CHAPEL HILL TRANSIT
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CHAPEL HILL TRANSIT PUBLIC TRANSIT COMMITTEE

NOTICE OF COMMITTEE MEETING AND AGENDA

MARCH 24, 2015 – 11:00 A.M. to 1:00 P.M.

CHAPEL HILL TRANSIT – FIRST FLOOR CONFERENCE ROOM

MEETING SUMMARY OF A REGULAR MEETING OF THE PUBLIC TRANSIT COMMITTEE
1ST FLOOR TRAINING ROOM, CHAPEL HILL TRANSIT

Tuesday, January 27, 2015 at 11:00 AM

Present: Jim Ward, Chapel Hill Town Council
Ed Harrison, Chapel Hill Town Council
Damon Seils, Carrboro Alderman
Bethany Chaney, Carrboro Alderman
Cheryl Stout, UNC Public Safety
Than Austin, UNC Transportation Planner
Julie Eckenrode, Assistant to Carrboro Town Manager
Meredith Weiss, UNC Finance and Administration

Absent: Matt Czajkowski, Chapel Hill Town Council

Staff present: Brian Litchfield, Transit Director, Roger Chapin, Assistant Transit Director, Operations, Rick Shreve, Budget Manager, Bruce Heflin, Special Projects, Tyffany Neal, Assistant Operations Manager – Demand Response, Flo Miller, Chapel Hill Deputy Town Manage,r Tina Moon, Carrboro Planning Administrator, Bergen Watterson, Carrboro Transportation Planner

Guests: Eric Hyman – Chapel Hill Transportation and Connectivity Advisory Board, Michael Parker – Chapel Hill Planning Commission, Katie Jansen – Herald Sun

1. The Meeting Summary of November 18, 2014 was received and approved.

2. **Employee Recognition** – Brian recognized Gerhard Koenig – Demand Response Operator of the Year, Melissa Tillman-Fixed Route Operator of the Year and Michael Chandler-Fixed Route Operator of the Year and Distinguished Driver of the Year. Jim Ward and Brian presented the awards.

3. **Consent Items**

   A. December Financial Reports – Rick reviewed this for the Partners and reviewed the process for fuel contracting and prior trends in contract vs. rack prices. Brian said that CHT will continue to monitor contract prices and lock in at the lowest possible price. Jim Ward asked that staff keep the Partners informed so they can support them in contracting. Brian also noted significant engine and transmission failures that have happened this year and these will affect the overall maintenance expenses.

4. **Discussion Items**

   A. Updated EZ Rider Certification Application – Brian introduced the topic. Tyffany reviewed the process and walked the Partners through the draft revised application. The current

application was revised in 2008. She reported that the Town Attorney is currently reviewing the draft and feedback has been requested from other agencies. Public Input sessions will be held as well. The EZ Rider Advisory Committee has representatives from Chapel Hill and Carrboro and Jim Ward suggested trying to get representation from UNC. Cheryl Stout asked about having a certification application for groups of people. Brian said that would be a good question for the ADA.

B. November & December Performance Reports – These were provided for the Partners information.

5. **Information Items**

A. Estes Park Update – Brian reviewed this item. The reimbursement is being completed at this time. Staff informed the Partners of their concern for passenger safety as they walk across to the temporary bus stop. The Partners acknowledged the concern but directed staff to keep the service proposal on hold until the Section 8 housing voucher situation has been resolved.

B. Long Range Financial Sustainability Study Update – Brian reviewed the study to date. A fare analysis draft will be presented at the February meeting as well as the updated Capital Plan. Bethany Chaney asked how the decreases in ridership were being reflected or integrated in to the plan. She also requested that the ridership reports show 3 years at a time. Brian said that it may be too soon to say that the decrease in ridership is a trend or that it would continue, but staff could look into how that might be included in the overall financial plan.

C. North South Corridor Alternatives Analysis Study Update – Brian reviewed the update. A more complete update will be provided by the consultants at the February meeting.

