8.0 SITUATIONAL APPRAISAL

The situation appraisal assesses the transit operator and system to assist in identifying ways to enhance the delivery of transit services. This appraisal takes into account the evaluation of existing conditions and assessment of future projections of systemwide travel demand, land use, roadway level of service, and changes to the transit system that have been proposed by MDT. This chapter presents an overview of the transit provider's organizational structure, agency coordination efforts, estimated future travel demand, land use, and roadway level of service, and efforts to help foster a more transit-friendly operating environment.

8.1 Miami-Dade Transit Agency Coordination

As Miami-Dade County's transit operator, MDT coordinates with all areas of county government. This includes the Mayor's office, the County Manager's Office, the Board of County Commissioners, the Miami-Dade MPO, Miami-Dade County Planning and Zoning and other county departments whose efforts and responsibilities integrate with the operation of mass transit services.

MDT coordinates extensively with the Miami-Dade MPO for the development of the FY 2010 – 2014 Transportation Improvement Program (TIP) and the 2035 Long Range Transportation Plan (LRTP) through the participation on the TIP development committee and LRTP steering committee. MDT also collaborates with the MPO for ongoing countywide transportation planning initiatives and studies through participation on the Transportation Planning Council. MDT also coordinates with the Miami-Dade Planning and Zoning Department and the South Florida Regional Planning Council (SFRPC) by providing input on various transit impacts of the Comprehensive Development Master Plan Bi-annual Amendments, as well as, with area-wide issues tailored to the various Commissioner Districts and Community Councils.

Miami-Dade Transit continuously undertakes extensive outreach efforts to engage local stakeholders and the public for purposes of providing educational information and to collect feedback and input on MDT's existing and future service plans. These outreach efforts consist of stakeholder meetings, presentations at community meetings, news releases and through MDT's feedback zone program. The feedback zone provides an opportunity for the community to submit comments, suggestions, and complaints about MDT services through email or U.S. mail.

Miami-Dade Transit also works in cooperation with FDOT Districts Four and Six, the South Florida Regional Transportation Authority (SFRTA, the operator of the Tri-Rail commuter rail system), and Broward County Transit (BCT) on various transportation issues, conceptual plans and policies, and the implementation of projects of local and regional significance. Several projects where MDT is in a participating and coordinating role include the development of the SFRTA Regional Strategic Transit Plan, South Florida East Coast Corridor Transit Analysis (SFECCTA), the implementation of I-95 Managed Lanes project and integration of Intelligent Transportation System (ITS) projects into the regional information technology architecture.

8.2 Local and Regional Transportation Plans

A review of several local and regional short-term and long range planning documents was performed to assess the level of impact that proposed and programmed project initiatives would have on MDT services. Furthermore, these documents were reviewed to ensure that the FY 2010 – 2019 TDP Major Update is consistent with corresponding transit capital and operational improvement projects for the Miami-Dade Transit service area.

8.2.1 MPO 2030 LRTP

The MPO 2030 LRTP was adopted in November 2004 to include a cost feasible plan for the implementation of transit projects as grouped by priority (Priority 1 through 4). The projects listed as Priority 1, Priority 2, and Priority 3 occurs within the planning horizon of the FY 2010-2019 TDP Major Update. Specifically, Priority 1 projects were included in the FY 2005 – 2009 TIP under the 2030 LRTP and remain in the existing FY 2010 – 2014 TIP, with completion dates of 2012 for the MIC-Earlington Heights project; 2017 for the North Corridor project and 2023 for the East-West Corridor. Priority 2 and Priority 3 projects were included as funded projects between 2010 – 2015 and 2016 – 2020 respectively. The following premium transit projects are listed in the 2030 LRTP by priority to include:

- MIC-Earlington Heights Connection (Priority 1)
- North Corridor (Priority 1)
- East-West Corridor (FIU to MIC) (Priority 1)
- East-West Corridor (MIC to Government center) (Priority 2)
- Kendall Corridor (Priority 2)
- Bay Link (downtown Miami – Miami Beach) (Priority 3)

Current MDT plans have placed these projects on hold with the exception of the MIC-Earlington Heights connection, and the Kendall Corridor is also moving forward as an enhanced bus service, due to a lack of funding for the construction and operation of these capital improvements. MDT is revaluating alternate options and strategies for implementing premium transit service within these corridors listed in the 2030 LRTP.

8.2.2 MPO 2035 LRTP

The Miami-Dade County MPO has updated the 2030 LRTP to the year 2035. The previous LRTP was adopted in November of 2004. An update of the latest LRTP needs to occur every five years to meet federal and state requirements. The 2035 LRTP was approved by the MPO Governing Board in October 29, 2009.

In addition, the 2035 LRTP focuses on improving the efficiency of the current transportation infrastructure while identifying innovative ways to enhance mobility. Miami-Dade Transit is represented on the LRTP Steering Committee to assure that the development of the 2035 LRTP is aligned with MDT's policy and project initiatives.

8.2.3 MPO Short-Term Transit Improvement Options Study

The Miami-Dade MPO has prepared a report on short-term transit improvement options. The goals of this effort are to reduce transit operating costs and revenue miles, and improve transit services in the county. The report includes specific recommendations for the following seven corridors:

- Biscayne Boulevard
- Busway Corridor
- Collins Avenue
- West Flagler Street
- Kendall Drive
- Miami Gardens Drive
- NW/SW 27th Avenue

Of these seven corridors, one already has high-capacity transit service (the south Miami-Dade Busway Corridor) and two other (Collins Avenue; NW 27th Avenue) have high-capacity transit services planned and programmed in the existing Long-Range Transportation Plan (Bay Link Light Rail; North Corridor Metrorail Extension). The recommendations of the report include converting the bus system to a trunk and feeder system, in which longer distance service acts as trunk lines, with short-distance circulator and shuttle routes serving as collector routes. According to the report, this would eliminate duplicative service, maximize resources where they are needed most, reduce cost and improve service.

The report provided specific recommendations for changes to alignments and headways on existing services in each of the corridors, as well as recommendations for new services in many corridors. Other specific recommendations in the corridors include relocation and reduction in the number of bus routes, greater coordination with municipalities, and more construction of terminal facilities, transit centers and park-and-ride lots.

Many of the recommendations include the implementation of new services, changes to existing route service frequencies, and implementation of new infrastructure, which could have significant operating and/or capital cost implications. Given the current funding issues at MDT and currently planned service reductions on many routes, service improvements, including routes identified for service increases by the MPO's report, would need to find funding sources in addition to the existing sources now utilized for bus operations.

8.2.4 Miami-Dade 2009 Metrorail Transit Survey

The Miami-Dade County MPO has initiated a data collection program in accordance with the Federal Transit Administration (FTA) guidelines for transit demand modeling efforts. This program serves to obtain data that will supplement transit planning and modeling efforts in Miami-Dade County and the South Florida Region for those transit capital projects that will seek federal funding assistance. In April 2009, the MPO

conducted the Metrorail Transit Survey (MTS) of Metrorail passengers and passenger door counts. The purpose of the MTS was to provide with real world ridership data and basic demographic information. The MTS gathered transportation characteristics including trip purpose, mode of access and egress, and origin-destination information. Data from the MTS will be used as regional transportation planning tool and help to validate assumptions in the Southeast Regional Planning Model (SERPM v6.5).

Survey instruments were distributed in English, Spanish, and Creole with 18 questions for passengers to complete and return at each of the 22 Metrorail stations. The survey was administered during the period of 6:00 AM to 6:00 PM on trains traveling in both north and south directions. Of the total 30,112 surveys distributed during the MTS, 17,862 (59% return rate) surveys were returned and considered valid.

The origin and destination response data for each Metrorail station is presented in Figure 8-1. The survey response data illustrates the high demand of service on Metrorail from the Civic Center station to the south with the highest on-off activity occurring at Dadeland South, Dadeland North, South Miami, University, Douglas Road, Brickell, and the Civic Center stations.

Figure 8-1: MPO Metrorail Survey Responses – Origin and Destination

Origin/Destination	Dadeland South	Dadeland North	South Miami	University	Douglas Road	Coconut Grove	Vizcaya	Brickell	Government Center	Overtown	Culmer	Civic Center	Santa Clara	Allapattah	Earlington Heights	Brownsville	Dr.MLK Jr.	Northside	Tri-Rail	Hialeah	Okeechobee	Palmetto	No Response	Grand Total
Dadeland South	19	44	71	98	156	58	36	224	883	90	39	595	19	44	18	15	54	34	26	20	8	30	10	2,591
Dadeland North	16	13	29	54	75	43	32	154	622	48	28	350	8	17	8	3	16	12	7	11	9	9	8	1,572
South Miami	20	19	10	20	27	12	7	38	297	27	5	171	0	8	9	1	5	8	14	2	7	4	2	713
University	27	28	5	4	14	3	13	12	93	8	5	104	2	6	5	0	6	1	20	7	6	6	0	375
Douglas Road	98	87	61	32	11	21	12	93	236	21	21	89	14	25	10	7	16	9	15	9	15	8	7	917
Coconut Grove	80	53	47	24	45	4	5	44	135	6	5	52	5	11	6	2	7	4	12	6	7	9	4	573
Vizcaya	28	37	16	17	30	5	3	11	32	3	3	27	2	3	2	1	3	4	6	6	4	5	3	251
Brickell	117	131	60	35	65	21	12	12	40	7	15	66	5	11	8	4	5	7	28	22	11	22	4	708
Government Center	354	367	176	80	148	55	26	28	34	19	11	104	17	48	47	25	37	50	82	91	76	91	12	1,978
Overtown	76	58	33	22	32	10	11	12	43	5	7	29	1	3	19	4	9	17	10	11	18	18	4	452
Culmer	37	29	27	14	27	4	9	17	46	2	5	17	3	8	7	15	9	8	7	7	7	4	2	311
Civic Center	204	206	91	60	45	21	11	41	81	4	7	24	3	14	24	13	45	42	78	42	36	34	7	1,133
Santa Clara	20	20	13	9	16	5	1	18	58	4	4	8	5	5	4	6	7	6	3	4	2	4	2	224
Allapattah	37	24	30	38	39	11	7	24	97	5	7	43	3	10	14	11	13	10	15	16	6	16	3	479
Earlington Heights	43	16	16	14	31	7	5	21	122	9	10	73	4	8	12	7	14	13	7	22	13	8	5	480
Brownsville	17	8	14	9	11	2	2	5	72	11	12	40	0	7	11	11	5	20	8	11	13	11	3	303
Dr.MLK Jr.	49	17	19	27	25	6	8	16	129	11	12	85	6	15	12	13	9	9	3	11	8	10	5	505
Northside	39	20	26	27	56	4	30	17	166	16	8	93	3	13	11	11	9	12	3	12	16	14	0	606
Tri-Rail	37	9	9	31	9	8	8	45	146	6	0	132	8	9	1	4	4	4	6	8	13	16	7	520
Hialeah	20	22	14	24	26	9	10	39	206	12	8	108	10	21	17	2	14	20	7	7	9	16	7	628
Okeechobee	25	8	5	13	25	4	12	35	227	26	4	155	12	8	4	8	7	14	7	0	8	13	0	620
Palmetto	14	12	5	15	18	10	7	40	215	17	3	159	4	7	4	7	8	11	16	13	9	4	1	599
Total Responses	**1,377**	**1,228**	**777**	**667**	**931**	**323**	**267**	**946**	**3,980**	**357**	**219**	**2,524**	**134**	**301**	**253**	**170**	**302**	**315**	**380**	**338**	**301**	**352**	**96**	**16,538**
No Response	9	4	2	2	7	5	5	4	27	3	3	18	0	4	3	1	3	5	6	6	4	0	1203*	1,324
Grand Total	**1,386**	**1,232**	**779**	**669**	**938**	**328**	**272**	**950**	**4,007**	**360**	**222**	**2,542**	**134**	**305**	**256**	**171**	**305**	**320**	**386**	**344**	**305**	**352**	**1,299**	**17,862**

* The sum of both the origin and destination questions that were not answered

Source: MPO Metrorail Survey, August 2009

The Government Center station has the highest activity as both a destination and origin of travel during the peak period travel in both the north and south direction of the Metrorail system based on the number of responses collected at that station and ridership data from MDT. These results indicate an opportunity to identify operational improvements for this segment based upon its high passenger activity.

8.2.5 SFRTA Strategic Regional Transit Plan

The SFRTA developed the Strategic Regional Transit Plan (SRTP) for the promotion of regional transit to ensure mobility, economic viability and quality of life in the south Florida region. The Strategic Plan serves as a long range plan to identify transportations service needs for the South Florida region. The SRTP defined three potential transit networks:

- Connective Network: Serves future land use and activity centers maximizing infrastructure investments.
- Productive Network: Places transit options in most heavily used corridors.
- Value Network: Presents transit options that result in high ridership through a provision of good transit service at a reasonable price.

The transit alternatives proposed in the SRTP serve either one or more of the three listed networks include:

- Miami Beach Light Rail Transit
- Tri-Rail branch to downtown Miami
- Kendall Drive Bus Rapid Transit
- Metrorail East-West Extension
- 137th Avenue Rapid Bus

The projected capital and operating costs for the implementation of these projects is significant. Each project has the potential for eligibility under the FTA 5309 New Starts program where up to 75 percent of capital funds could be secured through the federal (50%) and state (25%) government participation. However, the associated operating cost of a project would need to be funded locally over the life of the project. Therefore, operating funding in addition to existing sources being applied to fund current transit operations will need to be identified.

8.3 Information Technology

Miami-Dade Transit is committed to the deployment of a comprehensive, inter-operative and fully integrated system of Intelligent Transportation Systems (ITS) technologies. MDT is continuously working to ensure seamless technology integration with county and regional technology initiatives, and incorporating technology in the implementation of transit business processes. The Agency adheres to a locally approved regional ITS architecture and has developed its own ITS architecture that integrates existing systems with future ITS initiatives. MDT participates with FDOT and other local agencies to incorporate and integrate all ITS projects to the overall regional architecture.

The information technologies deployed serve to provide enhanced methods of communicating information to transit passengers and better align MDT's business objectives for the proficient administration, operation, and maintenance of transit services. The following lists several key projects that demonstrate MDT's commitment to implementing technology enhancements to better serve the community:

- **Kiosk:** Electronic Transit information centers provide transit information relating to bus routes, schedules, service interruptions, service modifications, station and emergency information to the MDT patrons.
- **Rider Alerts:** Submit messages to the public pertaining to any delays, detours, or service disruptions affecting any route on the MDT system. The public has the ability to sign up on the MDT website to receive alerts via text messages, emails and/or electronic pagers.
- **Train Tracker:** Informs Metrorail passengers of the time of arrival for the next train approaching a station. This information has significantly reduced the waiting time of MDT's riding customers.
- **Electronic Asset Management (EAMS):** This project has integrated and automated MDT's Materials Management, Maintenance and Inventory system providing information on detailed worked performed, hours necessary to perform the task, and automatic preventive maintenance generation of work orders resulting in a more efficient delivery of services.
- **Electronic Document Management (EDMS):** Created an electronic filing system enabling the Engineering Planning and Development directorate to obtain fast, accurate and reliable access to MDT's project files. This has enhanced the assurance of document integrity and records management work flows. The system is now being deployed agency wide.

MDT is concentrating heavily in the infrastructure area for future ITS deployment. The following presents several key projects that are in various phases of development and implementation:

Automated Fare Collection System

This project is currently underway and will implement a comprehensive automated Fare Collection System with "smart" card (EASY CARD) technology to include:

- Photo ID/Easy Card System
- Data Center Rewiring/Redesign
- Automated Passenger Counters (APC) Data & Business Process Integration
- Easy Card Website
- Corporate Discount Program Website
- Upgrade to MDT Network

Electronic Signage Information Systems (ESIS) / Wireless at Rail Stations

The focus of this project is to implement electronic audio and visual signage at Metrorail stations that are integrated with real-time information. This will enable MDT to have an Emergency Management system for emergency notification and for security personnel.

Metro-Mover Fiber Repair/Replacement

The fiber optic cable system currently used to support the Metromover system is well past its useful life. A total of six stations will need to have fibers replaced. This project will also replace fibers for Video and Wireless Networking Security CCTV System and conduit.

CAD/AVL System Replacement

The current CAD/AVL System has been in service for 13 years and has reached its end-of-life cycle. The CAD/AVL software is also an antiquated system that needs to be replaced. This project will provide migration of both hardware and software to current technology for easier and more cost efficient maintenance and support. This project also provides easier integration to the new critical systems, such as Transit Operations System (TOS) and the Fare Collection System currently being implemented.

Transit Operating System (TOS) Upgrade and Replacement

This system is used to dispatch Bus Operators and tracks Bus Operators payroll. The current system is obsolete and running on antiquated hardware. TOS was installed in 1988 and throughout the years has undergone several modifications to meet MDT requirements. However, TOS platform and computing environments have not caught up with the improvement and sophistication that have occurred in the past twenty years in technology. As a result, the TOS has become limited in it use.

The goals and objectives of the TDP Major Update are consistent with MDT's assessment of new technology available for development and the implementation of ITS improvement projects.

8.4 Assessment of Miami-Dade County Comprehensive Development Master Plan

An evaluation of the Land Use and Transportation elements of the Miami-Dade County Comprehensive Development Master Plan (CDMP) was performed as part of the TDP Major Update situation appraisal. This review was performed to determine whether policies of these CDMP elements were supportive or hindered the provision of MDT transit services.

8.4.1 General Observations

The Land Use Element and Transportation Element of the CDMP represent a very positive policy and design direction that benefits the provision of MDT transit services. The Land Use Element represents a complete array of planning strategies and techniques for creating a symbiotic relationship between land development and MDT transit services.

The Transportation Element addresses the needs of automobile traffic, bicyclists, and pedestrians in the Traffic Circulation Sub-element. Transit needs are covered in the Mass Transit Sub-element. The policies in these two sub-elements clearly support transportation modes other than automobiles, but as discussed in later sections, private automotive traffic receives the majority of the policy emphasis.

8.4.2 Land Use

The pattern of land use and urban growth promoted in the original CDMP continues to occur throughout Miami-Dade County. The location and configuration of Miami-Dade County's urban growth through the year 2025 shall emphasize concentration and intensification of development around centers of activity, development of well-designed communities containing a variety of uses, housing types and public services, renewal and rehabilitation of blighted areas, and contiguous urban expansion when warranted, rather than sprawl.

Miami-Dade County shall require all new development and redevelopment in existing and planned transit corridors and urban centers to be planned and designed to promote transit-oriented development (TOD), and transit use, which mixes residential, retail, office, open space and public uses in a pedestrian-friendly environment that promotes the use of rapid transit services. This set of actions will produce short trips, minimize transfers, attract transit ridership, and promote travel patterns using the transit line that are balanced directionally and temporally to promote transit operational and financial efficiencies. In fact, when the existing land use map is compared to the adopted 2015 and 2025 land use plan it is noticeable that areas along the South Miami-Dade Busway changed from undeveloped land to low or medium residential density in the new plan (refer to the segment between Florida City and SW 200 Street).

The County will give special emphasis to providing a high level of public mass transit service to all planned urban centers. These Urban Centers are intended to be moderate- to high-intensity design-unified areas. The adopted land use plan for 2015 and 2025 shows that Urban Centers such as Downtown Miami will continue with a

residential density increase that goes along with the population growth forecasted for this area.

8.4.3 CDMP Evaluation Criteria

The FDOT Guidance for Producing a Transit Development Plan provides information to help transit agencies evaluate the level of support offered by local comprehensive plans. To facilitate this type of evaluation, the guidance document includes a list of 19 evaluation criteria. These criteria were used to guide the review of the CDMP Land Use and Transportation elements. A listing of the specific criteria is provided in the appendix as a reference.

8.4.4 Land Use Element Evaluation

In general, the Land Use Element of the CDMP is supportive of transit. This portion of the CDMP has 12 broad objectives, each with several supporting policies. The objectives and policies recognize the importance of multi-modal transportation and the role that land use and urban design play to support transit services. In particular, Objective LU-7 states that "*Miami-Dade County shall require all new development and redevelopment in existing and planned transit corridors and urban centers to be planned and designed to promote transit-oriented development (TOD), and transit use, which mixes residential, retail, office, open space and public uses in a pedestrian-friendly environment that promotes the use of rapid transit services*."

Policy statements that support the objectives, which are directly or indirectly related to transit, are presented in the following table.

In addition to the policy themes summarized above, the CDMP Land Use Element includes a narrative discussion about the importance of good pedestrian environments, increased density with good urban design, allowing neighborhood commercial development to occur in residential areas, and allowing mixed-use development.

