# HILLSBOROUGH COUNTY METROPOLITAN PLANNING ORGANIZATION

2035 Long Range Transportation Plan

# Needs Assessment Segment Summary:

# **Busch Boulevard/Linebaugh Avenue Corridor East**

Prepared for:

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# 1.0 INTRODUCTION

The Hillsborough County Metropolitan Planning Organization (MPO) is updating the Long Range Transportation Plan (LRTP) for 2035. This update will include a Problem Statement/Needs Assessment for nine potential rapid transit corridors in Hillsborough County. The nine corridors are:

- Downtown Tampa to University of South Florida
- University of South Florida to Wesley Chapel
- Downtown Tampa to Tampa International Airport
- Tampa International Airport to Carrollwood
- Busch Boulevard/Linebaugh Avenue Corridor West
- Busch Boulevard/Linebaugh Avenue Corridor East
- Brandon to Downtown Tampa
- West Shore to Pinellas County
- Downtown Tampa to South Tampa

The "Problem Statements" for these corridors will document current and future transportation system issues in each corridor, within the LRTP's time horizon, providing information for future decision-making and conception of alternative solutions.

# 2.0 STUDY AREA DESCRIPTION

The Busch Boulevard/Linebaugh Avenue Corridor East runs east to west and spans approximately 5 miles between the Tampa International Airport (TPA) to Carrollwood corridor and the Downtown Tampa to University of South Florida (USF) corridor just east of I-275 (See Figure 1). For its entire length the corridor is parallel to Linebaugh Avenue and Busch Boulevard, though it primarily runs adjacent to Busch Boulevard. In addition to these roadways, Waters Avenue is a major east-west roadway located south of the existing rail line. The corridor is intersected by a variety of major north-south roadways (Dale Mabry Highway, Himes Avenue, Armenia Avenue, North Boulevard, Florida Avenue, I-275, and Nebraska Avenue).

These and other major and minor streets and highways in the study corridor were built and are maintained by a variety of state and local government transportation agencies, including Florida Department of Transportation (FDOT) District Seven, Hillsborough County, the Florida Turnpike Enterprise, and the City of Tampa. The primary roadway system serving the study area is a mix of limited access freeways/toll roads, divided and undivided arterial streets, and major collectors. These travel patterns, focused on major centers of commercial activity, generate significant transportation demand within the study area, especially during peak hours.

Because several significant roadways have been identified as "constrained" due to policy, right-of-way constraints, and surrounding neighborhoods, flexibility in developing transit service expansions like bus lanes or station area infrastructure is limited. Other existing rights-of-way, such as existing rail rights-of-way, must be considered to facilitate premium transit opportunities that are precluded by roadway constraints.

The Busch Boulevard/Linebaugh Avenue Corridor East is characterized by low-density residential and some light industrial and retail along Busch Avenue. Busch Gardens is a theme/amusement park located on Busch Boulevard between 30<sup>th</sup> Street and 40<sup>th</sup> Street. A more prominent concentration of retail is focused around the intersections with I-275 and Nebraska Avenue.

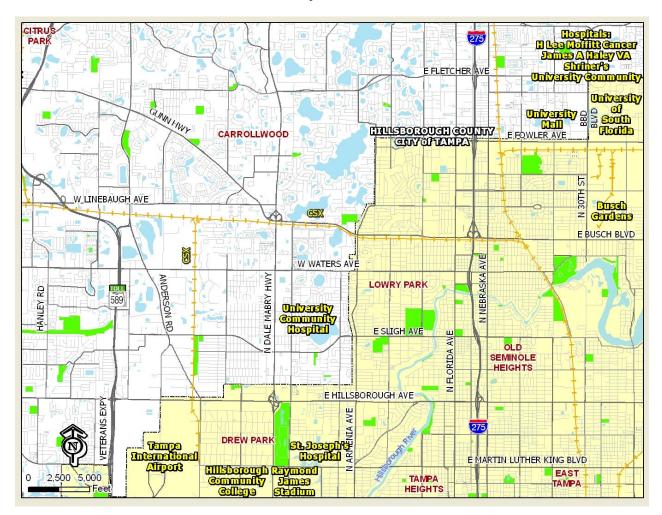


Figure 1 Study Area

MPO projections indicate that Hillsborough County's population and employment numbers will increase by the year 2035 to 1.7 million persons and 1.2 million jobs respectively. The future landscape and concentration of the county's population and employment for the corridor in 2035 is shown in Figure 2. The corridor has mid-range concentrations of population and employment.

