

MARKET, DEMOGRAPHIC AND ECONOMIC ANALYTICAL SUPPORT

SR 836 AND NW 107th AVENUE EXPRESS ENHANCED BUS TOD: HIGHEST AND BEST USE WORKSHOP

Prepared for:

Miami-Dade County

Citizen's Independent Transportation Trust



TransportationTrust



August 27, 2013
(revised 10/1/2013)



Metropolitan
Center

Executive Summary

The following report provides market, demographic and economic analysis in support of the land planning and urban design study and charrette to be performed by the Miami-Dade Department of Regulatory and Economic Resources (RER) as part of SR836 Express Enhanced Bus Service TOD in the general vicinity of NW 107th Avenue in nearby areas of the Cities of Sweetwater and Doral and unincorporated Miami-Dade County. The analysis includes: 1) key population and household characteristics in the surrounding service area, 2) economic and market conditions, including employment patterns and local industries and current residential and commercial property values, and 3) opportunities based on market conditions and best practice case studies.

Transit Oriented Development (TOD) Design Guidelines have been developed by the Florida Department of Transportation (FDOT) that provide general parameters and strategies for local governments and agencies to promote and implement development that is supportive of transit investment. The guidelines include such variables as population and employment density, intensity and diversity of land uses, parking availability, and the physical design of the street network to provide connectivity and accessibility. In terms of bus-use TOD, the implementation experience is scarce and the number of exemplary cases is relatively small. However, the literature suggests that Enhanced Bus Service is ideally supported by TOD characterized by a mix of uses, more intense development and walkable streets within a ½ mile of the transit service. TOD increases the density of people near transit, including residents, employees, visitors, and customers in a built environment that is pedestrian friendly and connected to transit.

The analysis found that the current land area within the vicinity of SR 836 and NW 107th Avenue has sufficient population density to support a potential Enhanced Bus Service TOD location. Ideally, the minimum density to support a TOD in a suburban area is 5-30 dwelling units per acre. However, the highest density in the SR 836/NW 107th Avenue area is only 13-25 dwelling units per acre with most of the surround area less than 13 dwelling units per acre. While Miami-Dade County's 2015 and 2025 Land Use Plan designates the SR 836 and NW 107th Avenue location as an Urban Center, the existing area does not provide for the mixed-uses necessary to support a successful TOD support area.

Other Key Findings:

- There is an estimated population of 7,946 within a ½ mile radius of SR 836 and NW 107th Avenue, of which, 73 percent are in the labor force;
- There is an estimated 3,781 housing units within a ½ mile radius consisting primarily of 1-unit detached, single-family homes;
- An estimated 83 percent of commuters in the area drive alone by car, truck or van;
- The employed population 16 years and older in the area is primarily employed in management, business, science and art; sales and office; and service occupations;
- There is a very limited amount of vacant, private land within the 2-mile transit service area of SR 836 and NW 107th Avenue;
- Class A office and flex space lease rates in the SR 836/NW 107th Avenue market area range from \$100-\$205 psf and \$16.00-\$24.00 psf for Class B. Retail space in the SR 836/NW 197th Avenue area is currently leasing for \$21.00-\$35.00 psf.

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I Introduction

Miami-Dade County is implementing incremental improvements for rapid transit expansion projects of the People's Transportation Plan, including the East-West Corridor. This features the SR836 Express Enhanced Bus Service in the short term and potentially rail service in the long term. To support this enhanced bus service beginning in 2012 with Phase 1 and a further phase in 2016 or 2017 – which addresses heavy congestion on SR836 (especially during rush hour in peak direction) and demand for movement of passengers from western Miami-Dade County to the Miami Intermodal Center – a land planning and urban design study is necessary to determine the highest and best uses for Transit Oriented Development (TOD) location(s) over both the short term and long term.

The following report provides market, demographic and economic analysis in support of the land planning and urban design study and charrette to be performed by the Miami-Dade Department of Regulatory and Economic Resources (RER) as part of SR836 Express Enhanced Bus Service TOD in the general vicinity of NW 107th Avenue in nearby areas of the Cities of Sweetwater and Doral and unincorporated Miami-Dade County. The analysis includes: 1) key population and household characteristics in the surrounding service area, 2) economic and market conditions, including employment patterns and local industries and current residential and commercial property values, and 3) opportunities based on market conditions and best practice case studies.

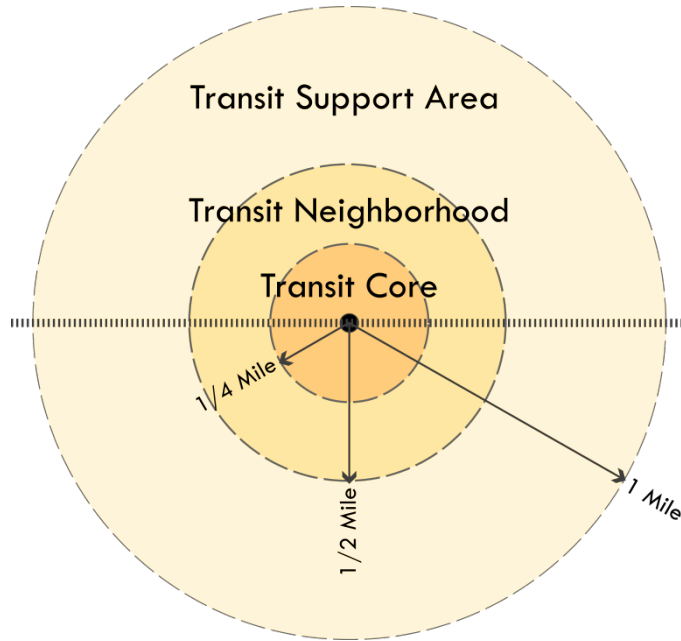
II Transit Oriented Development

According to the Florida Department of Transportation (FDOT), transit-oriented developments (TODs) are compact, moderate to high intensity and density, mixed use areas within one-half mile of a transit stop or station that is designed to maximize walking trips and access to transit. They also are characterized by streetscapes and an urban form oriented to pedestrians to promote walking trip to stations and varied other uses within station areas. One quarter-mile and one-half mile distances represent a 5 to 10 minute walk time, which is the amount of time most people are willing to walk to a destination. The most intense and dense development is typically located within the one quarter mile radius (transit core). Developments' intensities and densities gradually decrease out to the one-half mile radius (transit neighborhood) and the one mile radius (transit supportive area).