Table 8-1: CDMP Land Use Policy Statements

Transit-Supportive Policy Themes – Land Use	Policy Number
Concentrating higher density development in centers and corridors, which have multi-modal accessibility.	LU-1A, LU-1B, LU-7F, LU-7G, LU-7I, LU-9H, LU-9R, LU-9T & LU-10A
Recognizing the need to prioritize infill development within existing urban areas.	LU-1C, LU-1M, LU-10A, LU-10C, LU-12A, LU-12B & LU-12D
Encouraging safe and convenient automotive, pedestrian, and bicycle circulation.	LU-1D
Creating an aesthetically pleasing and dynamic built environment.	LU-1E, LU-9I, LU-9J & LU-9O
Encouraging housing diversity, including minimum residential densities.	LU-1F, LU-7F & LU-9G
Clustering business development rather than locating it in strips or isolated locations.	LU-1G
Preventing discontinuous, scattered development along the urban fringe.	LU-1O
Giving first priority to providing services and facilities within the Urban	LU-2B

Development Boundary (UDB).	
Requiring transit-oriented development (TOD) within transit corridors and urban centers.	LU-7A, LU-7G, LU-7H & LU-7I
Encouraging mixed-use development near transit.	LU-1D, LU-7H, LU-7I, LU-9P, LU-9Q & LU-9U
Discouraging uses that are not transit-friendly within transit areas.	LU-7E
Encouraging walking, transit, and bicycling, and creating a pedestrian-friendly environment through design and land use considerations.	LU-7B, LU-7C,LU-7D, LU-7F & LU-7G
Giving priority to UDB (Urban Development Boundary) expansion areas located within one mile of an urban center and/or "extraordinary" transit service.	LU-8G (iii)

Source: CDMP, Land Use Element

A section on urban centers promotes the ideas of accessible grid street systems, shared parking, locating buildings toward the street and placing parking in less obtrusive locations, and making allowances to increase density over time. The plan document also identifies fourteen "long-standing concepts embodied in the Miami-Dade CDMP". Several of these related concepts that promote transit include:

#5. Minimize consumption of energy for transportation purposes and the amount of air pollution from transportation sources by encouraging a more compact urban form.

#6. Shape the pattern for urban development to maximize the efficiency of existing public facilities and support the introduction of new public facilities or services such as improved mass transit system.

#8. Rejuvenate decayed areas of development by promoting redevelopment, rehabilitation, infilling and the development of activity centers containing a mixture of land uses.

#9. Promote development of concentrated activity centers of different sizes and character to provide economies of scale and efficiencies of transportation and other services for both the public and private sectors.

#10. Redirect higher density development towards activity centers or areas of high countywide accessibility.

#13. Avoid excessive scattering of industrial or commercial employment locations.

8.4.5 Transportation Element Evaluation

In general, the Transportation Element is also supportive of transit. This portion of the CDMP has several overall planning objectives and policies followed by five sub-elements. Two of these sub-elements, Traffic Circulation and Mass Transit, apply to transit. Similar to the Land Use Element, the transportation objectives and policies recognize the importance of transit and the creation of a multi-modal transportation system. Policy statements that support the objectives, which are directly or indirectly related to transit, are presented in Table 8-2:

Table 8-2: CDMP Transportation Policy Statements

Transit-Supportive Policy Themes – Transportation	Policy Number*
Supporting, and seeking funding for, convenient mass transit.	TE-1A, MT-1A, MT-3A, MT-4C, MT-5A, MT-5B & MT-5C
Establishing level of service measures for transit.	MT-1A – MT-1D
Providing inter-city and inter-state commuter rail and bus service.	TE-1B
Providing high quality intermodal connections.	TE-1C, TE-1D & MT-8A – MT-8E
Implementing transit-supportive Land Use Element policies.	TE-1F, MT-4A & MT-4B
Providing for safe, convenient, and comfortable movement of pedestrians and non-motorized vehicles, including on-site circulation.	TE-2A - TE-2G
Coordinating transportation and land use planning efforts.	TE-3A – TE-3C, TC-4A, TC-4B, MT-2A - MT-2C, MT-5D, MT-6A – MT-6E & MT-7A – MT-7C
Tolerating greater peak hour congestion where good transit is available within ½ mile.	TC-1B
Considering more flexible and/or reduced parking requirements in Urban Centers and locations where transit service is available.	TC-1I
Considering transit to help improve air quality and conserve energy.	TC-6E

* TE – Transportation Element – General goals, objectives and policies.
TC – Traffic Circulation Sub-element
MT – Mass Transit Sub-element

8.4.6 Suggested Policy Amendments

Based upon the evaluation of the CDMP's Land Use and Transportation elements several proposed policy amendments have been developed. For the Land Use Element, the amendments seek to further enhance the type of land use development, design and definition as related to supporting mass transit. Related to the Transportation Element the proposed amendments place more emphasis on the promotion of mass transit services and non-motorized transportation.

8.4.6.1 Land Use Element

The objectives and policies in the Land Use Element clearly recognize the importance of multi-modal transportation and the role that land development should play in creating a well-integrated relationship between transit and the land uses it serves. Three policy amendments to the Land Use Element are suggested to further enhance its support for transit. Each of these proposed policy amendment are described below.

Evaluate policies that may discourage mixed-use development.

Under Objective LU-4, Policies LU-4A, LU-4C, and LU-4D address the issue of incompatible land uses, with a focus on protecting residential neighborhoods. While this is an appropriate concern, it appears these policies could discourage the mixed-

use and transit-oriented development sought in other sections of this plan element, such as Objective LU-7.

Policies under Objective LU-4 should emphasize that in some cases, different uses should be mixed with careful consideration of their characteristics and application of sound urban design principles to ensure compatibility.

Develop a stronger policy regarding inappropriate land uses and development design near transit.

Policy LU-7E states that land uses "not conducive to public transit" should not be permitted within a ¼ mile of rail rapid transit stations. The county should consider amending this policy to consider that the prohibition should be mandatory – at least for uses that are clearly incompatible in all conceivable circumstances.

View major streets (section line roads) as potential community focal points rather than neighborhood boundaries.

The "Residential Communities" section of the Land Use Element notes that the section line roads should form the physical boundaries of neighborhoods. Thinking of such streets as boundaries may also have the unintended consequence of creating few pedestrian and bicycle linkages across these major roadway barriers. This section also states that along major streets, pedestrians should be accommodated by sheltering sidewalks from passing traffic with landscaping on the street edge. However, in addition to landscaping, the county should consider using design treatments along major streets, and especially along important transit corridors, to allow them to become attractive and active community centers rather than neighborhood barriers. Traffic calming, mixed land uses, pleasant and convenient pedestrian/bike access. Good urban design can transform vehicle throughways into truly multi-modal corridors.

8.4.6.2 Transportation Element

The objectives and policies in the Transportation Element clearly recognize the importance of multi-modal transportation. However, the emphasis of the general Transportation Element objectives and policies and the Traffic Circulation Sub-element is clearly biased toward accommodating automobiles over other transportation modes. The Transportation Element could benefit from three types of future amendments that would give more attention and emphasis to transit and non-motorized travel. Each of the three proposed policy amendments is presented below.

De-emphasize the focus on level of service (LOS) for automobiles.

Objective TC-1 states that "It is desirable that all roadways in Miami-Dade County operate a level of service (LOS) C or better." Supporting Policy TC-1H states that "…Miami-Dade County will give highest priority to the funding of necessary capacity improvements to roadways on the Florida Intrastate Highway System…" Objective TC-3 states "The County's transportation system will emphasize safe and efficient management of traffic flow." Supporting Policies TC-3A and B focus on auto-related system treatments and correcting high accident locations.

Similarly aggressive policy statements are absent regarding pedestrian and bicycle system safety and performance, connectivity, and convenience issues. The Mass Transit Sub-element Objective MT-1 and supporting policies suggest appropriate levels of transit service, and Objective MT-3 indicates that a "sound funding base" should be provided. However, the policy language suggests that compared to automobile travel, transit and non-motorized modes are lower priorities.

Therefore, the County should consider promoting a true multi-modal balance by strengthening its policy and financial commitment for transit, walking, and bicycling while diminishing the emphasis on maintaining or expanding roadway capacity.

Consider Transportation Demand Strategies (TDM) that include transit and non-motorized transportation.

Objective TC-1F lists a number of possible TDM strategies to reduce overall peak-hour demand and use of single occupant vehicles. Of the strategies, offering a subsidy for transit riders and park-and-ride lots are the only transit-related alternatives. There are no walking or bicycling strategies.

The county should consider broadening the list of TDM strategies to encourage people not to drive. The key will be to provide realistic and attractive travel options to driving.

Provide a clearer and more detailed vision regarding pedestrian and bicycle system improvements that complement transit.

Successful transit depends upon people having easy access to it. Walking and bicycling are the two common and most efficient ways to reach transit. Objective MT-8 and the supporting policies begin to address this by noting the importance of pedestrian walkways, comfortable pedestrian environment, and bicycle lockers and racks. But the Transportation Element does not clearly address what accommodations should be made to provide pedestrians and bicyclists with safe, convenient, and comfortable access between transit and surrounding development.

The county should consider broadening the objectives and policies to cover:

- Safe and convenient pedestrian and bicycle networks, especially within urban centers and transit corridors.
- A planned countywide non-motorized network featuring a fine-grained system that is comparable to the level of attention given to vehicular modes. CDMP

figure 6 – Planned Non-Motorized Network 2005 (Traffic Circulation Sub-element), is very limited in scope and identifies few facilities countywide.

- Access strategies for the major county centers that would promote transit use along with walking and bicycling. CDMP figure 4 – Major Existing Traffic Generators and Attractors 2025 (Mass Transit Sub-element) shows major destinations in the county, but there is no discussion about how access should be provided by transit, walking, or bicycling.

8.5 Systemwide Travel Demand Model Estimates

Travel demand estimates were prepared for the TDP Major Update using the existing Dade/Broward Model which was accepted by FDOT District Six as an appropriate method of estimation for the FY 2010 – 2019 TDP Major Update (see appendix for formal FDOT acceptance letter).

8.5.1 Methodology

Travel demand estimates on transportation needs in a region are based on projected levels of population and employment as well as the characteristics of the existing and planned transportation networks. To estimate these transportation needs, the Dade-Broward travel demand model was developed by merging the calibrated and validated travel demand models created by the both the Miami-Dade County and Broward County Metropolitan Planning Organizations. This travel demand estimation model was specifically developed to address MDT's needs in assessing potential transit ridership within Miami-Dade and across the Dade-Broward county line.

The main input to the model include population and employment data as well as roadway and transit networks. The demographic data used in the model were developed by the respective Planning and Zoning department for each county. The roadway and transit networks reflect the networks that were approved as part of the respective county's model updates of their LRTP's development process for the forecast years. The mode choice component of the model was refined and calibrated in collaboration with the Federal Transit Administration and based on the comprehensive transit on-board survey performed in 2004 by Miami-Dade Transit.

The model was further updated to provide information needed for the MDT TDP Major Update. The updates to the Dade-Broward model included estimating 2009 and 2019 conditions based on the available 2000 and 2030 MPO data. Socio-economic data for 2009 and 2019 were estimated by interpolating between the 2000 and 2030 data. The roadway and transit networks were also adjusted to reflect current conditions and projected conditions in 2019. The transit network for both 2009 and 2019 is based on the latest line-up rolled out in June 2009 by MDT.

8.5.2 Ten Year Model Estimate Forecast (2009 – 2019)

The population and employment levels are expected to grow in Miami-Dade by approximately 2.5 and one percent per year respectively. As a result, estimated ridership between 2009 and 2019 is projected to increase at approximately 2.5 percent per year.

The largest increase is seen in estimated ridership (passenger link trips) for Metrorail with the introduction of the Orange Line Phase 1: MIC-Earlington Heights service in 2012 and the completion of the Miami International Airport PeopleMover project. For this analysis, the 2019 operating scenario assumes that the MIC-EH would operate from the Miami Intermodal Center to Dadeland South. The service will operate on the new section of elevated tracks between the MIC and Earlington Heights and share the existing elevated tracks currently used for the Stage 1 line from Palmetto to Dadeland south. The line MIC-EH line is assumed to run at 7.5-minute headway during the peak

period and 15-minute headway during the off-peak hours, while the existing line would continue to operate at 7.5 and 15-minute headways during peak and off-peak periods. The Miami International Airport PeopleMover service is assumed to operate at 90-second headways all day and interface with the regional transit service including the MIC-EH line at the MIC station. Figure 8-2 shows the assumed operating plan. The subsequent phases of the Orange Line, Phase 2: North Corridor and Phase 3: East-West are not included since they are not planned at this time to be in operation by 2019.

The MIC-EH Metrorail Extension and the MIA PeopleMover projects will in effect provide rail service at one of the region's major employment centers – Miami International Airport. Metrorail ridership is expected to increase by 45 percent between 2009 and 2019. Although the service on Metrobus is not expected to change over the planning horizon of the TDP Major Update, ridership is expected to grow by 12 percent between 2009 and 2019 accounting for the growth in population and employment as well as the new Metrorail service to Miami International Airport, as bus routes will connect Metrorail to the region. Consistent with the increase in the number of passengers using the transit system, both passenger miles and hours will also increase by approximately 20 percent between 2009 and 2019. A summary of the mode choice output results is provided in the subsequent tables.

Table 8-3: 2009 Estimated Transit System Summary

	Total Daily Passenger Linked Trips	Total Daily Passenger Miles	Total Daily Passenger Hours
Metrobus	191,350	703,800	49,100
Express Bus	3,070	23,560	1,000
Metrorail	53,790	331,830	9,360
Metromover	22,050	15,410	1,310
Total	270,260	1,074,600	60,770

Source: Dade-Broward Model, 2009

Table 8-4: 2019 Transit System Summary

	Total Daily Passenger Linked Trips	Total Daily Passenger Miles	Total Daily Passenger Hours
Metrobus	214,960	785,870	55,950
Express Bus	3,900	31,760	1,350
Metrorail	78,230	450,560	12,550
Metromover	29,420	21,040	2,580
MIA Mover	5,330	5,330	800
Total	331,840	1,294,560	73,230

Source: Dade-Broward Model, 2009

Figure 8-2: Operating Plan Used for Travel Forecast Estimates

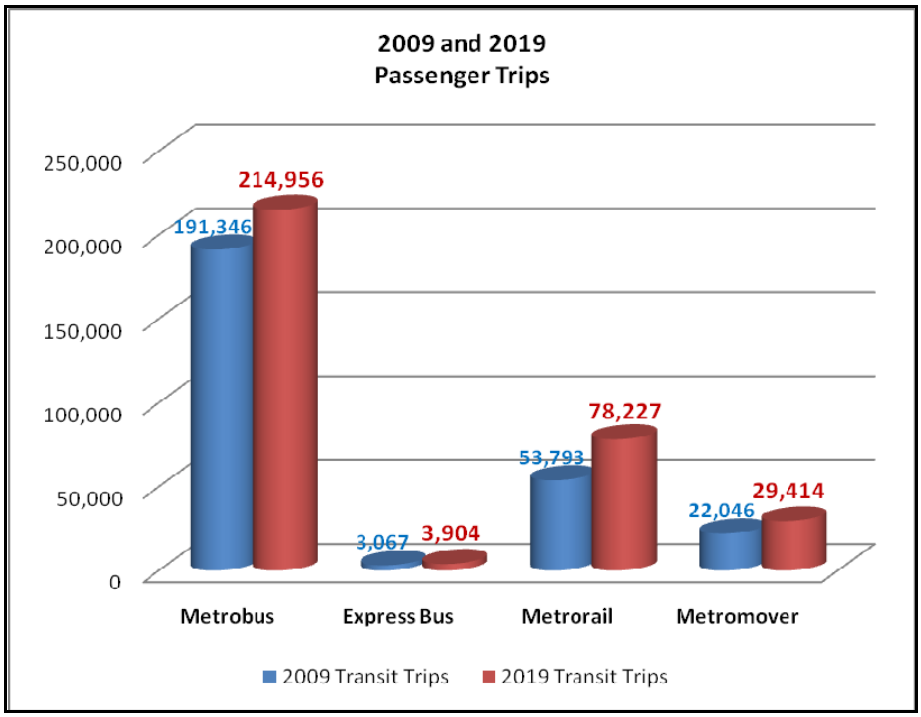
Table 8-5: Difference between 2009 and 2019 Transit System Summary

	Total Daily Passenger Linked Trips	Total Daily Passenger Miles	Total Daily Passenger Hours
Metrobus	**23,610**	**82,070**	**6,860**
Express Bus	**840**	**8,200**	**350**
Metrorail	**24,440**	**118,730**	**3,190**
Metromover	**7,370**	**5,630**	**1,280**
MIA Mover	**5,330**	**5,330**	**800**
Total	**61,590**	**219,960**	**12,480**

Source: Dade-Broward Model, 2009

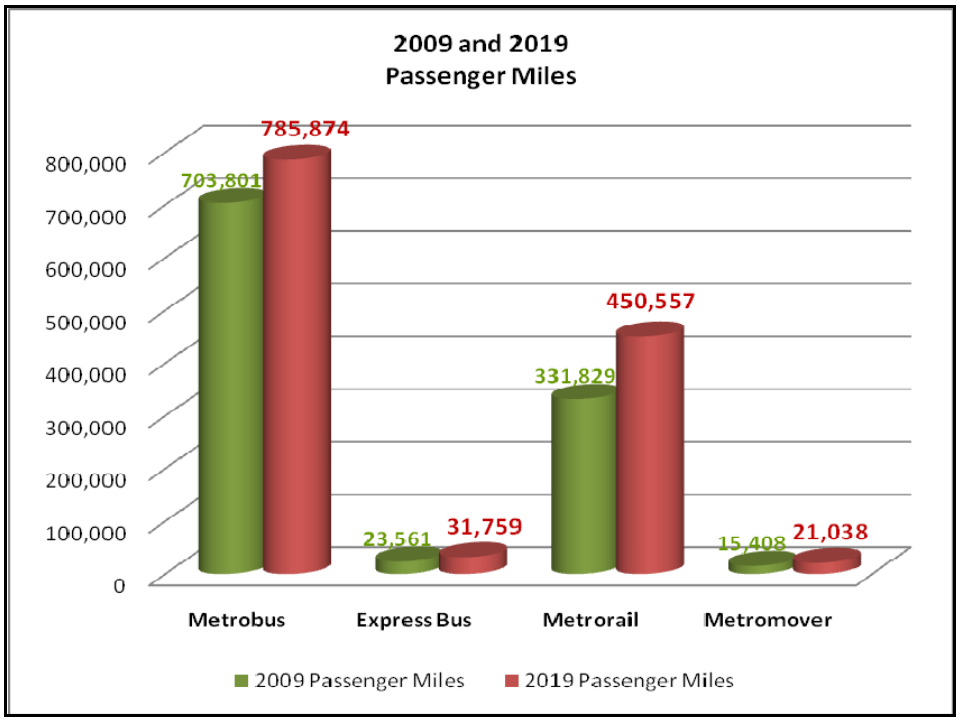
The following figures (Figure 8-3 through Figure 8-5) help to illustrate the percent change or growth in passenger trips, passenger miles and passenger hours according to transit mode between 2009 and 2019.

Figure 8-3: Difference in 2009 and Projected 2019 Passenger Trips



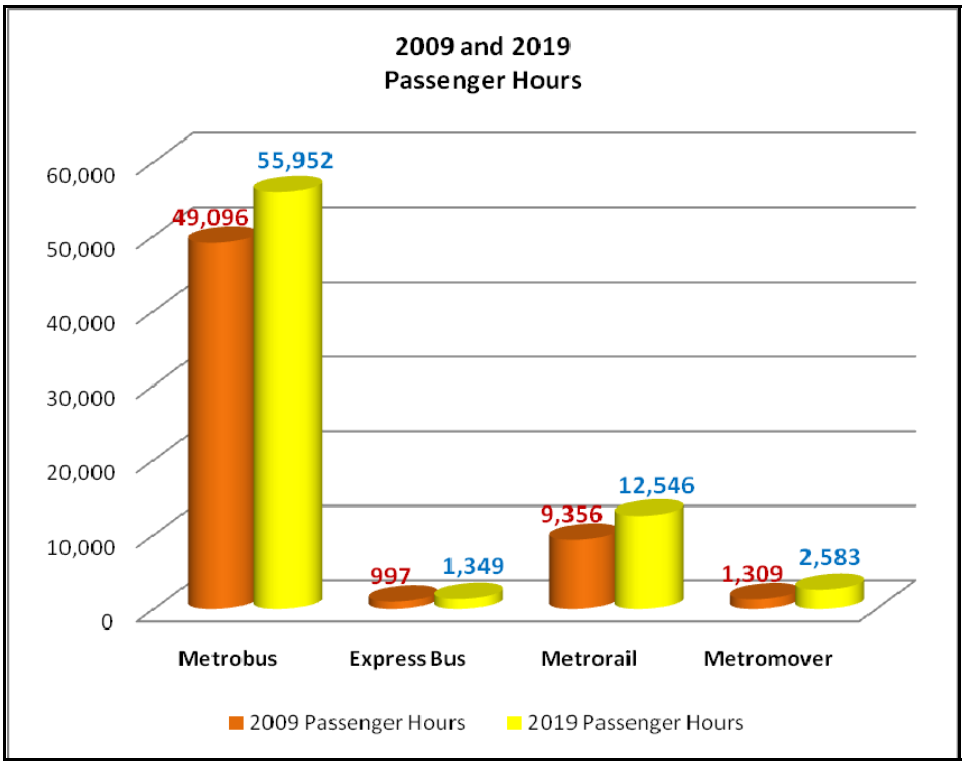
Source: Dade-Broward Model, 2009

Figure 8-4: Difference in 2009 and Projected 2019 Passenger Miles



Source: Dade-Broward Model, 2009

Figure 8-5: Difference in 2009 and Projected 2019 Passenger Hours



Source: Dade-Broward Model, 2009

8.6 Transit Propensity

A transit propensity analysis was performed for the TDP Major Update based upon the latest available Census data for 2000. The transit propensity analysis takes into account various demographic characteristics of geographic areas of Miami-Dade County and uses this information to identify those areas that have the strongest propensity for transit use. The transit propensity analysis prepared for the MDT TDP Major Update took into account three demographic characteristics:

- Percentage of Population Age 65 or Over
- Percentage of Low Income Households (household income <$10,000)
- Percentage of Zero Car Households

All of these household characteristics are considered an important transit market, so places with a high concentration of these three characteristics can be considered to be locations where improvements to transit service are likely to yield the greatest return in terms of transit ridership.

