Executive Summary

The Central Midlands Regional Transportation Authority (CMRTA) has undertaken a Comprehensive Study Project in order to assess the existing state of its transit operations and management and to chart a future course for effectively serving the Central Midlands region. This project consisted of three concurrent studies: a Comprehensive Operational Analysis (COA) of fixed route services, a Contract-Operator Management Performance Review (MPR), and a County-wide Park-and-Ride Study (PRS).

This report presents a summary of work completed for the COA portion of the Comprehensive Study Project. The objective of the COA was to identify near-term, short-range and long-range service recommendations that result in expanded opportunities for Columbia-area residents to utilize transit, boosting ridership in a manner that also improves service productivities.

CMRTA provides fixed route services within Richland County and portions of Lexington County, carrying over 8,000 passengers every weekday, almost 4,000 every Saturday, and almost 1,000 every Sunday. Much of this service is provided within the City of Columbia with operations reaching into the communities of Cayce, West Columbia, Forest Acres, Arcadia Lakes, Springdale, St. Andrews, Harbison, and the Village at Sandhill. CMRTA's system is primarily a radial network, with nearly all of its 24 weekday routes starting/ending at the Downtown Transfer Center (DTC), located at Laurel and Sumter Streets in downtown Columbia.

In order to fully understand and evaluate the existing system's strengths and weaknesses, a multi-pronged approach was established that incorporated data collection and field work, staff and public input, and a latent demand analysis. Data collection efforts included a thorough review of existing data and previous studies, a ridecheck survey to collect ridership and on-time data, a transfer analysis, and an onboard survey to understand rider demographics and trip-making characteristics. Public outreach efforts consisted of interviews with CMRTA and Veolia staff and board of directors, interviews and group meetings with community stakeholders and the public, and both a rider and non-rider transit opinion survey. The latent demand analysis assessed existing and future population, household, and employment demographics and trip-making patterns for the region.

From amassing and analyzing these various quantitative data and qualitative judgments, a number of common issues arose that become the focus for what the future-year recommendations would need to accomplish in order to boost ridership, improve service productivities, and expanded opportunities for residents to use transit. These issues were grouped around three major themes:

I. ***CMRTA fixed-route service needs to be more* reliable**. The greatest weakness identified in the evaluation of existing services was on-time performance (OTP). Only 68% of weekday timepoints were met on-time during the ridecheck ("on-time" was defined as buses arriving 1-minute early to 5-minutes late). Saturday OTP was also 68%, and Sunday OTP was 82%. Most CMRTA trips are taken to or from work, meaning riders need a higher degree of on-time reliability than these figures indicate. And in a radial system such as CMRTA's, where one third of all riders make a transfer to complete their trip, OTP is especially critical, as it could be the difference in elongating a trip by 30-minutes to an hour, depending on when the next trip arrives.

Of all customer satisfaction measures, on-time performance is the most critical and most sensitive to riders. If the service is perceived as unreliable, passengers will seek whatever alternatives necessary to meet their transportation needs. This bore out in public meetings and opinion surveys, which frequently cited service reliability as a key factor in choosing transit.

The root of CMRTA's on-time performance problems lies in route schedules that provide too little recovery time to absorb delays due to traffic congestion, passenger loading, train crossings, and so on. In order to provide the most service possible on what is a very limited operating budget, CMRTA has reduced systemwide scheduled recovery time to 7% on weekdays, 9% on Saturdays, and 10% on Sundays. Fixed route bus systems should minimally maintain at least 12%, and preferably 15%, scheduled recovery time.

All future recommendations begin with the belief that existing service reliability needs to improve first before any expansion of service area or spans or frequencies can take place. And enhancing service reliability extends beyond just on-time performance. It also is reflected in vehicle breakdowns, availability of accurate route schedules and information, consistent routings between weekdays and weekends, and other criteria that the public identified as needing improvement. These reliability issues are a necessary first step toward CMRTA transforming their transit system.

II. ***CMRTA fixed routes need to* connect *more places together.*** All but two of CMRTA's existing routes connect at the DTC. While population and employment densities and street topography strongly support CMRTA's radial network, several factors point to supplementing this core system with other services. First, latent demand analysis shows that suburban communities continue to grow in both residential and commercial densities, meaning riders need to connect to more places than just the CBD. This is confirmed by an analysis of ridership activity by stop, which shows that three-quarters of the top 25 system stops are outside of the CBD, primarily at shopping and medical destinations that also support lower-income jobs.