D. Regional Bus Procurement Update – The bid may be issued in the next 60 days.

E. FTA Grant Update – Staff has asked the FTA to allow Chapel Hill Transit to spend the money allocated on replacement buses before it is lost. Brian hopes to have a response from FTA soon.

6. **Departmental Monthly Report**

A. Operations - Provided for the Partners.

B. Director – Provided for the Partners. Brian made note of his vacation plans and his attendance at the APTA Legislative Conference in Washington, DC in March.

7. **Future Meeting Items**

8. **Partner Items**

9. **Next meeting –** January 27, 2015

10. Adjourn

The Partners set a next meeting date for February 24, 2015

CONSENT ITEM March 24, 2015

3A. January Financial Report

Staff Resource: Rick Shreve, Budget Manager

January 2015

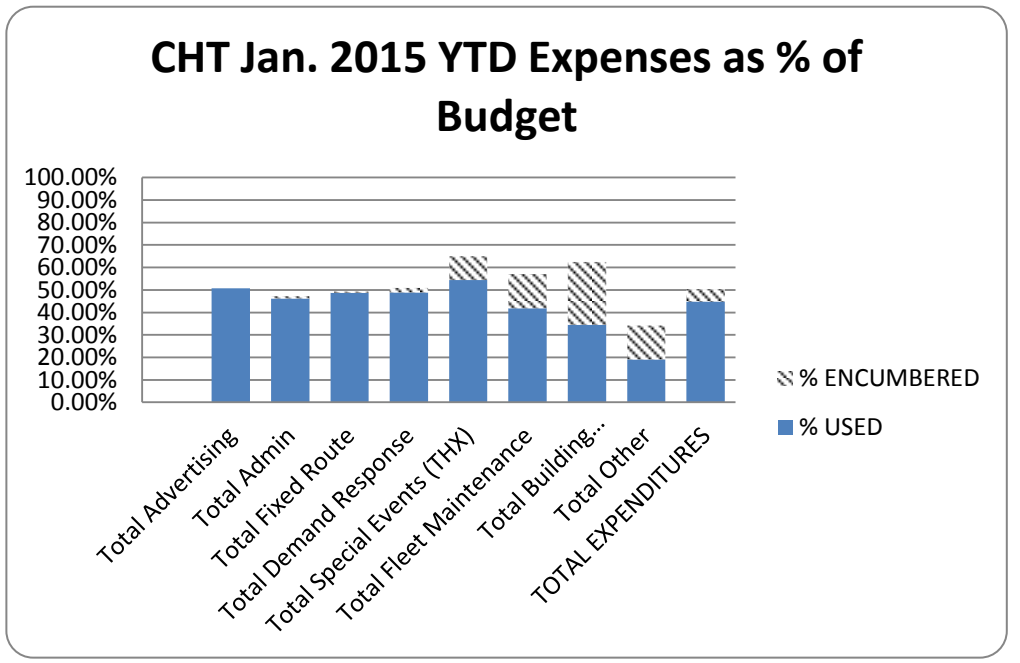
- Expenses for the month of January were $1,490,570. Along with the encumbrances, approximately 50.4% of our budget has been expended or reserved for designated purchase (e.g. purchase orders created for vehicle maintenance inventory supplies encumber those funds, and show them as unavailable for other uses).

Highlights

- This data reflects the start of the second half in the fiscal year, and is closely in line with our projections. This aggregation of expenses and encumbrances is consistent with years past, and is perfectly in line with what we would expect at this point in the year.
- We have a number of vacant positions that account for some of our personnel expenses running below budget, but we are in various stages of hiring processes to fill these positions. Other projects and contracted services will result in larger payment towards the end of the year, balancing out the fact that we have thus far spent below budget for the year.
- The attached data exhibits the financial information by division within CHT, and should be a useful tool in monitoring our patterns as the year progresses, and is a high-level representation of the data used by our division heads.
    - It is worth noting that the "Special Events" line is mostly comprised of Tar Heel Express expenses, and the line labeled "Other" is comprised primarily of special grant-funded expense lines that are not permanent fixtures in the division budgets.