The maps in Figure 8-6, Figure 8-7, and Figure 8-8 on the following pages show concentrations of elderly persons, low income households and “Zero Car” households, households that traditionally lack access to a private vehicle. As seen on the map showing percentage of population age 65 and over, the greatest concentration of elderly residents is located in the mid-county and northern areas and along the coast. Concentration of low income households are found mainly west and north of downtown, with other pockets scattered throughout the County. Zero-car household distribution is similar to location of low income households, with the households mostly located west and north of downtown, with some scattered pockets throughout the County.

Figure 8-9 shows the combined concentration of each of these demographic characteristics plotted on the same map, allowing identification of the areas in which they overlap. The areas with high concentration of all three demographic (age 65 and over, low income, and zero-car households) characteristics are shown on the map in Figure 8-10.

Figure 8-6: Percentage of People 65 Years and Older

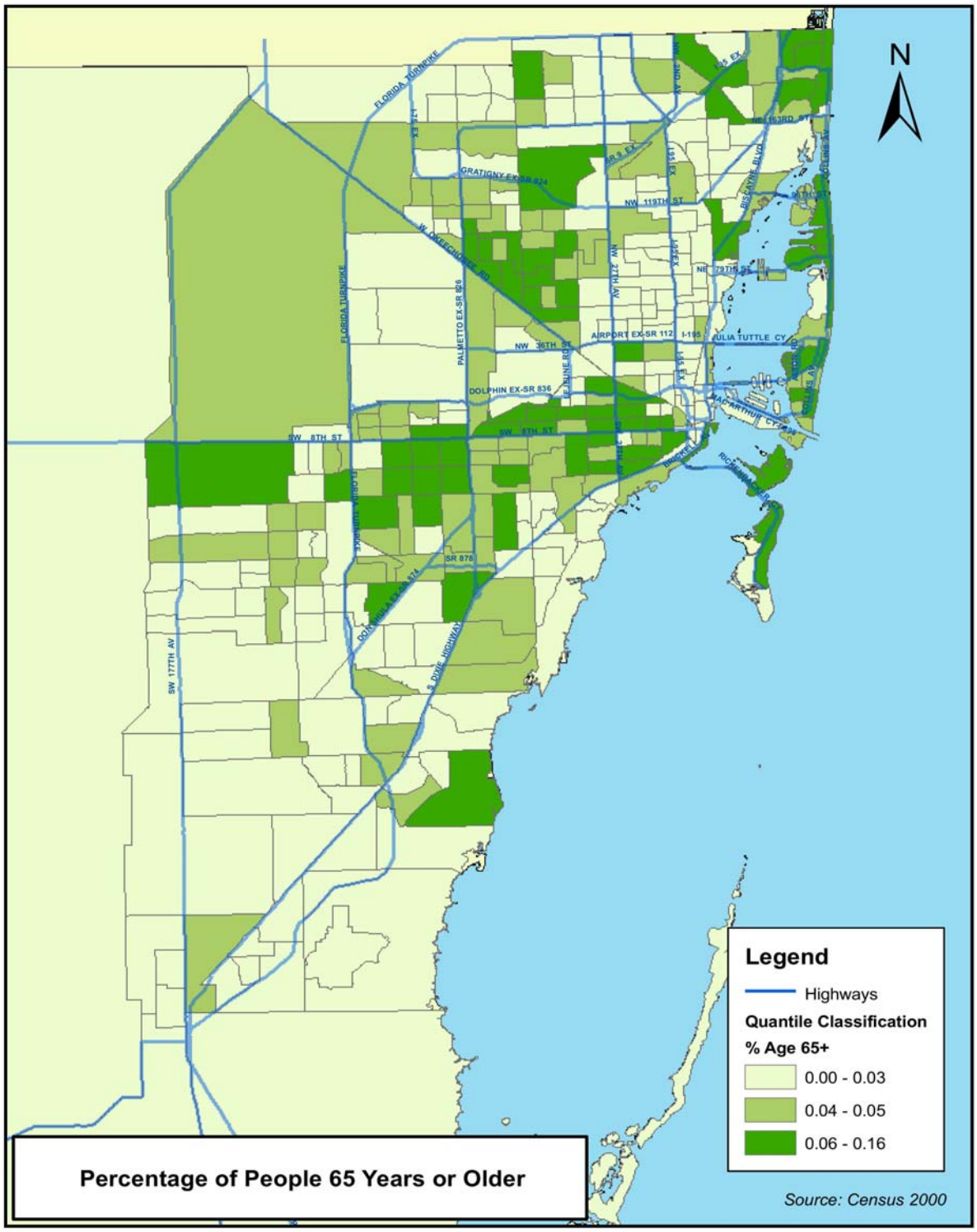


Figure 8-7: Percentage of Low Income Households

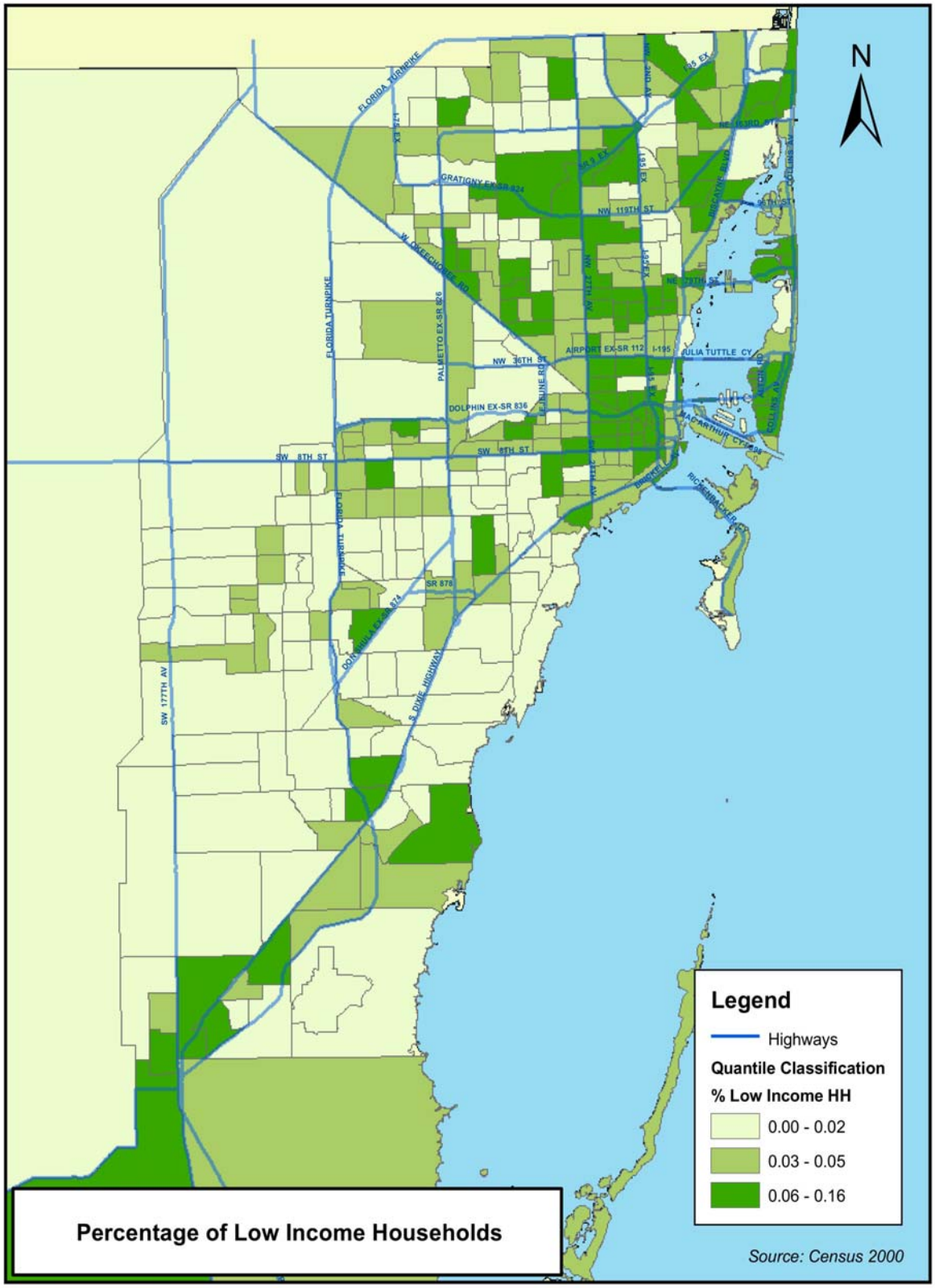


Figure 8-8: Pecentage of Zero Car Households

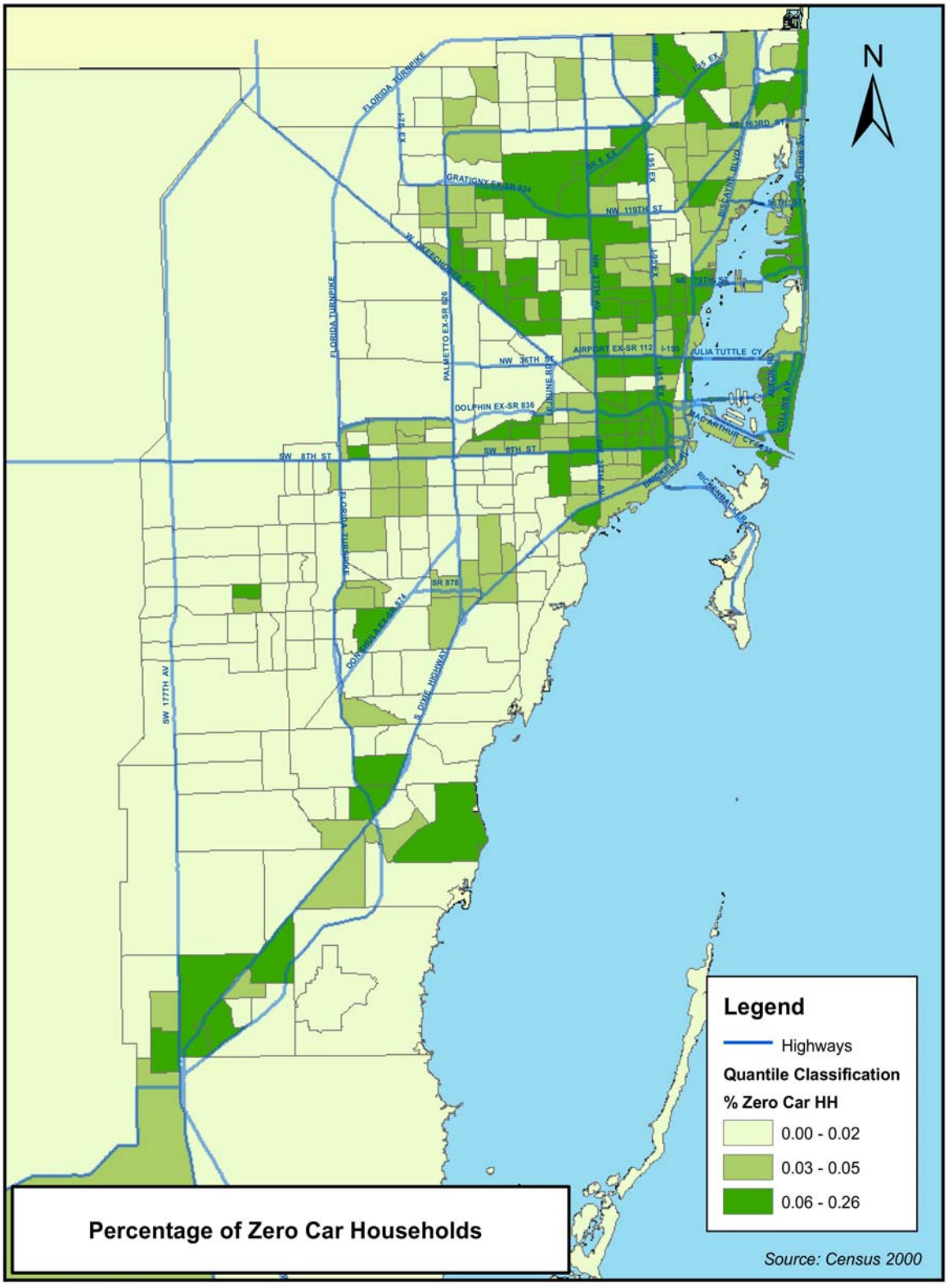


Figure 8-9: Highest Concentration of Transit Dependant Population

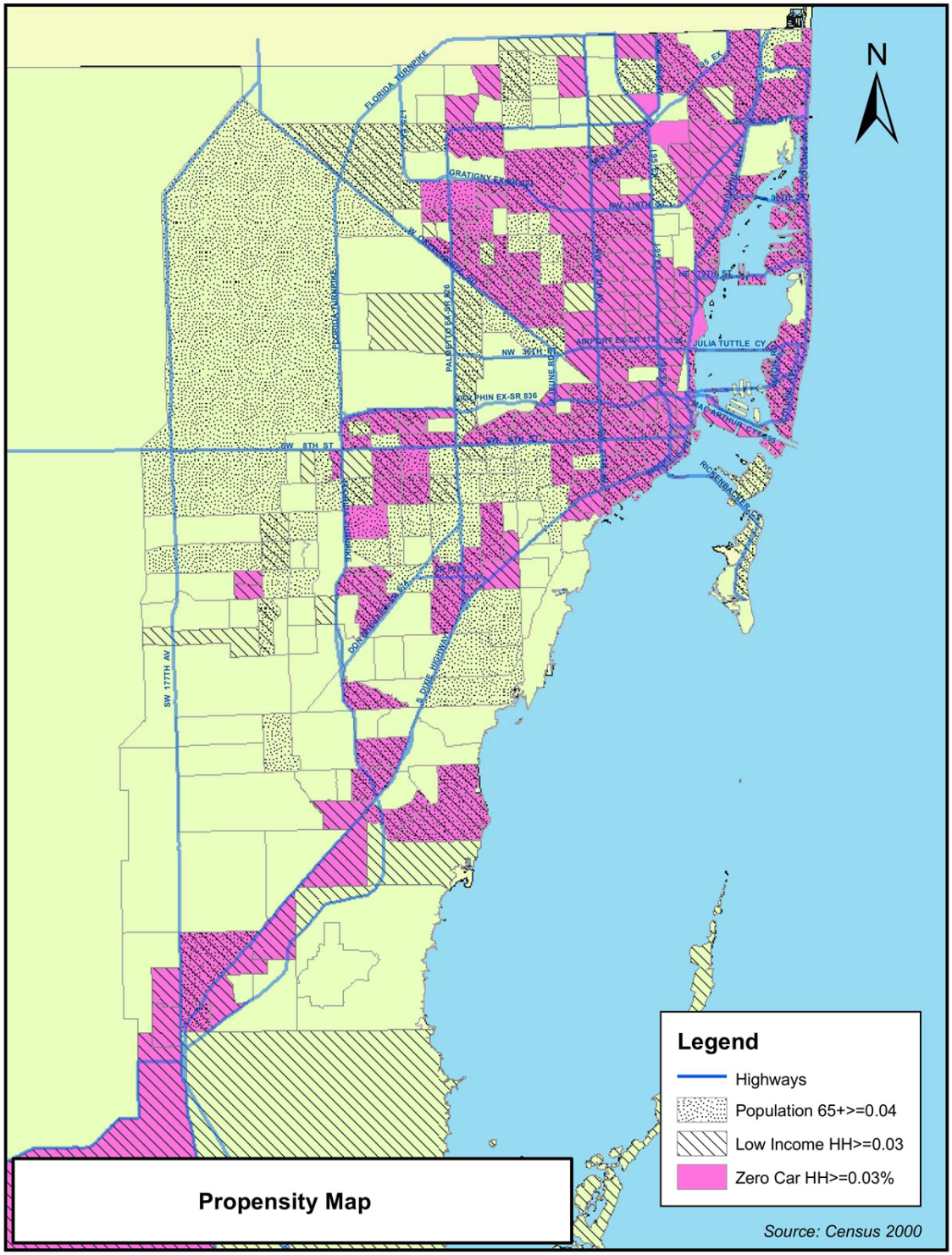
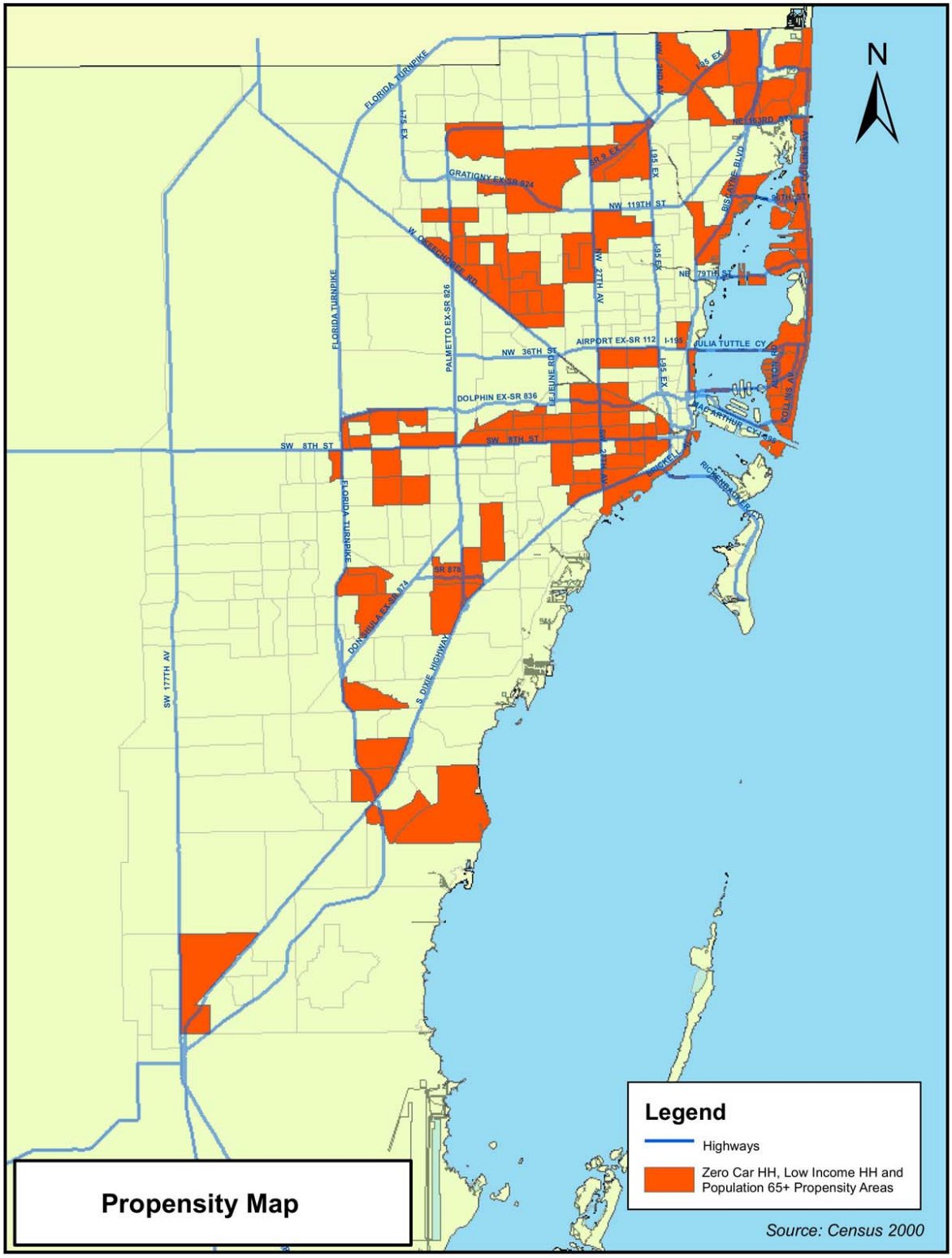


