

**Perimeter Community Improvement
Districts**

**Perimeter Circulator
Implementation**

October 18, 2012



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Prepared for:
Perimeter Community Improvement
Districts

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Our Ref.:
GA063984.0001

Date:
October 18, 2012

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Introduction and Project Purpose

Creating the premier livable center of the Southeast is the vision of the Perimeter Community Improvement Districts (CIDs). As one step towards implementing this vision, the Perimeter CIDs want to implement a circulator system that provides first or last mile service for commuters, decreases contributions to area auto emissions and traffic congestion, and allows riders to enjoy many activities without driving.

The Central Perimeter area features a high density of employees, a concentrated set of midday destinations and a transit friendly environment that promotes ready access to designated transit stops. These characteristics provide the foundation for a successful circulator service.

This report is organized into the following sections:

- Existing Conditions and Prior Studies – review of current conditions in the Perimeter CIDs and overview of previous studies regarding circulator service in the area
- Circulator Definition and Purpose – overview of what a circulator is, identification of vision and goals, target market, keys to success, and circulator performance measures
- Concept Design – details about the proposed circulator service
- Implementation – overview of steps to circulator implementation including ownership and operations, phasing, cost estimates and funding sources
- Recommendations
- Stakeholder Involvement and Coordination – brief overview of stakeholder involvement efforts and survey results

Existing Conditions and Prior Studies

This section provides an overview of existing conditions in the Perimeter CIDs relevant to the proposed circulator service. Additionally, prior studies that identified shuttle routes and focused on implementation are reviewed.

Traffic Congestion

Traffic congestion during peak periods is a side effect of the Perimeter area’s success and position as one of the largest Class A corporate office markets in the southeast. To address traffic issues, the Perimeter CIDs are proactive in implementing transportation enhancements to increase mobility in the Perimeter activity center. The proposed circulator service is one step towards implementing the Perimeter CIDs vision to create the premier livable center of the Southeast. The circulator system will avoid currently congested roads where possible and provide an alternative to private automobiles for short trips within the Perimeter CIDs. Additionally, the circulator system will provide a mobility option for workers and visitors who currently ride transit to the Perimeter area. By providing a last mile connection between businesses, restaurants, shopping, and entertainment, the circulator will increase the attractiveness of transit to people who do not currently use it.

Existing Private Shuttle Ridership and Service Characteristics

To gauge potential demand for a lunchtime circulator service, ridership data for several private shuttles currently operating in the Perimeter CIDs was obtained. While the proposed circulator will provide a different type of service than the existing private shuttles, the current number of riders provides insight regarding the potential market for a circulator. Not all operators were willing to provide current ridership data. Table 1: Existing Private Shuttle Average Daily Ridership summarizes the number of riders by shuttle. Additionally, the current hours of operation and shuttle destinations have been included to show the extent of private shuttle service within the Perimeter CIDs. Figure 1: Existing Private Shuttle Routes and Destinations is a map of current private shuttle services in the Perimeter CIDs.

Table 1: Existing Private Shuttle Average Daily Ridership

Shuttle	Average Daily Trips	Hours of Operation	Destinations
Art Institute	n/d	Monday – Friday 7:00 AM – 10:30 PM Saturday 8:00 AM – 4:00 PM	Sandy Springs Station, Art Institute
Ashford Green	n/d	6:30 AM – 10:30 AM; 3:00 PM – 7:00 PM	Dunwoody Station, Ashford Green
Central Park	n/d	6:30 AM – 9:30 AM; 3:30 PM – 6:30 PM	Sandy Springs Station, 7000 Central Park

Shuttle	Average Daily Trips	Hours of Operation	Destinations
Children's Healthcare	n/d	6:00 AM - 8:00 AM; 3:30 PM – 6:30 PM	Medical Center Station, Children's Healthcare at Scottish Rite
Concourse	350	6:00 AM – 6:15 PM	Dunwoody Station, Concourse, Westin, Perimeter Mall (Lunch Only)
Cox Enterprises	125	6:45 AM – 6:45 PM	Medical Center Station, Cox Headquarters, 1400 Lake Hearn, Auto Trader
Glenlake Embassy Row	250	Monday – Friday 6:10 AM – 10:00 AM; 3:30 PM – 6:00 PM	Sandy Springs Station, Newell Rubbermaid, Kaiser Permanente, UPS, Embassy Row
Lakeside	n/d	7:00 AM – 9:30 AM; 3:30 PM – 6:00 PM	Medical Center Station, 5775 Glenridge Drive
Perimeter Center East	350	6:40 AM – 10:30 AM; 3:10 PM – 7:00 PM	Dunwoody Station, Perimeter Center East, 1455 Lincoln
Perimeter Summit	125	6:00 AM – 9:30 AM; 2:30 PM – 6:30 PM	Medical Center Station, 1001, 2002 & 3003 Summit Boulevard, Villa Christina
Ravinia	400	6:00 AM – 6:45 PM	Dunwoody Station, Crown Plaza, Ravinia, Perimeter Mall
Terraces	150	6:35 AM – 10:30 AM; 3:05 PM – 7:00 PM	Dunwoody Station, South Terraces, North Terrace, Sterling Point
Total Riders	1,750		

Notes: n/d = No data available

Source:

Private shuttle operators

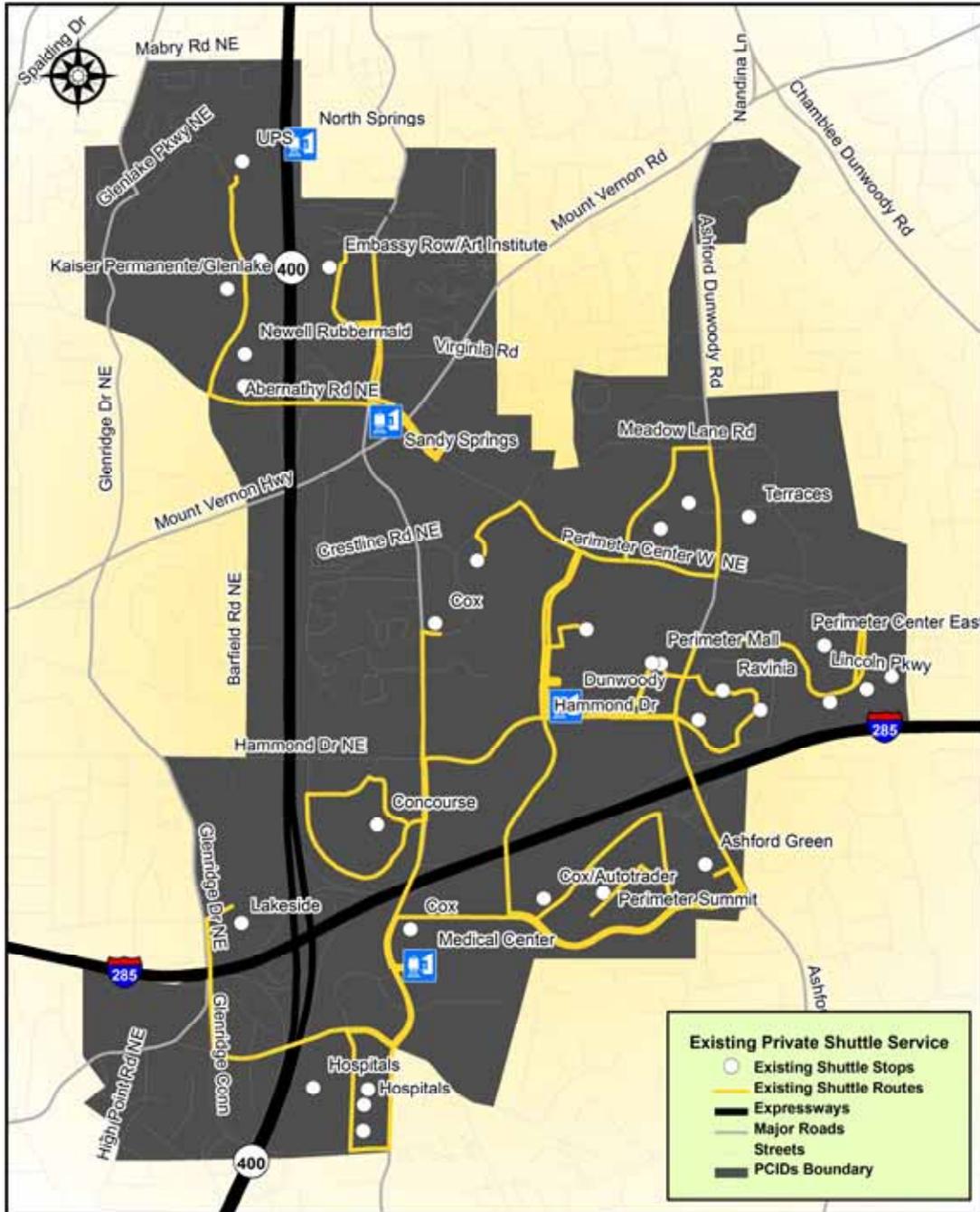


Figure 1: Existing Private Shuttle Routes and Destinations

As shown in Table 1, at least 1,750 trips per day occur on the existing private shuttles on an average day. Although believed to be significant, the number of daily trips on the other existing shuttles is unknown. The majority of shuttle riders are most likely not driving to the Perimeter area. The circulator is an additional service that does not duplicate the private shuttles, so it is probable that shuttle riders will also use the circulator service.

In addition to the private shuttles discussed above, the numerous hotels in the Perimeter CIDs also operate their own shuttles. As the hotel shuttles are limited to hotel guests only and generally do not have a fixed schedule or stops, they are not included in this analysis.

Prior Studies

The Perimeter CIDs have previously engaged consultants to analyze transportation issues and recommend solutions in the Central Perimeter. Two previous studies focused on transportation in the Central Perimeter and recommended consolidation of the private shuttle system. The Perimeter Circulator is distinct from the existing private shuttles; however, some findings from the prior studies are applicable to the circulator system.

Central Perimeter Transportation Study Final Report

Dated November 2000, the *Central Perimeter Transportation Study Final Report* (CPTS) focused on consolidating the existing private shuttle routes. Shuttle routes were identified and system operations were analyzed to anticipate potential operational issues. This report determined an area-wide shuttle system was feasible, but did not provide a detailed operations plan or recommend a specific vehicle technology.

Perimeter Area Consolidated Shuttle Operations & Implementation Plan

As a follow up study to the CPTS, the *Perimeter Area Consolidated Shuttle Operations & Implementation Plan* (Implementation Plan) was completed in August 2002. The implementation plan examined operational issues, presented an operations plan, provided cost estimates for the system, detailed a financial plan, and included a system implementation strategy. The CPTS focused on consolidating and expanding the existing private shuttle system as opposed to implementing a circulator service.

Circulator Definition and Purpose

A circulator is a small bus or large van that goes to many destinations and is not merely a point to point service. A circulator does not duplicate or replace existing private shuttles.

The Perimeter CIDs have expressed a vision for the Central Perimeter as the premier livable center in the Southeast. Transit and walking are key transportation components of a livable center. The circulator extends the reach of transit and walking trips, allowing people to access more destinations without driving.

Vision and Goals

A vision statement and associated goals were developed to shape the design of the circulator system. The vision and goals are based on input received from stakeholders as well as policies and goals previously identified by the Perimeter CIDs.

Vision: provide a convenient service that moves people within the Perimeter CIDs without cars. The following goals are intended to achieve the vision:

- Connect workers, residents, and visitors to key destinations.
- Improve access to jobs
- Mitigate congestion
- Provide travel choices

Target Market

Identifying a target market for the circulator is critical for designing and operating a successful system. Choosing a target market does not preclude serving secondary markets, however the circulator cannot be all things to all people. For example, college students are likely to have different primary destinations and schedules than office workers.

The primary target market of the circulator is employees who work in the Perimeter CIDs and visitors doing business in the area. Members of this target market are choice riders, who have private automobiles or other alternatives to transit. The circulator

needs to be clean, convenient, and serve destinations such as office parks, restaurants, and shopping to attract the target market.

Keys to Success

Based on the circulator definition, vision and goals, and target market, the following keys to success were defined for the Perimeter circulator.

- Short headways of 10 minutes coupled with direct trips, so workers can get out and back within their allotted lunch time, which may be as short as 30 to 45 minutes
- Reliable on-time performance
- Employer support, which may include:
 - Flex-time to allow for midday trips
 - Financial participation
 - Designated stop locations with street furniture at entrances
- Branding and marketing: the circulator must be distinct from existing MARTA services and the private shuttles

Prior to determining specific keys to success for the Perimeter circulator, *Practices in the Development and Deployment of Downtown Circulators* published by the Transportation Research Board in 2011 was reviewed to determine lessons learned from case studies of existing circulator systems. Table 2: Nationwide Circulator Keys to Success summarizes factors for a successful circulator reported by agencies operating circulators in Baltimore, Washington, Austin, and Los Angeles.

Table 2: Nationwide Circulator Keys to Success

System	Keys to Success	Year of System Initiation
Baltimore Charm City Circulator	Ten minute headways	2010
	Easy to understand routes	
	Limit the markets served	
	Stable, reliable funding source is needed, voluntary contributions do not work	
	Marketing and branding is important, the circulator needs to be differentiated from other forms of transit	
D.C. Circulator	Develop specific criteria and performance levels at the beginning	2005
	Branding is important, use distinctive high quality vehicles with a paint scheme designed for them to stand out	
'Dillo (Austin, discontinued)	Strong routes need anchors at either end	1970s
Downtown Dash (Los Angeles)	Provide short headways to minimize wait times for riders	1985
	Identify attractions and be clear on your target market	

Source:

Practices in the Development and Deployment of Downtown Circulators,
Transportation Research Board

Circulator Performance

After the Perimeter circulator is implemented, tracking progress towards meeting the goals is needed to determine if the Perimeter CIDs are getting a return on their investment. Performance measures can be calculated on an ongoing basis or at set intervals as determined by the Perimeter CIDs. The following performance measures are recommended:

- How many destinations are connected by the circulator system?
- How many office buildings are served by the circulator?
- How many people are boarding and alighting at office buildings?
- How reliable are the circulator travel times and what is the on-time performance?
- What is the total number of circulator riders?
- How many boardings/alightings are occurring at MARTA stations?

In addition to providing circulator arrival information to riders, NextBus¹ or similar technology can be used by the operator to track vehicle location and schedule adherence in real time as well as other system performance measures. For the Silver Level Circulator, the estimated cost² ranges from \$250,000 to \$1.6 million depending on equipment specified, system configuration, and contract negotiations. Estimated costs for equipping all the vehicles and stops at the Diamond Level range from \$775,000 to \$5.1 million.