Transit 640 Fund Budget to Actual at end of January 2015

	ORIGINAL BUDGET	REVISED BUDGET	ACTUAL MONTH EXPENSES	ACTUAL YTD EXPENSES	CURRENT ENCUMBRANCES	BALANCE AVAILABLE	% USED OR ENCUMBERED Jan. = 58.33%
Total Advertising	$ 91,261	$ 91,261	$ 6,268	$ 46,298	$ -	$ 44,963	50.73%
Total Admin	1,367,848	1,367,848	88,545	630,877	14,679	722,292	47.20%
Total Fixed Route	11,613,961	11,362,150	838,635	5,541,190	49,651	5,771,309	49.21%
Total Demand Response	1,912,354	1,934,481	148,049	944,579	38,345	951,557	50.81%
Total Special Events (THX)	312,302	316,302	44,239	172,190	33,289	110,823	64.96%
Total Fleet Maintenance	4,102,377	4,155,356	290,229	1,741,426	630,423	1,783,507	57.08%
Total Building Maintenance	671,360	763,299	39,995	263,547	213,247	286,505	62.46%
Total Other	439,350	1,502,542	34,611	286,730	225,986	989,826	34.12%
TOTAL EXPENDITURES	**$ 20,510,813**	**$ 21,493,239**	**$ 1,490,570**	**$ 9,626,837**	**$ 1,205,619**	**$ 10,660,783**	50.40%



CONSENT ITEM March 24, 2015

3A. February Financial Report

Staff Resource: Rick Shreve, Budget Manager

February 2015

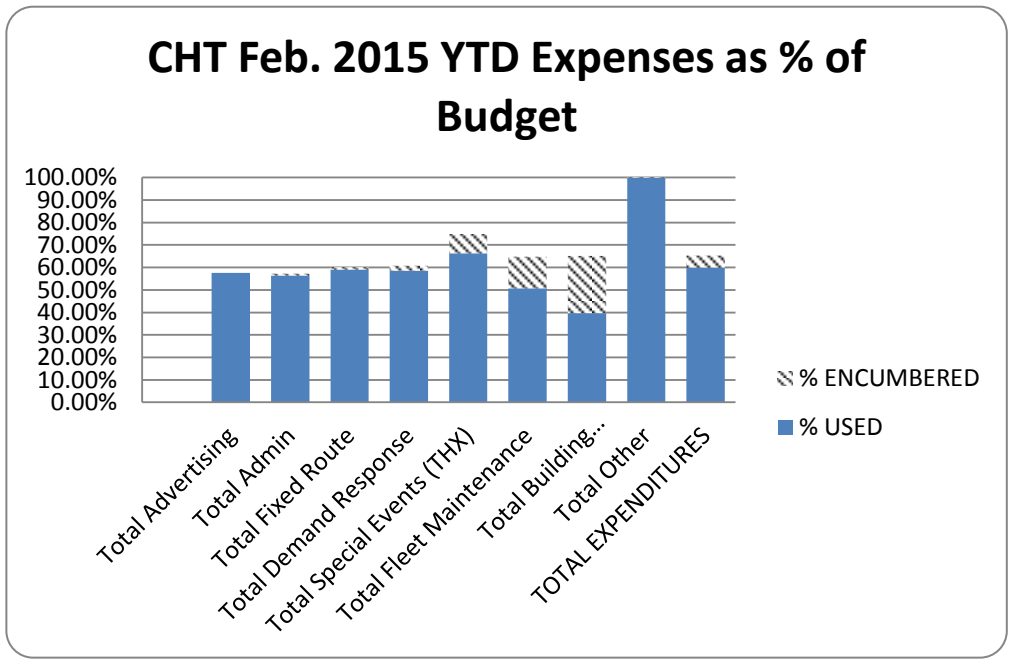
- Expenses for the month of February were $1,356,965. Along with the encumbrances, approximately 58.87% of our budget has been expended or reserved for designated purchase (e.g. purchase orders created for vehicle maintenance inventory supplies encumber those funds, and show them as unavailable for other uses).

