Coconut Grove Transit Circulator Services Technical Assistance Study: Final Report

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COCONUT GROVE
TRANSIT CIRCULATOR SERVICES
TECHNICAL ASSISTANCE STUDY

Final Report

March 2002

Prepared for:

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INTRODUCTION

This report summarizes the tasks undertaken for the Coconut Grove Transit Circulator Services Technical Assistance Study, prepared by the Center for Urban Transportation Research (CUTR) for the Miami Parking Authority. Alternative route options are presented for the Coconut Grove area along with recommendations for the implementation of service.

Background

The community of Coconut Grove lies just south of Downtown Miami, and contains an eclectic mix of restaurants, shops, parks, cultural activities, hotels, residences, and residents. The major shopping areas are located in the village center at the junction of Cocowalk, which houses an AMC movie theater, 38 various shops, and restaurants, and the Streets of Mayfair, which holds 228,000 square feet of shopping and dining within 2.5 city blocks. Additional shops and restaurants, including many with sidewalk seating, are located south and west of Cocowalk along Main Highway and cross-streets such as Commodore Plaza.

Coconut Grove is also a dense residential area, with sections of affluent housing as well as sections with a low-income, minority population (West Grove). Housing ranges from single-family homes to rental properties to high-rise condominiums overlooking Biscayne Bay. The area can be divided into geographic sections: North Grove, Center Grove, South Grove, and West Grove. The business district is a part of Center Grove.

Issues have been identified with parking in the commercial area that result in significant traffic congestion, air and noise pollution from vehicles, and conflicts with pedestrians. The area is also known for its ample nightlife, which is evident mostly on weekends, but also during the week to some degree. On-street, metered parking is available, but visitors to the business district often seem to have a difficult time finding a place to park their vehicles on the street. A parking garage located at the intersection of Oak Avenue and Mary Street, only a few blocks from the heart of the business district is often underutilized.

Another issue that affects traffic circulation in the Grove is the high level of through-traffic, especially during peak morning and afternoon hours, as well as weekend nights. The corridor of Main Highway to McFarlane Road to Bayshore Drive is utilized as an alternative to U.S. 1 as a north-south route to and from the Downtown Miami/Brickell area and the residential areas south of Coconut Grove such as Coral Gables and Pinecrest.
There are a number of potential markets that can be served by transit circulator services in Coconut Grove. A desire exists to offer internal circulation within Coconut Grove and its business district to provide Grove residents and its visitors alike an easy and convenient way to patronize the area’s shopping, dining, and entertainment opportunities. In addition, better access to the Metrorail stations that serve Coconut Grove can serve the dual purpose of allowing more visitors to access the area without their cars and of providing all of Coconut Grove’s residents and employees with high quality access to the regional Miami-Dade Transit (MDT) system for work, school, and other trips. It is very likely that people would utilize an attractive type of transit circulator service that would not only provide internal circulation but also would have convenient connections to Metrorail and shopping/leisure destinations, as well as access to connections to Downtown Miami/Brickell.

**Existing Miami-Dade Transit (MDT) Services in Coconut Grove**

Coconut Grove is unofficially bound on its north/northwest side by U.S. 1, which also serves as the corridor for the elevated Metrorail service operated by Miami-Dade Transit (MDT). Three Metrorail stations are able to provide access to Coconut Grove: Douglas Road, Coconut Grove, and Vizcaya. The Douglas Road and Coconut Grove stations are located nearest to the business district of Coconut Grove. The Vizcaya station is in the far northeastern section of Coconut Grove, and is near the Vizcaya Museum and Gardens and the Museum of Science and Planetarium. For each of these three Metrorail stations, Table 1 presents average weekday boardings, total weekday boardings, weekend boardings, and the individual station’s rank among the system’s 21 total stations in terms of ridership. Of the three stations, Douglas Road is clearly the busiest in terms of boardings. This is due to the proximity of the Douglas Road station to the business district of the City of Coral Gables and to the comparatively higher volume of parking spaces available at the station for those commuting to other areas such as Downtown Miami.

<table>
<thead>
<tr>
<th>Station</th>
<th>Avg. Weekday Boardings</th>
<th>Total Weekday Boardings</th>
<th>Saturday Boardings</th>
<th>Sunday Boardings</th>
<th>Rank of 21 Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Douglas Road</td>
<td>1,860</td>
<td>35,337</td>
<td>5,400</td>
<td>4,037</td>
<td>8</td>
</tr>
<tr>
<td>Coconut Grove</td>
<td>1,220</td>
<td>23,182</td>
<td>3,445</td>
<td>2,758</td>
<td>13</td>
</tr>
<tr>
<td>Vizcaya</td>
<td>930</td>
<td>17,676</td>
<td>2,507</td>
<td>1,538</td>
<td>16</td>
</tr>
</tbody>
</table>

* Data shown are for September 2001.

Six MDT Metrobus routes provide access to and/or circulate within Coconut Grove. Tables 2 and 3 show information on these routes. Maps of the individual routes are available in
Appendix A of this report. These six routes, Metrobus Routes 6, 22, 27, 37, 42, and 48, that operate in Coconut Grove, do not necessarily meet the goals that Coconut Grove has for the provision of transit service within the area. MDT is a regional system, and the routes that traverse the Grove are regional in nature, with most traveling in a north-south alignment throughout other parts of the City of Miami and Miami-Dade County. Also, the equipment used to operate these routes consists of full-size diesel transit buses that appear out of proportion with Coconut Grove in terms of their size. The existing Metrobus routes are discussed further in a later section of this report.

**Table 2: Metrobus Routes Serving Coconut Grove**

<table>
<thead>
<tr>
<th>Route</th>
<th>Avg. Weekday Boardings</th>
<th>Total Weekday Boardings</th>
<th>Saturday Boardings</th>
<th>Sunday Boardings</th>
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<tr>
<td>6</td>
<td>326</td>
<td>6,192</td>
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<tr>
<td>22</td>
<td>4,066</td>
<td>77,263</td>
<td>10,836</td>
<td>7,028</td>
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<tr>
<td>27</td>
<td>8,894</td>
<td>168,992</td>
<td>25,099</td>
<td>18,981</td>
</tr>
<tr>
<td>37</td>
<td>3,608</td>
<td>68,559</td>
<td>10,405</td>
<td>9,529</td>
</tr>
<tr>
<td>42</td>
<td>1,041</td>
<td>19,778</td>
<td>3,504</td>
<td>3,400</td>
</tr>
<tr>
<td>48</td>
<td>492</td>
<td>9,348</td>
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<td>n/a</td>
</tr>
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</table>

* Data shown are for September 2001.
NOTE: Ridership figures in this table reflect total route ridership.

**Table 3: Other Characteristics of Metrobus Routes Serving Coconut Grove**

<table>
<thead>
<tr>
<th>Route</th>
<th>Frequency</th>
<th>Vehicle Type</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Peaks</td>
<td>Midday</td>
</tr>
<tr>
<td>6</td>
<td>60</td>
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<tr>
<td>22</td>
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<td>27</td>
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<td>30</td>
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<td>37</td>
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<tr>
<td>42</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>48</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Douglas Bridge*</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

* Shuttle began operating October 2001 as a "bridge" from Coconut Grove across U.S. 1 to Metrorail. The Douglas Bridge operates 10am to 6pm Monday, Wednesday, Friday, and Saturday only.
SUMMARY OF STAKEHOLDER INTERVIEW PROCESS

One of the many ways of determining the need for and the desired characteristics of transit circulator services is to assess the opinions of residents, business representatives, and other community leaders in Coconut Grove. As a part of the process of determining the most appropriate type of transit circulator service for Coconut Grove, stakeholder interviews were conducted. The purpose of such interviews is to discover more about the existing conditions in the study area from those who are most familiar with it, and to help determine whether circulator service in Coconut Grove is indeed desired and what goals the community would have for the service. This information, as well as additional details regarding preferred service characteristics, was used to develop the alternative route options shown later in this report.

Between February and December 2001, 15 residents and business representatives were asked through a personal interview process about the current conditions of Coconut Grove, as well as their opinions about the type, frequency, and origins/destinations of new transit services in Coconut Grove. The discussion items used to guide the interviews are included in Appendix B.

Specifically, the persons interviewed included a mix of residents and business owners and managers, while one was a business owner and resident, and another was a resident who represented the Coconut Grove Town Council. The importance of including a diverse group in the interview process is inherent in the responses received. The respondents spoke to the needs of the residents, businesses, and employees in Coconut Grove and were in touch with transit needs of the area from these points of view. These conditions and needs are presented in this section to illustrate the range of perceptions and expectations of transit circulation services in Coconut Grove.

Current Conditions in Coconut Grove

When asked to describe the traits, characteristics, and values of Coconut Grove, the respondents consistently described the area as a residential and commercial community with the natural environments and vitality that has historically attracted significant tourist activity. Described as the “Jewel of Miami,” Coconut Grove is thought to be a unique community with much to offer.

One respondent alluded to a dilemma between the “Grove-ites” and the younger, more progressive residents. Apparently, the “Grove-ites,” who are described as the traditional residents of Coconut Grove, are resistant to change and are discouraged by the additional traffic burdens in their community. Alternately, the newer residents welcome the high-visibility
activities and insist that increased traffic is a necessary result of maintaining economic vitality in Coconut Grove. The traditional residents are concerned that Coconut Grove is losing its small town feel or character and are in favor of recapturing the natural essence of the area. One respondent asserted that Coconut Grove should plant more trees and create additional open space. Those interviewed agreed, however, that a compromise must be developed that will allow for the charm of Coconut Grove to be maintained while at the same time welcoming those outside of the Grove who are extremely instrumental in the economic survival of the community.

The fear of both residents and business representatives in Coconut Grove is the growing number of vacated retail space. Some believe that the future of Coconut Grove is in jeopardy as businesses are relocating into other communities and as it is losing convention business to other areas, such as Miami Beach. One respondent acknowledged that the shopping and entertainment center of Coconut Grove is suffering and that more attention needs to be given to the Commodore Plaza.

When asked about the parking situation in Coconut Grove, most residents and business representatives agreed that parking problems exist, especially during the weekends and special events. One business owner noted that parking problems have been worse, but the closing of several neighborhood businesses has resulted in a reduction of demand for spaces. Several respondents acknowledged that while parking is a problem in some areas of the Grove, there are others areas where parking spaces are underutilized. Specifically, parking at the Oak Street garage is plentiful and underutilized, partially due to people not knowing that the garage exists.

Other parking problems are related to curbside parking. One respondent noted that residents want their guests to be able to park on the streets in front of their homes, but do not want others to be able to benefit from curbside parking. Besides limiting the parking alternatives for residents, eliminating curbside parking will be bad for neighborhood businesses, according to many business representatives.

As a result of the limited number of spaces available in the most popular areas of Coconut Grove, some people are parking their automobiles anywhere, ignoring parking restrictions. Parking in swales and other “no parking” areas is common in Coconut Grove and is not adequately enforced by officials. These and other parking problems, according to the respondents, have discouraged residents of Coconut Grove from venturing out by automobile to shop and play in the area on the weekends.

When the interviewed residents and business representatives were asked what measures could be taken to better manage automobile traffic into and out of Coconut Grove, several
respondents actually mentioned improving infrastructure that would encourage pedestrian activity. Coconut Grove is a pedestrian community, much like an "urban transit village without a bus," according to one resident. Many noted that Coconut Grove lacks adequate sidewalks and needs to improve its curbside appeal. One respondent even suggested that some Coconut Grove streets should be open only to pedestrian traffic.

In addition, bike paths, as one respondent noted, are in disrepair. In addition, more bicycle racks are needed in Coconut Grove, as only two currently exist in Center Grove, according to one respondent. Besides improving pedestrian and bicycle infrastructure, other suggestions included creating more remote parking lots and providing opportunities for shuttle service.

When asked how they felt about the number of buses and delivery trucks in the area, several respondents suggested limiting access to tour buses. Several feel that the tour buses need a staging or off-street parking area and certainly do not need to travel through residential areas. They acknowledge that when tour buses are rerouted through residential areas, due to special events, Coconut Grove residents are frustrated. One participant thought that officials enable tour buses to traverse narrow streets and allow them to sit on main thoroughfares. However, at least one of the respondents felt that tour bus traffic in Coconut Grove was a good thing for business and seemed hesitant to suggest activities that would discourage their presence.

Similar feelings regarding delivery trucks were also expressed. Respondents felt that delivery trucks are also responsible for some of Coconut Grove’s traffic woes. It was noted that it would be helpful if delivery trucks could be restricted to certain hours within the day.

Existing Transit Services

Several of the questions that were asked of the interviewed residents and business representatives were related to their perceptions of existing transit services in and out of Coconut Grove. Respondents were asked if they were satisfied with Miami-Dade Transit’s (MDT) current routes. Several of the participants were not familiar with MDT routes and do not use the bus service. However, most acknowledged that they were familiar with Metrorail service and had used it.

When asked if residents of Coconut Grove had good connectivity to the MDT regional system, one respondent felt that MDT did a good job and that Metrorail is well utilized by Coconut Grove residents. Several of the residents interviewed admitted that they do not use MDT Metrobus for several reasons, including too many transfers needed to reach key places outside of Coconut Grove. One respondent even said that it is “quicker to drive during the worse traffic day than to take transit.”
Another issue is the size of the buses that currently operate within Coconut Grove. A representative of a local school expressed concern with the “smell and dust” associated with the larger vehicles that run in the area. Others also noted the general unattractiveness of the full-size MDT buses.

Most of the residents and business representatives believe that MDT has not done a good job of promoting transit services to Coconut Grove, nor has Miami-Dade County or the City of Miami done a sufficient job of promoting parking alternatives to those coming into the area from the outside. Several interviewees suggested that better marketing techniques, such as print or television advertising, should be pursued.

New Transit Services

After discussing the current conditions and satisfaction with existing transit services in Coconut Grove, the interviewed residents and business representatives were asked to describe the new service that they would like to see in Coconut Grove. Nearly all of the respondents agreed that any service in Coconut Grove should connect with the Douglas Road and Coconut Grove Metrorail stations. Specifically, one respondent suggested a connection between Metrorail and Center Grove along 27th and 37th Avenues. According to one resident, 27th Avenue has been called “the Gateway to the Grove” and, at one time, money had been secured to fund a shuttle along 27th Avenue to Bayshore. However, the money was eventually diverted elsewhere after plans for the shuttle were not pursued.

One respondent indicated that links to lower-income West Grove must also be examined. Transit connections to West Grove would support redevelopment efforts in that area. In addition, connections across U.S. 1 would provide West Grove pedestrians with an alternative to walking across intense traffic on U.S. 1 when attempting to connect with Metrorail. Other connections throughout Coconut Grove could encourage residents of the North and South Groves to spend their entertainment dollars in Central Grove rather than traveling outside the area to dine, shop, or see a movie. As it stands now, many residents of North and South Grove find traffic and parking too much of a hassle.

Major destinations such as the convention center, Peacock Park, Monty’s, Commodore Plaza, Vizcaya, CocoWalk/Mayfair, the Ritz Carlton, and other hotels were also often identified as possible origins and destinations for alternative transit services. Other connections mentioned were Grand Avenue, Miami City Hall, Oak Street Garage, David Kennedy Park, Dinner Key Marina, and the Vizcaya Museum/Gardens and the Museum of Science/Planetarium. Although mentioned previously, many of the respondents also believe that some type of transit service connecting Coconut Grove to remote parking areas is important. Besides the parking lots...
described previously, the University of Miami parking lots were also listed as potential connections of shuttle services with areas in Coconut Grove.

The respondents believed tourists would most likely utilize such services; although, representatives from two of the more upscale hotels in the area did not believe their clients would make use of a shuttle service. Hotel representatives believed their employees would utilize and appreciate more frequent service from Metrorail into the area. Others who might benefit from new transit services in Coconut Grove are West Grove residents who wish to get access to Metrorail, residents who do not drive, and people who wish to avoid the hassle of finding parking. Several respondents believed that, while the evening circulator services would attract tourists and others outside of Coconut Grove, it would also encourage residents of Coconut Grove to get out more often and enjoy where they live.

