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City of Coral Gables Trolley Service Master Plan

1. Introduction and Project Overview

Under the terms of an inter-local agreement with Miami-Dade County, the City of Coral Gables has successfully operated a trolley-style shuttle bus operation along Ponce de Leon Boulevard for approximately ten years. The principal purpose of the service is to shuttle passengers from the County's Metrorail and Metrobus locations to and from downtown Coral Gables.

Since 2003, the system has expanded and now covers the stretch of Ponce de Leon Boulevard from the Douglas Road Metrorail station to Publix, at West Flagler Street. These two termini extend the local service via Metrorail and Metrobus to the greater Miami-Dade region and allow both trips within Coral Gables and those beyond to benefit from the service.

In 2013, the City initiated the current study to determine the feasibility, benefits, and specific details for establishing a similar service in other areas of the city. The results of that study are contained within this final report.

1.1. Overview of Scope of Work

The study contained eleven tasks that sought to build a base of information on the existing trolley system, ridership, and travel behavior in the city; formulate enhancements and improvements that respond to current and near-term needs; and present a management and financial plan that will lead to implementation. These tasks are briefly described below.



Figure 1-1 – Trolley Vehicle at Douglas Road Metrorail Station

Task 1 - Project Administration – management of the project effort to deliver the required information within the contract scope, schedule, and budget.

Task 2 - Agency/Stakeholder Coordination – meetings and coordination of study efforts and ongoing efforts by stakeholder agencies within the City of Coral Gables and other public agencies.

Task 3 - Public Involvement Support – preparation for, conduct of, and summarization of a public meeting open to the general public within the city.

Task 4 - Define Goals and Objectives for the City Trolley Service – establishment of a clear set of project goals and objectives to steer the study effort and serve as a basis for the evaluation of alternative concepts and the preparation of a final recommendation.

Task 5 - Data Collection and Existing Conditions – both original field data collection and assembly of existent information to understand the existing trolley service and formulate recommendations for improvement.

Task 6 - Mobility Needs Identification – identify mobility needs of different segments of the population within the city.

Task 7 - Alternatives Development and Analysis – formulation and development of alternative concepts for improving and expanding the current trolley system.



Task 8 - Preliminary Management Plan – develop a plan for implementing the recommended trolley service system.

Task 9 - Preliminary Financing Plan – analysis to determine if a trolley fare should be implemented and identification of funding sources for the system.

Task 10 - Recommendations – list of recommendations to enhance the existing and planned system.

Task 11 - Deliverables –report and map showing the proposed 2015 Trolley Service Master Plan routes and stop locations.

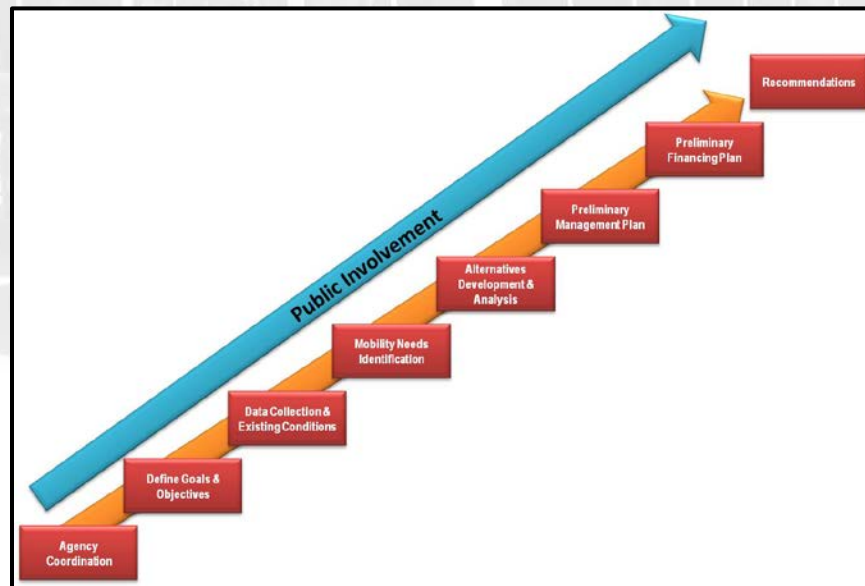


Figure 1-2 - Coral Gables Trolley Master Plan Study Process

1.2. Introduction to Trolley Operation Including Changes in Service

The Coral Gables Trolley Service is a fare-free, local circulator. Service operates (with numerous stops) between the Douglas Road Metrorail station in the south and Publix, at the corner of Flagler Street, a distance of 4.2 miles. Service begins at 6:30 a.m., Monday through Friday and terminates at 8:00 p.m. Extended service operates on the first Friday of each month until 10 p.m. to support Gallery Night, a monthly event in which people can stroll downtown Coral Gables and visit the galleries and enjoy other downtown night life.

Trolley stops are designated with a signpost advising passengers of the hours of operation. While some stops include a bench, most stops offer no other passenger amenities (e.g., trash receptacles, shelter, route map, etc.). Because vehicles arrive every 10 to 15 minutes, and about 12 minutes on average, and operate solely on Ponce de Leon Boulevard, route and schedule information is not necessarily needed.



Figure 1-3 - Typical Trolley Stop Signpost



System information is available on the Coral Gables City web site: <http://www.coralgables.com/index.aspx?page=325>. Here, customers can determine the location of the stops, route, and hours of operation.

Trolleys stop at all stops upon a signal from a passenger in the vehicle or in response to a passenger waiting at a stop. If no passenger makes a request, the trolley proceeds past the stop without stopping.

In March 2006, the city conducted a study to consider the expansion of the Coral Gables Trolley, which ran from the Douglas Road Metrorail station to SW 8th Street. Five areas for expansion were considered:

- SW 8th to Flagler Street;
- MacFarlane Homestead Historic District;
- University of Miami;
- Red Road area; and
- Riviera Business District.

That study concluded that service be extended north to Flagler Street, as an extension of the then existing trolley operation.

1.3. Expectations of Current Study

The City initiated the current study with goals and objectives but without any preconceived ideas of what improvements to the trolley system might include. Within certain limitations of financial resources, physical plant, and rolling stock, incremental expansions were open to investigation.

Geographical expansion was almost universally viewed as an avenue of investigation. Both the prior study and discussions with city staff and other stakeholders suggested potential for the Coral Gables Trolley to travel into new parts of the city and even beyond.

Another agreed upon area of investigation was that of the hours of operation. The current trolley operates on an average of 12-minute headways from 6:30 a.m. to 8:00 p.m. weekdays, with additional service on the first Friday of each month and under rental agreements with specific users. The trolleys are also used for certain special events. Expanding the hours of operation, both into the evening and on weekends were considered as likely possibilities. More frequent service would also be considered although early discussions revealed no strong desire to reduce headways.

The geographical and hours of operation considerations opened the door to serving new geographies with different hours of service. While extensions of the current Ponce de Leon Boulevard route would logically operate on the same schedule, service to other areas could occur with a different headway, during different hours, and even on different days.

Finally, any increase in transit service would entail additional costs possibly for rolling stock and certainly for operations and maintenance costs. The Coral Gables Trolley operates as part of the city's Parking Division and is maintained by the city's Department of Public Works. Furthermore, while previous studies questioned the cost-effectiveness of charging a fare to increase revenues the Parking Division already collects, counts, and transfers cash and so could do so for trolley fares were fareboxes to be installed on the vehicles.



2. Existing Operations

The Coral Gables Trolley system operates on 10 to 15-minute headways, Monday through Friday, from 6:30 a.m. to 8:00 p.m. The route generally follows Ponce de Leon Boulevard from the Douglas Road Metrorail station in the south to Publix on Flagler Street in the north (see Figure 2-1).

2.1. Infrastructure

The Coral Gables Trolley fleet includes 11 trolley vehicles, the oldest manufactured in 1999 and the most recent acquisition of three vehicles made in 2013. Normal operations require six vehicles through most of the day: five vehicles to start increasing to six in the afternoon.

Table 2-1 - Current Coral Gables Trolley Fleet

Year	Manufacturer and Vehicle Description	Vehicle Number	Current Mileage (as of 12/31/12)*
2006	Bluebird LF Diesel Trolley	6	*131696
2006	Bluebird LF Diesel Trolley	7	*136061
2006	Bluebird LF Diesel Trolley	8	*139251
2006	Bluebird LF Diesel Trolley	9	*103500
2002	Specialty Vehicle Diesel Trolley	10	*345239
1999	Double K FR Diesel Trolley	11	*66886
2002	Specialty Vehicle Diesel Trolley	12	*13256
2012	Gillig Diesel Trolley	17	*13256
2013	Specialty Vehicle Diesel Trolley	18	n/a
2013	Specialty Vehicle Diesel Trolley	19	n/a
2013	Specialty Vehicle Diesel Trolley	20	n/a

*Note: Vehicles 18, 19, and 20 were delivered in the spring of 2013.

The trolley vehicles are stored and maintained at a maintenance facility located at 4133 LeJeune Road in the city of Coral Gables. Here vehicles are stored and maintained.

2.2. Financial

The 2012-2013 budget for the Coral Gables Trolley system is \$1,357,512. The largest single amount, \$721,000 is for Keolis America, Inc., the current name of the operator. Other major elements are shown in the table below.

Table 2-2 - 2012-2013 Trolley Operating Budget

Cost Category	2012-2013 Budgeted Amount (\$s)
Salaries	139,360
Employee Benefits	84,896
Engineering & Architect Services	15,000
Other Professional Services	721,000
Maintenance & Operations	391,256
Equipment, Supplies, etc.	6,000
TOTAL	1,357,512





Figure 2-1 – Existing Coral Gables Trolley Route



2.3. Transit Level-of-Service in Coral Gables

Sixteen separate Miami-Dade Transit routes traverse the city of Coral Gables. Most operate on a 15 to 60-minute headway during peak periods and even during off-peak periods. Evening service is appreciably less and many routes do not operate on Saturdays and Sundays. The Midnight Owl (Route 500) operates during the evening hours on a 60-minute headway. (See Table 2-3 and Figure 2-2).

Transit service is often expressed in terms of a level-of-service (LOS), the frequency with which buses serve a particular area. For purposes of local transit service, an area is considered served if a bus passes within one-quarter to one-half mile of a point. For purposes of this study, service was considered only when a bus route passed within one-quarter mile of a location.

Table 2-3 - Service Characteristics of Miami-Dade Transit Service in Coral Gables

Line Name	Weekdays			Evening	Over- night	Saturday	Sunday
	Route	Peak	Off-Peak				
Headway (in minutes)							
Cent.Plaza-Round Towers Via CBD	6	60	60	n/a	n/a	60	60
CBD-Dolphin Mall Via NW 7 St	7	15	20	30	n/a	20	20
CBD-107 Avenue/Westchester Via SW 8th	8	10	15	20	n/a	15	20
FIU-CBD Via Flagler Street	11	8	12	20	60	12	15
West Dade To CBD - Via Coral Way	24	20	20	30	n/a	30	30
Hialeah-So.Miami Via Palm/37	37	30	30	30	n/a	30	30
Bird Rd/152 Avenue-Douglas Rd Stat	40	15	30	40	n/a	60	60
Dgls Rd-Mia Sprgs/Opa Locka Tri-Rail	42	20	30	60	n/a	40	60
Brickell-Univ. Sta. Via S. Bayshore	48	60	60	n/a	n/a	n/a	n/a
Flagler Max: West Dade-CBD	51	15	30	30	n/a	n/a	n/a
Chld Hosp-Mdc Kend/162 Av-Via 56 St	56	30	60	n/a	n/a	n/a	n/a
Airport-SW 152 St Via 57 Avenue	57	60	60	n/a	n/a	n/a	n/a
Douglas Rd-Old Cutler-136th-Kendall	136	45	n/a	n/a	n/a	n/a	n/a
Airport Flyer	150	30	30	30	n/a	30	30
Coconut Grove Circulator	249	18	18	20	n/a	25	25
Midnight Owl	500	n/a	n/a	n/a	60	60*	60*

* - Note- Overnight only



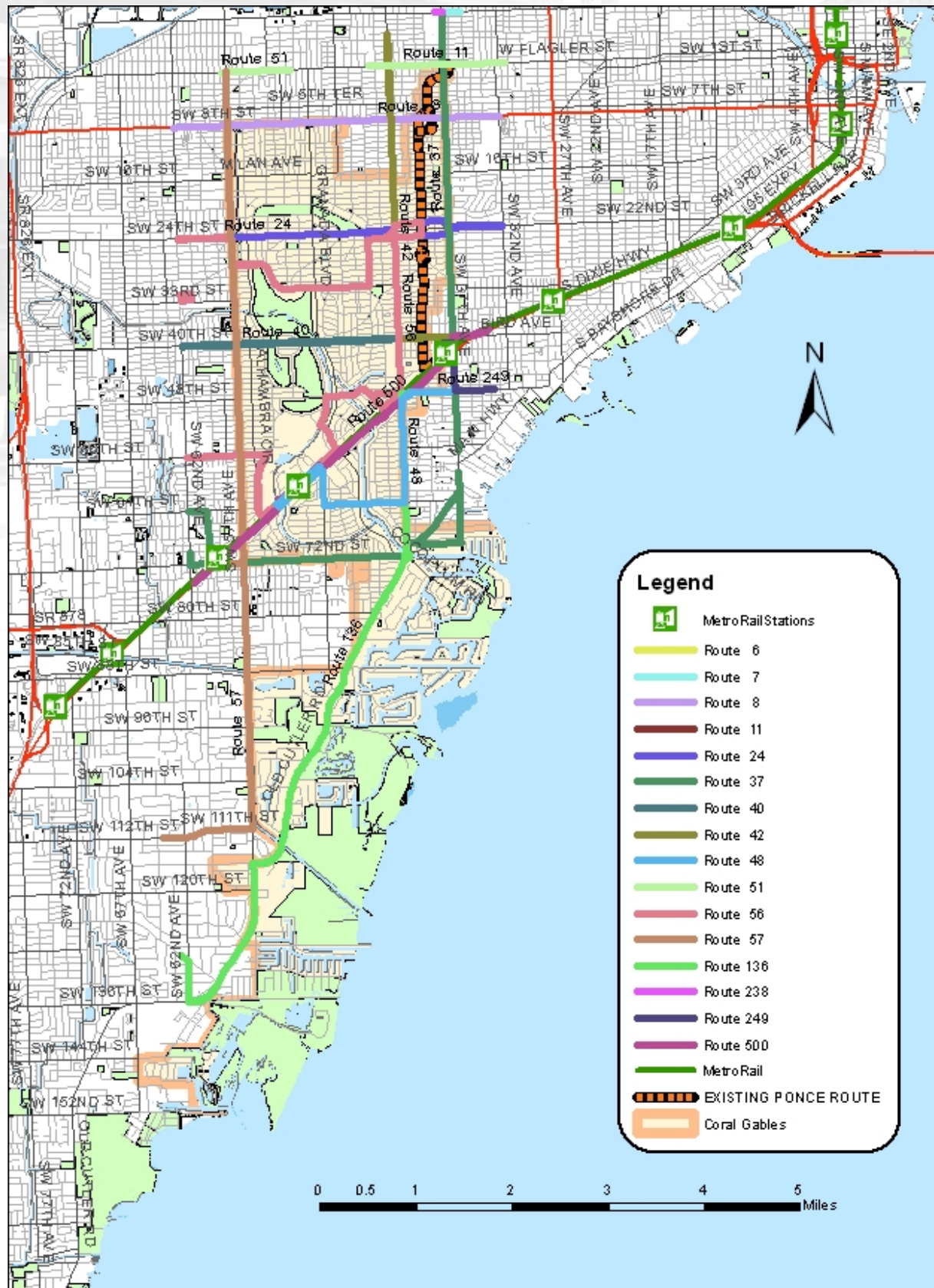


Figure 2-2- Existing Transit Service in Coral Gables



In addition, Metrorail serves the city with stops at the University, Douglas Road, and Coconut Grove Metrorail stations from 5:30 a.m. to midnight, seven days a week.

Level-of-service is evaluated on a scale of A, for more than six buses an hour (10-minute headways), to E, where only one bus serves the area per hour. LOS F indicates less than one bus per hour. Figure 2-3 shows the resulting peak period transit LOS for Coral Gables. Service frequency is relatively high along SW 37th Avenue and SW 42nd Avenue/LeJeune Road. East-west service is relatively low as is service south of US 1. Service along SW 57th Avenue varies, indicating connecting service between SW 57th Avenue and east-west routes.

2.4. Stops and Ridership

A summary of transit boardings and alightings, that is, passengers getting onto or off of a Coral Gables Trolley on a typical weekday, is shown in Figure 2-4. Boardings are heavily concentrated at the Douglas Road Metrorail station, Miracle Mile, and Flagler Street. Approximately 40 to 45 percent of all boardings occur at or near these locations. The alighting pattern is similar with concentrations at the two termini and at Miracle Mile. Additional volumes alight between Miracle Mile and Alhambra Plaza and even a few blocks to the north.

During the days in which passenger surveys were conducted, out of 55 existing stops 24 stops showed no boardings over the course of the day and 19 showed no alightings. Fourteen stops had only one boarding and 18 only one alighting. Given the frequent spacing of stops, approximately every 300 feet, passengers can select the stop almost directly in front of their destination or intersecting street; stop activity is good indication of the potential trip origins and destinations along the corridor.

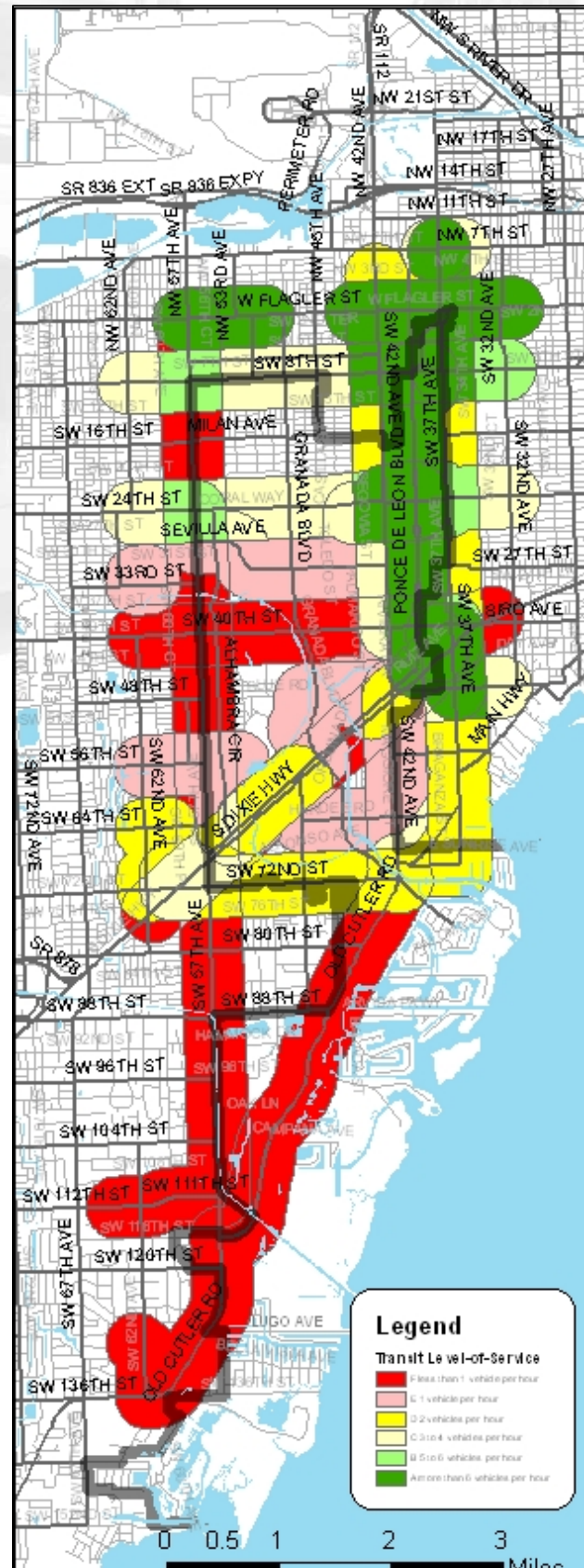


Figure 2-3 - Transit Level-of-Service in Coral Gables (excluding Coral Gables Trolley and Metrorail)





Figure 2-4 – Coral Gables Trolley Boardings and Alightings (based on survey data)



Boarding counts for the week of April 29, 2013 show how much of the ridership boards the trolley at Douglas Road and to a lesser extent at Miracle Mile and Flagler Street. Figure 2-5 illustrates this fact.

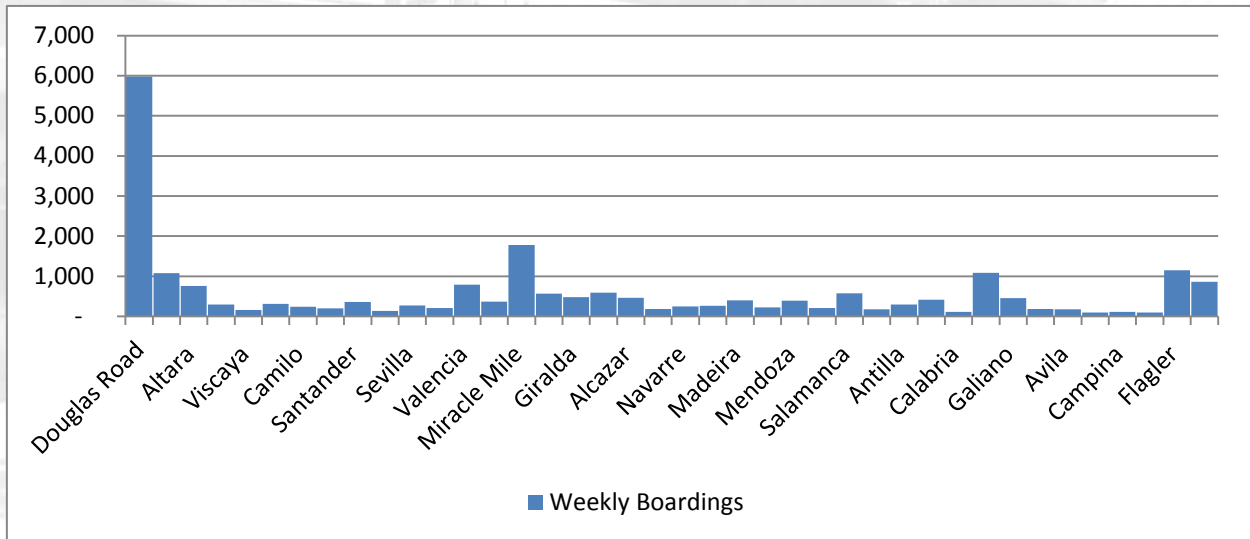


Figure 2-5 – Average Weekly Boardings (week of April 2013)

This tendency persists throughout the day as shown in Figure 2-6. While the relative magnitude of some of the boardings at certain stops changes, the general pattern is the same. Morning activity is a bit higher toward the northern end of the route than over the rest of the day while late afternoon activity is higher than over the rest of the day.

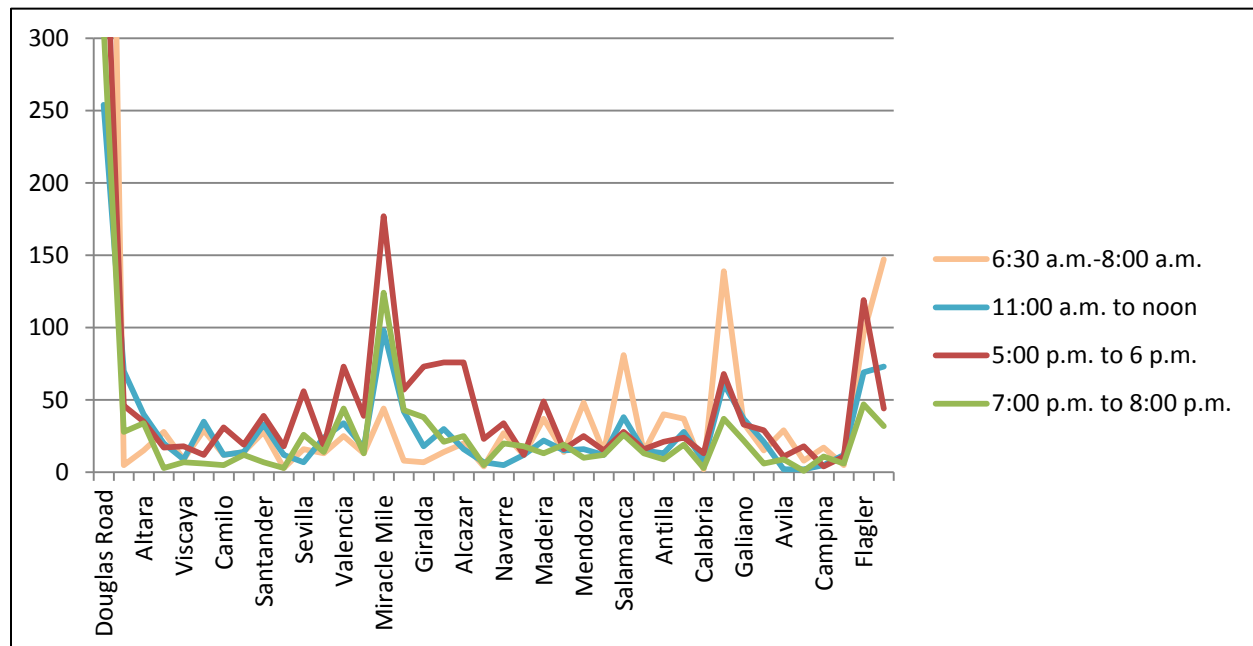


Figure 2-6 – Variations in Boardings by Time of Day



2.5. Land Use

Based on the current city land use plan, the one-quarter mile corridor around the existing trolley route is comprised of nearly 40 percent residential uses and approximately 23 percent commercial, retail, office, and other uses typically associated with the destination end of a trip. (See Table 2-4 and Figure 2-7).

Table 2-4 - Land Use within 1/4-Mile of Existing Trolley Route

Land Use	Area Square Feet	Area Square Miles	Percent of Total
Cemeteries	47,643	1.094	0.09%
Communications, Utilities, Terminals, Plants	1,952,711	0.070	3.80%
Industrial	613,662	0.022	1.19%
Institutional	1,524,185	0.055	2.97%
Low-Density Multi-Family	4,357,005	0.156	8.48%
Multi-Family, Migrant Camps	969,498	0.035	1.89%
Office	3,752,840	0.135	7.30%
Parks (Including Preserves & Conservation)	542,050	0.019	1.05%
Shopping Centers, Commercial, Stadiums, Tracks	5,826,907	0.209	11.34%
Single-Family	9,991,864	0.358	19.45%
Streets/Roads, Expressways, Ramps	16,278,862	0.584	31.68%
Townhouses	45,032	0.002	0.09%
Transient-Residential (Hotels/Motels)	274,571	0.010	0.53%
Two-Family (Duplexes)	4,549,895	0.163	8.86%
Vacant Unprotected	469,606	0.017	0.91%
Vacant, Government Owned	152,957	0.005	0.30%
Water	30,567	0.001	0.06%
Grand Total	51,379,854	1.843	100.00%



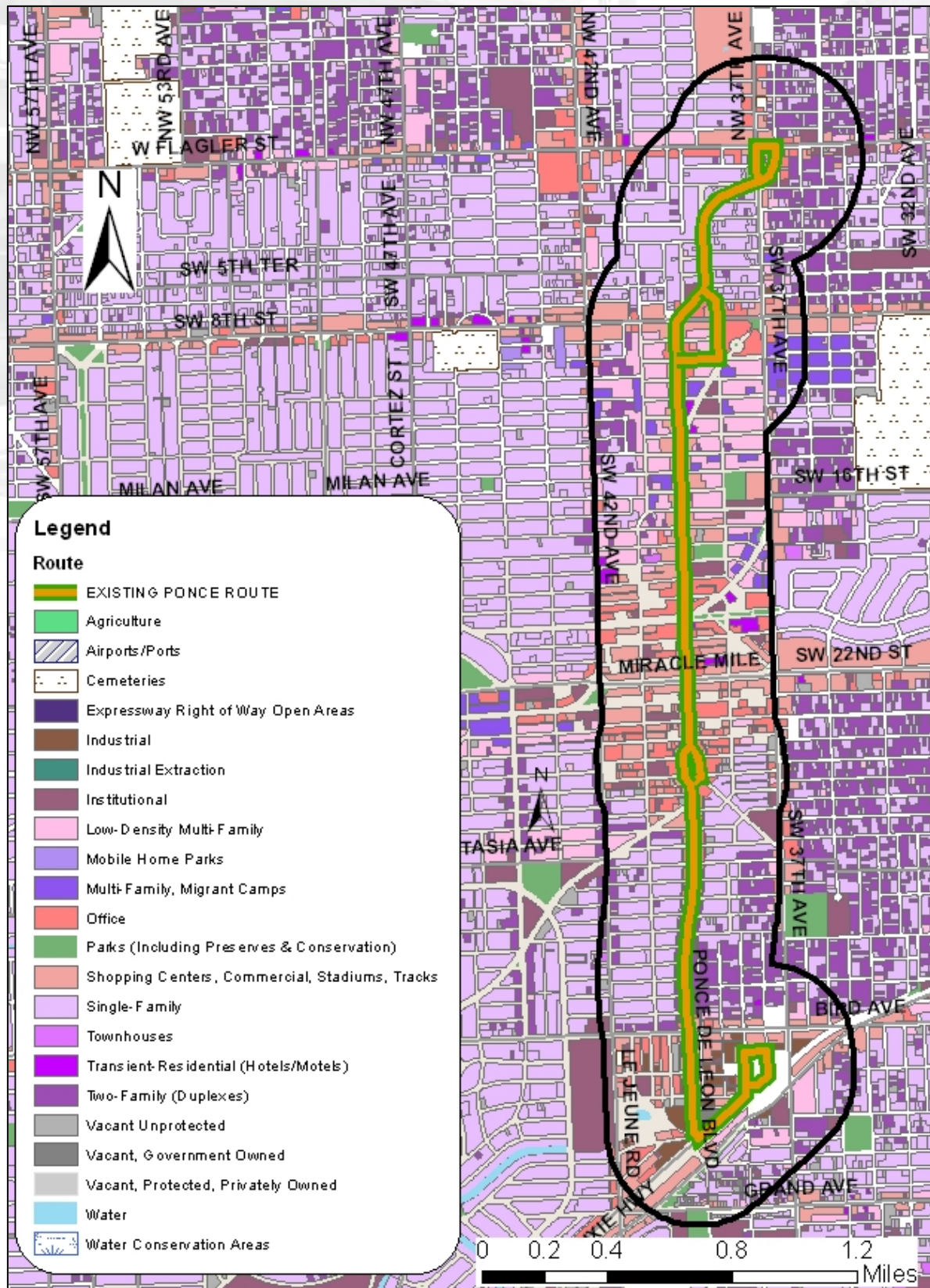


Figure 2-7 - Land Use within the Study Area



3. Public Outreach

Consultation with key stakeholders to this study enhanced the understanding of the function and purpose of the existing trolley service and offered insights into the potential for expansion of the operation. In each case, members of the study team met with representatives of key agencies and organizations and conducted interviews of an open-ended nature. After explaining the scope of the study, stakeholders were presented with a map showing various concepts for geographical expansion of the trolley service and invited to offer comment on the merits of those concepts as well as suggestions for other enhancements and improvements.