Customer satisfaction surveys are another tool for measuring how well the circulator system is meeting the vision. If riders are satisfied with the system, it is a success. Surveys can be always available on board for riders to fill out or performed at regular intervals.

¹ For more information: www.nextbus.com

² Based on costs incurred for Nextbus systems installed on ACTransit and Chapel Hill, North Carolina

Concept Design

Based on the results of our survey³ sent out to workers in the Perimeter area, analysis of existing conditions and future plans, and conclusions of prior studies, a concept circulator system was designed. This concept design represents a circulator system that will meet or exceed the vision and goals. The concept design is comprised of seven proposed routes that serve both Perimeter CIDs and the nearby Sandy Springs and Dunwoody Village activity centers. Service to Sandy Springs and Dunwoody Village will require coordination with the Cities of Sandy Springs and Dunwoody, because portions of those routes are outside the PCIDs boundaries and CIDs are required by law to spend CID funds within their districts.

As part of the concept design process, ARCADIS conducted travel time runs on two routes that are representative of conditions in the study area to assess the typical travel speeds and calculate the vehicle requirements for each route. The following sections detail the concept design and address frequency and scheduling, route descriptions, supporting infrastructure, marketing and administrative support, fares, and coordination with private property owners and public agencies.

Frequency and Scheduling

To meet the vision and goals, service frequency will be 10 minutes on all routes. Additionally, all routes will be two-way. This high level of service will encourage ridership and make circulator trips feasible for most employees during their lunch breaks.

Initially service might be provided from 11 in the morning until 2 in the afternoon in response to strong demand from those surveyed. Service may be provided on weekends or holidays. If demand warrants and funding is available, the hours and days of service can be extended in the future. Private shuttles covering most of the Perimeter CIDs currently serve the last mile from transit stations to employment destinations during the morning and evening peak periods.

³ Survey results are available in Appendix B. The survey was produced and distributed by the PCIDs.

Ridership Estimation Methodology

The ridership estimates are designed to be somewhat conservative. The following assumptions underlay the methodology. First, the primary market for circulator service is assumed to be workers in the Perimeter CIDs. Second, a circulator mode share of 2 percent was assumed, which is slightly more than half of the regional transit mode share of 3.66 percent⁴. The lower mode share for the circulator was assumed because it is unlikely that all transit riders will choose to travel during lunch.

The Atlanta Regional Commission (ARC) travel demand model was used as a basis for the circulator ridership estimates. Within the model, the region is divided into a number of traffic analysis zones (TAZs). Twenty-one TAZs fall completely or partially within the Perimeter CIDs. For each of the proposed circulator routes, the number of workers flowing into each adjacent TAZ was pulled from the travel demand model and added up to determine the total number of employees. For TAZs served by more than one proposed circulator route, an even split was assumed to avoid double counting workers. The number of workers was then multiplied by the assumed mode share of 2 percent to determine the ridership estimate for the route.

Actual circulator ridership will depend on branding, marketing, and execution. If circulator vehicles are not distinctive, clean, and on schedule, the ridership estimates are not likely to be achieved. Ridership estimates for each route are included in the following descriptions of the proposed circulator routes.

Route Descriptions

Each route is briefly described as follows. The route descriptions include the length of the route, number of vehicles required to meet the service standards, key destinations, and a list of the streets the route will run along. Figure 2: Key Circulator Destinations on the following page provides an overview of major circulator destinations.

⁴ U.S. Census American Community Survey (2009)

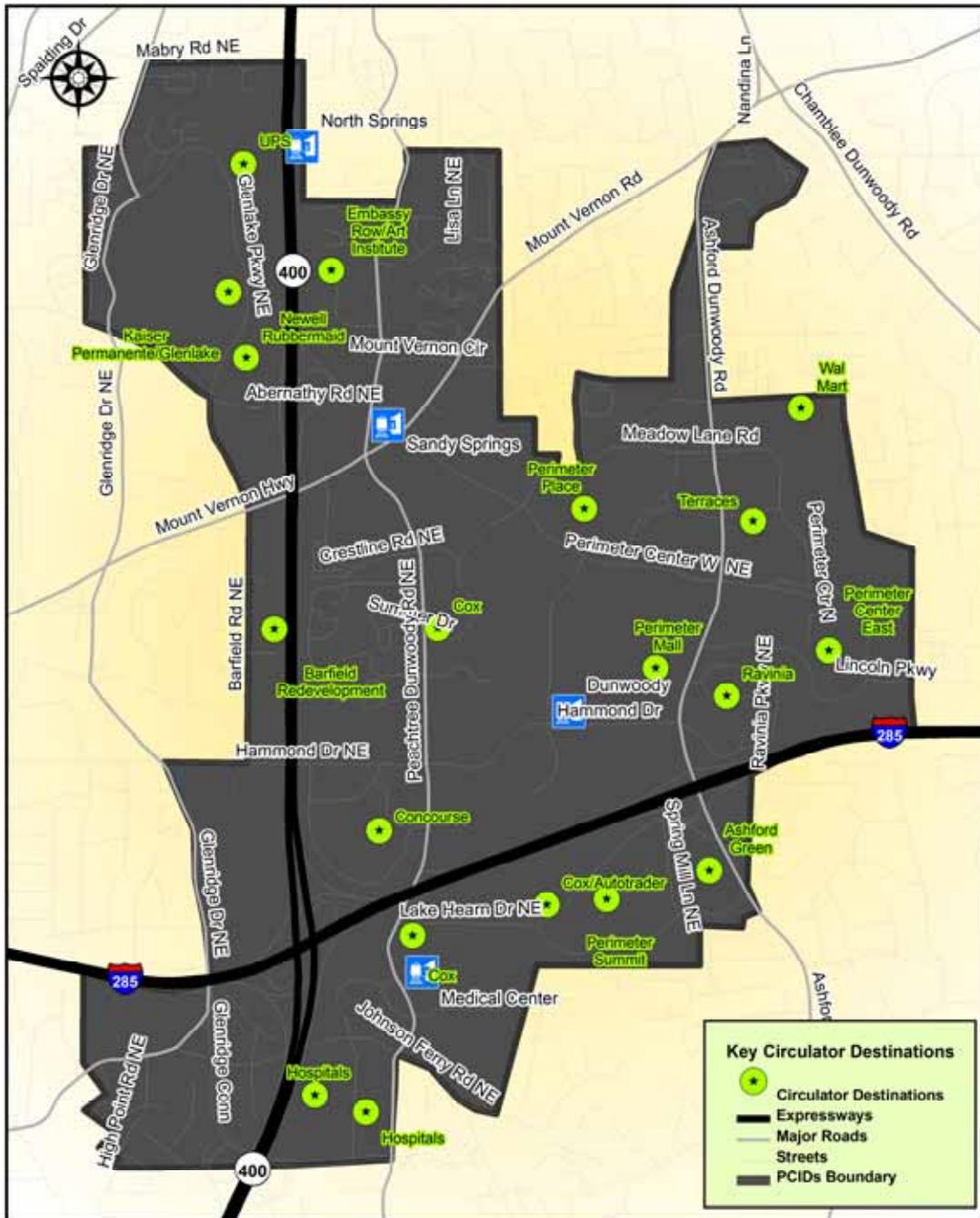


Figure 2: Key Circulator Destinations

#1 Orange Route

The Orange Route is a 6.7 mile long two-way loop. Nine transit vehicles are required to provide a ten minute service frequency on this route. This loop includes twelve stops. The proposed stops are: the Dunwoody MARTA Station, Perimeter Mall, Ravinia, The Alexander at the Perimeter Apartments, Perimeter Center East, The Drexel & The Heights, Savannah, Terraces, Perimeter Village, McCormick & Schmick's/Brio, Perimeter Point, and Perimeter Station. The estimated daily ridership for the Orange Route is 340 persons.