Second, the transfer analysis found several key routes with passenger transfer wait times of 20-minutes or more at the DTC, meaning that travel times between points outside of the CBD often take one or more hours. Ideally, buses should be "pulsed" to provide timed transfer opportunities for passengers (e.g., buses departing from the DTC at scheduled intervals of 15-minutes). The current design of the DTC with its use of on-street curb space on Laurel and Sumter Streets (and loading on Sumter at the far end of the block towards Blanding Street) does limit the number of bus routes that can be pulsed.

Future networks should seek to provide more crosstown opportunities and non-CBD transfer points and transit centers to allow riders to connect quickly from one part of the city to another. These services would also relieve some of the burden on the DTC, which the service evaluation and staff input deemed as inadequate in its design. Routes continuing to serve downtown in future scenarios should be pulsed to minimize transfer wait time.

III. ***CMRTA fixed-route services need to be* accessible *to more of the community.*** Accessibility, particularly as it relates to transit service, can mean many things. It can imply geographic coverage to reach more of the population, or the extent to which services meet the needs of certain population segments. Accessibility in transit has also come to be associated with

meeting the disabled community's needs. In all of these respects, the existing services analysis found room for CMRTA to grow.

As the Central Midlands region expands beyond the current limits of transit service, CMRTA must seek to push its service area to new areas where demand for transit may exist or increase service in some existing areas. The latent demand analysis and public outreach efforts identified a number of these, including Broad River Road/Lake Murray Blvd., I-77 Corridor/Blythewood, Parklane Road, Two Notch Road Corridor, north perimeter of Fort Jackson, Leesburg Road/Garners Ferry Road, I-77/Bluff Road Area, West Columbia, USC campus, Midlands Tech campuses, and Harbison/St. Andrews/Columbiana Place Mall Area.

Some of these areas are ripe for commuter services and are addressed in detail in the Park-and-Ride Study portion of the Comprehensive Study Project. Many others though would benefit greatly from introducing or increasing the level of local service provided. Expanded geographic coverage, increased service frequencies, and longer service spans were top concerns of both riders and non-riders. In particular, evening and Sunday service are issues. Six routes operate on Sundays at 120-minute service frequencies. This is an inadequate level of service to attract a significant ridership base.

Finally, the need for more accessible services as it relates to the disabled communities reflects the reality of every transit agency that costs are a major obstacle to expanding services because complementary ADA services are several times more expensive to provide than fixed-route services. Agencies nationwide are learning to make their general public offerings more attractive to disabled riders, to both reduce paratransit costs as well as provide more transportation options to the disabled rider.

Future service plans for CMRTA must become more accessible to the entire region in both time and space considerations. And these plans must do so in a way that does not grow complementary ADA services, but perhaps even provides for future reductions in demand response costs.

There is much that current CMRTA fixed-route service is doing right, and future recommendations seek to preserve those elements. Namely, CMRTA maintains a weekday systemwide average of over 23 riders per revenue-hour, a good value for a key performance indicator. Productivity in some of the key corridors, like Two Notch Road, Forest Drive/Decker Boulevard, North Main Street, Broad River Road/St. Andrews Road, and Devine Street/Garners Ferry Road are even greater. And the latent demand analysis found that the vast majority of today's high population- and employment-density areas are within ¼-mile of transit.

But underscoring the myriad of data and analysis are demographics of CMRTA's riders that are confirmed in both the onboard survey and transit opinion survey: 4 out of 5 riders live in households with zero or one vehicles earning less than $30,000 annually. Over half of all riders do not have a driver's license. The majority of patrons rides the bus 4 days or more each week, primarily for work trips, and have been riding for over 5 years. This represents a ridership base that is highly transit-dependent. This base is less sensitive to deficiencies in service levels or reliability, especially when it comes to work trips.

Non-riders are not so immune. Many of them have a choice in transportation options, and CMRTA simply does not provide service that is reliable enough, direct enough, frequent enough, or close enough to make it competitive, even though most non-riders say they are willing to try transit under the right circumstances. In order to attract new riders to CMRTA and increase usage among current riders, CMRTA must transform itself into a system that is reliable, well-connected, and accessible, while maintaining its current strengths. The series of service plan recommendations prepared for the COA seek to do just that.