The following stakeholder organizations were contacted:

- Coral Gables Chamber of Commerce
- Coral Gables Business Improvement District
- University of Miami
- Fairchild Tropical Botanical Gardens
- Coconut Grove Business Improvement District
- City of Coral Gables Office of the City Manager
- City of Coral Gables Finance Department
- City of Coral Gables Department of Economic Sustainability
- City of Coral Gables Department of Public Works
- City of Coral Gables Development Services

3.1. Study Goals and Policy Guidance

Stakeholders were supportive of the study and were looking for guidance on how to improve the system over the next five years. They encouraged outreach to riders and potential riders through surveys, public meetings, and focus groups.

3.2. Current Operations

The Coral Gables Trolley system is operated under a contract with Limousines of South Florida (now Keolis, Inc.). Their contract was recently renewed for three years and they are eligible to two one-year extension options.

The Coral Gables Department of Public Works performs all preventative maintenance and service on the Coral Gables Trolley vehicles. They do the minor maintenance work, contracting out for larger tasks. Cleaning of the vehicles is performed in-house by the maintenance staff. They also perform minor services to police cars (e.g., tires and batteries). The maintenance operation has the ability to pull engines and transmissions. They do not however do transmission work or engine overhauls but instead rely on Miami-Dade County vendors including paint and body work. They do most work on air conditioning, lighting, engines, suspension, and brakes. Trolleys are cleaned once a day and the exterior periodically. In the evening, the crew sweeps and mops the interior. The Public Works Department maintains a limited stock of parts and owns just a few old parts and tires. Maintenance also performs the periodic (2,500 miles or 30 days) inspections. Public Works has a service truck and can tow a bus (F350 diesel).

Five staff (2 part-time at 29 hours/week) operating on two shifts – a morning and an evening shift – perform the work. It was noted that full time staff would carry higher fringe benefits than do part time staff. Two staff is needed for each shift and a dispatcher is on duty at all times. The current maintenance staffing is based on the current service. No maintenance staff work on the weekends.



3.3. Funding Sources

The trolley operation is funded through People's Transportation Program (PTP) funds. The amount was approximately \$1.4 million for 2013.

Stakeholders suggested that a parking surcharge might serve as a funding source for expansions to trolley service. Adding a fare, provided it is consistent with the agreement the city has with the county for PTP funding, would also be a possibility. A free fare option for residents and students as opposed to non-residents (and non-students) might also be considered. The consensus was that all funding should be used to expand the service.

Advertising on the trolleys was also suggested as a source of revenue but the concept has not generally been considered an attractive one and therefore should be considered very carefully.

The general consensus among stakeholders was that the free fare made sense and should be continued.

3.4. Alternative Concepts

Stakeholders were forthcoming with suggestions on possibilities for expansion of the current service and universally positive of the existing service. Several stakeholders encouraged the concept of a loop in the downtown. Combined with the current operation, the trolley would have the potential to capture more lunchtime office workers who would otherwise have to park twice, once upon arrival in the morning and then again at lunchtime.

Some noted that ideally, the system should be convenient for those already working downtown and particularly in the hours of 11 a.m. to 2:30 p.m. They suggested that the study should consider expanding service during evening hours: 5:30 p.m. to 7:30 p.m. Others thought that additional service on Thursday and Friday evenings, and weekends would meet the needs of increased activity during those time periods. A lunchtime loop might also be attractive.

It was observed that today the trolley stops at almost every block. It was recommended that this study consider the merits of maintaining that stopping pattern or eliminating certain stops.

Others suggested that the proposed changes to the configuration of Miracle Mile might offer the potential for changes to trolley service. There are 80 restaurants along Miracle Mile with a large service staff that rely on public transportation. University of Miami students would also use the service to reach Miracle Mile according to some. It was noted that the previously operated east-west route on Miracle Mile did not attract a great deal of ridership suggesting that a different route alignment, stopping pattern, service frequency, and hours of operation might have been warranted.

LeJeune Road and Douglas Road were not considered to be good candidate route locations as in the estimation of some stakeholders these streets "are bleak south of Andalusia-Giralda" and not conducive to pedestrian travel to the stops.

Interestingly, others suggested that service should stay off of Miracle Mile; a "zigzag" route through the central business district (CBD) might be more attractive. A variation of this approach was the idea of a "figure 8" shaped route through the downtown.

Looking beyond the downtown, some stakeholders proposed that areas south of US 1, including the neighborhoods on LeJeune Road, should be considered and nighttime service to this area might also be considered. Some noted that service into the residential neighborhoods would probably not be popular. They claimed that routes penetrating the neighborhoods would not be beneficial as ridership would be low and the adverse impact to the community high.



Fairchild Tropical Gardens is another area that might benefit from extended service. Noting that the distance from downtown to the Gardens is longer, they recommended that the trolley follow major routes and avoid local streets. Service might be limited to weekends based on some comments from stakeholders.

Several stakeholders cited The University of Miami as a potential destination. Other stakeholders however, were not in agreement and thought the University might not be a needed destination.

A trolley connection to the Miami Intermodal Center was suggested by some as beneficial, connecting Coral Gables to the airport and other parts of the region.

The Biltmore Hotel as a potential destination was discussed with stakeholders. Many felt that the travel time to the Biltmore Hotel was too long and so is probably not a viable destination.

Any changes to the system should be well advertised and the trial period should be extended to allow time for people to learn about the changes.

3.5. System Purpose and Function

Today's system was viewed by some stakeholders as a "backbone" to a potentially larger system covering a broader geography. Many suggested that the trolley system reduces traffic and parking demand from the central business district and improvements to the system could expand upon these results. They saw the trolley as an important "tool" for getting around downtown and that it serves as a lunchtime circulator. It also brings in people from the Metrorail and forms a regional transit connection. One stakeholder said that the trolley offers "a nice vibe" to downtown Coral Gables and is also complementary to the parking system employed in the city.

Travel and tourism are important to the 160 restaurants. Many businesses downtown have service job employees that don't get parking: housekeepers and waiters.

Stakeholders observed that the trolley is free, convenient, and better than the Miami-Dade Transit (MDT) operation. They also noted that the city has control of the service and that the service supports a walkable downtown. They suggested that the trolley should be a means of bringing people to downtown Coral Gables and encouraging visitors. The trolley is important to keeping downtown Coral Gables competitive with other venues around the region. The Coral Gables Business Improvement District (BID) seeks to create a vibrant, nighttime environment that is conducive to young people and felt that the trolley is helpful in this regard. The trolley is also a means of drawing visitors from beyond South Florida; 12 million visitors fly to Miami-Dade County each year representing a substantial visitor/tourist market. Conversely, stakeholders advised that the areas south of US 1 have little commercial activity and probably don't need trolley service.

Some stakeholders thought that the trolley carries workers and younger people to the city who are looking to avoid parking charges.

Many stakeholders noted that residents are not the primary users of the system. Workers would appear to make up the majority of the ridership. Many stakeholders however, stated that the mission of the trolley operation should be to serve those who are already in Coral Gables.



3.6. Key Destinations, New Development, & Special Events; Potential Audiences/Markets

Stakeholders reported a number of major new development projects that could benefit from more direct trolley service. The 396 Alhambra Building is one major development with over 1,000 people that could benefit from a local loop off of Ponce de Leon Boulevard, for example.

New development is going up around the intersection of LeJeune road and Ponce de Leon Boulevard (Gables Gateway on Ponce). Gables Gateway, a mixed-use development project is being constructed near LeJeune Road at Ponce de Leon Boulevard. The project is being constructed in three phases. The first phase entails 250 rental units, 2,000 square feet of office space and 10,000 square feet of retail. The second phase, to be located north of the first, includes 119 rental units and 21,000 square feet of office space. Merrick Manor, another project in the same vicinity (located across from the high school), will include 188 condominium units. The Palace, at Andalusia and Douglas Road, will contain 240 units. Currently, 18 restaurants are located at the north end of Ponce de Leon Boulevard.

The University of Miami campus serves approximately 14,400 full-time and part-time students with another 3,100 faculty and staff on campus. The campus has parking for 9,400 and issues 10,000 permits. Freshmen are prohibited from bringing cars to campus and only about 300 sophomores have cars. The campus has Zip Car. Gables Gateway, noted above, is expected to house some university students. Red Road Commons, another development located at SW 57th Avenue and Ponce de Leon Boulevard, on the South Miami side of the street, will house up to another 800 units. University students have expressed an interest in service to: Miami Beach, Key Biscayne, and Dadeland Mall. The university considers service using their own transportation resources in response to student requests.

The Coconut Grove BID expressed an interest in an extension of the trolley into the Grove. They noted that district is expansive and that the residential areas do not connect. The BID sponsors several events (e.g., Arts Festival, Bed Race, Fourth of July picnic, Taste of the Grove) that might benefit from trolley service. A circulator needs to get into the neighborhoods. The MDT Route 249 is not “Disney” enough. There is plenty of parking in the Grove; off-street is more expensive but available. Other stakeholders similarly noted that service for special events would be a good idea.

Fairchild Tropical Botanical Gardens was frequently cited as a potential destination for trolley service. 12,000 of the 45,000 Fairchild members live in Coral Gables. Fairchild is recognized as an international destination with over 300,000 visitors each year. Fairchild is open from 7:30 a.m. to 4:30 p.m. (5 p.m. on Saturdays) seven days a week. The typical visit varies between one and two hours and three to four hours. The Gardens hold five to six festivals a year. Two-thirds of the Fairchild visitors are members. Attendance is 40 percent higher on weekends than weekdays so weekend service would be important.

City Tours and Big Red Bus do not travel to Fairchild. Miami-Dade Transit reaches Fairchild only twice a day on existing service (a review of current MDT schedules shows five trips each morning to the Gardens per day and six trips each evening back to the Douglas Road Metrorail station).

The route to Fairchild is slow and people traveling to the Gardens do so as a deliberate destination. Fairchild staff noted that Fairchild is not a “drive-by destination.” It was suggested that Fairchild could be one of several Coral Gables destinations that might be of interest to tourists and those on recreational travel. Fairchild could be linked to Miracle Mile and the Biltmore Hotel with trolley service. Tours could be conducted using the trolley and might include other destinations like Matheson Hammock Park. Trolley connections to UM for classes and students associated with the Gardens association would be served by the trolley. Fairchild itself has a staff of 120: 100 full-time equivalent employees and 650 volunteers who are on site at least once per week.



The Fairchild parking field is used daily as the paved parking is filled. The gardens have been able to handle the parking demand to date. For special events they have operated shuttle buses to overflow parking at Matheson Hammock Park and Palmetto High School.

The Biltmore Hotel supplies town cars and has tour bus activity so it is not a significant trolley destination, according to some.

3.7. Other Operations

The Hurry 'Cane Shuttle service serves the University of Miami campus. The university has ridership statistics. The current service offers academic shuttles: 7 a.m. to midnight. The orange and green routes serve 600,000 riders per year. It connects the Metrorail station to the core of the campus and remote parking to the core.



Figure 3-1 – University of Miami Shuttle Routes

The Hurry 'Cane shuttle is also used for shuttle service to Sunset Place (Thursdays through Sundays) Coconut Grove (Thursday and Friday), and the Marine Sciences Campus. The vehicles operate on an 8-minute headway and are free to all users. The vehicles carry 22 seated and 33 with standees/29 seated and 41 with standees.

IBIS ride operates a "Thirsty Thursday" service that runs to Coconut Grove on Thursdays.



3.8. Public Meeting

On December 12, 2013 a public meeting was convened at the Coral Gables Youth Center. Commencing at about 6:30 p.m., residents and other interested persons were given a presentation describing the current study. Exhibit boards were posted that described the project goals, alternative route concepts, and an evaluation of those alternatives. Copies of these items are shown in Appendix E. A copy of the meeting announcement from the Miami Herald is shown in Figure 3-2.

Following the presentation, attendees were invited to ask questions, offer suggestions and comments, and express opinions and preferences for future trolley operations. Many of the 15 to 20 attendees did make statements or ask questions, as summarized below:

- Questions regarding the study and particularly the surveys conducted for the study
 - Phrasing of the survey question on the possibility of charging a fare
 - Clarification of the finding that about 52 percent of the riders are taking work trips and also that about 50 percent of the riders are residents
 - Details of the responses regarding extending the hours and increased frequency of the trolley service
- Suggestions on areas needing transit service or alterations to current service
 - Lack of good transit service in the community just south of US 1 with Miami-Dade Transit operating only hourly service and no service on Sundays
 - The residential nature of the area around Romano Avenue would not appear to warrant a trolley stop; the trolley stop appears to attract foot traffic from east of 37th Avenue, creating an intrusion into the neighborhoods
 - Potential for extending service toward South Miami
 - Source of trolley operations funding
 - Elaboration on the concept of extending service to the airport and whether such a route would have intermediate stops along the way
 - An observation that Miami-Dade Transit currently runs service to the airport
- Comments and questions on current service and changes to service
 - Some trolleys are difficult to enter, particularly for the elderly, because of the steps
 - Potential disadvantages to charging a fare on the trolley
 - Potential for charging a fare only for non-residents
 - Potential impact on the new City of Miami Trolley service running to Miracle Mile
 - Observation that students take the trolley

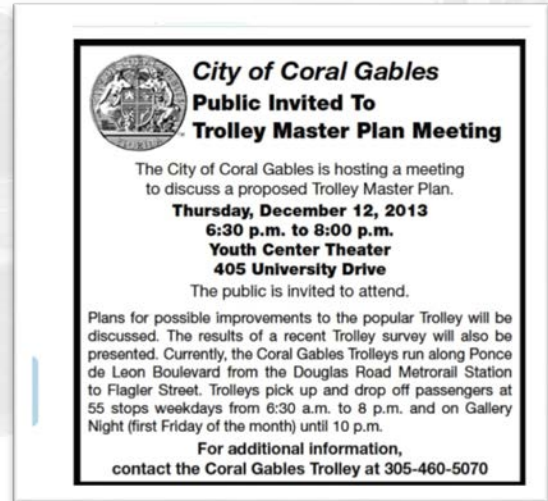


Figure 3-2 - Miami Herald Meeting Announcement

Attendees were invited to complete a comment card. Three comment cards were received making the following statements:

- Extending the hours of operation on Friday and Saturday evenings to permit visiting downtown on these evenings
- Introducing more environmentally-friendly vehicles as the fleet is replaced
- Reducing “free” parking on Ponce de Leon Boulevard for Coral Gables residents



- Charging non-residents a fare to use the trolley
- Better accessibility onto the trolley vehicles to accommodate the elderly and handicapped
- Extend service to Grand Avenue

Both before and after the presentation, attendees had an opportunity to review the exhibits and ask questions of the project staff.



4. Surveys

A series of surveys were conducted to determine the travel patterns and preferences for trolley service. Both current trolley passengers and select audiences of other individuals were surveyed in an effort to obtain a representative cross section of the existing and potential market.

4.1. On-Board Trolley Survey

On May 30 and August 20, 2013, survey personnel rode the trolley vehicles from 6:30 a.m. to 7:00 p.m. Each surveyor carried a 4G-connected iPad linking the device to an Internet-based survey. Surveyors approached riders randomly, attempting to survey all riders, as they boarded the vehicles. After securing permission to conduct the survey, which was conducted either in English or Spanish, the surveyor asked a series of 17 questions. (See Figure 4-3.) Door counts were conducted by the drivers at the same time for control purposes.

During the course of the day, only two individuals declined to take the survey. Otherwise, 204 surveys were conducted. Most individuals responded fully to all of the questions and nearly every survey that was begun was completed before the passenger reached his or her destination and exited the bus.



Figure 4-1 – Survey being Administered on Trolley Vehicles

4.2. Survey Results

About four-fifths of the respondents reported their home zip codes. The most prevalent home locations were in Coral Gables (33134) or immediately adjacent to Coral Gables (33125, 33135, 33145). (See Figure 4-2.)

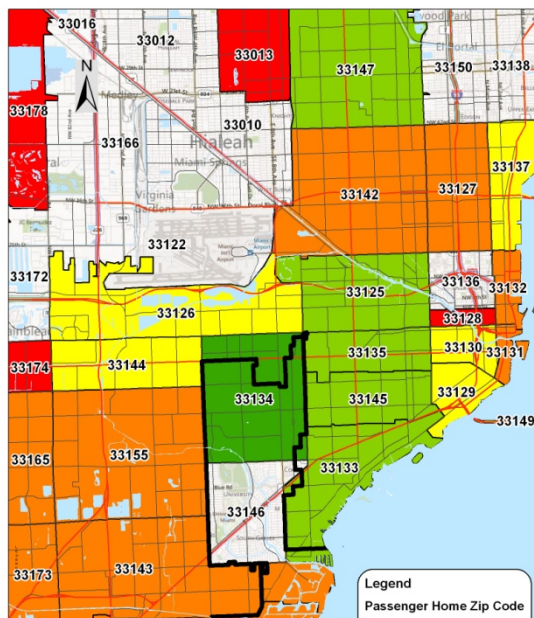


Figure 4-2 – Distribution of Responses by Zip Code



Table 4-1 – Tabulation of Responses by Zip Code

Zip Code	Number of Respondents	Percentage of Respondents
33125	14	5%
33126	7	2%
33127	4	1%
33129	5	2%
33130	5	2%
33132	4	1%
33133	12	4%
33134	85	30%
33135	18	6%
33137	7	2%
33144	5	2%
33145	12	4%
33147	10	4%
33156	4	1%
33169	4	1%
33173	4	1%
33186	4	1%
Other	77	27%
Total	281	96%*

*Note – Total less than 100% due to rounding



Coral Gables Trolley Survey



1. Where did you begin this trip today (before getting on the trolley)?
☐ Work ☐ Non-Work ☐ Home
2. Where did you board the trolley? _____ (stop name)
3. Where will you leave the trolley?? _____ (stop name)
4. Where will you end this trip (after getting off the trolley)?
☐ Work ☐ Non-Work ☐ Home
5. What is the purpose of this trip on the trolley? (e.g., work, shopping/dining, social/recreational, school, other)
☐ Work ☐ Shopping/Dining ☐ Social/Recreational ☐ School
☐ Other: _____
6. Will you use the trolley again today? ☐ On a return trip ☐ This is the return trip ☐ No
7. Where do you live? _____ (zip code)
☐ Downtown Coral Gables ☐ Coral Gables outside the downtown _____ ☐ City of Miami
☐ Elsewhere in Miami-Dade County _____ Other _____
8. Where do you work? _____ (zip code)
☐ Downtown Coral Gables ☐ Coral Gables outside the downtown _____ ☐ City of Miami
☐ Elsewhere in Miami-Dade County _____ Other _____
9. How often do you make this trip on the trolley?
☐ Daily ☐ Several times a week ☐ Several times a month
☐ Rarely ☐ First time
10. Do you use transit for trips in the vicinity of downtown Coral Gables? (check all that apply)
☐ Coral Gables Trolley - Times per month _____
☐ Miami-Dade Transit bus or Metrorail - Times per month _____
11. How many times a week do you go to places in downtown Coral Gables during the day? _____
12. What are the biggest problems with the current trolley service? (check all that apply)
☐ Too slow ☐ Doesn't go where I need to go ☐ Not enough hours per day
☐ Doesn't run on weekends ☐ Other _____
13. During what time periods would you want more frequent trolley service? (check all that apply)
 Weekdays: ☐ Before 11 a.m. ☐ 11 a.m. to 2 p.m. ☐ 2 p.m. to 8 p.m. ☐ No change
14. During what time periods would you want extended service hours (e.g., later into weekday evenings or on weekends)? (check all that apply)
 Weekdays: ☐ After 8 p.m. ☐ No change
 Weekends: ☐ Before 11 a.m. ☐ 11 a.m. to 2 p.m. ☐ 2 p.m. to 8 p.m. ☐ After 8 p.m. ☐ None
15. If trolley service were expanded to new routes where would you like it to go? (List locations)

16. If trolley service were expanded to the locations you listed above at what times would you use the additional trolley service? (check all that apply)
 Weekdays: ☐ Before 11 a.m. ☐ 11 a.m. to 2 p.m. ☐ 2 p.m. to 8 p.m. ☐ After 8 p.m. ☐ Not applicable
 Weekends: ☐ Before 11 a.m. ☐ 11 a.m. to 2 p.m. ☐ 2 p.m. to 8 p.m. ☐ After 8 p.m. ☐ Not applicable
17. Are you male/female?
18. Age _____
19. Employment status
☐ Working full time ☐ Working part time ☐ Not working/unemployed ☐ Student
☐ Homemaker ☐ Retired
20. If Coral Gables were to charge a fare for use of the trolley what do you think it should be?

For questions concerning this survey, please call us at (305) 460-5070.

Figure 4-3 – On-Board Trolley Survey Instrument



Of the survey respondents, nearly half began their trips at home. Just over a quarter started at work and only a fifth started their trip from a non-work destination (e.g., restaurant, shopping, medical office, etc.).

Table 4-2 - Trip Origin

Trip Origin	Number	Percentage of Valid Responses
Home	114	46%
Non-Work	59	24%
Work	75	30%
No Answer Entered	33	n/a
Grand Total	281	100%

A summary of the trip origins and destinations together indicates that 27 percent of the trips on the trolley begin at home and end at work while another 19 percent begin at work and end at home. Nearly half of the total trips therefore, are commuting trips to and from work. Only 22 percent of the trips are between work and non-work or non-work to non-work, characteristic of lunchtime shopping and dining. Thirty percent of the trips are between home and non-work destinations, which could be residents conducting recreational activities in the downtown.

Table 4-3 – Trip Origin & Destination Type

Began Trip	End Trip			
	Home	Non-Work	Work	Total
Home	2%	17%	27%	46%
Non-Work	13%	10%	1%	24%
Work	19%	5%	6%	30%
Grand Total	34%	32%	34%	100%

Boarding and alighting data from the survey are presented in Table 4-4 and Table 4-5. (These data were previously presented in Figure 2-4.) These statistics emphasize the dominance of activity occurring at Douglas Road, Miracle Mile, and Flagler Street, more than 55 percent of the total boardings.



Table 4-4 - Station of Boardings

Stop Name	Boardings	Percent of Total Boardings	Stop Name	Boardings	Percent of Total Boardings
Alcantarra North	0	0%	Madeira South	4	2%
Alcantarra South	1	0%	Majorca South	2	1%
Alcazar North	0	0%	Mendoza South	2	1%
Alcazar South	2	1%	Menores North	0	0%
Alhambra North	3	1%	Menores South	3	1%
Alhambra South	5	2%	Minorca North	2	1%
Almeria North	1	0%	Minorca South	1	0%
Almeria South	1	0%	Miracle Mile North	18	7%
Altara North	2	1%	Miracle Mile South	7	3%
Altara South	0	0%	Navarre South	0	0%
Andalusia South	1	0%	Oviedo North	1	0%
Antilla South	0	0%	Palermo North	1	0%
Aragon North	4	2%	Palermo South	1	0%
Aragon South	2	1%	Publix South	6	2%
Avila North	1	0%	Romano North	1	0%
Avila South	0	0%	Romano South	0	0%
Cadima North	3	1%	Salamanca North	2	1%
Cadima South	0	0%	Salamanca South	3	1%
Calabria North	0	0%	San Lorenzo North	3	1%
Calabria South	1	0%	San Lorenzo South	4	2%
Camillo South	1	0%	Santander North	1	0%
Camilo North	2	1%	Santander South	1	0%
Campina North	0	0%	Santillane North	2	1%
Candia North	4	2%	Santillane South	7	3%
Candia South	0	0%	Sevilla North	0	0%
Carmona South	0	0%	Sidonia North	1	0%
Catalonia North	0	0%	Sidonia South	2	1%
Douglas Rd. North	78	31%	SW 8th St North	4	2%
Douglas Rd. South	1	0%	SW 8th St South	12	5%
Flagler North	1	0%	Valencia South	4	2%
Flagler South	35	14%	Viscaya South	1	0%
Galiano North	2	1%	Zamora North	1	0%
Giralda North	1	0%	Zamora South	2	1%
Giralda South	1	0%	TOTAL 253		
Madeira North	1	0%			



Table 4-5 - Station of Alightings

Stop Name	Boardings	Percent of Total Boardings	Stop Name	Boardings	Percent of Total Boardings
Alcantarra North	1	0%	Majorca North	4	2%
Alcantarra South	0	0%	Majorca South	0	0%
Alcazar North	2	1%	Mendoza North	2	1%
Alcazar South	1	0%	Mendoza South	0	0%
Alhambra North	8	3%	Menores North	5	2%
Alhambra South	2	1%	Menores South	1	0%
Almeria North	1	0%	Minorca North	5	2%
Almeria South	0	0%	Minorca South	1	0%
Altara North	2	1%	Miracle Mile North	18	7%
Altara South	4	2%	Miracle Mile South	23	9%
Andalusia North	2	1%	Navarre North	1	0%
Andalusia South	2	1%	Navarre South	0	0%
Antilla North	1	0%	Oviedo North	0	0%
Antilla South	1	0%	Palermo North	1	0%
Aragon North	5	2%	Palermo South	0	0%
Aragon South	4	2%	Publix North	7	3%
Avila North	0	0%	Publix South	0	0%
Avila South	0	0%	Romano North	1	0%
Cadima North	0	0%	Romano South	1	0%
Cadima South	1	0%	Salamanca North	1	0%
Calabria North	3	1%	Salamanca South	0	0%
Calabria South	1	0%	San Lorenzo North	2	1%
Camillo South	0	0%	San Lorenzo South	3	1%
Camilo North	1	0%	Santander North	2	1%
Campina North	0	0%	Santander South	7	3%
Candia North	2	1%	Santillane North	1	0%
Candia South	1	0%	Santillane South	0	0%
Carmona South	0	0%	Sevilla North	0	0%
Catalonia North	1	0%	Sidonia North	1	0%
Catalonia South	1	0%	Sidonia South	0	0%
Douglas Rd. North	5	2%	SW 8th St North	12	5%
Douglas Rd. South	45	19%	SW 8th St South	2	1%
Flagler North	33	14%	Valencia North	2	1%
Flagler South	0	0%	Valencia South	1	0%
Galiano North	4	2%	Viscaya South	0	0%
Galiano South	2	1%	Zamora North	3	1%
Giralda North	1	0%	Zamora South	0	0%
Madeira South	1	0%	TOTAL	245	



Passengers boarded and alighted at nearly every station during the survey. Sixty percent of the respondents identified boarding at: Douglas Road (31%), Flagler Street (14%), Miracle Mile (10%), or SW 8th Street (5%). Nearly half the respondents identified the same four stations for alighting: Douglas Road (16%), Flagler Street (11%), Miracle Mile (15%), or SW 8th Street (5%). Thirteen stations had no more than one person board and 16 had no more than one alight.

Just under half of those responding to the question reported starting their trips at home. Trips originating from work accounted for 30 percent of the total with just 21 percent starting their trip from some other destination (e.g., shopping, restaurant, medical visit, etc.). Trip ends were fairly evenly distributed between home, non-work, and work.