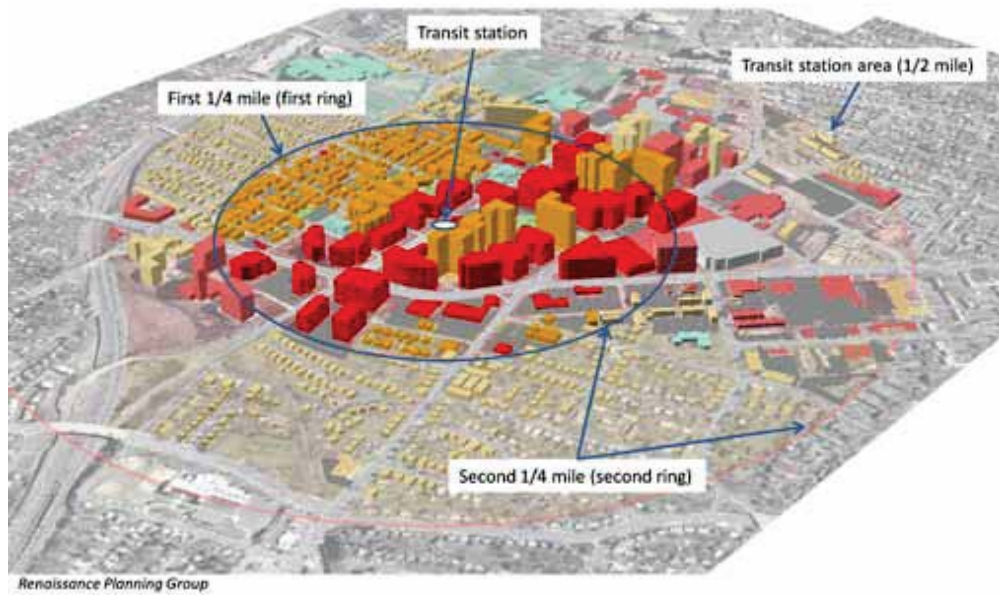
According to FDOT, a TOD consists of four interrelated areas:

1. Station Area – one-half mile or approximately 500 acres around the transit station composed of transit core and transit neighborhood;
2. Transit Core – first-quarter mile or approximately 125 acres around transit station
3. Transit Neighborhood – second-quarter mile or approximately 375 acres surrounding the transit core; and
4. Transit Supportive Area – one-mile around the transit station.

TOD Areas



(FDOT, 2011)



Successful transit-oriented developments (TODs) meet demand for compact, walkable, mixed-use development - the same markets that are also likely to see an important amenity value in easy access to high-quality transit service. At the same time, the more people, jobs, and services that exist within walking distance of transit service, the higher the potential transit ridership and fare generation, and the more cars that can be pulled off congested roads.

While most of the TOD literature focuses on development next to rail service, there is growing interest in bus-use TOD. The literature that exists on bus-use TOD is focused on bus rapid transit (BRT) TOD implementation experience which is scarce and the number of exemplary cases relatively small. However, the literature suggests that “enhanced bus service” is ideally supported by TOD characterized by a mix of uses, more intense development and walkable streets within a ½ mile of the transit service.

In an attempt to summarize the elements of effective and efficient BRT/TOD, the Institute for Transportation and Development Policy (ITDP) publishes *The Bus Rapid Transit Guide* which is a combination of both quantitative and qualitative characteristics that can be placed on a quality spectrum (See Appendix B). While the current CITT study is focused on “enhanced bus service,” the ITDP TOD Standard for bus rapid transit (BRT) is useful for future SR 836 corridor planning.

The Transit-Oriented Development (TOD) Standard (“the Standard”) is an effort by leading technical experts to come to a common understanding of what constitutes internationally-recognized urban development best practice. This includes promoting sustainable urban transport while minimizing the travel mode share of personal motor vehicles and reducing the greenhouse gas (GHG) emissions and other negative externalities associated with their use.

The Standard recognizes urban development projects that are located within walking distance of a high-capacity transit station and that present specific urban design and land use characteristics known to support, facilitate, and prioritize the use of public transport, walking, cycling and other non-motorized modes. The TOD Standard is based on ITDP’s Principles of Urban Development for Transport in Urban Life. Together, the following urban development principles foster efficient spatial configurations that enable high-quality, car-independent lifestyles.

1. Develop neighborhoods that promote walking
2. Prioritize non-motorized transport networks
3. Create dense networks of streets and paths
4. Locate development near high-quality public transport
5. Plan for mixed-use
6. Match density and transit capacity
7. Create compact regions with short commutes
8. Increase mobility by regulating parking and road use

III Demographic and Economic Analysis

Area Characteristics

Transit oriented development must have supportive market conditions to channel new development into or encourage revitalization of a transit corridor. The development market must exist at several levels including the demographics of the area, economic conditions and land development potential. This section of the report provides a demographic analysis of the sub-geographies surrounding a potential Enhanced Bus Service TOD site within the SR 836 and NW 107th Avenue service area. As previously noted, TODs support the public investment in light rail and fixed route transit (bus) service. As such, successful TODs require an increase in the density of people near transit, including residents, employees, visitors, and customers. The more people, jobs, and services that exist within walking distance of transit service, the higher the potential transit ridership and fare generation

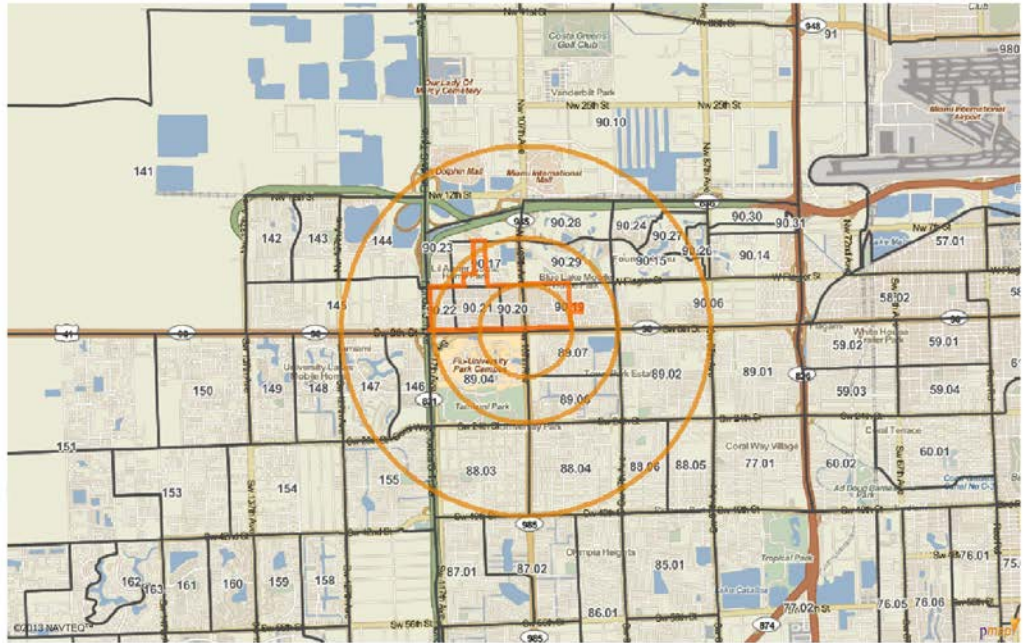
For the purposes of the demographic and economic analysis, the following sub-geographies have been delineated:

Sub-geographies:

1. Transit Neighborhood Area – one-half mile around the transit station including the first quarter mile Transit Core;
2. Transit Support Area – one mile around the transit station; and
3. Transit Service Area – two miles around the transit station.



Map of Custom Regions (2 MILES, 1 MILE, 0.5 MILES) and Sweetwater



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Households

There are 77,790 persons (25,844 households) within the two-mile Transit Service Area of SR 836 and NW 107th Avenue, of which, 10,745 persons (3,578 households) live within the one-half mile Transit Neighborhood Area. The majority (79 percent) of households within the Transit Service Area are families with an average family size of 3.47 persons. The population density within the Transit Neighborhood Area is approximately 21 persons/acre.