Figure 8-10: Transit Propensity Map

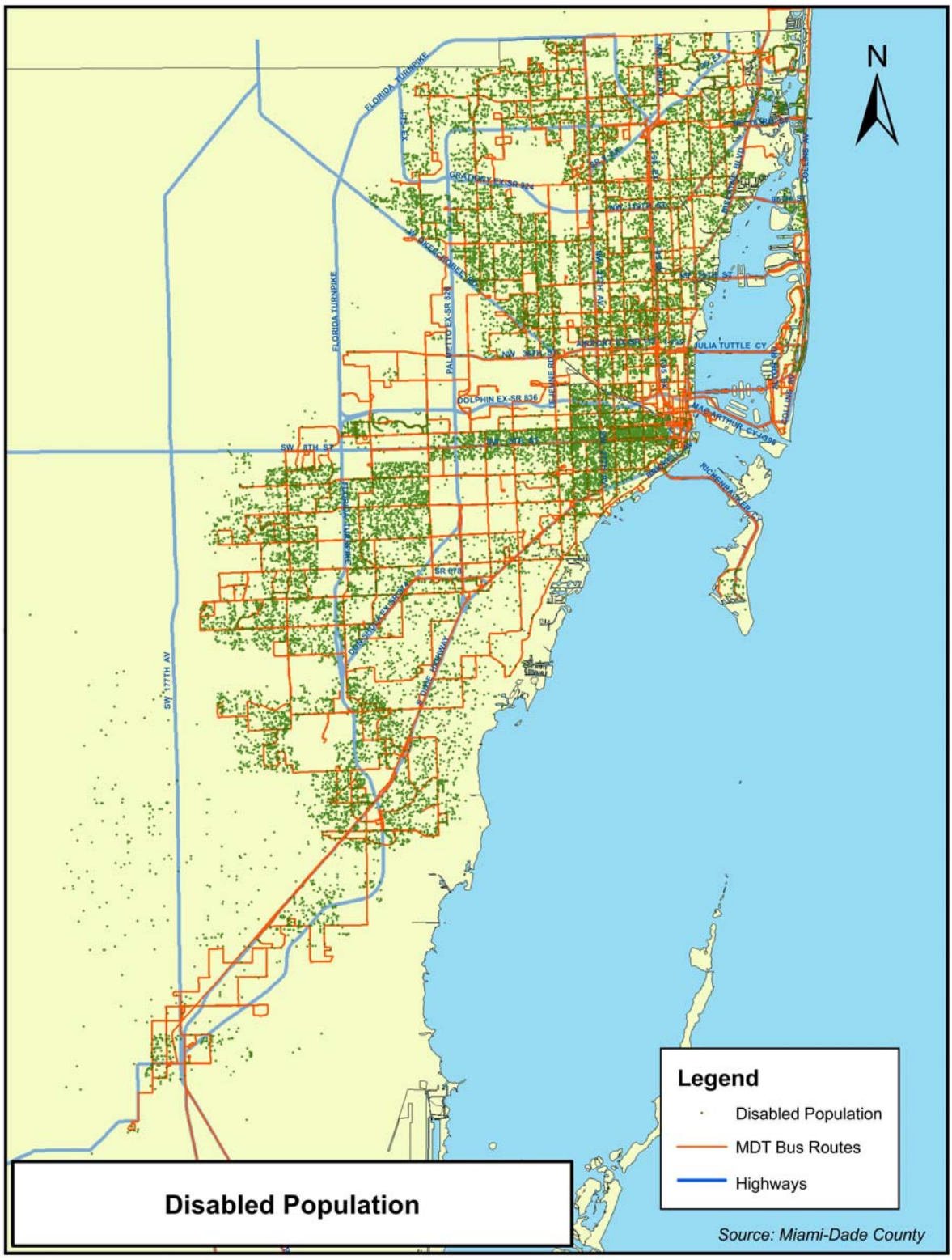


The transit propensity map shows a strong concentration of areas for high transit ridership potential areas west of downtown and mid-County, with a number of pockets north and south and along the coast. These areas generally correspond to those areas where MDT is providing higher level transit service or has plans to expand its service offerings;

- The Hialeah area and higher-propensity pockets north and south of downtown are served by the existing Metrorail and Busway services.
- Many of the high propensity areas in the northern areas of Miami-Dade County would be served by a premium transit service in the NW 27th Avenue corridor (North Corridor as referenced in the FY 2010 – 2014 TIP).
- High propensity areas along the coast would be served by a proposed premium transit service from downtown Miami to Miami Beach (Baylink light rail service as referenced in the 2030 LRTP).
- Areas along West Flagler Street, SW 8th Street and nearby parallel routes are served by high frequency bus service such as the Routes 8 and 11, and the Flagler MAX.

The distribution of the disabled population within Miami-Dade County is presented in Figure 8-11 to include an overlay of existing Metrobus service. Although Metrobus service provides coverage for many of these areas, bus routes and stops tend to be located at distances that create an inconvenience for many potential users. These far distances between a residence and a bus stop create a potential unsafe pedestrian condition for the disabled when there is a need to cross multi-lane roadways and busy street intersections to reach a bus stop. However, in some cases where the bus stop is in close proximity (e.g., several blocks) to a residence, Metrobus service may actually be able to supplement existing demand response services.

Figure 8-11: Disabled Popluation Distribution



8.6.1 Roadway Level of Service

The maps shown in Figure 8-12 and Figure 8-13 show existing and projected roadway level of service (LOS) on the major arterial and higher-level roadways in Miami-Dade County for 2005 and 2015. The figures were developed by the MPO as part of the Arterial Grid Analysis Study performed recently. Based on the study, the Future Conditions LOS (2015) was determined using traffic growth rates from Miami-Dade County's 2030 LRTP. Roadway level of service is calculated largely, though not entirely on the basis of volume-over-capacity (V/C) ratios. Roadways where the demand for peak period traffic access is at or exceeds the capacity of the roadway experience levels of service E and F, depending on the degree to which demand exceeds capacity. Roadways on which conditions are free-flowing are indicated by LOS A and B. Roadways that are approaching capacity are indicated by LOS C and D.

Traffic congestion is a critical issue for bus service that uses urban arterials. Traffic congestion results in bus service being less efficient and effective, extending running times, making it difficult to maintain bus schedules and causing inconvenience to bus passengers.

The map in Figure 8-12 indicates that traffic congestion already is a serious problem in Miami-Dade County and affects many of MDT's highest ridership bus routes. As the map in Figure 8-13 shows, by 2015 serious traffic congestion will spread, and most segments on the major arterial roadways in the county, both north-south and east-west, will experience LOS D, E or F conditions during the peak travel periods.

Many streets on which MDT's highest ridership routes operate, including Collins Avenue (Routes L and S, among others) Flagler Street (Route 11) and Biscayne Boulevard (Route 3) are already experiencing high levels congestion, and will experience worsening congestion in the future, virtually along their entire alignments. Improvements such as through signal or roadway priority treatments should therefore be put in place to mitigate the adverse impacts of traffic congestion on transit service. These mitigation measures will minimize the need to deploy and operate more buses in order to maintain and achieve the same service headways.

The increase in bus running time is apparent as illustrated in Figure 8-14 through Figure 8-17 depicting travel time for buses serving downtown Miami. Figure 8-14 and Figure 8-15 identifies existing bus travel time for 2009 and Figure 8-16 and Figure 8-17 shows 2009 and 2019 for express bus travel time. For purposes of the analysis in Figure 8-16 MDT express bus service routes and limited stop routes considered are the following:

- Kendall - Kendall Area Transit (KAT) (Route 288);
- Killian KAT (Route 204);
- Sunset KAT (Route 272);
- 95 Civic Center (Route 95X);
- Dade-Monroe Express (Route 301)

The data shown on these figures was developed using the travel time matrices from the Dade-Broward model for 2009 and 2019. Each map is color coded to show the areas that take longer than 45 minutes by bus to reach downtown Miami. One notable difference between the bus and express bus maps is in the area of the Golden Glades interchange where an improvement to travel time to downtown Miami is shown as a result of the implementation of the I-95 Express lane service. Overall, the 45 minutes travel time shed decreases slightly between 2009 and 2019.

Figure 8-12: Roadway Level of Service (2005)

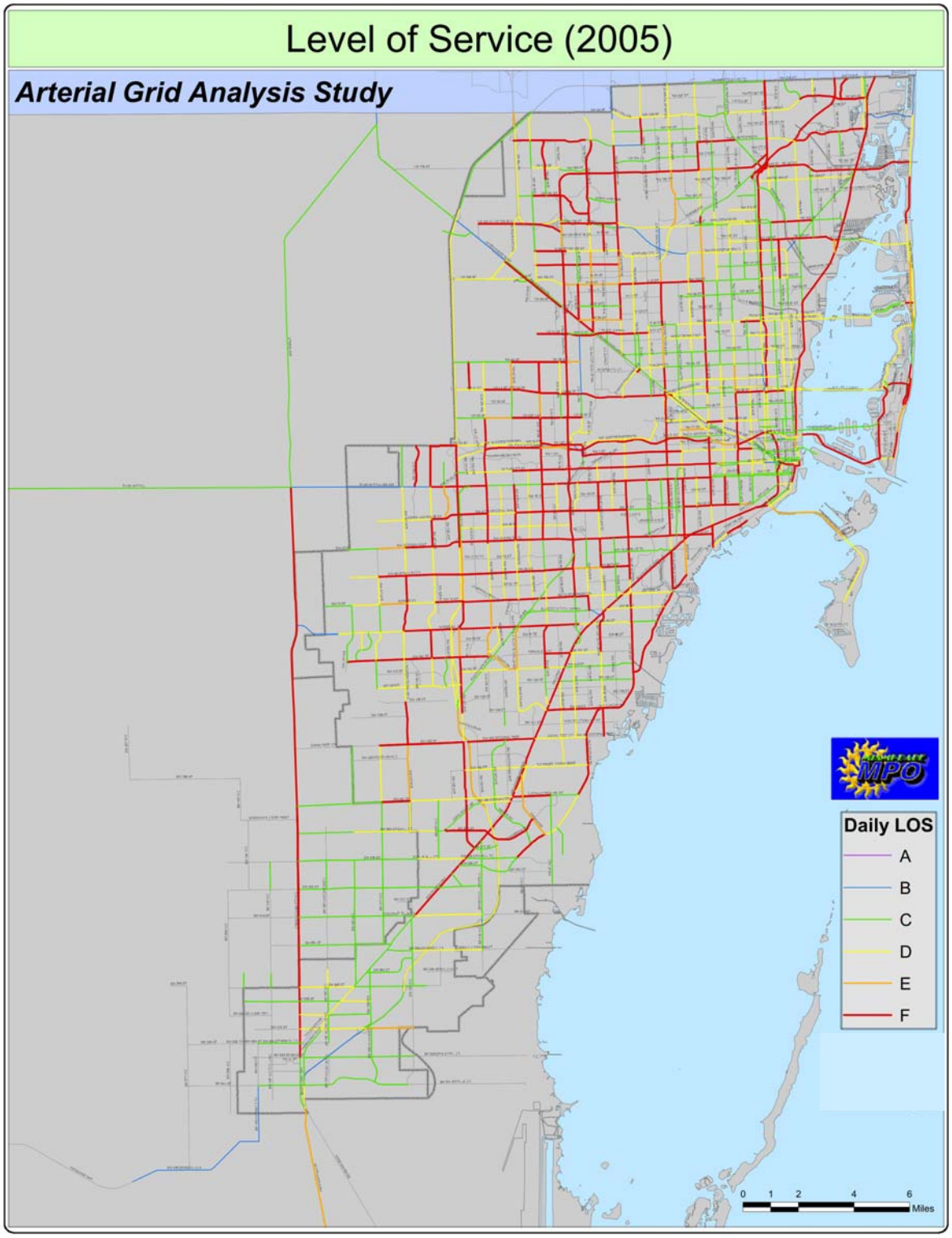


Figure 8-13: Projected Roadway Level of Service (2015)

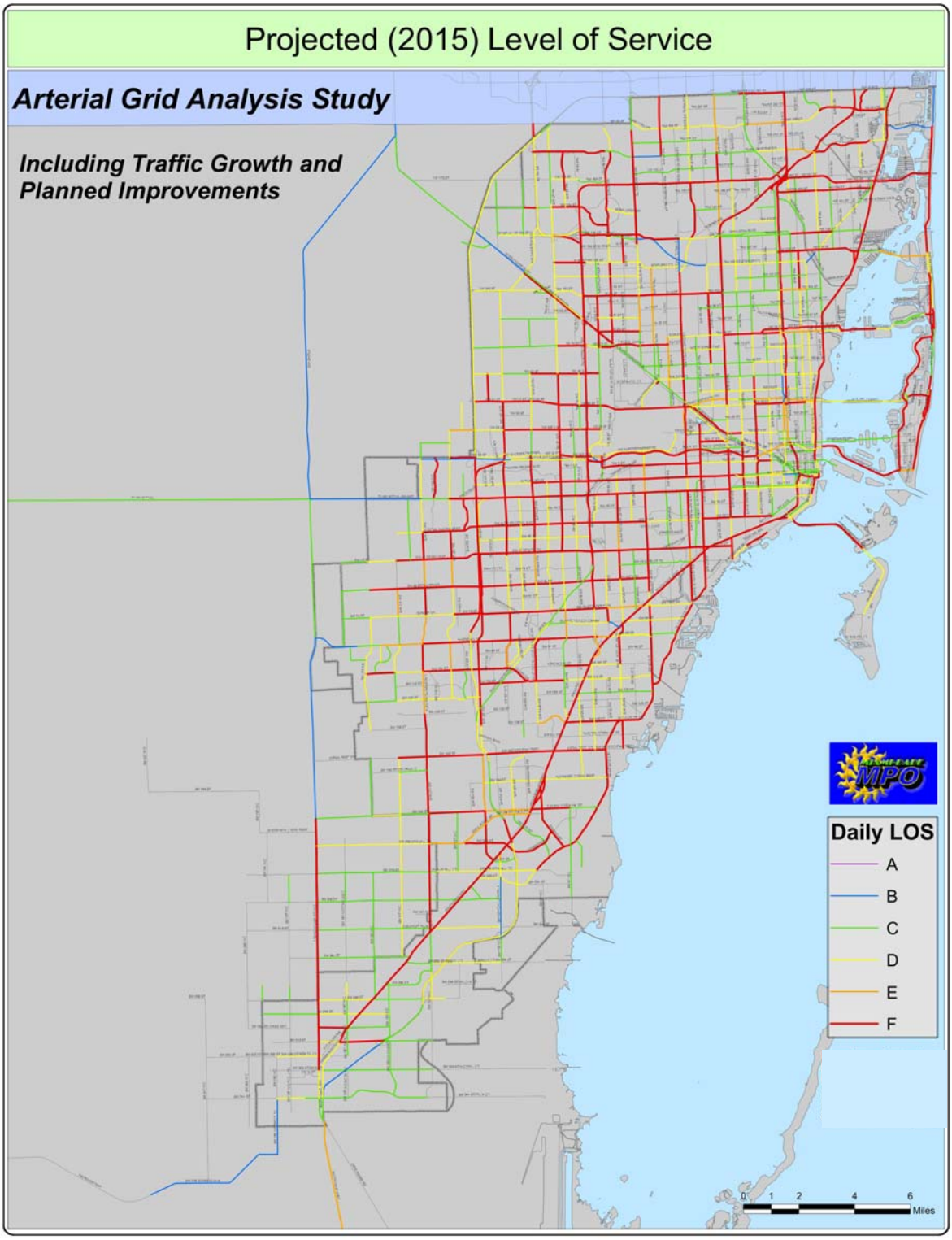
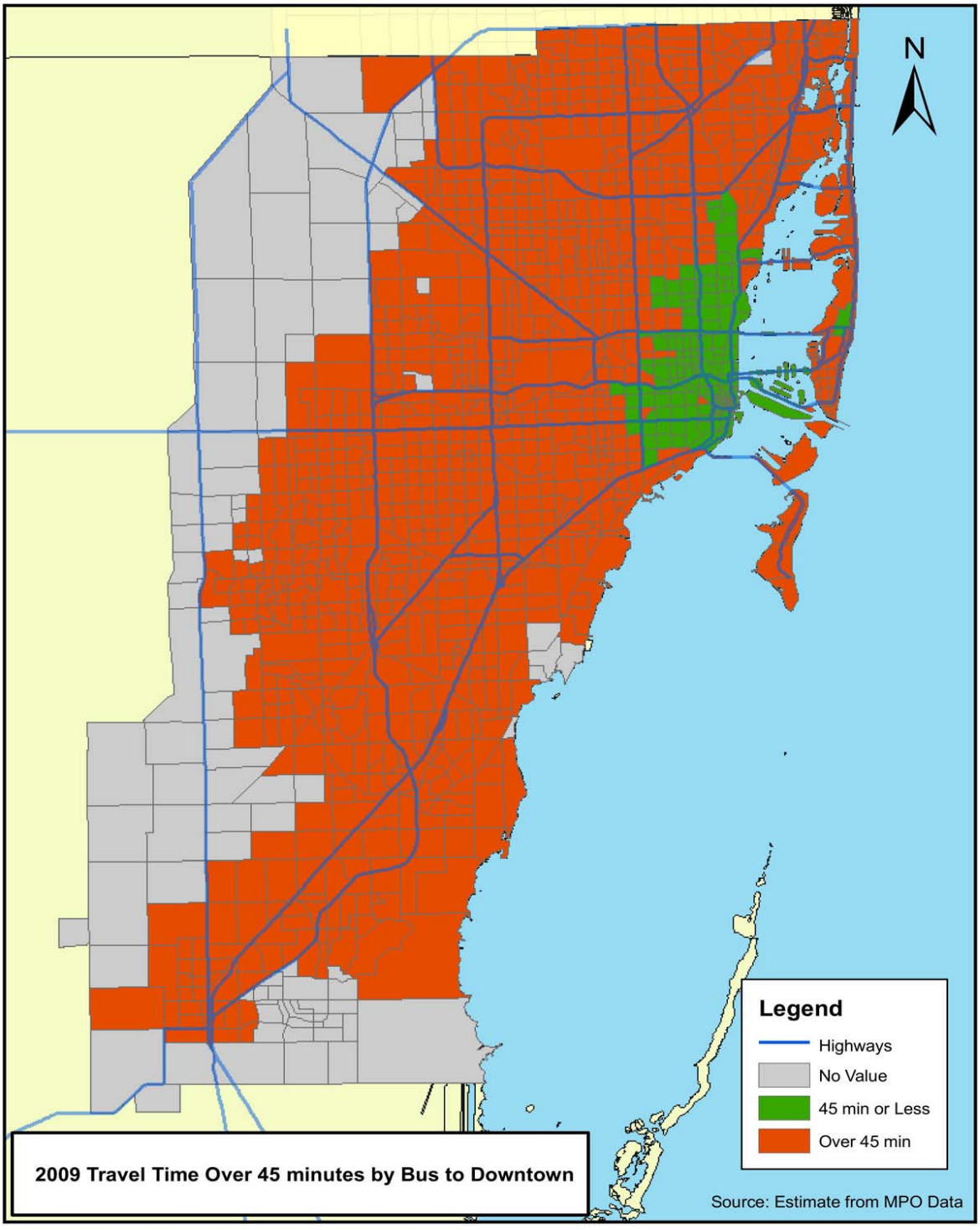
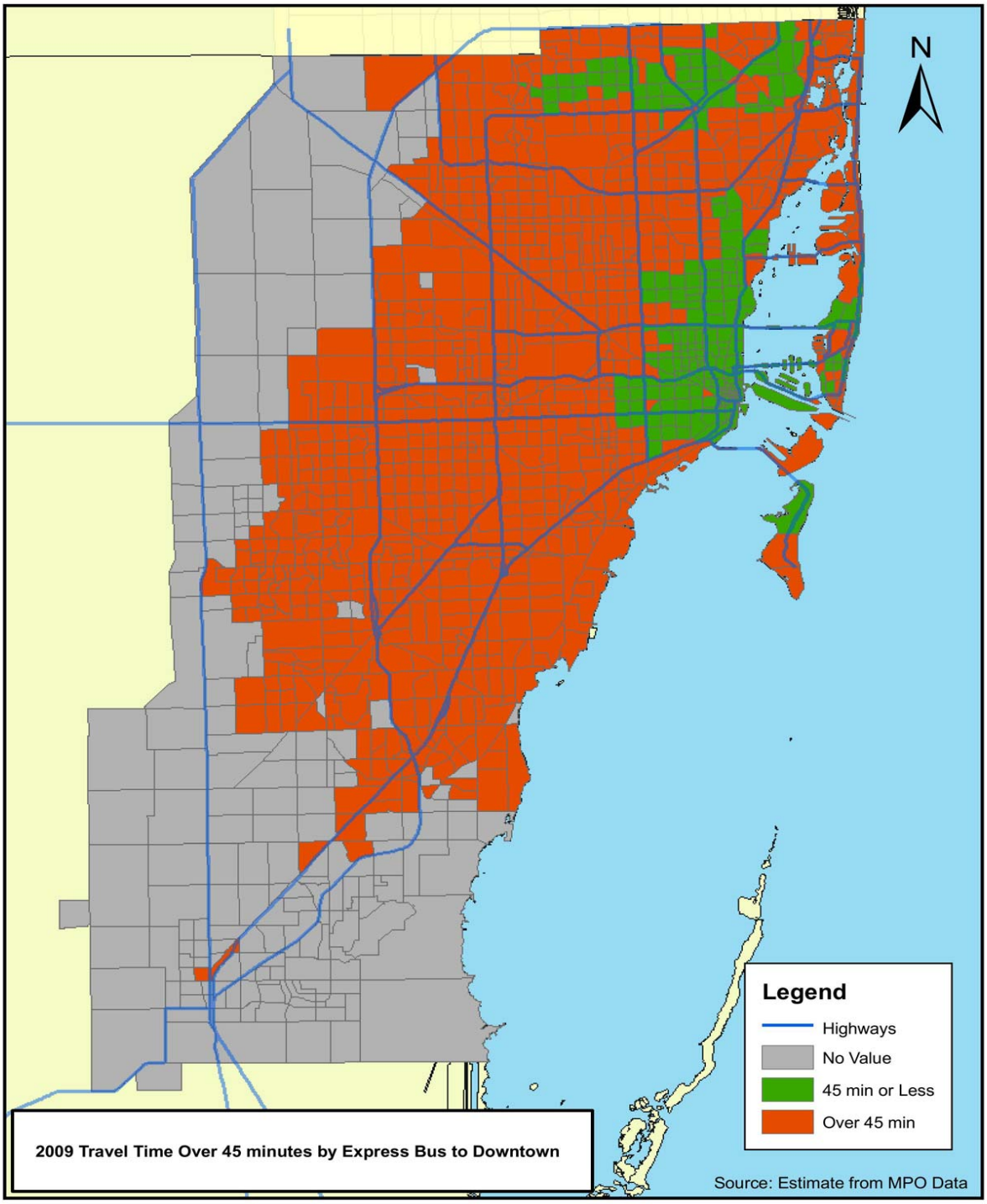