The Orange Route begins at Perimeter Mall and the Dunwoody MARTA Station. It then travels along Hammond Drive to Ravinia Parkway. After passing through the Ravinia office complex, the route travels on a new circulator only roadway connection⁵ to Perimeter Center East and continues on to Perimeter Center North. The route then travels on Asbury Square and Meadow Lane, turning onto Olde Perimeter Way and then follows Perimeter Center Parkway back to Perimeter Mall.

#2 Green Route

The green route is a 6.9 mile long two-way modified figure eight. Nine transit vehicles are needed to provide a ten minute headway on this route. This route includes twelve stops. The proposed stops served by the Green Route include: Perimeter Mall, the Dunwoody MARTA Station, Palisades office Park, three stops at Concourse (low rise office buildings, Westin, King and Queen), Publix, Comfort Suites & Hilton Suites, Cox Headquarters, Honeybaked Ham/La Madeleine, Perimeter Point, and Perimeter Station. The estimated daily ridership for the Green Route is 455 persons.

The Green Route starts at Perimeter Mall and the Dunwoody MARTA Station and travels along Hammond Drive to Concourse Parkway. After passing through the Concourse office complex, the route runs along Peachtree Dunwoody Road to Central Park Way. The route continues on Crown Pointe Parkway and then turns onto Olde Perimeter Way and returns to the Perimeter Mall along Perimeter Center Parkway.

⁵ This new connection has also been proposed as an important walking and biking connection by the PCID's bicycle and pedestrian consultant.

#3 Purple Route

The Purple Route is a 7.8 mile out-and-back. Twelve transit vehicles are required to provide a ten minute service frequency on this route. Nineteen stops are along this route. Proposed stops are: Embassy Row, Sandy Springs MARTA Station, Northpark, Honeybaked Ham/La Madeleine, Perimeter Point, Perimeter Station, Perimeter Mall, the Dunwoody MARTA Station, 223 Perimeter Center Parkway (AJC Headquarters), Marriott, The Pavilion, Perimeter Crossing, the Medical Center MARTA Station, St. Joseph's Hospital, Medical Quarters, Peachtree-Dunwoody Medical Center, Children's Healthcare of Atlanta, Meridian Mark Plaza, and Northside Hospital. The estimated daily ridership for the Purple Route is 405 persons.

The Purple Route begins at Embassy Row and runs along Peachtree Dunwoody Road where it turns onto Abernathy Road/Perimeter Center West. The route then turns onto Crown Pointe Parkway and then takes Olde Perimeter Way and Perimeter Center Parkway to Lake Hearn Drive, which it follows to Peachtree Dunwoody Road. The route then follows Glenridge Connector briefly and turns onto Meridian Mark Road and then takes Johnson Ferry Road back to Peachtree Dunwoody Road and then returns to the starting point.

#4 Red Route

The Red Route is an 8.8 mile out-and-back. Eleven transit vehicles are needed to provide a ten minute headway on this route. This route includes eleven stops. Proposed stops served by the Red Route include: UPS Headquarters, Kaiser Permanente, Newell Rubbermaid, Sandy Springs MARTA Station, The Art Institute, Perimeter Point, Perimeter Mall, the Dunwoody MARTA Station, Cox Communications, Autotrader, and Ashford Green. The estimated daily ridership for the red route is 345 persons.

The Red Route follows Glenlake Parkway from the UPS Headquarters driveway to Abernathy Road and then turns on Peachtree Dunwoody Road where it turns around at Embassy Row and then takes Abernathy Road/Perimeter Center West to Crown Pointe Parkway. It then turns on Olde Perimeter Way and follows Perimeter Center Parkway to Lake Hearn Drive. The route then turns around at the Sheraton located off Lake Hearn Drive and returns to the starting point.

#5 Barfield Route

The Barfield Route is a 3.2 mile out-and-back. Six transit vehicles are required to provide a ten minute service frequency on this route. Ten proposed stops are along this route, with exact placement to be determined as redevelopment occurs along Barfield Road. Key destinations are Perimeter Mall, the Dunwoody MARTA Station, and office developments along Barfield Road. As implementation of the Barfield Route is dependent on redevelopment along Barfield Road and the characteristics of potential redevelopment projects are unknown at this time, ridership was not estimated for this route.

The Barfield Route begins at Perimeter Mall and the Dunwoody MARTA Station and follows Hammond Drive to Barfield Road. It turns around just before Mount Vernon Highway and returns to the starting point.

#6 Sandy Springs Route

The Sandy Springs Route is a 5.2 mile out-and-back with a short one-way loop at Roswell Road and Mount Vernon Highway. 3.2 miles of this route are outside the PCID boundaries. Seven transit vehicles are needed to provide a ten minute headway on this route. There are six stops along this route. Proposed stops within the Perimeter CIDs served by the Sandy Springs Route include Perimeter Mall, the Dunwoody MARTA Station, and Publix. Outside the Perimeter CIDs, proposed stops include Whole Foods, Mellow Mushroom and the Sandy Springs commercial district. As this route depends on coordination with the City of Sandy Springs for implementation and finalization of the proposed route, ridership was not estimated.

The Sandy Springs Route starts at Perimeter Mall and the Dunwoody MARTA Station and follows Hammond Drive to Roswell Road. It then turns onto Mount Vernon Highway, then Boylston Drive, then Hilderbrand Drive and turns back onto Roswell Road and returns to the starting point.

#7 Dunwoody Village Route

The Dunwoody Village Route is a 6.1 mile out-and-back with a short one-way loop around Dunwoody Village. 1.1 miles of this route are outside of the PCID boundaries. Seven transit vehicles are required to provide a ten minute service frequency on this route. Six stops are along this route. Proposed stops within the Perimeter CIDs are: Perimeter Mall, the Dunwoody MARTA Station, Perimeter Place, and the plaza with

Firkin and Gryphon, Chili's, and Macaroni Grill. The Dunwoody Village commercial district is the only proposed stop outside the Perimeter CIDs. As this route depends on coordination with the City of Dunwoody for implementation and finalization of the proposed route, ridership was not estimated.

The Dunwoody Village Route begins at Perimeter Mall and the Dunwoody MARTA Station and follows Perimeter Center Parkway and Olde Perimeter Way to Meadow Lane Road. The route turns onto Meadow Lane Road and then follows Ashford Dunwoody Road to Mount Vernon Road. After turning onto Mount Vernon Road, the route then follows Dunwoody Village Parkway to Chamblee Dunwoody and then turns back onto Mount Vernon Road and returns to the starting point.

All circulator routes described above are illustrated in Figure 3: Diamond Level Circulator Route Map on the following page.