Table 1: Household Type by Transit Area, 2011

HOUSEHOLD BY TYPE	0.5 MILE	1 MILE	2 MILE
Total households	3,578	8,569	25,844
Family households (families)	2,682	6,699	20,363
With own children under 18 years	958	2,486	7,552
Married-couple family	1,710	4,640	13,929
With own children under 18 years	561	1,816	5,487
Male householder with no wife present	264	415	1,981
With own children under 18 years	66	46	431
Female householder with no husband present	708	1,644	4,453
With own children under 18 years	331	624	1,634
Nonfamily households	896	1,870	5,481
Householder living alone	792	1,431	4,396
65 years and over	484	768	1,934
Households with one or more people under 18 years	1,181	2,838	9,045
Households with one or more people 65 years and over	1,547	3,225	8,808
Average household size	2.78	3.14	3.15
Average family size	3.11	3.49	3.47

Source: 2011 American Community Survey.

Educational Attainment

There are 58,021 persons age 25 years and older living in the Transit Service Area. A total of 29,558 persons (51 percent) in this age group have some college or college degrees. An additional 16,866 persons (29 percent) have a high school diploma.

Table 2: Educational Attainment by Transit Area, 2011

EDUCATIONAL ATTAINMENT	0.5 MILE	1 MILE	2 MILE
Population 25 years and over	7,946	19,181	58,021
Less than 9th grade	725	2,624	5,714
9th to 12th grade, no diploma	1,133	2,712	5,883
High school graduate (includes equivalency)	2,365	5,782	16,866
Some college, no degree	938	1,789	7,015
Associate's degree	897	1,711	6,498
Bachelor's degree	1,202	3,359	11,083
Graduate or professional degree	686	1,204	4,962

Source: 2011 American Community Survey.

Housing Tenure and Occupancy

There are 28,257 housing units within the Transit Service Area, of which, 12,793 (45 percent) are located within the Transit Neighborhood. Occupied housing units comprise 91 percent of the units in the service area with relatively low homeowner (2.54 percent) and rental (3.96 percent) vacancy rates.

Table 3: Housing Occupancy Attainment by Transit Area, 2011

HOUSING OCCUPANCY	0.5 MILE	1 MILE	2 MILE
Total housing units	3,781	12,793	28,257
Occupied housing units	3,578	12,147	25,844
Vacant housing units	203	646	2,413
Homeowner vacancy rate	0.9	1.58	2.54
Rental vacancy rate	13.9	4.73	3.96

Source: 2011 American Community Survey.

The majority of housing units by structure type within the Transit Service Area are nearly equally divided between one-unit, detached structures (9,222 units) and multi-family structures of 20 or more units (9,612 units). These two structure types comprise 67 percent of the total units in the service area. One-unit, attached unit structures (5,438 units) comprise the next largest share (19 percent) of units within the service area.

Table 4: Housing Units in Structure by Transit Area, 2011

UNITS IN STRUCTURE	0.5 MILE	1 MILE	2 MILE
Total housing units	3,781	9,012	28,257
1-unit, detached	1,620	3,081	9,222
1-unit, attached	467	2,511	5,438
2 units	42	102	313
3 or 4 units	240	197	527
5 to 9 units	132	456	1,459
10 to 19 units	297	739	1,653
20 or more units	920	1,036	9,612
Mobile home	63	890	33
Boat, RV, van, etc.	0	0	0

Source: 2011 American Community Survey.

The majority (63 percent) of the housing units in the Transit Service Area are owner-occupied. The owner/renter split (54 percent/46 percent) is closest in the one-half mile Transit Neighborhood area. The average household size of renter-occupied units in the Transit Service Area is 3.53 compared to 2.94 for owner-occupied units.

Table 5: Housing Tenure by Transit Area, 2011

HOUSING TENURE	0.5 MILE	1 MILE	2 MILE
Occupied housing units	3,578	12,147	25,844
Owner-occupied	1,944	7,495	16,336
Renter-occupied	1,634	4,652	9,508
Average household size of owner-occupied unit	2.37	3.14	2.94
Average household size of renter-occupied unit	2.54	3.09	3.53

Source: 2011 American Community Survey.

Employment and Industry

According to 2011 ACS estimates, there are 43,545 persons 16 years and older in the labor force living within the two mile Transit Service Area. An estimated 8.1 percent (3,507 workers) of the labor force are unemployed. Females 16 year and older comprise 49 percent of the area's labor force.

Table 6: Employment Status by Transit Area, 2011

EMPLOYMENT STATUS	0.5 MILE	1 MILE	2 MILE
Population 16 years and over	10,343	32,733	68,119
In labor force	5,832	19,366	43,525
Civilian labor force	5,832	19,366	43,427
Employed	5,311	17,653	39,920
Unemployed	521	1,713	3,507
Armed Forces	0	0	98
Not in labor force	4,511	13,367	24,594
Civilian labor force	5,832	19,366	43,427
Percent Unemployed	8.9	8.8	8.1
Females 16 years and over	5,904	17,737	36,532
In labor force	2,962	9,248	21,426
Civilian labor force	2,962	9,248	21,404
Employed	2,736	8,700	19,790
Own children under 6 years	578	1,849	4,640
All parents in family in labor force	458	1,160	3,244
Own children 6 to 17 years	1,302	4,742	9,553
All parents in family in labor force	1,011	3,411	7,092

Source: 2011 American Community Survey.

Commuting to Work

According to the 2011 ACS estimates, 32,499 workers (82 percent) commute to work by car, truck or van and drove alone. Only 1,093 workers (3 percent) use public transportation, excluding taxicabs. The mean travel time to work is 31.0 minutes one way.

Table 7: Commuting to Work by Transit Area, 2011

COMMUTING TO WORK	0.5 MILE	1MILE	2 MILE
Workers 16 years and over	5,233	12,126	39,478
Car, truck, or van -- drove alone	4,350	10,503	32,499
Car, truck, or van -- carpooled	344	810	3,844
Public transportation (excluding taxicab)	57	180	1,093
Walked	192	169	212
Other means	56	7	386
Worked at home	234	457	1,444
Mean travel time to work (minutes)	27.2	30.7	31.0

Source: 2011 American Community Survey.

The employed population 16 years and older within the Transit Service Area is primarily employed in sales and office occupations (13,375 workers) and management, business, science and art occupations (12,009 workers). According to the U.S. Census, “occupation” describes the kind of work a person does on the job. The highest annual median earnings are in management, business, science and art occupations (\$50,369) with the lowest in service occupations (\$18,415). The median annual earnings for sales and office occupations is \$22,767.

Table 8: Occupations of Civilian Employed Population by Transit Area, 2011

OCCUPATION	0.5 MILE	1 MILE	2 MILE
Civilian employed population 16 years and over	5,311	12,342	39,920
Management, business, science, and arts occupations	1,401	3,066	12,009
Service occupations	851	2,628	7,390
Sales and office occupations	2,221	3,843	13,375
Natural resources, construction, and maintenance	369	1,530	3,016
Production, transportation, and material moving	469	1,275	4,130

Source: 2011 American Community Survey.

An analysis of “industry by occupation” for the civilian employed population 16 years and over within the Transit Service Area finds the labor force primarily employed in educational services, and health care and social assistance (7,719/19 percent of workers) and retail trade (6,075/15 percent of workers). According to the U.S. Census, “industry” data describe the kind of business conducted by a person’s employing organization.