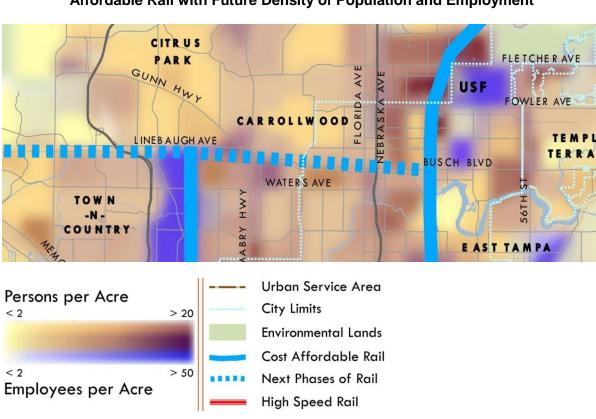


Figure 2 2035 Long Range Transportation Plan (Excerpt) Affordable Rail with Future Density of Population and Employment

# 3.0 THE TRANSPORTATION PROBLEM

# 3.1 Travel Patterns

### 3.1.1 Select Link Analysis

An analysis of travel patterns was completed on chosen roadway segments in the corridor, using the Tampa Bay Regional Planning Model (TBRPM) Version 7 for a select link analysis. The select link analysis depicts trip patterns for vehicles using a particular 'link' in the roadway network to visualize the amount of traffic on the link, as well as where the trips' general origin and destination. The select link analyses for the chosen links in the corridor are summarized.

#### Busch Boulevard: between Florida Avenue and I-275

Busch Boulevard serves both local and regional traffic. Most of the local traffic is concentrated between Dale Mabry Highway and I-275 along Busch Boulevard. Other heavily used facilities used by trips on this link include Gunn Highway, Veterans Expressway (north of Gunn Highway), Busch Boulevard (east of I-275), and I-275 between Busch

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Boulevard and Downtown Tampa. Regional trip origins are from Pasco County via Veterans Expressway, Clearwater via West Hillsborough Avenue, Brandon via I-4/I-75, New Tampa via I-75 southbound, and Riverview and Bloomingdale via I-75 northbound. The highest amount of trips on this link are associated with the Veterans Expressway corridor, with only a small portion continuing on Busch Boulevard east of I-275. Approximately 30 percent of trips on the link are found east of I-275. The majority of trips are headed south on I-275. Figure 3 depicts the results of the select link analysis.

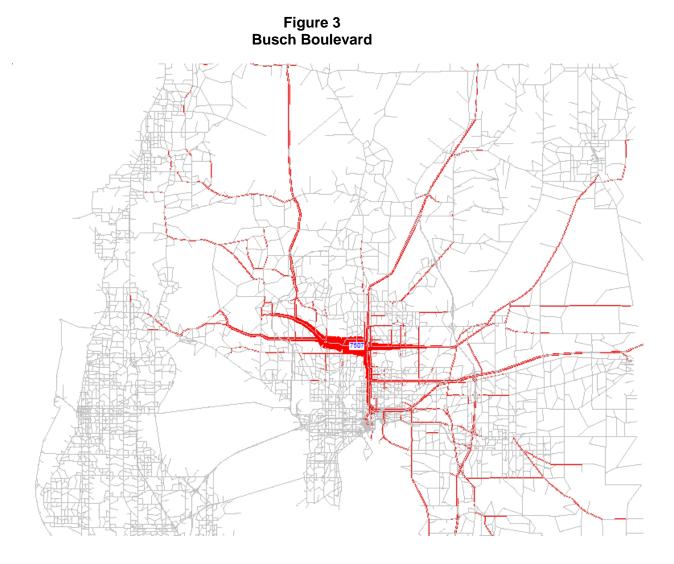
#### 3.1.2 Travel Demand

Travel patterns are measured as person trip flows between origin and destination points (O/D). These points are generally transportation analysis zones (TAZ) or predefined districts, which are modeled using a variety of supporting data.