These recommendations – Near-Term, Short-Range, and Long-Range – ostensibly define growth that occurs over time, but in the context of the COA they have come to mean more than that. Each plan represents an opportunity to primarily address one of the overarching issues cited above, and each plan represents what is possible for CMRTA at various funding levels, starting with existing levels and growing to levels commensurate with the best of its peers.

The **Near-Term Service Plan** focuses on improving service ***reliability***. It represents the most efficient and productive system possible that is cost-neutral to existing operating expenses and provides solutions that can be implemented immediately. The Near-Term Plan reflects the reallocation of resources from unproductive service to areas where service needs have been identified. A significant portion of the resources have been committed to increasing systemwide layover/recovery time as a means to improve service reliability. As noted above, service reliability is a necessary first step for CMRTA to take in order to attract any but the most transit-dependent of riders.

Another key recommendation in the Near-Term Plan that is targeted towards service reliability is the pulsing of buses at the DTC at 15-minute intervals. The transfer analysis identified long passenger wait times for many route-to-route transfers. The existing design of the DTC limits the number of routes that can be pulsed. However, it is still possible to pulse most of CMRTA's bus routes. A proposed schedule developed for the COA allows key corridor routes to have timed-transfers at the DTC at 0-, 15-, 30- and 45-minutes past the hour.

The Near-Term Plan also includes modest route alignment and frequency improvements that enhance connectivity and coverage within the existing CMRTA service area. Since service levels are essentially the same as existing, systemwide ridership is expected to remain relatively unchanged with the Near-Term Plan, growing only by about 2%, to about 2.4 million annual boardings.

The **Short-Range Service Plan** seeks to address the issue of enhancing service ***connectivity***, while still incorporating the reliability measures instituted in the Near-Term Plan. This plan brings the transformation of service that field work, public input, and latent demand analysis indicate would immediately generate high productivity, improve regional mobility, and stimulate economic growth for the community. It reflects a restructuring and rebranding of fixed-routes services that will make riding easier to navigate for existing and new riders, and prepares the introduction of new service types like flex and express service to the region.

A key component to transforming CMRTA is providing greater connectivity through the region to the Central Midlands' unique residential neighborhoods as well as its key corridors and destinations. Part of this effort means supplementing the Downtown Transfer Center with suburban transit hubs in high-density areas where transfers can occur and to which more direct service can be provided. Proposed locations for non-downtown connection points are:

- Palmetto-Richland Memorial Hospital area
- Dutch Square Mall area
- Columbiana Centre/Harbison area
- Columbia Place Mall
- Patterson/Garners Ferry Wal-Mart
- Wood Hills/Garners Ferry Target
- Shop Road/Blair Street area

Of course, the Downtown Transfer Center will continue to be the main hub around which trip-making revolves. As part of this plan, the DTC is recommended to be modified or replaced as a state-of-the-art facility with off-street bus bays that facilitate safer and simpler passenger loading and unloading.

The Short-Range Plan contains several elements – suburban transit centers, a revitalized DTC, express and crosstown services, higher frequencies and longer service spans, and a systemwide rebranding – that are very attractive to both riders and non-riders alike. It assumes a growth in local route revenue hours of about 71% and in operating costs of about 58%, along with proposed capital investment. While this level of growth requires a significant local financial commitment to become a reality, it simply brings CMRTA in line with the operating and capital characteristics of its peer agencies. Systemwide ridership in the Short-Range is projected to grow by about 63% to 3.9 million annual boardings.

Finally, the **Long-Range Service Plan** tackles the additional issue of increasing ***accessibility*** to transit services to more of the region, and providing riders more access to a variety of transit services. The plan expands service into suburban areas that currently do not have service, with much of it coming through community flex routes that are anchored at suburban transit centers and provide a simultaneous expansion of both general public and ADA-compatible services. Weekday service is expanded by over 50% in this plan.

Three additional locations are proposed for non-downtown connection points above the Short-Range:

- Forest Drive Wal-Mart
- Midlands Tech Northeast Campus
- Two Notch Road/Beltline Road area

This plan also proposes that the following corridors have a minimum of 15-minute peak period and 30-minute midday period frequencies on weekdays as a means to improve accessibility:

- North Main Street to Frye Road (north of Columbia College)
- Farrow Road to Fontaine Road
- Two Notch Road to Columbia Place Mall
- Taylor Street/Forest Drive to the Forest Drive Wal-Mart
- Millwood/Devine/Garners Ferry Road Corridor to the Garners Ferry Wal-Mart

The Long-Range Service Plan continues the transformation of service begun in the Short-Range to meet the transportation needs and desires of the Central Midlands region now and into the future. It assumes a growth in local route revenue hours of about 145%, and in operating costs of about 116%. This would require a highly significant local financial commitment and place CMRTA above-average in

service provided compared to its peer agencies. This expansion of service is projected to increase systemwide ridership by about 128% to 5.4 million annual boardings.