Figure 8-14: 2009 Bus Travel Time to Downtown Miami



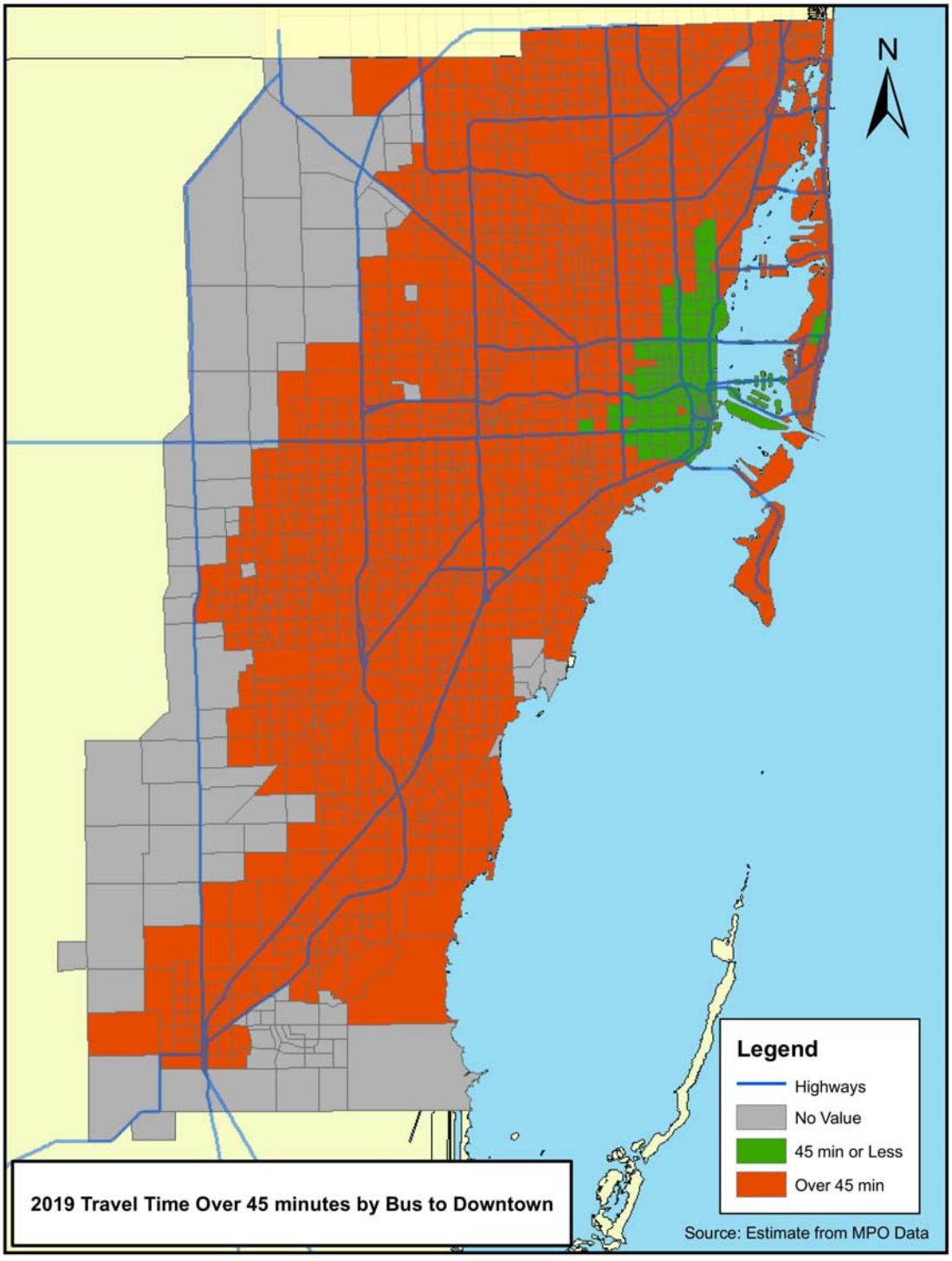
Source: Miami-Dade Transit, 2009

Figure 8-15: 2009 Express Bus Travel Time to Downtown Miami



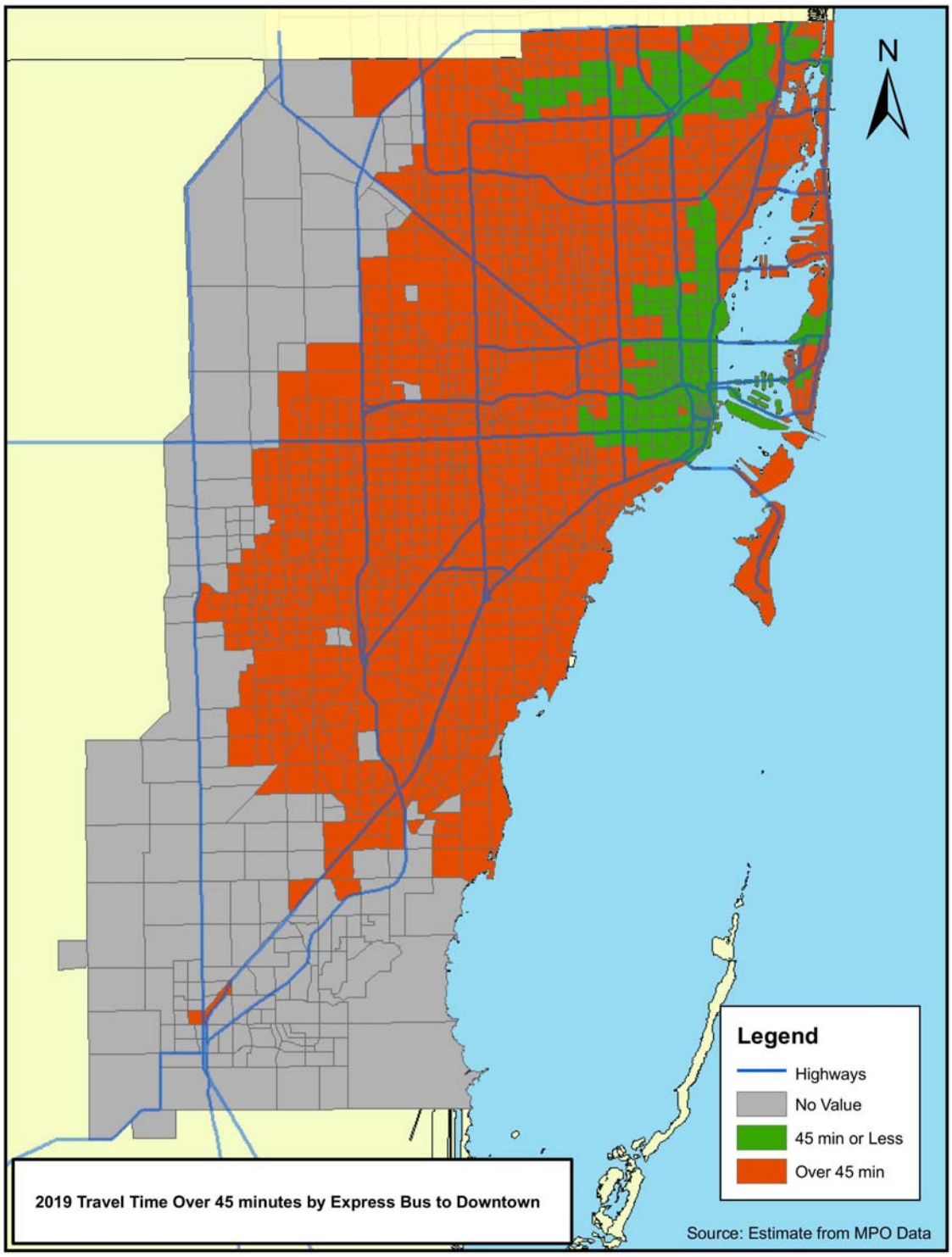
Source: Miami-Dade Transit, 2009

Figure 8-16: 2019 Bus Travel Time to Downtown Miami



Source: Dade-Broward Model, 2009

Figure 8-17: 2019 Express Bus Travel Time to Downtown Miami



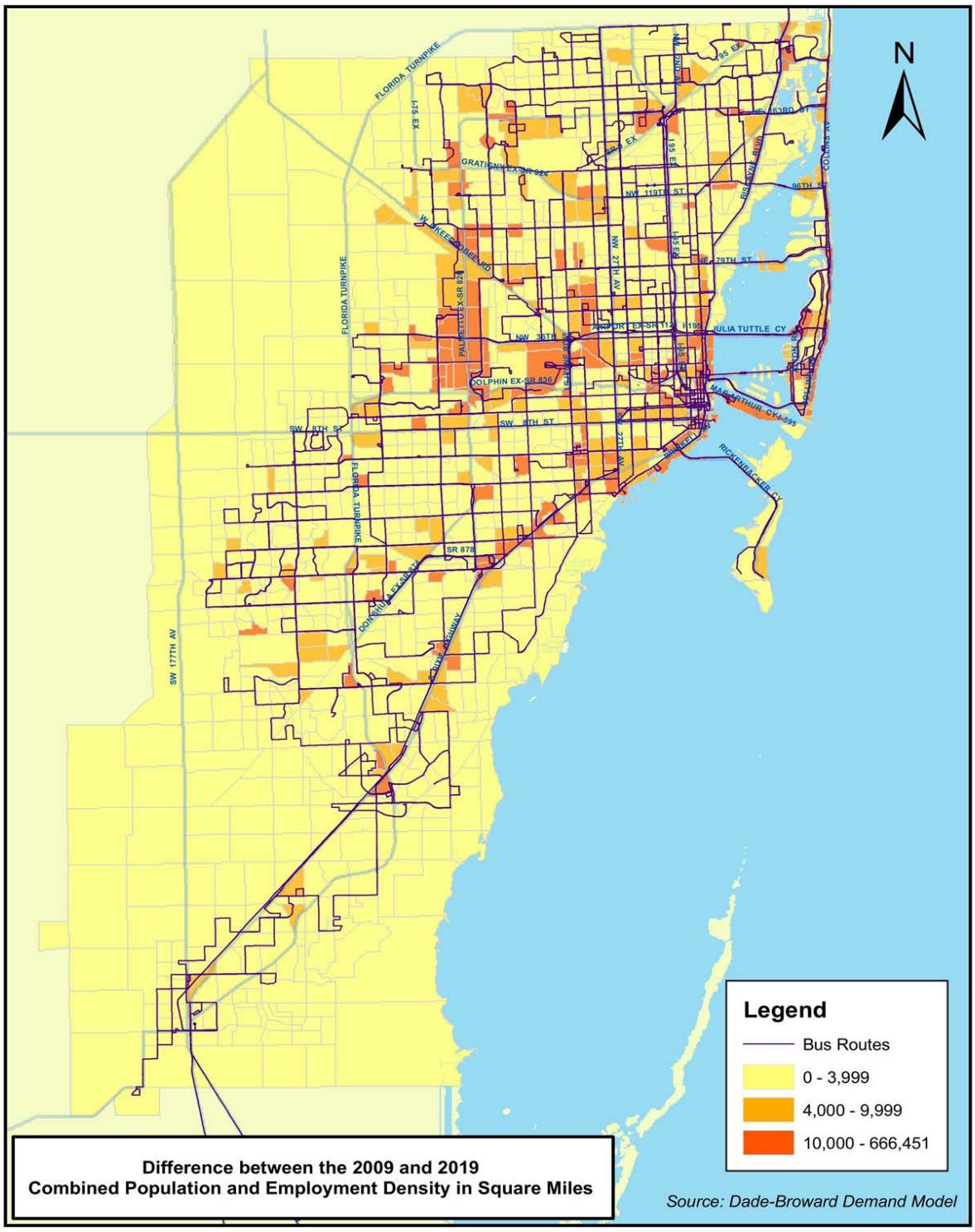
Source: Dade-Broward Model, 2009

8.6.2 Population and Employment Density

Analysis of population and employment was based on estimated 2009 and 2019 figures based on interpolation of 2000 and 2030 socio-economic data. The map in Figure 8-18 shows the projected difference in combined population and employment density, expressed as persons plus employees per square mile within a TAZ, between 2009 and 2019. The analysis of population and employment in the area indicates that no areas will decline in terms of population and employment density between 2009 and 2019. The yellow colored areas are those that will grow by 4,000 to 10,000 persons plus workers per square mile, while the brown areas will grow by 10,000 or more persons plus workers per square mile.

An overlay of the current transit service shows that MDT is currently serving all of the areas of the county where significant growth is anticipated. Most of the areas that are showing higher growth are already served by Metrorail or by high frequency bus service on multiple bus routes. The area around the Miami International Airport, which is expected to grow significantly in population and employment between 2009 and 2019, will be served by the Metrorail East-West extension. Other corridors targeted for bus improvements in this report, includes West Flagler Street, SW 8th Street, Biscayne Boulevard, and Kendall Drive (SW 88th Street) which include pockets where significant growth is anticipated between 2009 and 2019.

Figure 8-18: Difference between Population and Employment Density (2009 – 2019)



Source: Miami-Dade Transit, 2009

8.7 Identifying Unmet Transit Needs

Based on the results of the existing transit conditions, the transit propensity analysis, traffic conditions and other considerations, the following corridors warrant consideration as priority transit corridors:

- US 1 (Biscayne Boulevard) from Downtown Miami to the County line
- NE 167th/163rd/Sunny Isles Boulevard from Golden Glades Tri-Rail Station to Collins Avenue
- NW 135th Street from NW 12th Avenue to US 1
- NW 36th Street/Julia Tuttle Causeway from Tri-Rail Hialeah Market Station to Collins Avenue
- West 12th Avenue from Okeechobee Metrorail Station to NW 186th Street
- SW 107th Avenue from SW 40th Street to NW 25th Street
- West Flagler Street from SW 107th Avenue to Downtown Miami
- SW 8th Street from SW 107th Avenue to Downtown Miami
- SW 72nd Street from 117th Avenue to US 1/Busway
- Kendall Drive from 137th Avenue to US 1/Busway
- Coral Reef Drive from 137th Avenue to US 1/Busway

These corridors are shown in the map in Figure 8-19. Table 8-6 on the next page shows the existing (2008) MDT ridership on routes that use portions of each of these corridors, and the average roadway level of service for each of the corridors.

All of these corridors serve areas with pockets of high transit propensity (as indicated in Figure 8-10) and experience high peak period traffic congestion based on 2015 roadway level of service (LOS) (as indicated in the map in Figure 8-13). Several, including US 1, Flagler Street, and SW 8th Street support high ridership existing bus routes. In addition, four of these corridors (Biscayne, Flagler, Kendall, Miami Gardens) are included among the corridors that were examined by the Miami-Dade MPO in their Short-Term Transit Improvement Options. Further analysis is required to clearly prioritize these corridors for further analysis. This additional analysis could come in the form of a corridor improvement planning study or an Alternatives Analysis to enter into the FTA's Section 5309 New Starts process. Most of the corridors are potentially eligible for capital funding under the FTA's "Small Starts" or "Very Small Starts" programs.

High-ridership transit corridors include north of NW 27th Avenue and Collins Avenue in Miami Beach experience significant traffic congestion, but are the sites of planned capital improvements as mentioned previously as listed in the 2030 LRTP (the North Corridor Metrorail Extension and the Bay Link LRT line). However, should these projects not go forward as rail transit projects, these corridors should be considered for high capacity bus corridor improvements.

In addition, most of the major north-south and east-west streets in downtown Miami and in Little Havana (12th, 17th, 22nd and 27th Avenues) support relatively high transit ridership, experience significant traffic congestion, and lie in an area of high transit propensity. Improvements could be concentrated on one or two streets, or distributed across several streets to improve transit operating conditions in these areas.

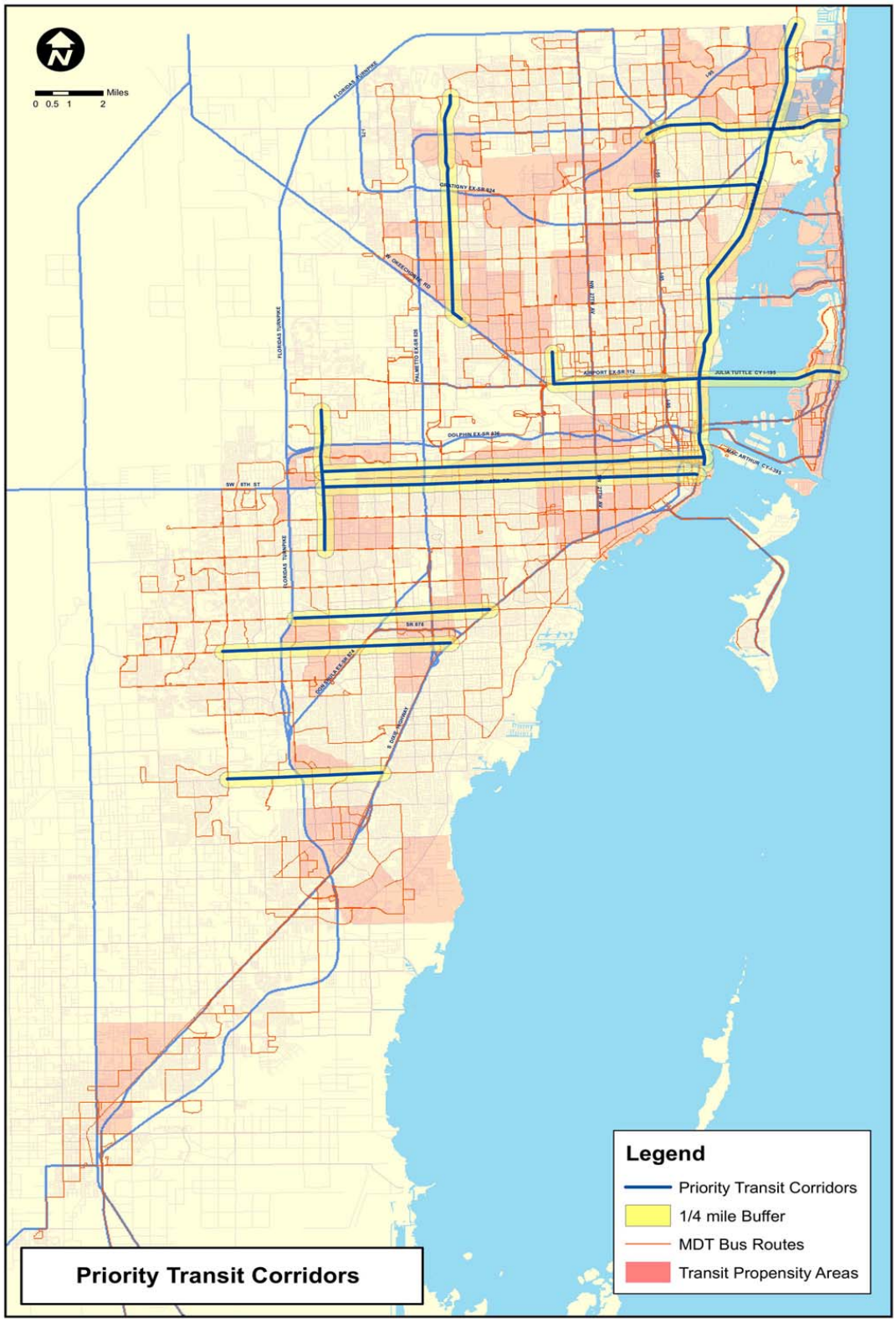
Table 8-6: Proposed Priority Corridor Transit Routes

Potential Recommended Corridor Improvements					
Alignment	**From (South/West)**	**To (North/East)**	**Routes Served**	**MDT Ridership**	**Roadway LOS (2019)**
US 1	Downtown Miami	Hallandale Beach Boulevard	C	3,956	E/F
			J	5,709	
			S	12,380	
			3	8,123	
			16	4,275	
			28	1,471	
			33	2,226	
			36	3,220	
			51	4,637	
			62	4,973	
			93	3,406	
			95	1,803	
				56,180	
NE 167th/163rd/Sunny Isles Blvd	Golden Glades	Collins Avenue	E	12,380	F
			H	219	
			2	1,471	
			3	1,178	
			22	2,624	
			83	737	
			95	1,283	
			246	1	
				19,893	
NW 135th Street	NW 12th Avenue	Biscayne Blvd. US 1	E	12,380	A-F
			28	289	
				12,669	
NW 36th St./Julia Tuttle Causeway	Tri-Rail Hialeah Market	Collins Avenue	C	493	C-F
			J	688	
			M	3,320	
			36	4,973	
			62	1,803	
			120	4,932	
				16,209	

Table 8-6: Proposed Priority Corridor Transit Routes (continued)

Potential Recommended Corridor Improvements					
Alignment	**From (South/West)**	**To (North/East)**	**Routes Served**	**MDT Ridership**	**Roadway LOS**
West 12th Avenue	Okeechobee Metrorail Station	NW 186th Street	73	2,478	C-F
			83	4,185	
			267	494	
				7,156	
SW 107th Avenue/ SW 112th Avenue	SW 40th Street	NW 25th Street	7	4,605	D-F
			8	7,768	
			11	14,121	
			36	3,220	
			71	1,372	
			137	2,144	
			212	1,283	
			238	666	
				35,178	
Flagler Street	107th Avenue	Downtown Miami	6	940	D-F
			7	4,605	
			11	14,121	
			51	4,637	
			208	1,912	
				26,215	
SW 8th Street	107th Avenue	Downtown Miami	7	4,605	F
			8	7,768	
			11	14,121	
			51	4,637	
			207	1,842	
				32,973	
SW 72nd Street	117th Avenue	US 1/Busway	56	958	E/F
			72	1,059	
			272	1,095	
				3,113	
Kendall Drive	137th Avenue	US 1/Busway	88	3,060	E/F
			288	808	
				3,867	
Coral Reef Drive	137th Avenue	US 1/Busway	36	3,220	F
			52	2,002	
			252	1,336	
				6,558	

Figure 8-19: Priority Transit Corridors



The consideration of the following infrastructure and systems improvements would result in travel time savings include the implementation in these corridors of:

- Bus signal priority or pre-emption
- Bus pull-outs
- Queue jumps
- Peak period or all day bus lane restrictions
- Dedicated (separated) bus lanes

Should travel demand in the corridors be sufficient, full bus rapid transit (BRT) or light rail transit (LRT) could be considered. The implementation of time savings improvements would require a detailed analysis of the traffic issues in the corridors, the availability of right-of-way, environmental and social impacts and other factors in each of the corridors.

