

# City of Coral Gables Trolley Service Master Plan Executive Summary

## 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.

## 2. 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.



## 3. Existing Trolley Operation

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.



The trolley operation is funded through People's Transportation Program (PTP) funds. The amount was for \$1.3 million for 2013.

### **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. 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. 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. Attendees offered suggestions and posed questions on the study and potential recommendations.

#### **3.2. 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. Principal findings from the surveys are summarized as follows:

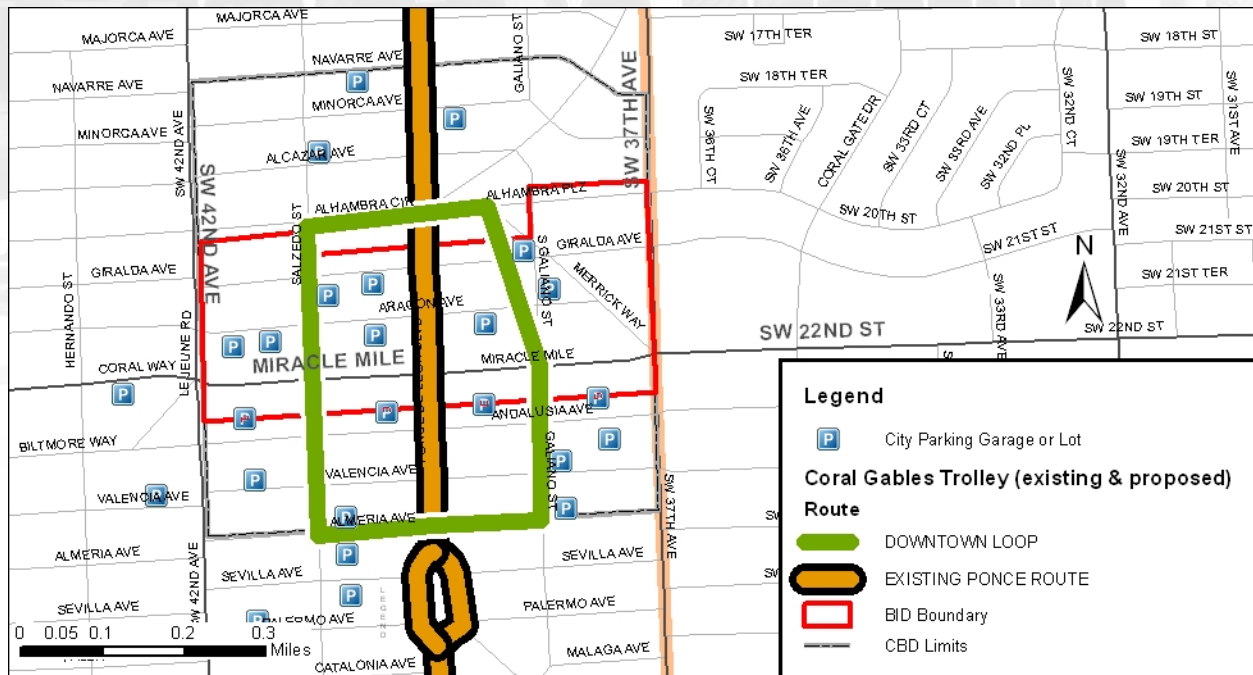
- The existing trolley system is used primarily by residents and those living in the immediate vicinity of Coral Gables (with many living in Miami just east of the city).
- Home-to-work travel was the dominant trip purpose of users. Social/recreational followed by medical comprised another third of the 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 Mile with no other station emerging as a significant origin or destination. 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 offered few suggestions for geographical expansion of service and no dominant destination emerged from the survey. Those surveyed off of the trolleys similarly offered no consensus.



#### 4. Detailed Recommendations for Coral Gables Trolley System

Four recommendations are presented for enhancement to the Coral Gables Transit system. These are:

- Operate a service that loops around downtown Coral Gables- Figure 4-1 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 unimpaired by downtown traffic.



**Figure 4-1 – Proposed Downtown Loop Route**

A headway of approximately six minutes is proposed for the service. The trolley could operate as a single clockwise or counter-clockwise loop. 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.

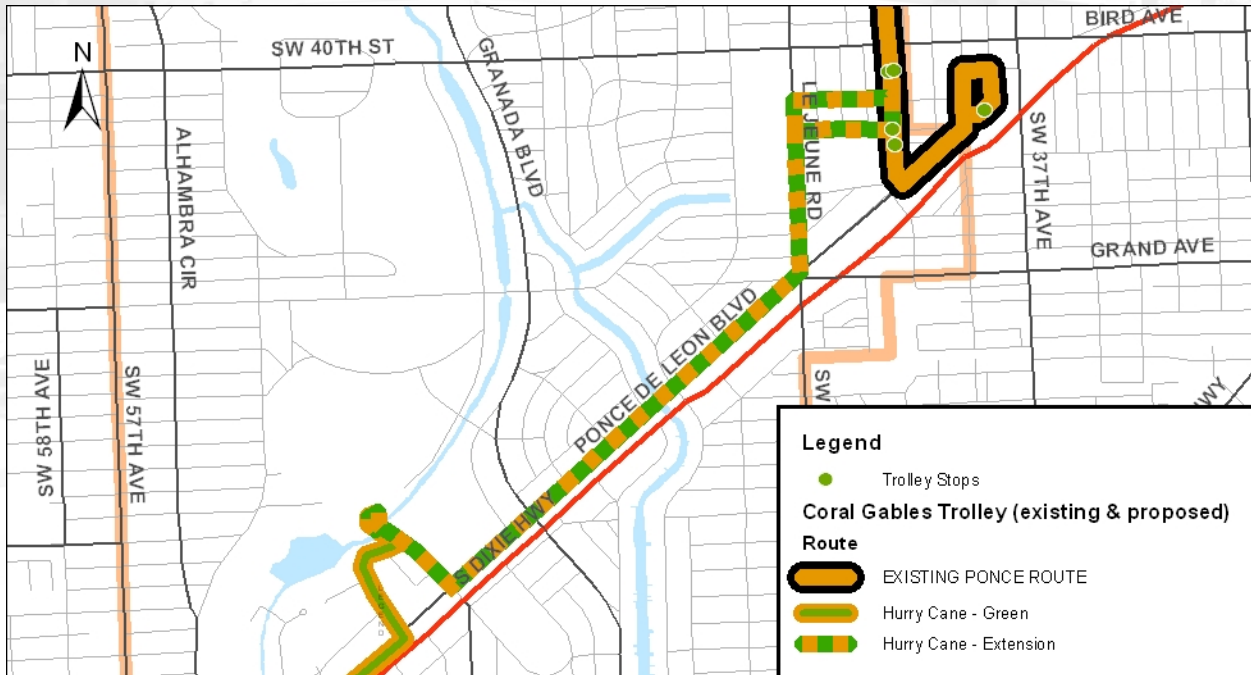
The service could be operated with four vehicles. Adding this requirement to the peak requirement for the Ponce service would result in a need for ten vehicles, one fewer than the current trolley fleet.

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.

- Connect with the University of Miami - 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.



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. A proposed route is shown in Figure 4-2 below.



**Figure 4-2 - 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.

- Acquire and Implement a 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. This concept is depicted in Figure 4-3 below.



**Figure 4-3 - 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. 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.

- **Implement 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



**Figure 4-4 - Representation of Traffic Signal Priority System**



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.

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.

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.