Table 4-6 - Trip Ends of Respondents

Trip End	Home	Non-Work	Work	Grand Total
Home	5	41	66	112
Non-Work	31	23	3	57
Work	46	13	14	73
Grand Total	82	77	83	242

More than half the respondents reported that they were traveling to work with the remainder distributed fairly evenly between other trip types.

Table 4-7 - Trip Purpose

Trip Purpose	Number Responding	Percent by Trip Purpose
No Answer Entered	36	-
Medical	7	3%
School	29	12%
Shopping/Dining	38	16%
Social/Recreational	43	18%
Work	128	52%
Grand Total	281	100%

Four in five respondents said that they would or were making a return trip. Only 19 percent said that they were taking a one-way trip.



Table 4-8 - Making a Return Trip

Row Labels	Making a Return Trip	Percent Making a Return Trip
No Answer Entered	41	-
No	54	23%
On a return trip	126	53%
This is the return trip	60	25%
Grand Total	281	100%*

*Note – Total exceeds 100% due to rounding.

Forty-four percent of those responding to the question live in Coral Gables with another 25 percent reporting living in the city of Miami. A small number reported Kendall, Pinecrest, Coconut Grove and other close-by areas as home.

Table 4-9 - Location of Residence

Area	Number Responding	Percent Responding
Allapattah	4	3%
Brickell	4	3%
Broward	3	2%
Coconut Grove	6	3%
Coral Gables	97	44%
Cutler ridge	1	1%
Doral	2	1%
Edgewater	1	1%
Ft. Lauderdale	1	1%
Goulds	1	1%
Hialeah	2	1%
Homestead	1	1%
Kendall	7	5%
MIA	2	1%
Miami	58	25%
Miami Beach	3	1%
Miami Gardens	2	1%
Miami-Dade	5	1%
Miramar	2	1%
No Answer	70	32%
Opa Locka	1	1%
Outside Region	2	1%
Pinecrest	2	1%
South Miami	1	1%
Sweetwater	1	1%
West Miami	2	1%
Grand Total	281	100%



Coral Gables accounted for the majority of the employment locations of trolley users with Miami second. These two accounted for nearly half of the users. No other locale generated any significant number of employment among riders. Those not working were the next most significant category at about one in six.

Table 4-10 - Location of Employment

Location	Percent
Coconut Grove	1%
Coral Gables	38%
Don't Work	17%
Doral	0%
Hialeah	0%
Miami	10%
Miami Beach	0%
Miami Gardens	0%
Miami Springs	0%
Miami-Dade	1%
No Answer	26%
Outside Region	1%
Pinecrest	1%
South Miami	0%
Various	1%
TOTAL	100%*

*Note – Total does not equal 100% due to rounding.

Most trolley passengers make multiple trips to the downtown area each month. Survey data indicate that passengers make a total of more than 20 trips downtown each month, typical of full-time work. Figure 4-4 demonstrates this tendency as well as the number of riders who take even more trips downtown each month.



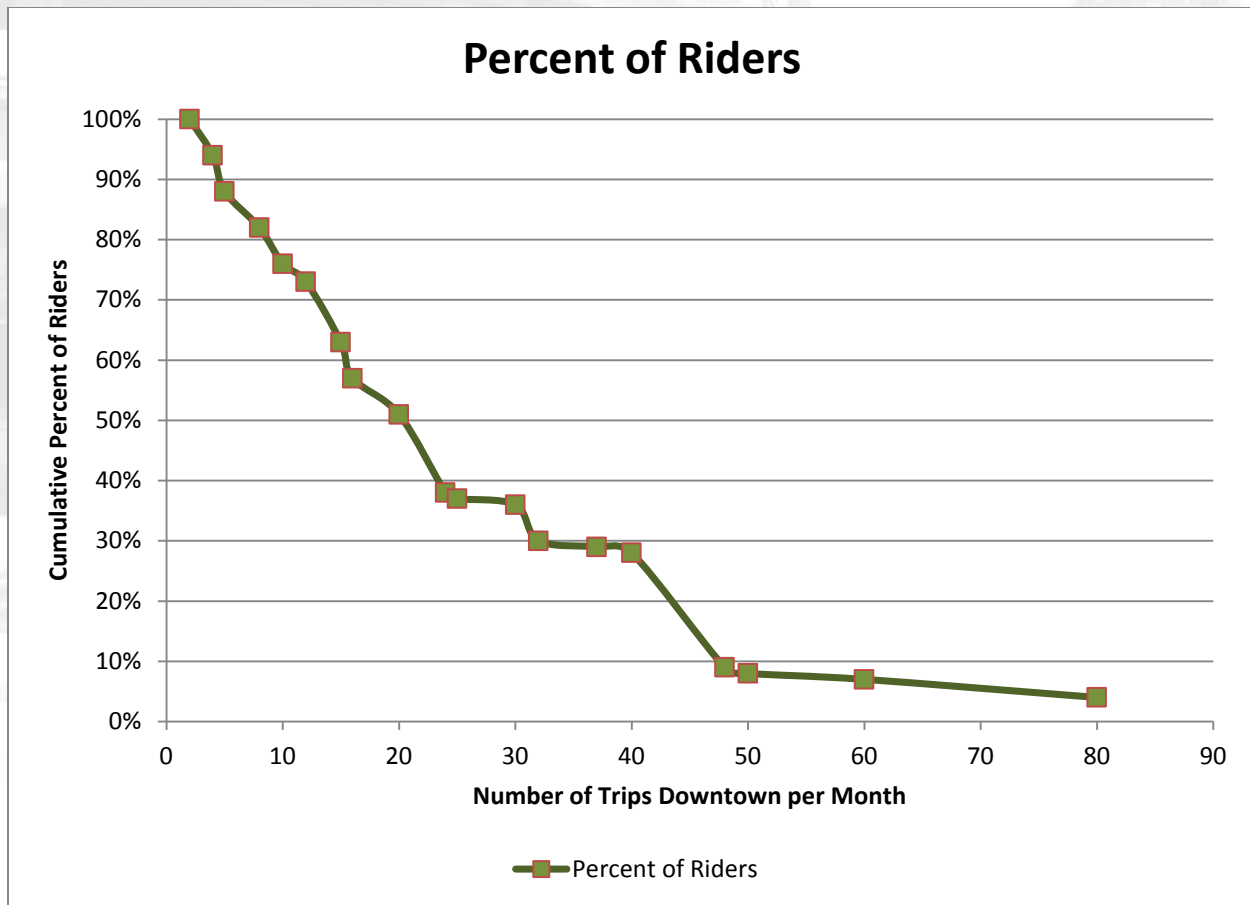


Figure 4-4 – Cumulative Frequency of Trips to Downtown Coral Gables

The survey indicates that most trolley passengers are frequent riders. More than half ride daily while another quarter ride several times a week. Table 4-11 presents these results. A small number of passengers reported riding for the first time.

Table 4-11 - Frequency of Trolley Use

How Often Do You Ride	Count of Frequency	Percentage
[No Answer Entered]	40	
Daily	131	54%
Several times a week	59	24%
Several times a month	27	11%
Rarely	14	6%
First time	10	4%
Grand Total	281	



Table 4-12 - Frequency of Trolley Use

Monthly Frequency of Use	Percent of Riders	Cumulative Percent of Riders
1	2%	2%
2	7%	9%
3	2%	11%
4	5%	16%
5	2%	18%
8	10%	27%
10	5%	32%
12	7%	39%
15	7%	46%
16	7%	53%
20	10%	63%
21	2%	65%
24	5%	70%
25	2%	72%
30	5%	76%
40	15%	91%
50	3%	94%
60	3%	97%
80	3%	100%

Table 4-12 indicates that the typical trolley passenger makes over 20 trips per month. Twenty percent use the trolley for 20 to 40 round trips each month.

Passengers participating in the survey freely shared their concerns regarding the service. Most significant is that more than half the respondents identified no issues (response of “No response” or “No problems”) and were generally satisfied with the service. The span of service, hours in the day and the fact that it does not operate on weekends were the next most significant issues mentioned. The quality of the service – too slow or not sufficiently frequent – were next. These responses, as shown in Table 4-13, represented more than 90 percent of the responses. Issues specific to a particular trip accounted for the remainder of the concerns.



Table 4-13 - Passenger Concerns with Trolley Service

Issue	Number	Percent of Responses
No response	153	47.5%
Doesn't run on weekends	55	17.1%
Not enough hours per day	38	11.8%
No problems	19	5.9%
Too slow	17	5.3%
Frequency of service	16	5.0%
Too crowded	8	2.5%
Quality of vehicles	5	1.6%
Customer behavior	2	0.6%
Quality of drivers	2	0.6%
Lack of passenger amenities at stops	2	0.6%
Cleanliness of vehicles	1	0.3%
Doesn't go where I need to go	1	0.3%
Quality of service	1	0.3%
Unreliable	1	0.3%
Too many stops	1	0.3%
TOTAL	322	

4.3. Trip Length Distribution

Based upon the reported trip origins and destinations of the passengers using the Trolley service, it was determined that the average trolley trip extends over about 1.4 miles. This is consistent with reported travel patterns and boarding and alighting counts that indicate that many passengers board at Douglas Road and the Publix at Flagler Street and alight in the vicinity of Miracle Mile. Fewer than 10 percent of the riders reported traveling a distance of one-half mile or less while about one quarter traveled up to one mile. Another quarter traveled over two miles; none traveled more than three miles.



4.4. Willingness to Pay a Fare

Riders were asked what fare they would be willing to pay for the trolley service that is currently free. Only 17 percent answered that they would be unwilling to pay a fare. Another 69 percent of the respondents were willing to pay fares of between \$0.25 and \$1.00 per trip. A number of respondents suggested that fare for non-residents should be charged or that the fare collection system should support transfer between the trolley and Miami-Dade Transit service. Figure 4-5 and Table 4-14 shows the results obtained for this question.

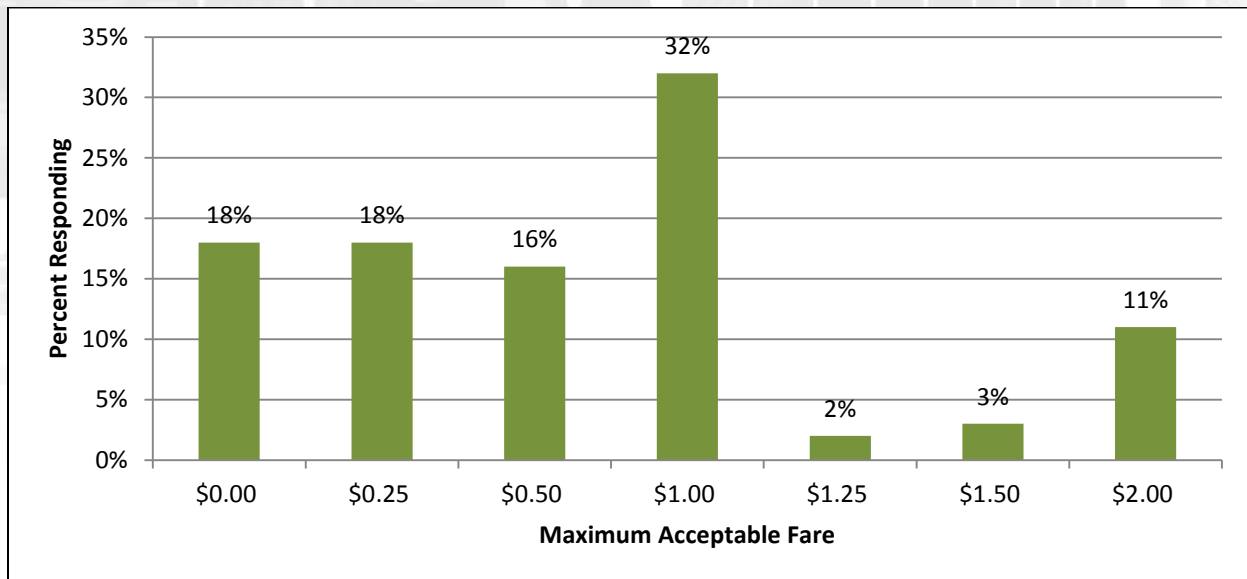


Figure 4-5 - Maximum Acceptable Fare

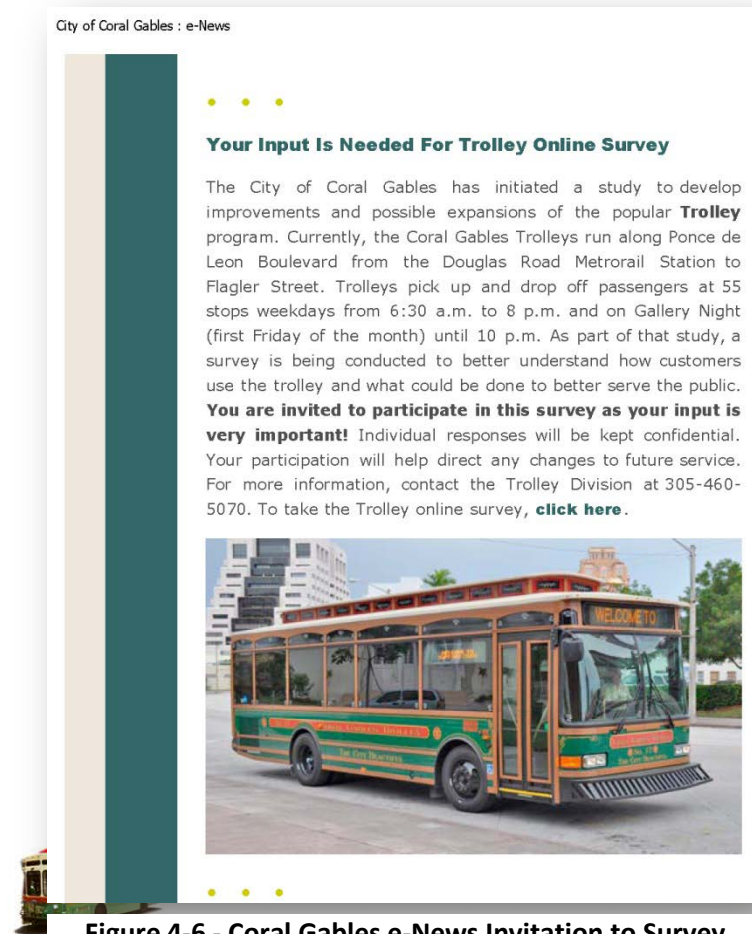


Table 4-14 - Tabulation of Maximum Acceptable Fare

Maximum Acceptable Fare	Number Responding	Percent Responding
\$0.00	33	16%
\$0.25	39	19%
\$0.50	37	18%
\$1.00	63	31%
\$1.25	3	1%
\$1.50	8	4%
\$2.00	21	10%
No response	77	
Grand Total	281	

4.5. City-Wide Survey

Between July 31 and August 25, 2013, residents of Coral Gables were invited to complete a survey regarding the trolley service. Participants reached the on-line survey by clicking a link in the article.



A total of 185 surveys were received and analyzed. The results of the survey are summarized in Appendix A. The following key findings were derived from the survey:

- Survey participants:
 - Nearly three-quarters of the respondents live within Coral Gables (Zip Code 33134 or 33146).
 - Three-fifths of the respondents live outside downtown Coral Gables while one-quarter live in downtown Coral Gables. Respondents from

Figure 4-6 - Coral Gables e-News Invitation to Survey

Broward, Miami, and elsewhere in Miami-Dade made up the remainder of those surveyed but presented no concentration of respondents.

- More than half the respondents work in Coral Gables with no other area receiving more than a handful of responses.
- Most respondents completed the survey the day the newsletter was published.
- Transit use:
 - More than half the respondents use the Coral Gables Trolley exclusively while another fifth used a combination of the trolley and Miami-Dade transit service. Overall, the respondents were transit users.
 - Most respondents used transit five or fewer times per month.
 - The primary reasons respondents said they did not use transit more frequently was that it does not go where they need to go, does not run on weekends, does not run over enough hours a day, is too slow, or is unreliable. Other responses were cited in just a few instances.
- Travel:
 - Most respondents traveled downtown on a weekly basis with nearly half citing five trips per week.
- Expansion of Service:
 - Respondents were fairly evenly distributed in wanting more service throughout the day although one-fifth cited no need for change.
 - Requests for service on the weekends were significant and greater than requests for service expansion during the weekday.
 - No new destination for service received more than 10 percent of the total responses but the top six destinations were: Biltmore Hotel, University of Miami, Miracle Mile, South Miami, Biltmore Way, and Venetian Pool. Other responses included locations throughout Coral Gables and even well beyond the city.
 - Most respondents said they would be willing to pay up to \$1.00. Only 20 percent said they would not be willing to pay a fare.

4.6. Senior Survey

During the month of May 2013, a survey was distributed to 800 adults over the age of 55 along with the Parks & Recreation Division quarterly program calendar. Participants were invited to complete and return a paper survey addressing the Coral Gables Trolley service. Surveys could be returned by mail or dropped off at the War Memorial Youth Center when participants of programs registered for activities. 42 responses were received and tabulated.



Coral Gables Trolley Survey



The City of Coral Gables currently operates trolley service along Ponce de Leon Boulevard between the Douglas Road Metrorail station and Flagler Street. Trolleys pick up and drop off passengers at 55 stops weekdays from 6:30 a.m. to 8 p.m. and on Gallery Night until 10 p.m. A master plan study is now under way that considers expanded hours of service, new routes, and changes to the existing route. Your answers to these questions will help to determine which improvements would best serve our community. Thank you in advance for your cooperation.

1. **Where do you live?** _____ (zip code)
2. **In what area do you live?** (please check one)
 Downtown Coral Gables ☐ Coral Gables outside the downtown ☐
 City of Miami ☐ Elsewhere in Miami-Dade County ☐
 Other _____ (please specify)
3. **Where do you work?** _____ (zip code)
 Downtown Coral Gables ☐ Elsewhere in Miami-Dade County ☐
 Coral Gables outside the downtown ☐ Other _____ (please specify)
 City of Miami ☐ Don't Work ☐
4. **How often do you use transit for trips in the vicinity of downtown Coral Gables?**
 (note all that apply)
 a. Coral Gables Trolley ☐ Number of times per month _____
 b. Miami-Dade Transit bus or Metrorail ☐ Number of times per month _____
5. **If you don't use transit, why don't you use transit?** (check all that apply)
 No good transit service ☐ Too expensive ☐ Buses/trains too crowded ☐
 Existing service is unreliable ☐ Other _____ ☐
6. **How many times a week do you travel to places in downtown Coral Gables?** _____
7. **For what purposes do you travel to downtown Coral Gables?** (check all that apply)
 Live downtown ☐ Work downtown ☐ Shopping ☐ School ☐
 Medical/Health Care ☐ Other ☐
8. **If trolley service were expanded where would you like it to go?** (List locations)

9. **At what times would you use additional trolley service?**
 Weekends: Morning ☐ Afternoon ☐ Evening ☐
 Weekdays: Morning ☐ Afternoon ☐ Evening ☐
10. **If Coral Gables were to charge a fare for use of the trolley what do you think it should be?**

Please return this survey to _____. For questions concerning this survey, please call us at (305) 460-5070.

Figure 4-7 – Citywide Trolley Survey



The following highlights were noted from the responses:

- Survey participants:
 - Three of five respondents live in Coral Gables (Zip Code 33134 or 33146). The remainder lived primarily in Miami or immediately to the west of Coral Gables. Fourteen percent reported Miami Beach as their home Zip Code.
 - Seven out of ten residents reported their home area as Coral Gables with another nine percent reporting Miami. Several other locations around the county were also cited.
 - Of those reporting a place of employment, only one in five cited Coral Gables while one in seven cited Miami. The other responses were scattered around the area.
- Transit Use:
 - Nearly two-thirds do not use transit for trips to downtown Coral Gables. One in five use transit ten or more times a month.
 - The most common reason for not using transit was that it didn't connect places they wanted to travel but only one in eight offered this reason. The remainder cited a variety of reasons suggesting the automobile or other mode was more convenient.
- Travel:
 - Half the respondents make at least one trip to downtown Coral Gables each week.
 - About one-third of the trips were for shopping and another 18 percent for medical purposes. Only 21 percent live or work downtown.
- Expansion of Service:
 - Respondents offered no consensus on where else the trolley might run. While one in eight suggested something along Miracle Mile, locations in and around Coral Gables all received some interest.
 - Similarly, respondents expressed interest in more service throughout the weekday and weekend.
 - Almost half the respondents wanted to maintain the free fare. Only three percent of the respondents would consider a fare of over \$1.00 appropriate.

4.7. Business Survey

Members of the Coral Gables Chamber of Commerce and Coral Gables Business Improvement District were invited to participate in an on-line survey on the trolley service through their respective newsletters.

Response to this invitation was minimal and so no results were derived from the survey.

Voice your Desires for the Trolley

The City of Coral Gables is conducting a study of improvements and possible expansions to the current trolley.



Currently, the Coral Gables Trolley runs along Ponce de Leon Boulevard between the Douglas Road Metrorail station and Flagler Street. Trolleys pick up and drop off passengers at 55 stops weekdays from 6:30 am to 8 pm and on Gallery Night (First Friday of the month) until 10 pm. As part of the study, a survey is being conducted to better understand how people use the trolley and what could be done to better serve the public. You are invited to participate in the survey by clicking on the link below. This will take you to a short on-line survey that will inform the study and help direct any changes to future service. Your participation is very much appreciated and the individual responses will be kept confidential. For further information, please call the Trolley Department at (305) 460-5070. [Trolley survey](#).



Figure 4-8 - Invitation to Participate in Business Survey

4.8. Fairchild Tropical Botanical Garden Survey

Members of Fairchild Tropical Botanical Gardens, numbering over 46,000, were invited to participate in the trolley survey. The response included only 25 surveys, suggesting minimal interest in the trolley and offering little ability to reach conclusions. Nevertheless, the findings from this survey are as follows:

- Survey Participants:
 - One-third of the survey respondents live in Coral Gables (Zip Code 33134 or 33146).
 - All of the respondents live within 20 miles of Coral Gables and only a few live more than 10 miles away.
 - Most respondents lived in Coral Gables or areas immediately adjacent to Coral Gables and also in Key Biscayne and Virginia Key.
 - The respondents all reported working in just nine Zip Codes with nearly half in Coral Gables. Several lived just north of Coral Gables (33126) and several south (33143, 33156, 33158) and west (33183, 33186).
- Transit Use:
 - About one-quarter of respondents make at least five trips downtown by transit monthly. Only five percent report making no transit trips downtown.
 - More than half of those trips are for dining or shopping with the remainder divided evenly between recreation and work.
 - Respondents were split over issues with transit. About three-fifths found the service unreliable or insufficiently frequent while the remainder expressed a lack of familiarity with the system or found that it was unavailable suggesting that they had never tried transit.
- Travel:
 - Only one in seven users made no weekly trips downtown. Two in five made at least a daily trip, on average downtown.
- Expansion of Service:
 - Miracle Mile was the most frequently desired destination (35%) followed by one-quarter who cited Fairchild Tropical Botanical Gardens.
 - Other suggestions for expansion of service was scattered around Coral Gables and also Coconut Grove and South Beach.
 - Desire for more frequent service or expanded hours was fairly evenly distributed across the weekdays and weekends.
 - Almost four-fifths of respondents were willing to pay a fair fare with about three-fourths of all respondents citing fares of up to \$1.00.



5. Project Goals & Objectives

Working with stakeholders and city staff identified earlier in this document, a statement on the goals and objectives for expanding and enhancing the current Coral Gables Trolley system was developed. The four project goals identified were:

- Serve residents, employers, and employees living and working in downtown Coral Gables to reduce traffic congestion and the demand for parking.
- Offer an alternative, low impact means for travel into downtown Coral Gables, reducing the number of automobile trips to and within Coral Gables.
- Enhance the economic vitality of Coral Gables businesses through the expansion of a quality trolley operation that serves the business community, workers, customers, students, and tourists.
- Expand and improve the existing Coral Gables Trolley system in a cost-effective manner, recognizing the constraints of funding, infrastructure, and vehicles.

The Coral Gables Trolley is viewed as an effective way to reduce traffic congestion downtown, while improving the quality of life and general experience within the downtown area. Extending the trolley to other parts of the city and even beyond the city limits would be advanced only in the context of this downtown focus.

The financial component to the trolley operation is an underlying reality. While today, the trolley generates no revenue for routine service it in fact reduces city revenue, encouraging people to use the trolley for trips downtown rather than drive and then park at city-owned garages or at metered parking spaces. As a practical matter, transit systems in the United States do not recover a significant share of their operating expenses through fares and so the Coral Gables system is comparable to other systems. Expanding the system however, would result in an increase in costs, which might not be covered even with a fare. The expansion of the system therefore should be done in a cost-effective manner and attentive to financial constraints.

Any expansion of the system should also be considered in light of the total trolley fleet and the staffing and facilities that keep the vehicles in operation. Adding vehicles for expanded service for example, would require not only additional funds to purchase, operate, and maintain the vehicle but would also require additional drivers, maintenance staff, and maintenance space to keep the trolleys running.

5.1. Financial Goals

Today, the trolley system operates with People's Transportation Trust funds of approximately \$1.3 million (Year 2013). Fares and parking revenues are potential sources for funding existing and expanded service and could be considered. Advertising, while frequently a potential source of transit revenue, rarely amounts to more than one or two percent of the total transit budget. Given the context of the current operations within an environment with a high level of attention to aesthetics, this approach might be difficult to justify.

5.2. Limitations and Constraints

Current operations require a maximum of six vehicles and so the fleet of eleven vehicles has the capacity to serve more frequently and over a broader geographic area.



6. Alternative Routes

Alternative routes were developed through discussions with stakeholders and consideration of potential markets. Several different expansions were proposed that would:

- Serve the downtown core;
- Expand the reach of the current trolley service to some new markets within Coral Gables;
- Extend service to destinations beyond Coral Gables.

These alternative routes were identified without regard for the hours of operation. It is recognized that some routes might operate along the same hours as the existing service while others might have shorter hours, longer hours, and/or include weekends.

6.1. Core Routes

Responding to the needs for service in downtown Coral Gables, the “core routes” would extend coverage over the downtown. Figure 6-1 shows these potential routes. Passengers could connect with service east and west of Ponce de Leon Boulevard and circulate on street north and south of Miracle Mile. The North Loop would extend the service area one block east and west of Ponce de Leon, to Salzedo and Galiano Streets. These streets offer a quicker route and also could serve passengers closer to LeJeune Road and SW 37th Avenue. This route could also serve the downtown south to Valencia Street and even the circle. All of these routes would allow transfers to and from the existing Ponce de Leon route.

6.2. Coral Gables Extension Routes

Four routes were developed to extend trolley service to the limits of the city (see Figure 6-2). The Riviera District and University of Miami have always been considered likely areas for transit given the high population and level of commercial activity. The Biltmore Hotel, a world renowned Coral Gables destination is used by guests and visitors to the hotel.

6.3. Other Extensions

Three routes were identified to connect Coral Gables with areas beyond the city or in the case of Fairchild Tropical Botanical Gardens, to the distant limits of the city. The Miami Intermodal Center (MIC) adjacent to the airport is four miles beyond the northern terminus of the existing trolley service and outside the city limits. Fairchild is four and a half miles beyond the southern terminus of the existing trolley route and Coconut Grove is a two-mile extension to the east. These alternatives are shown in Figure 6-3.

