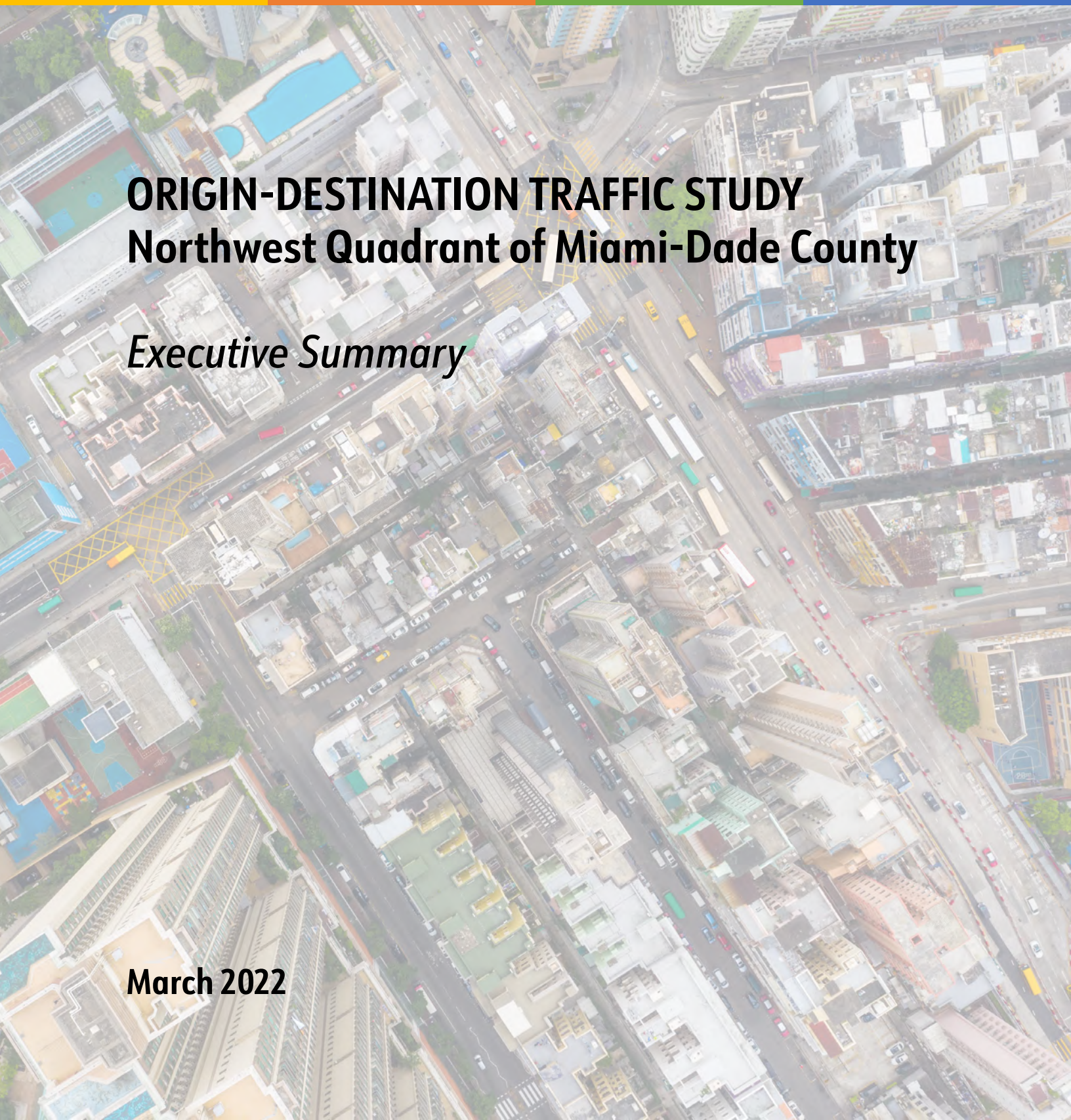
Miami-Dade Transportation Planning Organization



ORIGIN-DESTINATION TRAFFIC STUDY
Northwest Quadrant of Miami-Dade County

Executive Summary

March 2022

Miami-Dade Transportation Planning Organization

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Prepared for Miami-Dade Transportation Planning Organization by Gannett Fleming & CTS

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1. Introduction

Miami-Dade County is divided into seven well-defined geographic sections identified as Transportation Planning Areas. Each Transportation Planning area, identified by the Miami-Dade Transportation Planning Organization (TPO), is distinguished by its own characteristics, growth rates, needs, and transportation challenges. The Northwest Transportation Planning Area of Miami-Dade County plays a vital role in the economy of the Southeast Florida region. The area accommodates a significant amount of industrial land use due to its prime location, zoning, and excellent connections with Port Miami, Miami International Airport (MIA), and the region. With a growing economy, maintaining good connectivity and improving moblity in the Northwest Transportation Planning Area is important for the residents, businesses, and visitors within the Planning Area, Miami-Dade County, and the region.

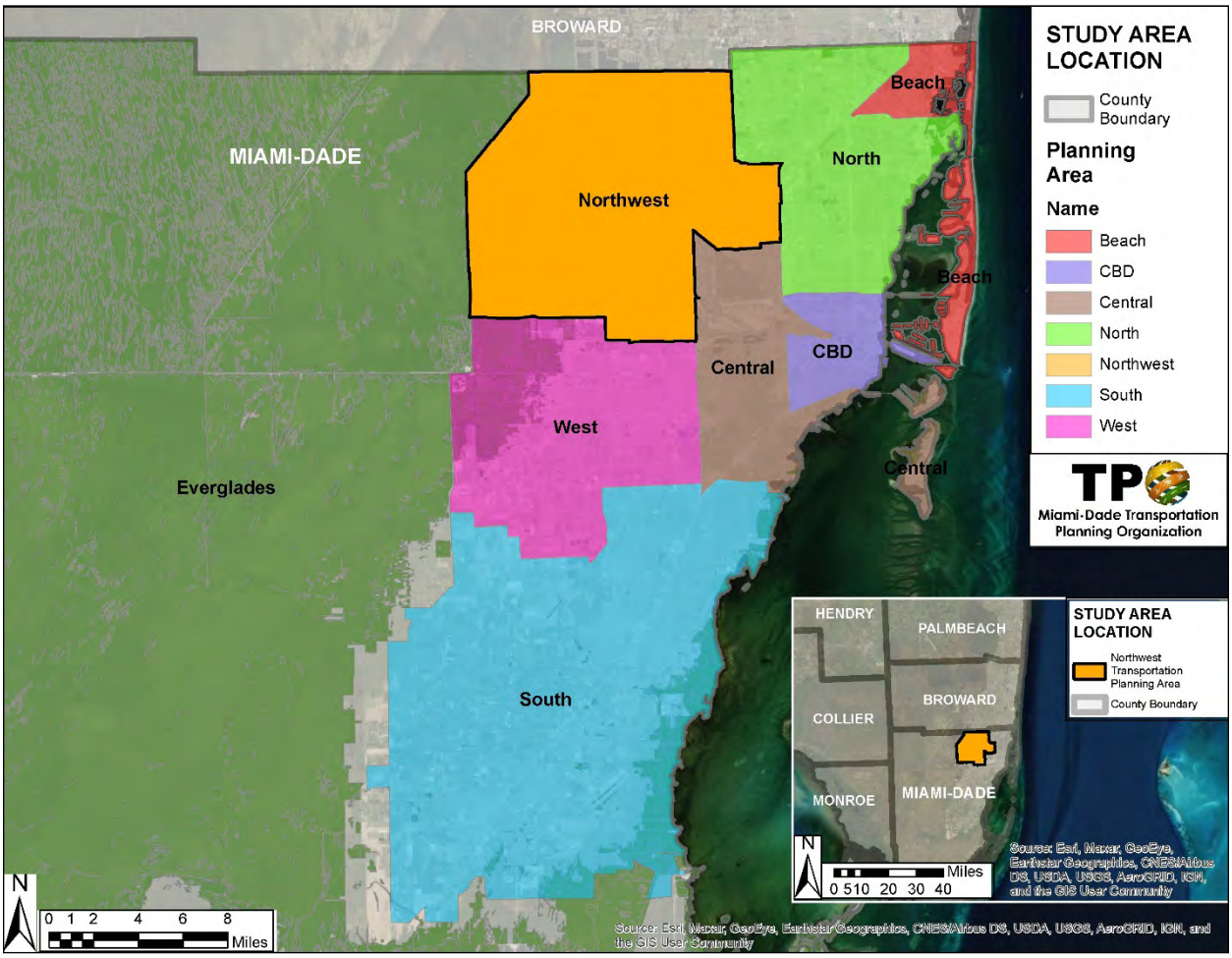

Figure 1. Study Area Location

This study examines the current and projected travel patterns in the northwest area of Miami-Dade County, providing insight into the effects of the projected growth and identified infrastructure improvements. In particular, the effect of the extension of NW 107th Avenue from NW 106th Street to NW 122nd Street on local travel patterns is analyzed and documented. The NW 107th Avenue project is listed in the Year 2045 Long Range Transportation Plan (LRTP) in Priority Period III which represents the period from 2031 to 2035 with an estimated project cost (2018$) of $10,464,000.00.