As discussed previously, the interviewees consistently expressed concern with utilizing buses that are large, noisy, and “smelly.” The idea of having small, electric vehicles, similar to Miami Beach’s Electrowave, seemed very appealing to several of the interview participants. Although more expensive, the respondents felt that electric vehicles would garner more support because of their aesthetic and environmental advantages. Several respondents thought a trolley system would appeal to both the residents and business representatives of Coconut Grove. Several of the respondents agreed that the look of the transit vehicles should be vibrant or “funky,” as described by one respondent. The vehicles can be used to bring something identifiable to the area to help bring “the Grove” back to life.

Most of the respondents agreed that the greatest demand for circulator services would be on weekends and during special events. Several others added that regular evening services would also be utilized in Coconut Grove. While some believed that beginning service at mid-morning for the opening of retail establishments was adequate, some respondents suggested that service should begin early enough to allow for work commuters to connect with Metrorail to their employment destinations. Many of the respondents agreed that the service should run into the early morning hours on the weekends to provide alternatives to drinking and driving. The respondents consistently suggested a frequency of 15 minutes, especially if connections to Metrorail were established. Most of the respondents concurred, however, that the hours and frequency should ultimately depend on the ultimate purpose of the circulator service.

Along with vibrant electric (or otherwise alternatively-fueled) vehicles, the respondents agreed that the system should incorporate consistent amenities such as shelters and seating, signage, trash receptacles, and detailed route information. One respondent suggested using natural tree canopies rather than bus shelters in the residential areas of Coconut Grove; although, the trees would not provide much protection from wet weather.

Final Report Stakeholder Interviews
Several of the respondents, when asked about possible funding sources, said that private funding sources presented excellent opportunities. Several respondents mentioned discrete advertising on or inside the vehicles by Coconut Grove businesses; however, one participant did express concern about advertising on shelters and buses. This person mentioned that the Coconut Grove community had recently rejected plans to allow larger advertisements in the area in an effort to keep commercialism from ruining the neighborhood appeal.

Some respondents believed that private organizations should be allowed to bid to operate and/or maintain the circulator services, while others believed that it was definitely the local government’s responsibility and tax dollars should be utilized. One resident stated that merchants should not be asked to fund new transit services because Coconut Grove’s business owners already pay their “fair share.” However, others supported the notion of establishing a special taxing district.

Other sources of funding support mentioned were user fees or fares (while some offered the possibility of a fare-free service), parking revenues, and utilizing money in an existing trust fund that is currently supported by businesses that do not supply parking.

All of those interviewed agreed that locally-tailored transit circulator service could be a useful addition to Coconut Grove, adding charm and creating an identifiable service to generate enthusiasm and ownership by the residents, as well as support from tourists and others outside of Coconut Grove. Many of the respondents are genuinely concerned about the future of Coconut Grove and hope that transit can be included in efforts to revitalize their community.
ALTERNATIVE ROUTE ALIGNMENTS FOR TRANSIT CIRCULATOR SERVICE IN COCONUT GROVE

Based upon the collection of existing data and other relevant information, current MDT transit services, the results of the stakeholder interviews, input from the Parking Advisory Committee, and CUTR's observations in the Coconut Grove area, four alternative route alignments were developed for possible transit circulator services for Coconut Grove. The alternatives are described in this section. Illustrations depicting the four alternatives are shown on the maps on the following pages. On each illustration, the proposed route alignment is shown, as well as existing MDT routes to show the relationship the existing MDT service.

Description of Alternatives

Alternative Route 1 — Douglas Road Metrorail Station to Coconut Grove Metrorail Station via Grand Avenue

This alternative serves corridors that terminate at the Douglas Road Metrorail station at the west end-of-the-line, south along Douglas Road (37th Avenue) to Grand Avenue, east to McFarlane Road, south to Bayshore Avenue, northeast to Aviation Avenue, northwest to Tigertail Avenue, southwest to 27th Avenue, and north to the eastern terminus at the Coconut Grove Metrorail station. This route is bi-directional, meaning that the westbound and eastbound trips serve the same corridors.

This route is designed to serve residents of West Grove and potential future development at the intersection of Grand Avenue and Douglas Road, as well as providing bi-directional connections to both the Douglas Road and Coconut Grove Metrorail stations. Also, this alternative would serve within one block of the parking garage on Oak Avenue at the intersection with Tigertail and Mary Street. This route also serves the Bentley Family Health Center across from the Douglas Metrorail Station.

Alternative Route 2 — Douglas Road Metrorail Station to Coconut Grove Metrorail Station via Bird Avenue

This alternative also connects residents of West Grove to both the Douglas Road and Coconut Grove Metrorail stations. Corridors served are Oak Avenue, north on Hibiscus Street, east on Day Avenue, north on New York Street, east on Bird Avenue, north on 27th Avenue to the Coconut Grove Metrorail Station. This alternative is also bi-directional.
This route is also designed primarily for the residents of West Grove. This route also serves the Bentley Family Health Center across from the Douglas Metrorail Station.

**Alternative Route 3 — University of Miami Residence Hall to Center Grove via Grand Avenue**

This alternative begins at the residence halls on Stanford Street at the University of Miami (UM) and travels southeast to U.S. 1, northeast to Grand Avenue, then east to Mary Street. The return trip serves westbound on Oak Avenue, south on Matilda Street then west on Grand Avenue, and southwest on U.S. 1 back to the residence halls on the UM campus.

This route was suggested as an alternative during the interview process. Since this study and the development of alternatives is about managing both mobility and parking, one strategy is to encourage UM students to leave their cars parked on campus and use a shuttle service to access Center Grove as their downtown. Existing service on campus already connects UM students with Coral Gables and more recently with Coconut Grove on Saturday evenings. A partnership with UM could lead to a greater level of frequency and viability for the future.

**Alternative Route 4 — Vizcaya Metrorail Station to Center Grove via Tigertail Avenue**

This alternative serves corridors with an eastern terminus at the Vizcaya Metrorail station, northeast on S.W. 2nd Avenue, southeast on S.W. 26th Road, southwest on Bayshore Drive, northwest on Alatka Street, southwest on Tigertail Avenue to Oak Avenue in Center Grove. This route is also bi-directional.

This route is designed primarily to connect residents of North Grove to Center Grove, which was one of the high priorities that emerged from the interview process. CUTR believes that serving Tigertail will create easier walking access for north Coconut Grove residents, especially on those blocks that have barriers to automobile access. This alternative will also connect North Grove residents with Metrorail at the Vizcaya station.

**Operational Characteristics of the Four Alternatives**

**Methodology for Developing Operational Characteristics**

There are several factors influencing the operation of service that ultimately determine the cost of providing that service. These factors include:
Coconut Grove Transit Circulator Services Study

- Route mileage, which translates to annual revenue miles of service;
- Round-trip time, which translates to annual revenue hours of service;
- Frequency, which determines the number of buses and hours they operate;
- Hours of service, which determines the service day and the annual revenue hours; and
- Vehicle requirements, which are derived by the above factors.

Table 4, on page 23, details the operational characteristics of the four alternatives, while Table 5, also on page 23, outlines the estimated annual operating costs for each alternative.
This is a blank page
Route 2
Douglas Road Metrorail Station to Coconut Grove Metrorail Station via Bird Road
This is a blank page
Route 3
University of Miami Residence Hall to Center Grove via Grand Avenue
This is a blank page
Route 4
Vizcaya Metrorail Station to Center Grove via Tigertail Ave

Legend
- Route 4 (Proposed)
This is a blank page
Table 4: Operational Characteristics — Coconut Grove Transit Service Alternatives

<table>
<thead>
<tr>
<th>Coconut Grove Transit Service Alternatives</th>
<th>Roundtrip Distance (miles)</th>
<th>Roundtrip Travel Time (minutes)</th>
<th>Frequency (minutes)</th>
<th># of Buses</th>
<th>Round Trips per Weekday</th>
<th>Weekday Span of Service (M-Th)</th>
<th>Daily Weekday Service Hours</th>
<th>Fri.-Sun. Service Hours</th>
<th>Daily Fri.-Sun. Revenue Hours</th>
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<tr>
<td>Douglas Road Metrorail Station to Coconut Grove Metrorail Station via Grand Avenue</td>
<td>5.9</td>
<td>40**</td>
<td>15</td>
<td>3</td>
<td>81</td>
<td>5:30 a.m. to 12:30 a.m.</td>
<td>57</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Douglas Road Metrorail Station to Coconut Grove Metrorail Station via Bird Avenue</td>
<td>4.6</td>
<td>30</td>
<td>15</td>
<td>2</td>
<td>56</td>
<td>8:00 a.m. to 10:00 p.m.</td>
<td>28</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Alternative Rt 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University of Miami Residence Hall to Center Grove via Grand Avenue</td>
<td>6.0</td>
<td>25</td>
<td>15</td>
<td>2</td>
<td>67</td>
<td>8:00 a.m. to 10:00 p.m.</td>
<td>28</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Alternative Rt 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vizcaya Metrorail Station to Center Grove via Tigertail Avenue</td>
<td>7.5</td>
<td>30</td>
<td>15</td>
<td>2</td>
<td>56</td>
<td>8:00 a.m. to 10:00 p.m.</td>
<td>28</td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>

* The implementation of Route 1 will replace existing MDT service; as such, the span of service and number of revenue hours shown in the table is higher to match the MDT service.

** Roundtrip distance for Route 1 will take longer due to higher passenger loads since it replaces existing MDT service and would be offered fare free.

Table 5: Estimated Annual Operating Cost — Coconut Grove Transit Services

<table>
<thead>
<tr>
<th>Alternative Route</th>
<th>Description</th>
<th>Annual Revenue Miles, Weekday</th>
<th>Annual Revenue Miles, Fri.-Sun.</th>
<th>Total Annual Miles</th>
<th>Annual Revenue Hours - Weekday</th>
<th>Annual Revenue Hours - Fri.-Sun.</th>
<th>Total Annual Revenue Hours</th>
<th>Estimated Cost per Revenue Hour</th>
<th>Total Estimated Annual Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1*</td>
<td>Douglas Road Metrorail Station to Coconut Grove Metrorail Station via Grand Avenue</td>
<td>132,538</td>
<td>104,926</td>
<td>237,464</td>
<td>11,856</td>
<td>8,892</td>
<td>20,748</td>
<td>$45</td>
<td>$840,000**</td>
</tr>
<tr>
<td>2</td>
<td>Douglas Road Metrorail Station to Coconut Grove Metrorail Station via Bird Avenue</td>
<td>51,520</td>
<td>43,056</td>
<td>94,576</td>
<td>5,824</td>
<td>4,680</td>
<td>10,504</td>
<td>$45</td>
<td>$472,680</td>
</tr>
<tr>
<td>3</td>
<td>University of Miami Residence Hall to Center Grove via Grand Avenue</td>
<td>80,640</td>
<td>84,240</td>
<td>164,880</td>
<td>5,824</td>
<td>4,680</td>
<td>10,504</td>
<td>$45</td>
<td>$472,680</td>
</tr>
<tr>
<td>4</td>
<td>Vizcaya Metrorail Station to Center Grove via Tigertail Avenue</td>
<td>84,000</td>
<td>70,200</td>
<td>154,200</td>
<td>5,824</td>
<td>4,680</td>
<td>10,504</td>
<td>$45</td>
<td>$472,680</td>
</tr>
</tbody>
</table>

* The implementation of Route 1 will replace existing MDT service; as such, the span of service and number of revenue hours shown in the table is higher to match the MDT service.

** MDT has estimated that it could provide the service associated with Alternative Route 1 at an annual cost of $840,000, which represents a slightly lower cost per revenue mile than shown in the table. Final costs may also be lower based on additional detailed analysis by MDT regarding off-peak vehicle requirements and cost-savings associated with the modification of existing services.
MDT has two types of regional bus routes serving Coconut Grove: regional routes that pass through the Grove in a northeast-southwest direction and regional routes that use the Grove as an end-of-the-line for major north-south corridors. A total of seven MDT regional routes operate in Coconut Grove, as follows (route maps are included in Appendix A):

**Route 6** – Center Grove is the southern end-of-the-line for this route that begins on N.W. 29th Street, travels east to Miami Avenue, south to Downtown Miami, west on Flagler, north on N.W. 22nd, west on N.W. 14th Street, and south on S.W. 32nd and S.W. 37th Avenues. This route operates from 8:13 a.m. to 5:55 p.m. on weekdays and serves the Coconut Grove Metrorail Station on northbound and southbound trips. The frequency of this route in Coconut Grove is one bus every hour (60 minutes). This route is one of two routes that enter Coconut Grove and operate using minibuses.

**Route 22** – This route begins at the Douglas Road Metrorail station and serves S.W. 22nd Avenue via Center Grove (Grand, McFarlane, Bayshore, Mary and Tigertail). This route travels in a north-south pattern on S.W. 22nd Avenue to the 163rd Street Avenue Mall in North Miami Beach and operates from 4:44 a.m. to 12:33 a.m. on weekdays. The frequency of this route in Coconut Grove is one bus every hour.

**Route 27** – Center Grove (Oak, S.W. 32nd, Grand, McFarlane, Bayshore, Mary and Tigertail) is the southern end-of-the-line for this route that travels in a north-south pattern on S.W. and N.W. 27th Avenue all the way to the Miami-Dade county line. This route operates from 5:05 a.m. to 2:29 a.m. on weekdays and serves the Coconut Grove Metrorail station on northbound and southbound trips. The frequency of this route in Coconut Grove is one bus every 30 minutes.

**Route 37** – Route 37 passes through Coconut Grove on Ingraham and S.W. 37th Avenue (Douglas Road). The southern end-of-the-line for this route is the South Miami Metrorail Station. It travels east on Sunset Drive to Cocoplum Circle, north on LeJeune to Edgewater, north on Douglas (serving the Douglas Metrorail station) to N.W. 21st Street, and then north to Miami. This route operates from 4:44 a.m. to 12:14 a.m. on weekdays. The frequency of this route in Coconut Grove is one bus every 30 minutes.

**Route 42** – Route 42 is the only regional MDT route that serves the City of Miami City Hall. Center Grove (McDonald, Grand, McFarlane, Bayshore, Darwin, Tigertail and Oak)
is the southern end-of-the-line for this route that serves the Douglas Road Metrorail station and travels north on LeJeune Road, serves Miami International Airport, and has a northern terminus in Golden Glades. This route operates from 4:44 a.m. to 8:48 p.m. on weekdays. The frequency of this route in Coconut Grove is one bus every hour.

**Route 48** – This route has a southern terminus at the South Miami Metrorail Station, serves the University Metrorail Station, Douglas Road Metrorail Station, Center Grove (Grand, McFarlane, and Mary), Bayshore, Brickell, Downtown Miami and then travels north through the Miami area to the Santa Clara Metrorail Station. This route operates from 5:06 a.m. to 8:31 p.m. on weekdays. The frequency of this route in Coconut Grove is one bus every hour. This is one of two MDT routes that penetrate Coconut Grove and uses minibuses rather than 40-foot buses.

**Douglas Bridge** – This new shuttle service began operating in October 2001 to act as a “bridge” across U.S. 1 between Coconut Grove and the Douglas Road Metrorail Station. Currently, this route operates with 20-minute frequency from 10:00 a.m. to 6:00 p.m. on Mondays, Wednesdays, Fridays, and Saturdays only. In addition to connecting residential areas of West Grove with the Douglas Road Metrorail Station, it also serves Walgreen’s, Gibson/Stirrup Plazas, and the Coconut Grove Neighborhood Service Center.

Existing MDT service may be confusing and/or inconvenient to residents, visitors, and employees of Coconut Grove. It is evident from the current level of MDT service in the Grove that there is a general lack of ridership. Therefore, consideration has been given to the possibility of MDT reducing coverage of some routes with the implementation of Coconut Grove circulator service.

It is anticipated that MDT would scale back only those routes that use Coconut Grove as the end-of-the-line and not the regional routes that bisect the Grove. All of the proposed alternatives in this report, when compared to existing MDT routes serving Coconut Grove, provide enhanced frequencies and provide bus service that is tailored to the needs of residents, visitors, and employees of the Grove.