Table 9: Employment by Industry by Transit Area, 2011

INDUSTRY	0.5 MILE	1 MILE	2 MILE
Civilian employed population 16 years and over	5,311	12,342	39,920
Agriculture, forestry, fishing and hunting, and mining	13	73	162
Construction	232	904	2,494
Manufacturing	236	754	1,676
Wholesale trade	376	860	2,265
Retail trade	855	1,866	6,075
Transportation and warehousing, and utilities	616	899	3,556
Information	71	244	1,001
Finance and insurance, and real estate and rental and	395	765	3,565
Professional, scientific, and management, and	503	1,571	4,421
Educational services, and health care and social assistance	1,174	2,318	7,719
Arts, entertainment, and recreation, and accommodation	349	917	3,353
Other services, except public administration	301	893	2,074
Public administration	190	278	1,559

Source: 2011 American Community Survey.

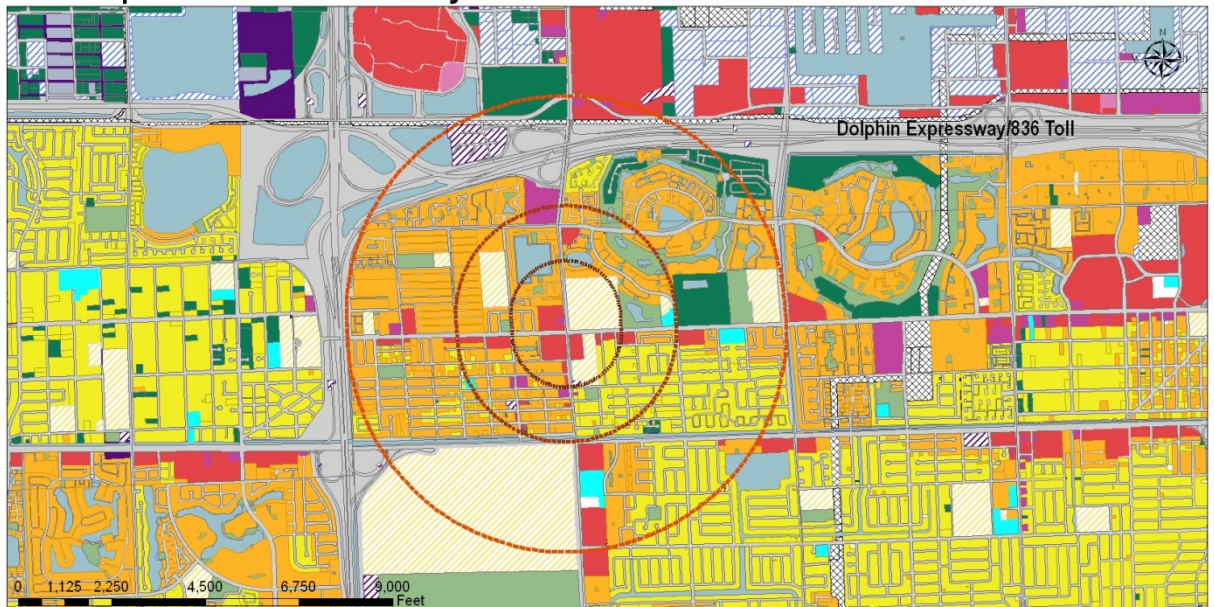
IV Market and Financial Feasibility

A. Land Use

Case study has shown that a mix of uses by type, scale, and location helps establish sustainable TOD Neighborhood Areas which, in turn, promote trip capture, active streets, and potentially higher transit ridership. TODs should be thought of as groupings of projects within ¼ to ½ mile (a five- to ten-minute walk) of a transit stop, oriented inward to the transit stop, with uses that complement each other, rather than a single building. A prototypical TOD is a multi-unit housing and mixed use project that supports the public investment in light rail and fixed route transit (bus) service. TODs increase the density of people near transit, including residents, employees, visitors, and customers in a built environment that is pedestrian friendly and connected to transit. Mixed-use buildings, projects, or areas with a mix of uses are active from early in the morning to late in the evening, making the environment safer for pedestrians and providing peak and off-peak customers for transit service.

According to Miami-Dade County’s *Adopted 2015 and 2025 Land Use Plan*, the existing land use within the SR 836 and NW 107th Avenue Enhanced Bus Service TOD study area consists primarily of low to medium density residential land uses (See Land Use Map). The residential area to the west of NW 107th Avenue and north of West Flagler Street is medium density (MDR) residential providing for 13-25 dwelling units per acre (DU/AC). The residential areas to the northeast and southwest of NW 107th Avenue and West Flagler Street are primarily low-medium density (LMDR) providing for 6-13 dwelling units per area (DU/AC). The residential area to the southeast of NW 107th Avenue and south of West Flagler Street is low density (LDR) residential providing for 2.5-6 dwelling units per acre (DU/AC).

Proposed Enhanced Busway Service-TOD Area: SR-836 and NW 107th Avenue



SR 836 and NW 107th Avenue BRT/TOD Service Area

Source: Miami-Dade County ITD-Geographic Information System Set-Service, 2013.