In addition, and building upon this analysis, potential projects were identified that could improve the mobility within the area. Three types of potential improvements to the mobility of the area were identified, including a transit project,

the identification of multiple areas where mobility could be improved through the use of micro-mobility, bicycle and pedestrian modes, and two roadway projects.

1.1 Study Background

During the Transportation Planning Organization (TPO) Board meeting of May 20, 2021, Resolution #20-2021 was approved authorizing the TPO to develop a scope of services and budget to study the travel patterns within the Northwest quadrant of Miami-Dade County. This project will provide a comprehensive understanding of transportation movements, effects, and the various impacts associated with such movements within the Northwest Transportation Planning Area which includes the City of Doral, the City of Hialeah, the City of Hialeah Gardens, the Town of Medley, the City of Miami Lakes, the City of Opa-Locka and the City of Sweetwater.

2. Current Conditions

The proposed and planned projects within the Northwest Transportation Planning Area as listed in the Transportation Improvement Program (TIP) and the Year 2045 Long Range Transportation Plan (LRTP) were reviewed. These two programs include the FDOT projects from the Five-Year Work Program, the transit projects as listed in the Transit Development Plan (TDP) of the Department of Transportation and Public Works (DTWP), and the Miami-Dade County Expressway Authority (MDX) projects from their Master Plan. The TIP also lists the major capital transportation projects from the Capital Improvement Programs of the municipalities.

2.1 Review of Programmed and Planned Improvements

The planned improvements in the Northwest Transportation Planning Area of Miami-Dade County by the different agencies are all listed in the full report and additional details on the planned projects can be located in the Transportation Improvement Program 2021/2022 – 2025/2026 and the Year 2045 Long-Range Transportation Plan. To move the currently planned projects toward implementation, the Miami-Dade TPO recommends for the FDOT to start the Efficient Transportation Decision Making (ETDM) process and for the County to start the project scoping process for the planned projects.

2.2 Existing Infrastructure

The Northwest Transportation Planning Area is well connected through a variety of modes. Many of the facilities are part of the Strategic Intermodal System (SIS), a network of facilities of vital importance to the economy of the State. Figure 2 shows the SIS facilities in the Northwest Transportation Planning Area, including highway, rail, waterway, airports, freight, terminals, passenger terminals, and fixed guideway terminals. Good connections to the SIS, through local facilities specifically in areas of commerce, are important for economic growth.

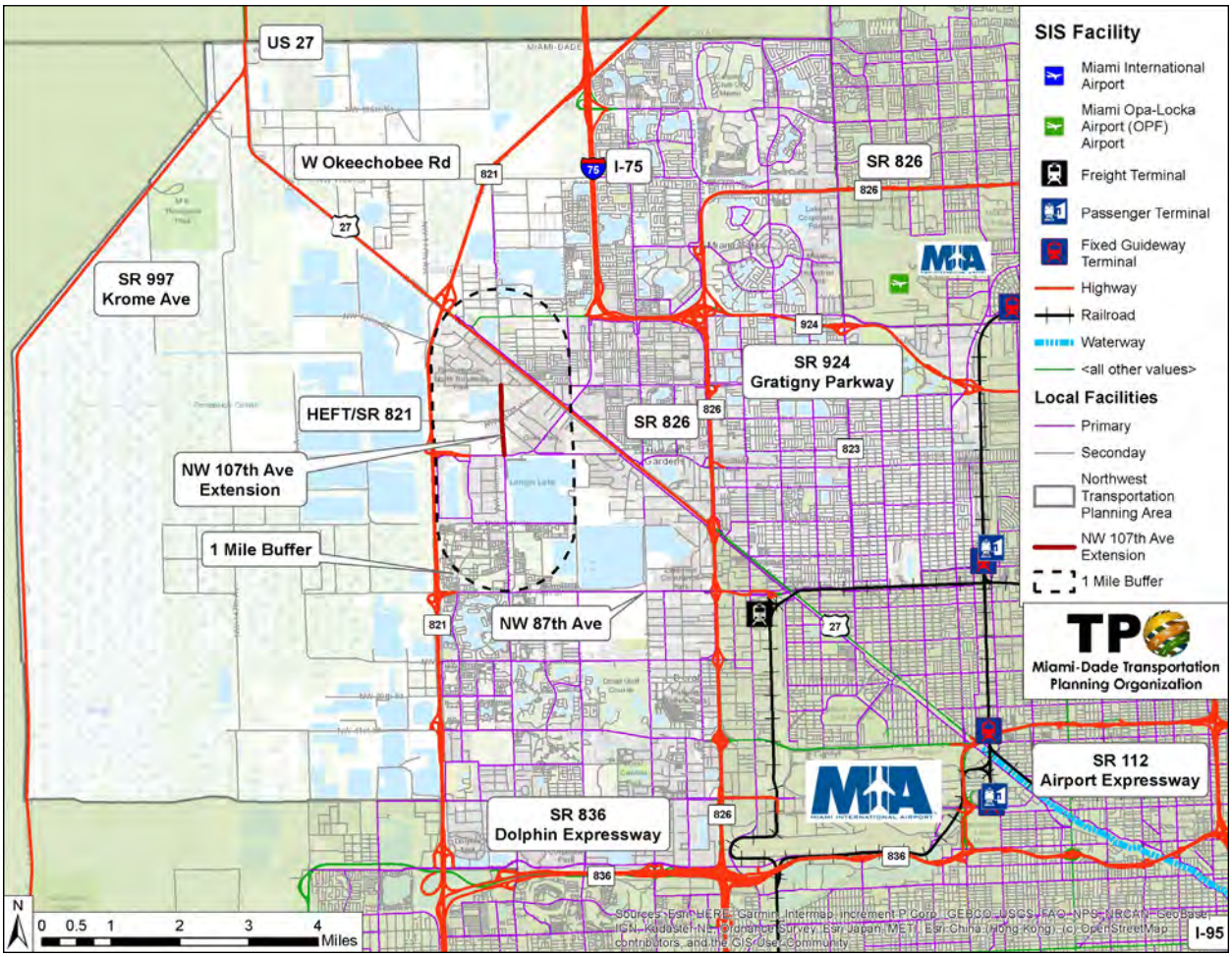

Figure 2. SIS Facilities

The extension of NW 107th Avenue is a project that provides an additional north-south connection in the Northwest Transportation Planning Area. This results in not only a decrease in travel time and travel distance but also alleviating traffic from parallel State facilities, and thus freeing up capacity for other traffic.

3. Existing & Future-Year Analysis

A travel demand model, such as the Southeast Regional Planning Model (SERPM), is the tool of choice to analyze the impact of socioeconomic data or transportation network changes. The validity or accuracy of a travel demand model is based on how well it simulates the actual travel patterns in the base year of the model, which is the year 2015. This check was conducted for the year 2015 scenario against actual year 2015 data sources, such as ridership numbers and traffic counts, and was conducted regionwide for the SERPM, which includes Miami-Dade, Broward, and Palm Beach counties.

For the NW 107th Avenue extension analysis, the year 2015 validation was verified within the Northwest Transportation Planning Area using two different year 2015 data sources. These were the Location Based Service (LBS) data and Longitudinal Employment Household Dynamics Data (LEHD). The comparison of the Northwest Transportation Planning Area origin and destination travel patterns for all trips was compared with the LBS data, while employment data, workers' characteristics, and workers' travel patterns were compared to the LEHD data.