6.4. Preliminary Evaluation of Alternatives

Each of the candidate alternatives was subjected to an initial evaluation to compare between them. The basis for this evaluation was:

- Population and employment potentially served – Local circulator service like the Coral Gables Trolley typically draws from a market of approximately one-quarter mile from the route. This is typically a comfortable five minute walk and is consistent with frequent service covering relatively short distances. The total population and number of jobs within one-quarter mile of the proposed alignment was calculated from recent U.S. Census data to estimate the market that might be served. This is not to suggest that the entire market would choose to ride the trolley or that those living and working beyond this range might not choose to ride, but serves as



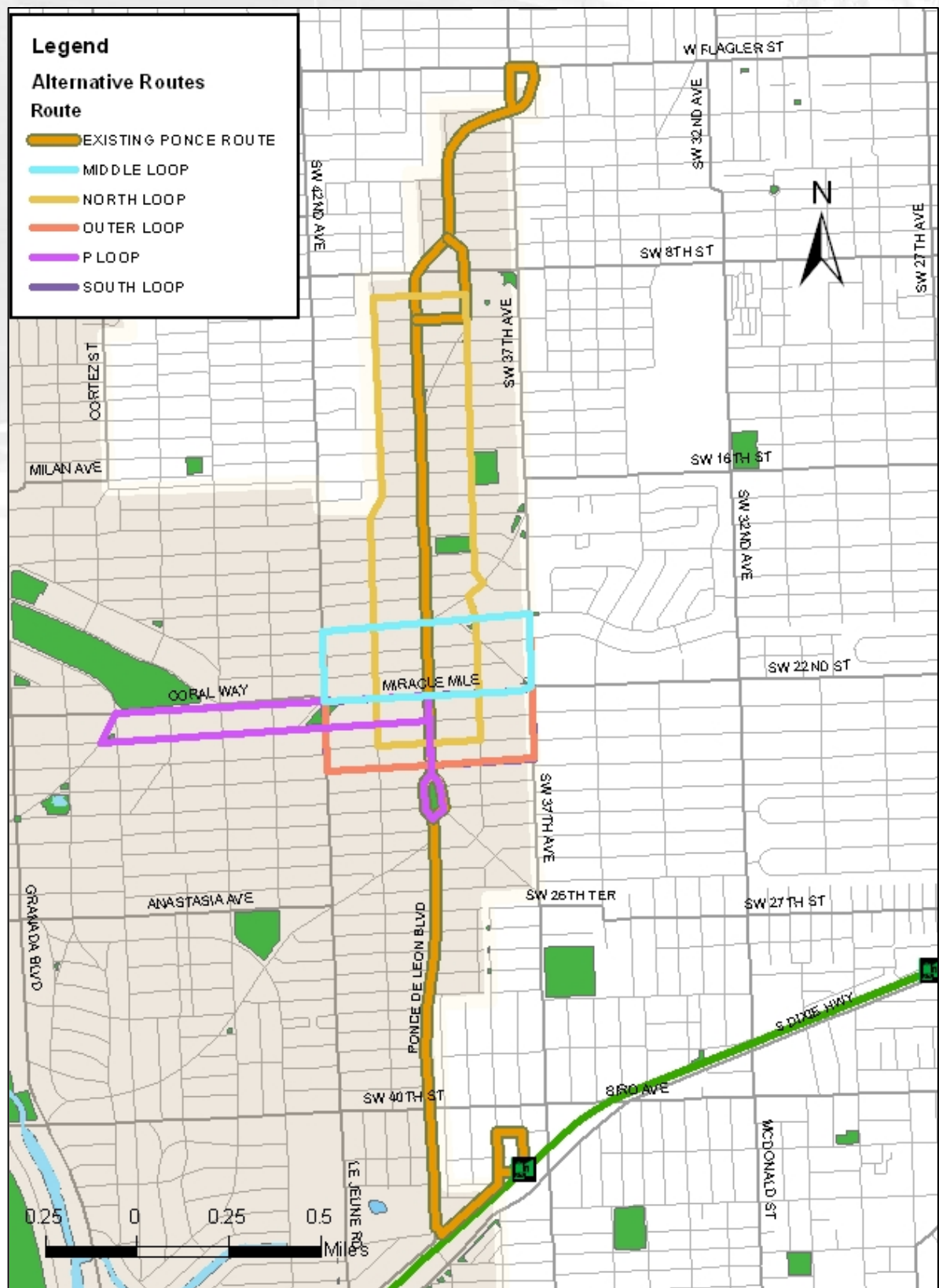


Figure 6-1 - Alternative Core Routes



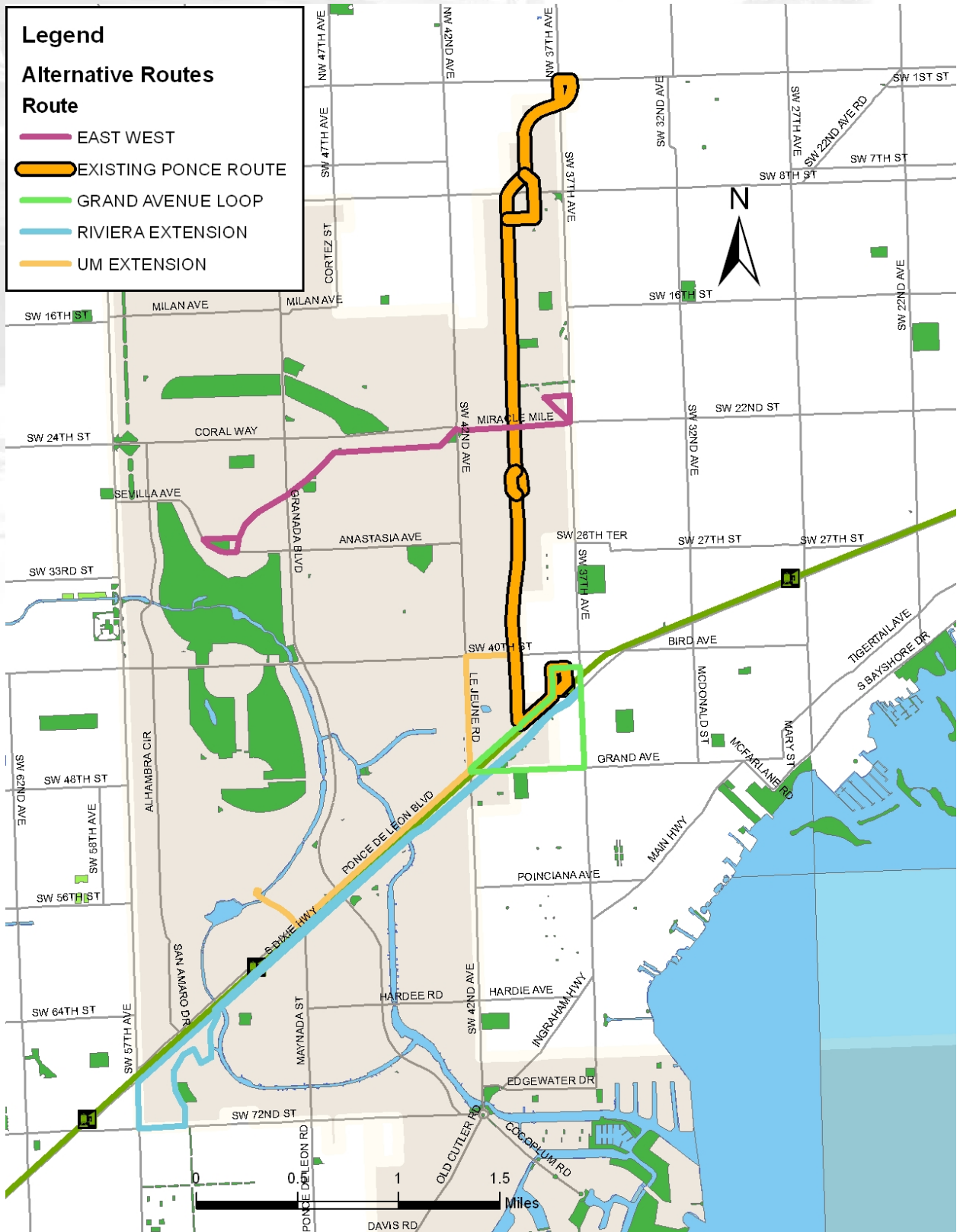


Figure 6-2 - Alternative Extension Routes





a basis for comparison. Population and employment already within one quarter mile of the existing trolley service was not included in this calculation.

- Population and employment per mile – One measure of route efficiency is the market served per mile. Longer extensions otherwise, will tend to serve a larger market than shorter routes while not necessarily being as cost-effective.
- Cost to serve the potential market – Using the current operating costs for the trolley, it is possible to estimate the cost to operate a single run of each route. Using this cost allows a basis for comparison, recognizing that headways and hours of operation might vary from route to route. Dividing the potential market into the cost allows for a comparison of the relative cost to serve the new market.
- Extent to which it services downtown vs. markets at the ends of the proposed routes – Many of the routes respond to the stated goal of serving downtown Coral Gables. Several routes serve destinations at the ends of the proposed routes (e.g., Airport, Fairchild Tropical Botanical Gardens). While these routes do pass through populated areas, their primary focus is the termini. This was noted in the evaluation.
- Whether the service would compete with existing Miami-Dade Transit service – Sixteen Miami-Dade Transit bus routes currently operate in the vicinity of Coral Gables, using the same streets on which proposed trolley service could operate. Generally, Miami-Dade Transit has withdrawn service where service is implemented by a local jurisdiction. While the locally-operated service may be better suited to the local market, it does not result in the same increase in transit service that might otherwise occur were MDT to leave their routes in place. It can be expected that just as MDT removed service from Ponce de Leon Boulevard when the Coral Gables Trolley was implemented, that service on other streets might also be eliminated.
- What portion of the total service would be outside of the city limits of Coral Gables – The terms of the PTP funds received by the city require that 70 percent of the service operate within the city limits. The calculation of service within the city could be pro-rated by number of hours so that a part-time extension outside of the city would weigh less than a full time extension.

Table 6-1 compares the various alternative routes with the existing Ponce de Leon Boulevard Route. The current route operates within one-quarter mile of some 66,700 residents and employees, more than 9,500 per mile. The length of the run, operating on congested streets, results in a cost toward the higher side versus other alternatives. The large market however, results in a relatively low cost per potential passenger.

And while Ponce de Leon Boulevard at certain times experiences heavy traffic, the four-lane configuration results in fairly reliable service and an absence of frequent, recurring congestion. The existing route clearly serves an intermediate market, from Douglas Road Metrorail station in the south to the Publix off of Flagler Street, in the north. While these termini represent major markets, the entire length of the route is used by passengers.

The Coral Gables Trolley does not directly compete with MDT bus service but numerous routes pass east-west through the city and operate on LeJeune and Douglas Road, offering alternative bus routes.

One hundred percent of the current Coral Gables Trolley route lies within the city limits.

A comparison with some of the other alternative routes indicates that each has strengths and weaknesses but none does as well across the various evaluation measures as the current service. The current trolley serves a market more than triple the next highest route. It serves nearly



Table 6-1 - Evaluation of Alternative Routes and Extensions

Route	Potential Market	Population & Employment Per Mile	Cost per run	Cost per potential 1,000 riders served	Serves Downtown Users	Traffic Barriers / Reliability	Terminal / Intermediate Market	Competing MDT Routes	Percent Outside City
AIRPORT CONNECTION	21,600	2,100	312.84	14.48		Long	Terminal	Yes	19%
BILTMORE EXTENSION	5,900	1,700	104.28	17.67		Okay	Terminal	Yes	0%
EAST WEST	9,300	2,200	128.48	13.82		Okay	Terminal	No	0%
EXISTING PONCE	66,700	9,500	210.06	3.15		Okay	Intermediate	Yes	0%
FAIRCHILD	7,800	900	258.16	33.10		Long	Terminal	Yes	6%
GRAND AVENUE LOOP	4,300	2,300	56.47	13.13		Congestion	Terminal	Yes	9%
GROVE	11,900	3,600	98.60	8.29		Congestion	Intermediate	Yes	44%
MIDDLE LOOP	5,200	3,800	40.94	7.87		Okay	Intermediate	No	0%
NORTH LOOP	4,600	1,500	92.63	20.14		Okay	Intermediate	No	0%
OUTER LOOP	7,700	3,800	60.06	7.80		Okay	Intermediate	No	0%
P LOOP	5,200	2,300	66.63	12.81		Okay	Terminal	No	0%
RIVIERA EXTENSION	20,500	3,400	177.79	8.67		Congestion	Terminal	Yes	2%
SOUTH LOOP	6,900	5,000	41.23	5.98		Okay	Intermediate	No	0%
UM EXTENSION	10,700	3,500	90.54	8.46		Congestion	Terminal	No	0%
LE JEUNE EXTENSION	5,400	1,200	133.26	24.68		Congestion	Terminal	Yes	8%

twice as many passengers per mile though with a higher than average cost. Because of the large market, the existing route is less expensive per potential passenger than the next lowest by half.

Several routes would need to contend with traffic congestion during peak periods and many serve primarily a terminal market rather than an intermediate market, more typical of circulator service. Many of the routes duplicate MDT service. Only the Grove route option is significantly outside of Coral Gables; the MIC route also travels outside the city.

6.5. Recommendations for Further Analysis

Based upon the surveys of riders and potential riders, discussions with stakeholders, and analysis of the existing system, land use, and travel behavior, several areas present themselves for further examination.

First, the downtown area, the most dense part of the city, would benefit from the expansion of the trolley beyond the limits of Ponce de Leon Boulevard. As intended, the current route serves more as means of bringing people to the downtown and less as a means of circulating within the downtown. While many passengers use the route for trips up and down Ponce de Leon, they are limited in their ability to travel by trolley east and west and therefore choose to drive. A frequent request of those contacted through the on-line surveys indicated a desire for east-west trolley service.

Such a service might operate on different headways than the current service – more frequent might be appropriate – and might operate for only a portion of the day. For example, a midday service (11:30 a.m. to 2:30 p.m.) would support lunchtime dining and shopping. An evening service, for example from 5:00 p.m. to 9 p.m. or 10 p.m. would support evening activities. On this latter possibility, operating past 8:00 p.m. would mean that passengers could not use the current service and so the market for such service would be reduced once the existing trolley stops running.

Consideration for a single loop (e.g., clockwise around the downtown) versus two-way (one vehicle running clockwise, a second running counter-clockwise) would need to be made. Starting with one loop and later adding the reverse direction would be another possibility and would have implications for routing.

The second area warranting further investigation would be to connect the University of Miami to downtown Coral Gables. An extension of Hurry Cane service to a point that would allow passengers to transfer to the Coral Gables Trolley, perhaps in the vicinity of Merrick Park, itself a destination, could connect with the existing trolley and facilitate travel to downtown Coral Gables.

The third area to investigate would be a passenger information system that supplies next bus information to passengers. Reliability was frequently cited as an issue by some passengers and potential passengers. Because the trolleys at times need to contend with traffic, reliability is by necessity reduced. An information system that offers real-time status of approaching trolleys would permit riders to plan their trip accordingly, perhaps waiting indoors in a climate-controlled environment before continuing to the street to board the trolley. Passengers might also choose to adjust their travel schedule, adding an errand or skipping a detour before walking to a trolley stop.

Next bus information is typically supplied in electronic displays at the stops. Because Coral Gables does not place shelters at the stops, no good place for mounting such equipment is available. Furthermore, the cost of installing and maintaining such equipment could be relatively high. Alternatively, smart phone technology exists to supply the same information directly to the rider. A rider could consult the Coral Gables Trolley app and know where the next approaching vehicle is or when it will arrive at a given stop. However, this approach may not be feasible because not all users necessarily carry smart phones.

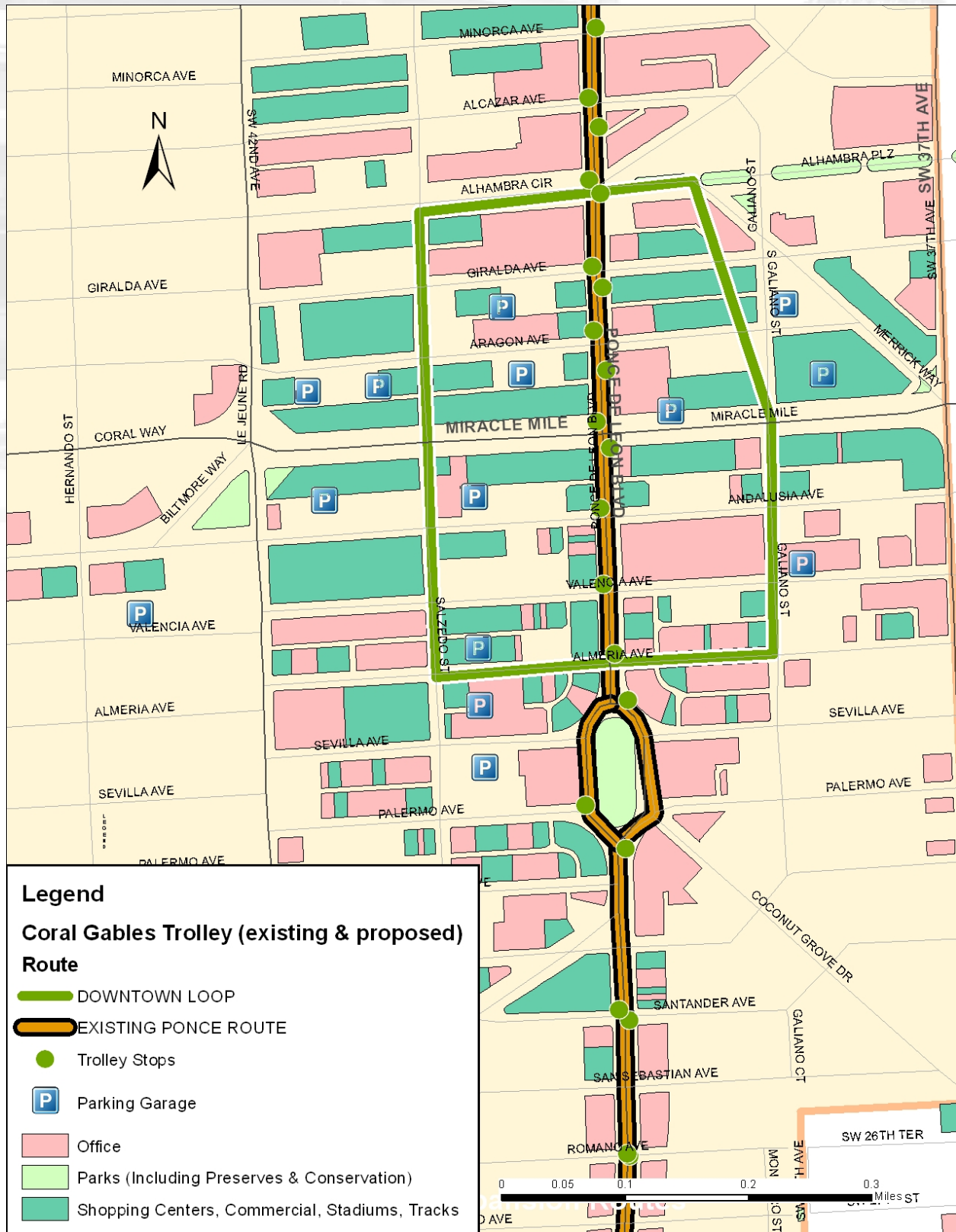


Finally, reliability, on-time performance, and speed of service were frequently cited as issues of concern by passengers and potential passengers. Traffic signal priority (TSP) has the potential to reduce delay to trolleys at intersections and has been successfully implemented elsewhere in Miami-Dade County and around the country. Under TSP, a trolley approaching a traffic signal can cause the signal to turn green earlier than the normal signal cycle would produce or delay the change to red to allow the trolley to pass. TSP typically operates within 10 or 15 seconds of when the signal would otherwise change. It can also be applied only when a trolley is operating behind schedule. The complexity of the system is partially dependent on the equipment in the traffic signal controller cabinet and the software and hardware associated with the trolley operation. Because Coral Gables operates only five vehicles in each direction per hour, the adverse impact on general traffic should be minimal while the benefit to the trolley service can be substantial.

TSP can be applied to only critical locations or to all signals on the trolley route. Trolley stop location should be considered as part of any TSP implementation. TSP is most effective when stops are located on the far side of an intersection so that a trolley does not need to stop for passengers and then for the signal.

The on-board surveys and surveys of the general and special public markets indicated an interest in extending the hours of operation. The common request for additional or more frequent service (in the case of existing service) was for Saturday mornings and afternoons. Running the current route on Saturday mornings would meet this apparent demand albeit without responding to a need to address traffic, more of an issue during the week.





7. Detailed Recommendations for Coral Gables Trolley System

This section describes the recommendations in greater detail. The sections below also present the costs for implementation of the relevant systems and changes. The City should consider implementing the recommendations as the City deems appropriate and as funding is made available. In each case, some additional study would be warranted if the city decides to proceed with these recommendations.

7.1. Description of Downtown Loop Service

Residents, workers, and visitors could benefit from an expansion of the existing trolley system to cover the downtown area. Those making short trips during the weekday, particularly during the midday, could readily make use of a frequent service that passes through the downtown core. The key to a successful downtown loop would be:

1. To find a route that could operate on streets with a minimum of traffic congestion, so as to be able travel efficiently through the area;
2. To cover most of the downtown core, operating within one-quarter mile of downtown origins and destinations, so as to extend the range that an individual could cover during a lunch hour or other brief time period; and
3. To limit the overall length of the route so as to increase the reliability of the service.
4. Pass parking garages and lots so as to serve as a parking shuttle service.

Downtown Coral Gables covers an area of approximately one-half mile by one-half mile (as reported by the city Planning and Development Department GIS files). Within the center of this area, bounded by LeJeune Road, Almeria Avenue, Douglas Road, and Navarre Avenue is included the limits of the Coral Gables Business Improvement District (BID). This area would be the target service area and a trolley could offer a travel time benefit over walking.

Figure 7-1 shows a proposed routing through the downtown that follows Salzedo Street, Alhambra Plaza, Galiano Street and Almeria Avenue. This 1.1 mile downtown loop would operate largely unimpacted by downtown traffic; Miracle Mile, LeJeune Road, and Douglas Road would be alternative streets but each faces frequent peak period congestion, which would make the trolley service less reliable.



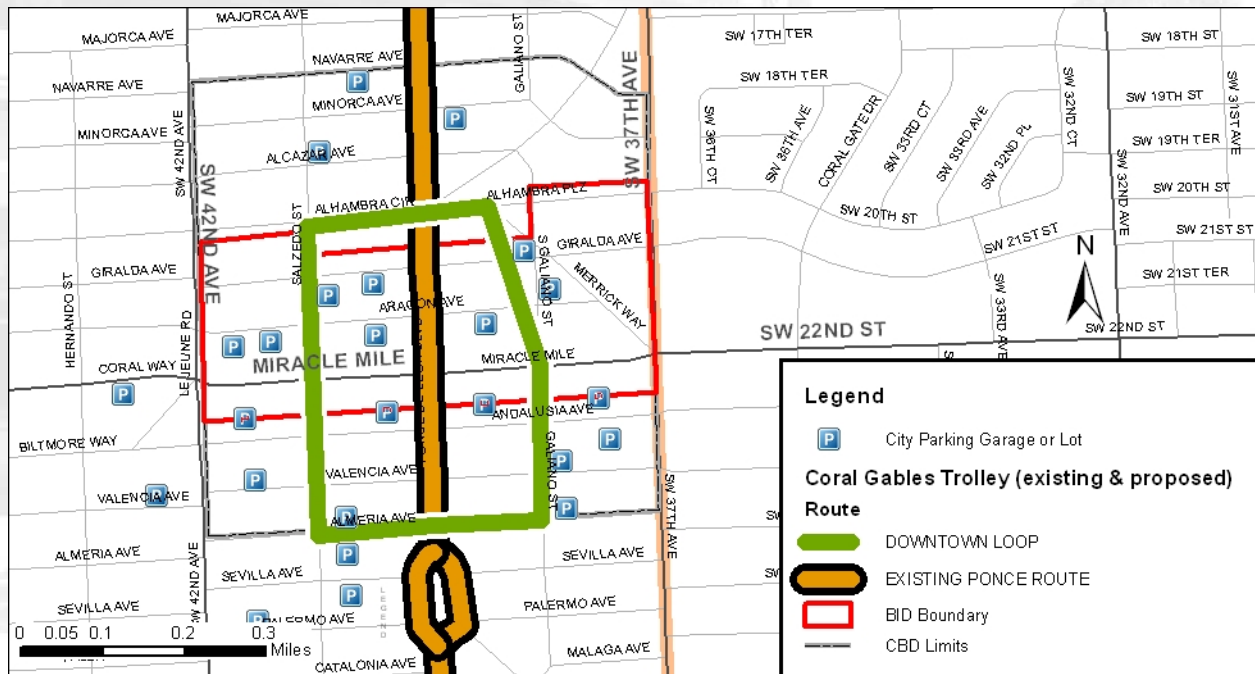


Figure 7-1 – Proposed Downtown Loop Route

A headway of approximately six minutes is proposed for the service. Considering the time to walk to a trolley stop (a distance of up to one-quarter mile), wait for the trolley (an average of three minutes on a six-minute headway), and walk from the trolley stop to the destination (again, no more than a quarter-mile), the trolley would be competitive with simply walking for distances of 800 feet or more. Certainly, some pedestrians would hop on a passing trolley and others might simply choose to wait rather than walk but on average, the trolley would facilitate many downtown trips.

The trolley could operate as a single clockwise or counter-clockwise loop. While this would be a lower cost than two routes, one clockwise and the other counter-clockwise, the disadvantage of such a configuration is that either the initial trip could be considerably longer or shorter than the return. A trip from the corner of Almeria Avenue and Salzedo Street to Miracle Mile and Salzedo Street on a service operating clockwise, would be very quick but the return would require travel around the entire downtown. If a single direction was chosen however, the clockwise route would require the trolley to make only right turns, which can be executed more quickly than left turns. In addition, westbound lefts from Alhambra to Salzedo are currently prohibited in the peak periods. A turn prohibition exemption would need to be made for trolley vehicles.

A clockwise and counter-clockwise loop operating on six-minute headways for each direction is recommended for this service. The service would be operated between 11:30 a.m. and 2:30 p.m. to facilitate midday shopping, dining, and also any business activity during those hours. Clearly longer hours, as well as evening hours are possible but this time period would be the appropriate start for such a service.

The service could be operated with four vehicles. Adding this requirement to the peak requirement for the Ponce service would result in a need for ten vehicles, one fewer than the current trolley fleet. This could result in insufficient spare vehicles and the purchase of one additional vehicle might be warranted. Table 7-1 summarizes this calculation.



Table 7-1 - Fleet Requirement for Downtown Loop

Factor	Statistics
Route length	1.1 miles
Average speed	7.5 mph
Running Time	8.8 minutes
Headway	6 minutes
Vehicles required	4

The current operating costs for the trolley system were applied to this proposed operation. The daily cost of this operation, would be approximately \$700. The annual cost for five-day a week service would be approximately \$176,000.

Table 7-2 - Operating Cost for Two-Way Loop (11:30 a.m. to 2:30 p.m.)

	Vehicle Hours	Vehicle Miles	Total Cost
Units	12.00	90.37	
Unit Cost	\$29.37	\$3.58	
	352.43	323.42	
Daily Cost	\$700		
Annual Cost	\$176,000		

7.2. University Connection

The University of Miami, with a population of students, faculty, and staff, would appear a natural point to connect the Coral Gables Trolley system. Hurry Cane shuttles transport students around the campus and to other campuses, shopping and entertainment centers, the airport and SunLife Stadium. Frequently cited in the surveys conducted for this project, a connection would allow the UM population to work, shop, dine, and conduct other business in downtown Coral Gables.

Private-sector residential development within a mile of campus has increased significantly in the past five years with the renovation of the Cloisters and the construction of Red Road Commons, the Valencia apartment complex, and various other projects in the nearby South Miami and Merrick Park areas. The University estimates that more than 1,500 students are now living in the vicinity and are either walking, biking, or using public transit to get to the campus.

The University offers considerable bus service between the camps and surrounding areas. The Ibis Ride Shuttle, serving over 13,600 riders annually, operates on Thursday and Friday nights from 9 p.m. to 2 a.m. between the Coral Gables campus (University Village and Stanford Circle) and Coconut Grove. The Sunset Shuttle, serving over 28,100 students annually, operates Thursdays and Fridays from 5 p.m. to 2



a.m., Saturdays 12 p.m. to 2 a.m., and on Sundays from 12 p.m. to 6 p.m. The shuttle operates from Merrick Drive and Stanford Circle. After the pickup, the shuttle proceeds to the corner of Mariposa Court and Madruga Avenue and offers service to the many retail locations on the east side of US 1, including supermarkets, restaurants and South Miami's Shops at Sunset Place. Recreational shuttles are also provided to all home football games for the University community, from the campus to SunLife Stadium. Shuttles are also used for day trips to nearby area destinations as part of programmed activities for students. During campus breaks and at the end of each semester, University shuttles provide transportation to the Miami and Fort Lauderdale airports for students traveling home.

Just as the current University transit service circulates on campus and connects with Coconut Grove, a similar arrangement for connecting to downtown Coral Gables warrants further investigation. The Hurry Cane Stanford Express (Green) line travels every six to eight minutes on class days and 15 to 20 minutes at other times. It operates during the hours of 7 a.m. to midnight during the spring and fall semesters and 7 a.m. to 7 p.m. during the summer. This 1.7 mile route facilitates travel from parking and other locations around the campus.

An extension of the current route to the vicinity of Merrick Park would offer a direct connection for the UM community to a major shopping/dining/employment destination. It would also allow for the continuation of a trip to downtown Coral Gables, transferring to the Coral Gables Trolley at San Lorenzo Avenue.