An analysis of travel demand conducted for the Tampa Bay Area Regional Transportation Authority's (TBARTA) Master Plan looked at person trip flows between "super districts" (large land areas) for 2035 and 2050. The analysis showed that in 2035, almost half of all trips in Northwest Hillsborough (the super district in which the Busch Boulevard/Linebaugh Avenue Corridor East is located) will stay within the district, and significant numbers of trips will occur between Northwest Hillsborough and West Shore/Southwest Hillsborough or Northeast Hillsborough. Together, these three super districts account for 84 percent of all trips to and from Northwest Hillsborough County. By 2050 the travel relationships are expected to remain almost identical. In both periods, only three percent of trips are between Northwest Hillsborough County and the Tampa CBD.

TBARTA's analysis also forecast future ridership demand for a proposed regional network of rail and bus services. Figure 4 depicts strong demand in 2035 for transit service in this corridor, with regional connections.

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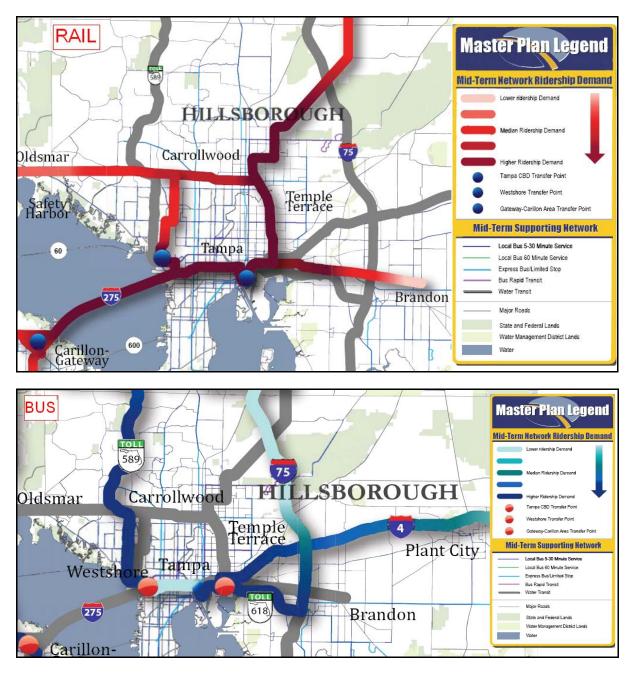


Figure 4 TBARTA Ridership Demand for Rail and Bus Service 2035 – Hillsborough County

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#### 3.1.3 Travel Markets

The following areas have been identified as critical travel markets for the corridor in response to their existing and future travel patterns, land use patterns, and demographic trends. Due to high levels of traffic and a strong capacity for future growth, the following areas will likely benefit from fixed-guideway transit facilities in this corridor.

- *Busch Gardens* is a theme/amusement park located on Busch Boulevard between 30<sup>th</sup> Street and 40<sup>th</sup> Street. It attracts both local residents and out-of-town visitors, creating travel delays during peak hours and visiting days.
- Carrollwood and Other Residential Areas, including Sulphur Springs, Forest Hills Village, Seminole Heights, Lowry Park, Twin Lake, Jasmine Pond, and others located along the Busch Boulevard/Linebaugh Avenue Corridor East. Because of the concentration of major arterials and proximity to Veterans Parkway and I-275, these neighborhoods experience heavy through traffic. Busch Avenue, in particular, serves as a major east-west connection for the region, and is the primary roadway serving the highly used Busch Gardens theme park.

The Carrollwood Community Plan recommends redevelopment and intensification of commercial corridors with a transit focus, particularly along Dale Mabry Highway and Linebaugh Avenue. The Plan also envisions North Dale Mabry Highway, Nebraska Avenue, and Florida Avenue being transformed into vibrant pedestrian friendly environments that serve as gathering places for adjacent neighborhoods.

• *Employment Area north of the Airport* extends from Hillsborough Avenue northward to Linebaugh Avenue. The area contains light industrial and heavy commercial uses. It is a major attraction for employment and is prone to congestion and increased travel times.

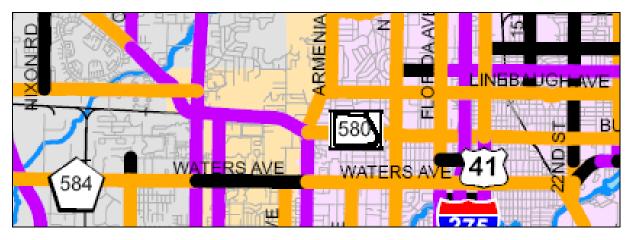
## 3.2 Traffic Congestion

Congestion can be measured using a volume to capacity (v/c) ratio, a method used to determine how many cars are actually using the road, compared to the road's intended capacity. A summary of 2035 v/c ratios at roadway links within the study area is provided in Table 1. By 2035, almost all of these roadways will carry more vehicles than their intended design capacity (i.e. v/c ratios greater than 1.0), as shown in Figure 5.