3.1 Base Year – Origin and Destination Comparison for All Trips

The County data was disaggregated for the Transportation Planning Area and Transportation Area District (TAD), which are geographical subsets of the Planning Area, to analyze the origin and destination patterns. The Base Year 2015 scenario from the SERPM was used and compared with the LBS data to evaluate the vehicle trips and person trips generated. Overall, the LBS data shows about 19.4 million vehicle trips, while from the SERPM, the number of vehicle trips is about 13.5 million and the number of person trips is about 21.0 million. The top five Planning Areas that produce trips are the Northwest Transportation Planning Area, the Central Transportation Planning Area, Broward County, the West Transportation Planning Area, and the North Transportation Planning Area. The same Transportation Planning Areas were observed receiving similar trips in both data sources. Therefore, it was concluded that the SERPM data reflects the trip movement between the different Transportation Planning Areas with a reasonable accuracy. Table 1 and Figure 3 show the trip distribution of the SERPM by transportation planning area. Additional data and origin and destination comparisons between the LBS and the SERPM data are listed in the full report.

Table 1. SERPM Base Year Trip Exchanges with Northwest Transportation Planning Area

Transportation Planning Area & Other	Year 2015 Average Daily Vehicle Trips	Percentage of Total Trips
Beach	32,240	3%
CBD	51,550	5%
Central	129,220	13%
North	117,290	12%
Internal Northwest Area	433,700	42%
South	40,490	4%
West	105,440	10%
Broward County	112,960	11%

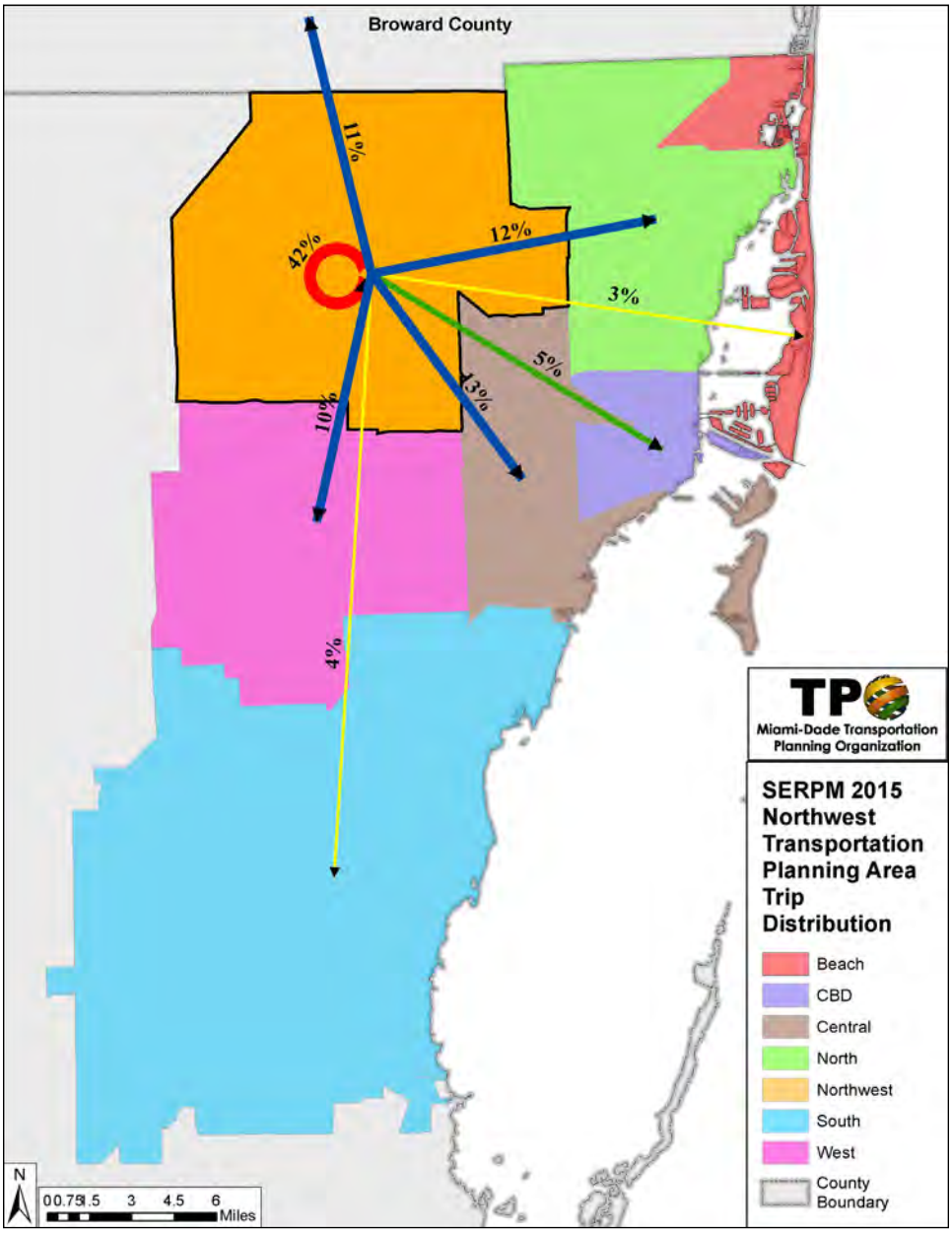

Figure 3. SERPM Base Year 2015 Travel Patterns for All Trips

As shown in Figure 3, most of the trips (42%) remain inside the Northwest Transportation Planning Area. The Central (13%), North (12%), West (10%) Transportation Planning Areas and Broward County (11%) fall in the next grouping. While the Central Business District (CBD), Beach and South Transportation Planning Areas have the least amount of trips exchanges with the Northwest Transportation Planning Area.

3.2 Data Comparison for Workers and Work Trips

The LEHD data provides insight into the travel patterns of the workers within the Northwest Transportation Planning Area. Figure 4 shows that on an average day 163,233 workers come into the Northwest Transportation Planning Area to work, while 105,698 workers leave the area to go to work. There are 46,052 workers who live and work within the area.

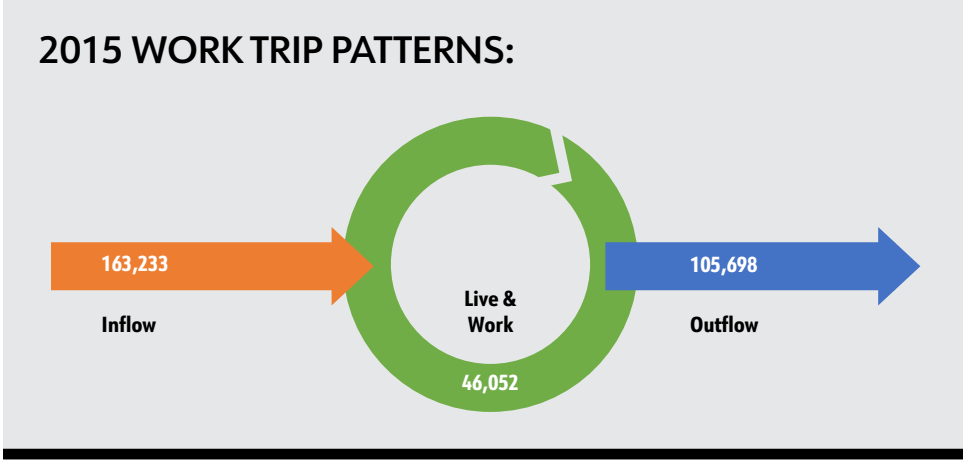

Figure 4. Year 2015 Work Trip Patterns in Northwest Transportation Planning Area

Figure 5 shows that the greatest percentage of work trips coming into the Northwest Transportation Planning Area, come from the West Transportation Planning Area (16%) and Broward County (16%). The lowest percentage (2%) from the Beach Transportation Planning Area.