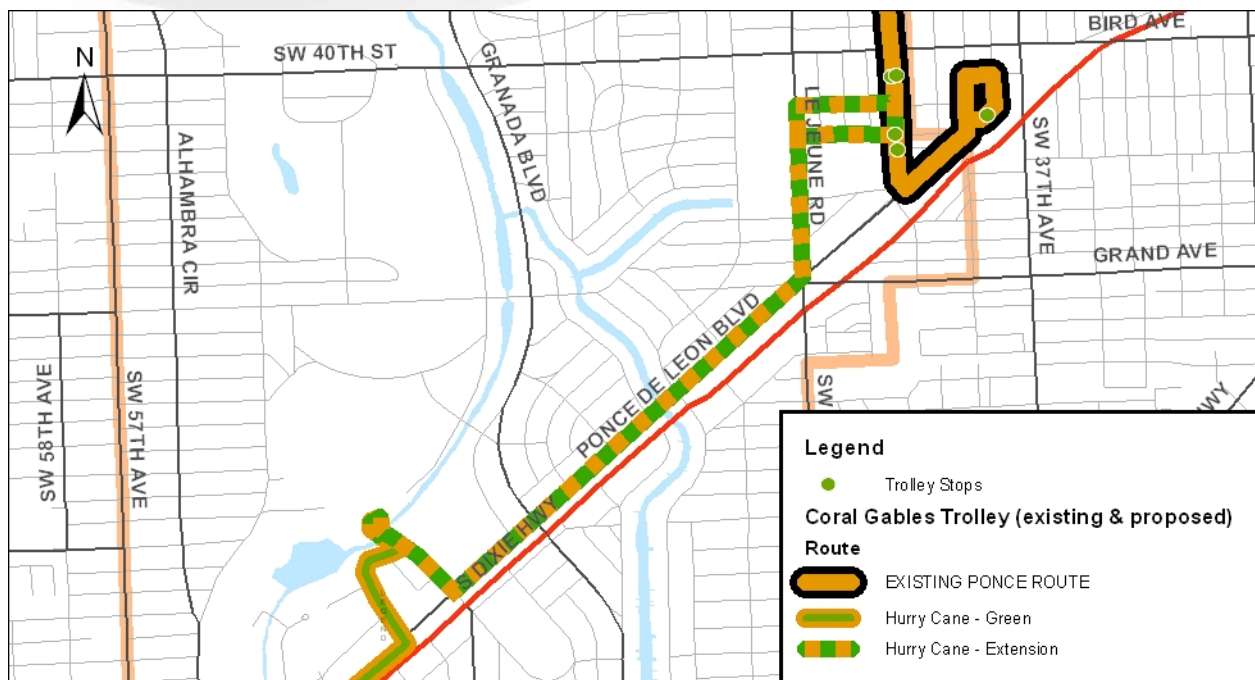


Figure 7-2 - Proposed University Connection

Service for the Merrick Park connection would be appropriate starting in the late morning and continuing into the evening consistent with the Coral Gables Trolley. Operating on six-minute headways (or twelve-minutes if alternate runs of the route that terminates at Stanford Circle continued to Merrick Park) would permit a reasonable wait between transferring from one vehicle to the other.



The 2.2-mile route could be traversed in 11 minutes, traveling at 12 mph over Ponce de Leon Boulevard and several smaller roads. The shuttle could stop in the vicinity of the Pearson Residential College and/or Mahoney-Pearson Garage, at the intersection of Ponce de Leon Boulevard and Le Jeune Road and then terminate on San Lorenzo Avenue at Merrick Park. Placing the stop near Le Jeune Road would facilitate a transfer to the Coral Gables Trolley for those transferring to the downtown service.

7.3. Passenger Information System

Real-time passenger information systems can inform riders of the proximity of a trolley and the expected time of arrival. The recommended passenger information system uses GPS technology and a proprietary algorithm that incorporates historical travel data to track vehicles and predict vehicle arrival time. By taking into account the actual position of the buses, intended stops, and typical traffic patterns, the system can estimate vehicle arrivals with a high degree of accuracy. This estimate is refreshed constantly to provide riders with up-to-the-minute information.

Transit riders can get next bus information from a variety of sources – through the internet to mobile devices such as smart phones and tablets, computers, and wayside signs found at bus shelters and transit depots. Arrival information can be received by text through subscription.

The earliest next bus information systems were installed in the late nineties and are now common in many systems around the country. The basic platform links the GPS information for the bus back to a central data center and then broadcast through multiple means to the passenger.



Figure 7-3 - NextBus Passenger Information System Information Flow

The data can also be shared with outside software developers, for use in creating additional real-time applications for mobile devices. Free apps are available to the public on major mobile device software platforms (iPhone/iPad, Android, Windows Phone, Palm). The information can also be displayed at stops through LED displays.

Under a basic system, passengers could access a web site or app on a smart phone to get a real-time report on when the bus closest to the stop will arrive. A local phone number can be called for a similar report or a request to receive a text. QR codes can be installed on the bus stop pole allowing a smart phone user with the appropriate QR-reading app to log into the next bus information without having to enter a web site or have an app loaded on their device. Small signs on the pole can show the URL for the next bus information.

The cost for a NextBus (a proprietary vendor and representative of these systems) is approximately \$56,000 for hardware and implementation. Annual operating costs are approximately \$14,000. A breakdown of these costs is shown in Appendix D. This investment allows expansion in several directions. First, the system can be integrated with a traffic signal priority system discussed later in this report. Second, information for the next bus system can be displayed on LED displays. Given the lack of



infrastructure at Coral Gables trolley stops, displays at Douglas Road Metrorail station and Publix could be housed under cover. Additional displays at the stops closest to Miracle Mile would along with the other two stops, offer information to the greatest number of passengers for the fewest number of installations. LED displays would cost approximately \$4,000 each. Free-standing kiosks are also possible although probably not warranted given the relatively low number of boardings at any individual station.

The NextBus system can also be incorporated in an automatic passenger counter system to give real-time, ongoing information on passenger activity. The system can also be used to link passengers to Wi-Fi and report back engine operating information to the dispatcher. The system can also be used to announce stops as the trolley approaches. While these features are all attractive, they are not recommended at this time.

7.4. Traffic Signal Priority

The existing Coral Gables Trolley route passes through 22 traffic signals. Traffic signals are maintained by Miami-Dade County and set to manage the flow of general traffic on the streets. Generally, the signals are set to minimize total delay for all traffic approaching from all directions. In some cases, the signals may be timed to permit traffic moving at a pre-determined speed to travel along the route with a minimum of stops. The signal system is not set to facilitate the flow of transit vehicles, which because they stop at bus stops along the route, pausing for varying lengths of time depending upon passenger activity. Travel signal delay therefore, can be a significant source of delay to the Coral Gable trolleys.

Traffic signal priority (TSP) is a technology that either advances the green signal or delays the red signal in accordance with a predetermined set of rules. In its simplest form, a bus approaching a signal within 10 or 15 seconds of the normal phase change from red to green will initiate that phase change earlier, permitting the bus to pass through the intersection without having to wait for the normal change in signal. Similarly, the system can extend the green time, delaying the red phase for 10 or 15 seconds so that the bus can pass through the intersection without stopping.

Because the change in normal signal timing can have an adverse impact on general traffic – prolonging the green in one direction similarly prolongs the red in the intersecting direction – resulting in longer delays and traffic queuing on the cross streets and within dedicated turn lanes (e.g., left turn lanes with separate turn phases). TSP therefore, may be limited, requiring several signal cycles between activation to permit the flow of traffic to “recover” from the effects of the preemption.

Some transit systems that have employed TSP limit its use to those buses that are traveling behind schedule. Generally, transit service follows a schedule and an early arrival can be as problematic as a late arrival for passengers waiting at a stop. While an early arrival can translate into a shorter trip for those on the bus, it can mean missing the bus by not arriving at the stop on time and therefore having to wait for the next bus.

The Coral Gables service operates every 12 to 15 minutes and so 6 to 8 minutes in the two directions. Signal preemption of 10 to 15 seconds for this frequency would not have an adverse impact on the general flow of traffic.

Preemption could however be limited to vehicles running ahead of schedule so as to avoid a bunching of the vehicles.



Figure 7-4 - Representation of Traffic Signal Priority System



Employing a GPS-based traffic signal priority in conjunction with a bus location system would result in economies as the vehicle tracking system could serve both functions. For example, a \$20,000 vehicle tracking system (software and hardware) could track buses. With approximately \$2,000 network-connected control devices at each signal location, the location of the bus and even status (running behind, on, or ahead of schedule) could be transmitted to the signal controller and apply the appropriate response. Buses running late for example could receive an advanced green or delayed red while those running ahead of schedule or on time would not.

Maintenance costs for the system would also be reduced under a single system. Maintenance costs could run \$400 to \$800 per month and would cover repair or replacement of the controller equipment.

The benefits of traffic signal priority have been in the range of a four to almost ten percent reduction in travel time, depending on field conditions. For Coral Gables, more important than the travel time savings however would be the increase in reliability and the avoidance of “bunching” of vehicles along the route. It is recommended that additional study be conducted to establish the ability of the current signal system to include traffic signal priority. This would include the physical and managerial issues associated with the system as the traffic signal system is operated by Miami-Dade County. Further discussion and evaluation would also identify the specific requirements of a traffic signal priority system.

7.5. Operations and Management Plan

The current Coral Gables Trolley operation is comprised of a combination of private and public sector elements. The capital assets – vehicles, maintenance facility, and station amenities – are city-owned. The maintenance personnel are city Department of Public Works personnel. Operations are managed by a private contract manager who oversees private contract drivers. The city has direct oversight through a city-employed trolley manager under the direct supervision of the Parking Division management staff.

This structure is common to other small cities in the region. City-owned equipped operated by a private operator to minimize the typically higher costs of Miami-Dade Transit service, customized service to meet local needs, and reliance of outside expertise to avoid the need for expanding municipal staff in a specialized area outside the typical range of expertise for a municipality.

No change in the current operating configuration is recommended even with the modest expansion of the trolley system recommended in this study.



Appendix A

Summary of City-Wide Survey Results Survey Conducted Commencing on July 31, 2013



Coral Gables Trolley Survey



The City of Coral Gables currently provides trolley service along Ponce de Leon Boulevard between the Douglas Road Metrorail station and Flagler Street. Trolleys pick up and drop off passengers every 10 to 15 minutes at 55 stops weekdays from 6:30 a.m. to 8 p.m. On the first Friday of every month, service is extended until 10 p.m. to serve visitors to the galleries along Ponce de Leon Boulevard on Gallery Night. A master plan study is now under way that considers expanded hours of service, new routes, and changes to the existing route. Your answers to these questions will help to determine which improvements would best serve our community. Thank you in advance for your cooperation.

1. **Where do you live?** _____ (zip code)
2. **In what area do you live?** (please check one)
Downtown Coral Gables ☐ Coral Gables outside the downtown ☐
City of Miami ☐ Elsewhere in Miami-Dade County ☐
Other _____ (please specify)
3. **Where do you work?** _____ (zip code)
Downtown Coral Gables ☐ Elsewhere in Miami-Dade County ☐
Coral Gables outside the downtown ☐ Other _____ (please specify)
City of Miami ☐ Don't Work ☐
4. **Do you use transit for trips in the vicinity of downtown Coral Gables?** (check all that apply)
Coral Gables Trolley ☐ Number of times per month _____
Miami-Dade Transit bus or Metrorail ☐ Number of times per month _____
What is the purpose of the trip to those places? _____
5. **If you don't use transit, why don't you use transit?** (check all that apply)
No good transit service ☐ Too expensive ☐ Buses/trains too crowded ☐
Existing service is unreliable ☐ Other _____
6. **How many times a week do you travel to places in downtown Coral Gables?** _____
7. **During what time periods would you want more frequent trolley service?**
Weekdays: Before 11 a.m. ☐ 11 a.m. to 2 p.m. ☐ 2 p.m. to 8 p.m. ☐ No change ☐
8. **During what time periods would you want additional service (e.g., later into weekday evenings or on weekends)?**
Weekends: Before 11 a.m. ☐ 11 a.m. to 2 p.m. ☐ 2 p.m. to 8 p.m. ☐
Weekdays: After 8 p.m. ☐ No change ☐
9. **If trolley service were expanded to new routes where would you like it to go?** (List locations)



Coral Gables Trolley Survey



10. If trolley service were expanded to the locations you listed above at what times would you use the additional trolley service?

Weekends: Before 11 a.m. ☐ 11 a.m. to 2 p.m. ☐ 2 p.m. to 8 p.m. ☐ Not applicable ☐

Weekdays: Before 11 a.m. ☐ 11 a.m. to 2 p.m. ☐ 2 p.m. to 8 p.m. ☐ Not applicable ☐

11. If Coral Gables were to charge a fare for use of the trolley what do you think it should be?

For questions concerning this survey, please call us at (305) 460-5070.



1. Where do you live? _____ (zip code)

Home Zip Code	Count of Home Zip Code	Percent of Valid Responses
33029	1	1%
33125	1	1%
33131	1	1%
33133	5	3%
33134	133	73%
33135	2	1%
33139	1	1%
33143	3	2%
33144	1	1%
33145	4	2%
33146	18	10%
33155	3	2%
33156	5	3%
33176	2	1%
33183	2	1%
33190	1	1%
[No Answer Entered]	2	
Grand Total	185	



2. In what area do you live?

Home Area	Count of Home Area	Percent of Valid Responses
[No Answer Entered]	1	n/a
Broward County	1	1%
City of Miami	13	7%
Coral Gables Outside Downtown	112	61%
Downtown Coral Gables	48	26%
Elsewhere in Miami-Dade County	10	5%
Grand Total	185	



3. Where do you work? _____ (zip code)

Work Zip Code	Count of Work Zip Code	Percent of Valid Responses
33010	2	1%
33023	1	1%
33030	1	1%
33056	1	1%
33124	2	1%
33125	2	1%
33126	1	1%
33128	1	1%
33129	1	1%
33130	4	3%
33131	6	4%
33132	5	3%
33133	5	3%
33134	70	48%
33135	1	1%
33136	2	1%
33137	1	1%
33139	1	1%
33143	4	3%
33145	3	2%
33146	13	9%
33149	1	1%
33154	1	1%
33155	4	3%
33156	2	1%
33166	1	1%
33175	1	1%



Work Zip Code	Count of Work Zip Code	Percent of Valid Responses
33176	1	1%
33179	1	1%
33181	1	1%
33196	1	1%
33199	2	1%
33309	1	1%
[No Answer Entered]	40	n/a
Grand Total	185	



3a. In what area do you work?

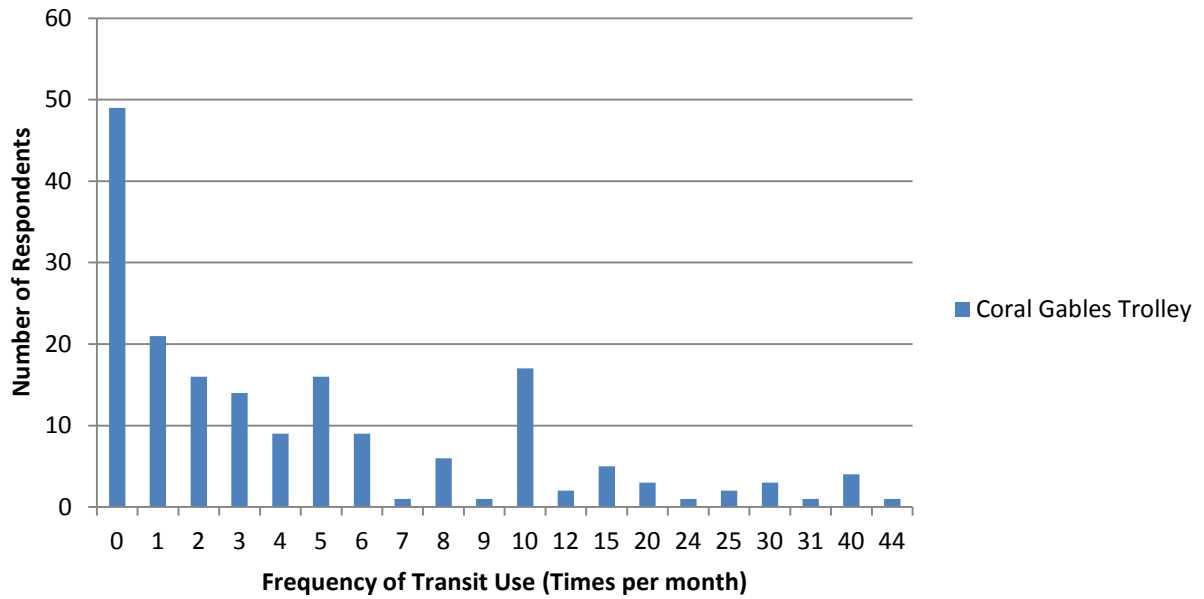
Work Area	Count of Work Area	Percent of Valid Responses
[No Answer Entered]	15	n/a
Bay Harbor Islands	1	1%
City of Miami	26	15%
Coconut Grove	1	1%
Coral Gables outside downtown	29	17%
Don't Work	30	18%
Downtown Coral Gables	54	32%
Downtown Miami	1	1%
Elsewhere in Miami-Dade County	21	12%
Fort Lauderdale	1	1%
Hialeah	1	1%
Miami Airport	1	1%
Miramar	1	1%
South Miami	1	1%
Village of Merrick Park	1	1%
Grand Total	184	

4. Do you use transit for trips in the vicinity of downtown Coral Gables? (check all that apply)

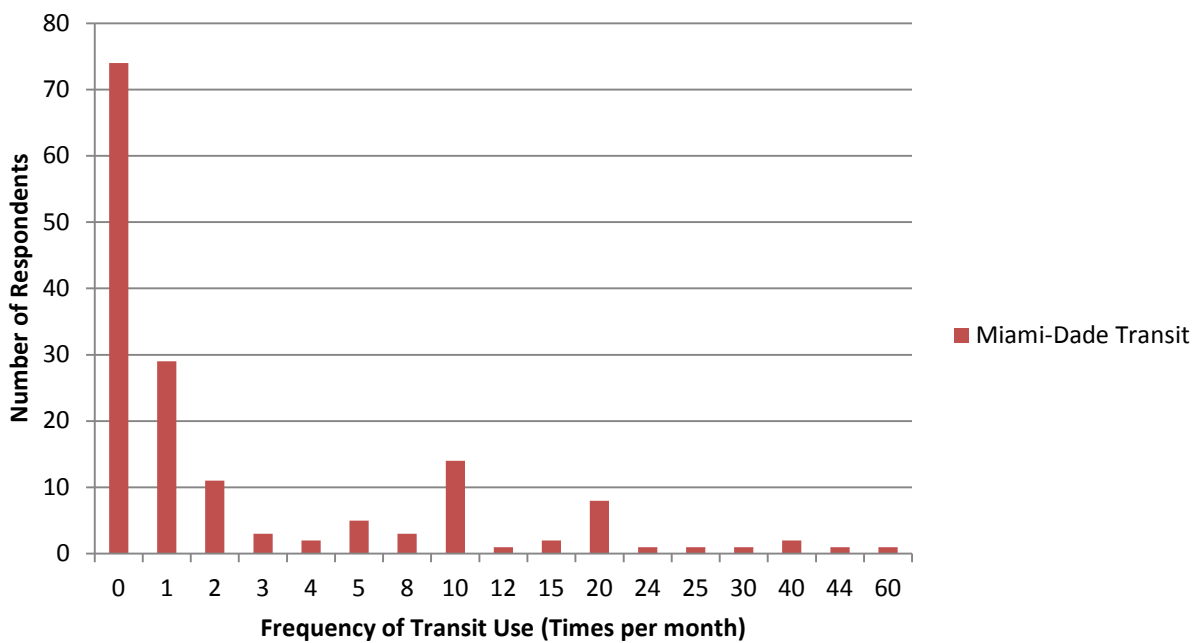
Use Transit	Count of Transit Users	Percent of Total Responses
[No Answer Entered] (assume "No")	42	23%
Coral Gables Trolley only	103	56%
Coral Gables Trolley & Miami-Dade Transit bus or Metrorail	35	19%
Miami-Dade Transit bus or Metrorail only	5	3%
Grand Total	185	



Coral Gables Trolley



Miami-Dade Transit



5. If you don't use transit, why don't you use transit? (check all that apply)

Issues with Transit	Number	Percentage Valid Responses	Percentage of All Responses
[No Answer Entered]	90	n/a	38%
Buses/trains too crowded	2	1%	1%
Doesn't go where I need to go	55	38%	24%
Doesn't run on weekends	36	25%	15%
Not enough hours per day	20	14%	9%
Too slow	16	11%	7%
Service is unreliable	8	6%	3%
Can't bring my bike	1	1%	0%
Too expensive	1	1%	0%
Prefer to walk	1	1%	0%
Too far to walk to station/stop	1	1%	0%
Need my car for work	1	1%	0%
Don't like passengers	1	1%	0%
Too infrequent	1	1%	0%
	234		

Note – Shaded lines are most frequently cited issues.



6. **How many times a week do you travel to places in downtown Coral Gables?** _____

Trips Downtown	Number Responding	Percent of Valid Responses	Percent of All Responses
1	11	7%	6%
2	21	13%	11%
3	14	8%	8%
4	21	13%	11%
5	36	22%	19%
6	8	5%	4%
7	27	16%	15%
8	3	2%	2%
10	10	6%	5%
12	3	2%	2%
15	5	3%	3%
20	4	2%	2%
25	2	1%	1%
30	1	1%	1%
40	1	1%	1%
[No Answer Entered]	18	n/a	10%
Grand Total	185		



7. During what time periods would you want more frequent trolley service? (check all that apply)

More Frequent Service	Number Requesting More Frequent	Percentage of Valid Responses
Weekdays: 11 a.m. to 2 p.m.	52	24%
Weekdays: 2 p.m. to 8 p.m.	81	37%
Weekdays: Before 11 a.m.	40	18%
[No Answer Entered]	33	n/a
Weekdays: No change	44	20%
Grand Total	250	

During what time periods would you want extended service hours (e.g., later into weekday evenings or on weekends)? (check all that apply)

Expanded Service	Sum of Count of Expanded Service	Percent of Valid Responses
Weekdays: No change	9	2%
Weekdays: After 8 p.m.	61	16%
Weekends: No change	8	2%
Weekends: Before 11 a.m.	36	9%
Weekends: 11 a.m. to 2 p.m.	82	21%
Weekends: 2 p.m. to 8 p.m.	88	23%
Weekends: After 8 p.m.	106	27%
[No Answer Entered]	25	n/a
	415	100%



8. If trolley service were expanded to new routes where would you like it to go? (List locations)

New Destination	Number	Percent of Valid Responses	Percent of All Responses
No response	55	n/a	21%
Biltmore Hotel	27	13%	10%
University of Miami	23	11%	9%
Along Miracle Mile	19	9%	7%
South Miami	14	7%	5%
Biltmore Way	13	6%	5%
Venetian Pool	12	6%	5%
Youth Center	10	5%	4%
Coconut Grove	9	4%	3%
City Hall	7	3%	3%
Alhambra Circle	6	3%	2%
Miami International Airport	5	2%	2%
Along Le Jeune Road	5	2%	2%
Brickell	5	2%	2%
Downtown Shopping District	5	2%	2%
8th Street	4	2%	2%
Along Grand Boulevard	4	2%	2%
Fairchild Tropical Botanical Gardens	4	2%	2%
Residential Neighborhoods	4	2%	2%
Along Coral Way	3	1%	1%
Coral Way	3	1%	1%
Bird Road	3	1%	1%
Downtown East/West	3	1%	1%
Downtown Miami	3	1%	1%
Miami Intermodal Center	2	1%	1%
Along 37th Avenue	2	1%	1%
Granada Country Club	2	1%	1%



New Destination	Number	Percent of Valid Responses	Percent of All Responses
Douglas Road	2	1%	1%
Riviera District	2	1%	1%
600 Biltmore Way	1	0%	0%
Along Bird Road	1	0%	0%
Wynwood	1	0%	0%
Coral Gables Senior High	1	0%	0%
FIU	1	0%	0%
South Coral Gables	1	0%	0%
Red Road	1	0%	0%
Cocoplum Circle	1	0%	0%
Coral Gables Museum	1	0%	0%
Grand Total	265		

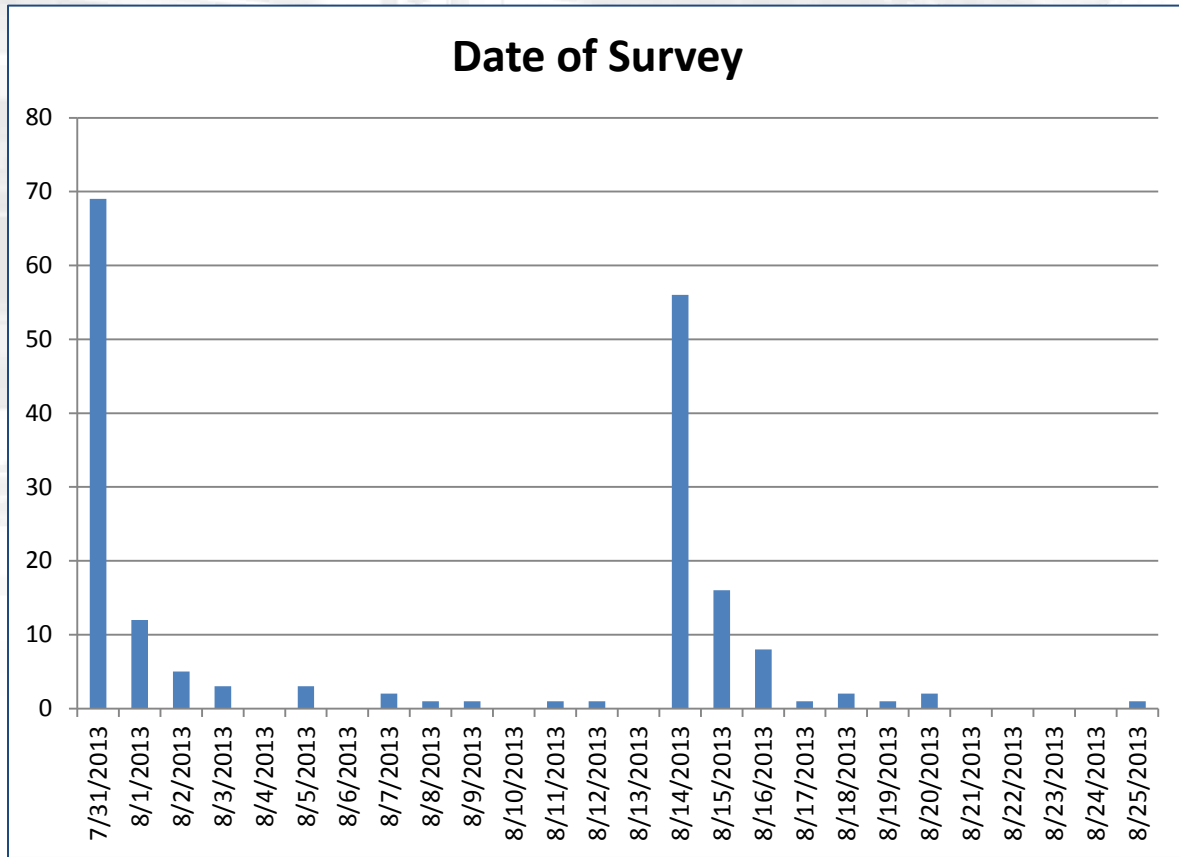


10. If Coral Gables were to charge a fare for use of the trolley what do you think it should be?

Maximum Fare	Number of Responses	Percentage of Valid Responses	Percentage of Responses
0.00	36	n/a	20%
0.05	1	1%	1%
0.25	35	24%	19%
0.50	27	18%	15%
0.75	3	2%	2%
1.00	54	36%	29%
2.00	6	4%	3%
5.00	1	1%	1%
No response	21	14%	11%
Total	184		



Date Survey was Completed



Appendix B

Summary of Senior Survey Results Survey Conducted Commencing on June 2013

1. Where do you live?

Home Zip Code	Percent Responding
32323	5%
33126	3%
33132	2%
33133	5%
33134	53%
33140	14%
33143	8%
33146	8%
33233	3%
33333	2%
34556	2%
43434	2%
44343	2%

2. In what area do you live?

Home Area	Number Responding
Downtown	37%
Coral Gables	35%
Miami	9%
Miami-Dade	9%
Other	8%
Coco Plum	2%
Coral Gables by Granada Gulf	2%
Downtown Miami, Biscayne Blvd.	2%
High Pines	2%

3. Where do you work?

Work Zip Code	Percentage Responding
33122	13%
33126	20%
33134	13%
33136	7%
33312	7%
33333	7%
33434	7%
33555	7%
34345	7%
35353	7%
44444	7%

4. How often do you use transit for trips in the vicinity of downtown Coral Gables?

Monthly Trips to Downtown Coral Gables	Percentage Responding
0	38%
1	8%
2	11%
4	19%
6	5%
10	8%
15	5%
20	3%
25	3%

5. If you don't use transit, why don't you use transit?

Reason for Not Using Transit	Percentage Responding
Difficulty in walking distance	4%
I do use it	2%
I drive my car	4%
Inconvenient	2%
No need	2%
No place to leave my car	2%
No service close by	12%
Prefer own transportation	2%
Talking	2%
Trolley system too far away	2%
Unnecessary	2%

6. How many times a week do you travel to places in downtown Coral Gables?

Trips Per Week to Downtown Coral Gables	Percentage Responding
0	3%
1	3%
2	9%
3	22%
4	13%
5	19%
6	3%
7	13%
8	3%
10	9%
12	3%

7. For what purposes do you travel to downtown Coral Gables? (check all that apply)

Trip Purpose	Percentage Responding
Live	12%
Work	9%
Shop	30%
School	5%
Medical	18%
Other	25%

8. If trolley service were expanded where would you like it to go?

New Destination	Percentage Responding
Airport	6%
Alhambra Corridor	6%
Biltmore Area	3%
Coconut Grove	3%
Coral Way Corridor	3%
Corporate Center	3%
Douglas Road Corridor	3%
East/West across Coral Gables	3%
Granada Road Corridor	6%
Merrick Park	3%
Miami	6%
Miracle Mile Corridor	16%
No response	6%
North Gables	3%
Other cities	10%
SW 8th Street Corridor	3%
University Drive	3%
Youth Center	10%

9. At what times would you use additional trolley service?

Time and Day	Percentage Responding
Weekend - Morning	16%
Weekend - Afternoon	16%
Weekend - Evening	15%
Weekday - Morning	22%
Weekday - Afternoon	19%
Weekday - Evening	10%

10. If Coral Gables were to charge a fare for use of the trolley what do you think it should be?

Maximum Acceptable Fare	Percentage Responding
\$ -	47%
\$ 0.10	3%
\$ 0.25	11%
\$ 0.50	17%
\$ 0.75	6%
\$ 1.00	14%
Other	3%

Appendix C

Summary of Fairchild Tropical Botanical Gardens Member Survey Results

Survey Conducted Commencing on June 4, 2013

Coral Gables Trolley Survey



The City of Coral Gables currently operates trolley service along Ponce de Leon Boulevard between the Douglas Road Metrorail station and Flagler Street. Trolleys pick up and drop off passengers at 55 stops weekdays from 6:30 a.m. to 8 p.m. and on Gallery Night until 10 p.m. A master plan study is now under way that considers expanded hours of service, new routes, and changes to the existing route. Your answers to these questions will help to determine which improvements would best serve our community. Thank you in advance for your cooperation.