Table 1 below presents the key features and statistics of existing service and the three future year service plans. Note that ridership projections are very general estimates based on changes to service levels. Changes in the region's population, employment, and demographic characteristics, as well as CMRTA fare policy, service marketing, and other factors, all will affect the number of riders using the system.

Table 1
Existing and Future Year Service Plan Summary

Service Characteristic	Existing	Near-Term	Short-Range	Long-Range
Weekday Bus Routes				
Fixed Routes to DTC	22	20	18	21
Fixed Routes not to DTC	2	2	5	7
Flex Routes	0	0	2	8
Total Routes	24	22	25	36
Typical Bus Freq's. in Key Corridors				
Weekday Peak Periods	30 min.	30 min.	20 to 30 min.	15 min.
Weekday Midday Period	30 to 60 min.	30 min.	30 min.	30 min.
Service Hours				
Weekdays	16.0	16.0	17.0	18.0
Saturdays	15.5	15.5	16.5	17.5
Sundays	12.5	11.5	14.0	15.0
Transit Hubs	1	1	8	11
Peak Buses Required				
Standard Bus (30'-40')	30	29	39	53
Flex Bus / Cutaway Bus	0	0	3	9
Total Peak Buses	30	29	42	62
Fleet Buses Required				
Standard Bus (30'-40')	36	35	47	64
Flex Bus / Cutaway Bus	0	0	4	11
Total Fleet Buses	36	35	51	75
Annual Revenue Bus-Hours	107,600	110,000	184,300	263,400
Annual Revenue Bus-Miles	1,488,000	1,382,300	2,264,700	3,139,700
Annual Boardings (projected)	2,368,000	2,410,000	3,872,000	5,395,000
Annual O&M Costs	$11,528,000	$11,622,000	$18,173,000	$24,867,000

Not included in the above table is funding required for capital improvements. Over $26 million will be required over the Plan's 15-year period to cover bus fleet replacement and expansion. Another $15 million may be required for transit facility and bus stop improvements.

Service recommendations cannot be implemented in a vacuum, nor can they become successful without supporting systems and activities being installed alongside them. For these reasons, several related measures are suggested to accompany the service proposals. These begin with addressing service standards in a thorough and efficient manner. The project team has recommended a three-pronged process for CMRTA that consists of a route performance monitoring program, a system performance monitoring program, and an on-time performance monitoring program. These programs will ensure that routes and the system as a whole will continually reach higher levels of productivity and efficiency.

A full range of other supporting activities are also discussed. These include: a TDM program, a capital improvement plan, a fleet management plan, management reorganization as proposed by the MPR, public-private partnerships, federal grant pursuits, and improved marketing and customer information, to name a few. While not the focus of the COA, these efforts work toward the same goals of the COA of boosting ridership, improving service productivities, and expanding opportunities for Columbia-area residents to utilize transit.

3.0 COA Service Plan Recommendations

Three distinct service plans have been prepared as part of this COA work effort. The Near-Term Plan represents a 1 to 3-year time period and is cost-neutral. The Short-Range Plan represents a 4-9-year time period and will require additional funding sources. The Long-Range Plan represents a 10- to 15-year time period and also requires additional funding sources. Although these are distinct plans that are defined by time periods, it is important to note that elements of any plan could possibly be shifted to other plans. For example, elements of the Short-Range Plan could be moved into the Near-Term Plan should there be additional funding to implement some services prior to Year 4. Thus, the plans presented in this Tech Memo are perhaps more appropriately defined by funding. It will be important to take into consideration route cycle times and resulting interlines, if only select improvements are moved from one plan to another.

Following are general descriptions of each COA service plan, followed by detailed route alignment and service frequency recommendations.