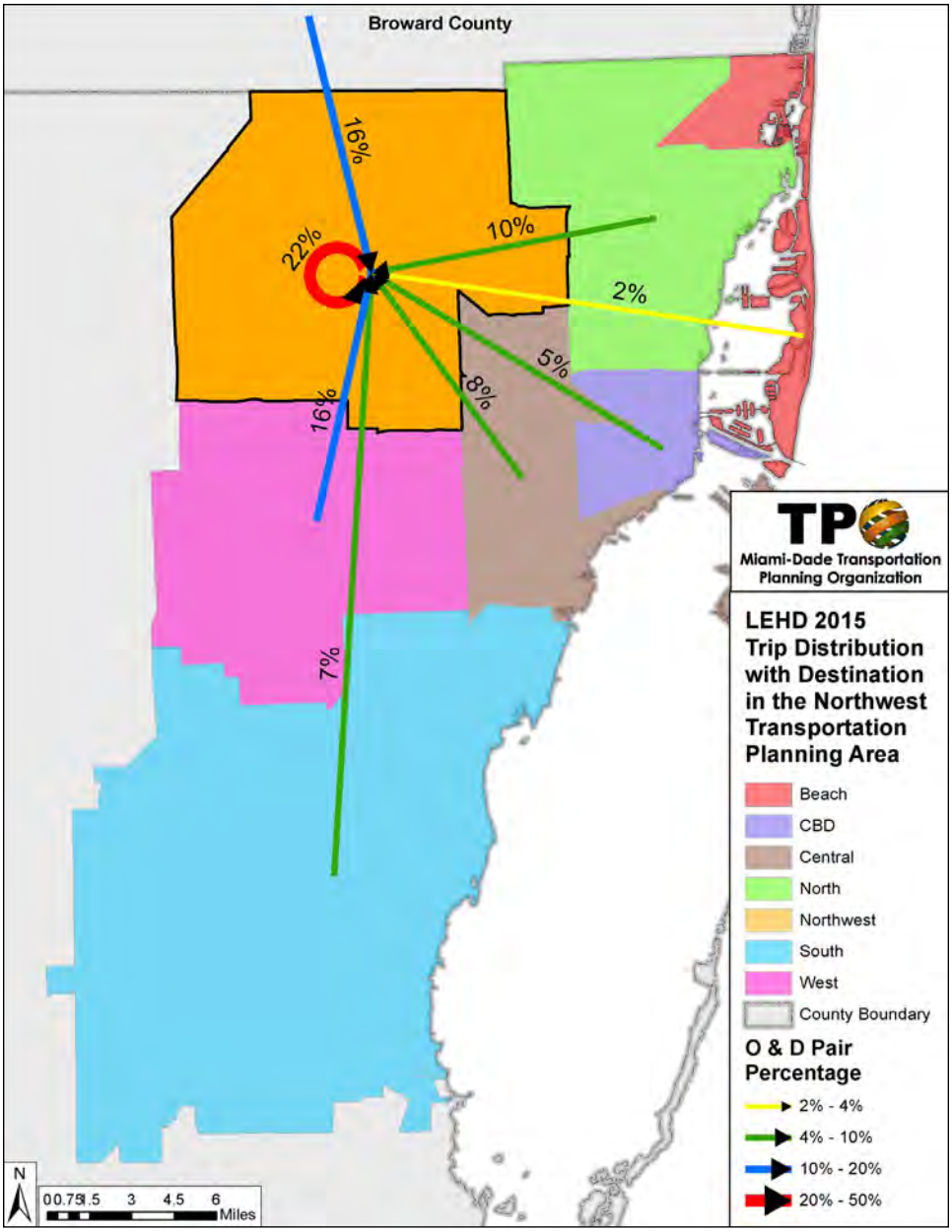

Figure 5. Year 2015 Work Travel Patterns to the Northwest Transportation Planning Area

In Figure 6, the greatest percentage of work trips coming from the Northwest Transportation Planning Area go to the Central Transportation Planning Area (15%) and Broward County (15%). The smallest percentage (2%) of trips go to the South Transportation Planning Area.

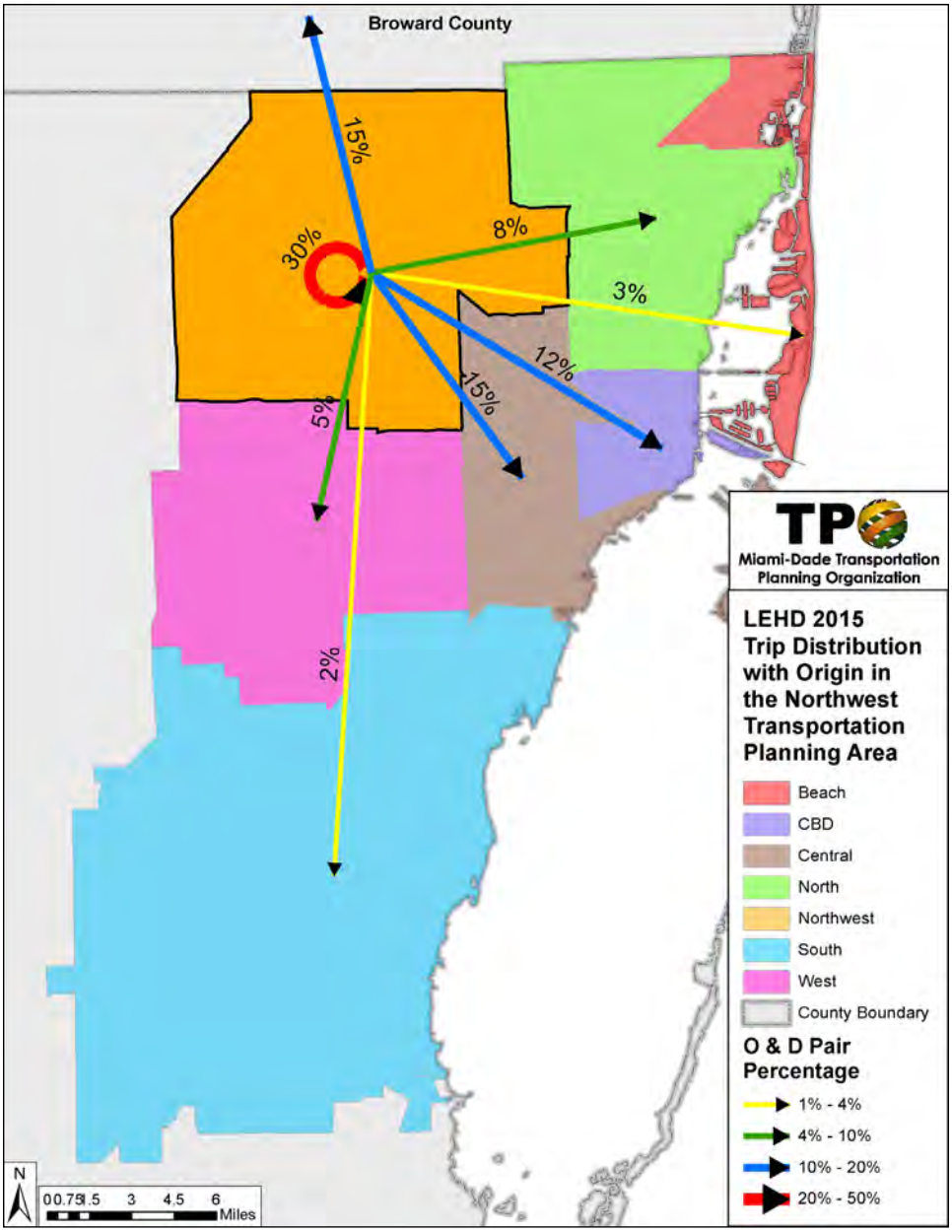

Figure 6. Year 2015 Work Travel Patterns from the Northwest Transportation Planning Area

The full report lists additional information related to the travel patterns of the work trip based on the Transportation Planning Areas and TAD. It also contains additional workers profile information by the Northwest Transportation Planning Area and its TADs. Additional comparisons between the LEHD data and the SERPM data and the 2019 LEHD travel patterns are documented in the full report as well.

3.3 Socioeconomic Data Forecasts

The Base Year (2015) and future year (2045) socioeconomic data was developed as part of the LRTP and used in the regional planning model to measure the impact of the growth on the transportation system.

Population

The annual population growth rate in the Northwest Transportation Planning area is slightly lower than the County as shown in Table 2.

Table 2. Population Forecasts

Area	Population		
	2015	2045	Annual Growth
Northwest Transportation Planning Area	375,543	477,861	0.9%
Miami-Dade County	2,629,861	3,532,976	1.1%
Region*	5,817,912	7,509,098	1.0%

**Includes Miami-Dade, Broward, and Palm Beach counties*

Figure 7 shows the LRTP population annual growth rates by traffic analysis zone (TAZ), which are geographical subsets of the regional planning model, within the Northwest Transportation Planning Area. The TAZs are depicted by average linear growth greater than or less than 2% by TAZ. The 2% margin was used to clearly identify those TAZs that deviate in growth rate from the average.