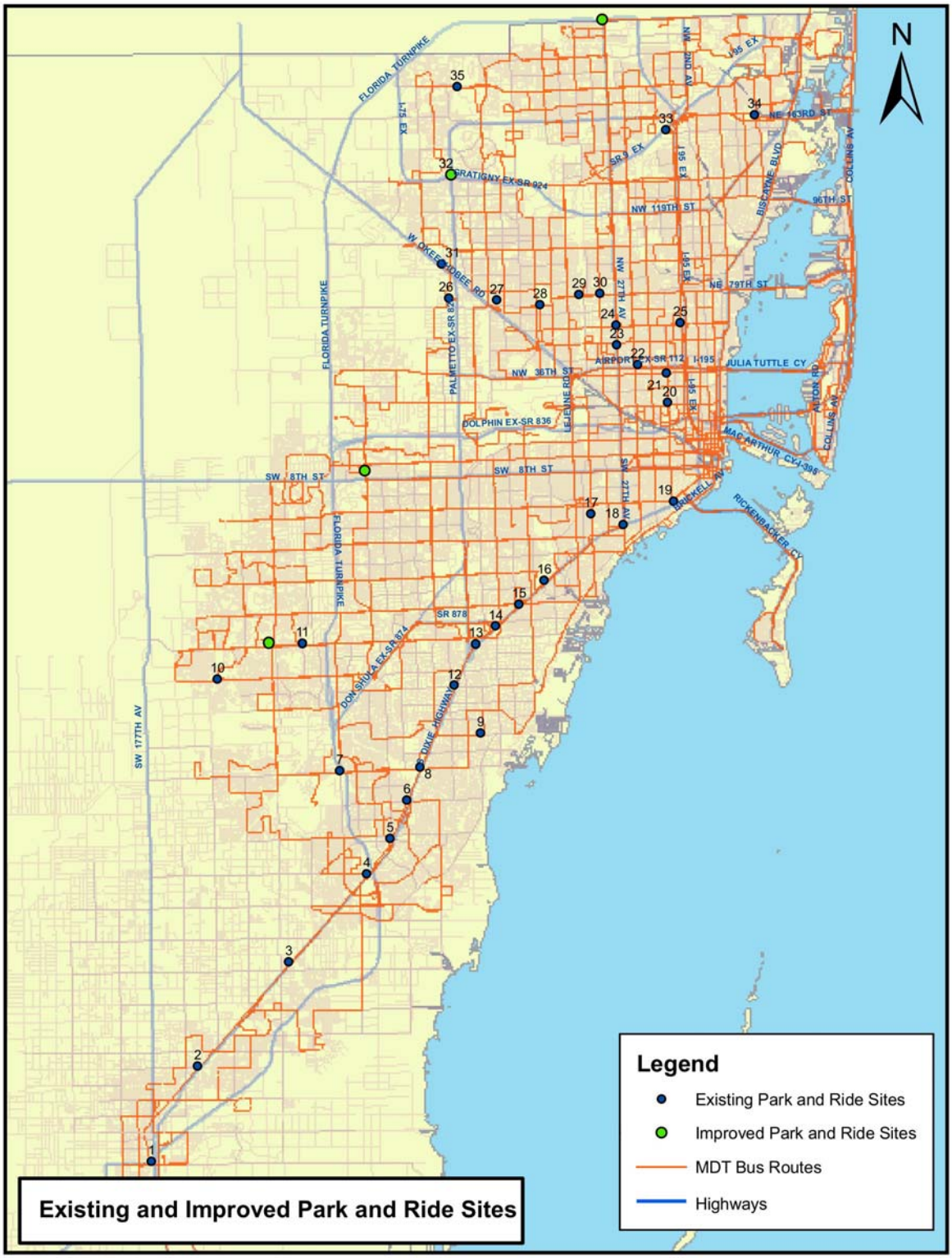
In addition, transit passenger comfort amenities such as shelters, benches, bus stop pads, next bus technology and improved lighting in these corridors would improve the passenger's experience and likely would generate additional ridership.

The following maps in Figure 8-20 and Figure 8-21 present the locations of existing and proposed park-and-ride and hub locations throughout the county. Table 8-7 and Table 8-8 present detailed location information which corresponds to map location. Coverage for park-and-ride lots, particularly for lots oriented to downtown running bus, Metrorail and Tri-Rail service, is excellent throughout most of Miami Dade County. Potential for improved park-and-ride access exists in four locations:

- West Flagler Street/SW 8th Street Corridor
- NW 27th Avenue near Broward County Line
- Kendall Drive from 137th Avenue to US 1/Busway
- Intersection of Palmetto Expressway (SR 826) and Gratigny Expressway (SR 924)

The identification of these our park and ride lots are based upon their proximity to the priority transit corridors to serve as intercept points for connections to transit services. Additional proposed park and ride lot locations are identified in Section 3.2.2.

Figure 8-20: Existing and Improved Park-and-Ride Sites



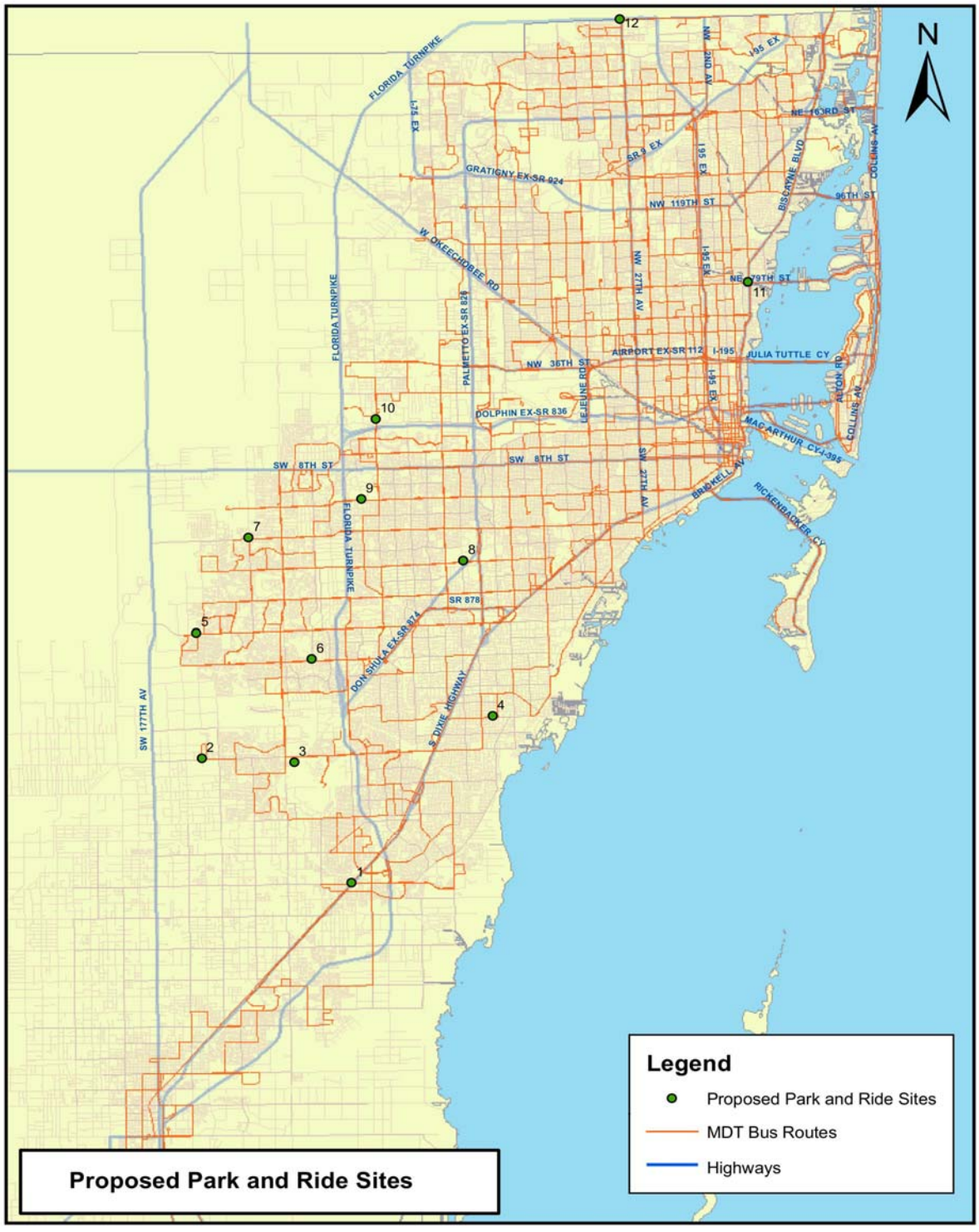
Source: Miami-Dade Transit, 2009

Table 8-7: Existing Park-and-Ride Sites

MAP ID	FACILITY	ADDRESS
1	Busway / S.W. 344th Street	SW 344th St & Busway
2	Busway / S.W. 296th Street	SW 296th St & Busway
3	Busway / S.W. 244th Street	SW 244th St & Busway
4	Busway / S.W. 200th Street	SW 200th St & Busway
5	Busway / S.W. 186th Street (Quail Roost TOD)	SW 186th St & Busway
6	Busway / S.W. 168th Street	SW 168th St & Busway
7	S.W. 152nd Street / S.W. 117th Avenue (FLA Turnpike at Coral Reef	SW 117th Ave & SW 152nd St
8	Busway / S.W. 152nd Street	SW 152nd St & Busway
9	S.W. 136th Court / S.W. 72nd Street (Sunset Drive) (FPL ROW)	SW 136th Ct & SW 72nd St
10	Kendall Hammocks Town Center, S.W. 104th Street / SW 152nd Avenue	SW 104th St & SW 152nd Ave
11	S.W. 127th Avenue / S.W. 88th Street (Kendall Drive) (FPL ROW)	SW 127th Ave & SW 88th St
12	Busway / S.W. 112th Avenue (adjacent to Target)	SW 112th St & Busway
13	Dadeland South	9150 Dadeland Blvd
14	Dadeland North	8300 S Dixie Hwy
15	South Miami	5949 S Dixie Hwy
16	University	5400 Ponce De Leon
17	Douglas Road	3100 Douglas Rd
18	Coconut Grove	2780 SW 27th Ave
19	Vizcaya	3201 SW 1st Ave
20	Santa Clara	2050 NW 12th Ave
21	Allapattah	3501 NW 12th Ave
22	Earlington Heights	2100 NW 41st St
23	Brownsville	5200 NW 27th Ave
24	Dr. Martin Luther King, Jr. "Plaza"	6205 NW 27th Ave
25	7th Avenue Transit Village (NW 7th Avenue / NW 62nd Street)	NW 7th Ave & NW 62nd St
26	Palmetto	7701 NW 79th Ave
27	Okeechobee	2005 Okeechobee Rd
28	Hialeah	125 E 21st St
29	Tri-Rail	1125 E 25th St
30	Northside	3150 NW 79th St
31	Telemundo Network, Inc - Okeechobee	
32	SR 826 and SR 924	
33	Golden Glades (S.R. 7 & N.W. 163rd Street)	NW 7th Ave & NW 163rd St
34	NE Passenger Activities Center (NE 15th Avenue / NW 165th Street	NE 15th Ave & NE 165th St
35	Miami Gardens Drive / NW 73rd Court (FPL ROW)	NW 186th St & NW 73rd Ct

Source: Miami-Dade Transit, 2009

Figure 8-21: Proposed Park-and-Ride Sites



Source: Miami-Dade Transit, 2009

Table 8-8: Proposed Park and Ride Locations

Map ID	NAME	LOCATION
1	Busway Lot	Busway and SW 216th Street
2	Kendall South Park and Ride	SW 152nd Street and SW 162nd Avenue
3	Kendall South/Metrozoo	Miami Metrozoo Park
4	FPL Lot	SW 72nd Street and SW 136th Court
5	West Kendall Park and Ride	Kendall Drive and SW 162nd Avenue
6	FPL Lot	SW 104th Street and SW 127th Avenue
7	Bird West Park and Ride	Bird Road and SW 147th Avenue
8	Bird Central Park and Ride	Tropical Park
9	West Miami-Dade/Tamiami area	Tamiami Park
10	Doral Park and Ride	NW 107th Avenue and NW 12th Street
11	El Portal Park and Ride	Biscayne Boulevard and NE 79th Street
12	County Line Park and Ride	NW 27th Avenue and NW 215th Street

Source: Miami-Dade Transit, 2009

8.7.1 Alignment with TDP Major Update Goals and Objectives

The development of the goals and objectives for this TDP Major Update also creates the establishment of corresponding measures that will allow MDT to evaluate future performance in subsequent TDP updates. These measures also provide MDT the ability to assess how effective existing procedures and processes are performing as well as potentially facilitate the refinement or development of new ways for the MDT to further enhance the operation and delivery of MDT transit services system wide. Comparison of these results with future years will allow MDT to monitor and set goals for continuous improvement of its systems. Where applicable, the analysis used performance standards developed by MTA in its Service Standards document (August 6, 2009)

The following section provides quantifiable data and documentation for many of the goals, objectives and corresponding measures which will form the baseline of information for future evaluation by MDT.

8.7.1.1 Goal 1 Improve the Quality of Transit Services

Objective 1.1: Improve the accessibility to Major health care, recreation, education, employment cultural and social services facilities

Measure: Transit service route miles within 1/4 mile of major health facilities, recreation, education, employment, cultural and social services facilities

For purposes of this TDP Major Update the transit service miles providing connections to major medical and educational facilities were evaluated. In the future this measure will also evaluate recreation, employment, cultural and social service facilities. Approximately 64 transit service route miles operate within a ¼ mile of major medical facilities while more than 130 transit service miles operate within ¼ mile of all colleges and universities within Miami-Dade County.

Objective 1.2: Enhance mobility for people through improved transit connectivity

Measure: Average travel time, transfer time

Table 8-9 presents model outputs showing the total average travel time of 67 minutes during the peak travel periods for passengers on the entire MDT transit system. As presented, the peak travel time for those passengers who exclusively walk to and take Metrobus is on average about 76 minutes per work trip. Analysis of drive access trips shows an average travel time of 58 minutes per work trip for people who drive and exclusively ride Metrobus whereas they would typically walk to their final destination. The Metrobus mode is being used for this analysis since it has higher mode passenger share when compared with Metrorail and is also more susceptible to route adjustments compared to a fixed system such as Metrorail and Metromover.

Table 8-9: Average Peak Transit Travel Time

Average Peak Time	Minutes
Walk Access (HBW)	76.35
Drive Access (HBW)	58.53
Total Average Travel Time	67.44

Source: Dade-Broward Model, 2009

Objective 1.3: Improve transit level of service on major roadway corridors and between major origins and destinations

Measure: Headway and service span, average transit time savings

Table 8-10 shows estimates average travel time (including average wait time and transfer time, if required) for transit service between the traffic analysis zones of key origins and destinations in Miami-Dade County. This information was developed based on the travel times from the Dade-Broward model which is based on the latest June 2009 transit service. Peak hour travel times were based on home-based work estimated travel time. Selected traffic analysis zones (TAZ) were selected representing the areas shown on Table 8-10. As the table shows, due to traffic congestion, which causes slower travel speeds, as well as longer headways and transfers, and other factors, travel times can be quite long even for trips that are a relatively short distance.

For example, travel time between downtown Miami and Miami International Airport—a trip of only ten miles, which would take less than 20 minutes by car under uncongested conditions—averages around 70 minutes using public transit. From the Airport to Miami Beach, a relatively short trip of only 11 miles, can average around 80 minutes. A trip from Florida City to downtown, a trip that takes only 50 minutes by car, takes an average of 150 minutes using transit, in spite of the existence of both the Busway and Metrorail lines operating in the corridor. Providing benefits to the transit riders including making travel time for transit users similar to travel time for drivers, is a key element of encouraging transit use, and should be a key goal of the agency and a metric to be continuously measured.

Continuing analysis of these metrics should point MDT in the direction of improving travel speeds through corridor improvements as well as increasing headways and improving transfer coordination of transit services connecting key county origins and destinations.

Table 8-10: Estimated Peak Travel Times (minutes)

Areas	TAZ	Airport	Aventura	Coral Gables	Cutler Bay	Dadeland	Doral	Downtown Miami	Florida City	Hialeah	Miami Beach	Miami Lakes
		743	**85**	**1036**	**1340**	**1002**	**708**	**544**	**1455**	**346**	**618**	**163**
Airport	**743**	-	100	50	120	70	90	70	150	50	80	70
Aventura	**85**	100	-	100	-	140	90	50	-	60	50	60
Coral Gables	**1036**	50	100	-	100	50	80	50	130	60	90	90
Cutler Bay	**1340**	125	-	100	-	50	120	130	60	-	-	-
Dadeland	**1002**	90	140	50	50	-	70	80	80	90	120	90
Doral	**708**	110	90	70	120	60	-	100	140	50	100	40
Downtown Miami	**544**	70	60	40	130	80	110		160	50	40	70
Florida City	**1455**	150	-	120	60	80	140	160	-	180	200	-
Hialeah	**346**	50	60	60	-	100	40	50	180		60	20
Miami Beach	**618**	80	50	90	-	120	90	40	200	60		80
Miami Lakes	**163**	80	60	80	-	90	40	80	-	20	80	

Source: Dade-Broward Model, 2009

Objective 1.4 Maximize service reliability and efficiency

Measure: On time performance, frequency of service:

The on-time performance for the various MDT transit modes are provided in Table 8-11. Metrorail has excellent on-time performance, which is aided by the fact the line is running on an exclusive guideway system. Excellent on-time performance also indicates that elements of the operation are working well, from scheduling of the system to account for unbalanced passenger loads between the north and south of the system and throughout the day, to vehicle and track maintenance, which ensures that trains make pullout and operate without breakdowns or delays.

Metrobus operates at about 77 percent on-time performance, which is a good result given the congested traffic conditions under which most of the routes operate, in many corridors throughout the day, as well as the high load factors on many of the routes. Improving this result in the future will be the on-going challenge for the agency, as it seeks to make corridor signal and infrastructure improvements as well as continuing to improve vehicle maintenance (to ensure that pullouts are not missed or buses break down due to maintenance issues) and continuous refinement of bus route alignments and schedules to account for changing traffic conditions.