Roadway	2035 V/C
Linebaugh Ave. @ Gunn Hwy	1.27
Busch Blvd. @ Dale Mabry Hwy	1.92
Busch Blvd. @ Armenia Ave.	1.92
Busch Blvd. @ Florida Ave.	1.44
Busch Blvd. @ Nebraska Ave.	1.43
Waters Ave. @ Dale Mabry Hwy.	1.30
Waters Ave. @ Armenia Ave.	0.97
Waters Ave. @ Florida Ave.	1.36
Waters Ave. @ Nebraska Ave.	1.28
Average V/C Ratio	1.43

Table 1Volume to Capacity Ratios

Figure 5 2035 Congestion with Existing and Committed Improvements – Corridor Area



**Congestion to Volume to Capacity Ratio** 



In addition, several of the major roadways in the study area cannot be widened further due to a variety of constraints. Increasing the capacity of Busch Avenue and Waters Avenue is restricted due to policy, limited right-of-way, and surrounding neighborhoods. The northsouth streets of Dale Mabry Highway, Armenia Avenue, and Florida Avenue are considered constrained roadways as well. With roadways overburdened by large volumes of vehicles and little opportunity to expand their capacity, transportation options must be expanded in order to accommodate future populations of commuters and residents.

# 3.3 Travel Times

As part of the 2035 Long Range Transportation Plan, the MPO analyzed and compared travel times in this corridor for current bus service (based on HART schedules), potential rail transit, and 2035 driving time at an average daily congested speed. The rail segment was assumed to follow the existing freight lines on the south side of Busch Boulevard and in the vicinity of 22<sup>nd</sup> Street, while bus service and automobiles were assumed to follow a parallel roadway. The endpoints were the activity centers of Carrollwood (vicinity of Dale Mabry Highway and Busch Boulevard) and Seminole Heights (vicinity of 22<sup>nd</sup> Street and Hillsborough Avenue).

Busch Boulevard/Linebaugh Avenue East Corridor

By Rail	15 minutes	
By Auto, 2035	25 minutes	67% faster by rail
Current Bus Service	41 minutes	173% faster by rail

Driving times are at average daily congested speed in the Busch Boulevard corridor, as forecast for 2035 using Tampa Bay Regional Planning Model Cost-Affordable Network. Current bus service is based on published HART bus schedules and Google Transit. Times are between the closest major bus stops, and may be an average of the travel time in each direction. Rail travel times are based on analyses prepared for TBARTA Master Plan, provided courtesy of TBARTA and FDOT.

## 3.4 Safety & Security

Between 1995 and 2007, Hillsborough County had a higher crash rate (per million vehicle miles traveled (VMT)) and injury rate (per VMT) than the state of Florida.

The Busch Boulevard/Linebaugh Avenue Corridor East contains one of the top 50 intersection crash rate locations in Hillsborough County, located at Busch Boulevard and Nebraska Avenue. This intersection is ranked as the tenth worst in the County (107 crashes) with a crash rate of 1.33. While the total number of crashes is high, the crash rate is relatively low compared to crash rates of other top 50 intersections. Of the top 50 roadway segments with the highest crash occurrence, only one occurs in the corridor along Waters Avenue between Florida Avenue and I-275. At 10 crashes and a crash rate of 4.23, this roadway segment is the rated as the 24th worst in the county (See Figure 6).

A mapping of injury crashes (combined total of vehicles, bicycles, and pedestrians) revealed that the corridor contains a relatively average amount of "low" rated intersections (one to 82 crashes) and roadway segments (one to 77 crashes). Several intersections rated between medium and high are found along Waters Avenue or Dale Mabry Highway. Roadways that contain one or more segment rated as medium (78 - 118 crashes) or high (119 or more crashes) include relatively small portion(s) of Busch Boulevard and Waters Avenue. Sections of Dale Mabry Highway and Himes Avenue below Waters Avenue are rated as medium, and I-275 is rated high.