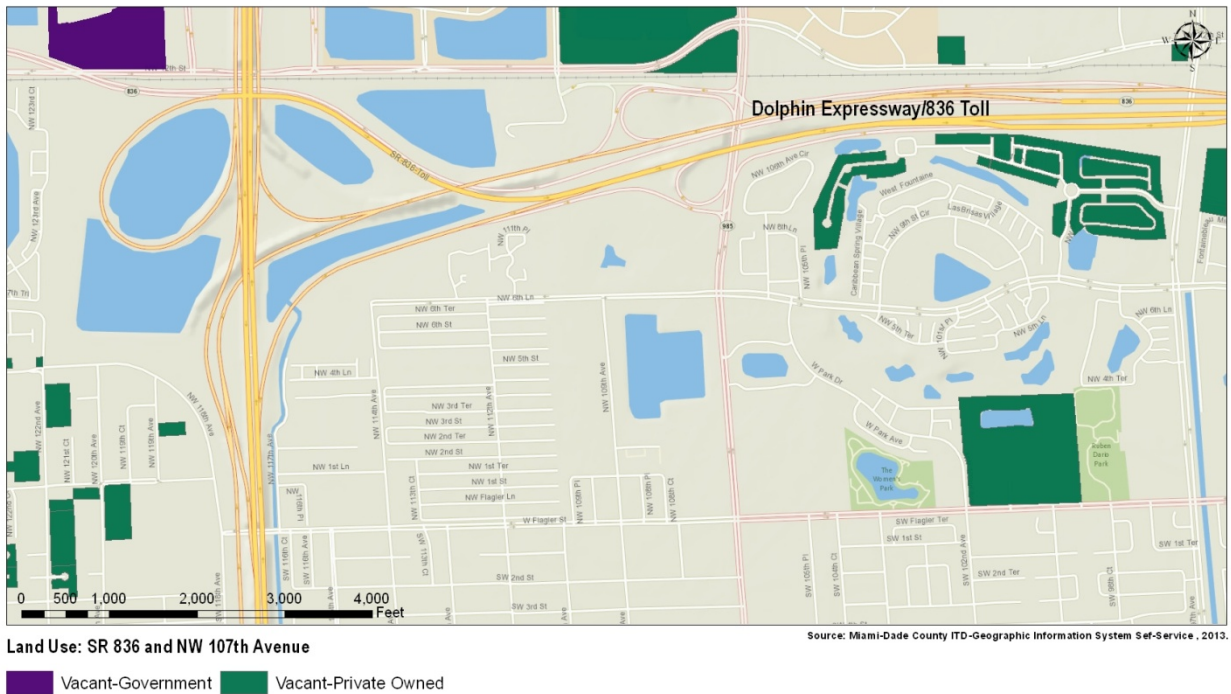


Based on TOD case studies, the minimum density to support a TOD in a suburban area such as the SR 836/NW 107th Avenue location is 5-30 dwelling units per acre. The highest density in the SR 836/NW 107th Avenue area is 13-25 dwelling units per acre with most of the surround area less than 13 dwelling units per acre (See Land Use-BRT/TOD Radii Map above). As previously noted, the population density within the one-half mile Transit Neighborhood Area is approximately 21 persons/acre, which is far less than the 80-135 persons/acre design standard set by FDOT for suburban TOD locations. While the 2015 and 2025 Land Use Plan designates the SR 836 and NW 107th Avenue location as an Urban Center, the surrounding land area does not currently provide for the mixed-uses necessary to support a successful TOD support area.

B. Vacant Land

There is a very limited amount of vacant, private land in the Transit Service Area (see Vacant Land Map). The vacant land in the area is either associated with un-built residential developments or small vacant parcels within the City of Sweetwater.

Vacant, Non-Residential Land: SR 836 and NW 107th Avenue Proposed Enhanced Busway Service-TOD Site Area



C. Ownership Patterns

As previously noted, the majority (63 percent) of the housing units in the two-mile Transit Service Area are owner-occupied with one-unit, detached structures (9,222 units) the predominant structure type. The percentage of owner-occupied units in the area is significantly higher than Miami-Dade County (56 percent) as a whole. The area’s 2.5 percent owner vacancy rate is substantially lower than Miami-Dade County’s owner vacancy rate of 4.1 percent.

D. Industry Sectors

According to Cushman & Wakefield’s 4Q-2012 *MarketBeat Report*, Miami-Dade County’s economic recovery is being led by a range of sectors including retail trade, education and health services, transportation, and warehousing and utilities. International trade remained a key driver for the region with approximately \$24.6 billion shipped through Miami International Airport and the Port of Miami resulting in an 8.2 percent increase over the previous year. Overall, Miami-Dade County remained on course towards market fundamentals during the nationwide economic downtrend experienced in other key markets. Year-end vacancy rates in both CBD and suburban markets continued to decrease. The direct vacancy in the CBD ended the year at 17.7 percent which was a 4.6 percentage point drop from the year-end 2011. Suburban markets recorded a direct vacancy rate of 15.9 percent, which was a less significant decrease year-end 2011. Net absorption through the end of 4Q marked a full year of positive net absorption of over 500,000 square feet and a year-to-year positive net of 775,000 square feet.

The outlook for 2013 is one of optimism based on the continuous improvement during the past two years. Healthy absorption performance for the past 2 years is expected to bode well for stabilized market

conditions and continued positive absorption into 2013 especially due to the lack of significant new supply in the near future. An uptick in rental rates in key markets has been forecasted (Cushman & Wakefield, 2013).

According to the CoStar Group, Class A office and flex space lease rates in the SR 836/NW 107th Avenue market area range from \$100-\$205 psf with Class B office and flex space leasing in the \$16.00-\$24.00 psf range. Retail space in the SR 836/NW 197th Avenue area is currently leasing for \$21.00-\$35.00 psf (See Appendix A).

Miami-Dade County's residential market has also shown signs of recovery with housing values and rent prices escalating in the past year. The median price of all residential units in 2011 was \$246,000 which is approximately 1 percent higher than 2005. The median gross rent (\$1,053) has increased by 29 percent in the past five years. However, the County's vacancy rate has increased from 10 to 16 percent since 2005.

IV Business Opportunities

A. Projected Market

As previously noted, most of the land along NW 107th Avenue south of SR 836 is residential with the exception of a large parcel of land designated Commercial-Office & Professional at the northwest corner of NW 10th Avenue and NW 7th Street and a parcel of land located at the southeast corner of NW 107th Avenue and NW 7th Street designated Commercial-General. Other Commercial-General parcels of land exist at the intersection of NW 107th Avenue and West Flagler Street.

The designated Commercial-Office & Professional land use on NW 107th Avenue and NW 7th Street has the potential to support the development types, e.g. office, retail, institutional, normally associated with TOD. However, the existing and future land uses of the general area are not conducive to the level of mixed-use development necessary to support an Enhanced Bus Service TOD Support and Service Area.

Miami-Dade County has developed land use policies and regulatory provisions to accommodate development around bus-uses TODs. According to Miami-Dade County's Future Land Use Plan, the County "shall encourage development of a wide variety of residential and nonresidential land uses and activities in nodes around rapid transit stations to produce short trips, minimize transfers, attract transit ridership, and promote travel patterns on the transit line that are balanced directionally and temporally to promote transit operational and financial efficiencies." Land uses that may be approved around transit stations shall include housing, shopping and offices in moderate to high densities and intensities, complemented by compatible entertainment, cultural uses and human services in varying mixes. The particular uses that are approved in a given station area should, a) respect the character of the nearby community, b) strive to serve the needs of the community for housing and services, and, c) promote a balance in the range of existing and planned land uses along the subject transit line. Rapid transit station sites and their vicinity shall be developed as "urban centers" as provided in this plan element under the heading Urban Centers.

B. TOD Case Studies: Challenges and Opportunities

There have a number of case studies on Transit Oriented Development in the United States. One prominent case study is the Transit Oriented Development Program associated with the Westside MAX

Light Rail Project in Oregon. Program participants included Tri-Met, Metro, Oregon DOT, Washington County, and the cities of Beaverton, Hillsboro and Portland.

Tri-Met's 1997 model includes the following definition of a TOD: "Multiple-unit housing and mixed use projects that support the public investment in light rail and fixed route transit (bus) service because they preserve, enhance, or contribute to creating active pedestrian districts within walking distance of transit. TODs increase the density of people near transit, including residents, employees, visitors, and customers in a built environment that is pedestrian friendly and connected to transit. Mixed-use buildings, projects, or areas with a mix of uses are active from early in the morning to late in the evening, making the environment safer for pedestrians and providing peak and off-peak customers for transit service. A TOD may be a single building, a group of buildings, or a multiple block district" (TOD Advocate, 2013).

While TOD projects are often associated with light rail stations, the Northgate and Convention Place projects included in these case studies are primarily bus based. The public and private elements of both proposed projects are vertically integrated -- public below and private above. The following are the "lessons learned" from these TOD projects:

1. Timing/Coordination

There can be irreconcilable timing dilemmas. Light rail PE/DEIS processes end about five years before service begins. Developers usually have about a two-year time frame. Long-range land use planners can take several years to prepare a twenty- year plan. Identify and take advantage of "windows of opportunity". To the extent possible, coordinate work programs and schedules for the light rail project and station area planning. Managers of major projects want to be on time and on budget.

As construction projects progress, they are less flexible; change orders create headaches and cost money. This is a key reason to undertake station area design, planning and development as soon as possible. Be prepared to do any or all of the following concurrently -- Public/private master planning; finalizing transit facility locations and design; updating local government plans, regulations and capital improvement programs; development review; and TOD marketing/incentives. Use a charrette process (intensive multi-day meeting) to compress the time required to reach agreement on light rail final design, TOD, plan/code, and other issues without missing opportunities or creating fatal flaws by dealing with one issue at a time.