Highlights

- This data is closely in line with our projections. This aggregation of expenses and encumbrances is consistent with years past, and is perfectly in line with what we would expect at this point in the year.
- We have a number of vacant positions that account for some of our personnel expenses running below budget, but we are in various stages of hiring processes to fill these positions. Other projects and contracted services will result in larger payment towards the end of the year, balancing out the fact that we have thus far spent below budget for the year.
- The attached data exhibits the financial information by division within CHT, and should be a useful tool in monitoring our patterns as the year progresses, and is a high-level representation of the data used by our division heads.
    - It is worth noting that the "Special Events" line is mostly comprised of Tar Heel Express expenses, and the line labeled "Other" is comprised primarily of special grant-funded expense lines that are not permanent fixtures in the division budgets.
- Partners funded $400,000 towards capital replacement in the current year: $360,000 for fixed route buses, and $40,000 for service vehicles. We are in the process of procuring these vehicles (no expenditures have been approved at this point), and these funds will remain dedicated to that purpose in a reserve fund in the likely event that we have not expensed them by the end of this year.

Transit 640 Fund Budget to Actual at end of February 2015

	ORIGINAL BUDGET	REVISED BUDGET	ACTUAL MONTH EXPENSES	ACTUAL YTD EXPENSES	CURRENT ENCUMBRANCES	BALANCE AVAILABLE	% USED OR ENCUMBERED Feb. = 66.67%
Total Advertising	$ 91,261	$ 91,261	$ 6,313	$ 52,611	$ -	$ 38,650	57.65%
Total Admin	1,367,848	1,365,548	92,968	770,165	12,064	583,319	57.28%
Total Fixed Route	11,613,961	11,149,654	735,282	6,583,639	117,629	4,448,386	60.10%
Total Demand Response	1,912,354	1,934,481	130,746	1,131,616	42,252	760,613	60.68%
Total Special Events (THX)	312,302	316,302	26,637	209,831	26,688	79,783	74.78%
Total Fleet Maintenance	4,102,377	4,143,856	281,547	2,099,525	586,856	1,457,474	64.83%
Total Building Maintenance	671,360	777,099	44,928	308,476	197,182	271,442	65.07%
Total Other	439,350	1,715,038	38,544	1,715,038	190,145	(190,145)	111.09%
TOTAL EXPENDITURES	**$ 20,510,813**	**$ 21,493,239**	**$ 1,356,965**	**$ 12,870,900**	**$ 1,172,815**	**$ 7,449,523**	65.34%



DISCUSSION ITEM March 24, 2015

4A. North South Corridor Alternatives Analysis Study
Action: 1. Receive information and provide staff and consultant team with feedback.

Staff Resource: Mila Vega, Service Planner

Overview

- A presentation updating the Partners on the status of the North South Corridor Alternatives Analysis Study will be made at the March 24, 2015 meeting by the project consultant team.

Attachments

- Draft Service Plan
- Other study documents are available at the project website: http://nscstudy.org/study-documents/

Recommendation

- Partners discuss the information provided in the presentation and provide staff and consultant team with feedback.

Chapel Hill transit

DRAFT Service Plans Technical Memorandum

Updated January 22, 2015

Table of Contents

List of Tables

List of Figures

1. Introduction

The North-South Corridor Study has been undertaken to evaluate potential transit improvements that can better address the travel markets along the North-South Corridor. This Technical Memorandum presents proposed Bus Rapid Transit (BRT) operating plans and supporting bus route modifications for the project alternatives being considered in the Alternatives Analysis for this project. All alternatives are being evaluated for the Horizon Year 2040.

The North-South Corridor is a heavily-travelled corridor that connects major destinations within Chapel Hill, such as UNC Chapel Hill, Downtown Chapel Hill, and UNC Hospitals, with growing northern and southern areas of the town. The corridor's northern edge begins in the vicinity of Eubanks Road and follows Martin Luther King Jr. Boulevard then continues through downtown Chapel Hill on Columbia Street before reaching Southern Village at the southern end along US 15-501.