Crashes involving bicyclists are predominantly found on Waters Avenue near Dale Mabry Highway and Himes Avenue, and between Florida Avenue and Nebraska Avenue. Crashes involving pedestrians are mostly along Waters Avenue, and, again, clustered between Florida Avenue and Nebraska Avenue. Several of these bicycle and pedestrian related crashes were fatal (See Figure 7). Further analysis concluded that the corridor does not contain any potential intersection or roadway hot spots, which are small areas where crashes with similar rates are concentrated.

The Safety Technical Memo prepared for the MPO's LRTP offers a variety of recommendations to improve the safety of the most dangerous intersections and roadway segments in the county. Recommendations address many major issues common among all intersections and segments, including red light running, speeding and aggressive driving, bicycle and pedestrian safety, sight distance, roadway geometry, and incidence management, among others.

The Tampa Bay Regional Planning Council completed the "Tampa Bay Region Hurricane Evacuation Study" in 2006. When estimating evacuation clearance times, roadway segments with the highest volume ratios were considered as a "critical link" in the roadway system. These segments are not only carrying evacuees, but also the emergency responders and non-evacuees. While congestion would be widespread throughout the area during an evacuation, the study lists several locations where congestion would control the overall traffic flow for the area. In the study corridor, the I-275/I-4 interchange is classified as a "critical links."

Within the study corridor, Dale Mabry Highway, I-275, and Nebraska Avenue are listed as evacuation routes.

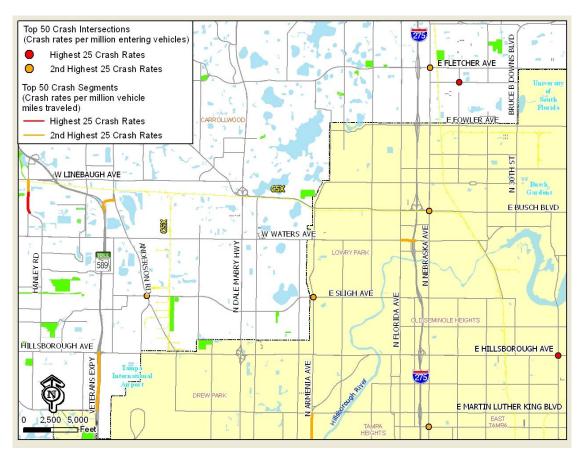


Figure 6 Top 50 Crash Locations – Intersections and Segments

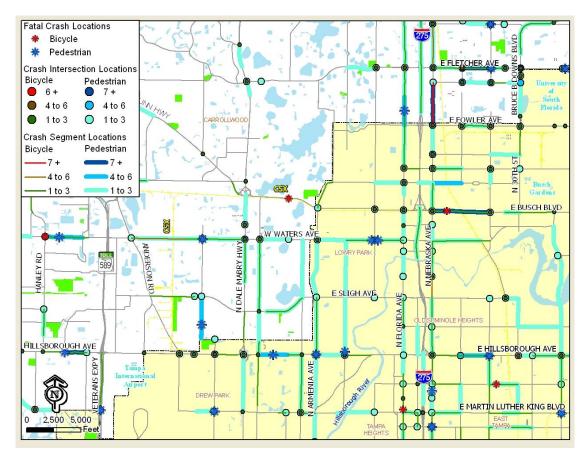


Figure 7 Crash Locations – Pedestrian and Bicycle

# 3.5 Modal Interrelationships

#### 3.5.1 Hillsborough Area Regional Transit Authority

The corridor today is served by 22 bus routes, many of which directly connect to transfer facilities, such as the Northwest Transfer Center (routes 16 and 39), West Tampa Transfer Center (routes 36 and 45), University Area Transit Center (routes 1, 2, and 9), and the Marion Transit Center in Downtown Tampa (routes 1, 2, 9, and 14). In addition to serving downtown's Marion Transit Center, route 9 serves the downtown Amtrak station as well. Table 2 highlights HART ridership comparisons between fiscal year 2006 and year-to-date 2009.