3.1 Near-Term Service Plan

The primary focus of the Near-Term is improving service ***reliability***. Near-Term Service Plan is a cost-neutral plan that reflects the reallocation of resources from unproductive service to areas where service needs have been identified. A significant portion of the resources have been committed to additional layover/recovery time as a means to improve service reliability. As noted in the prior section, there is presently insufficient scheduled layover/recovery time which is adversely impacting system on-time performance. The Near-Term Plan reflects the following improvements in system layover/recovery time:

- Weekday Service –from 7% to 14% of total revenue bus-hours
- Saturday Service – from 6% to 10% of total revenue bus-hours
- Sunday Service – from 9% to 13% of total revenue bus-hours

Another key recommendation in the Near-Term Plan that is targeted towards service reliability is the pulsing of buses at the DTC at 15-minute intervals. The transfer analysis identified long passenger wait times for many route-to-route transfers. The existing design of the DTC limits the number of routes that can be pulsed. However, it is still possible to pulse most of CMRTA's bus routes. A representative schedule was developed to determine how routes could be pulsed at the DTC. This schedule is shown in Appendix A of this Tech Memo and includes a graphic that shows arrival and departure times at the DTC. This proposed schedule reflects the following departure times at the DTC:

- 0:00 – Routes 1, 8, 15a, 16 and 21
- 0:15 – Routes 6, 11, 23 and 30/31
- 0:30 – Routes 1, 3, 15b, 16 and 20
- 0:45 – Routes 4, 12, 34 and 30/31

Routes not included in the pulsed schedule are Routes 5, 17, 26 and 28. Those routes could be scheduled during non-pulse times. As noted above, the maximum number of pulsed buses at the DTC at one time is five buses. The above schedule also has the North Main, Two Notch, Taylor/Forest Road and Devine/Garners Ferry Road routes on the same pulse at 0:00 and 0:30.

In addition to the improvements identified above, savings obtained from the elimination of unproductive service have also been used to provide some improvements in service coverage and connectivity. Those improvements are as follows:

- Routes 3 and 8 are restructured to provide one-seat service between USC and the Garners Ferry Road Target.
- Route 15 is restructured into two route patterns that operate all-day, with one pattern continuing service to Columbia Place Mall and the other route pattern providing service along Faraway Drive.
- Devine/Garners Ferry Road service is simplified, and now includes all-day service to Greenlawn.
- Service in the South Columbia area is simplified, and no longer reflects different route patterns for different days of the week (i.e., the existing 8, 8a and 77).
- Route 30 and 31 is proposed to operate all-day. Route 30's alignment is modified to include service to the Palmetto-Richland Memorial Hospital. Point deviation service is proposed along a portion of Route 31's alignment.
- Route 34's alignment is modified to provide direct service between the DTC and the Columbiana Centre/Harbison area.
- Route 36's alignment is modified, and now is anchored at the south end at the Garners Ferry Road Target.
- Sunday service frequencies are improved with all but one route operating at 60-minute frequencies.

To achieve these improvements, the following service reductions are required:

- Route 4 (Olympia/Eastway Park) weekday service frequencies are reduced from 30-minutes to 60-minutes.
- Route 6 (Eau Claire) weekday service frequencies are reduced from 30-minutes to 60-minutes and the end-of-line loop is tightened. Sunday service on Route 6 is also eliminated.
- Midday trips on Route 17 are eliminated.
- Route 19 is eliminated, since most of this route's alignment is already covered by other routes.
- Route 22 is eliminated, replaced with modified Route 20 service.
- Route 25 (Cayce) is eliminated.
- Midday service on Route 35 (Village at Sandhill) is eliminated.
- Existing 30-minute Saturday service frequencies on Routes 1 and 16 is reduced to 60-minute frequencies.
- Route 30a and 31a Saturday service is eliminated.
- Routes 8a (Saturday service) and 77 (Sunday service) are eliminated.

3.2 Short-Range Service Plan

The primary focus of the Shot-Range Plan is ***connectivity***. This plan does not reflect significant geographic expansion of CMRTA service. However, route structure is modified to provide improved transfer opportunities outside of downtown Columbia. Radial and new crosstown routes converge at proposed suburban transit centers. These new transit connection opportunities allow riders to complete their transit more efficiently. Proposed locations for non-downtown transfer centers are:

- Palmetto-Richland Memorial Hospital area

- Dutch Square Mall area
- Columbiana Centre/Harbison area
- Columbia Place Mall
- Patterson / Garners Ferry Wal-Mart
- Wood Hills / Garners Ferry Target
- Shop Road/Blair Street area

Bus and passenger amenity improvements such as bus pull-out lanes, passenger shelters and sidewalks should be considered at each of these locations. It is also recommended that the Downtown Transfer Center be modified or replaced as part of the Short-Range Plan, with off-street bus bays.