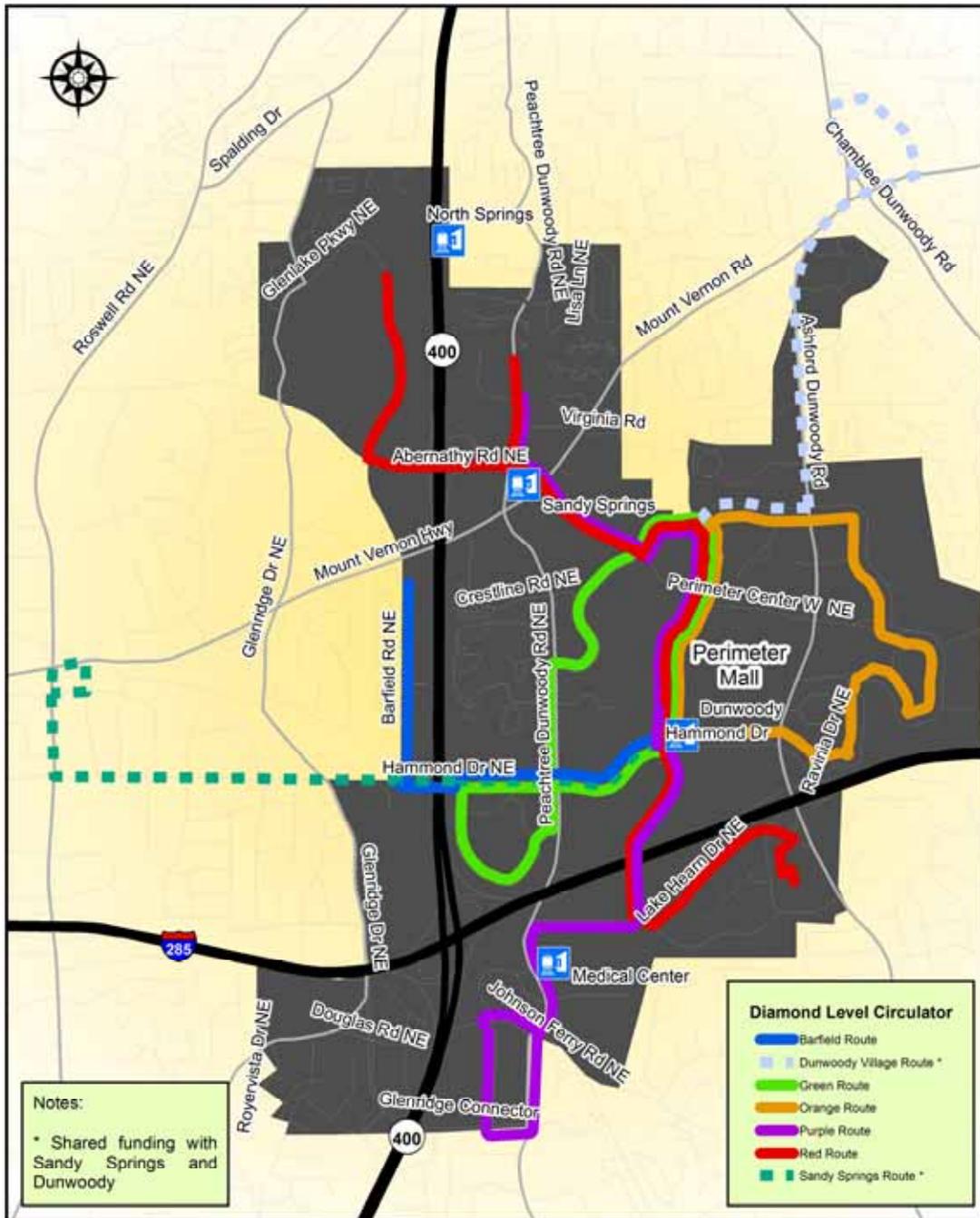


Figure 3: Diamond Level Circulator Route Map

Supporting Infrastructure

In addition to circulator vehicles, supporting infrastructure is important to the success of the circulator system. A wide variety of items comprise supporting infrastructure, with examples including high technology GPS-based vehicle location services, physical amenities at circulator stops, and special lanes only for transit vehicles.

Technologies that use GPS to locate vehicles and update riders on when the next vehicle will arrive can increase ridership by saving time and making the circulator more convenient. NextBus⁶ is an example of a company that currently provides vehicle location services and arrival times through variable message signs located at stops, smart phone applications, and text messages. Syncromatics⁷ is another provider of vehicle location services. This information is very helpful to the travelling public. However, if a particular route or stop is serviced more frequently than about 8 to 10 minutes, this information may be unnecessary.

Providing amenities at circulator stops encourages ridership. At a minimum, pavilions should be provided to shield riders from inclement weather and shade them from the sun during the summer. Benches and trash cans should also be provided. Circulator system route maps encourage ridership by helping potential riders understand the system.

Signal priority⁸ at intersections provides extra green time to an approaching circulator vehicle. This technology reduces delay experienced by the circulator and improves the average speed and on time performance.



⁶ For more information: www.nextbus.com

⁷ For more information: www.syncromatics.com

⁸ This is different than signal pre-emption, which is used by emergency vehicles, in that a circulator vehicle approaching a red light cannot turn force the signal to green.

Queue jumper⁹ lanes are a tool for allowing transit vehicles to skip the line at congested intersections. An additional transit only lane is added to an intersection approach and when coming up to the light, the transit vehicle pulls into that lane. When the light changes, either for all traffic or just the transit vehicle, the transit vehicle is at the front of the line and proceeds through the intersection. On the downstream side of the intersection is another lane that allows the transit vehicle to merge back into traffic. This solution is cheaper than a dedicated transit lane and substantially reduces transit vehicle delay at congested intersections.



Dedicated transit only lanes are an infrastructure solution in corridors with levels of congestion that are so high signal priority and queue jumper lanes are ineffective. Dedicated transit only lanes are also the most expensive piece of supporting infrastructure, as they require right-of-way acquisition and large amounts of pavement.

Marketing and Administrative Support

Besides physical infrastructure, the circulator system will require marketing and administrative support to be successful. The purpose of marketing efforts is to inform the public in the Perimeter CIDs of the existence of the circulator service and to build demand for it.

As mentioned in the Keys to Success section, advertising and branding are important to the success of a circulator system. A big component of the marketing effort is developing a distinct brand identity for the circulator system. To maximize ridership, the circulator needs to be distinct from other existing transit services.

⁹ For more information: [en.wikipedia.org/wiki/Queue_jump](https://en.wikipedia.org/wiki/Queue_jumper)

Fares, Passes, and Accounting

Based on initial stakeholder input, a fare is proposed to ride the circulator. As only a minority of survey respondents indicated they would be unwilling to pay to use a circulator, the fare is not anticipated to negatively impact ridership.

Employers may choose to contribute to fund circulator operations instead of their employees paying individual fares. Circulator passes should be issued to employees, so that vehicle operators can easily identify them. For individuals whose employers chose not to participate, discounted multi-ride or monthly passes should also be explored to encourage frequent circulator ridership.

The need for fare collection and accounting follows the decision to charge a fare. The recommended strategy is for the Perimeter CIDs to set the fare and have the contractor operating the route collect the fare. Potential contractors estimate projected ridership and reduce their bid per hour by the amount they expect to collect in fares. This fare collection strategy provides a financial incentive for the contractor to get riders on circulator vehicles. To attract riders, they will keep the vehicles clean and on schedule as well as encourage their drivers to be courteous. Additionally, this reduces overhead for the Perimeter CIDs, as they do not have to handle and keep track of the collected fares. Alternately, the contractor could be required to collect fares and deposit them on behalf of the Perimeter CIDs.