**Comparison of Coconut Grove Alternatives to MDT Metrobus and Metrorail Services**

The three Metrorail stations that span the length of Coconut Grove along U.S. 1 (Dixie Highway) and the seven Metrobus routes that directly serve Coconut Grove is a clear indication
that the neighborhood receives very high levels of service compared to other parts of the region. Therefore, it is necessary to compare the proposed Coconut Grove Alternatives to MDT services. In this section, the four alternatives are compared to MDT services in light of the four market groups and service needs that this study is intended to address:

- Access for residents of North Grove to Center Grove via neighborhood scale service;
- Access for residents of West Grove to the regional rail and bus network via neighborhood scale service;
- Access for University of Miami students to Center Grove as their Downtown area; and
- Access for Miami-Dade County residents and visitors to Center Grove via park-and-ride and train-and-ride alternatives.

**Metrorail**

Metrorail operates at a staggered frequency of 10 to 15 minutes at all three stations along U.S. 1. Alternatives 1, 2, and 4 operate between at least one of the three stations, and Alternative 3 operates at the University of Miami Metrorail station. Since all alternatives operate at a 15-minute frequency, there is an increased likelihood that scheduling techniques would enable Coconut Grove Alternatives to be timed to meet Metrorail trains more times per hour than current Metrobus routes in Coconut Grove. Metrobus routes with 30-minute frequencies can meet trains twice per hour (if timed) and routes with 60-minute frequencies can meet trains only once per hour.

**Metrobus**

Metrobus routes operating in the Grove have frequencies of every 30 and every 60 minutes. Most routes operate main corridors: Grand Avenue, McFarlane Road, Bayshore Drive, Mary Street, Oak Avenue, Tigertail Avenue, S.W. 32nd Avenue and S.W. 37th Avenue (Douglas Road). Most of the four alternatives utilize the same corridors; however, the alternatives when viewed in their entirety do not duplicate any Metrobus routes. Alternative 1 operates on Grand Avenue to provide more convenient walking distances for West Grove residents to access the regional bus and rail system.

The routing of Alternative 3 somewhat mirrors the routing of MDT's Route 48 from the University of Miami campus to Center Grove; however, the alternative developed for this study is more direct because there are no deviations between the campus and Center Grove. The

*Final Report*

*Alternative Route Alignments*
alternative enters U.S. 1 from Ponce de Leon Boulevard on campus and travels directly to Grand Avenue and into Center Grove. MDT's Route 48 deviates twice to serve Maynada, Hardee, and LeJeune Road and also serves the Douglas Road Metrorail station. Finally, Alternative 4 duplicates a small portion of MDT's Route 22 on Tigertail Avenue; however, no MDT bus route serves the entire length of Tigertail from Alatka Street to Center Grove.

Table 6 outlines the comparisons of the Coconut Grove Alternatives to MDT services and provides the strengths of each alternative in relation to services provided by MDT.

**Table 6: Comparison of Coconut Grove Alternatives and MDT Service**

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Alternative Connections to MDT Bus/Rail</th>
<th>MDT Frequency</th>
<th>Alternative Frequency</th>
<th>Strengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Douglas Road Metrorail Station to Coconut Grove Metrorail Station via Grand Avenue</td>
<td>Rail: Douglas &amp; Coconut Grove</td>
<td>Every 15 minutes</td>
<td>- Operates at comparable frequency to Metrorail and greater frequency than Metrobus routes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bus: 6, 22, 27, 37, 40, 42, 48, 65x, 72, J</td>
<td>Rail: 10-15 min.</td>
<td>- Provides walking distance for West Grove residents seeking to access regional system</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bus: 30-60 min.</td>
<td>- Potential for partnership between Coconut Grove Trust Fund and Miami-Dade Transit</td>
</tr>
<tr>
<td>2</td>
<td>Douglas Road Metrorail Station to Coconut Grove Metrorail Station via Bird Avenue</td>
<td>Rail: Douglas &amp; Coconut Grove</td>
<td>Every 15 minutes</td>
<td>- Operates at comparable frequency to Metrorail and greater frequency than Metrobus routes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bus: 6, 22, 27, 37, 40, 42, 48, 65x, 72, J</td>
<td>Rail: 10-15 min.</td>
<td>- Provides easier walking distance for West Grove residents seeking to access regional system</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bus: 30-60 min.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>University of Miami Residence Hall to Center Grove via Grand Avenue</td>
<td>Rail: University of Miami</td>
<td>Every 15 minutes</td>
<td>- Operates at comparable frequency to Metrorail and greater frequency than Metrobus routes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bus: 48, 52, 56</td>
<td>Rail: 10-15 min.</td>
<td>- Will attract UM students to Center Grove through a direct connection from campus</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bus: 30-60 min.</td>
<td>- Has potential for partnership between City of Miami and UM</td>
</tr>
<tr>
<td>4</td>
<td>Vizcaya Metrorail Station to Center Grove via Tigertail Avenue</td>
<td>Rail: Vizcaya</td>
<td>Every 15 minutes</td>
<td>- Operates at comparable frequency to Metrorail and greater frequency than Metrobus routes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bus: 12, 17, 24</td>
<td>Rail: 10-15 min.</td>
<td>- Connects residents of North Grove to Center Grove with shorter walking distance to Tigertail versus Bayshore</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bus: 30-60 min.</td>
<td>- Tigertail is more pedestrian friendly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Serves parking garage at Oak Avenue</td>
</tr>
</tbody>
</table>

From an examination of the regional MDT bus and rail network as a whole and all the communities of the regional service area, it is clear that Coconut Grove has very high levels of service for both bus and rail. The geographic coverage of MDT service in the Grove is comparable to the levels of service in Coral Gables, the Miami Beaches, and Downtown Miami. For many corridors, such as 22nd Avenue, 27th Avenue and 37th Avenue, Coconut Grove is a logical southern end-of-the-line for north-south corridors with MDT routes that run all the way to the northern county line. However, in light of the high levels of service coverage provided
by MDT, the primary distinguishing factor of the Coconut Grove Alternatives is that their design is dedicated to the scale, mobility patterns, and unique needs of Coconut Grove residents and visitors. In this sense, the alternatives would act as a complement to MDT bus and rail services operating in the Grove, unless Alternative 1 is selected and it replaces existing MDT service.

If indeed Alternative 1 is implemented, it would replace existing MDT service in Coconut Grove provided by Metrobus Routes 22, 27, and 42, all of which would be truncated at the Metrorail stations they serve. The end of the line on Route 22 would be moved to the Coconut Grove Metrorail Station and the Grand Avenue service would be provided by the route alignment of Alternative 1. Approximately 180 existing passenger trips per day would need to transfer to or from the new circulator service to complete their trips. The south ends of the line for Routes 27 and 42 would be moved to the Douglas Road Metrorail Station, and their service south of the station would be provided by the circulator service. Approximately 250 passenger trips from Route 27 and 20 passenger trips from Route 42 per day would need to transfer to complete their trips. However, the 15-minute frequency offered by the circulator service would make transferring to the service described in Alternative 1 relatively easy. One additional factor to consider is that a transfer would normally require an additional fare for those passengers who pay in cash. MDT officials believe it would be unfair to ask the passengers who use existing Metrobus service to pay an additional transfer fee in order to access Coconut Grove if Alternative 1 is instituted. Accordingly, MDT officials recommend that if Alternative 1 is implemented, it should be available on a fare-free basis. This would not only address the question of how to treat existing Metrobus passengers, but would also increase the attractiveness of the service for all residents, employees, and visitors to Coconut Grove.

**Relationship of Alternatives with Existing and Proposed Parking**

One of the primary objectives of this study is to maintain the character of Coconut Grove while concurrently maintaining the vibrancy of the business community in Center Grove. In essence, the Grove possesses a competing challenge: it wants visitors because the neighborhood is a regional attraction and the business sector needs customers, but it does not want those visitors to clog the already congested streets and parking spaces.

As the alternatives approach the final phase of recommendations, these are the four issues in the transit/parking relationship:

- Offering incentives to visitors to park away from the Grove (Douglas Road and Coconut Grove Metrorail Stations) and use a shuttle to access Center Grove;
Promoting the use of off-street parking (parking garage[s]) in Center Grove, which would require a more extensive wayfinding system than is currently in place;

Promoting the success of transit alternatives through the elimination of on-street parking metered spaces, which impacts safety and character; and

Eliminating need for parking due to increased transit access to Coconut Grove (combination Metrorail/Metrobus and the implementation of circulator services).
VEHICLE TECHNOLOGY OPTIONS

Minibuses versus Full-Size Buses

Local circulator services are typically provided with minibuses. It has been determined that all of the service route options described in this report can be provided with minibuses that are approximately 22 to 24 feet in length. These vehicles can seat between 16 and 20 passengers, with capacity for another 10 to 15 standees. It is not anticipated that the alternative routes proposed in this report would need any more passenger capacity than a minibus provides. Each route is relatively short, and passengers would be getting on and off throughout the short routes, thereby freeing up capacity along the way. While there might be an occasional exception, it is not anticipated that more than 25 passengers would be on a minibus at one time during a typical one-way trip. MDT's average passenger load throughout the system is 36 passengers per hour. With each minibus providing four trips per hour, there would be a capacity of between 75 to 100 passengers per hour per bus.

It is quite difficult to predict an exact level of ridership for any of the proposed routes. In Miami Beach, the incredible popularity of the electric shuttles and the effect of free fares were not anticipated. The seven buses that were originally placed in service were insufficient to satisfy the demand from passengers. The City decided to charge $0.25 for the service, which resulted in a reduction in ridership of approximately 30 percent. Miami Beach then added four more electric minibuses to provide the additional capacity needed. If any service provided in Coconut Grove becomes very popular, there could be a need to consider larger or more vehicles.

Minibuses are the preferred type of vehicle to use for local circulator service due to their greater maneuverability and their more neighborhood-friendly size. The smaller size of a minibus would be most advantageous in an area such as Coconut Grove, where the vehicle would be able to easily negotiate the narrow streets without much notice, whereas a 40-foot bus can appear as an intrusion to the area. The smaller size of the vehicle would be more in keeping with the pedestrian activity on the streets throughout the business district of Coconut Grove. These smaller vehicles also have faster acceleration to help ensure better schedule adherence.

Low-Floor Buses versus Conventional Buses

The advantages of minibuses for local circulator services are fairly evident and, whenever possible, they should be used. In addition, minibuses with "low floors" are preferable as well. Low-floor minibuses have no steps for passengers to climb to get on or off the vehicle. This
makes boarding easier for everyone, particularly the elderly and disabled, a parent with a baby stroller, or a shopper with a wheeled basket to help transport groceries. Low floors on buses utilize manually activated ramps to accommodate wheelchairs, thereby eliminating the need for hydraulic wheelchair lifts (all vehicles used in the proposed service would need to be accessible to the disabled). Perhaps most importantly, low-floor minibuses also help speed the boarding and alighting process for each passenger, thereby contributing to faster route service and more reliable schedules. The only disadvantage to acquiring low-floor minibuses is that they are more expensive than conventional minibuses, and therefore increase the capital costs of providing the proposed services.

**Conventional versus Alternative-Fuel Vehicles**

Many of those interviewed as part of this project, as well as some members of the Parking Advisory Committee, expressed a preference for utilizing electric vehicles. The idea of smaller, alternative-fuel (preferably electric) vehicles was seen as an attractive option for use in Coconut Grove. A type of equipment different from the traditional transit bus, that would have a unique style and bring identity to the circulator service and to the Grove itself, would be ideal. In addition, the quiet, smooth, clean ride of an electric transit vehicle would be congruent with the pedestrian environment within Coconut Grove.

Virtually everyone with whom CUTR spoke was familiar with the Electrowave Shuttle service on Miami Beach. It was acknowledged how the electric vehicles helped provide greater visibility for the service which helped in its promotion and marketing. However, even Miami Beach officials believe that the basic demand for local circulator service was there, whether electric batteries or conventional fuels powered the vehicles. As noted above, the electric battery powered vehicles used in Miami Beach give the service visibility and identity, and add to the quality of the environment in the entertainment district with its many pedestrians and sidewalk cafés. After more than three years of experience, it is hard to imagine any other type of vehicle being used on Miami Beach.

**The Basics of Electric Vehicles**

A pure electric vehicle (EV) is a very simplistic vehicle that uses a rechargeable battery for fuel. The major components of an EV's power train are a battery pack, an electric motor, a transfer gear (instead of a transmission), and a controller. There is only one moving part in an electric motor, compared to 847 moving parts in a conventional internal combustion engine. This relative simplicity results in a reduced parts inventory and reduced routine maintenance.
A hybrid electric vehicle (HEV) is generally propelled by two sources of power. In a Series HEV (common for transit minibuses), one source of power is a rechargeable battery, while the other can be gasoline, diesel, propane, compressed natural gas (CNG), or another fuel supply for an auxiliary power unit (APU) that continuously charges the battery pack.

The benefits of EVs are well established. They reduce site emissions to zero or near zero (depending on whether the vehicle is a pure EV or a hybrid EV). They require far less oil and fuel, thereby relieving dependence on foreign oil, which results in more stable fuel prices. EVs are about twice as fuel efficient as vehicles with internal combustion engines. They are virtually silent except for some slight sounds from an air-conditioning system or a minor whir from a turbine APU in a hybrid EV. EVs also emit no offensive smells or exhaust. Eliminating both noise and smell is particularly important for operations in areas such as Coconut Grove that encourage pedestrian and sidewalk activities. The absence of a transmission makes an electric transit vehicle low-floor by nature, which allows for easier boarding and alighting. In addition, it has been clear that, wherever they have been used for transit services, EVs have proven to be fantastic for public relations and rider acceptance.

Pure electric vehicles generally provide an average range of 40 to 80 miles (or 4 to 8 hours of service) on lead-acid batteries (the most common type of battery), depending on the ability of the vehicle’s operator to avoid uneven acceleration. Accelerations and decelerations must be as smooth as the operator can manage to extend the battery charge as long as possible. As such, special training is needed for the operators of EV transit vehicles. Vehicle range is also dependent on topography, but the flat nature of the Miami area minimizes this as a factor. There are gauges on board vehicles to inform the operator of how much energy is left in the batteries. The vehicle will slow down gradually before losing all its power (an EV will not suddenly stop in the middle of a route). Another type of battery is the nickel cadmium battery (NiCad), which cost significantly more, but also provide significantly more power and range (however, they are considered by many to be cost-prohibitive at this time—Miami Beach, for example, will have sealed lead-acid batteries in its new hybrid EVs. More advanced batteries are being developed each year. Batteries are 98 percent recyclable and are always sent back to the supplier. Currently, battery packs cost between $10,000 and $12,000.

Typical lead-acid battery packs on EVs take six hours to slow-charge, which is the most common recharge method at the present time. In the future, “rapid recharge” equipment, which is discussed below, may become more widely used. The batteries last between 800 and 3,000 cycles (charges and discharges); maintenance and operating techniques determine how long they will last within that range. An EV operator needs to be prepared to swap out the battery pack after about five to eight hours of service. Despite of the weight and size of the battery pack, swapping out the batteries is a relatively fast and simple process. The vehicle is
taken to its maintenance site where a technician uses a forklift to remove the battery pack from the vehicle. The technician positions that battery pack in its place for recharging and then puts a new fully charged battery pack in the vehicle. The process takes no more than five minutes, but the vehicle also needs to be removed from service to complete this process. How long this takes depends on how near the maintenance facility is to swap out batteries. In Miami Beach, the entire process takes a little less than 15 minutes since the facility is near, but not right along, the Electrowave route alignment. This emphasizes the need to have a maintenance facility right along the route, if possible.