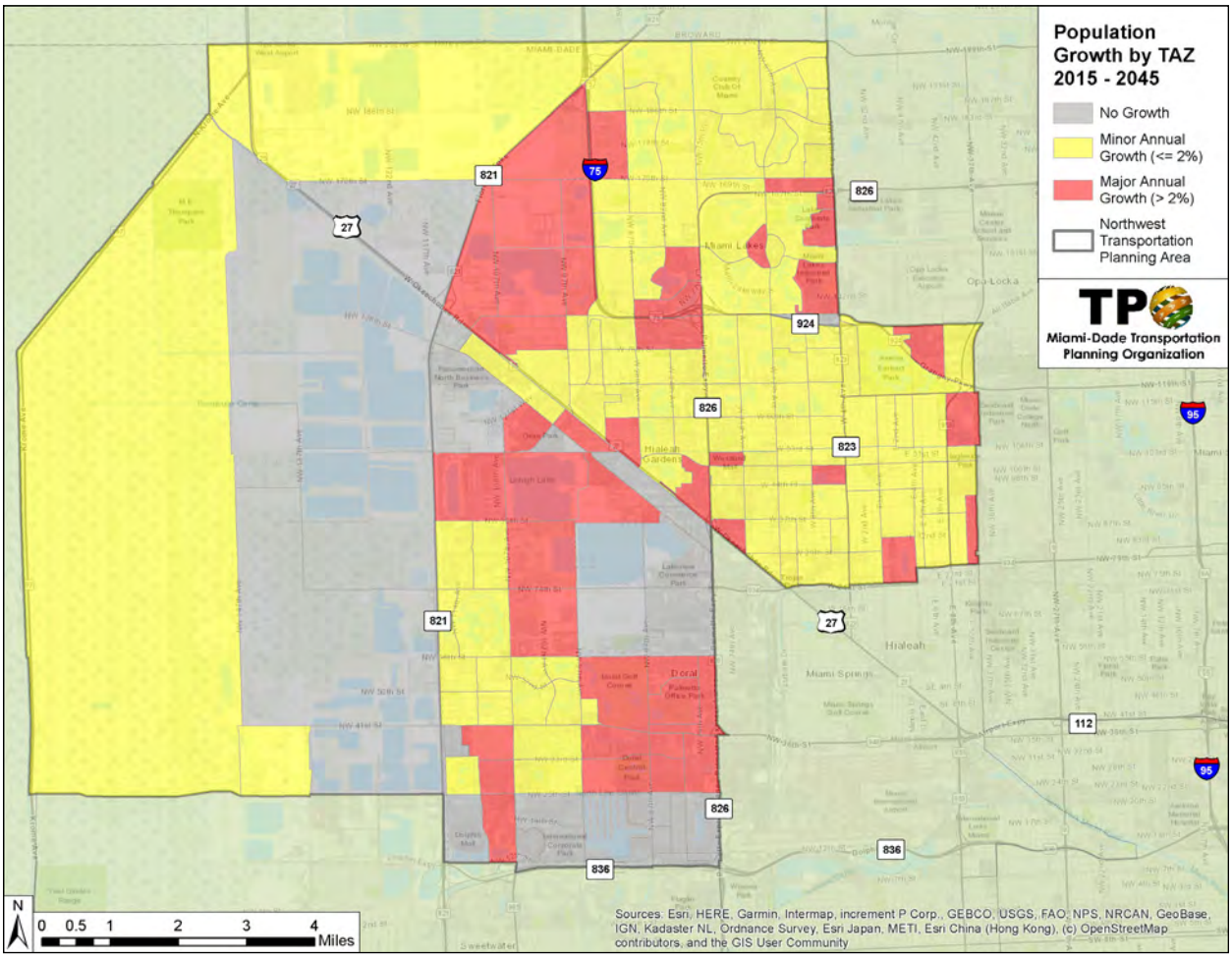

Figure 7. SERPM Population Annual Growth Rates by TAZ from 2015 to 2045

Employment

The annual employment growth rate for the Northwest Transportation Planning Area is higher than the County by 0.2% and higher than the region by 0.4%, as shown in Table 3.

Table 3. Employment Forecasts

Area	Employment		
	2015	2045	Annual Growth
Northwest Transportation Planning Area	266,347	388,970	1.5%
Miami-Dade County	1,318,040	1,813,709	1.3%
Region*	2,997,442	3,982,824	1.1%

**Includes Miami-Dade, Broward, and Palm Beach counties*

Figure 8 shows the SERPM employment annual growth rates by TAZ within the Northwest Transportation Planning Area. The TAZs are depicted by average linear growth greater than or less than 2% by TAZ. The 2% margin was used to clearly identify those TAZs that deviate in growth rate from the average.

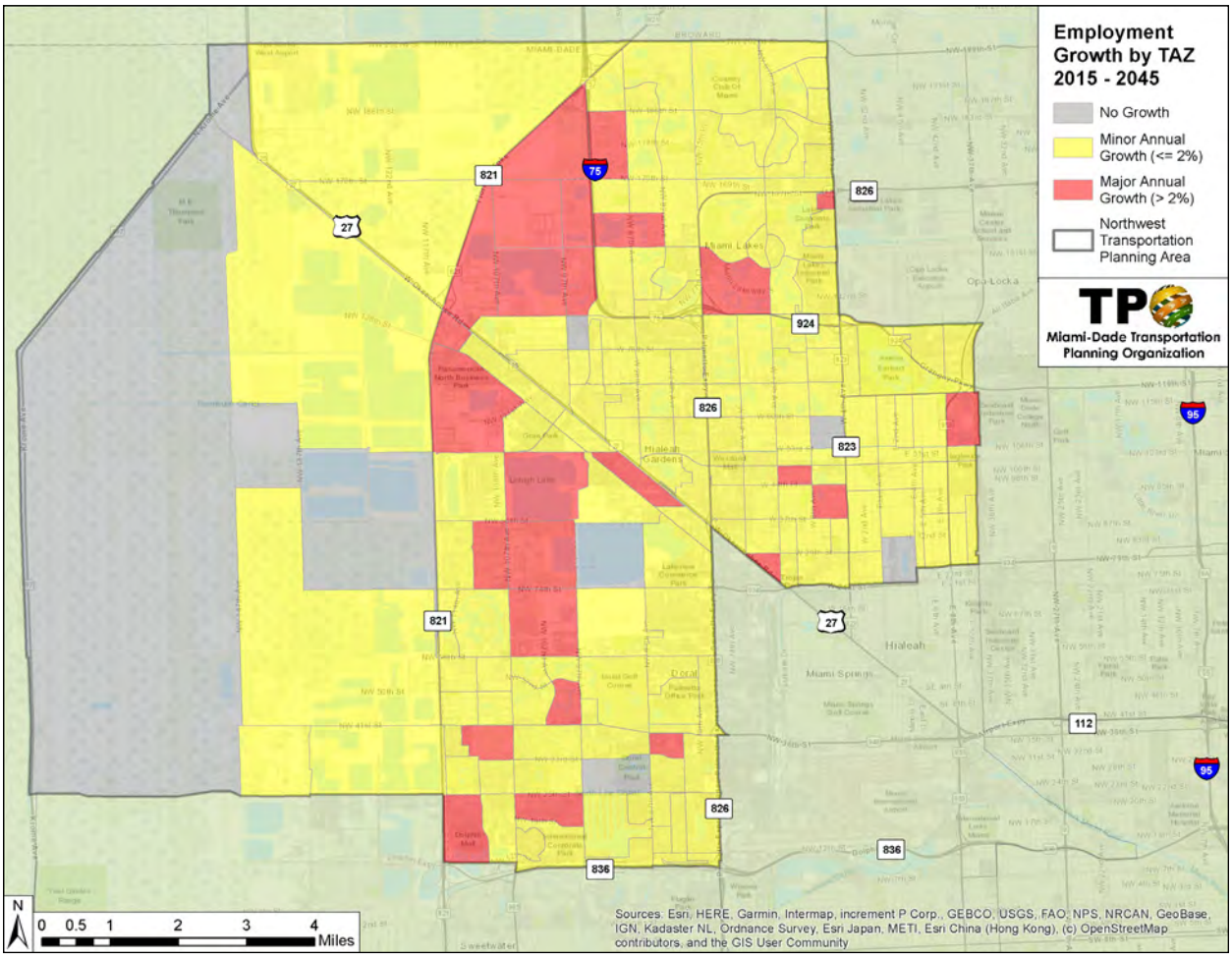

Figure 8. SERPM Employment Annual Growth Rates by TAZ from 2015 to 2045

4. NW 107th Avenue Extension Analysis

The red analysis link shown in Figure 9 was added to the network to connect NW 107th Avenue to the existing segments of the roadway from NW 106th Street to NW 122nd Street. The network was analyzed with and without the NW 107th Avenue extension to identify the differences in the travel patterns caused by this roadway network change in the Northwest Transportation Planning Area.