Table 8-11: MDT Annual On-Time Performance (2008)

On-Time Performance		
Metrorail	**Metrobus**	**Metromover**
99.90%	76.60%	N/A

Source: Miami-Dade Transit, 2009

Objective 1.5 Maximize multimodal travel options and provide travel choices

Measure: Transit service route miles by transit mode (Metrorail, Metromover, Express and Local Bus)

MDT, with its Metrorail and Metromover services, is among the few US transit agencies to offer heavy rail and people mover systems. These systems, constructed in the 1980s, offer high capacity, exclusive guideway transit on some of the system's busiest routes, offering customers a service that is qualitatively superior to bus service. The convenience of Metrorail will be further extended by the completion of the MIC-Earlington Heights Metrorail service, which will connect downtown Miami and the other locations along the Metrorail system with Miami International Airport and the vibrant employment center that surrounds the airport. MDT's challenge is to maintain the high quality of service on the Metrorail system while further extending the heavy rail system on lines where it is warranted.

More recently, MDT has developed a successful busway along US 1, extending south from the Dadeland Metrorail station and providing what is in effect a busway extension of the Metrorail system. Bus Rapid Transit (BRT) offers a potentially more cost-effective and more flexible means to extending the benefits of high capacity transit service to congested travel corridors, offering further transit choices to travelers in the county.

Table 8-12: Number of Transit Service Route Miles by Transit Mode

Transit Mode	Route Miles
Metrorail	23.02
Metromover	5.15
Metrobus Routes	2,371.60

Source: Miami-Dade Transit, 2009

Objective 1.6: Fill transit service coverage gaps

Measure: Service coverage in transit supportive areas completed in a regional level

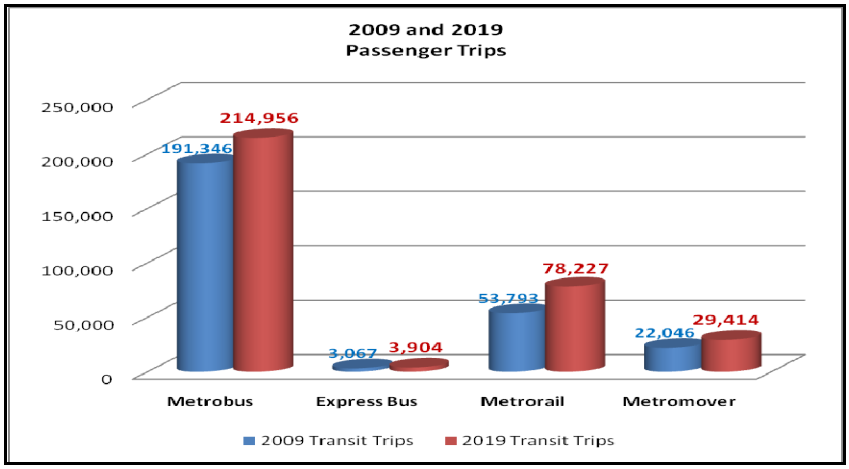
The number of miles of MDT bus routes within the transit transit-supportive service areas in 2009 is 716 miles. This will serve as a baseline for the measurement of future performance when evaluating service coverage.

Objective 1.7: Promote transit reliability

Measure: Increase in ridership

Travel demand estimation results were prepared for the TDP Major Update using the Dade-Broward travel demand model for 2009 and 2019 projections. Between 2009 and 2019 a 23 percent increase in the total number of transit trips is projected. MDT will be able to further improve upon existing ridership through the provision of efficient transit service that improves transit travel time and on-time performance.

Figure 8-22: Difference in 2009 and Projected 2009 Passenger Trips



Source: Dade-Broward Mode, 2009

Objective 1.8: Improve transportation facilities' and services' regional connectivity

Measure: Transit service route miles in corridors of regional significance

Table 8-13 shows the number of transit service miles (including miles of overlapping bus service) in each of more than a dozen key regional corridors. As the table indicates, MDT provides multiple bus routes operating segments of all of these corridors, with high concentrations of service on South Dixie Highway (the busway), A1A, Biscayne Boulevard and Flagler Street.

Table 8-13: Transit Service Miles in Corridors of Regional Significance

Corridors of Regional Significance	Transit Service Route Miles in Corridor
South Dixie Highway	195
A1A	187
I-95	127
Biscayne Boulevard	120
Flagler Street	95
NW 27th Avenue	81
Palmetto Expressway (SR 826)	74
Florida's Turnpike	72
Kendall Drive (88th Street)	66
Coral Way	64
SR 112	57
8th Street	50
Dolphin Expressway (SR 836)	33

Source: Miami-Dade County GIS files, 2009

Measure: Number and location of shelters, stations, transit centers relative to service standards

MDT's system offers stations along the Metrorail and Metromover system, and bus stops, shelters and benches along Metrobus routes. As Table 8-14 shows, station spacing on MDT's systems are about average for the industry, if slightly below the agency's standards for the bus system. MDT's standard calls for stops every 300-1,200 feet in higher density areas, every 500-1,200 feet in medium and 600-2,500 feet in lower density areas. This would indicate a slightly more frequent spacing of stops, on average, than five stops per mile (about one stop every 1,050 feet). More detailed analysis would be required to identify whether specific additional stops along routes would be warranted, and to determine where those stops would be physically placed along the route.

Table 8-14: Number of Station Stops Per Route Mile

	Number of Stations/Stops	Total Route Miles	Stations/Stops per Route Mile
Metrorail	22	23.02	0.96
Metromover	21	5.15	4.08
Metrobus	11,691	2,371.60	4.93

Source:

Objective 1.9: Include provisions for non-motorized modes in new projects and in reconstructions

Measure: Non-motorized infrastructure on transit improvements

Provisions that support non-motorized modes of transportation are included land use and transportation elements of the Miami-Dade County CDMP. Specifically, a pedestrian friendly environment that promotes walking, bicycling and transit is encouraged through design and land use considerations. One example of existing non-motorized infrastructure adjacent to transit is the bike path that stretches the length of the South Miami-Dade busway. Future capital improvements shall also seek to integrate non-motorized infrastructure upon the implementation of new transit services.

Objective 1-10: Increase reverse commute opportunities for disadvantaged communities

Measure: Transit service routes miles from urban centers to suburban employment areas in the AM Peak period

This objective and measures will be assessed in future TDP updates.

Objective 1-11: Promote transportation improvements that provide for the needs of the elderly and disabled

Measure: Average transit travel time to/from TAZs with a high proportion of elderly and disabled population

The following tables show travel time (including average wait and transfer time) by bus between six districts in Miami-Dade County where the population of elderly exceeds 20% of the total population. The high percentage of elderly in these districts also serves as a surrogate for the disabled population, since there is a high correlation between age and disability. These areas are primarily concentrated around downtown Miami, Little Havana, Hialeah and various areas along the coast (Figure 8-23). While travel between some of these districts is not particularly strong, travel time between the districts is indicative of the challenges facing people using transit in these districts to travel to other areas of the city and region.

As the tables below show, travel between even adjacent districts can be time consuming. For example, travel between downtown and the Airport takes on average more than an hour, while travel from Hialeah downtown can average nearly two hours

by bus (those fortunate to be within walking distance of Metrorail Station would have a much faster trip).

Comparison of Table 8-15 through Table 8-18, shows, travel times are anticipated to remain the same or grow longer between 2009 and 2019, due primarily to traffic congestion and higher passenger loads, which will degrade travel time. For example, local bus trips between Districts 1 and 2 are expected to stay the same between 2009 and 2019 at 71-77 minutes. However, travel time between districts five (5) and six (6) is expected to grow from under 120 to more than 130 minutes.

Comparison of these tables allows a comparison between travel times using local and express bus service. As a comparison of those tables show, express bus in many cases is not particularly faster (and in fact, can be slightly slower) than local bus in spite of the skip-stop character of the express service. For example, the tables indicate that travel between districts 5 and 6 takes about 120 minutes in 2009 using local bus, and is about the same using express (the express is slightly slower, with the analysis indicating a travel time of 118-119 minutes using local bus, and 120-121 minutes using express).

The results of this analysis is further evidence for the need for bus priority treatments to allow buses to bypass congested conditions, if MDT is to avoid experiencing even longer travel times between key destinations in the future. This is particularly important in serving areas frequented by elderly, disabled and lower income people, since these groups are the most dependent on transit and form large markets for transit service.

Table 8-15: Travel Time by Bus (2009)

O/D	District 1	District 2	District 3	District 4	District 5	District 6
District 1	0	77	68	136	123	170
District 2	71	0	68	117	96	137
District 3	69	66	0	79	100	113
District 4	136	113	79	0	105	61
District 5	120	90	101	106	0	118
District 6	176	139	110	63	119	0

Source: Dade-Broward model, 2009

Table 8-16: Travel Time by Bus (2019)

O/D	District 1	District 2	District 3	District 4	District 5	District 6
District 1	0	72	82	140	126	169
District 2	72	0	71	129	101	147
District 3	75	66	0	87	106	116
District 4	150	122	87	0	113	68
District 5	127	93	104	117	0	131
District 6	187	145	127	70	127	0

Source: Dade-Broward model, 2009

Table 8-17: Travel Time by Express Bus (2009)

O/D	District 1	District 2	District 3	District 4	District 5	District 6
District 1	0	66	69	138	124	166
District 2	71	0	68	112	97	138
District 3	69	67	0	80	101	111
District 4	124	94	65	0	106	62
District 5	120	91	102	107	0	120
District 6	116	86	58	64	121	0

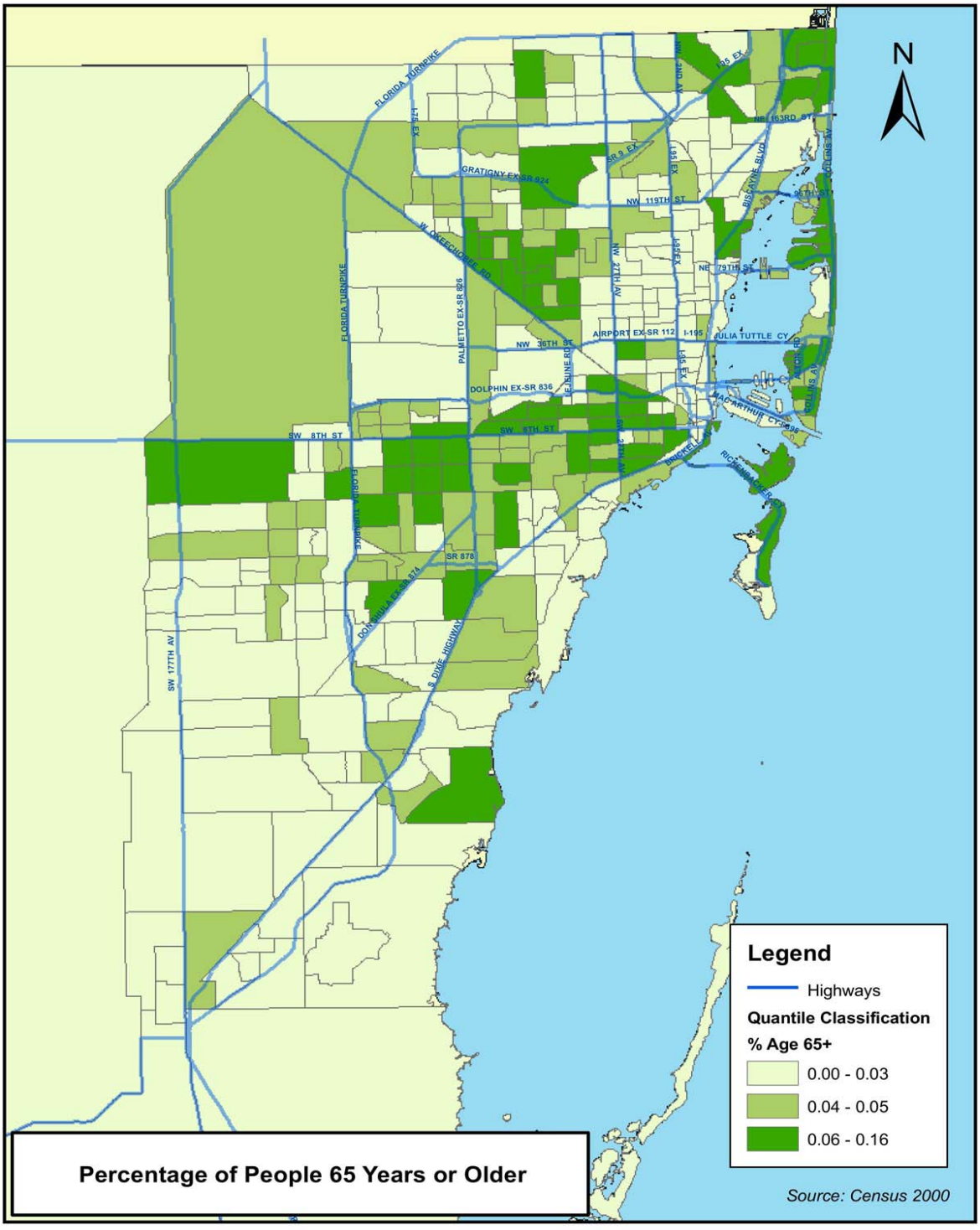
Source: Dade-Broward model, 2009

Table 8-18: Travel Time by Express Bus (2019)

O/D	District 1	District 2	District 3	District 4	District 5	District 6
District 1	0	72	82	141	126	170
District 2	72	0	71	124	101	149
District 3	75	67	0	88	108	117
District 4	136	99	72	0	114	70
District 5	126	93	106	117	0	132
District 6	0	87	58	70	128	0

Source: Dade-Broward model, 2009

Figure 8-23: TAZ Districts of Population 65 and Older



Source: Miami-Dade Transit, 2009

8.7.1.2 Goal 2: Improve Customer Convenience, Comfort and Safety on Transit Service and within Facilities

Objective 2-1: Improve safety on vehicle service operations

Measure: Level of investment in safety projects/Audit of System Safety Program Plan.

MDT will continue to regularly assess operational safety for workers and passengers according to level of investment and compliance of regularly updated safety plan. As part of MDT's Infrastructure Renewal Program safety projects are evaluated and prioritized for implementation on an annual basis.

Objective 2-2: Reduce roadway and multi-modal crashes

Measure: Number of accidents involving transit vehicles, Number of accidents/incidents per 100,000 miles

For 2008, MDT reported 3.15 accidents per 100,000 miles of transit service. This will serve as the baseline for future evaluation of performance for this measure.

Objective 2-3: Enhance outreach opportunities to educate the community on transportation issues and highlight transit service benefits such as service reliability, passenger cost savings, and environmental benefits

Measure: Develop speaker's bureau to inform public about transit benefits

Measure: Work with MPO, Transportation Management Organizations, major employers to promote transit service

Measure: Recruit community leaders to advise on promoting transit services

This objective and measures will be assessed in future TDP updates since no existing information is available.

Objective 2.4: Maintain convenient, clean, safe transit passenger facilities and vehicles

Measure: Reduction of passenger complaints regarding safety and cleanliness of vehicles and facilities

Miami-Dade Transit reported 7,447 passenger complaints for 2008. This will serve as the baseline for future evaluation of performance for this measure.

Measure: Completion of bi-annual safety and inspection audits of Metrorail and Metromover stations.

This objective and measures will be assessed in future TDP updates.

Measure: Number of safety related accidents and incidents on-board and in stations/transit facilities.

Miami-Dade Transit recorded 1,191 safety related accidents and incidents for 2008. This will serve as the baseline for future evaluation of performance for this measure.

8.7.1.3 Goal 3: Increase the Security of Transit Vehicles and Facilities

Objective 3-1: Ensure transit vehicles and facilities provide a secure environment for customers

Measure: Percent of functioning video cameras

The total number of active video cameras systemwide is 540. By October 2009, 590 active cameras will be operational. Upon the completion of future projects the MDT video surveillance system will consist of 684 active cameras. A future performance evaluation will determine the percent of these cameras are fully functional

Measure: Security personnel capabilities

Measure: Ensure 100 percent compliance with security contract

Measure: Reduction of security related incidents

Each of the previous three measures will be assessed for performance in future TDP updates.

Objective 3-2: Increase security at transit stops and intermodal stations and connections

Measure: Number of criminal incidents on-board transit and in stations/transit facilities.

The number of criminal incidents on-board transit was 113 incidents for 2008. The number of crimes reported at MDT facilities was 325 for 2008. The total number of criminal incidents recorded by MDT in 2008 is 438. This will serve as the baseline for future evaluation of performance for this measure.

8.7.1.4 Goal 4: Support Economic Vitality

Objective 4-1: Provide transit access to urban centers at a minimum of 30-minutes during the peak

Measure: Transit service within 1/4 mile of urban centers as identified by MDT.

Table 8-19 lists the three urban centers, as identified in the CDMP Land Use Element were evaluated to determine the amount of transit service within 1/4 mile. Downtown Miami has the highest concentration of transit service as evident from the operation of Metrorail, Metromover and Metrobus providing service coverage throughout the downtown area. Dadeland has a more focused center of activity with direct connections from Metrorail and the South Miami-Dade Busway. Additional urban centers should be identified and evaluated to determine whether adequate service is being provided.

Table 8-19: Transit Service Route Miles within ¼ mile of Urban Centers

Identified Urban Centers	Transit Service Route Miles within 1/4 mile
Downtown Miami CBD	53.5
Dadeland	36.5
NW 107 Avenue and NW 12 Street	8.9

Source: Miami-Dade GIS, 2009

Measure: Average home based trips to work (HBW) travel times on transit route providing access to urban centers.

Table 8-20 shows the average bus travel time during the peak periods for work trips to the three urban centers identified (Dadeland, Doral, and downtown Miami). Some of the work trips listed below result in lengthy travel times during the peak period. This can be attributed to multiple bus transfers, which results in an increase in wait time.

Table 8-20: Average Travel Time to Urban Centers for work Trips (Minutes)

		Dadeland	Doral	Downtown Miami
(AM Bus skims)	**TAZ**	**1002**	**708**	**544**
Aventura	**85**	170	141	62
Coral Gables	**1036**	84	119	66
Cutler Bay	**1340**	90	174	182
Hialeah	**346**	135	90	77
Miami Lakes	**163**	138	150	127
Pinecrest	**1162**	33	116	125
Kendall	**1237**	58	139	152

Source: Dade-Broward Model, 2009

Objective 4-2: Enhance major tourist travel and access opportunities within the Urban Growth Boundary.

Measure: Transit service route miles within 1/4 mile of tourist attractions.

Table 8-21 shows the number of miles of transit service that operates within close proximity to various tourist attractions in Miami-Dade County. As the table indicates, most of the attractions have transit service, with only relatively isolated locations such as Biscayne National Park and Everglades Safari Park lying beyond walking distance of MDT bus or rail service. However, a number of locations have relatively little service, including such diverse attractions as the Deering Estate, the Venetian Pool, Barnacle Historic State Park and Monkey Jungle.

In many cases, the locations of these attractions in outlying areas of the county do not lend themselves to extensive transit connections, and most are located along one or two routes that operate on an adjacent arterial street, rather than being in the center of a hub of transit service (such as in downtown Miami or Miami Beach). MDT should work closely with tourist attractions, particularly those that rely heavily on transit service for their clientele, to improve transit service to their locations.

Table 8-21: Transit Service Route Miles within 1.4 Mile of Tourist Attractions

Tourist Attractions	Route Miles
Miami Art Museum	15.6
Miami Childrens Museum	4.4
Vizcaya Museum and Gardens	1.7
Ancient Spanish Monastery	2.5
Barnacle Historic State Park	0.8
Bass Museum of Art	4.3
Bayside Marketplace	8.1
Biscayne National Park	NA
Coral Castle	2.5
Coral Gables Merrick House	1.0
Deering Estate at Cutler	0.0
Everglades Safari Park	NA
Fairchild Tropical Botanic Garden	0.5
Jungle Island	3.7
Metro Zoo	1.7
Miami Beach	167.8
Miami Science Museum	2.4
Miami Seaquarium	0.9
Monkey Jungle	0.0
The Wolfsonian Museum	4.0
Venetian Pool	0.6

Source: : Miami-Dade GIS, 2009

Objective 4-3: Increase and improve transit access to Miami International Airport and the Port of Miami

Measure: Transit service route miles within 1/4 mile of MIA and Port of Miami

The transit service route miles within a 1/4 mile of MIA and the Port of Miami are presented in Table 8-22. This analysis can be deceiving since, unlike many other attractions, the airport and seaport are large sites, but can only be accessed at a single point. Metrobus routes J, 7, 37, 42, 57, 133 connect directly to the airport terminal, in addition to the Tri-Rail commuter rail service which stops nearby.

The construction of the MIC and the MIC-Earlington Heights extension of Metrorail will greatly enhance transit service to the airport terminal over-and-above the already excellent Metrobus service to the terminal.

Metrobus route 243, the Seaport Connection, connects the Port of Miami to downtown Miami and to MDT's Metrobus and Metrorail systems.

Table 8-22: Transit Service Route Miles within ¼ mile of MIA and Port of Miami

Facility	Transit Service Route Miles within 1/4 mile
Miami International Airport	70.0
Port of Miami	17.5

Source: Miami-Dade GIS, 2009

Measure: Service hours on transit routes operating within 1/4 mile of MIA and Port of Miami.