Coordination

During the system design phase, the Perimeter CIDs will need to coordinate with several entities and agencies. Private property owners, MARTA and GRTA, and consultants currently working on various initiatives for the Perimeter CIDs will need to be consulted for circulator implementation to proceed smoothly.

Coordination with private property owners is essential where the circulator will be providing door-to-door service or running on private roads. A memorandum of understanding between the property owners and the Perimeter CIDs regarding circulator access and operations will be useful when properties change ownership. Additionally, if pavilions and other amenities are placed on private property, the memorandum of understanding should clearly state who owns them and who is responsible for maintenance.

Currently, MARTA and GRTA are working on upgrades to the Dunwoody MARTA Station that will benefit smaller transit services such as circulator and shuttle vehicles as well as enhance regional express bus service. As all of the recommended circulator routes stop at the Dunwoody MARTA Station, coordination is essential so adequate facilities will be in place to serve the circulator.

The Central Perimeter is a dynamic area and the Perimeter CIDs currently have several initiatives underway. Notably, the PCIDs are currently working on a bicycle and pedestrian plan for the market. Coordinating the circulator design and implementation with this initiative is important, as the circulator will complement bicycle and pedestrian modes. For example, the recommendation to convert Perimeter Center East from a four lane facility to a two lane facility with a buffered bike lane will provide space for a circulator to stop outside the flow of traffic.

Implementation

This section addresses key issues for implementation of the circulator system. Circulator system ownership and operations, implementation phasing, cost estimates, and funding sources

Ownership and Operations

The Perimeter CIDs should manage and maintain control of the circulator system to supervise operations and limit unnecessary bureaucracy and costs. However, the Perimeter CIDs should contract out the circulator operations through a competitive bid process. The private contractor selected by the Perimeter CIDs will be responsible for providing, storing, and maintaining vehicles as well as operating the system. This approach streamlines delivery, reduces liability, and provides greater flexibility to the Perimeter CIDs.

Table 3: Perimeter Circulator Service Supplied summarizes the amount of transit service provided for each phase. The number of vehicles is the minimum number of vehicles required to operate the circulator and maintain 10 minute headways. Annual vehicle revenue hours is how many total hours the vehicles are in service carrying passenger per year. Annual vehicle revenue miles is how many miles of service are provided in a year.

The Platinum and Diamond Level circulators show the same amount of service provided, because it is unknown at this time how much the transit only lanes

recommended as part of the Diamond Level system will increase circulator speeds. For illustration purposes, if the transit only lanes allow the circulator vehicles to increase their average speed to 20 mph, from the currently measured 14.5 mph, this would result in 8 less vehicles needed and a reduction in annual vehicle revenue hours of 6,048, which is a savings of \$390,000 per year in operations cost.

Table 3: Perimeter Circulator Service Supplied

Level	Number of Vehicles	Annual Vehicle Revenue Hours	Annual Vehicle Revenue Miles	Projected Ridership	Startup Cost	Annual Operating Cost
Silver	18	13,608	197,316	795	\$368,000	\$885,000
Gold	47	35,532	504,252	1,545	\$273,000	\$2.3 million
Platinum	61	46,116	652,428	1,545+	\$3.7 million	\$3 million
Diamond	61	46,116	652,428	1,545+	\$90.5 million	\$3 million

Note: Ridership estimates for the Platinum and Diamond levels do not include ridership on the proposed Barfield, Dunwoody, and Sandy Springs routes which is currently unknown.

Source:
ARCADIS

Phasing

Phasing the system in instead of building it all at once allows capital expenditures to be spread over time. Additionally, phasing provides the opportunity to refine the system operations or expand the system by adjusting or adding routes to respond to rider demand. Phasing capital investments also allows the opportunity to seek public sector funding for supporting infrastructure. The circulator system should be implemented in four phases, starting with the Silver Level and progressing through Gold and Platinum Levels and ending with the Diamond Level.

Silver Level

The Silver Level circulator is comprised of two routes that will be the first phase of the system. The Perimeter CIDs will choose the two circulator routes for implementation in based on surveys of potential riders and an analysis of need that will be performed in the next stages of project implementation.

To enhance the operations of the Silver Level circulator in terms of schedule adherence and running time, implementation of signal priority for transit is recommended at four key intersections. Signal priority for transit provides extra green time for circulator vehicles approaching an intersection as the signal is about to change to red. This increases the average speed of the circulator vehicle by eliminating some waiting time at congested intersections.

Gold Level

The Gold Level circulator system adds two new routes to the Silver Level circulator. If redevelopment along Barfield Road resulting in higher density mixed use has occurred by the time the Gold Level circulator is being implemented, the Barfield Route could be included as part of this phase.

Platinum Level

The Platinum Level Circulator adds the Dunwoody Village and Sandy Springs Routes to the Silver and Gold Level circulators. Additionally, if the Barfield Route was not implemented as part of the Gold Level circulator and redevelopment activity along Barfield Road warrants, the Barfield Route could be implemented during this phase.

By state law, CIDs are prohibited from spending funds on transportation improvements outside of their boundaries. As portions of the Dunwoody Village and Sandy Springs Routes lie outside the Perimeter CIDs, a cost sharing agreement will need to be negotiated with the cities. For example, an equitable funding arrangement based on the proportion of route miles within the Perimeter CIDs for the Dunwoody Route is 82 percent of the funding from the CIDs, and 18 percent from the City of Dunwoody. Similarly, for the Sandy Springs Route and example split is 38 percent of the funding from the CIDs, and 62 percent from the City of Sandy Springs. These examples illustrate the maximum percentage of funding the CIDs could contribute within the current state law. Alternate formulas might use the number of stops or boardings as a means to share the costs.

To enhance the operations of the Platinum Level circulator in terms of schedule adherence and running time, implementation of queue jumper lanes is recommended at key intersections. Queue jumper lanes are additional transit only lanes at intersections that allow transit vehicles to bypass automobile traffic lined up at the signal. Queue jumper lanes should be installed at congested intersections on the following three facilities:

- Abernathy Road/Perimeter Center West
- Hammond Drive
- Peachtree Dunwoody Road

Diamond Level

The Diamond Level is the final phase of the circulator implementation. To allow the circulator to skip traffic congestion and provide faster service, dedicated transit lanes should be added along the following facilities:

- Abernathy Road/Perimeter Center West from Glenlake Parkway/Barfield Road to Crown Point Parkway/Central Park Way
- Ashford Dunwoody Road from Hammond Drive to Meadow Lane Road/Asbury Square
- Hammond Drive from Concourse Parkway to Ravinia Parkway
- Peachtree Dunwoody Road from Concourse Parkway to Central Park Way

When the Ashford Dunwoody Road transit-only lane is in place, the Orange and Green Routes should be shifted from Perimeter Center Parkway to Ashford Dunwoody Road and reconfigured as appropriate. No additional circulator routes are recommended for implementation as part of this phase.

The dedicated transit lanes should be open to all transit vehicles, not just the circulator. Dedicated transit lanes require a substantial capital investment, so the Perimeter CIDs should explore funding partnerships with other transit operators and agencies that would benefit from the implementation of the lanes. The faster travel times resulting from the provision of transit lanes may allow the use of fewer vehicles to provide the same frequencies.