HART Service: Complete FY	2006	2007	2008	2009*	% Increase
Weekday Average Ridership	35,959	37,311	39,974	39,777	10.6%
Weekday Average Express Bus Ridership	758	937	1,071	936	23.5%
Saturday Ridership	16,979	17,856	19,019	18,951	11.6%
Sunday Ridership	8,495	9,656	10,715	10,261	20.8%
Total	62,191	65,760	70,779	69,925	12.4%

Table 2 HART Ridership Trends

\*Year-to-Date Ridership April 2009

As part of the LRTP update, the MPO evaluated transit level of service (TLOS) for all roads where public bus service is operated in Hillsborough County. TLOS reflects transit service levels (bus frequency and daily hours of service) and transit accessibility (spatial coverage and transit versus auto travel time).

Many parts of the corridor are considered to be a transit supportive density today, at 4.5 households or 4 jobs per acre, as shown in Figure 8.

Although some service is provided to the transit supportive areas, many of the major roadways in the corridor exhibit low levels of service. Areas with basic service (averaging wait times greater than 30 minutes) or peak-hour focused service include:

- Waters Avenue
- Sligh Avenue
- Busch Boulevard
- Fowler Avenue
- Armenia Avenue
- I-275



Figure 8 Existing Local Transit Level of Service – Corridor Area

### 3.5.2 Florida Strategic Intermodal System

In 2003, the Florida Governor and Legislature created the Strategic Intermodal System (SIS) to efficiently serve the mobility of Florida, and to help Florida become an economic leader, enhance economic prosperity and competitiveness, enrich the quality of life, and reflect environmental stewardship. The SIS is made up of state/regional significant facilities (roadways, ports, rail, and waterways) and services that move both people and goods and integrates facilities, services, and modes into a comprehensive system.

The SIS identified I-275 and the USF to Downtown railway (the eastern terminus of this study area) in the Busch Boulevard/Linebaugh Avenue Corridor East as meeting the state's criteria as critically important infrastructure to Florida's economy and quality of life. Transportation facilities in this plan receive priority status for limited state transportation funds due to their regional and national importance.

#### 3.5.3 Tampa Bay Area Regional Transportation Authority

TBARTA has developed a Regional Transportation Master Plan for the greater Tampa Bay region – from Citrus County to Sarasota County – for the Mid-Term (2035) and Long-Term (2050).

The TBARTA Master Plan's Mid-Term Vision proposes a regional short-distance rail link along this corridor. The route would operate along the existing rail corridor parallel to Bush Boulevard and would feature 10-minute peak headways, ultimately connecting Clearwater

with the University of South Florida. Most of the demand along this rail line is expected west of Himes Avenue as the railway intersects with the TPA to Carrollwood corridor. The service is expected to provide good transit connectivity, ridership, and access to employment, and should greatly improve transit service within the region.

# 3.6 Economic Development

Transit-oriented development (TOD) around stations served by high-capacity transit can generate significant economic return in terms of development and increased tax revenue. Examples include:

- Dallas Area Rapid Transit (DART) light rail:
  - \$4.26 billion in total projects attributable to DART presence
  - \$127 million in state and local tax revenue once all projects around stations are completed
- Santa Clara Valley Transportation Authority (VTA) light rail:
  - \$4 per square foot increase in land values surrounding stations (23 percent)
  - \$25 per square foot increase in land values surrounding CalTrain commuter rail stop (125 percent above mean property value)
- Portland Streetcar:
  - \$2.28 billion of investment within two blocks of streetcar alignment
- METRO Light Rail, Phoenix:
  - \$3.5 billion in private investment around light rail
- HealthLine BRT, Cleveland:
  - \$4.3 billion in current and anticipated development along route
- Other studies have shown that along a new rail line:
  - housing values can increase up to 17 percent
  - o commercial values can increase up to 30 percent
  - o ad-valorem revenues can increase 10 to 191 percent

The Hillsborough County City-County Planning Commission's 2025 land use map includes:

- Light industrial north of Tampa International Airport, which is fitting with the existing industrial character of this area.
- Busch Boulevard and Dale Mabry Highway designated as commercial office center.
- Remainder of unincorporated Hillsborough County characterized by low-density residential along Busch Boulevard and Waters Avenue.
- Low-density residential (0.35 to 0.6 Floor Area Ratio) (FAR) and some community commercial (2.0 FAR) along Florida Avenue within the city limits near the USF area.

The Carrollwood Community Planning Area Future Land use Map includes:

• Office Commercial (0.75 FAR) along Dale Mabry Highway near Linebaugh Avenue.