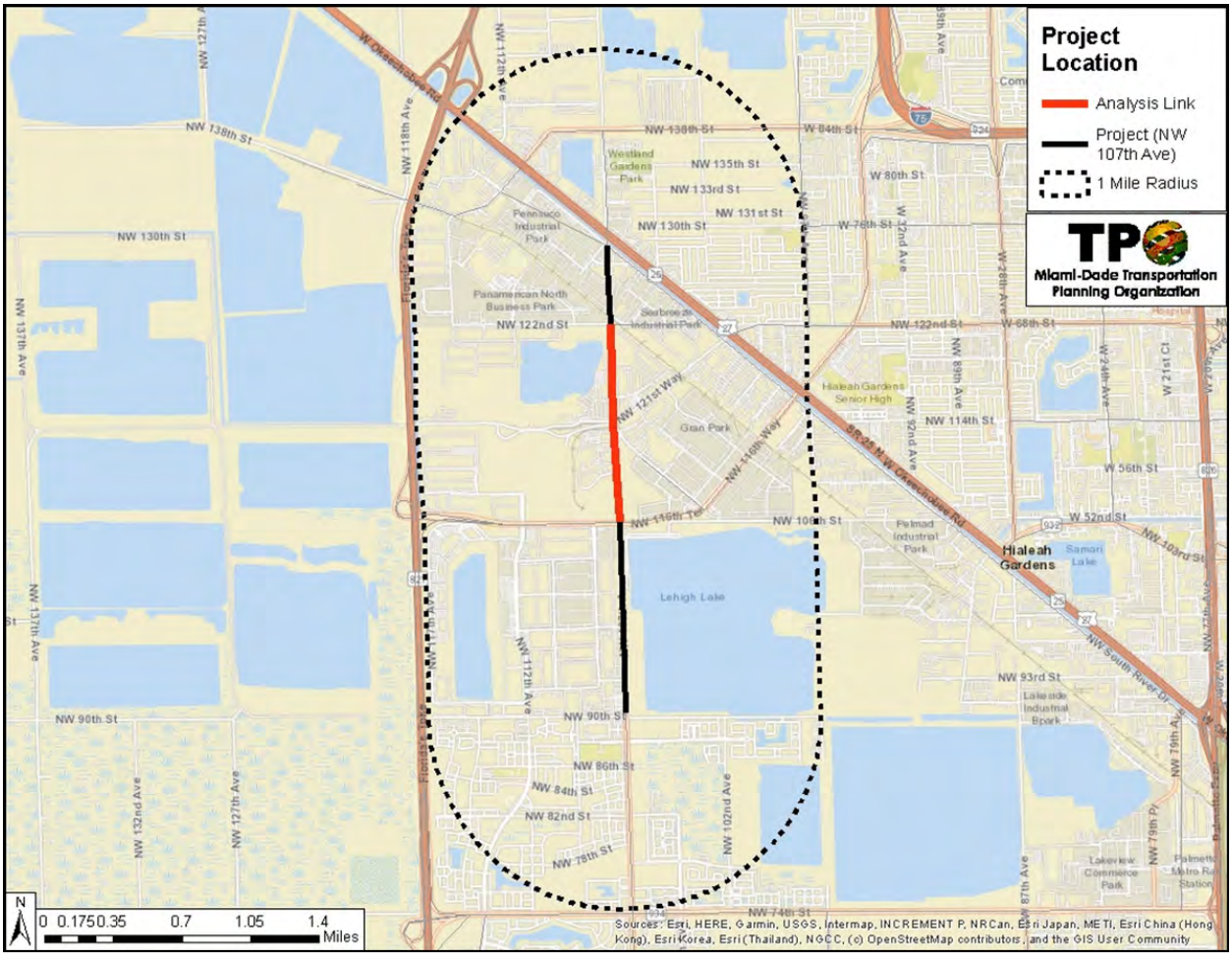

Figure 9. NW 107th Avenue Project Analysis Link

Figure 10 shows the difference in average daily directional traffic on the surrounding roadways between the year 2045 No-Build (without the NW 107th Avenue extension) and the Build (with the NW 107th Avenue extension) scenarios. There is a better distribution of trips in the area with the NW 107th Avenue extension. Another benefit of the project is that truck traffic will be able to access the industrial land uses along NW 107th Avenue without using Okeechobee Road and/or the HEFT.

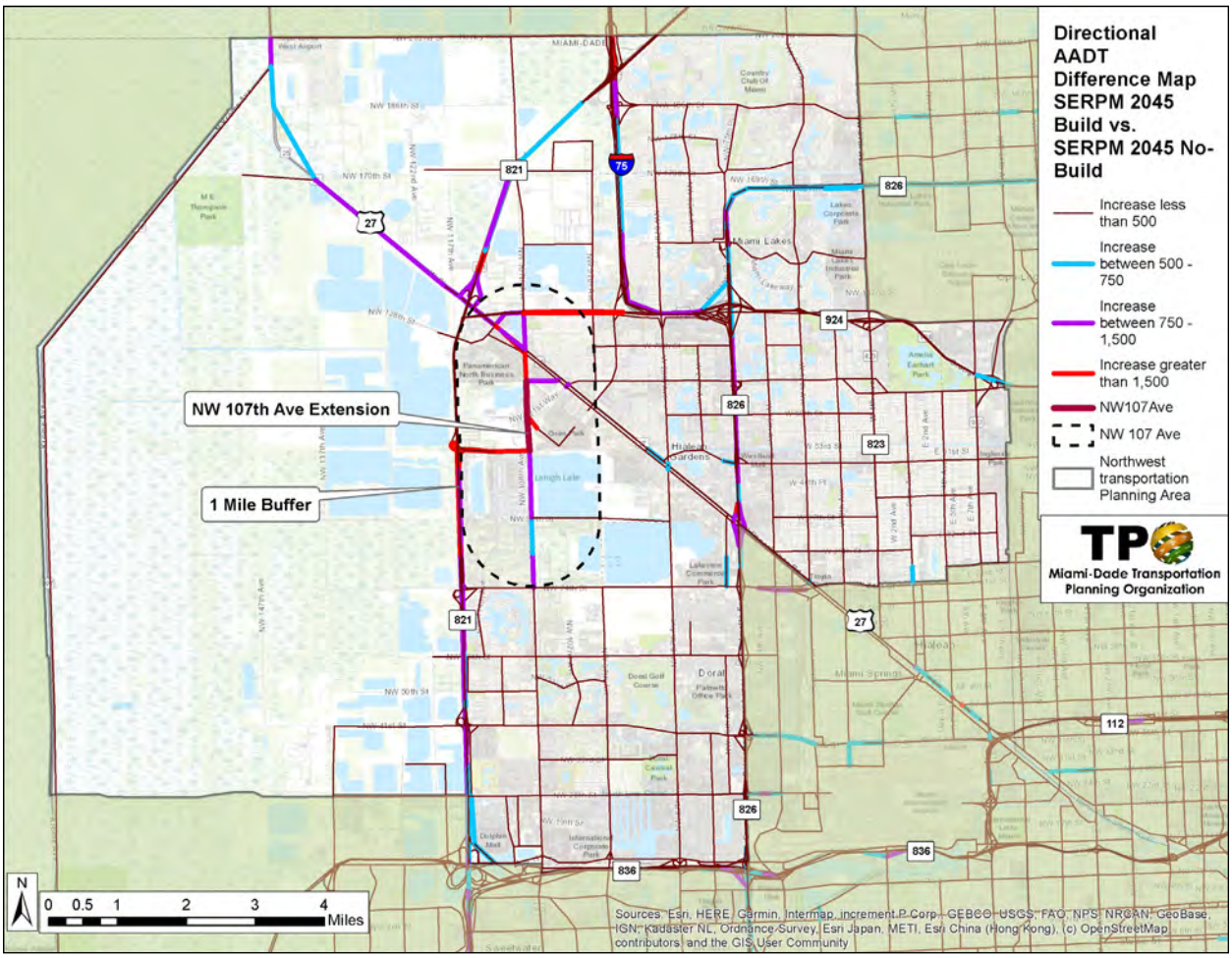

Figure 10. Year 2045 No Build vs. Build Daily Volume Comparison

4.1 Travel Time and Trip Length Savings

The top ten origins and destinations using the NW 107th Avenue extension were identified. By analyzing the top ten origins and destinations of trips using the new NW 107th Avenue extension, a comparison could be made on how those trips were taken prior to the NW 107th Avenue extension. The difference in travel time and travel distance for those trips was summarized in the final report. It was assumed that these top ten origins and destinations represent the total number of trips using the new NW 107th Avenue extension, and the travel time savings and travel miles reductions follow a normal distribution. The average and 68% confidence interval (average ± standard deviation) were estimated and applied to the average daily volume on the NW 107th Avenue extension which is estimated to be 19,635 average daily vehicles based on the year 2045 regional travel demand model. The results of simulating the travel patterns are listed in Table 4.