Cost Estimates

A range of costs were estimated for the circulator system by level. As construction costs vary over time depending on changes in raw material prices and wages and a

competitive bid process is recommended to hire a private contractor to operate the circulator, these cost estimates are guidelines and actual costs may vary.

Capital and operating costs for the different circulator system levels were calculated using the following methodologies. Capital costs were calculated using unit costs multiplied by the number of items required. Unit costs were sourced from manufacturer price lists, professional experience with similar projects, and the ARC cost estimate tool. Operations and maintenance costs were calculated by defining the circulator operating parameters, determining the total revenue hours of service, and multiplying by a rate of \$65.00 per hour. The hourly rate was determined by averaging hourly costs from recent responses by private shuttle operators to requests for bids for similar systems. This rate is also in line with other privately contracted transit services in the Atlanta area.

Silver Level

The Silver Level circulator will cost approximately \$885,000 per year to operate. Startup capital costs for the Silver Level circulator will be roughly \$368,000. Capital costs include implementing signal priority at four intersections and 24 pavilions.

Gold Level

Operating costs of \$2.1 million to \$2.3 per year are estimated for the Gold Level circulator system. The higher operating cost estimate applies if the Barfield Route is implemented in this phase. Startup capital costs of \$203,000 to \$273,000 are estimated for the Gold Level circulator and include 29 pavilions if the Barfield Route is not implemented and 39 pavilions if it is.

Platinum Level

The Platinum Level Circulator will cost approximately \$3 million per year to operate. Startup capital costs for the Platinum Level circulator will be roughly \$3.7 million dollars and include queue jumper lanes installed at seven intersections and 29 pavilions.

Diamond Level

Operating costs of \$3 million per year are estimated for the Diamond Level circulator system. Startup capital costs of \$90.5 million include transit only lanes on the four

recommended facilities. Table 4: Transit-Only Lane Capital Cost by Facility shows the capital cost estimate for transit only lanes on each of the four facilities.

Table 4: Transit-Only Lane Capital Cost by Facility

Transit-Only Lane	Estimated Capital Cost
Ashford Dunwoody Road	\$13,177,000
Abernathy Road/Perimeter Center West	\$25,960,000
Hammond Drive	\$23,215,000
Peachtree Dunwoody Road	\$28,142,000

Source:

ARC Cost Estimate Tool

Notes:

All costs include right-of-way.

Funding Sources

Funding sources for operations may include the following:

- Farebox recovery
- Employer contributions
- Perimeter CIDs
- Local governments

To fund capital improvements, the Perimeter CIDs should partner with municipalities and agencies that have initiatives underway or may benefit from the new infrastructure. For example, the signal priority recommendations may be able to be coordinated with the Georgia Department of Transportation's Regional Traffic Operations Program (RTOP), which is currently ongoing. For larger projects, such as the recommended transit-only lanes, the Perimeter CIDs should coordinate with other planned roadway improvements or leverage their funds to implement them.

Stakeholder Involvement and Coordination

Throughout the Perimeter Circulator Implementation process, meetings with staff from the Perimeter CIDs were conducted. Additionally, an online survey regarding potential circulator service was distributed to workers in the Perimeter CIDs primarily through property managers. There were 422 self-selected survey participants. As such, this is not a scientific survey because the sample was not random. However, it does provide insight as to general attitudes of people who work in the Perimeter CIDs towards a circulator. A summary of the survey results follows. Detailed survey results are attached in Appendix B.

Implementing a circulator may have a positive impact on transit ridership to the Perimeter area, based on survey results. Currently, 63.7 percent of respondents do not ride transit to work in the Perimeter area; however 52.6 percent of respondents indicated they would ride transit if a circulator was available. An additional 21.3 percent indicated they might ride transit if a circulator was available.

There is demand for a circulator service and people will pay a fare to use it. 69.0 percent of survey respondents indicated they would ride a circulator, with only 11.6 percent responding they would not ride. Only 14.7 percent of respondents indicated they would not be willing to pay a fare. Demand for service is highest at lunchtime, with 75.1 percent of survey respondents indicating they would benefit from service during that period.

Based on the survey results, frequency of service is critical to the success of the circulator, with 76.9 percent of survey respondents indicating it was very important.

Summary Recommendations

The Diamond Level circulator system will enhance Perimeter Center's status as the premiere livable center in the southeast by providing a convenient way to move throughout the area without a car. Additionally, the Diamond Level circulator extends the reach of walking and bicycling trips, enhancing the attractiveness of those modes.

The first step towards circulator implementation is to undertake survey with a scientifically valid random sample representative of workers in the Perimeter CIDs. Information gained from this survey can be used to corroborate previous stakeholder involvement efforts and optimize the design of the proposed circulator service.

Additionally, this survey will assist in determining the first two circulator routes to be opened.

The next step towards the Diamond Level circulator is to put a request for bids out to private transportation contractors to operate the two routes that are chosen by the Perimeter CIDs as the initial circulator routes comprising the Silver Level circulator. Subsequently, the Perimeter CIDs should begin designing pavilions to be placed along these routes.

Relationships with local governments will be critical to circulator implementation. The installation of signal priority equipment at the recommended intersections provides an opportunity to collaborate with DeKalb and Fulton Counties as well as the Cities of Dunwoody and Sandy Springs. The Perimeter Traffic Operations Program (PTOP) should be leveraged to implement the signal priority equipment.



Appendix A

Circulator Operations Worksheets



Appendix B

Survey Results

Diamond Level Circulator

Route Characteristics							
	Orange	Green	Dunwoody Village	Sandy Springs	Purple	Red	Barfield
Length (Miles)	6.72	6.90	6.04	5.16	7.84	8.78	3.24
Stops	12	12	6	6	19	11	10
Dwell Time per Stop (Minutes)	1	1	1	1	1	0.9	1
Layover Time (Minutes)	5	4.5	3	6	7	7	5.5
HEADWAY	Weekdays Peak	10	10	10	10	10	10
	Weekdays Base						
	Saturdays						
	Sundays/Holidays						
Speed (mph)	14.40	14.60	14.00	14.00	14.00	14.00	14.00
Total Cycle Dwell Time	12.00	12.00	6.00	6.00	19.00	9.90	10.00
Cycle Time	45.00	44.86	34.89	34.11	59.60	54.53	29.39

Level of Service							
	Orange	Green	Dunwoody Village	Sandy Springs	Purple	Red	Barfield
HOURS	Peak	3.00	3.00	3.00	3.00	3.00	3.00
	Base	0.00	0.00	0.00	0.00	0.00	0.00
	Saturdays	0.00	0.00	0.00	0.00	0.00	0.00
	Sundays/Holidays	0.00	0.00	0.00	0.00	0.00	0.00

Vehicle Calculations (Weekdays)							
	Orange	Green	Dunwoody Village	Sandy Springs	Purple	Red	Barfield
WEEKDAYS	Peak Vehicles Calculated	9.00	8.97	6.98	6.82	11.92	5.88
	Peak Vehicles Needed	9	9	7	7	12	6
	Base Vehicles Calculated						
	Base Vehicles Needed						
	Vehicle Hours Travelled (Peak)	27	27	21	21	36	18
	Vehicle Miles Travelled (Peak)	389	394	294	294	504	252
	Vehicle Hours Travelled (Base)						
	Vehicle Miles Travelled (Base)						
	Total Vehicle Hours Travelled	27	27	21	21	36	18
	Total Vehicle Miles Travelled	389	394	294	294	504	252