The industry is now producing “rapid recharge” equipment for battery packs. These pieces of equipment, which cost approximately $40,000 each, can fully charge a battery pack in approximately 20 minutes (versus the six hour slow charge technique noted above). If an EV is being used on a route that has a schedule that allows it to have a half-hour layover, it can be fully charged and ready for another service cycle fairly quickly. The advantage of rapid recharge equipment is that personnel are not required to take care of swapping out battery packs during service cycles of the vehicle. Another new technique is the concept of “opportunity recharges.” With this technique, a vehicle operator plugs the battery pack in the vehicle into the rapid recharge equipment for approximately five minutes. This does not fully recharge the batteries, but charges them to approximately 60 percent of their capacity, which is enough to keep the vehicle powered for another three to four hours. The EV industry has determined that this method (not charging the batteries fully) is probably the best for the longevity of battery packs’ life. There exists a “sweet spot” for batteries to be charged at about 40 to 70 percent of their capacity. Rapid rechargers allow the batteries to be substantially recharged before damaging heat builds up, and this process can be continued throughout the day. Opportunity recharges minimize the need for spare battery packs, and eliminate the need to have personnel readily available to swap out battery packs throughout the day.

Without rapid recharge equipment, pure EV operations need to have at least three sets of batteries for every vehicle: one that is being used in the vehicle; one that is being charged; and one that is fully charged and resting, ready to place in the vehicle. A fully charged battery pack should not be placed into an in-service vehicle immediately after its slow-charging cycle is complete. This subjects the battery to too much heat, and it is heat that ultimately ruins batteries.

**Pure Electrics versus Hybrid Electrics**

Hybrid EVs provide a great deal of flexibility in transit circulator operations. These vehicles have small turbine engines (APUs) powered by fossil fuel. They run very efficiently because they operate at a rather low and constant speed. The purpose of the APUs is to provide
continuous power to generate the battery packs and, in warm weather service areas such as Miami, they help power the air-conditioning systems. The range of a hybrid EV is considerably greater than a pure EV, because the hybrid does not have to be taken out of service for recharging as long as the APU has fuel to feed the batteries. Industry representatives note that the typical range for the hybrid EV is between 150 and 350 miles. The disadvantage to this type of vehicle is that each hybrid electric minibus costs approximately $40,000 more than a pure electric minibus (which themselves can cost at least $200,000). Advanced Vehicle Systems, Inc. (AVS), the producer of the 22 foot hybrid-electric vehicles used in Chattanooga, Miami Beach, and, most recently in Coconut Creek, has won a statewide bidding process, making it possible for Florida’s public transit providers to purchase these vehicles without engaging the competitive bid process. Table 7 shows approximate estimated costs for conventional diesel minibuses as well as pure electric and hybrid-electric minibuses.

Table 7: Comparison Of Costs – Conventional versus Electric Minibuses

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Number of Seated Passengers</th>
<th>Estimated Capital Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light-Duty “Cutaway” Diesel Minibus</td>
<td>18</td>
<td>$55,000</td>
</tr>
<tr>
<td>Medium-Duty Diesel Minibus</td>
<td>29</td>
<td>$110,000</td>
</tr>
<tr>
<td>Pure Electric Minibus</td>
<td>25</td>
<td>$215,000</td>
</tr>
<tr>
<td>Hybrid-Electric Minibus</td>
<td>25</td>
<td>$245,000</td>
</tr>
</tbody>
</table>

The appropriate option of electric bus operations (pure electric with battery swaps; pure electric with rapid rechargers; or hybrid electric) is determined by the following factors: a thorough understanding of the operating characteristics of the route(s), route schedules and frequency of service, the location and length of layovers, the number of vehicles required including spares, and storage/maintenance facility location(s). Pure electric vehicles cost less than hybrids, but require extra batteries and staff. Rapid recharging equipment can eliminate some of the need for additional batteries and staff, but is also expensive, at about $40,000 per unit. In addition, pure EVs have a somewhat limited range of between 40 and 80 miles, depending on operating conditions and the skill of the driver. Hybrid EVs do not require rapid recharge equipment or extra staff for battery swapping, but cost approximately 15 percent more than pure EVs. Series hybrids can provide a range of between 150 and 300 miles, a range between 80 and 100 percent more than pure electrics.

If the proposed circulator routes are relatively short, the somewhat shorter range of pure EVs might not be a disadvantage. Also, the pure EVs would be a good choice if the initially configured routes are short and the operating agency does not expect the service coverage to increase significantly thus requiring additional vehicle range (i.e., if the service area will not
change in size in the foreseeable future). Hence, pure electric transit vehicles work best when the circulator service is concentrated in a relatively small area with shorter routes.

If the routes are relatively longer, or the service coverage area might be expected to grow during the life cycle of the vehicles, hybrid-electric transit vehicles might be the optimal choice. Hybrids work best whenever there is a need for extended range on the vehicles. Another consideration is whether the operating agency anticipates the vehicles to be used in hurricane evacuations, other emergencies, or other special events that would require operations outside the normal service area.

For Coconut Grove, a relatively compact area with short route alignment options, pure electric transit vehicles might be sufficient. However, should the area consider using the vehicles for any other applications, such as those listed above (hurricane evacuations, other emergencies, special events) or in conjunction with any type of interlocal service agreement with an area such as Coral Gables, who will be implementing its own circulator service using electric vehicle technology, hybrid-electric vehicles would be the most feasible option.

Lessons Learned in the Application of Electric Vehicle Technology

There are a number of common experiences among the various cities that have implemented EV shuttle services that offer helpful lessons to other areas that are considering this type of service:

- **Match the technology with operating characteristics** – One of the most important lessons is to ensure that the electric vehicle technology will meet the operational requirements of the circulator service. The propulsion system must provide adequate power and range. In addition, the location(s) of storage/maintenance facilities is important: they should be on or near the routes.

- **Implement high quality service** – As is true for any transit service, in terms of service on the routes, frequency is key. Linear routes with bi-directional service tend to be more successful than looped routes, since they are more direct and easier for the rider to understand. However, it should be noted that “high quality service” might be defined somewhat differently in different areas. For example, circulator service in Coconut Grove will be considered high quality service if it is meeting the needs and goals of those it serves and is deemed successful within the community.

- **Meet Americans with Disabilities Act (ADA) requirements** – While the electric shuttles operating in Miami Beach comply with ADA for manual wheelchairs, they cannot accommodate electric wheelchairs. Manufacturers must find a way to meet this need.
• **Assign a dedicated staff** – Areas using this technology, especially Miami Beach, have found that it is important to have an operations and maintenance staff whose sole priority is the electric shuttle system.

• **Provide comprehensive training** – Both mechanics/technicians and shuttle vehicle operators need full training on electric vehicles and electric propulsion technologies. There are many nuances they need to appreciate. For example, the range of the electric shuttles is highly sensitive to the operating techniques of the drivers. Slow rates of acceleration and controlled deceleration makes the best use of regenerative braking systems and can increase the range of the vehicles. In addition, Miami Beach has found that continual refresher training (every 35 or 45 days) is helpful.

• **Do pre-acceptance testing** – Before the initial start of the service, run the vehicle as it would be run in normal service before final acceptance of the vehicles. This not only helps determine if the equipment is built to specifications, but also can help direct the training used for the operators and technicians.

• **Involve the experts** – There are many organizations, such as the Southern Coalition for Advanced Transportation (SCAT) and the Electric Transit Vehicle Institute (ETVI) that are more than willing to help with the start-up of an electric transit vehicle circulator system. Make sure that the vehicle manufacturer is committed to standing behind the product and is willing to provide considerable on-site training. Ensure, too, that the manufacturer knows the characteristics of the service that will be operated. Miami Beach has been very pleased with AVS, who has sent mechanics and engineers to help with problems, and they have even shipped parts overnight. In addition, AVS developed a training program for mechanics. Also, work with the local electric utility company. Florida Power & Light (FPL) was very helpful to the Miami Beach Transportation Management Association (TMA) in developing technical specifications and with other issues.

• **Select technology carefully** – There are many decisions that will need to be made, such as whether to choose pure electric vehicles or hybrid-electrics. If hybrids are chosen, the fuel for the APU must also be selected (diesel, CNG, etc.). Batteries must be selected very carefully: check with areas that have experience and choose the batteries with the best performance record.

• **Know inventory needs** – Be aware of what parts will be needed on site and which parts can be quickly secured from the manufacturer. This will be helpful in deciding what will be needed in the inventory, in determining storage space requirements at the facility, and in estimating inventory costs.

• **Expect some "bugs"** – There will likely be some problems with the new technology, so expect them. It is still a very young industry, and each vehicle is individually assembled by hand. Despite advances in the industry, there are always at least some
problems with new vehicles. Anticipate that, and realize that it will get better. Make sure that the number of spare vehicles is sufficient.

- **Understand infrastructure requirements** – Very specific infrastructure is needed to operate and maintain electric vehicles. Any area wishing to implement electric shuttles should fully understand these requirements. Also, work with the local utility, which can help specify exact needs for a system. Become familiar with the peak and off-peak times and rates for electricity.

- **Install infrastructure first** – Have the facility, infrastructure, systems, and trained mechanics in place before the vehicles arrive. When the first electric shuttles arrived in Miami Beach, there was no place to locate them, and a temporary shelter had to be built.

- **Understand that electric vehicles attract non-traditional transit riders** – People who would never think to ride a conventional city transit bus are very open to using electric vehicles. "Choice" riders will be attracted to the small, quiet, clean, and nice-looking shuttles. With quality, easy-to-understand service and customer-friendly operators, the trip in itself becomes a convenient, unique, and fashionable experience.

- **Fully leverage the public relations value** – The operating agency should be sure to take full advantage of the high public relations value electric shuttles invariably generate. The technology is non-intrusive and extremely popular for many reasons: the vehicles are environmentally-friendly, quiet and clean, futuristic and fun to ride, attract ridership, cost less to operate (although capital costs are higher), and encourage development in the areas around the route network. Because of these benefits, there tends to be support for the technology from local community leaders. Those who sponsor or otherwise support an electric transit circulator system are seen as "leaders," "pioneers," and "innovators."

- **There must be a "champion" for the system** – Whether it is an elected official, a local agency director, or another community leader or decision-maker, there must be someone prominent in the community who really wants to use the technology and wants to make the effort a success. Support for this type of system must come from the top ("grass tops" as opposed to "grass roots"). A leader with sufficient organizational clout or political skills can help ensure that the details associated with a new electric circulator system will be addressed.

**Facilities for Maintaining and Storing Electric Vehicles**

If the services proposed in this report are provided using conventionally fueled vehicles, the issue of where a maintenance facility is located is relatively minor. Conventional vehicles have great range (from 250 to 350 miles on a full tank of fuel), and they can handle all the service
they will provide in a day on one tank of fuel. There would be no need for the vehicles to return to the maintenance facility in the middle of the day unless an unexpected mechanical problem occurred that could not be corrected by a service vehicle in the field.

If, on the other hand, pure electric vehicles are used, there must be a maintenance facility in close proximity to the circulator routes. Indeed, the implementation of Miami Beach's Electrowave service was delayed for many months due to the difficulties in finding an appropriate maintenance facility. The operating range of such vehicles is relatively short, and a single charged battery pack does not have sufficient power to accommodate substantial "deadhead" mileage and 12 hours of service. Deadhead mileage is the distance buses must travel from their initial dispatch from the garage to the start of actual route service, and back again at the end of service. In addition, a charging facility must be relatively close by to minimize the amount of time a vehicle is removed from service in order to get recharged. The opportunity to place rapid rechargers at strategic places along the routes provides greater flexibility for electric vehicles, but it would still be advantageous to have a maintenance facility specifically designed for such vehicles near the circulator routes. This would also drastically reduce any costs associated with deadhead mileage. If hybrid EVs are used for any services, these vehicles provide sufficient range to obviate the need to return to the facility in the middle of the day for recharging purposes.

Whether constructing a new facility or retrofitting an existing building to be able to handle electric or hybrid-electric vehicles, there are a number of issues to consider when planning infrastructure for storing and maintaining this equipment. First, there must be adequate electrical service at the facility; power quality and load management are very important as well. The planning of a new or modified facility should be undertaken with consultation from a licensed commercial electrician and involvement from the local electric utility. Electricity billing rates are also an issue; it may be possible to get reduced rates for overnight recharging of batteries, when overall demand for power is low. In addition, if the vehicles are hybrid-electrics, or if gas, diesel, or CNG vehicles are fueled and maintained in the same location, there must be an awareness of the additional safety hazards and steps should be taken to mitigate these dangers. All local safety codes must, of course, be observed.

Regarding the size of a facility, a rule of thumb that can be observed is to allow approximately 4,200 square feet of space for every 5 vehicles in the fleet. The amount and configuration of space is important because there needs to be adequate room to maneuver a forklift around the vehicles to insert and remove battery packs. There must be adequate floor storage space for battery racks; due to their weight, batteries can be stacked no more than two high. Space is also needed for parts, charging, and offices. Other characteristics of a facility should include
ceilings that are at least 20 feet high to allow space for a vehicle raised on a hydraulic lift, and non-slip floors for safety. In addition, adequate ventilation must be provided in the facility.

As briefly mentioned above, separate areas are required to store parts and to charge batteries. There should also be a separate, environmentally controlled area for the repair of electronics, and another area for cleaning batteries (to capture and neutralize waste). If a fare is charged to ride the system, a vault or a secure room is also a necessity. Finally, an emergency eye-wash, shower, and scrub area is also specifically needed because personnel will be handling corrosives.

Advanced Vehicle Systems, Inc. (AVS) has expressed an interest in establishing a service center in Southeast Florida if a critical mass of electric vehicles are purchased and placed in service there. Miami Beach is hoping to purchase 25 more vehicles in the next five years. Along with Coconut Grove, Coral Gables is also pursuing the use of electric vehicles for its circulator services, and there are several other areas in the County that have expressed an interest in the use of electric vehicle technology for transit services. It is possible that this level of electric shuttle activity could attract AVS to establish a service center that might be expanded into a storage and maintenance facility as well, in partnership with public sponsors of electric shuttle service.

Where Electric Vehicles Make the Most Sense

- **Electric minibuses should be utilized in densely developed areas and/or areas of high pedestrian activity.** These areas, such as Coconut Grove, are likely to provide a greater market for ridership that will help justify the extra capital expense associated with these vehicles. They are also areas that will enjoy the maximum benefits from low-emission or emission-free vehicles. In addition, the minibuses will be seen by the greatest number of people, thereby maximizing the public relations benefit of this transit investment.

- **Electric minibuses are appropriate in areas that are being redeveloped.** The attractive nature of the vehicles contributes to the efforts to renew interest and investment in these areas. Electric vehicles tend to attract non-traditional passengers who will look forward to riding an electric minibus, although they might never seriously consider riding on a conventional bus. They are particularly effective in areas that have, or anticipate having, a considerable amount of pedestrian activity. Their clean and quiet operation adds to a pleasant environment that is more pedestrian friendly.

- **Electric minibuses are most appropriately utilized on routes that anticipate a great deal of stop-and-go operations due to significant boarding and alighting of passengers.** Electric vehicles are much more fuel-efficient and
Coconut Grove Transit Circulator Services Study

emissions-efficient than conventional buses in operational settings that require frequent acceleration and deceleration.

- **Electric minibuses are appropriate as a way of attracting people to use remote parking facilities.** These vehicles could be used to encourage remote parking (at Metrorail stations or other parking garages and lots within Coconut Grove) to reduce traffic that circles repeatedly in efforts to find on-street parking and contributes to congestion, noise, and air pollution in the business district.

- **Electric minibuses make sense when they connect with other regional transit services.** MDT’s Metrorail and Metrobus services that provide access to Coconut Grove can be regarded as gateways and, where appropriate, circulators can augment such regional services by extending their reach and providing much more direct access to the local activities and destinations within the Grove. If circulator services provide convenient intermodal connections, they could encourage more use of such regional transit services and help reduce traffic congestion on the regional road network.

- **Electric minibuses make more sense where synergistic sharing of resources, major facilities, and interlocal service agreements may be expected.** Coconut Grove should explore opportunities for resource sharing with other nearby areas that have an interest in utilizing electric vehicles, most definitely Coral Gables. Significant savings in support infrastructure and maintenance expenses can be realized by sharing a storage/maintenance center. Savings in operating costs are also possible through the integration of routes between these areas when it makes sense for passengers. The sharing of vehicles is another issue that can be explored.

