility analysis and future project development have not been identified at this time.

3.1.9 SR 836 Ramp EB to NW 37th Ave

Figure 20: SR 836 Ramp EB to NW 37th Ave

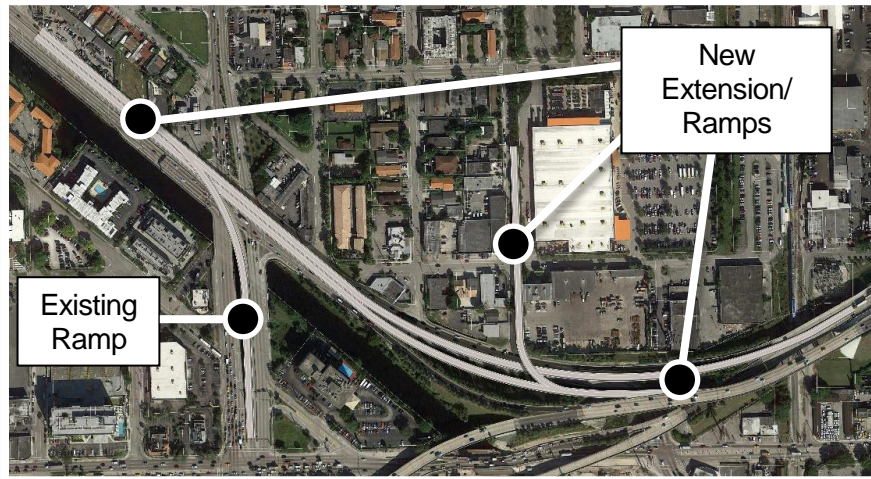


Description:

This project proposes the construction of an EB ramp from SR 836 to NW 37th Ave. NW 37th Avenue is a major north-south arterial that serves the city of Miami and which is limited in accessibility to expressway facilities. Currently, there are no existing off-ramps from SR 836 to NW 37th Avenue, and this project would provide additional access to the major arterial. Only discussions during the on-going MDX Board strategic planning have been completed. Funds for a feasibility analysis and future project development have not been identified at this time.

3.1.10 Ramp at Okeechobee Rd/NW 42 Ave

Figure 21: Ramps at Okeechobee Rd/NW 42 Ave



Description:

This project proposes an extension of SR 112 that lands just west of NW 42nd Avenue on Okeechobee Rd. This project provides an overpass and grade separation from SR 112 over Lejeune Rd (NW 42 Avenue) to Okeechobee Rd. The project also includes an eastbound SR 112 on-ramp from SE 9th Court. The project will connect with the existing NB ramp from NW 42 Avenue onto Okeechobee WB. The purpose of this project is to alleviate congestion in the entire “Iron Triangle” area which is one of the most significant bottlenecks in the County. Only discussions during the on-going MDX Board strategic planning have been completed. Funds for a feasibility analysis and future project development have not been identified at this time.

Preliminary Traffic and Revenue Estimates regarding Projects Systemwide impacts

As part of the on-going Strategic Planning process, a preliminary analysis was conducted to determine the potential systemwide impacts to MDX traffic and revenue as a result of the identified short term projects. Most of the projects had a positive impact to the system. They would provide additional access to the MDX system thereby improving mobility options and as a result increase revenues to the agency. As indicated previously, all of these projects will require planning and project development processes to be completed prior to the identification of funding for future implementation.

4.0 FUNDING STRATEGY

One of the key goals of MDX is as follows:

“MDX will provide the financial capacity necessary to maintain a state-of-the-art expressway system, and to implement planned improvements identified in the Master Plan.”

Practical measures that MDX is already undertaking include:

- Implementing the latest technologies in traffic management and electronic toll collection to optimize MDX system capacity
- Implementing Intelligent Transportation System (ITS) wherever possible along the principal expressway corridors and key congestion points
- Implementing Open Road Tolling (ORT) on all MDX facilities
- Leveraging all available financial resources to the maximum extent possible

MDX is currently staffed with approximately 45 professionals supported by contracted consultant assistance. Staff lives in the community, utilizes the system daily, and is committed to making commutes safer and more efficient.