The MPO had an assessment of TOD real estate development potential conducted in support of the LRTP and the Hillsborough County City-County Planning Commission's preparation of TOD-supportive comprehensive plan amendments. This assessment forecasted the development potential with a one-half mile radius around select station areas for 2035, one of which is near this corridor: USF. Due to the designation of low-density residential land use throughout the bulk of the corridor, extensive station area growth would likely be limited to the areas around Dale Mabry Highway or near I-275 that are zoned with moderately higher densities. The market potential for station areas would likely be fairly high near the eastern terminus of the corridor due to its proximity to USF. The study found the potential for:

- USF Station Area
  - 1,700 to 1,800 multi-family dwelling units
  - 100,000 to 200,000 square feet of office space
  - o 50,000 to 75,000 square feet of retail

### 3.7 Potential Effects on Natural and Socio-Cultural Resources

The construction of a passenger rail facility serving this corridor was evaluated for potential effects on natural and socio-cultural resources, using the State of Florida's Efficient Transportation Decision-Making (ETDM) Process. Through this process, agency representatives serving on an Environmental Technical Advisory Team (ETAT) reviewed a summary of the proposed project, and identified avoidance and minimization issues. The ETAT members consist of representatives from agencies which have statutory responsibility for issuing permits or conducting consultation under NEPA, and representatives of participating Native American tribes. The issues identified by the ETAT will be explored further through environmental impact studies and alternatives analyses.

This review process evaluates twenty resources and issue areas and identifies a degree of effect (DOE) that construction of a passenger rail facility may have on each. The DOE levels are characterized in the following table.

Degree of Effect	Possible effects that the transportation action has on environmental and community resources
Enhanced Degree of Effect	Project concept has positive effect on the ETAT resource or can reverse a previous adverse effect leading to environmental improvement. b) Project concept has positive effect on community. Affected community supports the proposed project.
Minimum Degree of Effect	<ul><li>Project concept has little adverse effect on ETAT resources. Low cost options are available to address concerns. Permit issuance or consultation involves routine interaction with the agency.</li><li>b) Project concept has minimum adverse effect on elements of the affected community. There is minimum community concern about the planned project. Little or no mitigation is needed.</li></ul>

Moderate Degree of Effect	Natural or cultural resources are affected by the proposed project, but avoidance and minimization measures are available and can be addressed during project development with a moderate amount of agency involvement and moderate cost impact. b) Project concept has adverse effect on some elements of the affected community. There is moderate community concern about the planned project. Public involvement is needed to seek alternatives more acceptable to the community. Moderate community involvement is required during project development. Some mitigation or minimization is needed to gain support from the community.
Substantial Degree of Effect	The project concept has substantial adverse effects, but ETAT understands the project need and is able to seek avoidance, minimization or mitigation measures during project development. Substantial interaction is required during project development and permitting. b) Project concept has substantial adverse effects on the affected community and faces substantial community opposition. Intensive community interaction with focused public involvement is required during project development. Project will need substantial mitigation to gain public acceptance.
Potential Dispute	Project concept may be contrary to a state or federal resource agency's program, plan or initiative. Project concept may have significant environmental cost. Reasons for indicating a potential dispute are contained in Agency Operating Agreements. Project concept may not be permittable. Reference Section 4.6, Process to Resolve Potential Dispute. b) Project concept is not in compliance with approved Local Government Comprehensive Plans, or may involve significant adverse effects on adjacent community.

For the Busch Boulevard Corridor East, the potential effects were considered substantial in the categories of **Water Quality & Quantity, and Secondary & Cumulative Effects**. A full report summarizing the ETAT's comments is available through the Hillsborough MPO or as ETDM #12722. A summary of the ETAT's recommendations for Degree of Effect in all categories is provided below.

Affected Resource	Degree of Effect (DOE)
Air Quality	Enhanced
Coastal and Marine	Moderate
Contaminated Sites	Moderate
Farmlands	None
Floodplains	Moderate
Infrastructure	Moderate
Navigation	No Involvement
Special Designations	Moderate
Water Quality and Quantity	Substantial

Wetlands	Moderate
Wildlife and Habitat	Moderate
Historic and Archaeological Sites	Minimal
Recreation Areas	Minimal
Section 4(f)	Minimal
Aesthetics	Minimal
Economic	Enhanced
Land Use	Moderate
Mobility	Minimal
Relocation	Minimal
Social	Minimal
Secondary & Cumulative Effects	Substantial