- **Electric minibuses are far more likely to be used where local municipalities are willing to provide increased matching money to help pay for vehicles and service.** With competing demands for very limited funding, the more a particular local area can demonstrate its commitment to implementing this technology by providing funds, the more likely it will be that the project will come to fruition.
FUNDING SOURCES

There are many potential sources of funds that could help to pay for the operating and capital expenses of circulator services in Coconut Grove. Some of the funds required might come from consistent sources that can be relied upon from year to year. The best chances of having a new circulator service in Coconut Grove would result from Miami-Dade Transit restructuring some of the routes that currently serve the Grove, replacing its large buses with minibuses. However, there are many other potential sources of funds that will be more difficult to secure and can only be obtained through a competitive process. Obtaining competitive grants will require a determined and energetic staff and a supportive policy board. "Local match" will likely be required in order to secure most state and federal grants. This section of the report describes the sources of funding that exist and might be available to pay for operating and/or capital expenses associated with new local circulator services in Coconut Grove.

Florida Department of Transportation (FDOT) Funding Programs

1. The Transportation Outreach Program

The Florida Legislature created the Transportation Outreach Program (TOP) with the passage of Senate Bill 862 in FY 2000. This program replaced the Fast Track Economic Growth Transportation Initiative that was in place for only one year. The "TOPs" program is dedicated to funding transportation projects of a high priority based on the principles of:

- Preserving the existing transportation infrastructure;
- Enhancing Florida's economic growth and competitiveness; and
- Improving travel choices to ensure mobility.

A minimum of $60 million will be available, annually, to fund projects under this program. A seven-member Transportation Outreach Program Advisory Council currently makes annual recommendations to the Legislature on prioritization and selection of economic growth projects. The Advisory Council is composed of three representatives chosen by the Governor, and two each by the President of the Senate and the Speaker of the House of Representatives. In the first year of the program (FY 2001), the Advisory Council recommended projects totaling $115,313,183 to the Legislature, an amount that exceeds the minimum availability by almost a two-to-one ratio. The Legislative Conference Committee for the state budget approved $115,859,919 in projects throughout the state.
Transportation Outreach Program projects may be proposed by any local government, regional organization, economic development board, public or private partnership, metropolitan planning organization, state agency, or other entity engaged in economic development activities.

Eligible projects include those for planning, design, acquiring right-of-way for, or constructing the following: major highway improvements, feeder roads which link to major highways, bridges of state or regional significance, transportation improvements for trade and economic development corridors, access projects for freight and passengers, and hurricane evacuation routes. Other eligible projects include major "public transportation" projects that encompass seaport and airport projects, rail projects that facilitate the movement of passengers and cargo, Spaceport Florida Authority projects, and bicycle and pedestrian facilities that add to or enhance a statewide system of public trails. Of particular interest to this study for Coconut Grove, public transportation transit projects which improve mobility on interstate highways, or which improve regional or localized travel are also eligible.

Projects funded under this program should provide for increased mobility on the state's transportation system. Projects that have local or private matching funds may be given priority over other projects. Projects must also be production-ready within five years and be consistent with local comprehensive plans.

From the description of the program provided above, it is clear that this program has a heavy predisposition to favor projects that will help the economy of a region. Hence, a transit circulator service in Coconut Grove might qualify for eligibility under the TOPS program if a direct link can be made between the services provided and the economic vitality of this section of the City of Miami.

The projects that have been approved for funding by the Legislature in the first year of the program range in cost from $63,000 to $12,500,000. Hence, even relatively small projects might be funded, and local areas such as Coconut Grove should not hesitate to apply for such funding, particularly if they can secure partners and supporters, and they believe a good case can be made that their project will enhance economic development. Of great importance to the Miami-Dade area, one of the projects included in this program for FY 2001 totaled $11,770,000 for a bus replacement program in Miami-Dade County to be administered by the Miami-Dade Transit Agency. According to the language of the conference committee,

"These funds will require a non-state match of 40 percent. Of the funds appropriated, 60% shall be provided for new feeder/circulator buses which travel to the main routes. The remaining 40 percent of the funds shall be provided for an increase or renovation of the existing main bus fleet."

Final Report

Funding Sources
This appropriation was approved by the Legislature but, unfortunately for Miami-Dade County and its municipalities, it was vetoed by the Governor. It would have otherwise provided funds that could have been used to pay a substantial portion of the capital costs of minibuses for use in Coconut Grove, and other communities in the county. The City of Miami and/or the Miami Parking Authority might wish to pursue discussions with Miami-Dade County and the Miami-Dade Legislative Delegation to see if there is any possibility of resubmitting this request in the hopes of getting better results in the next legislative session.

Those parties interested in proposing projects to be funded through the TOPS program should contact the District Six Planning and Public Transportation Director's office at 305-377-5900. Two of the seven current members of the TOPs Advisory Council are residents of Miami-Dade County (Elizabeth Reyes-Diaz and Carlos L. Valdes). Proposals to modify the composition of the Advisory Council to ensure that there is one representative from each of the seven FDOT districts throughout the state failed to pass in the 2001 session of the Florida Legislature.

2. Public Transit Service Development Program

The Public Transit Service Development Program was enacted by the Florida Legislature to provide initial funding for special projects. The program is selectively applied to determine whether a new or innovative technique or measure can be used to improve or expand public transit. Service Development Projects specifically include projects involving the use of new technologies, services, routes, or service frequencies; the purchase of special transportation services; and other such techniques for increasing service to the riding public as are applicable to specific localities and transit user groups. Projects involving the application of new technologies or methods for improving existing conventional operations, maintenance, and marketing in public transit systems can be funded through the program. Funding of Service Development Projects are subject to specified times of duration, but are supported for no more than three years. If deemed successful by their own measures, Service Development Projects will need to be continued by the public transit provider without Public Transit Service Development Program funds at the conclusion of the FDOT support period.

Each FDOT district office develops and submits a program of eligible Service Development projects to the Central Office by the first working day of July each year, for implementation beginning July 1 of the following fiscal year. Projects are developed in consultation with eligible recipients, and the need for such projects is typically justified in the recipient's Transit Development Plan (TDP). For example, a project to initiate a new marketing campaign must be generally supported in the recipient's TDP with a statement of need for improved marketing efforts, as well as an objective to provide these efforts. It is important to note that municipalities wishing to start a new transit service separate from the county are also eligible.
for Service Development funds from FDOT. Such Service Development grant applications must be supported by their own Transit Development Plan or feasibility study that describes the project and the likely benefit to public transit in the area.

As delineated in Section 341.051, Florida Statutes, the Department is authorized to fund Service Development Projects that will improve system efficiencies, ridership, or revenues. The following are eligible functional areas along with specified time durations for Service Development Projects: projects that improve system operations, having a duration of no more than three years; projects that improve system maintenance procedures, having a duration of no more than three years; projects that improve marketing and consumer information programs, having a duration of no more than two years; and projects that improve technology involved in overall operations, having a duration of no more than two years.

The Department provides up to one-half of the net project cost, but usually no more than the amount of funding committed by the local project sponsor. Any proposed state participation of more than 50 percent of the net project cost is for projects of statewide significance. The FDOT Central Office in Tallahassee makes the final determination of whether a project qualifies for more than 50 percent state participation. District offices are notified of the determination before the appropriation request is forwarded to the Legislature. This program offers great financial support for new local circulator services. Both the City of Hialeah and Miami Beach have received such funds to help pay for substantial portions of the costs associated with their recently implemented local circulator services.

This state program is one of the most likely sources of funding of operating or capital costs associated with new circulator services in Coconut Grove. Requests for such funds usually need to reach FDOT District offices by mid-May in order to be considered for funding starting in July of the following year. If the City of Miami or the Miami Parking Authority is interested in applying for grants from this program, representatives should contact the District Six Public Transportation Office at 305-377-5906. FDOT budgets approximately $2,000,000 statewide per year for this program. These funds are distributed throughout the seven districts of the department; approximately $450,000 might be available in District VI on an annual basis. Again, there is severe competition for this program’s funds, not the least of which comes from MDT which has many projects it would like to try on a pilot basis and Miami Beach which is considering expanding their local Electrowave services. Local leaders might consider approaching the FDOT Central Office staff in Tallahassee to recommend increased funding for this program on a statewide basis to help support new local circulator services.
3. County Incentive Grant Program

This FDOT program provides grants to counties to improve a transportation facility which is located on the State Highway System or which relieves traffic congestion on the State Highway System. The FDOT must consider, but is not limited to, the following criteria for evaluation of projects for County Incentive Grant program assistance:

- The extent to which the project will encourage, enhance, or create economic benefits;
- The likelihood that assistance would enable the project to proceed at an earlier date than the project could otherwise proceed;
- The extent to which assistance would foster innovative public-private partnerships and attract private debt or equity investment;
- The extent to which the project uses new technologies, including intelligent transportation systems, which enhance the efficiency of the facility;
- The extent to which the project helps to maintain or protect the environment; and
- The extent to which the project includes transportation benefits for improving intermodalism and safety.

FDOT will participate financially at different levels, depending on the nature of the project. For projects on the Florida Intrastate Highway System, the department shall provide 60 percent of the project costs. For projects on the State Highway System, the department shall provide 50 percent of the project costs. For local projects that demonstrate an ability to relieve traffic congestion on the State Highway System, the department shall provide 35 percent of the project costs. In the case of Coconut Grove circulator service, the most likely amount of state participation would be 35 percent, although it could be higher if service is provided along 27th Avenue, and if service is provided with electric vehicles.

Grants from this program source may only be used to pay for capital costs associated with a transportation project, but they can and have been used for transit capital expenses. Five transit projects received funding through this program in FY 2000, with the funds being used for such purposes as transit transfer hubs, shelters, and the cost of purchasing property for transit improvements. Approximately $13.5 million will be available in District VI in FY 2003, although it is uncertain how much money might be available after that time. A municipality may apply to the county for consideration by the county for funding under this program. The county must evaluate all municipal applications. If a municipality's proposed project is rejected by the county for funding or if the county's proposed project adversely affects a municipality...
within the county, the municipality may request mediation to resolve any concerns of the municipality and the county. This is a program that is controlled by the FDOT District offices, and the FDOT District staff makes the decisions on which projects are funded.

Although this program appears to be designed for projects that are typically regarded as county or state responsibilities, it is possible that the capital expenses associated with local transit circulator services in Coconut Grove could be a project to be discussed with Miami-Dade County whereby an interlocal agreement could be reached calling for the local share of the project to be provided by the City of Miami. In addition, representatives of both the Miami-Dade MPO and FDOT District VI have indicated that the County Incentive Grant Program offers the best opportunity for state funding of the purchase of new electric vehicles. Last year, local areas in District VI failed to take advantage of almost $7 million in state funds that could have been used to match local funds. These funds are still available on a carryover basis to local applicants with eligible projects and matching funds.

4. Urban Transit Capital Program

This FDOT program provides an additional resource for capital projects. Priority for funding is given to projects that: (1) support the strategies outlined in Transit 2020, A Strategic Plan for Florida, (2) demonstrate that the state funds will be used to leverage other local funds, private funds or federal funds, and (3) can be initiated and completed in a timely fashion. Urban Transit Capital funds are allocated to the FDOT districts by formula. District VI is projected to have between $750,000 and $3,000,000 per year available between FY 2003 and FY 2006. Up to one-half of the non-federal share of capital costs may be awarded for eligible projects. Eligible costs include expenses limited to:

- Rolling stock such as buses, vans, light rail vehicles, and other high occupancy vehicles;
- Purchase of land for installation of project facilities and right of way for transit corridor improvements;
- Acquiring or constructing mass transportation facilities, maintenance facilities, terminals, park and ride lots, or passenger waiting areas; and
- Computer hardware or software for planning, scheduling, customer service or communications.

Toll revenue credits may not be used as match. Local funds or private funds may be used as match.
Eligible recipients are public agencies eligible to receive FDOT Transit Block Grants, Public Transit Service Development, or Transit Corridor funds. These funds are not restricted to specific transportation corridors as is the case with the Transit Corridor program. Local municipalities such as Miami that wish to start or enhance local circulator services that promote the goals of the 2020 Strategic Plan are eligible for these state funds. The District Six office is likely to favor applications that demonstrate a clear promise of carrying significant numbers of passengers.

Project requests must be submitted to the District Office by November 1st annually. The District office will review submissions and make award decisions by December 1st annually. Project proposals must include a description of the project and its budget, a discussion on how the project will leverage non-department funds and how the project supports the strategies in the Transit Strategic Plan. The project should also be included in the local Transit Development Plan.

The Florida Transit Block Grant Program

One of the most important sources of funding available to transit agencies in the State of Florida is the Transit Block Grant Program administered by the Florida Department of Transportation. This program provides dollars to all transit operators in the State that provide fixed route transit services and are designated recipients of Section 5307 federal transit funding. The State currently allocates approximately $50 million dollars annually to 28 different transit providers through the state transit block grant program. This amount is expected to increase by approximately three percent per year over the next five years. The funds from this program may be used by recipients for either capital or operating expenses. These funds are made available to recipients based on a three part formula that takes into account the following three factors: (1) population of the service area (2) total revenue miles of transit service provided and (3) total passenger trips provided. Miami-Dade County is one of the 28 recipients of state transit block grant funds, and is the only recipient of such funds within Miami-Dade County. The City of Miami provides no transit services at the present time and receives no federal funding for transit; consequently it is not now eligible for state transit block grant funds. It is only mentioned in this report because it is possible the criteria for eligibility might change over the next few years and, if it does, the City of Miami should be mindful of the potential to receive funds from this source in the future if it decides to become a provider of transit services.
Federal Transportation Funding Programs

Flexible funding programs first authorized in 1991 by the Intermodal Surface Transportation and Efficiency Act were maintained with the passage of the Transportation Equity Act for the 21st Century (TEA-21) in 1998. These sources may be used for either transit or highway projects. The following flexible funding programs may be used for transit projects: the Surface Transportation Program (STP) and the Congestion Mitigation and Air Quality Improvement (CMAQ) programs. Both the STP and CMAQ programs are discussed below.

Flexible funds, such as STP funds, can be transferred from the Federal Highway Administration (FHWA) to the Federal Transit Administration (FTA) for project approval. Flexible funds that are programmed for transit-specific projects must result from both the local and state planning and programming processes, and must be contained in an approved State Transportation Improvement Program (STIP). In Florida, the STIP is the composite of individual jurisdiction’s TIPs. Therefore, local approval of transit projects considered for flex-funding is required by MPOs and FDOT Districts even before statewide consideration is contemplated. Once transferred, these funds are treated as FTA formula funds and may be used for any non-operating purpose eligible under the FTA program. (Note: CMAQ may be used for operating assistance within the parameters set for that program.)

1. **Surface Transportation Program (STP)**

TEA-21 authorizes $33.3 billion nationally for STP over the life of the Act, which ends in September of 2003. STP funds are distributed among the states based on each state’s lane-miles of federal-aid highways, total vehicle miles traveled on those highways, and estimated contributions to the Highway Account of the Highway Trust Fund. Once the funds are distributed to the states, sub-allocations are developed for each local area. STP funds may be used for any transit capital project including bus terminals and facilities, and rolling stock. A state/local match of 20 percent is required for STP funds. However, toll revenue credits may be used as a soft match for this program.

Public agencies that are interested in pursuing STP funds for use on transit capital projects must work with their local MPOs and FDOT District offices to obtain access to those funds. For example, the transit agency in Volusia County, VOTRAN, was able to obtain a formal resolution by the Volusia County MPO to annually set aside 20 percent of the county’s STP apportionment for VOTRAN. However, in Miami-Dade, transportation needs far exceed resources required to fund them. Virtually all of the STP funds available to Miami-Dade County are programmed to specific transportation projects over the next five years. The TIP can certainly be amended from time to time to include new projects. However, while it might seem like a long way off, if
the City of Miami wishes to establish circulator services in Coconut Grove or other areas of the city, it should be sure to plan on getting its proposed capital projects into the queue of TIP projects that starts six years from now.

2. Congestion Mitigation and Air Quality Program (CMAQ)

The CMAQ program was reauthorized in the recently enacted TEA-21. The primary purpose of the CMAQ program is to fund transportation projects and programs in non-attainment and maintenance areas that reduce transportation-related emissions. Over $8.1 billion is authorized over the six-year program (1998-2003), with annual authorization amounts increasing each year during this period. All projects and programs eligible for funding must come from a conforming transportation improvement program that is consistent with the National Environmental Policy Act (NEPA) requirements.