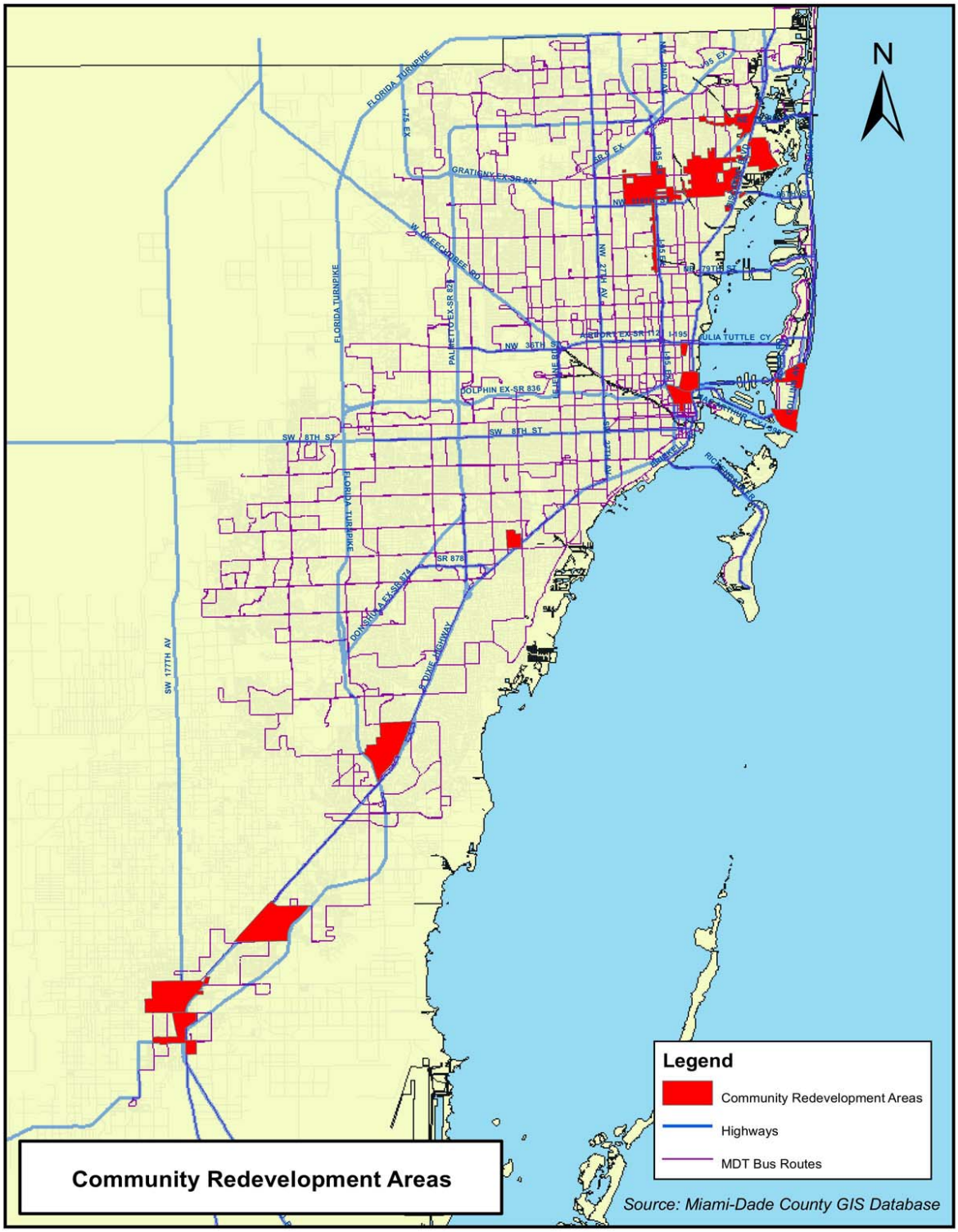
This measure will be assessed in future TDP updates.

Objective 4-4: Implement projects that support economic development and redevelopment areas

Measure: Transit service route miles within 1/4 mile of redevelopment areas.

A number of corridors in the county were identified by Miami-Dade County as potential redevelopment areas based on their older development and infrastructure. As the following table shows, MDT provides service on multiple routes to most of these corridors. The redevelopment areas are also illustrated in Figure 8-24.

Figure 8-24: Economic Development and Redevelopment Areas



Source: Miami-Dade County, 2009

Table 8-23: Transit Service Route Miles within ¼ mile of Redevelopment Areas

Redevelopment Areas*	Transit Service Route Miles within 1/4 mile
North Miami	61.6
East Overtown	58.4
North Miami Beach	52.7
City of Miami - OMNI	28.3
Florida City	26.9
Miami Beach	26.0
West Perrine	21.6
Naranja Lakes	17.1
7 Avenue Corridor	16.9
Homestead	13.9
South Beach (Former CRA)	13.0
Midtown Miami	12.3
South Miami	10.6
Biscayne Corridor	1.6

Source: * Information taken from the Miami-Dade County's GIS webpage.
Layer was last updated on 03/07/2008

Measure: Service hours on routes operating within 1/4 mile of redevelopment areas.

This measure will be assessed in future TDP updates.

Objective 4.5: Apply transportation and land use planning techniques, such as transit-oriented development (TOD), that support intermodal connections and coordination

Measure: Promote modification of permitted land use to encourage mixed-use and TOD

Measure: Encourage use of transit overlay districts to simplify implementation of transit-friendly land use in areas of high transit service or around transit station facilities.

This objective and measures will be assessed in future TDP updates. However, policy initiatives do exist within the CDMP Land Use element and Transportation Element related to development and population density.

8.7.1.5 Goal 5: Preserve the Environment and Promote Energy Conservation

Objective 5-1: Minimize and mitigate air quality impacts of transportation facilities, services, and operations

Measure: Tons per day of emissions (No_X, CO, VOC) generated by the region's transportation system

The total vehicle miles traveled (VMT) and vehicle hours traveled (VHT) was referenced for 2005 and estimated for 2030 based on the output of the Dade-Broward model. Emissions track very closely with VHT and VMT, and therefore this transportation data will serve as surrogate for the level of pollutants that affect air quality. As the data shows, projections indicate that regional VMT is expected to grow by more than 10% over the time period, while regional VHT will grow by more than 20%. Unless more of these trips can be diverted to transit or automobiles can be made less polluting than they are today, these increases in regional travel will have a significant impact on air quality in the region.

Table 8-24: Total Vehicle Miles Traveled / Vehicle Hours Traveled (2005 and 2030)

	2005	2030
TOTAL VMT	77,529,968	87,748,232
TOTAL VHT	3,466,268	4,177,409

Source: Dade-Broward Model, 2009

Objective 5.2: Reduce fossil fuels consumption through the consideration of alternative fuel vehicle technology

Measure: Number of gallons of bio-diesel fuel consumed.

The diesel fuel purchased and consumed by MDT contains an "alternate fuel" of 5% (B5) biodiesel blend. The number of gallons of biodiesel fuel consumed is not readily available.

Measure: Ratio of bio-diesel to standard clean diesel fuel consumed.

This measure is not applicable since the existing bus fleet is not using bio-diesel.

Measure: Number of hybrid technology buses in MDT fleet.

The existing bus fleet consists of no hybrid vehicles. However, there are plans by MDT for the procurement of nineteen diesel-electric hybrid vehicles to be placed into service by 2010 for operation within the I-95 Managed Lanes and the Kendall enhanced bus service.

Measure: Average miles per gallon of bus fleet.

The existing average mile per gallon for the bus fleet is 3.5 miles, which is around the average for diesel bus fleets operating in other cities. Changes to the bus fleet (to add

hybrid vehicles) and the use of bus priority treatments in congested roadway corridors would be required to significantly improve bus fuel economy.

Objective 5.3: Promote transit service projects that support urban infill and densification

Measure: Transit service route miles within the Urban Infill Area

The transit service route miles operated by MDT within the Urban Infill Area are more than 1,400 miles. As the map in Figure 8-25 shows, most of the transit system operates in the urban infill area, and there are few significant areas of the infill area where transit service is not available. In many of these areas, development still has not fully occupied the area; MDT would consider further service to those areas as development plans progress or additional development occurs in those areas.

Table 8-25: Transit Service Route Miles Within ¼ mile of Urban Infill Area

	Transit Service Route Miles within 1/4 mile
Urban Infill Area (UIA) Boundary	1,418

Source: Miami-Dade GIS, 2009

Measure: Service hours on routes serving the Urban Infill Area

This measure will be assessed in future TDP updates.

Objective 5.4: Minimize adverse impacts to established neighborhoods

Measure: Minimize impacts to established neighborhoods

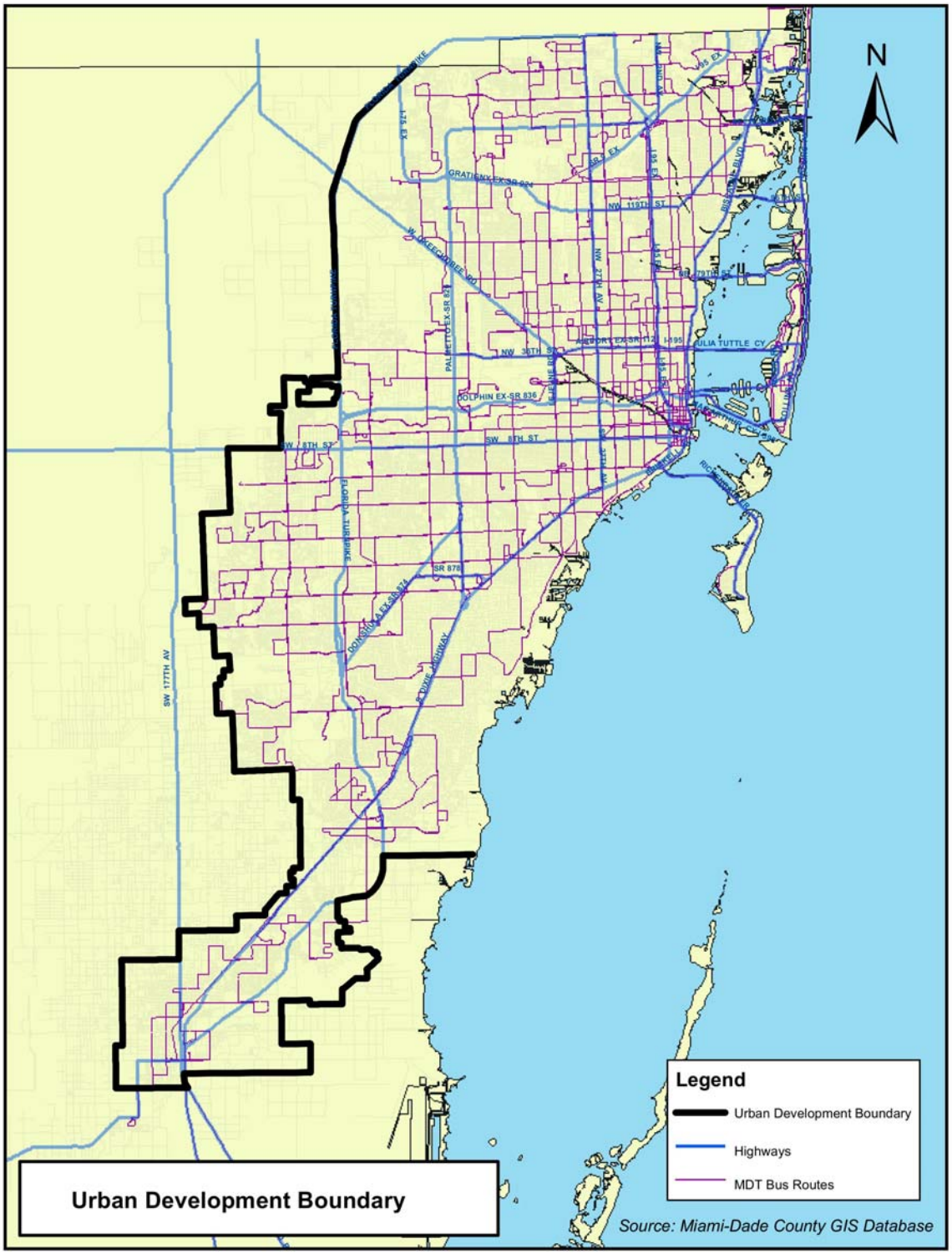
This objective and measure will be assessed in future TDP updates.

Objective 5.5: Promote transportation improvements that are consistent with adopted comprehensive development master plans

Measure: Consistent with adopted comprehensive development master plans

This objective and measures will be assessed in future TDP updates.

Figure 8-25: Urban Infill Area with Transit System Overlay



8.7.1.6 Goal 6: Enhance the Integration and Connectivity of the Transportation System, Across and Between Modes and Transit Providers, for People and Freight

Objective 6.1: Provide multi-modal options consistent with the local government

Measure: Consistency with adopted comprehensive development master plans

This objective and measure for new multi-model options will be assessed in future TDP updates

Objective 6.2: Facilitate connections between transportation modes

Measure: Multimodal connections (bus-rail, transit-taxi etc.)

Measure: On-time performance

Measure: Transfer time

Measure: Transfer policies

This objective and measure will be assessed in future TDP updates.

Objective 6.3: Ensure transportation options are available during emergency evacuations for the elderly and persons with disabilities

Measure: Transit service route miles within 1/4 mile of TAZs with a high proportion (20% or higher) of elderly and the disabled population

The number of transit service route miles within 1/4 mile of TAZ's with a high proportion (20% or higher) of elderly is 648 miles. This indicates that areas with a high concentration of elderly are well served by transit service and have full access to the Metrobus system, with some areas also well served by Metrorail.

Objective 6.4: Increase coordination between regional and local transportation providers

Measure: Provide better Multimodal connections: Tri-Rail-bus, bus-rail, municipal services-MDT, transit-taxi, jitney etc

This objective and measure will be assessed in future TDP updates.

8.7.1.7 Goal 7: Optimize Sound Investment Strategies for System Improvement and Management/Operation

Objective 7.1: Optimize benefits of capital expenditures

Measure: Capital expenditure

This objective and measure will be assessed in future TDP updates.

Objective 7.2: Optimize operations and maintenance expenses

Measure: Reduce cost per revenue mile

The cost per revenue mile of MDT's Metrobus service is $10.77 (gross allocated cost)

The cost per revenue mile of MDT's Metrorail service is $14.92 (gross allocated cost)

Measure: Decrease cost per revenue hour

The cost per revenue hour of MDT's Metrobus service is $130.28 (gross allocated cost).

Cost per revenue mile and hour are measures of efficiency. Cost per revenue mile and hour for MDT Metrobus service is relatively high compared to peer agencies. Improving operating speeds on congested corridors are among the ways to improve cost efficiency.

The cost per revenue hour of MDT's Metrorail service is $424.18 (gross allocated cost)

This again is slightly high for Metrorail systems but within the normal range for peer agencies. Efforts to reduce costs on the Metrorail system is similar to those that apply to the bus system

Objective 7.3: Optimize applications of People's Transportation Plan funding

Measure: PTP expenditure

This measure will be assessed in future TDP updates.

Measure: Consistency of PTP funding being used with commitments made in PTP

This measure will be assessed in future TDP updates.

Objective 7.4: Identify Public, Private Partnership opportunities

Measure: Number of private sector funded transit projects

Measure: Dollar amount of private sector funding

Currently there at least two projects that are identified to include a public private partnership. The first project includes a 260 space parking garage at the intersection of NW 107th Avenue and NW 12th Street to serve as a park and ride lot. The proposed project will be a turn-key operation including MDT owning the land, once the garage is completed. The estimated cost by the owner is $14 million. The second project is a bus station and surface park and ride lot with 45 parking spaces at the Kendall Town Center. There is an existing commitment in place as a result of the Development of Regional Impact (DRI) process to meet transit concurrency.

Measure: Ratio of public to private sector funding for operating funds and capital improvements

This objective and measure will be assessed in future TDP updates.

Objective 7.5: Align MDT priorities and deliverables with available funding and resources

Measure: Availability of additional funding from new sources tied to specific projects or programs

Measure: Projects completed within budget and on-time

This measure will be assessed in future TDP updates.

8.7.1.8 Goal 8: Maximize and Preserve the Existing Transportation System

Objective 8.1: Continue to examine the provision and utilization of special-use lanes on the existing system for transit use

Measure: Lane miles of special use/managed lanes used by transit services.

The existing special use lanes used by MDT is the South Miami-Dade Busway which is approximately 20 miles in length. In 2010, additional managed lanes usage will increase resulting from the operation of I-95 express service along I-95 between the Golden Glades interchange and downtown Miami. Furthermore, MDT is also considering implementation of special use lanes through buses operating on the shoulders of existing highways during morning and afternoon peak periods. In 2007, the buses running on shoulders pilot program was implemented with service on KAT routes for SR 874 Don Shula Expressway and SR 878 Snapper Creek Expressway.

Measure: Dollar amount of planned right-of-way acquisition for transit facilities

Miami-Dade Transit proposes to acquire up to $47.5 million in right–of-way for incremental and affordable transit projects along NW 27th Avenue that would support premium transit service. The acquisition and related projects will be separate and

distinct from the North Corridor Metrorail Extension project. Furthermore, the estimated dollar amount for planned right-of-way acquisition for the MIC is $67.2 million. For a the new Transit Village at NW 7th Avenue and NW 62 Street, there is a contract amount for acquiring 2.4 acres for $3.9 million.

Objective 8.2: Identify and implement the best available technologies and innovations to improve the reliability and efficiency of the transportation system

Measure: Operation of new technologies and innovations in transportation improvements

Miami-Dade Transit continuously works to assess ITS needs through an organization of prioritized ITS projects for deployment that conform to regional ITS architecture while reflecting the local needs and preferences for the operation of transit. MDT routinely reports to FTA to effectively demonstrate its commitment to deploy an inter-operative and fully integrated system of ITS technologies.

Objective 8.3: Upgrade and maintain existing transit infrastructure and facilities in a state of good repair

Measure: Capital expenditure on existing transit infrastructure is in line with identified needs (IRP)

Miami-Dade Transit has developed a procedure for identifying, evaluating, prioritizing, and programming capital improvement projects that will upgrade and maintain the existing transit infrastructure and facilities. This Infrastructure Renewal Program (IRP) is updated annually to assure the existing transit system and facilities remain in a state of good repair. For FY 2010, MDT has committed to spend $10.1 million on infrastructure and facility improvement projects.

Objective 8.4: Maintain the operational functionality of transit vehicles to maximize reliability

Measure: Number/percentage of missed pullouts, failures

The measures for Goal 8 present information for future evaluation of service reliability for the system. Generally, MDT's service reliability statistics are good, although there is always room for improvement. MDT experienced only 204 missed pullouts in 2008, or fewer than one missed pullout per operating day. While even a single missed pullout can mean inconvenience and discomfort for hundreds of passengers, an average of less than one missed pullout per day is very good performance for a transit system the size of MDT.

Measure: Adherence to preventative maintenance programs

For 2009, MDT is experiencing excellent adherence to their preventative maintenance program as compared to MDT's stated goals as presented in Table 8-26. As the statistics regarding adherence to preventive maintenance programs shows, all of the systems adhere to their respective programs virtually at all times. However, the rail system claims a slightly higher compliance rate than bus, and, at 96.25%, the record for the Metromover is measurably lower than for the other services, and shows room for improvement. The following table lists the percentage of adherence for each of the three transit modes in operation.

Table 8-26: Percent of Adherence to Preventative Maintenance Program by Mode

	Metrobus	Metrorail	Metromover
FY08/09	99%	99.90%	96.25%
Goal	90%	90%	90%

Source: Miami-Dade Transit, 2009

Measure: Mean distance between service disruptions on Metrorail, Metromover and bus. A service disruption is defined as an interruption of service between five minutes or greater for Metrobus; three minutes or greater for Metrorail; and two minutes of greater for Metromover.

As the current 2008 statistics show, the rail system operates more than ten times as many miles between breakdowns as the bus system, while the Metromover operates about 4,500 miles between breakdowns. The agency goal for this measure is also provided within the table for comparison. Analysis of similar statistics at peer agencies should be conducted to create a norm for these statistics, and data should be collected and analyzed with each future TDP to insure that the agency continues improving in the area of service reliability.

Table 8-27: Average distance between Service Disruption by Mode

	Metrobus	Metrorail	Metromover
FY08/09	3,744	54,245	4,530
Goal	4,000	39,000	6,000

Source: Miami-Dade Transit, 2009

8.8 Service Standards

In addition to the goals, objectives and measures developed for the TDP Major Update, MDT has also undertaken a separate initiative to establish specific transit service standards to assess the level of operational performance. The two primary applications of these service standards include:

1. The use of standards to evaluate the performance of existing services, and
2. Use of standards to evaluate proposals for new services

The service planning process considers four major divisions within MDT: Metrobus, Metrorail, Metromover, and Special Transportation Services (STS). Metrobus standards include information on the design and redesign of routes and schedules, and a process for route performance evaluation. For Metrorail, service schedule design standards are the only guiding factors since the system operates within an exclusive fixed alignment. The operating plan of Metromover forms the basis of service standards for this mode. Finally, for STS standards include performance and productivity of Demand-Response.

The numerical values of these service standards will undergo an annual evaluation by MDT yearly, using the most recent twelve-month period for which data is available. The evaluation will compare the current values of productivity standards versus those from the previous year. Operating cost data for the previous year will be examined to account for system-wide increases or decreases in expenditures.

The entire MDT service standard document is referenced in the appendix of this report.