The Short-Range Plan reflects a significant restructuring of bus service and provides CMRTA with the opportunity to "re-brand" its services. The following route classifications have been defined for the Short-Range Service Plan:

- *Local Radial Routes* – These are routes that provide radial service to/from the DTC with direct routing. Most of these routes (or combinations of these routes when operating on common alignments) provide 30-minute service frequencies. Route numbers 1 through 19 have been reserved for Local Radial routes.

- *Local Crosstown Routes* – The crosstown transit network has been expanded in the Short-Range Plan, with three major crosstown routes. These routes are anchored at Columbiana Centre/Harbison, Columbia Place Mall, the Garners Ferry Wal-Mart and Shop Road/Blair Street. Route numbers 20 through 29 have been reserved for Local Crosstown routes. The three crosstown routes that have been proposed for the Short-Range Plan are:
    - Harbison to Columbia Place Mall
    - Harbison to Garners Ferry Wal-Mart
    - Columbia Place Mall to South Beltline/Shop Road

- *Community Fixed Routes* – These are fixed routes that are oriented towards neighborhood service, thus are more likely to have circuitous routings within neighborhoods. Smaller buses should be used on these routes. Route numbers 30 through 39 have been reserved for Community Fixed routes that connect to the Downtown Transfer Center and route numbers 40 through 49 have been reserved for routes that do not serve downtown.

- *Community Flex Routes* – These are routes that provide point deviation and/or demand response service in neighborhoods. These routes are targeted towards low density residential areas. Cutaway buses should be used on these routes (e.g., buses similar to those used for DART service). Route numbers 50 through 69 have been reserved for Community Flex routes.

- *Express and Limited Stop Routes* – These are express routes that provide express or limited stop service to major destinations such as downtown Columbia and USC. Park-and-ride lots typically anchor the origin end. Route numbers 90 through 99 have been reserved for Express and Limited Stop routes.

The Short-Range Plan also reflects an extended span of service. Weekday and Saturday evening service is extended by one-hour until 10:30 p.m. Sunday evening service starts ½ hour earlier at 7:00 a.m. and ends one-hour later at 9:00 p.m.

The Short-Range Service Plan reflects a 71% increase in annual revenue bus-hours of local route service, thus will require additional financial resources.

The concept of community flex routes reflects the non-traditional delivery of transit services. Across the country, transit agencies are finding that it is more effective to implement non-traditional transit service in low density suburban neighborhoods. The Short-Range Plan proposes the introduction of two flex routes (Routes 51 – Denny Heights and 52 – Fairfield Road/Colonial Heights). This concept is further expanded in the Long-Range plan. A detailed description of flex route service options is described in the next section.

3.3 Long-Range Service Plan

The primary focus of the Long-Range Plan is increased ***accessibility*** to transit services The Long-Range Plan expands service into suburban areas that currently do not have service, thus expanding the accessibility of transit to Richland County residents. Much of this service expansion is through the introduction of six new Community Flex Routes that are anchored at suburban transit centers.

The Long-Range Plan includes the non-downtown transfer locations identified in the Short-Range Plan, with three additional locations. These transfer centers have been categorized as "primary" and "secondary", and are as follows:

Primary Transfer Facility Locations

- Downtown Transfer Center
- Palmetto-Richland Memorial Hospital area
- Columbiana Centre/Harbison area
- Columbia Place Mall
- Forest Drive Wal-Mart
- Garners Ferry Wal-Mart

Secondary Transfer Facility Locations

- Midlands Tech Northwest Campus
- Dutch Square Mall area
- Garners Ferry Target
- Shop Road/Blair Street
- Two Notch Road/Beltline Road area

A higher level of investment in bus and passenger amenities should be targeted towards the designated primary transfer facilities.

It is also proposed that the following corridors have a minimum of 15-minute peak period and 30-minute midday period frequencies on weekdays as a means to improve accessibility:

- North Main Street to Frye Road (north of Columbia College)

- Farrow Road to Fontaine Road
- Two Notch Road to Columbia Place Mall
- Taylor Street/Forest Drive to the Forest Drive Wal-Mart
- Millwood/Devine/Garners Ferry Road Corridor to the Garners Ferry Wal-Mart

Passenger amenities (sidewalks, lighting, bus stop benches and passenger shelters) should be a priority along these corridors.