Eligible projects include capital funding to establish new or expanded transportation projects and programs and operating assistance, under limited circumstances. Operating assistance under the CMAQ program is limited to three years, in most cases. The establishment or implementation of Transportation Control Measures (TCMs) generally satisfy program criteria and include programs for improved public transit. CMAQ can fund up to 100 percent of the project costs for eligible activities. This would be an ideal program to fund the purchase of new electric minibuses due to their low levels of emissions. Miami Beach has already utilized this program to help purchase its initial fleet of seven electric minibuses.

The Miami-Dade airshed has improved over the past five years, and the South Florida area is now regarded as an “attainment area” in terms of air quality. Consequently, South Florida will no longer be eligible for CMAQ funding in the near future. However, the Miami area air quality could degrade and the region could once again becomes eligible for CMAQ funds, or, the eligibility criteria for the program might change with the reauthorization of federal transportation legislation in 2004. If so, this program would be particularly appropriate to help pay the costs associated with the purchase and operation of electric vehicles that measurably reduce the amount of ozone, carbon monoxide, and particulate matter pollution. It should be noted that all known amounts of CMAQ funding available to Miami-Dade County (obtained when the county was not in an “attainment” status) for the remaining years of TEA-21 are already programmed for other projects.

3. Federal Transit Administration Urbanized Area Formula Transit Grants

The Federal Transit Administration provides funding to transit agencies throughout the nation through two primary programs. The first is the Urbanized Area Formula Transit Grant Program,
commonly known by its authorizing legislation as “Section 5307,” that provides funding to urbanized areas with a population of over 200,000 to support capital expenses. As the title of the program implies, local transit authorities are entitled to these funds (assuming they meet all federal guidelines and requirements), and receive their share of these funds on a formula basis that takes into account the area’s population, population density, and the amount of service miles provided. Miami-Dade Transit is the sole recipient of these funds in the county. However, funds from this source can be “passed through” to municipalities that provide their own local circulator services and have entered an “Interlocal Agreement” with Miami-Dade County. Since Miami-Dade County is granted jurisdiction over transportation services in the county by virtue of local ordinances, no city can provide its own local transit services without first getting permission and approval of the County Commission and Mayor. This permission is typically granted with the provisions that the City’s services will not duplicate the County’s services, and that fares will be consistent with the County’s transit fares. The City would then be eligible to receive a percentage of federal FTA 5307 funds passed through the County based on the City’s properly reported operations. This percentage is calculated using a formula that multiplies the City’s annualized bus revenue vehicle miles by “unit value for bus vehicle revenue miles for urbanized areas over 1,000,000.” This number is found in the table of Unit Values for Formula Grant Apportionment’s, published annually in the Federal Register. There is generally a two-year delay on the allocation of these funds. While it is too early to tell how many miles a circulator service in Coconut Grove might run, the area should not expect to receive any more than approximately $30,000 per year from this source of funds.

4. Federal Transit Administration Major Capital Grant Program

Commonly known by its authorizing legislation as “Section 5309,” this program provides capital assistance for new rail and other fixed guideway systems, modernization of rail and other fixed guideway systems, and for new and replacement buses and facilities. There is a total of approximately $535 million available nationwide to help purchase buses and bus facilities. Funds from this source are available on a competitive basis and are not distributed by formula at this time. The “competition” for these funds is primarily political, rather than being based on skills in grantsmanship. All of the funds for buses and bus facilities from this source are “earmarked” by Congress, with little input from the FTA staff. Once Congress has made its decisions on what areas will receive the funds, FTA prefers to work with only one designated recipient in any urban area. In Miami-Dade, the locally designated recipient is MDT. However, that agency could act as a pass-through on behalf of a local city, if there exists an interlocal agreement between the City and the County that allows the buses purchased by the County to be used in a locality for a particular program. This has already taken place in Miami Beach, whereby Section 5309 funds earmarked by Congress for Electrowave buses were channeled to Miami Beach through Miami-Dade Transit.
For FY 2002, the Federal Transit Administration’s proposed budget includes $50 million in this program for a “Clean Fuels Formula Program” to purchase or lease alternative fueled buses and their facilities. The City of Miami might wish to consult with its local Congressional representative(s) to see if they would support earmarks of federal transit funds for transit circulator vehicles or facilities. The City will need to be sure that the local Transportation Improvement Program includes Miami’s requests. It should also be noted that the Bush Administration in Washington has proposed to make the Section 5309 program a “formula” program similar to the Section 5307 program. This would bring an end to the earmarking of funds from this program by members of Congress. However, it would also mean that Miami-Dade County would receive more money on an annual basis for bus and bus-related facilities through an increased formula that would favor areas with high levels of population.

5. Transportation Enhancement Program

The Transportation Enhancement Program (TEP) is a federal program administered by FDOT and local Metropolitan Planning Organizations. The FDOT Environmental Management Office provides TEP guidance and direction. FDOT district offices review projects for eligibility and feasibility, but the Miami-Dade MPO makes final decisions on which projects are selected for funding.

Funding for transportation enhancement projects is provided by FHWA through TEA-21. This funding is intended for projects or features that transcend what has been customarily provided with transportation improvements. This program is for projects that are related to the transportation system, but are beyond what is required through normal mitigation or routinely provided transportation improvements. TEP is not a grant program; rather project sponsors undertake projects, and eligible costs are reimbursed.

The following 12 activities are eligible for funding under the Transportation Enhancement Program:

- Provision of facilities for pedestrians and bicycles;
- Provision of safety and educational activities for pedestrians and bicyclists;
- Acquisition of scenic easements and scenic or historic sites;
- Scenic or historic highway programs (including the provision of tourist and welcome center facilities);
- Landscaping and other scenic beautification;
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- Historic preservation;
- Rehabilitation and operation of historic transportation buildings, structures, or facilities (including historic railroad facilities and canals);
- Preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian or bicycle trails);
- Control and removal of outdoor advertising;
- Archaeological planning and research;
- Environmental mitigation to address water pollution due to highway runoff or reduce vehicle-caused wildlife mortality while maintaining habitat connectivity; and
- Establishment of transportation museums.

TEP funds can be used for planning, project development and environmental studies, design work, right-of-way acquisition, construction operations, and construction engineering and inspection services. The Miami-Dade MPO takes applications for enhancement funds in February/March of each year. Approximately $3 million will be available in FYs 2002 through 2004. Transportation Enhancement Funds are provided in an 80 percent/20 percent ratio of federal to state/local contributions. If a proposed project were regarded as having statewide significance, no local match would be required. The FDOT provides “soft match” money from toll revenue credits in such instances. The MPO could consider increasing the priority of a project under this program if a local sponsor indicated it would pay for a percentage of the project with its own funds versus having the project paid for entirely with federal funds. It should be noted that most of the funds available through this program are already programmed to multiple projects. However, there are annual opportunities to modify the priorities, and there might be projects that were approved in prior years that could not be implemented, thereby freeing up those dollars for allocation to new projects.

While searching for possible locations for a maintenance and storage facility for local circulator services in Miami, CUTR project managers were advised of the building and grounds at 650 NW 8th Street in Overtown. This site contains a 30,000 square foot building that is currently underutilized as a Commercial Driver's License testing site. The interior of the building is barely being used at the present time, and would require significant rehabilitation. However, part of the reason it is such an interesting option is that it is the building that once housed the electric trolleys that operated in downtown Miami in the 1930s and '40s. Would it not be exciting and appropriate, especially if a new electric vehicle shuttle service were to be used, to utilize the building that housed previous electric public transportation services to accommodate the new

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generation of electric vehicles? The old expression "what goes around, comes around" comes to mind. And what goes around and comes around as much as local circulator shuttles? This facility would be far too large for storing and maintaining vehicles operating in circulator services in Coconut Grove alone. However, a number of other adjacent areas are considering establishing local circulator services, including Downtown Miami and Coral Gables. Circulator services have already been started in the Brickell area of Downtown Miami. One major advantage of this facility is its location in relation to all of the areas just described. It is located only two blocks away from proposed Overtown routes, as little as six blocks away from Flagler Street routes, and 12 blocks north of the Brickell route. This proximity to Overtown, Flagler, and Brickell would keep open the option of utilizing all-electric vehicles in those areas. This facility is also located near enough to Coconut Grove and Coral Gables to serve as a reasonable maintenance and operating center for hybrid-electric vehicles that could serve those areas. The site is located in Overtown, which could provide some opportunities for jobs and further investment in the area. In fact, the site might also be of interest to Advanced Vehicle Systems, Inc. (the manufacturer of the electric vehicles utilized by Miami Beach) as a service center, if a similar service center is not established in Miami Beach. Given Overtown's status as an Economic Empowerment Zone, there are incentives available to encourage investment in the area, and given the building's previous use and history, it might also be possible to receive funds to purchase, rehabilitate, and operate the building through the Transportation Enhancement Program as well.

Other Federal Funding Programs that Support Transportation Projects

1. Transportation and Community and System Preservation Pilot Program

The Transportation and Community and System Preservation Pilot (TCSP) program is a comprehensive initiative of research and grants to investigate the relationships between transportation and community and system preservation, and private sector-based initiatives. The TCSP is a FHWA program being jointly developed with the Federal Transit Administration, the Federal Rail Administration, the Office of the Secretary, and the Research and Special Programs/Volpe Center within the U.S. Department of Transportation, and the U.S. Environmental Protection Agency.

The TCSP provides funding for grants and research to investigate and address the relationship between transportation and community and system preservation. The States, local governments, MPOs, tribal governments, and other local and regional public agencies are eligible for discretionary grants to plan and implement transportation strategies which improve the efficiency of the transportation system, reduce environmental impacts of transportation, reduce the need for costly future public infrastructure investments, ensure efficient access to

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jobs, services and centers of trade, and examine development patterns and identify strategies to encourage private sector development patterns which achieve these goals.

A total of $120 million is authorized for this program for FYs 1999-2003. Grant applications for TCSP grants are due to the appropriate FHWA Division Office in January of each year (FY 2003 applications will due by January 31, 2002). Grant projects are awarded in October of each year. Competition for these funds is vigorous and severe, and of the $35 million made available in FY 2000, less than 30 percent was competitively available, as $25 million was earmarked by Congress. Even more tellingly, only six percent—35 of 530 submitted applications—were funded last year, receiving anywhere from $100,000 to $1,000,000. However, the City of Miami might believe that its local circumstances present a strong case for eligibility under this program. In addition, South Florida is represented on the House Appropriations Committee, and it is possible that a Congressional earmark might be secured through a local congressional representative.

2. Community Development Block Grant (CDBG) Funds

This federally funded nationwide program administered by the Department of Housing and Urban Development (HUD) provides $4.8 billion on a formula basis to support a wide variety of community and economic development activities, with priorities determined at the local level. This program is specifically designed to assist areas of low and moderate income. While this program is not focused on transportation, communities can use CDBG funds for the construction of transportation facilities, or for vehicle acquisition and operating expenses for community transportation services. Funds from this source could be used to pay for either capital or operating expenses of shuttle services in Coconut Grove if it is consistent with community development goals and can be shown to benefit low and moderate-income people. There is a great deal of local input into how these federal funds are used, and any thoughts of using CDBG funds for the purpose of paying for buses, bus facilities, or shuttle services would need the support of these communities which might have many other pressing needs and redevelopment aspirations, and long lists of actions to be funded already in the pipeline.

Local Sources Of Funding

1. Local General Revenues

It is tempting for any local municipality to simply say that public transportation is the responsibility of the county, in part because the County Code of Ordinances grants Miami-Dade County the jurisdiction for virtually all transportation services in the county. However, any city with the desire to do so can utilize funds from its own general revenue accounts to help pay for
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a local community-oriented transit circulator service, as cities such as Aventura have already done. The interlocal agreement between Miami-Dade County and Aventura allows the city to provide its own transit services within certain parameters, and after the review and approval of Miami-Dade Transit. One of the difficulties associated with this option to fund circulator services in Coconut Grove is that it would target taxes received on a citywide basis to a relatively small area of the city. However, this has not prevented the City of Miami Beach from using its general revenues to help pay for the operating costs of the Electrowave service, which operates only in the southern portion of the city. In the case of Miami Beach, the argument can be made that South Beach is the economic heart of the city, and investing city-wide taxes in the Electrowave for that area is an appropriate investment in the future economic health of the City. It is possible that the City of Miami could make a similar, but less compelling, argument in favor of funding a portion of the expenses of transit circulator services in Coconut Grove. Of course, the other major difficulty associated with this option is the availability of general funds for any new services in the City of Miami. While the substantial investments being made in downtown Miami and Coconut Grove provide hope for more substantial tax revenues in the future, the City is still recovering from extreme deficits that required a state-appointed Oversight Committee to review the city’s finances and budget.

2. Local Option Gas Tax Revenues

All cities receive portions of local option gas taxes levied by Miami-Dade County. Proceeds already being collected are basically completely committed to required roadway and traffic engineering improvements. However, it is possible for a city to indicate that any new revenues from this source that exceed existing amounts would be dedicated to help pay for the operation expenses of a local transit circulator service.

In Broward County, the County Commission passed an additional one-cent local option gas tax in FY 2000. It was passed to encourage more local participation in public transit improvements, including new circulator services, new transit-supportive infrastructure (e.g., bus shelters, bus bays, or kiosks), or other improvements at existing transit terminals. Each city in the county is entitled to a portion of the penny gas tax proceeds, as long as they use it for any of these purposes. The funding associated with this provision represents 26 percent of the penny tax proceeds, or about $1,690,000 per year. These dollars are distributed by formula based on each city’s population. In addition to this funding, there is another 26 percent of the same one-cent gas tax that is available to all cities on a competitive grant basis. The funds available through this additional 26 percent of the penny gas tax can only be used for community bus service and not for the broader uses noted above. Seven cities in Broward County have taken advantage of the competitive grants and are now in the process of receiving between $100,000
and $400,000 annually that they apply toward the cost of providing local transit circulator services in their respective communities.

Miami-Dade County has an opportunity to do something similar. The County has the statutory authority to levy an additional two cents of local option gas tax. Miami-Dade County was levying the entire statutory-permitted six cents maximum local option gas tax until 1996. During that year, the County Commission rescinded two cents of the six cents being levied. The County Commission, by supermajority vote and the support of the County Mayor, could again levy one or two additional pennies of local option gas tax. Each penny levied would generate approximately $9 million per year. Proceeds from the tax could be used for any transportation purpose, and probably would be largely allocated to the backlog of road projects needed, but at least a portion could be used to fund the capital and/or operating expenses of local transit circulator services. This would clearly be the most expedient way to pay for much of the operating expenses associated with local circulator services. However, it is politically risky to do so. Transit-oriented general sales tax initiatives have thrice failed by increasingly large margins at the polls over the past decade. Still, representatives of the Miami-Dade League of Cities, including the City of Miami, might wish to review what has occurred in Broward County and determine if they would like to pursue such a proposal with the Miami-Dade County Commission and Mayor.

3. Other County Funds

Broward County also utilizes some of its own County general revenues to help pay the costs of municipal circulator service. Cities in Broward County that do not compete for the funds from the local option gas tax are reimbursed at a rate of $20 per hour for each hour of service provided by municipal transit circulators. This represents approximately half the cost of providing service at the local level.

Miami-Dade County is also considering endorsing a $1.5 billion bond issue for unmet capital needs throughout the county. A referendum might be placed on the ballot in calendar year 2002. The County Manager and the Mayor will fine-tune the list of projects that will be proposed for funding. It might be possible to include funding for electric vehicle maintenance centers and a fleet of minibus electric vehicles as part of this plan. The City of Miami should explore this opportunity to determine if it could get support to include capital expenses related to transit circulator services in Coconut Grove and Downtown Miami in the proposed list of projects. In addition, County officials are also considering going forward with another referendum within the next year to gain approval of a one-half cent general sales tax with all proceeds going for public transportation services. If the County decides to move forward with this plan, representatives of local municipalities might explore the opportunity to have expenses
associated with local circulator services included among the items that are eligible for funding under these revenues.