MDX’s philosophy includes:

- Accountability – MDX is responsive to the public and stakeholders
- Transparency – MDX information is available on its website and business activities are conducted in public forum. Committee and Board meetings recorded and/or webcast.
- Accessibility – MDX is local so the public has access and is encouraged to be involved with projects or express their opinion to the governing board.
- Small Government – MDX is a lean, streamlined and efficient organization.

Historically, the Interstate Highway System has been funded through the State Highway Trust Fund (HTF) which is funded primarily by fuel tax collected by the federal, state, and local governments. However, as the cost of maintaining the existing roadway infrastructure has grown, very little has been left for funding of new highway construction. As funding for expressways, roads and bridges decline, there has been a need for user fees (tolls) in order to fund transportation projects such as safety initiatives, expansions of existing structures, new bridges and expressways. Tolls are a fee that applies only to the user of the road. Tolls allow new roads to be built, improved and maintained without raising taxes on the general public. As population and economic growth increase, so will the traffic delays.

MDX is responsible for the collection and stewardship of toll dollars collected on its 5 expressways. MDX does not receive any revenue from the State of Florida, the Miami-Dade County half cent sales tax, or from state or federal gas taxes. MDX’s primary source of revenue is the tolls collected on its five expressways which are used to operate, maintain and improve the Expressway System. These tolls allow MDX to improve mobility and offer transportation choices within Miami-Dade County. MDX keeps toll dollars in Miami-Dade County; funding is not diverted to other parts of the State.

In order to fund the continual rising cost of construction for the various roadway improvements, MDX borrows money by selling bonds and uses the revenues as collateral. Similar to a mortgage loan where collateral is offered to the bank to secure the loan until fully paid, MDX offers the projected revenues as assurance that the bond’s principal and interest will be paid. Since revenues are leveraged over a 30 year period, once projects are constructed, these tolls pay for the principal and interest of the bonds issued to fund those projects. In addition, the expressways need to be maintained as well. The goal of maintenance is to preserve all parts of the road including pavement, shoulders, slopes, drainage and other structures as near to their as-constructed condition as possible. MDX invests in the regular and periodic maintenance of its roads because postponing maintenance and repairs results in higher costs later on.

Since June of 2015, MDX has:

- Invested over \$1.25 billion in completed projects and another \$420 million in ongoing projects
- Programmed to invest over \$700 million toward projects in the upcoming five years (still yielding an overall short-fall of systemwide needs)
- Contributed over \$500 million toward joint construction projects with other state and local governmental agencies
- Resurfaced all of the MDX System
- Performed system-wide bridge upgrades

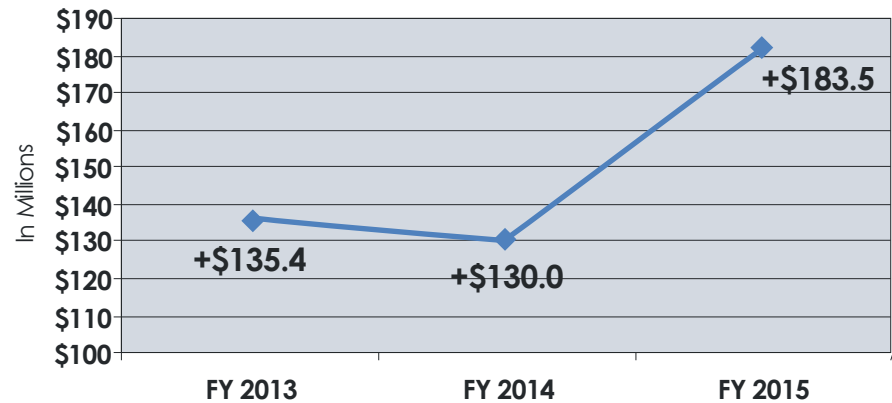
The following section highlights the existing funding sources for MDX operations as well as the planned funding implementation plan for future MDX projects.