2. Budget/Funding/Resources

Make walk-on ridership a budget priority. To the extent possible, make TOD an eligible light rail project expense. To capture potential TOD ridership, adequate resources are needed for staff, geographic information system (GIS) system/data/operator, consultants, marketing, training, land purchase, and so on. Obtain funds for TOD from as many sources as possible with as few strings as possible to provide technical and financial assistance as well as to buy land and make site improvements.

For TOD public/private master planning, negotiate a 50/50 cost split. Under intergovernmental agreements, pay for work that is completed, not for work in-progress. Use multi-year contracts; delegate authority so that every amendment does not have to go back to the governing bodies; provide

for public budget end-of-the-year funding roll over. Make sure that each public sector player has at least one senior level person assigned full time to TOD plan/code work and implementation. Once you succeed in obtaining TOD funds, use them or lose them.

3. TOD Sites

Identify, preserve, enhance or create TOD opportunity sites around stations and feeder bus routes. Consider interim development regulations to prohibit inappropriate land uses while permanent plans and regulations are being prepared. Purchase the land or prepare public/private master plans for large vacant sites. Proactively solve problems of difficult sites (hazmat, wetland). Consolidate fragmented parcels or at least require coordination of development. Support infill and redevelopment design sensitive to neighbors. In existing residential areas with alleys or large lots, allow a rental unit to be added on single family lots to increase density over time without major upheaval.

4. Marketing/Education

This is much more than "citizen participation" in planning. "Stakeholders" include transit project staff, residents, property owners, developers, institutional investors, business, special interest groups, government agencies, and others. Prepare a marketing strategy, document TOD opportunity sites (profiles/maps), market analysis, case studies (nothing sells like success), focus groups, charrettes, seminars, conferences, newsletter, presentations, handbook, tours, TV shows, newspaper articles, lecture series, sketch walks, computer simulations, field trips, surveys, web sites, monitor development projects, and so on.

5. Mixed-Use

Mixed use TODs are the most effective type of development for reducing external automobile trips but are difficult to do. Public incentives may be necessary. Mixed-use projects can be vertical (in a building) or horizontal (adjacent to one another). For vertical, it is more difficult to find developers and consultants who understand mixed use relationships and marketing, to obtain financing, and to get permit approvals. Most banks do not make loans for mixed use. A modest mix of uses can be hidden inside a larger project like first floor commercial in one building of a multi-building residential complex. Nationally, there is growing experience with mixed-use urban villages (neo-traditional development). Combined with transit, this is a powerful and workable marketing concept.

6. Infrastructure

Station area planning should include traffic impact analysis for the types and density of development desired. Make public improvements or offer tax/fee credits to developers to support necessary TOD infrastructure. Higher density pedestrian districts require more streets; this costs more than sprawl development and is harder to finance. Even assuming a 20% mode-split, higher density TODs will create local congestion because 80% of trips will still be by automobile. The benefits are creation of active pedestrian districts and reductions in regional traffic congestion, air pollution, and vehicle miles traveled. Land locked stations surrounded by vacant land can be wonderful development opportunity sites; however, be sure to acquire public access to the station before finalizing the station location and design.

7. Development Regulations

Make what you want easy and prohibit what you don't want. Many codes do the opposite. Do a regulatory audit. Adopt interim development regulations. If you don't want "suburban" low-density auto-oriented development in station areas, don't allow it. If you set your standards too high, no transit-oriented development will occur without subsidy. If too low, what's the point. Finding the balance that is currently viable, which is a moving target, is the hard part.

To the extent possible, make standards clear and objective. Use "shall" not "may"; adopt "standards" not "guidelines". Have an intergovernmental team prepare model regulations with intent and commentary to help local government staff expedite code update. Get sign off from police/fire officials for skinny street design. Prepare proactive solutions to fire code concerns for vertical mixed-use projects and wood frame platform parking. Some government agencies want single story buildings and lots of parking for their facilities. Require public agencies to practice what they preach. New people-intensive civic facilities should be located in station areas; locate new land-intensive public or private facilities like maintenance or storage elsewhere.

Negotiate an overall strategy with all agencies responsible for issuing light rail project development permits and fees. Obtain intergovernmental agreement on consistent design standards and a consolidated process. If you want high quality TOD design requirements, apply the same criteria to the light rail project. Obtain approval to assign any unused fee credits to TODs on adjacent properties.

8. Flexibility & Certainty

This is the boon and bane of developers and city officials. If you want retail but market risk does not justify requiring it, require retail "design" instead and zone for commercial land use which allows but does not require retail. This way a developer has a fallback position if retail does not work for a time. Consider adopting two approaches in the development code for TOD: A traditional one with prescriptive standards and a second with flexible performance standards for master planning with public review.

9. Density & Parking

High parking ratios combined with surface parking make high-density development impossible. In suburban areas, set the minimum density near the top end of what the market can provide without public subsidy for structured parking (25-30 du/ac subject to topography); this should increase over time. Set maximum allowed parking near the low end of what the market will accept (1.7 space/unit); this should decrease over time. Promote shared/joint parking and structured parking; provide public incentives to encourage this such as shared use of park & ride lots. Set up transportation demand management programs to reduce parking demand. Pedestrian oriented blocks are 200-300 feet long with a perimeter of 800-1200 feet. Small blocks may prohibit some types of development. Having more streets provides more on street parking which creates a better pedestrian environment.

10. Buy Land

Public purchase of land and resale for TOD is a key implementation tool. Obtaining funds to purchase land is difficult. To the extent possible, use light rail project funds. Buy as many of the "best" TOD sites as possible, prepare master plans, make site improvements, package incentives, then resell on a competitive basis for private development with conditions. Reinvest land sale proceeds to

reduce development soft costs, provide infrastructure in the project area or on-site public amenities, or put into a revolving fund to use at other TOD sites. Obtain interagency agreement on the permit approval process and requirements before offering joint development sites and incentive packages to developers. The location and size of light rail construction staging areas should take into account the potential for TOD; minimum size should be one acre; bigger is better. National multiple family residential developers like projects of 300 units or larger. This strategy works for infill sites as well as greenfield sites.

11. Program Administration

For intergovernmental projects, have management experts (not planners) set up and monitor contracts and legal agreements (IGA, MOU), objectives, milestones, budget, accounting, scheduling, products, and evaluation. Key decisions include who does what and joint products. Prescreen consulting firms in a variety of disciplines using an RFQ process to allow hiring on the fast track from a pre-approved short list on an as needed basis.

12. Joint Products

For example, model development regulations with intent and commentary should be prepared by a consultant team with an intergovernmental advisory committee. Local government staff can then prepare custom versions for adoption in their jurisdictions based on the model. This will expedite adoption of new local TOD plans and codes. Themes should be consistent but include variations for different situations. Seek review and critique of the model from special interest groups. Using common names and requirements for station areas where two or more local governments have jurisdiction reduces potential confusion of residents, business, property owners and developers. Use MOUs or letters of intent to establish a working basis for an inter-agency project. If conditions change, amend the agreements.