The very best opportunity for a new circulator service to be established in Coconut Grove would result from the County restructuring its existing transit routes and replacing them with a more locally identifiable route with minibuses. This has never happened without an interlocal agreement between the County and a city. These interlocal agreements permit local municipalities to operate their own circulator services, but almost all the cost of operating these services are borne by the city (with the assistance of temporary grants). The County has funded shuttle services in the unincorporated areas, but not within cities. However, for FY 2002, the County has budgeted almost $3 million for shuttle services that will be operated by MDT personnel within municipalities, without the need for an interlocal agreement. MDT will operate shuttle services in cities such as Sweetwater, Hialeah Gardens, and the Little Havana area of Miami, utilizing their own minibuses and bus operators. It also appears that the County will participate in helping to fund the capital and/or operating expenses of a new shuttle service in Coral Gables. There are reasons for the County to operate most of these circulator routes, since it helps them improve service reliability on some of their major bus routes in the process. If it can be shown that a circulator service in Coconut Grove could improve service on Metrobus routes such as Routes 22, 27, and 42, then a strong case can be made for having the County operate a minibus route through Coconut Grove as well.

4. Special Taxing District Funding

Chapter 18 of the Code of Miami-Dade County provides the County with the authority to establish Special Taxing Districts to help finance the provision of a wide range of public improvements and services. Special Taxing Districts are usually associated with public infrastructure capital improvements such as street lighting or sidewalks. However, they can also be used to fund public transit improvements or services. Special taxing districts may embrace not only an unincorporated area in the county, but also all or part of one or more municipalities in the county; provided however, that no such district shall be comprised solely of a municipality or embrace all or a part of a municipality without the approval of the governing body of such municipality. Special taxing districts for public transportation improvements may embrace the transporting of people by conveyances, or systems of conveyances, traveling on land or water, local or regional in nature, and available for use by the public, or a project undertaken by a public agency to provide public transit to its constituency, and may include but shall not be limited to the acquisition, design, construction, reconstruction, or improvement of a governmentally owned or operated transit system or ancillary facilities and improvements related thereto.
It is the intent of the county code to provide for the construction and the financing of public improvements and of providing services in areas in the county where such improvements and services could not conveniently be made available otherwise; that the cost of such improvements and services be borne on an equitable basis by those who receive the benefits thereof; and that property receiving special benefits be assessed in proportion to, but not in excess of, such special benefits. Indeed, this is how the local capital match for the Metromover system was secured. The special assessments for the areas of downtown Miami associated with the inner loop of the Metromover system have just been terminated within the past year. The special assessments for Brickell and the northeast sections of downtown associated with the Omni and Brickell loops of the Metromover will continue in effect until the year 2004.

While the County has the authority to establish special districts, it obviously would only want to do so on the condition that there is support for such a district within the proposed district. No issuance of bonds to pay for capital improvements can be accomplished without the consent of a majority of the property owners in the district.

Before a special taxing district of this nature can be established, a report must be completed that documents the benefits that will be realized as a result of the improvements or services. The report that was completed for the special assessment district established for the Metromover concluded that the estimated benefits of the project would be $256 million due to higher prestige, additional floor space made possible by better access and higher demand, less parking required, premium rents, higher occupancy, increased sales, and increased property values.

The establishment of a special taxing district could generate revenues that might possibly pay for all or a part of the operating and capital costs associated with local circulator services in Coconut Grove. The Grove is increasingly being characterized by concentrated businesses, high-rise offices, hotels and condominium buildings, and high pedestrian activity. There would seem to be a link between the economic health of Coconut Grove and a new transit circulator service that a special study could establish, particularly if only a portion of the operating expenses of such a service would need to be covered by the special taxing district. If so, the benefits this area might realize from an expanded electric circulator service might provide sufficient support from local property owners to vote a new tax on themselves. Utilizing a special taxing district would also eliminate the issue noted earlier that would be associated with using general tax revenues from the entire city's tax base. Taxpayers would not need to ask why people from all over Miami would pay for a service that is only directly serving Coconut Grove.
5. Revenues from Parking Authorities

In other cities where downtown circulator services are provided, a good portion of the funds to pay for their operation comes from parking revenues. These circulator services are designed to serve as feeders to and from parking facilities located on the immediate periphery of their downtowns. This service makes the parking garages more desirable and increases the revenues of the parking operator. It is possible that the circulator services in Coconut Grove could serve this purpose, as the Electrowave service in Miami Beach does. In that event, the Miami Parking Authority might be willing to contribute to a portion of the operating expenses of the Coconut Grove circulator services. These local funds could be used as a match to leverage funds from other sources such as Service Development Grants from FDOT.

More importantly, there exists a Coconut Grove Trust Fund administered by the Miami Parking Authority. Revenues are obtained through payments that local businesses contribute in lieu of providing parking. These revenues are governed by an Advisory Board that can decide to utilize the funds for parking facilities or a local transit circulator service if it believes it will help alleviate traffic congestion and parking problems. There might also be the possibility of increasing the revenues from this source without the need for a special study as required in a special taxing district.

6. Impact Fees or Mitigation Fees in Lieu of Impact Fees

Miami-Dade County extracts general transportation impact fees from new developments, but does not utilize these fees for transit purposes. Broward County and Hillsborough County both levy impact fees on new development that may be used to purchase capital equipment or facilities for transit service. There needs to be a rational relationship between where the developments occur and where the capital items are utilized. Broward County has used these impact fees to match state funds made available through the County Incentive Program to build local transit transfer centers. Miami-Dade County could institute an ordinance similar to the ones in the counties noted above. The County might have the opportunity to assess impact fees on new developments in the City of Miami that could be used to help pay for some of the capital costs associated with expanded shuttle services. The chances are much greater that Miami-Dade County would retain such impact fees to help pay for the capital costs of their own transit vehicles and facilities serving Miami. However, there might be an opportunity for cities such as Miami to make their case for having some of those funds directed to local transit circulator capital costs.

In Miami Beach, the Transportation Management Association that manages the Electrowave is partially supported through a mitigation fee in lieu of impact fees. It appears that state law
provides that impact fees can only be levied by a county. A mitigation fee is an instrument that local municipalities can assess that might help accomplish the same purpose. The City of Miami is currently assessing such fees for developments that are occurring in downtown Miami as part of Developments of Regional Impact. A considerable amount of money has been collected under this program already, and some of it will be used to help pay for planning associated with the numerous transportation projects the downtown area needs to accommodate new major developments. According to City staff, they are reluctant to utilize funds received from this source for anything other than reviews of the major development projects being proposed in Downtown Miami. However, given the increased density of development in Coconut Grove and the resulting impacts of such development on traffic congestion, there might be an opportunity to establish some sort of mitigation fee that would provide some revenues for a new transit circulator service.

7. Revenues from the Circulator Services

Transit services generally recover only partial percentages of their costs through the farebox; local circulator services can be expected to recover even smaller percentages. Since the trips taken on circulator services are relatively short, most providers believe the fares should be minimal or free. In addition, low fares, or no fares, also help encourage ridership. Fares for local circulator services in Miami-Dade County must be consistent with fares charged by MDT. The most similar fare that MDT charges is $0.25 for the Metromover, which provides services very similar to local circulator minibuses. Therefore, all local circulator services currently being provided in the county charge either $0.25 or allow passengers to board for free. In Miami Beach, passengers were allowed to ride the Electrowave for free for the first year of the service, but a fare of $0.25 was imposed afterward. While ridership decreased by over 30 percent, the service generated over $250,000 per year in revenues. The hopes of generating even more revenue through the farebox were hampered somewhat when the County Commission established the “Golden Passport” program, whereby people over 65 years old with an annual household income of less than $20,000 per year are allowed to ride for free. The interlocal agreement between Miami-Dade County and any local municipality that establishes its own transit services requires that the City’s fare structure be similar to the County’s. Consequently, seniors with the Golden Passport are allowed to ride the municipalities’ circulator services for free as well. However, the farebox should be recognized as a continuing source of income to help pay for the circulator services.

Another possible source of revenue that transit circulator services might generate is through the sale of advertising space on the outside and/or inside of the minibuses. This might take the form of ads on placards that promote consumer products or services. Another approach is to sell space to sponsors of the service with their names prominently placed on the vehicle in ways
that do not appear quite so commercial. Coconut Grove can focus on working with local businesses to sponsor the service as a way of generating revenue, and as a way of promoting partnerships with such businesses who will do other things to help promote the new service. Since their names would be associated with the vehicles, they would have a vested interest in helping the service to succeed.

8. Assistance from Other Partners

Florida Power & Light (FPL) is the major electric utility in South Florida, and has a clear interest in the development of electric vehicle technology. If the circulator services in Coconut Grove utilized electric vehicles, FPL might help in designing new maintenance facilities, and possibly contribute toward the cost of charging units. FPL staff will undoubtedly offer technical assistance to any study area in the development of specifications of electric vehicles and the infrastructure to support them.

If the routes help promote other public programs, there might be the chance that these programs could provide funding for facilities such as bus stops or shelters, or help promote the new shuttle services. It is possible that these other programs will identify non-transportation sources of funds to help pay for enhancements such as bus shelters. Non-profit foundations might provide similar assistance if they see the synergy between the circulator services and the other public programs. Clearly, there would be more support from enthusiastic citizens if the circulator services enhance access to the other public programs. The promoters of the circulator services in Coconut Grove need to be aware of the possibility of establishing relationships with non-traditional, non-transportation partners in the immediate area, and should continue to meet with as many community and business interest groups as possible to connect with more partners in the future.

9. Private Contributions

In Broward County, the major condominium complexes known as Century Village prepay for all their residents, which enables those residents to ride the County’s bus service for “free” (the passenger pays no fare when boarding the bus). A fee of approximately $4 per unit per month is paid by each residential unit to help pay for the extensive circulator services that are provided on an otherwise fare-free basis to all residents. This allows unlimited access to such services by the residents of the condos. Although many of the residents still drive and do not use the bus services, they understand the benefits for their neighbors and support the monthly payments. Something similar might be explored in Coconut Grove. The area has a growing number of concentrated residential towers and hotels that might possibly be interested in establishing the
type of arrangement that exists in Broward County. This method of revenue generation would not require a special assessment to be established. It could be done through the voluntary actions of the residents and hotels of the area. Although such a funding mechanism might be easier to establish, it is also more prone to uncertainty given its voluntary nature. However, it should still be kept as an option.

Perhaps a more realistic source of private funding support could come from the developer who is building a major hotel and parking facility at the Coconut Grove Metrorail station as part of a public-private joint development. There have been indications that the developer understands the value of having a convenient shuttle service to Coconut Grove, and might be willing to be a partner in helping to fund such services.

In short, no opportunities to gain private partners should be dismissed. It is surprising how often private entities will find it in their best interest to contribute to a mobility service.

**Other Sources of Funding for Electric Circulator Services**

The transit circulator services established in Coconut Grove might utilize standard diesel technology. However, if electric vehicles are used, there are other sources of funding to explore from the state and federal governments. The United States Department of Energy (U.S. DOE) and the Florida Department of Community Affairs are involved in promoting alternative fuel programs. These programs deal with all types of fuels, including such alternatives as compressed natural gas, biodiesel, liquefied natural gas, propane, and hydrogen among others, as well as electric propulsion.

The Clean Cities program was initiated by the U.S. DOE in the early 1990s. It began in south Florida in 1993 with the creation of the Florida Gold Coast Clean Cities Coalition by Executive Order of the Governor and a subsequent Clean Cities designation by the U.S. DOE. The Florida Gold Coast Clean Cities Coalition is a public/private advisory board composed of state legislators, local government representatives, federal and state agencies, and private sector representatives dedicated to reducing the region's reliance on gasoline and diesel fuels and improving air quality. The role of the Coalition is to provide a fuel-neutral policy direction to maximize the use of vehicles operating on clean alternative fuels throughout the five-county area. This area is composed of Monroe, Miami-Dade, Broward, Palm Beach, and Martin Counties. South Florida Regional Planning Council (SFRPC) staff provides support to the Coalition through a contract with the Florida Department of Community Affairs.

The mission of the Coalition is:
"To reduce our dependence on imported oil and improve the environment by creating a sustainable alternative fuel market through the support and promotion of clean fuels."

The goals of the Coalition are as follows:

- To increase the acquisition and use of alternative fuel vehicles;
- To develop alternative fuel infrastructure;
- To contribute to economic development through the support of alternative fuel industry;
- To promote the benefits of using alternative fuel vehicles; and
- To gain legislative support and funding for alternative fuel vehicle programs.

Since its inception, the coalition has increased the number of alternative fuel vehicles being used in the five-county region by 16 percent every year. They have also increased the number of alternative refueling facilities, increased their number of stakeholders by 50 percent, and sponsored the first statewide alternative fuel conference in February 1999.

The Miami Beach Transportation Management Association (TMA) is a member of the coalition, as are the City of North Miami Beach and the Miami-Dade County Department of Environmental Resources Management.

There are now as many as 1,700 alternative-fueled vehicles in South Florida (including vehicles in eight police fleets). The majority of these vehicles have been converted to run on compressed natural gas (CNG) or propane. However, while the Coalition is fuel-neutral in terms of the use of alternative (other than gasoline and diesel) fuels, with the presence of EV Ready Broward, there is increasing interest in electric and electric-hybrid vehicles.

The Clean Cities Coalition (CCC) is committed to trying to find funding for alternative fuel projects. They also help with writing grant proposals and initiating demonstration projects. Grants are available from a few sources on a periodic basis. Units of local government including, but not limited to, cities, towns, counties, school boards, airport authorities, transit agencies, and designated 501(c)(3) organizations are eligible to submit proposals for various grants managed by the Coalition. In order to receive assistance in these matters, the proposing agency must become a member of the Coalition, easily done through the adoption of

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a "Memorandum of Understanding" that serves as a non-binding agreement to the principles of the National Clean Cities Program.

There have been a number of programs that proposers in South Florida pursued in the recent past. One was the Gold Coast Clean Cities Alternative Fuel Mini-Grant Program. A total of $60,000 was available on a first-come, first-served basis. Grantees could receive up to $25,000, matched on a dollar-for-dollar basis. Funds may be used for alternative fuel projects that make a positive contribution to the environment, the health, welfare, and quality of life in the applicant’s community, or in reducing reliance on petroleum. The highest priority was given to proposals dealing with mass transit projects.

Another program managed by the Coalition is an alternative fuel vehicle rebate program. During the year 2000, $31,250 in funding was provided to local fleets for the purchase of alternative fuel vehicles (AFVs). Nine local fleets received 25 rebates, which included seven rebates for dedicated AFVs and 18 for bi-fuel AFVs. By fuel type, the AFVs included 22 compressed natural gas vehicles (7 dedicated/15 bi-fuel) and three bi-fuel propane vehicles. Dedicated AFVs were eligible for a $2,000 rebate per vehicle and bi-fuel AFVs were eligible for a $1,000 rebate per vehicle. Funding for this program was from a U.S. DOE grant with matching funds from the SFRPC. The rebate program will continue for the next three years. However, future rebates will only be available to dedicated AFVs using compressed natural gas, propane or electricity for fuel. Rebates will be $2,000 per vehicle and will be applied for through automobile dealerships. This program as currently structured would not apply to electric vehicle minibus purchases.

The Coalition also manages another program that is primarily funded by the U.S. DOE and EPA dealing with "Brownfields." These are areas that have been subject to any number of environmental degradations and are now eligible for federal funds to enhance improvements, which can include infrastructure and services. The SFRPC has a list of the eligible sites that could serve as electric vehicle servicing sites. There is also a "Small Bus Loan" program that encourages private companies to secure inexpensive financing to buy alternative fuel vehicles, and then get tax credits to help further reduce their costs.