There are park-and-ride lot locations within the corridor that are well-utilized. This includes the Eubanks Road lot that has easy access to I-40 for those commuting into Chapel Hill from the north, and the Southern Village park-and-ride lot at the southern end. UNC park-and-ride facilities in the corridor include the RR lot on Estes Drive and the lot at 725 Martin Luther King, Jr. Boulevard.

Chapel Hill Transit's (CHT's) Route NS provides service along this corridor, and has an average of over 3,500 riders a day. Several other routes also use portions of the corridor, resulting in high bus volumes that build from both ends of the corridor towards UNC Hospitals. Plans for future development on both ends of the corridor support the need for transit improvements.

This Technical Memorandum begins with a description of existing CHT, Triangle Transit, and Orange Public Transit (OPT) services relevant to the North-South Corridor. The 2040 No Build Alternative is then discussed, specifying associated service plans. Lastly, descriptions and service plans are outlined for the Build Alternatives that are being considered in the Alternatives Analysis – BRT in Mixed Traffic Alternative, BRT in Dedicated Side Lane Alternative, and BRT in Dedicated Center Lane.

2. Existing Corridor Services

Chapel Hill Transit has a total of 24 routes operating during weekday daytime bus service. On Saturday, the total number of routes drops to only eight, and on Sunday only two routes are in service. The North-South Corridor exhibits a similar pattern of robust service during the week and little service on weekends. There are a total of eight routes that operate on significant portions of the North-South Corridor during the week (NS, A, G, N, NU, HS, T, and V). Of these routes, only the NU and T run on Saturdays, and only the NU runs on Sundays. Tables 2-1 and 2-2 present service and ridership characteristics for the eight routes that have been defined as North-South corridor routes.

Table 2-1: CHT Service Span Frequency for North-South Corridor Routes

Day of Week	Route Name	Span of Service	Weekday Frequency (minutes)			
			AM Peak	Midday	PM Peak	Eve.
Weekdays	NS	5:30 am to 10:38 pm	10	20	10	60
	A	5:30 am to 10:38 pm	30	60	30	n/a
	A-Ltd.	7:14 am to 9:41 am	30	n/a	n/a	n/a
	G	6:23 am to 8:40 pm	50	50	50	n/a
	HS	6:45 am to 5:40 pm	60	n/a	60	n/a
	N	6:25 am to 7:20 pm	30	60	30	n/a
	NU	7:05 am to 10:44 pm	20/25	20/25	20/25	45
	T	6:50 am to 6:44 pm	30	35	35	n/a
	V	6:23 am to 8:06 pm	40	60	40	n/a
Saturdays	NU	10:38 am to 11:17 pm	n/a	45	45	45
	T	8:15 am to 5:40 pm	60	60	60	n/a
Sundays	NU	10:38 am to 11:17 pm	n/a	45	45	45

Table 2-2: CHT Weekday Ridership Characteristics for North-South Corridor Routes

Route Name	Average Daily Ridership	Passengers per Revenue Hour	Passengers per Revenue Mile	Passengers per Revenue Trip
NS	3619	50	4.4	33.5
A	1414	46.2	4.6	34.5
G	938	33.8	2.8	28.4
HS	158	23.8	1.7	11.3
N	657	35.1	4.3	17.3
NU	1429	55.5	5.8	2.0
T	1027	47.9	4.0	27.0
V	578	26.4	2.6	17.0

Service performance metrics calculated from September 2014 ridership data

2.1 Northern Corridor Routes

Routes operating on the north portion of the corridor include both CHT and Triangle Transit routes. Following are brief descriptions of those routes.

Route NS (Eubanks Road / Southern Village)

This route is the primary bus route serving the full length of the corridor, proceeding from Eubanks Road CHT park-and-ride lot to the Southern Village CHT park-and-ride lot. The high demand of this route has justified the need to run a mix of standard and articulated buses on this route throughout the day. Like many CHT routes, service adjusts with the needs of the UNC academic calendar. Monday through Friday service operates from 5:30 am to 10:38 pm; service frequencies are 10 minutes during peak periods, tapering to 60-minute service in the evenings with service only to/from UNC Hospitals. No weekend service is available. Round trip mileage is 15.7 miles and takes 70 minutes at an average speed of 13.5 mph.