13. Property Owners

Individuals, families and public or private organizations that own vacant or underutilized land in light rail station areas may have little or no expertise with development. They may know even less about transit oriented development. Their perception of risk for TOD may be even higher than that of conservative developers. The public sector should provide technical assistance to property owners as well as practice patience.

14. Station Design/Plan/Develop

The right interagency/interdisciplinary team with the right assignment at the right time can save significant funds and time while reducing conflict. The team should include land use, transportation, market analysis, environmental, urban design, engineering, legal, marketing, public relations, and other specialties. To identify, preserve, enhance and create TOD sites, include urban designers and market analysts on teams before finalizing transit facility location and design, updating city/county plan/code and preparing public/private master development plans. For interagency teams, seek people with expertise and signature authority; document team conclusions and decisions at the end of each work session; members should obtain sign off from their agencies before the next meeting so work can proceed to the next stage. When explaining the purpose of TOD to engineers or

economists, tell them that TOD will "increase the utilization capacity" of light rail. Translated into English, this means that you get more riders at little or no additional cost. That is a very good thing.

15. Public/Private Partnerships

In Portland, the best TOD projects were developed using the Oregon version of California's "specific plans". Seek partnerships with local government, major property owners and developers. Offer to split the cost of master planning but require a 50% private match. Be willing to modify transit facility location and design to take maximum advantage of major development projects. Define roles and responsibilities, and set clear joint objectives at the beginning for land uses, density, parking, block size, incentives, street connectivity, public involvement and so on. Either jointly hire a consulting team or create two teams, one for the private participants and another for the public. Use a charrette process with the decision makers and consultants in face to face discussion.

16. Missed Opportunities

In Oregon, the two most significant missed opportunities were not preparing model plan/code provisions and not purchasing land for TOD. Model interim city/county station area development regulations prepared by an intergovernmental team with consulting assistance saved time, effort and money; the effort should have continued to prepare permanent model plan and code.

Public purchase of some of the large tracts of vacant land around stations from willing sellers in the early 1990s for mixed use development would have created better catalyst projects demonstrating the full potential of TOD. Even if funds had been available, it would have been hard to convince a public agency (city, county or transit) to buy land for TOD that had never done this type of economic development project before. In 1997, Metro established a new program to buy land for TOD.

C. Bus Rapid Transit TOD Opportunities

According to ITDP, BRT transit is best described as a movement that is applying creativity and innovation to bus service, with a special focus on medium-length and longer trips. It is in these longer trips where the rapid aspect becomes important where saving time helps bus service compete with the automobile. Not all BRT innovations, however, have the same potential to shape land use. Some innovations improve the rider experience, while other innovations begin to make a statement in the landscape that bus infrastructure no longer means just a sign and maybe a bench by the side of the road.

A successful BRT must be akin to a rail line, but with buses instead of trains. In this type of BRT, specially designed and branded buses travel on a bus-only lane or corridor and stop at stations. Stations are typically spaced from a half mile (0.2 km) to several miles apart. In the full expression of "like-rail" BRT, the corridor is fully grade separated so that the buses only slow to stop at stations. Trips are free from congestion and delays to cross intersections. The Orange Line in Los Angeles and the EMX Line that travels between Eugene and Springfield, Oregon, are U.S. examples of like-rail BRTs.

Bus-only corridors with stations are also a key component of a type of BRT often called busway, or transitway, systems. Busway systems take advantage of the fact that unlike trains, buses can run

anywhere there is a road. A bus may start on a neighborhood route, go to the busway to speed downtown, and then circulate on the downtown streets. Busway systems, therefore, can reduce the need for transfers, potentially combining door-to-door service with speed. Busways also can accommodate multiple transit providers: intercity buses, buses from distant suburbs, express buses, local buses, and even private vanpools all could be permitted access to the busways.

Pittsburgh has a busway system dating to the 1970s, and Ottawa, Canada, and Brisbane, Australia, have developed extensive systems of rapid transit on the transitway model. Bus service that uses high-occupancy vehicle (HOV) or high-occupancy toll (HOT) lanes can get a community part of the way toward implementation of a full transitway system.

Bus rapid transit is being unveiled in communities across the United States, following the international trend as BRT spreads from Curitiba, Brazil, to Bogotá, Colombia, to Guangzhou, China, and now to Johannesburg, South Africa. Many of the U.S. BRT projects are much smaller in scale than the leading international examples, but as experience in the suburbs of Minneapolis reveals, thinking anew about land use and buses is still possible (Lincoln Institute, 2013)

The Cedar Avenue Transitway is one of two new BRT lines under construction in the Twin Cities metropolitan region. The 16-mile (26-km) route runs from Lakeville through Apple Valley, Eagan, and then on to the Mall of America in Bloomington, where riders can transfer to the area's expanding rail system. The corridor connects these growing suburbs to jobs in downtown Minneapolis and St. Paul and along Interstate 494. The \$250 million project is building stations, parking facilities, and bus lanes on the shoulders of the busy, and increasingly congested, Cedar Avenue. When the first stations on the Cedar Avenue Transitway opened earlier this year, the Minnesota Valley Transit Authority began expanding express service to the region's job centers and linking in local bus routes. Station-to-station service was planned to begin in 2012.

The investment in the Apple Valley Transit Station signals the commitment to high quality service both to bus riders and to the occupants of the cars that pass under its glass-enclosed pedestrian bridge. Opened in January, its 750-stall parking structure nears capacity on a typical workday; the station also connects to city and county bicycle trails. The \$21 million facility shows that bus infrastructure can provide the type of landmark that could boost place making for a neighborhood.

Smaller and supporting less parking than the Apple Valley Transit Station is the Cedar Grove Transit Station, an example of a neighborhood station. The station and its 200 weekday buses are an essential element in Eagan's efforts to promote the redevelopment of an area once occupied by a mall. The transit station is integrated into a plan for a pedestrian-focused, mixed-use neighborhood of residential and commercial uses.

The Cedar Avenue Transitway terminates at the Lakeville Cedar park-and-ride lot. Transit planners thought ahead when selecting the site, currently a surface parking lot in a still developing area of the suburb. They avoided the prime commercial locations and instead positioned the lot to support shared parking with the commercial development when it eventually reaches the area.

Because BRT technologies are relatively new and evolving and because their use seems to play out differently in every community, it is crucial that transportation and land use decision makers from

both the public and private sectors share the specifics about what is being planned and developed. With construction underway on the BRT corridors in the Twin Cities, ULI Minnesota brought together transit providers, local governments, and the private sector for a bus rapid transit forum to learn about the new transit services and share ideas about how to coordinate BRT and land use. Among the issues raised, though not resolved, was whether a development's shuttle bus service would be allowed to use the new transitways and transit stations.

To capitalize on BRT's potential, land use decision makers need to understand what type of BRT is planned. Is it like-rail BRT that will concentrate access at the stations? Or is it a busway system, where land with good vehicle access to the transit corridor may be just as significant as sites within a half-mile walk of the stations? Or does BRT mean better bus service, without much of an impact on infrastructure? Will the BRT line or corridor be "rapid" enough, and often even more important to transit users will the buses arrive frequently enough to constitute an amenity to surrounding development?

BRT may open opportunities to coordinate transit service with demand for compact, mixed-use, walkable development in communities that are not large enough to support rail. The same is true for suburban areas not dense enough to support rail. Regardless of the type and service level of BRT, however, the same land use lessons of TOD apply: station area design, attention to security, the placement of parking, and easy and relatively pleasant access into the surrounding neighborhoods or activity centers by foot and bicycle are still the elements of success.