The Long-Range Plan reflects an extended span of service. Weekday and Saturday evening service is extended until 11:30 p.m. Weekday peak period service is also expanded to start an hour earlier (from 3 to 6:30 p.m.) Sunday evening service is extended until 10:00 p.m.

The Long-Range Plan reflects a 145% increase in local route service-hours over existing service.

As noted earlier, the Short-Range Plan includes two proposed Community Flex routes. The Long-Range plan adds six more flex routes. Service designs that could be applied towards designated flex routes are as follows:

- *Route Deviation* – In a route deviation service, a vehicle operates along a fixed route, making scheduled stops along the way. Vehicles will deviate from the route to pick up and drop off passengers upon request. The vehicle then returns to the fixed route at the point at which it departed to accommodate the request.
- *Point Deviation* – In a point deviation service, a vehicle operates on a fixed schedule with specific stops but without a fixed route. Vehicles will accommodate requests for pick up and drop off at locations other than specified stops or "points" as long as they can be accommodated within the fixed schedule.
- *On-Call* – On-call service is an on-demand feeder service that operates in a specific service area and provides connections to a limited number of destinations within the area. Passengers are typically picked up within the zone and transported to a transit center and vice versa. As the term implies, service is activated by calling and making a reservation, usually with the vehicle driver who controls the schedule. But, requests for service can also be answered by a central call center and dispatched using the same staff that manages the complementary paratransit service.

Typical implementation issues associated with the above flex route options are:

- Service is typically done with small cutaway buses. Thus, service is most effective when passenger trips range from 5 to 15 passengers per hour.
- Reservations can be handled either by a call center/dispatcher or made direct to the driver via a cell phone on the bus. Standing trips can be accepted, but most services operate on a first come, first serve.
- Flex route services requires some effort in the beginning to explain the concept and is usually well-received.
- Service works best if it is anchored at a major generator like hospitals and shopping centers, with transfer options to other buses at that location.
- The size of the service area can vary by time of day. A larger service area with longer headways during the midday can be used to accommodate more people.

- Fares can be higher since it is considered a premium service.

3.4 Individual Route Recommendations

Following are route-specific recommendations. A route alignment map and service frequency table is shown, and descriptions of route-specific service modifications are provided for each service plan period (Near-Term, Short-Range and Long-Range).

Summary of Financial Plan Estimates
For Various Transit Service Growth Scenarios

Characteristic	Scenario 1a	Scenario 1b	Scenario 2	Scenario 3
Service Plan	Near-Term Plan w/o Run Time Adj's.	Near-Term Plan w/ Run Time Adj's.	Short-Range Plan	Long-Range Plan
Implementation Schedule	NT Plan by 2011 No further changes	NT Plan by 2011 5% hr. adj. every 4 yrs	NT Plan by 2011 SR Plan by 2014	NT Plan by 2011 SR Plan by 2014 LR Plan by 2020
P&R Service Program	None	None	Start-up PNR Plan	LR PNR Plan - Ph. 1 (Richland Co. Only)
TDM Program	Minimal ($100k/yr)	Minimal ($100k/yr)	Grows to $250k/year	Grows to $250k/year
Total 15 yr costs ($millions) *In YOE dollars*	$236.36	$252.99	$385.95	$485.22
Funding Sources ($millions) *In YOE dollars*				
Federal Sources	$66.18	$68.90	$94.95	$121.01
State Sources	$7.27	$7.27	$7.27	$7.27
Farebox/Miscl.	$42.19	$45.01	$683.31	$84.61
Local Sources Req'd.	$120.73	$131.82	$215.41	$272.34
Potential 1 cent sales tax rev's. *In YOE dollars*	$863.05	$863.05	$863.05	$863.05
% of 1 cent sales tax over 15 years	13.99%	15.27%	24.96%	31.56%

Key Assumptions:

1. 2.54% inflation factor based on historical CPI for past 12 years
2. 25 cent fare increases assumed every 5 years to keep farebox recovory ratio around 20%.
3. Federal funding assumes just 5307 funds, and does not take into account potential funds from other federal programs such as JARC and New Freed
4. Ridership growth assumed from both service improvements and Columbia area population increases
5. O&M and capital costs based on previously published COA cost estimates.
6. PRS lots assumed to be secured thrrough leases instead of land purchases. Included costs for capital improvements at lots.
7. County 1 cent sales tax revenues assume $40 million in 2010, increasing to $50 million by 2025 in current year dollars.