4.1 Existing and Potential Funding Sources

4.1.1 Operating Revenue

As indicated in **Figure 22**, total operating revenues were +\$183.5 million and +\$130.0 million for fiscal years 2015 and 2014, respectively. Revenues received from tolls have increased steadily as a percent of total operating revenues.

Figure 22: Total Operating Revenue by Fiscal Year



4.1.2 Non-Operating Revenue

Investment income was \$2.1 million and \$2.8 million for fiscal years 2015 and 2014, respectively. Investment income for fiscal year 2015 decreased 25% over fiscal year 2014. Investment income for 2014 decreased 13.9% over fiscal year 2013.

The decrease for fiscal year 2015 was primarily due to the absence of a one-time investment income payout on a joint participation agreement in fiscal year 2014 that did not occur in fiscal year 2015; partially offset by additional funds on hand for investment related to the Series 2014A Bonds issued at the end of fiscal year 2014.

The decrease for fiscal year 2014 was primarily due to lower reinvestment yields on investments and the termination of an investment agreement towards the end of fiscal year 2013; partially offset by the absence of an arbitrage expense in fiscal year 2014 and investment income on a joint participation agreement.

4.2 New Revenue Sources

The projects included in the MDX 2040 LRMTP will be evaluated by financial planners to determine what types of financial arrangements would be viable for any new toll roads or improvement projects to existing toll facilities. Financing of new investments is likely to involve a

combination of public and private participants. These arrangements are known as public-private partnerships (P3) where financing includes contributions from various public and private sources or it could be a diversification of MDX revenues and public/public partnerships.

4.3 Funding Approach

Prior to actual project financing, there needs to be a more detailed assessment of the risks associated with each of the projects proposed as part of the master planning effort.

Future studies will include:

- Extensive market research to determine the viability of each project and the likelihood that the revenue projections can be achieved and the facility utilized efficiently by the public.
- Detailed economic analysis to determine toll rates, actual rates-of-return on the investments and financial capacity calculations.
- Environmental studies to determine the impacts to the natural and social environments and to develop appropriate mitigation strategies for each project.
- More detailed traffic modeling as part of project development studies.
- Updated financial feasibility assessments relative to the status of MDX financial capacity at various points in time.

5.0 IMPLEMENTATION PLAN NEXT STEPS AND UPDATES

5.1 Next Steps

MDX has been given the legislative authority to build, own and operate tolled facilities in Miami-Dade County, but when implementing projects MDX includes the MPO, FDOT and other key transportation providers in the process of its projects development.

MPO/LRTP Process

MDX major projects included in the MPO LRTP are in **Figure 2**. New projects being evaluated in the Strategic Plan process will require amendments to the MPO plan.

Project Agreements

If new improvement concepts are found to be acceptable, MDX would then develop formal agreements related to the roles and responsibilities of the participating jurisdictions, where applicable.

PD&E and IJR/IMR Studies

Once agreements are in place, MDX can begin the required Project Development & Environment (PD&E) studies and Interchange Justification Reports (IJR) or Interchange Modification Reports (IMR) in cooperation with FDOT and the Federal Highway Administration (FHWA), as applicable. During PD&E studies, specific alternative locations and designs are analyzed and associated environmental impacts are presented for public review. The PD&E study will lead to a final recommended location and design concept for the project that would be presented to the key stakeholders and for MDX acceptance.

5.2 Interim and 5-Year Plan Update

Consistent with its current policy, MDX updates the Master Transportation Plan regularly. The next anticipated update is in 2020 with a planning horizon of 2045 consistent with the County MPO update schedules. However, as a result of MDX project implementation, or when it is warranted due to changing circumstances or priorities, an MDX LRMTP update can be prepared

in order to document any revisions, and provide a basis for continued dialogue with key stakeholders, the MPO and the public.