Table 4. Year 2045 Travel Time and Distance Savings

Trip Basis:
0.7 to 4.0 Minutes (Average of 2.32 Minutes) of Travel Time Savings
Up to 1.1 Miles (Average of 0.55 Miles) of Travel Reduction

Daily Basis:
230 to 1,300 Hours (Average of 760 Hours) of Travel Time Savings
Up to 22,000 Miles (Average of 10,800 Miles) of Travel Reduction

As shown in Table 4, more than half of the trips could have a travel time savings of approximately 0.7 minutes to 4.0 minutes with an average of 2.32 minutes and a travel mile reduction of approximately 0 miles to 1.1 miles with an average of 0.55 miles. On a daily basis, the estimated travel time savings range from 230 hours to 1,300 hours and the estimated travel miles reductions range from 0 miles to 22,000 miles.

In Appendix E of the full report, additional information is provided on the travel paths between the top ten origin and destination pairs and the calculations related to the total time savings.

5. List of Potential Projects

The next step in the study was to identify additional potential projects that could improve the mobility within the Northwest Transportation Planning Area. Special attention was given to the areas with higher-than-average population and employment growth rates, which are portrayed in Figure 10 and Figure 11, respectively. The focus of the analysis was to improve the mobility within the Northwest Transportation Planning Area by creating additional north-south and east-west connections, as well as providing improved connections between the different land uses and modes.

5.1 Types of Projects

Three different types of projects were identified. The types of projects were either a transit mode, a micro-mobility/bicycle/pedestrian mode or a highway mode. Figure 11 provides a general overview of the location of the different potential projects. The full report provides more detailed information about potential locations for micro-mobility/bicycle/pedestrian mode improvements.

The Medley On-Demand Service Area, shown in Figure 12, would enhance the mobility and connections between the residential and commercial land uses and the Palmetto Metrorail Station.