1. **Where do you live?** _____ (zip code)
2. **In what area do you live?** (please check one)
Downtown Coral Gables ☐ Coral Gables outside the downtown ☐
City of Miami ☐ Elsewhere in Miami-Dade County ☐
Other _____ (please specify)
3. **Where do you work?** _____ (zip code)
Downtown Coral Gables ☐ Elsewhere in Miami-Dade County ☐
Coral Gables outside the downtown ☐ Other _____ (please specify)
City of Miami ☐ Don't Work ☐
4. **Do you use transit for trips in the vicinity of downtown Coral Gables?** (check all that apply)
Coral Gables Trolley ☐ Number of times per month _____
Miami-Dade Transit bus or Metrorail ☐ Number of times per month _____
What is the purpose of the trip to those places? _____
5. **If you don't use transit, why don't you use transit?** (check all that apply)
No good transit service ☐ Too expensive ☐ Buses/trains too crowded ☐
Existing service is unreliable ☐ Other _____
6. **How many times a week do you travel to places in downtown Coral Gables?** _____
7. **If trolley service were expanded where would you like it to go?** (List locations)

8. **At what times would you use additional trolley service?**
Weekends: Morning ☐ Afternoon ☐ Evening ☐
Weekdays: Morning ☐ Afternoon ☐ Evening ☐
9. **If Coral Gables were to charge a fare for use of the trolley what do you think it should be?**

For questions concerning this survey, please call us at (305) 460-5070.

FTG

1. Where do you live?

Home Zip Code	Percentage Responding
33032	4%
33130	4%
33131	4%
33133	8%
33134	29%
33135	4%
33143	4%
33145	4%
33146	4%
33149	4%
33155	4%
33156	8%
33170	4%
33186	8%
33190	4%

2. In what area do you live?

Home Area	Percentage Responding
City of Miami	25%
Coral Gables outside the downtown	33%
Elsewhere in Miami-Dade County	25%
Homestead	4%
Key Biscayne	4%
Little Gables	4%
Westchester	4%

3. Where do you work?

Work Zip Code	Percentage Responding
33126	16%
33131	5%
33133	5%
33134	42%
33143	5%
33156	5%
33158	5%
33183	5%
33186	5%

Work Area	Percentage Responding
City of Miami	19%
Coral Gables outside the downtown	14%
Don't Work	29%
Downtown Coral Gables	19%
Elsewhere in Miami-Dade County	5%
home	5%
Kendall	5%
Pinecrest	5%

4. Do you use transit for trips in the vicinity of downtown Coral Gables? (check all that apply)

Trips Downtown Per Month	Coral Gables Trolley	Miami-Dade Transit
0	0%	5%
1	15%	10%
2	10%	0%
3	10%	5%
5	5%	5%
10	5%	0%
20	5%	5%
25	5%	5%
30	0%	5%
40	5%	0%

Trip Purpose	Percentage Responding
Dining & Shopping	54%
Recreation	23%
Work	23%

5. If you don't use transit, why don't you use transit?

Issues with Transit	Percentage Responding
Unavailable	19%
Unfamiliar with System	13%
Unreliable	38%
Infrequent Service	25%
Never Tried	6%

6. How many times a week do you travel to places in downtown Coral Gables?

Weekly Trips Downtown	Percentage Responding
0	14%
1	18%
2	14%
3	5%
4	9%
5	18%
7	9%
10	9%
20	5%

7. If trolley service were expanded where would you like it to go?

Other Destinations	Percentage Responding
Miracle Mile Corridor	35%
Fairchild Tropical Gardens	24%
Throughout Miami-Dade County	6%
Biltmore Way	6%
Coconut Grove	6%
North Gables	6%
South Beach	6%
East and west of Coral Gables	6%
Merrick Park	6%

8. At what times would you use additional trolley service?

More or Extended Service	Percentage Responding
Weekdays: Morning	15%
Weekdays: Afternoon	15%
Weekdays: Evening	12%
Weekends: Morning	18%
Weekends: Afternoon	21%
Weekends: Evening	18%

9. If Coral Gables were to charge a fare for use of the trolley what do you think it should be?

Acceptable Fare	Percentage Responding
\$ -	22%
\$0.10	6%
\$0.25	6%
\$0.50	22%
\$1.00	28%
\$1.50	11%
\$2.00	6%

Appendix D

NextBus Cost Information



Price Proposal for Coral Gables, FL Trolley Real-Time Passenger Information System

One-Time Implementation Costs

	Unit List Price	Units	Extended Price
NextBus Real-Time Passenger Information System	Included	1	Included
Tracker Suite with Mobile Data Terminal (MDT)*	\$2,700	11	\$29,700
Hardware Shipping (Trackers)	\$50	11	\$550
Route Configuration	\$5,000	1	\$5,000
SMS Text Messaging System	\$5,000	1	\$5,000
Telephone Information System	\$5,000	1	\$5,000
Project Management			\$5,000
Travel and Expenses			\$5,000
Training (half-day online sessions - on-site available)	\$500	2	\$1,000
Total One-Time Implementation			\$56,250

*includes installation

Annual Operating/Recurring Costs

	Per Month	Units	Per Year
Cellular Service - GPS Trackers	\$25	11	\$3,300
ASP (Software) Hosting Service - GPS Trackers	\$55	11	\$7,260
Telephone Information System (\$10/route per month)	\$30	1	\$360
SMS Text Messaging System (\$10/route per month)	\$30	1	\$360
Hardware Warranty (after Year 1) - Tracker Suites**		11	\$2,970

** Optional

Project Year Breakdown

	Capital	Operating	Total
Year 1 Costs	\$56,250	\$11,280	\$67,530
Year 2 Costs**	\$0	\$14,250	\$14,250
Year 3 Costs**	\$0	\$14,250	\$14,250
Year 4 Costs**	\$0	\$14,250	\$14,250
Year 5 Costs**	\$0	\$14,250	\$14,250

**Includes optional extended warranty

Five Year Total Cost (One-Time Implementation and Annual Operating Costs)	\$124,530
--	------------------

Other Options

	Capital	Operating (Per Year)	Extended Warranty (after Year One)
<i>Mobile Data Terminal (MDT) Options</i>			
Two-way Text Messaging Through MDT	\$3,000	N/A	N/A
Schedule Adherence Feedback Through MDT	\$3,000	N/A	N/A
Driver Covert Alarm (\$2,000 one-time setup fee)	\$100	N/A	\$5
<i>LCD Television Type Displays</i>			
52" LCD panel with modem&custom page* (per sign)	\$11,500	\$2,580	\$1,217
42" LCD panel with modem&custom page* (per sign)	\$5,900	\$2,580	\$492
32" LCD panel with modem&custom page* (per sign)	\$5,500	\$2,580	\$444
22" LCD panel with modem&custom page* (per sign)	\$5,100	\$2,580	\$384
LCD Panel Shipping (per sign)	\$50-\$500	N/A	N/A
22" LCD Outdoor Kiosk with modem&custom page*	\$26,200	\$2,580	\$2,934
32" LCD Outdoor Kiosk with modem&custom page*	\$29,900	\$2,580	\$3,414
42" LCD Outdoor Kiosk with modem&custom page*	\$34,000	\$2,580	\$3,942
52" LCD Outdoor Kiosk with modem&custom page*	\$42,000	\$2,580	\$4,967
LCD Kiosk Shipping (per kiosk)	\$100	N/A	N/A
<i>LED Variable Message Displays</i>			
24" 2-line LED sign*	\$3,950	\$960	\$395
32" 2-line LED sign*	\$5,200	\$960	\$520
44" 2-line LED sign*	\$5,400	\$960	\$540
54" 2-line LED sign*	\$7,800	\$960	\$780
24" 4-line LED sign*	\$5,400	\$960	\$540
40" 4-line(w/message line) LED sign*	\$9,400	\$960	\$940
52" 5-line (w/message line) LED sign*	\$13,000	\$960	\$1,300
53" 10-line (w/message line) LED sign*	\$15,000	\$960	\$1,500
LED Sign Shipping (per sign)	\$50-\$500	N/A	N/A
Add ADA Audible Voice to LED Signs* (per sign)	\$750	N/A	\$75
Solar Powered 24" 2-line LED Signs* (per sign)	\$12,500	\$960	\$1,250
Solar Powered LED Sign Shipping (per sign)	\$100	N/A	N/A

<i>Automatic Passenger Counters</i>			
Automatic Passenger Counters (APC) -- Door size less than 42" wide	\$2,586	\$120	\$388
<i>Wi-Fi Hotspot for Passenger Use</i>			
Wi-Fi Hardware*	\$1,000	N/A	\$100
Unlimited Data Plan	N/A	\$1,950	N/A
<i>Other Options</i>			
Engine Diagnostics Interface*	\$500	N/A	\$50
NextStop Annunciation System (for vehicles with PA system)*	\$7,500	\$120	\$750

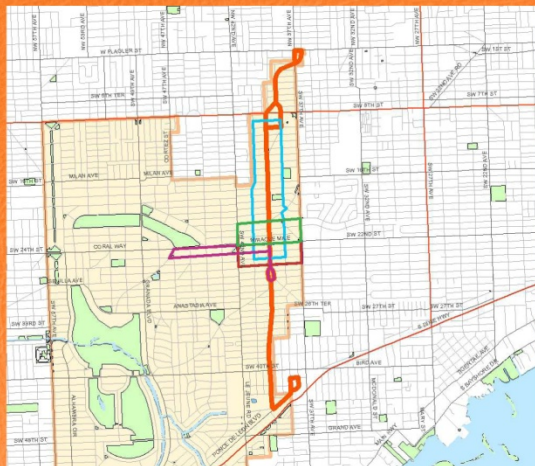
Appendix E

Public Meeting Materials

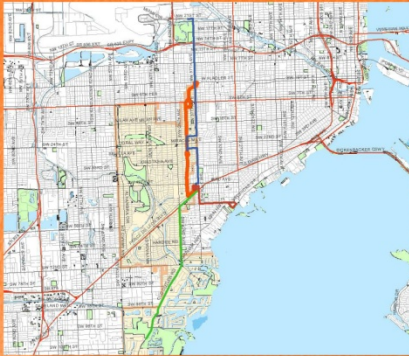
Coral Gables Trolley Master Plan Study Project Goals & Objectives

- Serve residents, employers, and employees living and working in downtown Coral Gables to reduce traffic congestion and the demand for parking.
- Offer an alternative, low impact means for travel into downtown Coral Gables, reducing the number of automobile trips to and within Coral Gables
- Enhance the economic vitality of Coral Gables businesses through the expansion of a quality trolley operation that serves the business community, workers, customers, students, and tourists.
- Expand and improve the existing Coral Gables Trolley system in a cost-effective manner, recognizing the constraints of funding, infrastructure, and vehicles.

Coral Gables Trolley Master Plan Study Core Routes



Coral Gables Trolley Master Plan Study Regional Routes and Extensions



Coral Gables Trolley Master Plan Study Evaluation Matrix

Route	Potential Market	Cost per potential 1,000 riders served	Traffic Barriers / Reliability	Terminal / Intermediate Market	Competing MDT Routes	Percent Outside City
AIRPORT CONNECTION	21,637	14.46	Long	Terminal	Yes	19%
BILTMORE EXTENSION	5,908	17.65	Okay	Terminal	Yes	0%
EAST WEST	9,271	13.86	Okay	Terminal	No	0%
EXISTING PONCE	66,653	3.15	Okay	Intermediate	Yes	0%
FAIRCHILD	7,831	32.97	Long	Terminal	Yes	6%
GRAND AVENUE LOOP	4,321	13.07	Congestion	Terminal	Yes	9%
GROVE	11,853	8.32	Congestion	Intermediate	Yes	44%
MIDDLE LOOP	5,211	7.86	Okay	Intermediate	No	0%
NORTH LOOP	4,602	20.13	Okay	Intermediate	No	0%
OUTER LOOP	7,716	7.78	Okay	Intermediate	No	0%
P LOOP	5,179	12.86	Okay	Terminal	No	0%
RIVIERA EXTENSION	20,453	8.69	Congestion	Terminal	Yes	2%
SOUTH LOOP	6,901	5.98	Okay	Intermediate	No	0%
UM EXTENSION	10,724	8.44	Congestion	Terminal	No	0%
LE JEUNE EXTENSION	5,382	24.76	Congestion	Terminal	Yes	8%

**The City of Coral Gables Trolley Master Plan Study
Comment Card
December 12, 2013**



The City of Coral Gables is conducting a study to guide the expansions and improvements to the Trolley service over the next five years. Your comments and suggests are helpful in guiding the direction of that study by identifying the improvements that will be most beneficial to the City's residents, workers, and visitors. Please take a moment to note your comments and suggestions.

Name:

Home Address:

Comments:

(Continue on reverse side) Thank you



Coral Gables Trolley Master Plan Study

Project Summary and Recommendations



Presentation Outline

- Study Purpose
- Project Goals
- Current Service
- Survey Findings
- Recommendations



Study Purpose

- Prepare a master plan to improve and expand existing trolley service
- Develop a five-year plan



Project Goals

- Serve residents, employers, and employees living and working in downtown Coral Gables
- Reduce the number of automobile trips to and within Coral Gables
- Enhance the economic vitality of Coral Gables businesses
- Expand and improve the existing Coral Gables Trolley system in a cost-effective manner

Current Trolley Service


- Single route along Ponce de Leon Boulevard
- 12-minute frequency on average
- 55 stops
- 6:30 a.m. to 8 p.m. daily (10 p.m. on first Friday of each month)
- Free fare



Rider and Non-User Surveys

- Conducted on the trolleys and through e-News links to on-line surveys
- Determined travel behavior, use of the existing system, and preferences for modifications and expansion



Coral Gables Trolley Survey 

Direction: ☐ Northbound ☐ Southbound Vehicle Number: _____ Surveyor: _____ Time: _____

1. Where did you begin this trip today (before getting on the trolley)?
☐ Work ☐ Non-Work ☐ Home

2. Where did you board the trolley? _____ (stop name)

3. Where will you leave the trolley? _____ (stop name)

4. Where will you end this trip (after getting off the trolley)?
☐ Work ☐ Non-Work ☐ Home

5. What is the purpose of this trip on the trolley? (e.g., work, shopping/dining, social/recreational, school, other)
☐ Work ☐ Shopping/Dining ☐ Social/Recreational ☐ School
Other: _____

6. Will you use the trolley again today? ☐ on a return trip ☐ this is the return trip

7. Where do you live? _____ (zip code)
☐ Downtown Coral Gables ☐ Coral Gables outside the downtown _____ ☐ City of Miami
☐ Elsewhere in Miami-Dade County _____ Other: _____

8. Where do you work? _____ (zip code)

9. How often do you make this trip on the trolley?
☐ Daily ☐ Several times a week ☐ Several times a month
☐ Rarely ☐ First time

10. Do you use transit for trips in the vicinity of downtown Coral Gables? (check all that apply)
☐ Coral Gables Trolley - Times per month _____
☐ Miami-Dade Transit bus or Metrorail - Times per month _____

11. How many times a week do you go to places in downtown Coral Gables during the day? _____

12. What are the biggest problems with the current trolley service? (check all that apply)
☐ Too slow ☐ Doesn't go where I need to go ☐ Not enough hours per day
☐ Doesn't run on weekends ☐ Other: _____

13. If trolley service were expanded where would you like it to go? (List)

a. At what times would you use additional service?
Weekends: ☐ Morning ☐ Afternoon ☐ Evening
Weekdays: ☐ Morning ☐ Afternoon ☐ Evening

14. Are you male/female? _____

15. Age _____

16. Employment status
☐ Working full time ☐ Working part time ☐ Not working/unemployed ☐ Student, homemaker, retired

17. If Coral Gables were to charge a fare for use of the trolley what do you think it should be?

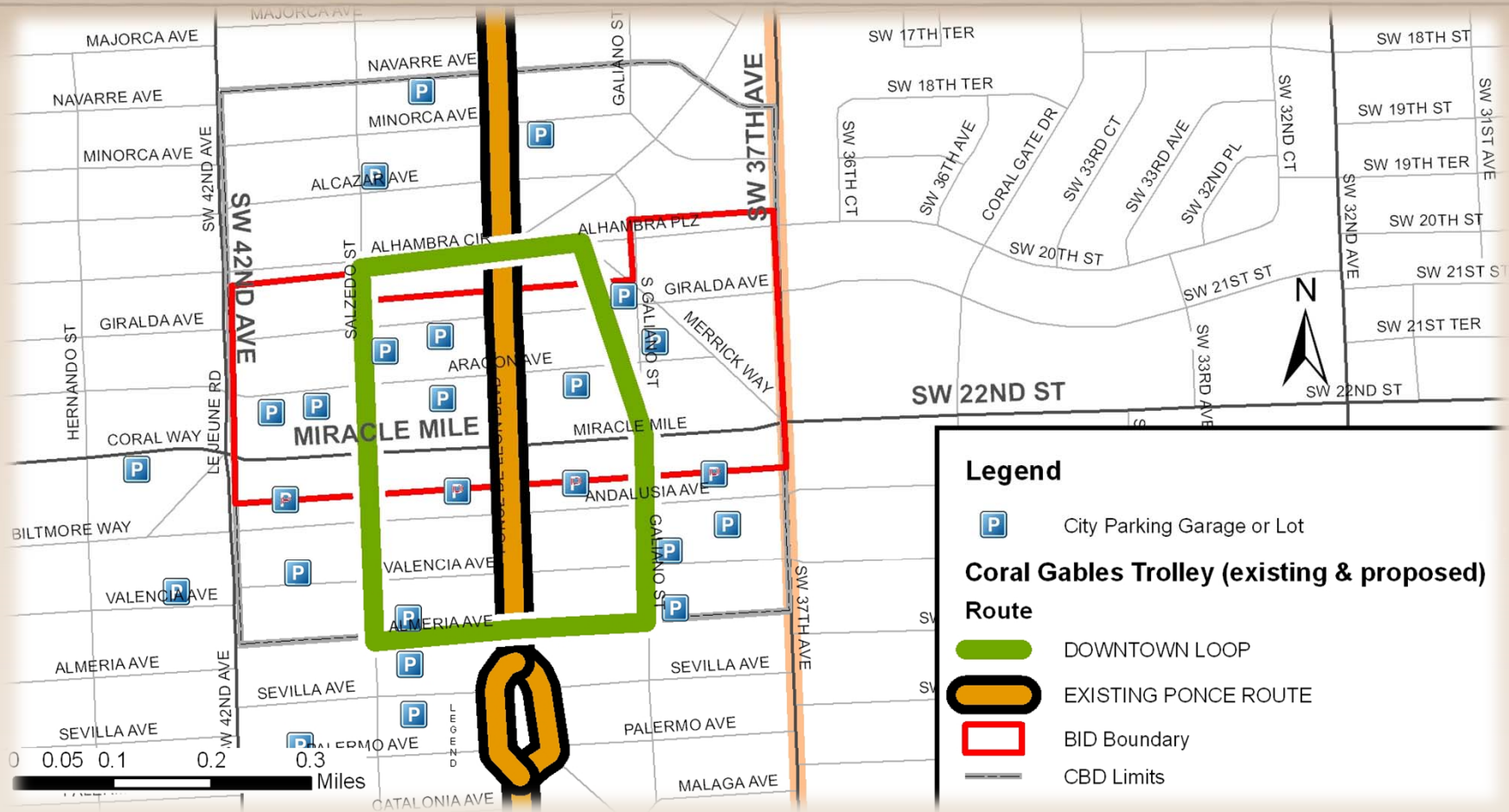
For questions concerning this survey, please call us at (305) 460-5070.



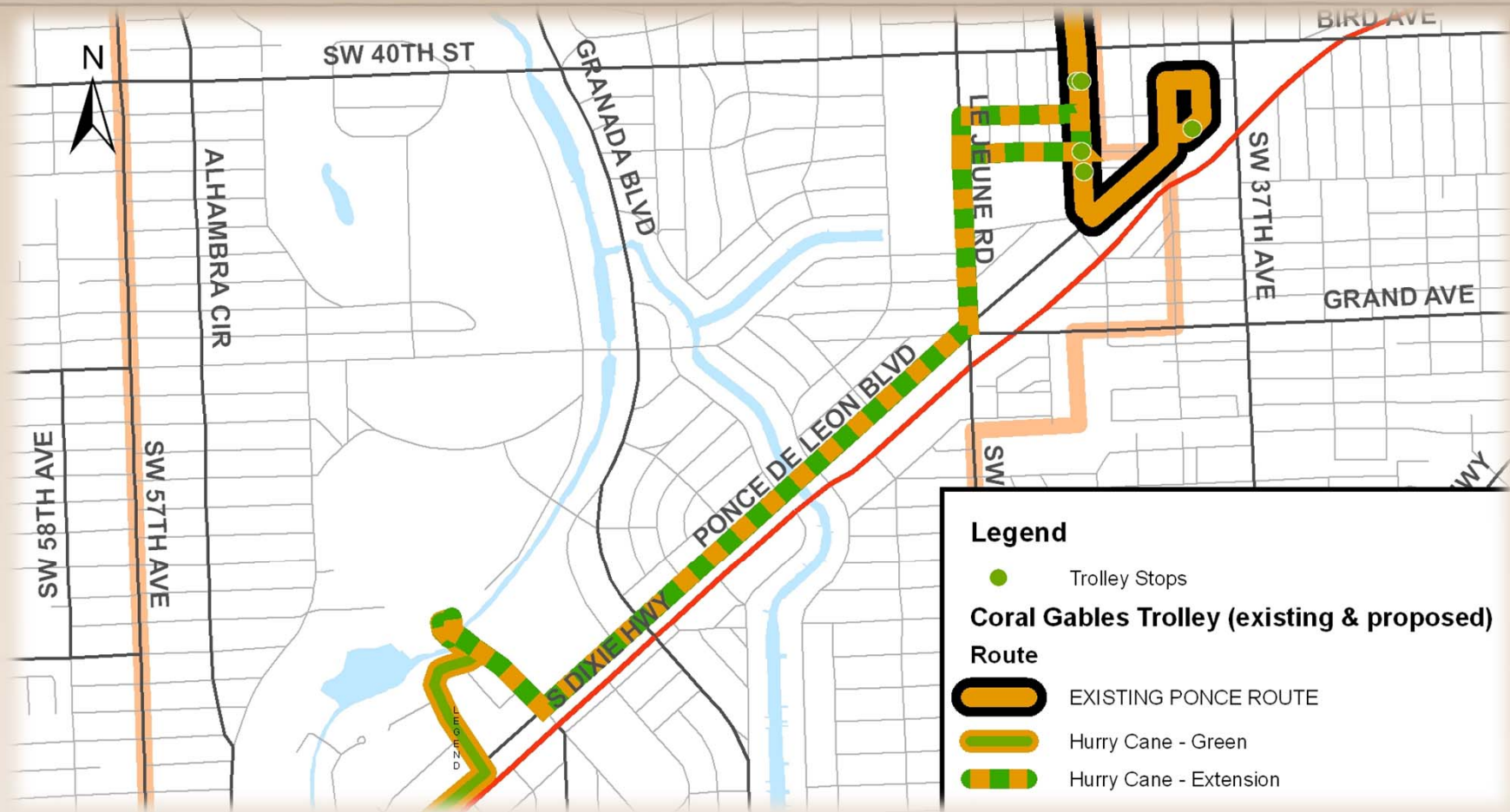
Survey Findings

- Current system is used primarily by residents and those living in the immediate vicinity of Coral Gables (with many living in Miami just east of the city).
- Home-to-work travel was the dominant trip purpose of users. Social/recreational followed by medical comprised another third of the responses.
- Trolley users tend to use transit service daily. Less than one-third of those surveyed off of the trolleys reported using transit.
- Most riders boarded or alighted at the two termini or at Miracle. Half of those surveyed off of the trolleys make at least one trip to downtown Coral Gables a week.
- Riders were generally satisfied with the service citing the hours of operation and the speed of service as areas that they would like to see improved
- Most riders were willing to pay a fare with most saying they would pay between \$0.25 and \$1.00 per trip. About half of those surveyed off of the trolleys were willing to pay a fare.
- Riders and non-users offered few suggestions for geographical expansion of service and no dominant destination emerged from the survey.

Downtown Loop



UM Connection



Next Bus Information System

- Acquire and implement a real-time passenger information system to advise passengers of arriving buses
- Disseminate information through smart phones, cell phones, text messages and display boards at terminal stops



Traffic Signal Priority

- Employ a GPS-based traffic signal priority in conjunction with a bus location system
- Reduce delay at traffic signals and “bunching” of vehicles along the route
- Improve reliability





Questions and Comments

Coral Gables Trolley Master Plan Study

Public Meeting
December 12, 2013



Meeting Agenda

- Introduction and Overview
- Rider and Non-User Surveys
- Alternative Concepts
- Preliminary Evaluation
- Public Input

Study Purpose

- Prepare a master plan to improve and expand existing trolley service
- Develop a five-year plan



Project Goals

- Serve residents, employers, and employees living and working in downtown Coral Gables
- Reduce the number of automobile trips to and within Coral Gables
- Enhance the economic vitality of Coral Gables businesses
- Expand and improve the existing Coral Gables Trolley system in a cost-effective manner

Purpose of this Meeting

- Share the study findings
- Present concepts under consideration
- Present the study approach
- Receive feedback and suggestions

The City of Coral Gables Trolley Master Plan Study
Comment Card
September 11, 2013



The City of Coral Gables is conducting a study to guide the expansions and improvements to the Trolley service over the next five years. Your comments and suggestions are helpful in guiding the direction of that study by identifying the improvements that will be most beneficial to the City's residents, workers, and visitors. Please take a moment to note your comments and suggestions.