Platinum Level Circulator

Route Characteristics							
	Orange	Green	Dunwoody Village	Sandy Springs	Purple	Red	Barfield
Length (Miles)	6.72	6.90	6.04	5.16	7.84	8.78	3.24
Stops	12	12	6	6	19	11	10
Dwell Time per Stop (Minutes)	1	1	1	1	1	0.9	1
Layover Time (Minutes)	5	4.5	3	6	7	7	5.5
HEADWAY	Weekdays Peak	10	10	10	10	10	10
	Weekdays Base						
	Saturdays						
	Sundays/Holidays						
Speed (mph)	14.40	14.60	14.00	14.00	14.00	14.00	14.00
Total Cycle Dwell Time	12.00	12.00	6.00	6.00	19.00	9.90	10.00
Cycle Time	45.00	44.86	34.89	34.11	59.60	54.53	29.39

Level of Service							
	Orange	Green	Dunwoody Village	Sandy Springs	Purple	Red	Barfield
HOURS	Peak	3.00	3.00	3.00	3.00	3.00	3.00
	Base	0.00	0.00	0.00	0.00	0.00	0.00
	Saturdays	0.00	0.00	0.00	0.00	0.00	0.00
	Sundays/Holidays	0.00	0.00	0.00	0.00	0.00	0.00

Vehicle Calculations (Weekdays)								
	Orange	Green	Dunwoody Village	Sandy Springs	Purple	Red	Barfield	
WEEKDAYS	Peak Vehicles Calculated	9.00	8.97	6.98	6.82	11.92	10.91	5.88
	Peak Vehicles Needed	9	9	7	7	12	11	6
	Base Vehicles Calculated							
	Base Vehicles Needed							
	Vehicle Hours Travelled (Peak)	27	27	21	21	36	33	18
	Vehicle Miles Travelled (Peak)	389	394	294	294	504	462	252
	Vehicle Hours Travelled (Base)							
	Vehicle Miles Travelled (Base)							
	Total Vehicle Hours Travelled	27	27	21	21	36	33	18
	Total Vehicle Miles Travelled	389	394	294	294	504	462	252

Gold Level Circulator

Route Characteristics					
	Orange	Green	Purple	Red	Barfield
Length (Miles)	6.72	6.90	7.84	8.78	3.24
Stops	12	12	19	11	10
Dwell Time per Stop (Minutes)	1	1	1	0.9	1
Layover Time (Minutes)	5	4.5	7	7	5.5
HEADWAY	Weekdays Peak	10	10	10	10
	Weekdays Base				
	Saturdays				
	Sundays/Holidays				
Speed (mph)	14.40	14.60	14.00	14.00	14.00
Total Cycle Dwell Time	12.00	12.00	19.00	9.90	10.00
Cycle Time	45.00	44.86	59.60	54.53	29.39

Level of Service					
	Orange	Green	Purple	Red	Barfield
HOURS	Peak	3.00	3.00	3.00	3.00
	Base	0.00	0.00	0.00	0.00
	Saturdays	0.00	0.00	0.00	0.00
	Sundays/Holidays	0.00	0.00	0.00	0.00

Vehicle Calculations (Weekdays)					
	Orange	Green	Purple	Red	Barfield
WEEKDAYS	Peak Vehicles Calculated	9.00	8.97	11.92	10.91
	Peak Vehicles Needed	9	9	12	11
	Base Vehicles Calculated				
	Base Vehicles Needed				
	Vehicle Hours Travelled (Peak)	27	27	36	33
	Vehicle Miles Travelled (Peak)	389	394	504	462
	Vehicle Hours Travelled (Base)				
	Vehicle Miles Travelled (Base)				
	Total Vehicle Hours Travelled	27	27	36	33
	Total Vehicle Miles Travelled	389	394	504	462

Silver Level Circulator

Route Characteristics			
	Orange	Green	
Length (Miles)	6.72	6.90	
Stops	12	12	
Dwell Time per Stop (Minutes)	1	1	
Layover Time (Minutes)	5	4.5	
HEADWAY	Weekdays Peak	10	10
	Weekdays Base		
	Saturdays		
	Sundays/Holidays		
	Speed (mph)	14.40	14.60
	Total Cycle Dwell Time	12.00	12.00
	Cycle Time	45.00	44.86

Level of Service			
	Orange	Green	
HOURS	Peak	3.00	3.00
	Base	0.00	0.00
	Saturdays	0.00	0.00
	Sundays/Holidays	0.00	0.00

Vehicle Calculations (Weekdays)			
	Orange	Green	
WEEKDAYS	Peak Vehicles Calculated	9.00	8.97
	Peak Vehicles Needed	9	9
	Base Vehicles Calculated		
	Base Vehicles Needed		
	Vehicle Hours Travelled (Peak)	27	27
	Vehicle Miles Travelled (Peak)	389	394
	Vehicle Hours Travelled (Base)		
	Vehicle Miles Travelled (Base)		
	Total Vehicle Hours Travelled	27	27
	Total Vehicle Miles Travelled	389	394

Perimeter Shuttle Study Survey Results

Do you currently ride transit (ie, MARTA, XPress Bus) to work?

Answer Options	Response Percent	Response Count
Always	12.8%	54
Never	63.7%	269
Sometimes	23.5%	99

Would you ride transit to the Perimeter area if a circulator was readily available to take you to a point near your office?

Answer Options	Response Percent	Response Count
Yes	52.6%	222
No	26.8%	113
Maybe	21.3%	90

If a circulator were provided to help you get around within the Perimeter area during the day, would you use it?

Answer Options	Response Percent	Response Count
Yes	69.0%	291
No	11.6%	49
It depends...	19.4%	82

During what hours would you benefit from a circulator service? Select all that apply.

Answer Options	Response Percent	Response Count
Morning	43.1%	182
Lunchtime	75.1%	317
Evening	53.3%	225
Late Night	10.7%	45
Weekdays	40.3%	170
Saturday	23.9%	101
Sunday	19.0%	80
Other	5.9%	25

Perimeter Shuttle Study Survey Results

To help cover the cost of providing a circulator service, how much would you be willing to pay for a

Answer Options	Response Percent	Response Count
.50 cents to \$1	41.2%	174
\$1 to \$2	31.0%	131
\$2 to \$3	5.7%	24
More than \$3	1.2%	5
The rate would depend on distance of travel (zone fare)	18.5%	78
I would not be willing to pay to use a circulator	14.7%	62

How far would you be willing to walk to or from the circulator stop?

Answer Options	Response Percent	Response Count
Less Than ¼ Mile	68.0%	287
¼ Mile to ½ Mile	31.0%	131
More Than ½ Mile	3.8%	16

Would a guaranteed ride home in the event of an emergency be important to you?

Answer Options	Response Percent	Response Count
Yes	65.9%	278
No	34.1%	144

If there were an Inter-Perimeter Circulator, please rate the following characteristics in order of importance:

Answer Options	Very Important	Important	Somewhat Important	Not Important	Response Count
Frequency of service	324	81	9	7	421
Trip speed	188	150	61	13	411
Proximity to nearest stop	232	148	32	7	416
Connections to amenities	271	103	31	15	419
Connections to work	263	80	22	43	408