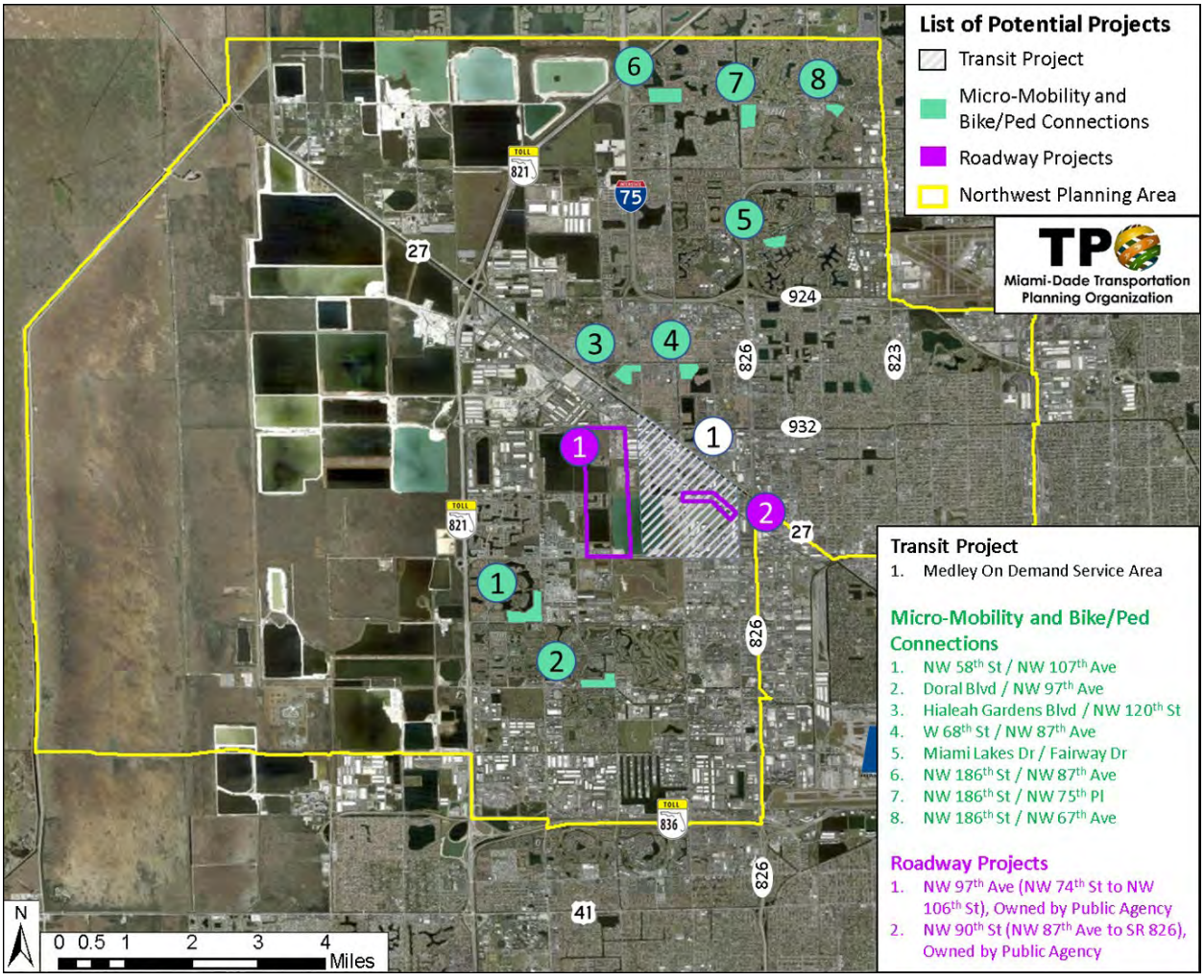

Figure 11. List of Potential Projects

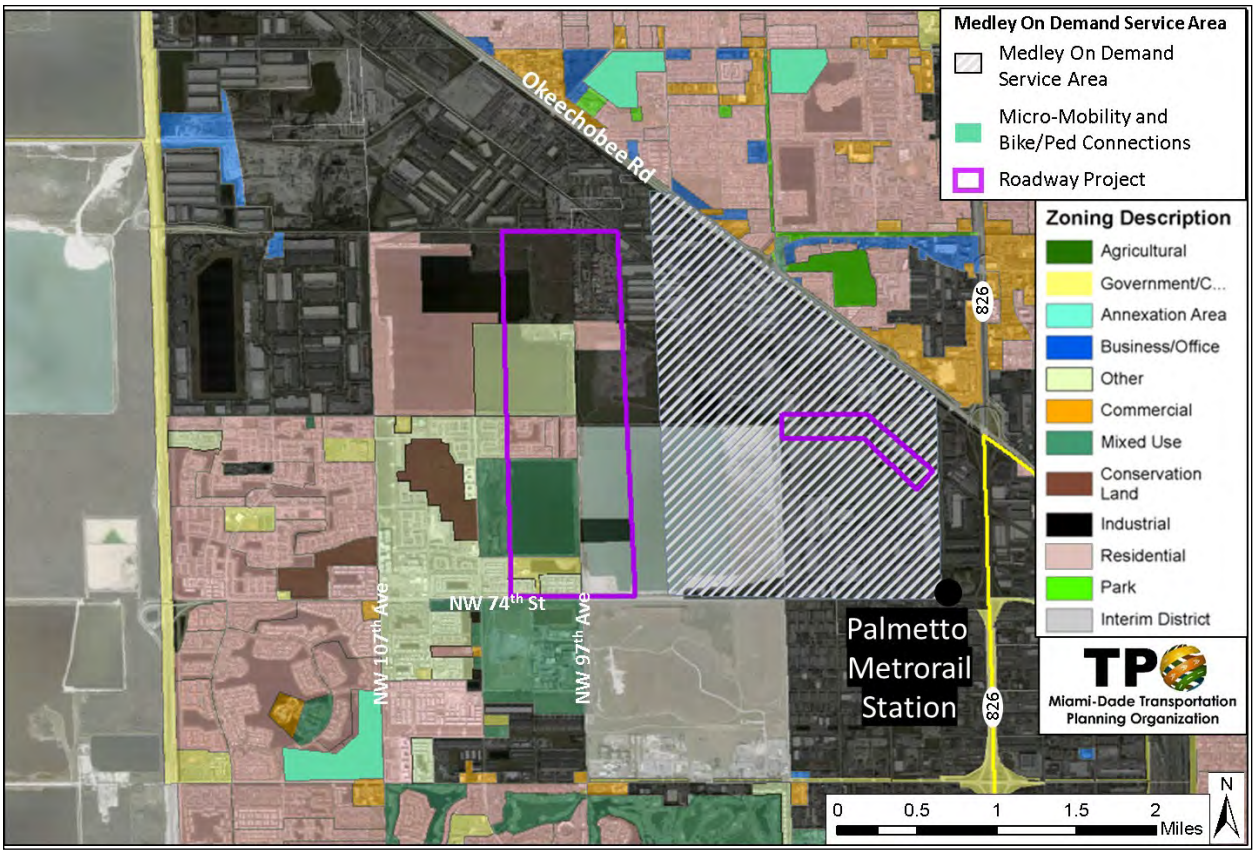

Figure 12. Medley On-Demand Service Area

In this part of the study, eight potential areas were identified that could benefit from micro-mobility/bicycle/pedestrian connections based on their land uses and development patterns. These areas are portrayed in green on Figure 11.

The study also identified two potential roadway connections, including an additional north-south connection between NW 74th Street and NW 106th Street, which is portrayed in Figure 13, and a possible east-west connection by connecting NW 90th Street to NW 81st Road. The potential east-west connection is portrayed in Figure 14.

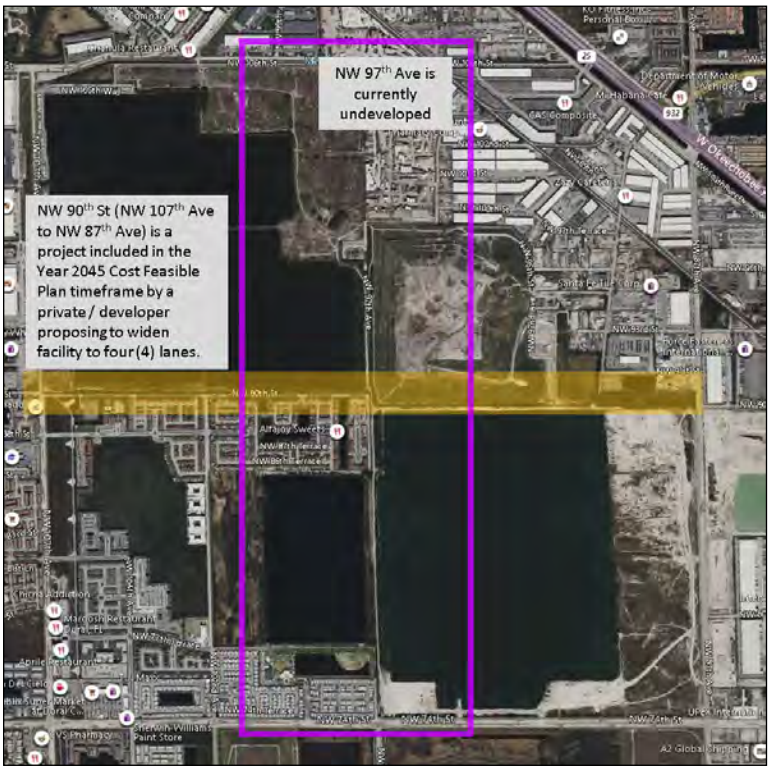

Figure 13. Potential North-South Connection

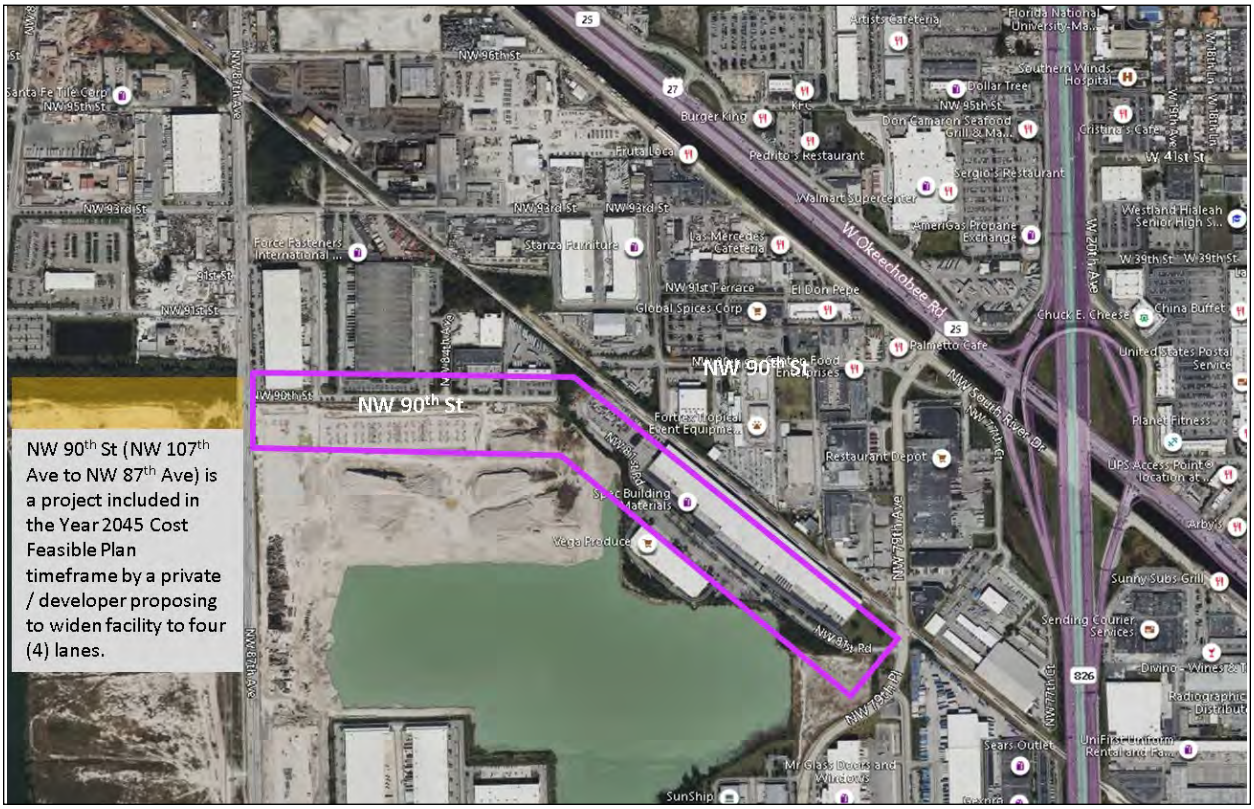

Figure 14. Potential East-West Connection

6. Summary of Findings

The Northwest Transportation Planning Area accommodates a significant amount of Miami-Dade County's industrial land uses due to its prime location, zoning, and excellent connections with Port Miami, Miami International Airport (MIA), and the Southeast Florida region. Its employment growth is slightly higher than the region and its population growth is estimated to be similar to the rest of the region. With a growing economy, maintaining good connectivity and additional mobility choices in the Northwest Transportation Planning Area are important for the residents, businesses, and visitors within the Planning Area, Miami-Dade County, and the Southeast Florida region.

The NW 107th Avenue extension will provide more direct access to destinations south of W. Okeechobee Road. It will also provide relief to the W. Okeechobee Road and the Homestead Extension of Florida's Turnpike (HEFT) as the extension will reduce the need to use those roads to access destinations in the area south of W. Okeechobee Road. The direct access will result in a significant amount of travel time and travel miles saved.

The potential projects that have been identified in this study will improve the traffic flow and mobility choices in the area, allowing for additional mode choices and better connections to different modes and land uses.