Name: _____

Home Address: _____

Comments: _____

(Continue on reverse side) Thank you

Current Trolley Service

- Single route along Ponce de Leon Boulevard
- 12-minute frequency on average
- 55 stops
- 6:30 a.m. to 8 p.m. daily (10 p.m. on first Friday of each month)
- Free fare



Study Process

Current
Status

Recommendations

Preliminary
Financing Plan

Preliminary
Management Plan

Alternatives
Development &
Analysis

Mobility Needs
Identification

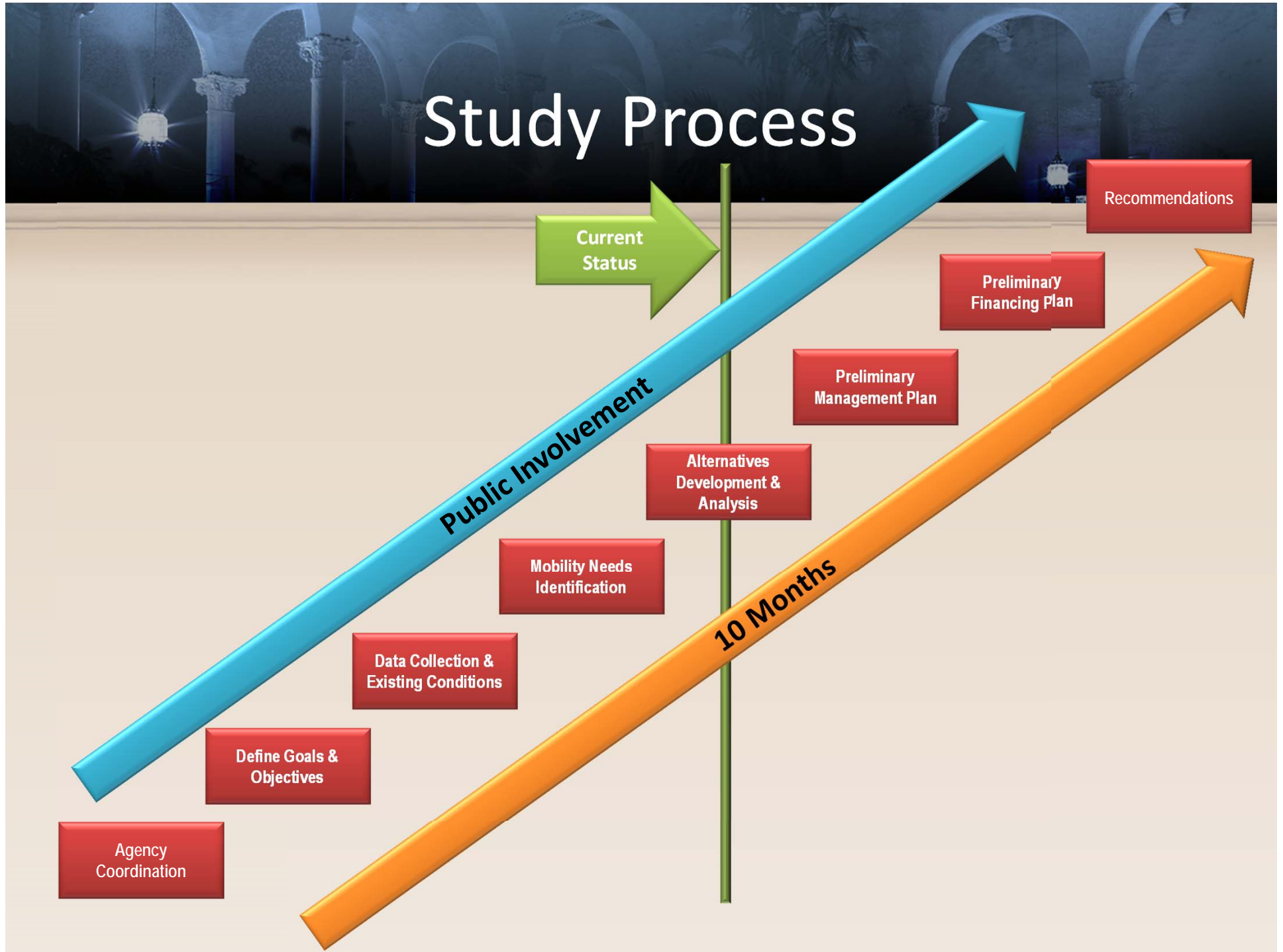
Data Collection &
Existing Conditions

Define Goals &
Objectives

Agency
Coordination

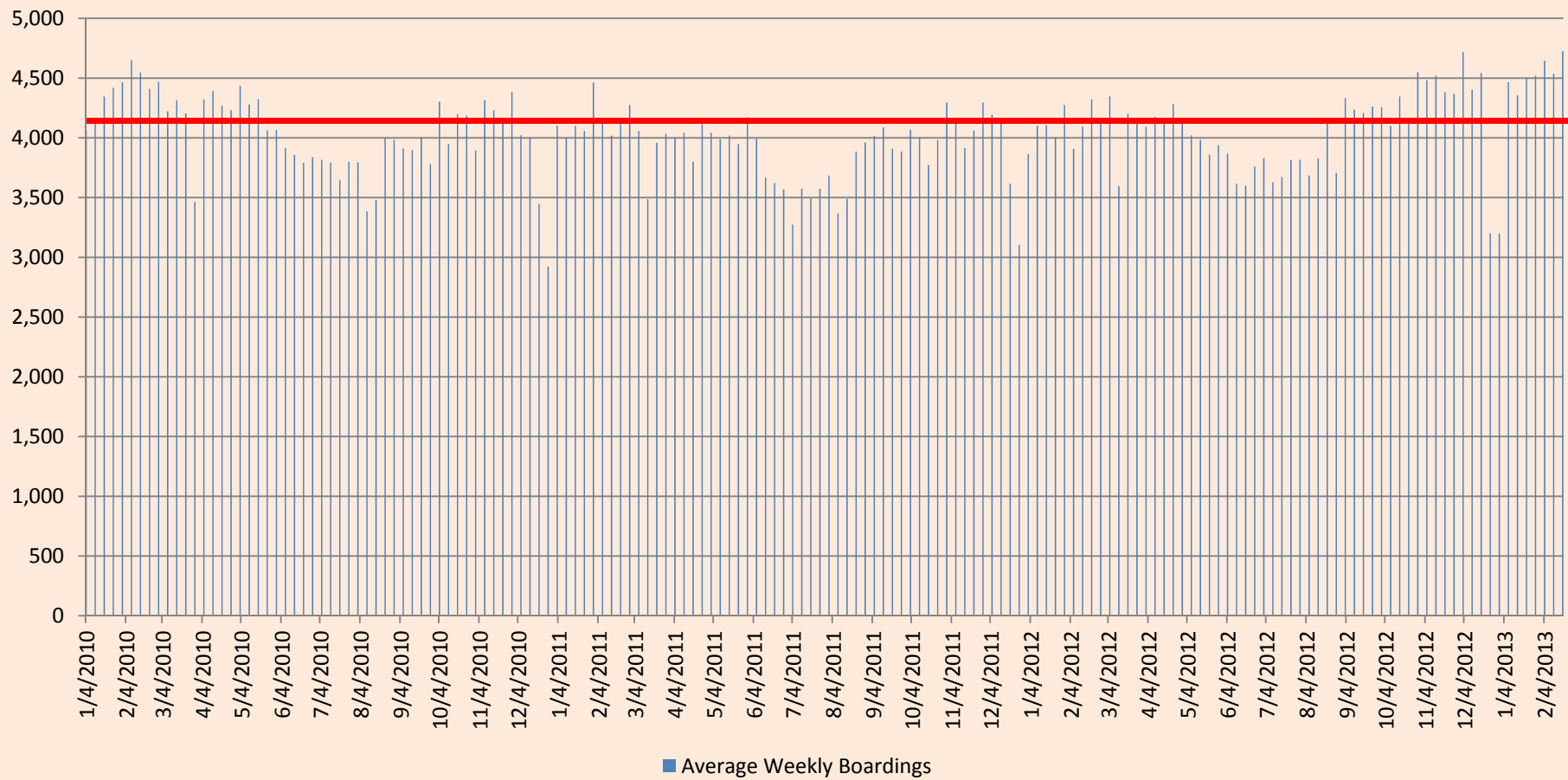
Public Involvement

10 Months

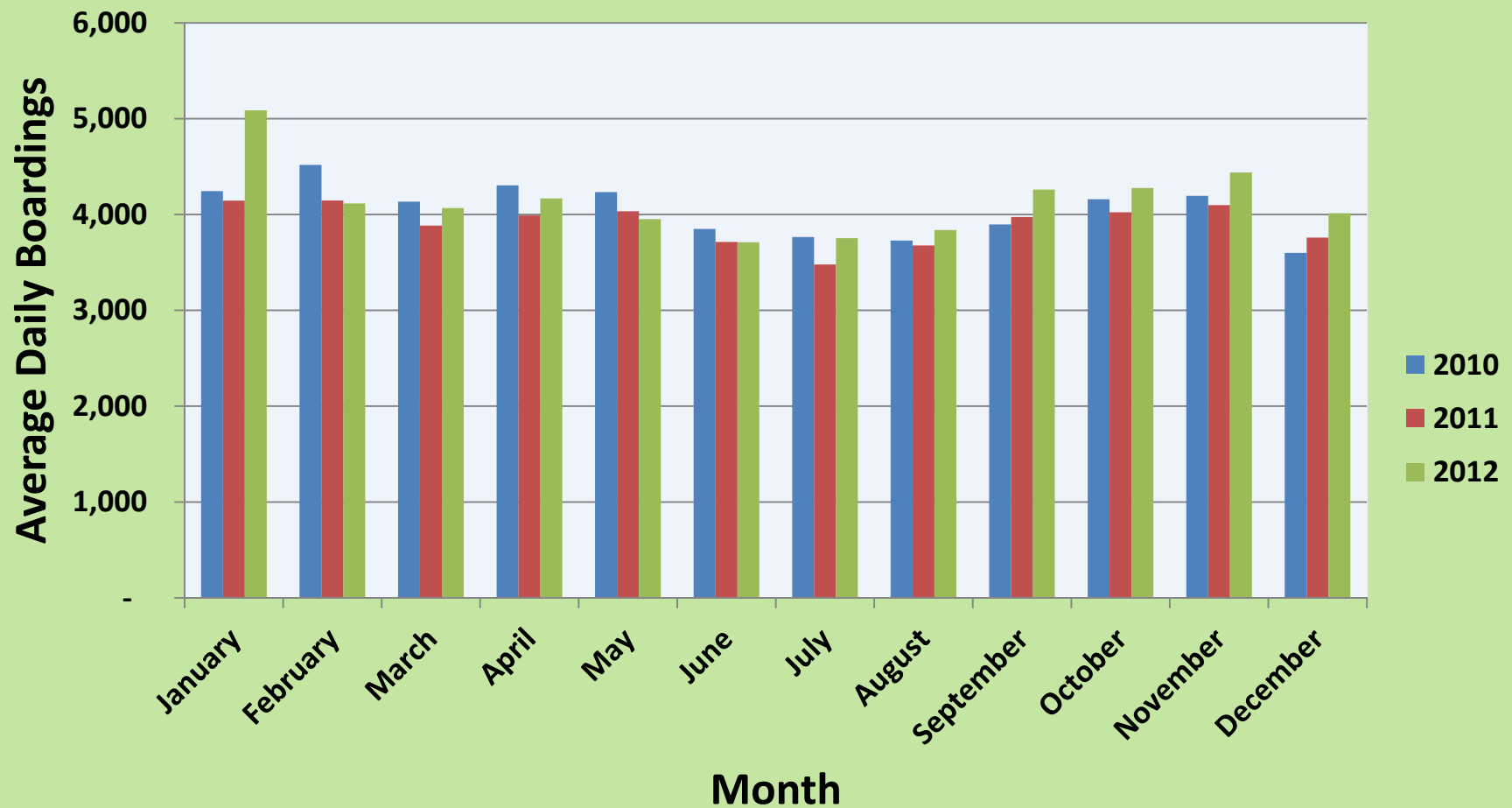


Daily Ridership

Average Weekly Boardings




Ridership by Month and Year



Survey Results

- Riders
- Issues & Concerns
- Possible Destinations & Change in Service Frequency and Hours



Coral Gables Trolley Survey 

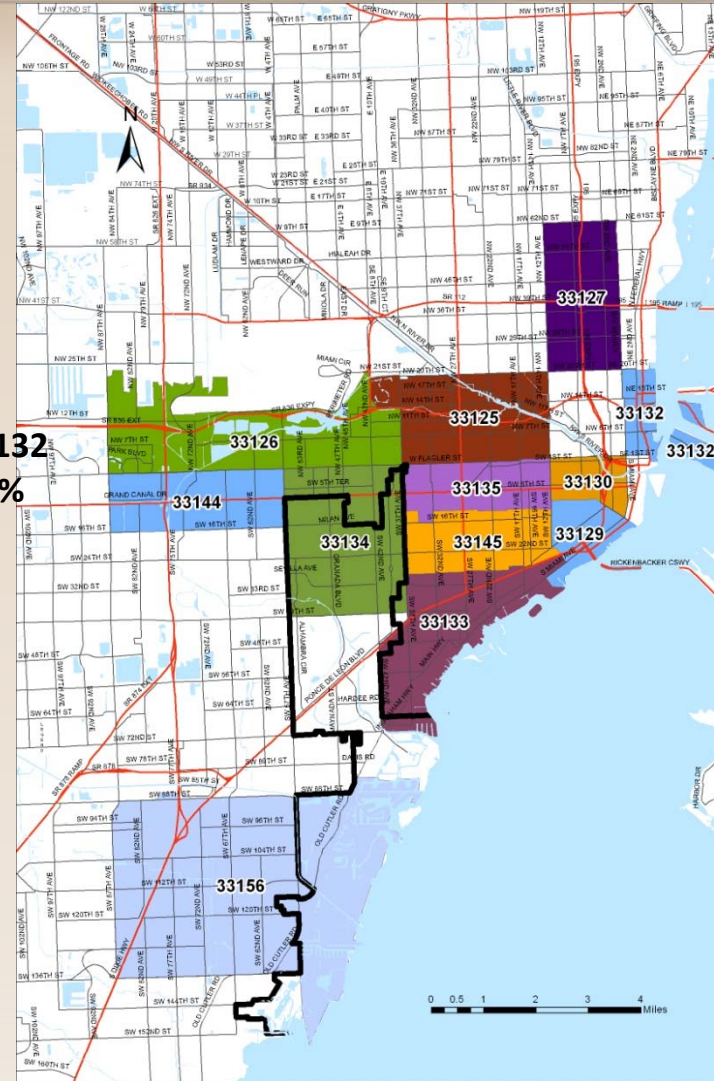
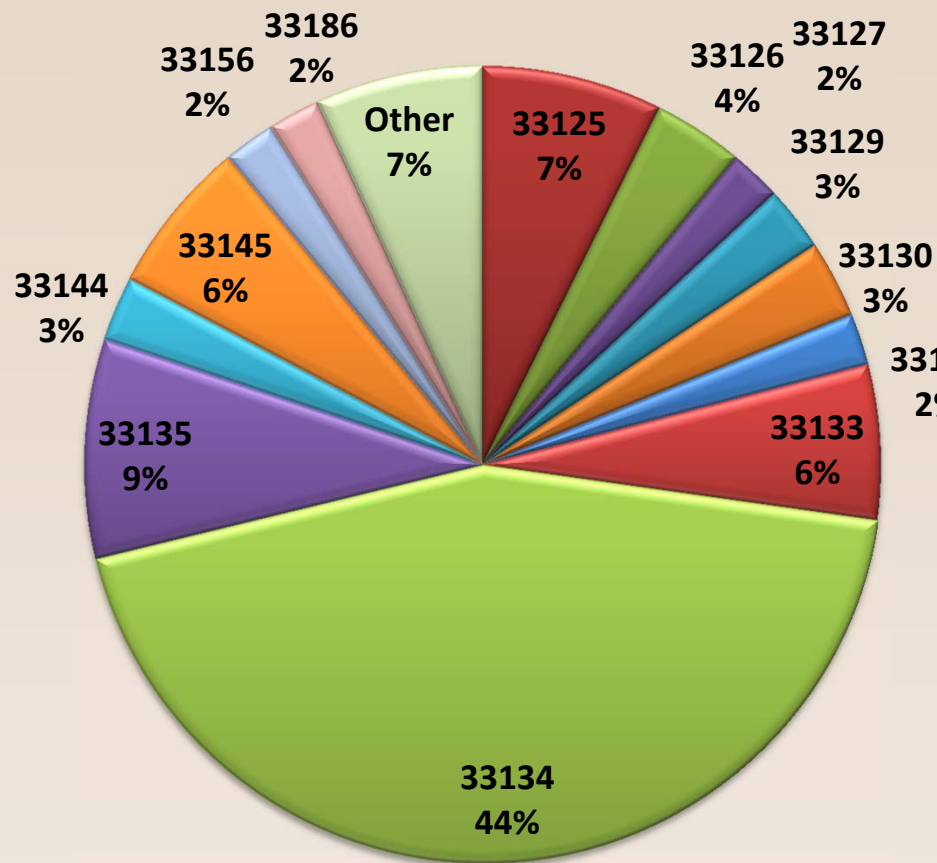
Direction: ☐ Northbound ☐ Southbound Vehicle Number: _____ Surveyor: _____ Time: _____

- Where did you begin this trip today (before getting on the trolley)?
☐ Work ☐ Non-Work ☐ Home
- Where did you board the trolley? _____ (stop name)
- Where will you leave the trolley? _____ (stop name)
- Where will you end this trip (after getting off the trolley)?
☐ Work ☐ Non-Work ☐ Home
- What is the purpose of this trip on the trolley? (e.g., work, shopping/dining, social/recreational, school, other)
☐ Work ☐ Shopping/Dining ☐ Social/Recreational ☐ School
 Other: _____
- Will you use the trolley again today? ☐ on a return trip ☐ this is the return trip
- Where do you live? _____ (zip code)
☐ Downtown Coral Gables ☐ Coral Gables outside the downtown _____ ☐ City of Miami
☐ Elsewhere in Miami-Dade County _____ Other: _____
- Where do you work? _____ (zip code)
- How often do you make this trip on the trolley?
☐ Daily ☐ Several times a week ☐ Several times a month
☐ Rarely ☐ First time
- Do you use transit for trips in the vicinity of downtown Coral Gables? (check all that apply)
☐ Coral Gables Trolley - Times per month _____
☐ Miami-Dade Transit bus or Metrorail - Times per month _____
- How many times a week do you go to places in downtown Coral Gables during the day? _____
- What are the biggest problems with the current trolley service? (check all that apply)
☐ Too slow ☐ Doesn't go where I need to go ☐ Not enough hours per day
☐ Doesn't run on weekends ☐ Other: _____
- If trolley service were expanded where would you like it to go? (List)

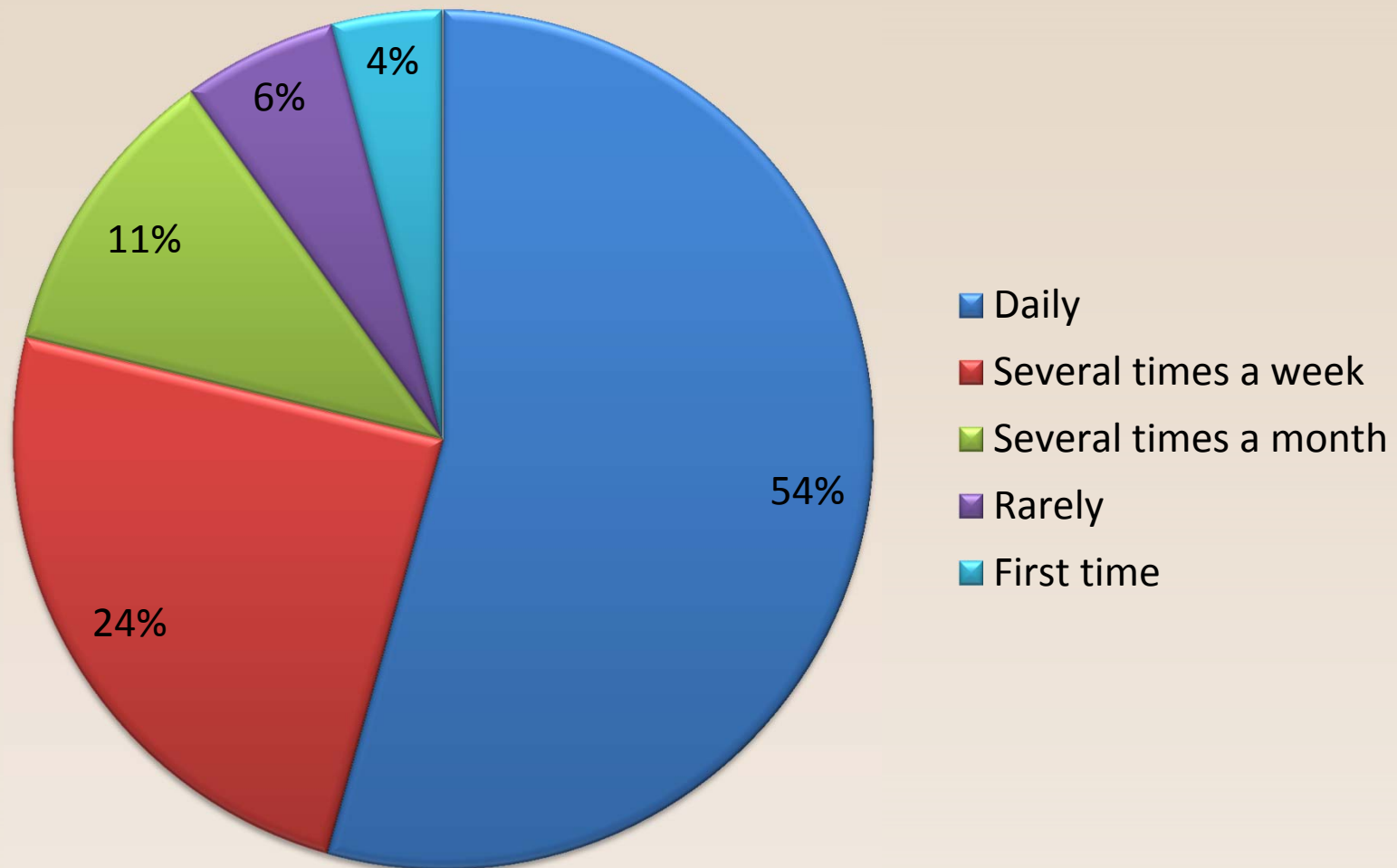
 a. At what times would you use additional service?
 Weekends: ☐ Morning ☐ Afternoon ☐ Evening
 Weekdays: ☐ Morning ☐ Afternoon ☐ Evening
- Are you male/female? _____
- Age _____
- Employment status
☐ Working full time ☐ Working part time ☐ Not working/unemployed ☐ Student, homemaker, retired
- If Coral Gables were to charge a fare for use of the trolley what do you think it should be?

For questions concerning this survey, please call us at (305) 460-5070.