Appendix A

Commercial and Retail Property Values

SR 836/NW 107th Avenue Market

Commercial Office and Flex Space

Address	Zip Code	Property Type	Building Size	Sale Price	Price SF	Total Available Space	Lease or Purchase
7890 NW 29th Street	33122	OFFICE	28,119 SF	\$5,000,000	\$177.82	13,000 SF	PURCHASE
11350 NW 25th Street - Dolphin Commerce Center-Bldg 4	33172	FLEX	84,381 SF	\$96,192-\$130,198	\$9.50-\$16.00	13,750 SF	LEASE
2100 NW 87th Avenue	33172	FLEX	35,003 SF	\$49,760-\$96,192	\$16.00	9,122 SF	LEASE
1400 NW 107th Avenue - Adler Plaza	33172	OFFICE	39,079 SF	\$23,760-\$99,660	\$23-24	990-2900 SF	LEASE
8725 NW 18th Terrace - RVH Office Center	33172	OFFICE	57,541 SF		\$21.50	18,401 SF	LEASE
8750 NW 21st Terrace - 8750 Gateway Center	33172	OFFICE	78,733 SF		\$18.00	78,000 SF	LEASE
1470 NW 107th Avenue - New World II Condos	33172	OFFICE	31293 SF	\$440,000	\$100.00	2,200 SF	PURCHASE
2400 - 2418 NW 87th Place - Gateway Office Center	33172	OFFICE	13,2050 SF	\$325,000	\$294	1,105 SF	PURCHASE
9300 NW 25th Street - Airport Lake Industrial Park - 25th St Executive Bldg	33172	FLEX	24,430 SF	\$3,295,000	\$134.88	13,840 SF	PURCHASE
10500 - 10556 NW 26th Street - Square One Business Cntr. - Square One	33172	OFFICE	39095 SF	\$449,000	\$205.00	2,189 SF	PURCHASE
1981 NW 88th Court - Americas Gateway Park - The Commons	33172	OFFICE	6,460 SF	\$1,292,000	N/A	6,460 SF	PURCHASE

Source: CoStar, 2013.

Retail Space

Address	Zip Code	Property Type	Building Size	Sale Price	Price SF	Total Available Space	Lease or Purchase
9600 SW 8th Street - Plaza 8 - Plaza 8	33174	RETAIL	56,613 SF	\$8,950,000		56,613 SF	PURCHASE
W Flagler Street - Fontainebleau Plaza	33174	RETAIL	45,000 SF	negotiable	negotiable	45,000 SF	LEASE
10520 - 10576 SW 8th Street - Florida International Plaza - Florida International Plaza	33174	RETAIL	68,510 SF	\$29,700-\$36,900	\$22.00	3,150 SF	LEASE
10900 - 10910 W Flagler Street - El Camino de Oriente - El Camino de Oriente Shopping Center	33174	RETAIL	54,000 SF	\$13,646-\$108,300	\$21.66	630-5,000 SF	LEASE
9610 - 9616 Fontainebleau Boulevard	33172	RETAIL	13,259 SF	\$3,200 per month	N/A	800 SF	LEASE TO OWN
460 NW 107th Avenue - New World II Condos	33172	RETAIL	22187 SF	\$220,000	\$100.00	2,200 SF	PURCHASE
10453 - 10481 SW 40th Street - Plaza Linda 1	33165	RETAIL	14,700 SF	negotiable	negotiable	14,700 SF	LEASE
10591 - 10617 SW 40th Street - Bird 107 Plaza	33165	RETAIL	43,521 SF	\$35,000	\$35.00	1,000 SF	LEASE
8870 SW 40th Street	33165	RETAIL	11,074 SF	\$50,400	\$28.00	1,800 SF	LEASE
8855 SW 24th Street - Coral Way Plaza	33165	RETAIL	87,305 SF	\$103,950-\$422,400	\$25-\$33	15,950 SF	LEASE
9634 - 9686 Coral Way - Coral Way Shopping Center	33165	RETAIL	54,833 SF	\$27,000-\$30,000	\$25.00	2,280 SF	LEASE
10921 SW 40th Street - West Lake	33165	RETAIL	27,607 SF	\$39,942	\$21.00	27,607 SF	LEASE

Source: Costar, 2013.

Appendix B

Bus Rapid Transit Standards

Institute for Transportation and Development Policy (ITDP)

BRT Strengths and Weaknesses and Implications for TOD

Strengths and Weaknesses of BRT as a Mode of Transportation	Implications for TOD in Low Density, High Growth Context
Strengths	
<ul style="list-style-type: none"> • Generally faster and lower cost implementation than for comparable fixed rail. 	<ul style="list-style-type: none"> • Lower implementation allows for the community to extend rapid transit lines further. This is important in auto oriented cities where there are long distances between destinations. • Successful TOD requires that transit provide access to the rest of the community.
<ul style="list-style-type: none"> • Flexibility to extend service off of the busway, ability to minimize transfers. • Relative ease of adaptation to changes in market demand. 	<ul style="list-style-type: none"> • Flexibility allows BRT to provide TOD users with the necessary access to existing scattered development. • Ease of adaptation broadens the market for potential TOD locations.
Actual Weaknesses	
<ul style="list-style-type: none"> • Poor image due to track record of on-street bus services. 	<ul style="list-style-type: none"> • Limited exposure to public transit as a whole exacerbates the poor images of buses. Strong marketing, through education, branding, and modern vehicle acquisition is necessary under these conditions.
<ul style="list-style-type: none"> • Lack of technical knowledge on transit and planning staffs. • Limited empirical information on the modes of use in the U.S. 	<ul style="list-style-type: none"> • Critical to build local technical capacity in BRT and TOD.
<ul style="list-style-type: none"> • Noise and pollution. 	<ul style="list-style-type: none"> • Externalities must be mitigated. This can be accomplished through bus technology and station design innovation. It also has implications for the design of the BTOD itself.
Perceived Weaknesses	
<ul style="list-style-type: none"> • Noise and pollution. 	<ul style="list-style-type: none"> • If these externalities are eliminated or mitigated, it is critical to advertise this information through strong marketing.
<ul style="list-style-type: none"> • Systems are more likely to be abandoned than fixed rail modes. 	<ul style="list-style-type: none"> • Communities can address these concerns through service guarantees for specified time periods.

Source: ITDP, 2013.

The BRT Standard Scorecard

Service Planning

Category	Max Score
Off-board fare collection	7
Multiple routes	4
Peak frequency	4
Off-peak frequency	3
Express, limited, and local services	3
Control center	3
Located In top ten corridors	2
Hours of operations	2
Multi-corridor network	2
Total	30

Infrastructure

Category	Max Score
Busway alignment	7
Segregated right-of-way	7
Intersection treatments	6
Passing lanes at stations	4
Minimizing bus emissions	4
Stations set back from intersections	3
Center stations	3
Pavement quality	2
Total	36

Station Design and Station Bus Interface

Category	Max Score
Platform-level boarding	6
Safe and comfortable stations	3
Number of doors on bus	3
Docking bays and sub-stops	2
Sliding doors in BRT stations	1
Total	15

Source: ITDP, 2013.