Each county in the state is responsible for a source of funds that represents reconciliation for environmental violations. Representatives of any study areas noted in this report may wish to contact Miami-Dade’s Department of Environmental Resources Management to determine if such funding could be made available for transportation-related improvements.
OPTIONS FOR OPERATING THE CIRCULATOR SERVICES

Potential Service Providers

A number of different entities could operate the services presented in this report. One option is for the services to be provided directly by Miami-Dade Transit (MDT). Miami-Dade County has broad jurisdiction over the provision of public transportation services as prescribed in the County’s charter. As is common knowledge, MDT is the major provider of transit services throughout the County with a fleet of 136 heavy rail (Metrorail) cars, 29 Metromover cars, and more than 600 buses. Bus service is provided for more than 210,000 passengers per day, and the service is now operated 24 hours per day. MDT operates its bus service from three different garages located in the north, central, and south parts of the county. The agency operates passenger vehicles that are as small as cutaway vans to articulated buses that are 60 feet in length. A recent focus has been on acquiring nearly 100 medium-duty 25-foot diesel-powered minibuses that have proven to be well-received in the communities they serve. MDT is clearly capable of providing whatever kind of shuttle services are contemplated for Coconut Grove.

Shuttle circulator services could also be provided through other entities including the City of Miami or possibly the Miami Parking Authority. For instance, Broward County has reached interlocal agreements with 10 different cities that now provide local circulator services with their own staffs of operators and mechanics. Those cities have concluded that there is an advantage in providing a circulator service that can be tailored to their citizens’ needs (rather than having only regional bus service that goes through their city, similar to Coconut Grove). Broward County provides minibuses to the cities through its ability to secure state and federal capital grants for transit vehicles. Technical assistance, in terms of scheduling and marketing the services, is provided by Broward County which also provides $20 per hour per vehicle in subsidies to each city to help pay for the operating expenses of the service. The cities are responsible for all other costs, and for providing the service with their own personnel or through private contractors, if they prefer.

There is also a precedent within Miami-Dade County for interlocal agreements, where municipal circulator services are now being provided in the cities of Miami Beach, Aventura, and North Miami. The cities of Hialeah and Coral Gables will soon have their own local circulator services as well. Given the County’s authority over public transit services, these local services have only been able to be instituted through an interlocal agreement with Miami-Dade County, meaning the County must approve of the proposed routes and services. These interlocal agreements generally provide that the majority of the local circulator routes must be within the city that is
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sponsoring the service, which would clearly not be a problem with the services being proposed for Coconut Grove. Fares charged for the service must be consistent with MDT’s fare structure, and each service would be required to accept transfers from the other. The interlocal agreements provide that any additional formula-driven federal or state revenues the County receives due to increased ridership will be provided to the city to help pay for the service. In reality, this amount would be modest and account for less than 10 percent of the cost of providing the service. There are other standard elements of the interlocal agreements including the need to provide adequate insurance and ridership reports.

The City of Miami is a full service city with a municipal fleet of vehicles maintained by the City’s General Services Administration. That department has a major garage and maintenance facility at 1390 NW 20th Street (not too far from the proposed circulator services for Coconut Grove). CUTR project managers visited that site and spoke with the managers of the department who indicated that their facility was bursting at the seams, and could not reasonably accommodate the high maintenance associated with transit vehicles. This does not mean that the City could not still be responsible for providing the services. In Miami Beach and Aventura, the cities have contracted with a private company (Coach USA) for the provision of local circulator services. In Aventura, the private company is responsible for all elements of the service including bus operations and maintenance of the vehicles. The vehicles in use are 24-foot diesel engine light-duty minibuses that provide hourly service throughout the city. In Miami Beach, the city has contracted with Coach USA only for the bus operations and dispatch functions. They have recently decided to contract out for the maintenance of the vehicles with the Electric Transit Vehicle Institute (ETVI) based in Chattanooga, Tennessee. In both Aventura and Miami Beach, the cities are ultimately responsible for the quality of the service provided through appropriate monitoring of the contract, but the service on the street is actually being provided by private employees under contract to the cities. Hence, if there is a great desire on the part of the City of Miami or the Miami Parking Authority to be recognized as the provider of shuttle services, there are more than enough examples of how it can be done. If the City or Parking Authority were to seek competitive proposals to have another public or private agency operate the service, they would need to notify MDT of this opportunity and allow MDT to respond to the request for proposals.

As noted above, MDT is clearly capable of providing such services as well. Until this year, MDT has not elected to pursue providing such services in the cities where local shuttles are now being operated, citing other priorities that require its attention. However, the FY 2002 County budget includes funds to pay for local transit circulator services in four different cities, including the Little Havana area of Miami. There might be greater interest by MDT in providing these services, particularly in Coconut Grove, since they are responsible for so much transit service in that area. MDT’s Central bus maintenance facility is located at NW 32nd Avenue and 34th Street.
which is within 20 minutes of the circulator routes proposed for Coconut Grove. The close proximity of these facilities would help minimize the “deadhead” mileage associated with providing transit service (As noted previously, “deadhead” mileage is the distance buses must travel from their initial dispatch from the garage to the start of actual route service, and back again at the end of service). All of the expenses associated with operating a bus start as soon as the bus leaves the garage, so it is advantageous to have as few deadhead miles as possible.

MDT currently has the ability to provide services with minibuses at a reduced cost due to previous negotiations with the Transit Workers Union (TWU—the bargaining representative of MDT bus operators and mechanics, among others). The cost of $45 per hour for service is based on the approximate cost of service if provided through the “B” Division of MDT. It is possible that service could be provided at lower cost through a private provider. For instance, Aventura is providing service through a contract with Coach USA for approximately $35 per hour, but that rate was based on conditions as they existed almost two years ago, before fuel prices nearly doubled and competition for employees became more intense. It also includes no street supervision services.

Which Agency Should Provide the Service?

Which method of operating is best? Which agency should manage and/or provide these proposed services? It depends to a large extent on the level of interest the City of Miami has in these services. In Miami Beach, the City identified the electric shuttle services as vital to its sustainability and quality of life. Traffic along Ocean Drive and Collins Avenue near the Art Deco District was becoming unmanageable as people wanting to access the popular clubs and restaurants cruised for parking spaces that were hard to find. As a partial solution to this condition, the City of Miami Beach put a great deal of effort into planning and implementing a highly customized service that made it possible for people to park at remote parking facilities and use a frequent electric minibus service to get to where they wanted to go along the beach. Miami Beach officials believed that this service was so important to the success of the area that they wanted control of the service. They also knew they were using new technology, and believed that specialized skills could best be developed in a local environment. The City was committing a considerable amount of its local dollars to the service, and felt it wanted more control over its investment. In addition, the City did not want the service to be provided by another agency with many other potential priorities that could distract that agency from making the electric shuttle a complete success. The reason most cities throughout Broward and Miami-Dade counties have elected to provide or manage such services is that they welcome the accountability and want to put more local energy into the service that they regard as politically popular. Local control gives a bit more flexibility to the local area in terms of schedules and routes. Utilizing private transit companies under contract also gives greater flexibility in
changing service when necessary. As of the writing of this report, it appears the cities of Miami Beach and Aventura are satisfied with the quality of services being provided by a private transit company working under a contract with the cities. This option is certainly available to the City of Miami or the Parking Authority, if either wishes to pursue it, and if the County agrees with it.

On the other hand, the City of Miami might not view the services proposed in this report in the same way that other local governments have regarded their own shuttle services. It might believe that the services being proposed are straightforward enough to allow the County to be the provider. The City might rather not go through the complexities of attempting to operate and maintain the vehicles itself, or to have to go through the competitive proposal process and then be responsible for managing a contract with a private provider. The City might not want to be responsible for providing a new public transit service and assuming the potential liabilities associated with it. Funds for operating the service might come from sources other than the City’s general funds (such as special assessment district revenues or savings from truncated MDT bus routes), thereby reducing the City’s interest in accountability. If there is general agreement about the routes and levels of service to be provided, the City might well wish to work directly with the County, assuming the County is interested in providing the service.

At this time, it appears that the County sees that there would be benefits to modifying Metrobus Routes 22, 27, and 42 by truncating them at the Metrorail stations they serve and replacing their services with minibuses that provide more frequent service through the Grove. If this occurs, the County would be willing to act as the provider. There is substantial logic for the County to be interested in being the provider of services. The Coconut Grove community does not need to be subjected to large, loud, polluting buses in this pedestrian-oriented neighborhood. MDT and County leaders should want to be involved with something that contributes to the positive development of Coconut Grove. The modification of the Metrobus routes mentioned above (Routes 22, 27, and 42) will help improve their reliability and schedule adherence, and would also make them easier to understand for passengers, since only every other bus on those routes actually travels through to the Grove. While truncating those bus routes at the respective Metrorail stations would require some passengers to transfer, the wait time will be limited if the Coconut Grove circulator provided service at least every 15 minutes (which is proposed in this report). MDT officials have met with representatives of the TWU Union. Union officials will support modifying transit routes in Coconut Grove, consistent with the recommendations in this report, as long as positions dedicated to providing service on the existing routes are redeployed on other parts of the MDT system.

To summarize, the major factors determining which entity should provide the service in Coconut Grove are as follows:

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- The shuttle route alignment options that are ultimately selected for serving Coconut Grove;
- The level of interest the City of Miami has in controlling and paying for the provision of the service;
- The level of interest the Miami-Dade County has in providing the service;
- The type of vehicle technology that will be used to provide the service.

CUTR recommends that if support for the proposed Coconut Grove service can be secured, then the County would be the best entity to provide the services through its “Division B” labor force. Those interested in instituting this service would then need to work closely with MDT staff and possibly with County decision-makers to help persuade them of the value of replacing existing large buses with smaller minibuses. In addition, if electric vehicles are, at some point, the preferred choice of technology, then this report will argue that the County should be the preferred provider. However, the County is also able to provide the circulator services with medium-duty minibuses that are much more appropriate to the scale of the Coconut Grove community. Even though the diesel minibuses are not low-floor and not as quiet as electric buses, they are still suitable for providing more attractive transit service in Coconut Grove.
CONCLUSIONS AND RECOMMENDATIONS

This report has determined the feasibility of, and presented alternative route alignments for, new transit circulator services for Coconut Grove. Background information has been provided, including an analysis of the study area and an examination of existing transit services in the area. A number of stakeholder interviews were conducted as a part of this effort, and those have also been summarized herein. From the data and information noted above, along with input from the Parking Advisory Committee, CUTR staff developed four alternative route alignments for transit circulator service in Coconut Grove.

Before the completion of this final report, additional input was gathered from the Parking Advisory Committee, and new information regarding MDT services was learned. As a result, this affected the ultimate selection of a route alternative for this study. This report recommends the implementation of Alternative Route 1 (map is shown on page 15), to replace MDT Routes 22, 27, and 42 in the area with more frequent service on smaller vehicles. MDT would truncate Routes 22, 27, and 42 at the Metrorail stations they serve.

Other issues to contemplate as implementation moves forward and, perhaps, as other route alternatives are considered, include the results of the recently completed circulator study in Coral Gables, which recommends service provided with five hybrid-electric vehicles. Also, due to the importance of pedestrian amenities to any transit service, especially in an area such as Coconut Grove, the Coconut Grove community and Miami-Dade County will need to focus on making the maximum aesthetic improvements to the stops that will be served once the final route alignment(s) are selected.

As in Coral Gables, vehicle technology must also be considered. While any service in Coconut Grove can easily be provided with the less expensive conventional diesel minibuses, a preference has clearly been voiced for the use of alternative-fuel vehicles, specifically electric or hybrid-electric. Also, a report recently completed for the Miami-Dade Metropolitan Planning Organization (Electric Transit Circulator Feasibility Study, CUTR, 2001) concluded that Coconut Grove, along with Coral Gables and Downtown Miami/Brickell, would be among the areas identified as most likely candidates for the use of electric vehicle technology for circulator service. While pure electric and hybrid-electric transit vehicles are more expensive to purchase than their diesel counterparts, they should be used if funding is available. It appears that Miami-Dade County will be providing the City of Coral Gables with sufficient funds to purchase five hybrid-electric minibuses. Therefore, a precedent is being established to utilize these types of vehicles for local circulator services with County support. The clean, smooth, quiet ride of
the “futuristic” vehicles will fit well with the small-scale, pedestrian environment in the Grove, and will provide a tailored, identifiable service that the Grove can call its own. In addition, such vehicles have proven to attract choice ridership, particularly those who might not ordinarily consider riding a typical transit vehicle. For the initial implementation of the recommended service, MDT could use its medium-duty diesel minibuses to provide the service. As interest in the service grows, and if MDT pursues alternative fuel buses for its entire fleet more aggressively, the acquisition of hybrid-electric vehicles to provide the service should be pursued.

The type and level of funding that can be secured for the provision of any circulator service in Coconut Grove is, of course, important. This report comprehensively reviewed potential funding sources for such services. While funding is not abundant, and competition is often fierce, some possibilities have been identified.

The service recommended to be implemented by this report would call for MDT to operate three minibuses at a total net-new cost to the agency of approximately $720,000, after accounting for cost-savings associated with the modification of existing services (costs may also be lower depending upon MDT’s analysis of off-peak vehicle requirements). Although MDT would truncate routes 22, 27, and 42 at the Metrorail stations, it would not realize significant savings in doing so. MDT would need to redeploy the employees currently driving the buses in Coconut Grove to other areas. MDT is also interested in making this service fare-free to the community. Given the relatively high cost associated with this recommended service, MDT would be looking for as many partners as possible to contribute toward the cost of the service. FDOT District VI has indicated an interest in supporting this service through a Service Development Grant. While the agency can fund up to one-half the cost of such service for three years, it appears that there is intense competition for these limited funds, and there might not be sufficient resources to provide one-half the expense associated with this new service from the Service Development Grant program. However, FDOT might be able to contribute as much as $200,000 per year. In addition, the Coconut Grove Trust Fund or other community resources can contribute some of their funds to the expense of this new circulator service. It is this community that will receive the direct benefit, and the service is intended to be fare-free. Finally, there might be some interest from major developers to contribute toward the expense of the project as well. This would mean that Miami-Dade County would need to contribute the remainder of the annual operating expenses, or approximately $400,000.

This report presents the final recommendations for the initial provision of transit circulator service in Coconut Grove, with the objective of easing traffic congestion in the unique business district by allowing its visitors more convenient access, and providing better access for all Coconut Grove residents to destinations within the Grove as well as to the MDT regional transit

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system. It has been determined that MDT should initiate the recommended service in Coconut Grove with diesel minibuses. This report provides additional information on other route alternatives that could be pursued in the future, as deemed appropriate. Further, this report contains a comprehensive discussion of funding sources and vehicle technology so that the initial services can continue to be tailored to the local needs of Coconut Grove in future years.
APPENDIX A

EXISTING MDT METROBUS SERVICE IN COCONUT GROVE: ROUTE MAPS
Route 22

No service to Industrial Park weekends and weekdays after 9 p.m.

Some trips end at Golden Glades. See schedule.

Late evening trips end at Flagler Street. See schedule.

Map not to scale
Douglas Bridge

Coconut Grove Neighborhood Service Ctr
(turn into parking lot)
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APPENDIX B

STAKEHOLDER INTERVIEW GUIDE
**Coconut Grove Transit Circulator Services Study**

**Current Conditions in Coconut Grove**

1. Are you a resident or business-owner in Coconut Grove?

2. What are the goals of Coconut Grove neighborhood to improve the environment and community?

3. What are some traits, characteristics, and values of the community?

4. Is there an interest in reducing the number of buses, school buses, delivery trucks and tour buses into the area?

5. Are you satisfied with MDT's current routes?

6. Do Coconut Grove residents have good connectivity to MDT regional system?

7. Do non-Coconut Grove residents have good regional transit services to access Coconut Grove?

8. Does MDT do a good job of promoting transit services to Coconut Grove?

9. Does the City of Miami and/or Miami-Dade County do a good job of promoting parking alternatives to non-Coconut Grove residents?

10. Do you have any ideas on what measures would better manage automobile traffic into and out of Coconut Grove for non-Grove residents?

11. How severe is the parking problem?

**New Transit Services**

12. If new transit services were implemented in the Coconut Grove area, what kinds of connections do you think would be needed (from where to where)?

13. Who would use the service?

14. What kind of vehicles should be used?

15. What hours should the service operate?
16. How frequently should service operate?

17. What origins and destinations should be served in Coconut Grove? Outside of Coconut Grove?

18. What types of amenities should be provided? Signs, shelters, benches, lighting, pull-outs, printed information, etc.

19. Who should pay for the service? How should it be funded?