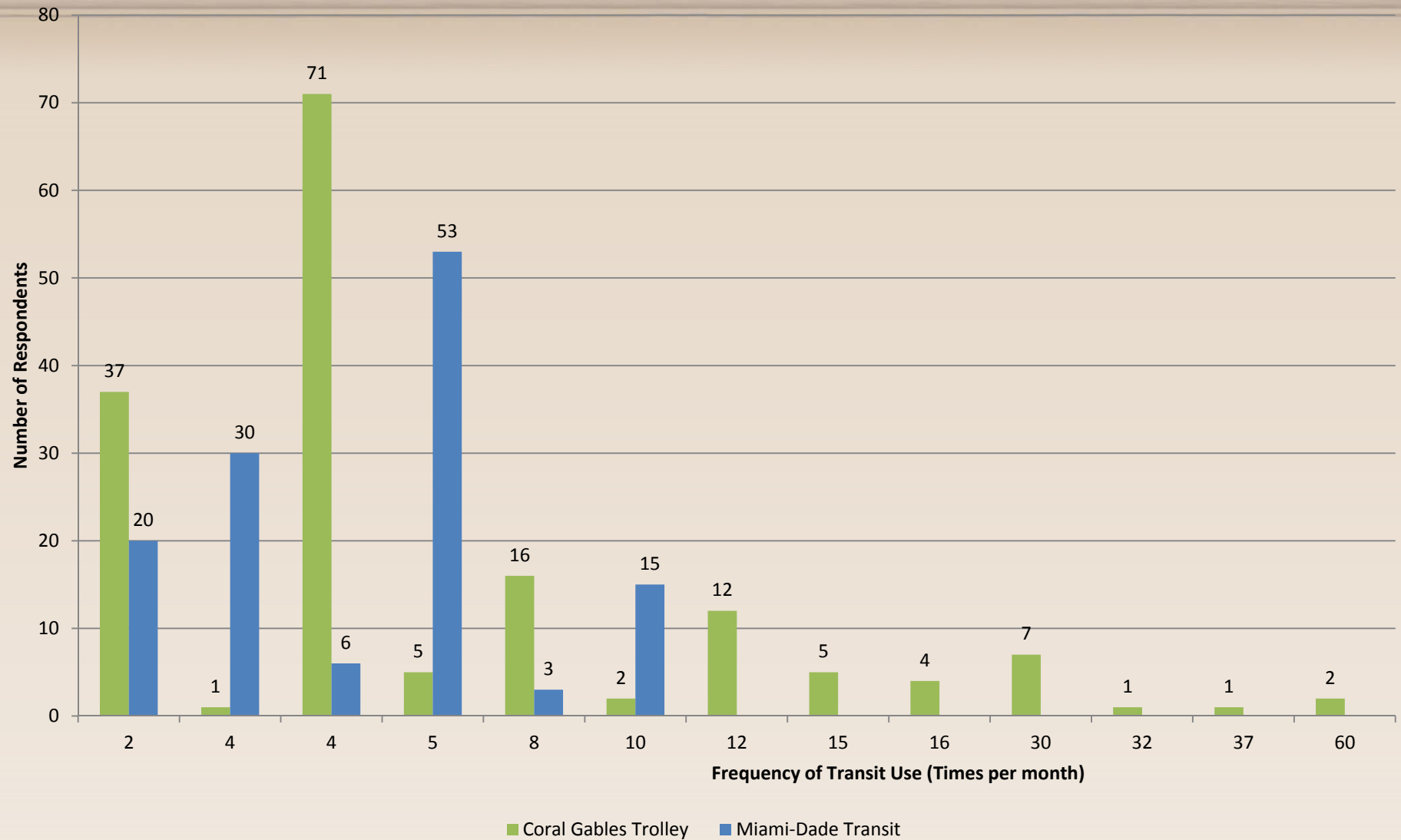
Home Zip Code of Customers



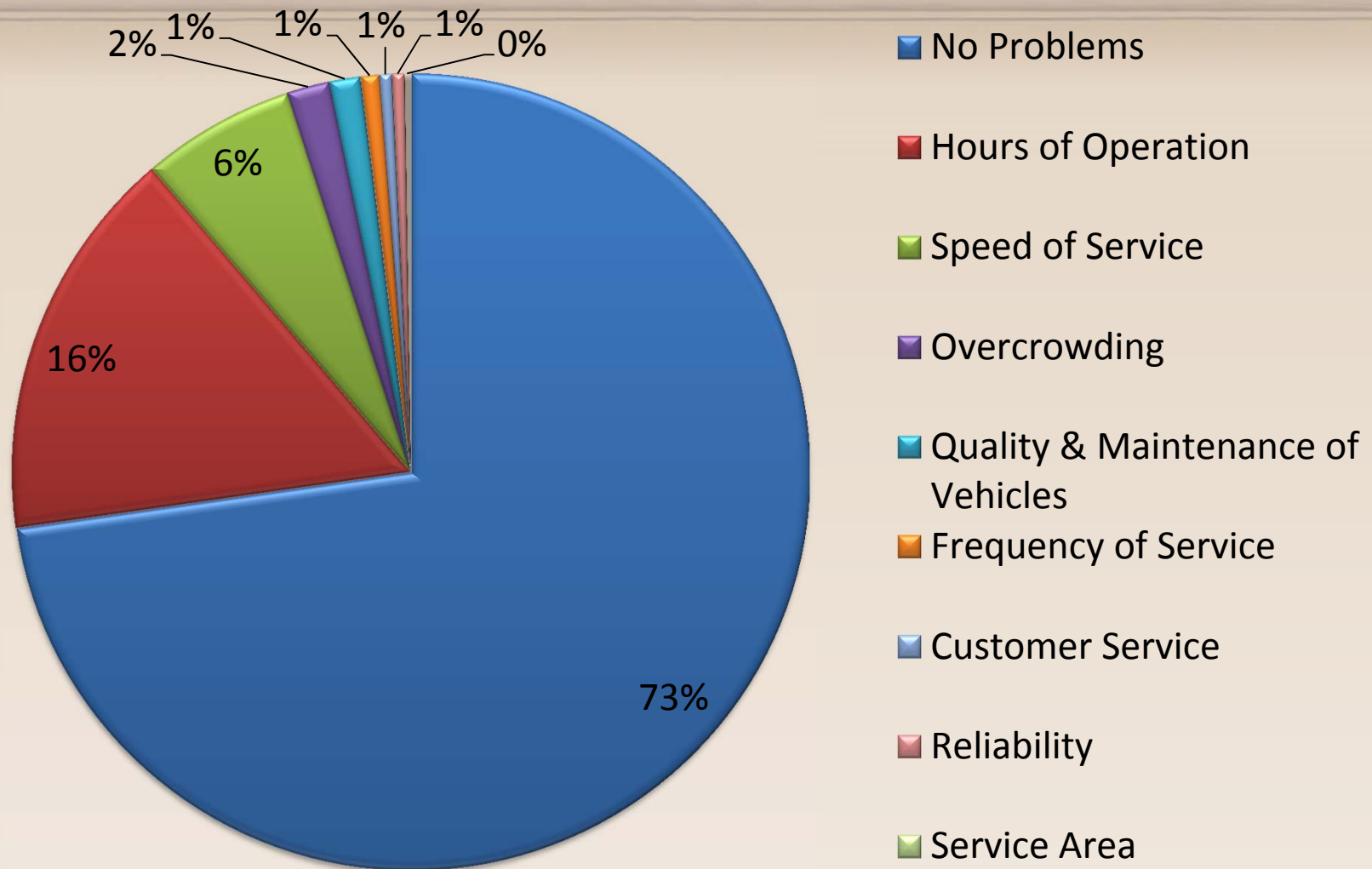
Frequency of Trolley Use



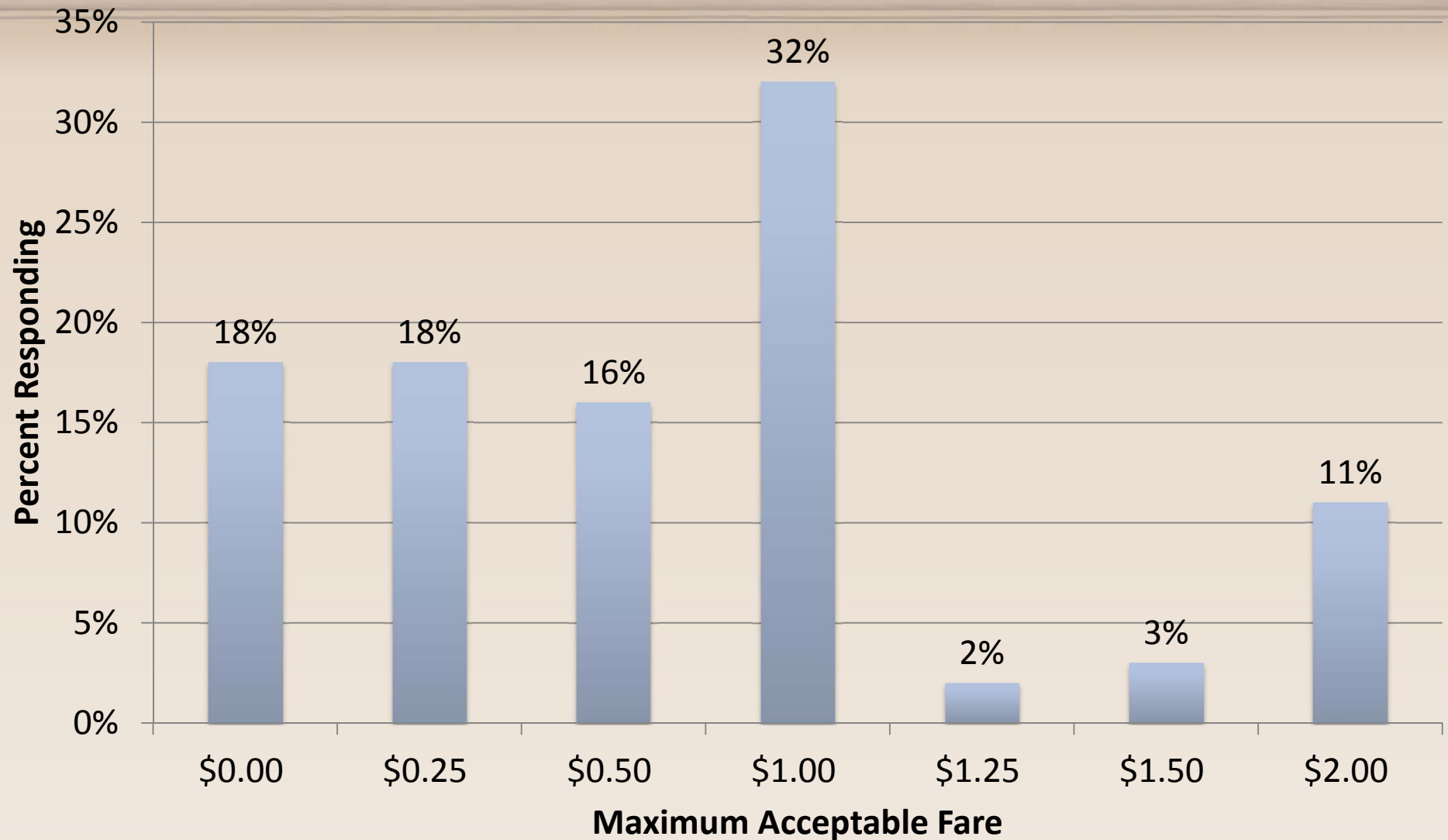
Frequency of Transit Use



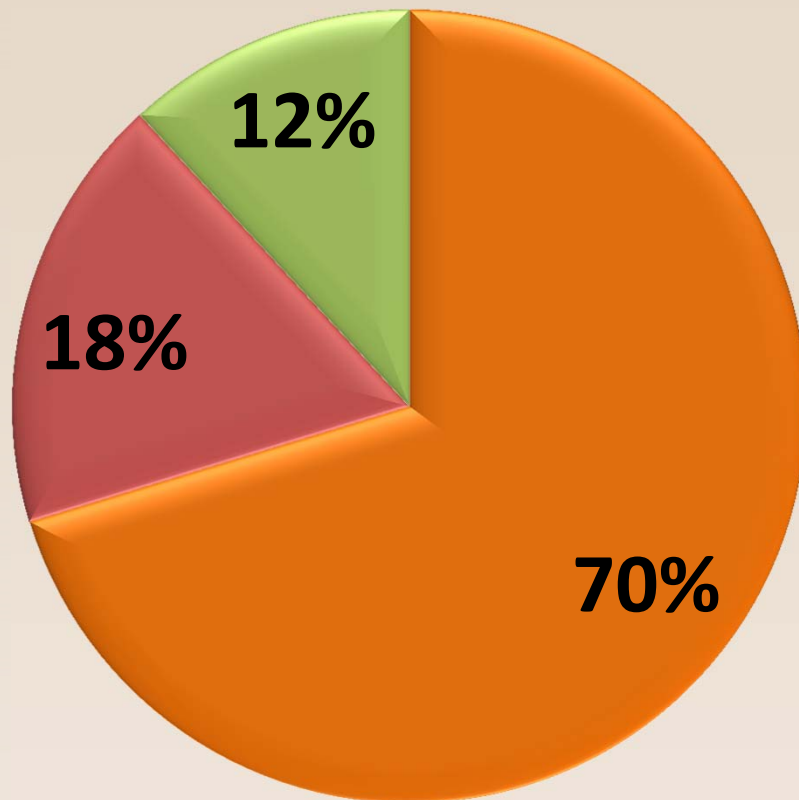
Issues with Current Service



Willingness to Pay a Fare

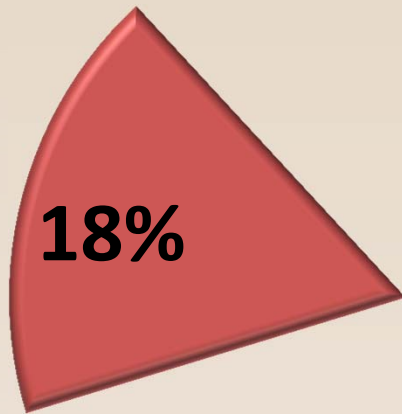


New Destinations



- No new destinations
- Near and within Coral Gables
- Beyond Coral Gables

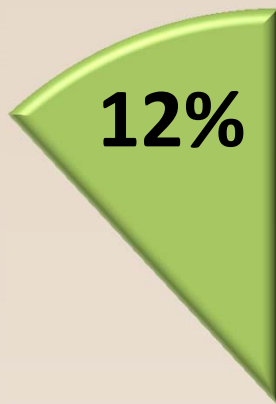
New Destinations



Near and within Coral Gables

- SW 7th Street
- SW 8th Street
- Further north and west
- Le Juene Road
- Miracle Mile

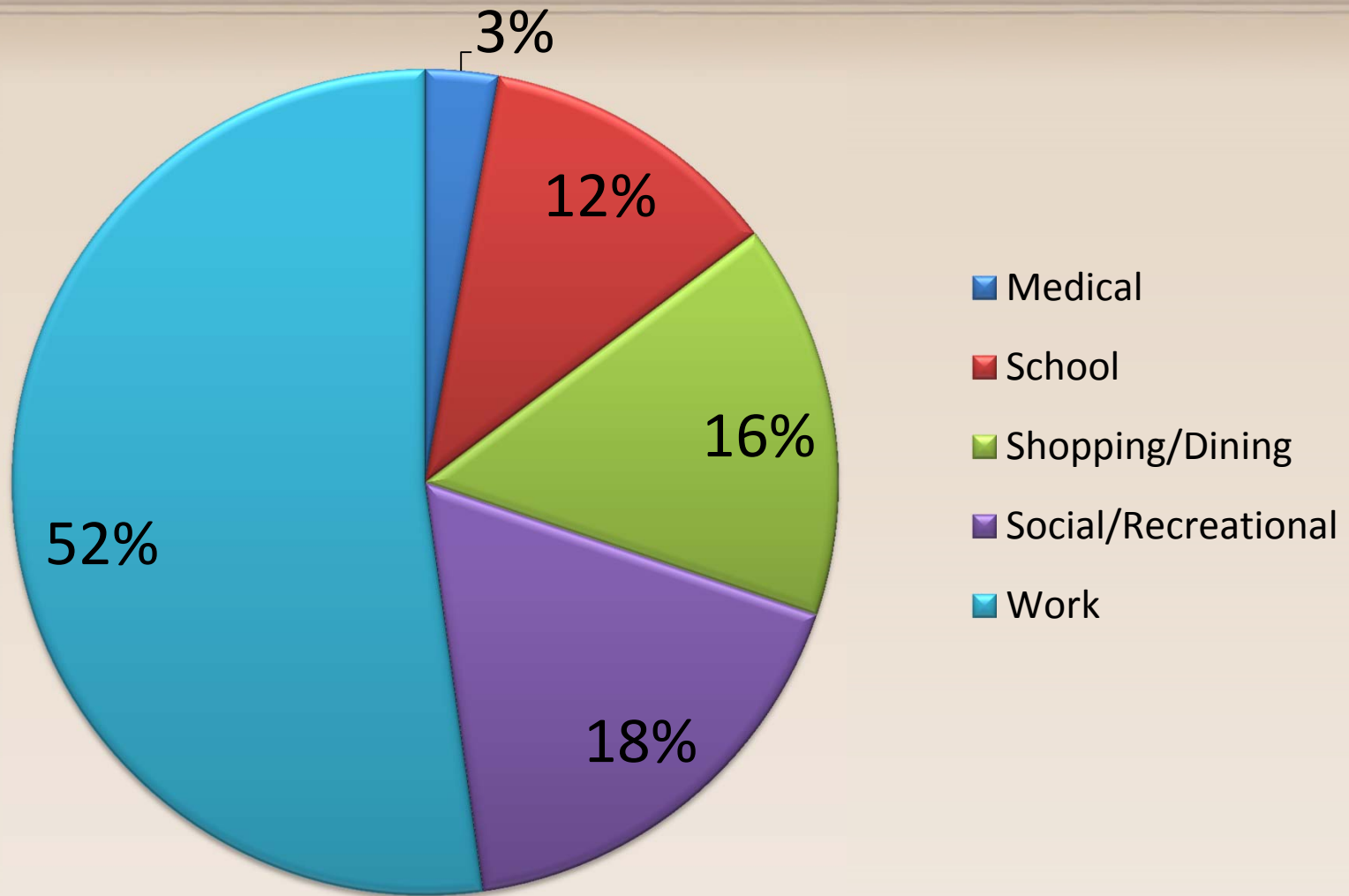
New Destinations



Beyond Coral Gables

- Bayside
- Brickell
- Coconut Grove
- Hialeah
- Homestead
- Key Biscayne
- Kendall

Trip Purpose



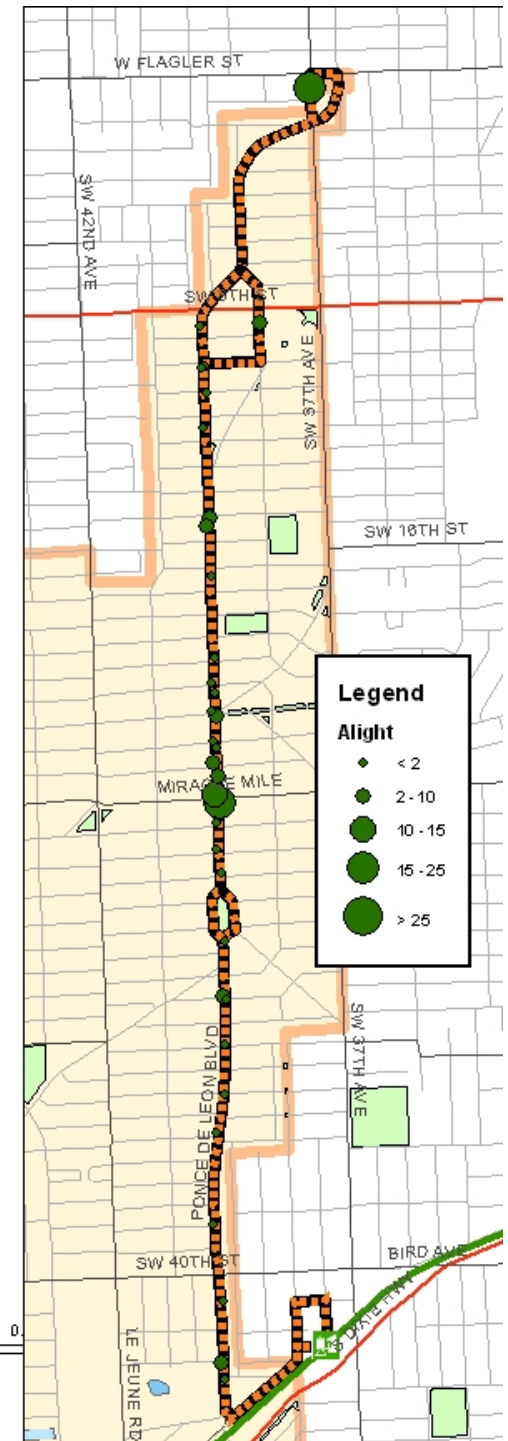
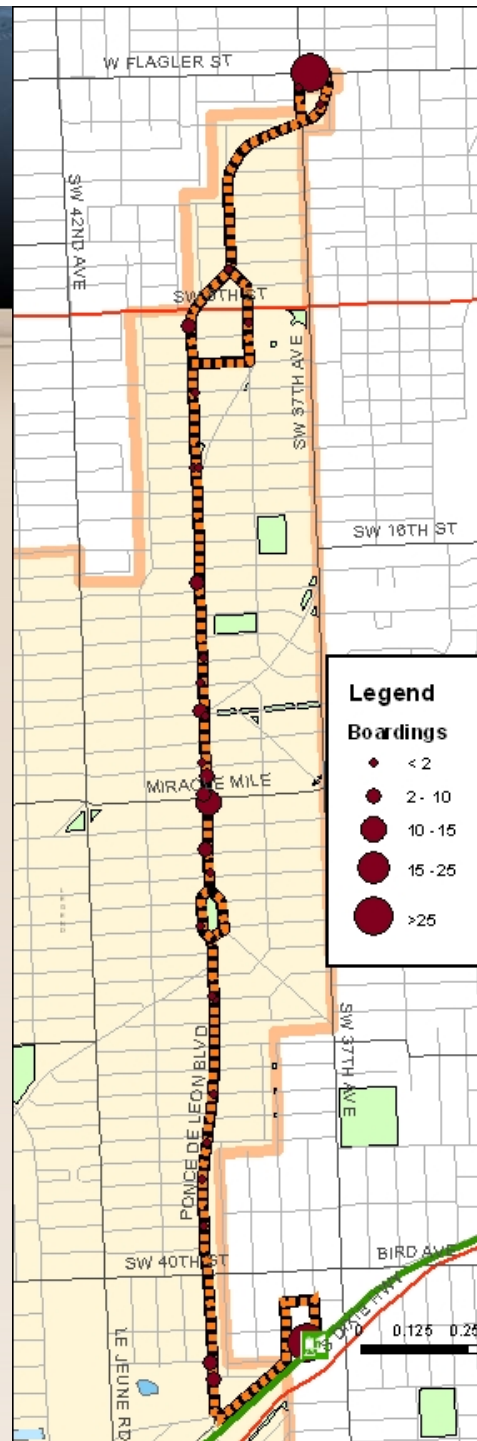
Trip Type

		To			
		Home	Non-Work	Work	Total
From	Home	2%	17%	27%	46%
	Non-Work	13%	10%	1%	24%
	Work	19%	5%	6%	30%
	Total	34%	32%	34%	100%

Boardings & Alightings

Most activity occurs at:

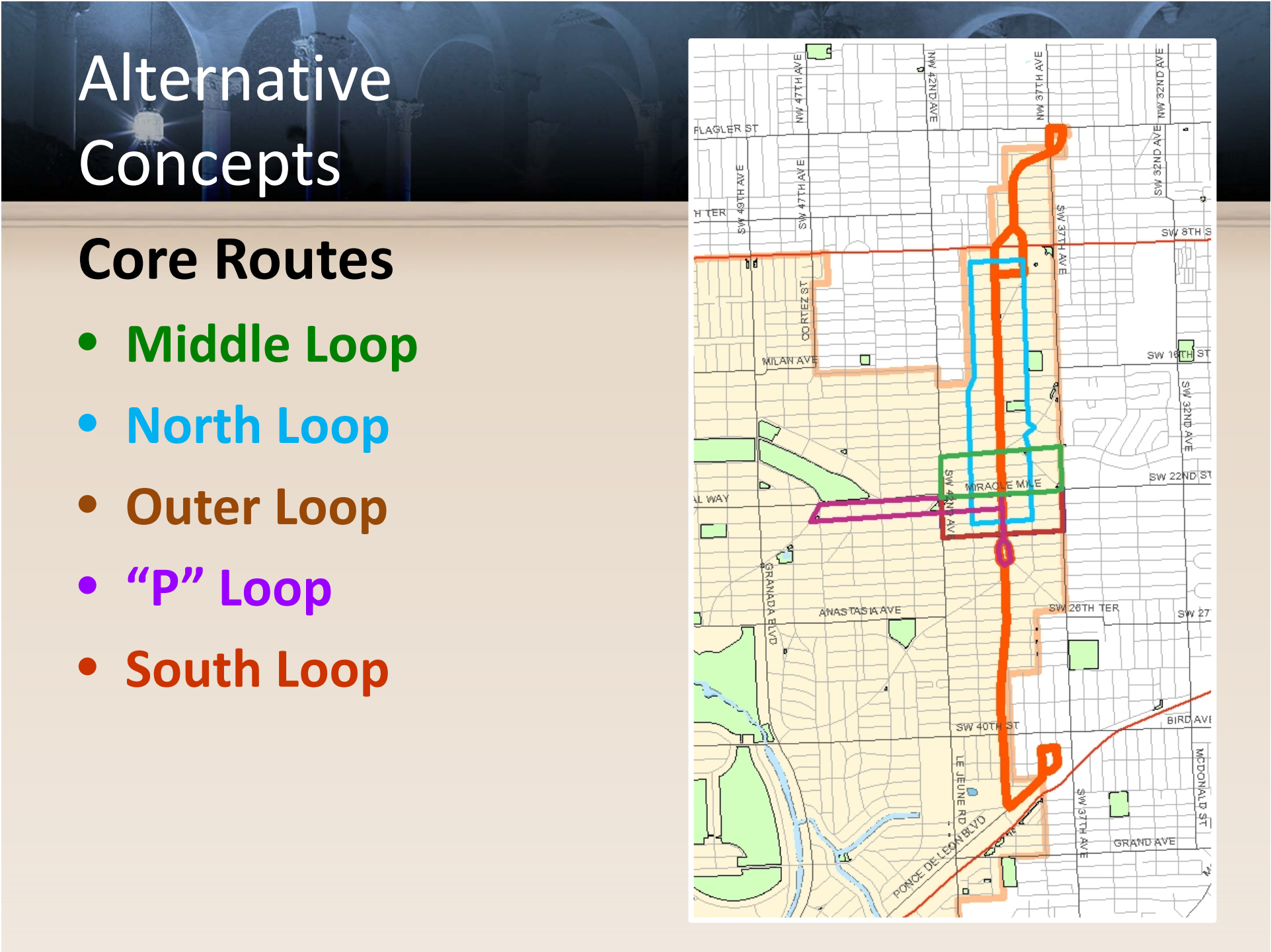
- Douglas Road
- Miracle Mile
- Flagler Street



Core Routes

- Middle Loop
- North Loop
- Outer Loop
- “P” Loop
- South Loop

- # Core Routes
- Middle Loop
 - North Loop
 - Outer Loop
 - “P” Loop
 - South Loop



Alternative Concepts

Coral Gables Extension Routes

- East-West
- Grand Avenue Loop
- Riviera Extension
- UM Extension



Alternative Concepts

Other Extensions

- Airport Connection
- Fairchild Route
- Grove Route

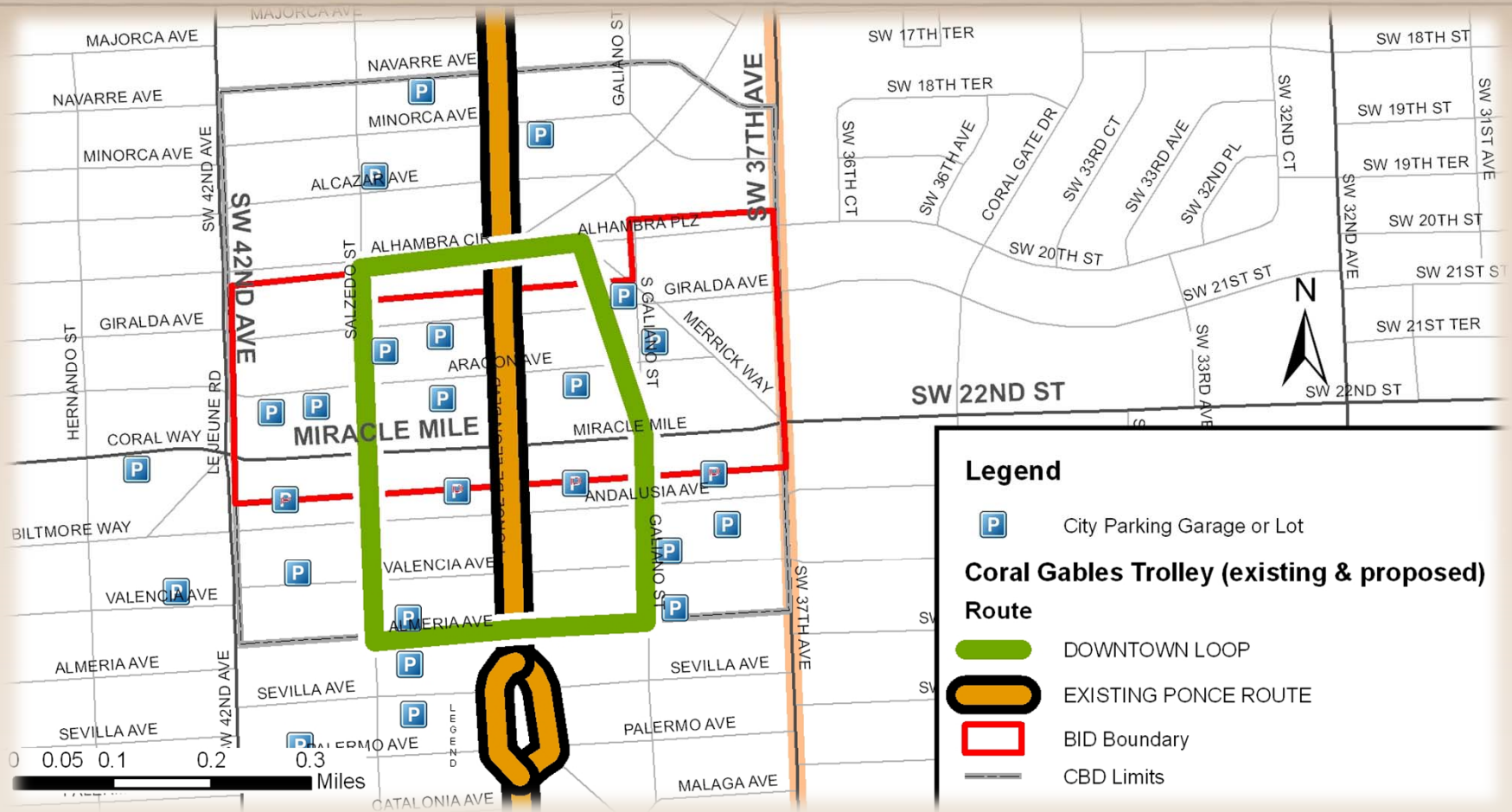
- # Other Extensions
- Airport Connection
 - Fairchild Route
 - Grove Route



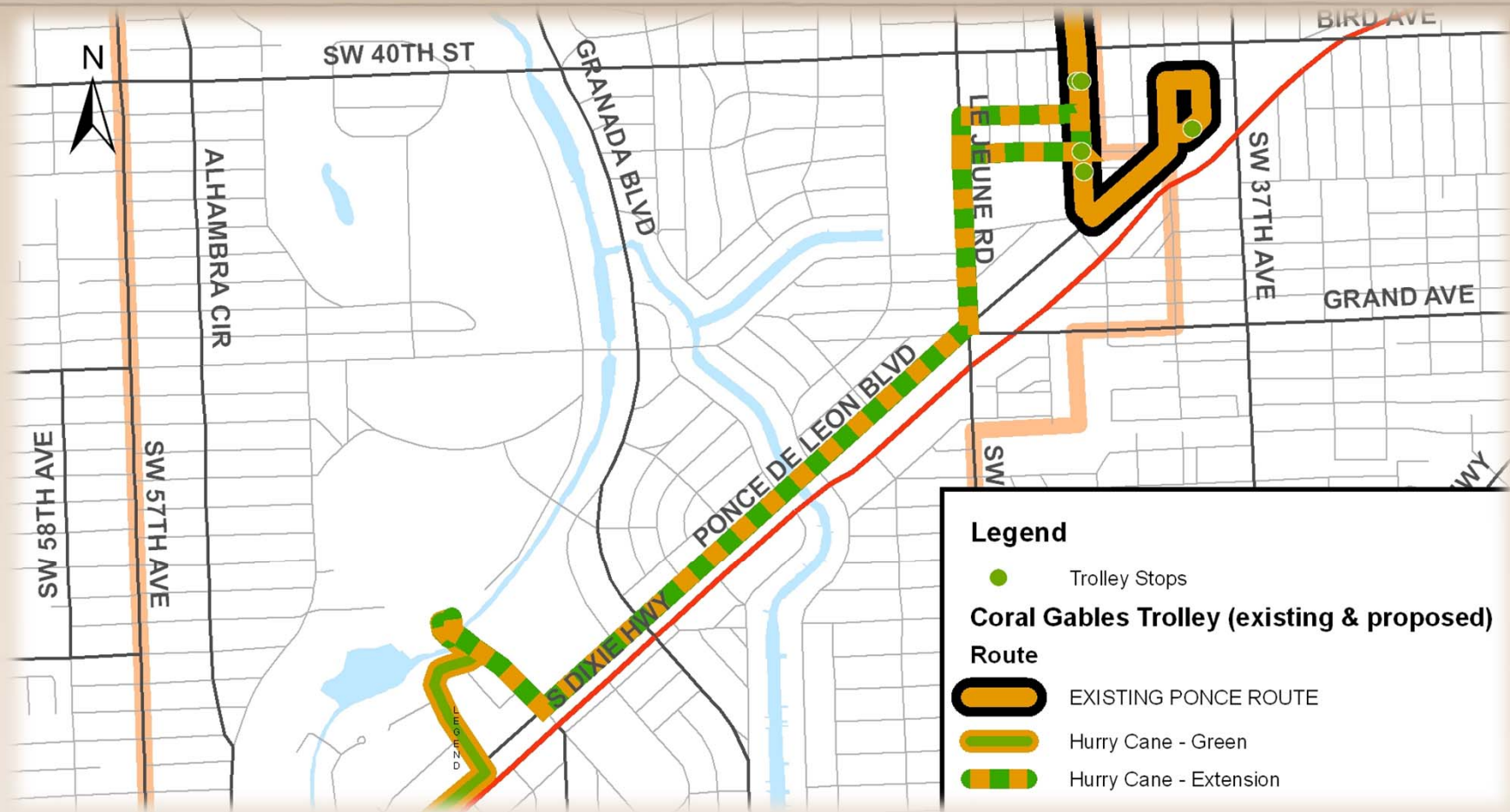
Evaluation Matrix

Route	Potential Market (within ¼-mile)	Trip cost per potential 1,000 riders served	Traffic Barriers / Reliability	Terminal / Intermediate Market	Competing MDT Routes
AIRPORT CONNECTION	21,600	14.46	Long	Terminal	Yes
BILTMORE EXTENSION	5,900	17.65	Okay	Terminal	Yes
EAST WEST	9,300	13.86	Okay	Terminal	No
EXISTING PONCE	66,700	3.15	Okay	Intermediate	Yes
FAIRCHILD	7,800	32.97	Long	Terminal	Yes
GRAND AVENUE LOOP	4,300	13.07	Congestion	Terminal	Yes
GROVE	11,900	8.32	Congestion	Intermediate	Yes
MIDDLE LOOP	5,200	7.86	Okay	Intermediate	No
NORTH LOOP	4,600	20.13	Okay	Intermediate	No
OUTER LOOP	7,700	7.78	Okay	Intermediate	No
P LOOP	5,200	12.86	Okay	Terminal	No
RIVIERA EXTENSION	20,500	8.69	Congestion	Terminal	Yes
SOUTH LOOP	6,900	5.98	Okay	Intermediate	No
UM EXTENSION	10,700	8.44	Congestion	Terminal	No
LE JEUNE EXTENSION	5,400	24.76	Congestion	Terminal	Yes

Downtown Loop



UM Connection




Request for Public Input

- Ask a question
- Offer a recommendation
- Complete a comment card
- Submit a comment by phone or e-mail
 - (305) 460-5070
 - ABrickTurin@GFNET.COM



The City of Coral Gables Trolley Master Plan Study
Comment Card
September 11, 2013



The City of Coral Gables is conducting a study to guide the expansions and improvements to the Trolley service over the next five years. Your comments and suggestions are helpful in guiding the direction of that study by identifying the improvements that will be most beneficial to the City's residents, workers, and visitors. Please take a moment to note your comments and suggestions.

Name: _____

Home Address: _____

Comments: _____

(Continue on reverse side) Thank you