Route A and A-Ltd (MLK Jr Boulevard / Northside)

Route A begins at the Seymour Senior Center off Homestead Road and travels down Martin Luther King Jr. Boulevard and Raleigh Street. Route A loops around the UNC campus and by UNC Hospitals, and through downtown Chapel Hill to the Colonial Heights neighborhood. Service frequencies are typically 30 (there are a couple of 60-minute gaps) on weekdays between 6:26 am and 7:24 pm with no weekend service. Round trip mileage is 16.3 miles and takes 85 minutes at an average speed of 11.5 mph.

The A-Limited is in service when UNC is in session, running from Hillsborough Street at Martin Luther King Jr. Boulevard in a clockwise direction to Manning Drive at UNC Hospitals and then N Columbia at

Rosemary Street. The A-Limited runs exclusively during AM peak period, and service frequencies are 30 minutes.

Route G (Booker Creek / University Mall / UNC Hospitals)

This route proceeds from Booker Creek Apartments on Lakeshore Drive and Estes Drive. It then travels down Martin Luther King, Jr. Boulevard through UNC's campus and by UNC Hospitals, then travels west on Raleigh Road to Hamilton/Fordham to University Mall. Service frequencies fluctuate around 50 minutes on weekdays from 6:23 am to 8:40 pm with no weekend service. Round trip mileage is 22.5 miles and takes 120 minutes at an average speed of 11.3 mph.

Route HS (Morris Grove Elementary / East Franklin Street)

This route begins at Morris Grove Elementary and travels southeast to serve Chapel Hill High School, continuing to Estes Drive, Airport Drive and Martin Luther King, Jr. Boulevard. It then travels south along the Martin Luther King Jr. Boulevard and Hillsborough, through the UNC campus and back north along Columbia Drive to Martin Luther King Jr. Boulevard to complete a loop at the southern end. Service frequencies are generally 55 to 65 minutes during weekday peak periods (with only one midday trip), with no weekend service. Route HS operates from 6:45 am to 5:40 pm. The round trip length is 13.4 miles and takes about 55 minutes at an average speed of 14.6 mph.

Route N (Estes Park / UNC Hospitals / Family Medicine)

This route proceeds from Estes Park Apartments on Estes Drive to Columbia Street, through the UNC campus and by UNC Hospitals to Bowels Drive and the Family Medical Center. This weekday only route operates from 6:25 am to 7:20 pm with service frequencies of 30 minutes during the peaks and 60 minutes during midday. Round trip mileage is 7.7 miles and takes about 55 minutes at an average speed of 8.4 mph.

Route NU (RR Lot / UNC Hospitals)

This route proceeds from the RR lot on Estes Drive down Martin Luther King, Jr. Boulevard through campus on Raleigh Street and Manning Drive then back on Columbia Street to Martin Luther King, Jr. Boulevard. During the week, the NU runs from 7:05 am to 10:44 pm. Service from peak to peak is 20 to 25 minutes, with early and late service offered at 45 minute frequencies. NU operates during weekends every 45 minutes from 11:30 am to 11:17 pm, but does not operate during breaks. Round trip mileage is 7.1 miles and takes 39 minutes at an average speed of 10.9 mph.

Route T (MLK Jr. Boulevard / UNC Hospitals)

This route proceeds from East Chapel Hill High School on Weaver Dairy Road to Martin Luther King, Jr. Boulevard to East Drive near UNC Hospital. Weekday frequencies fluctuate from 25 to 70 minutes, however the most common is 35 minutes. Service runs from 6:50 am to 6:14 pm with no weekend service. Round trip mileage is 14.0 miles and takes about 60 minutes at an average speed of 14 mph.

Route V (Southern Village/Meadowmont)

This route operates from Meadowmont and the Friday Center through the UNC campus and by UNC Hospitals, to Southern Village via Columbia Street an US 15-501. Weekday service frequencies are generally 30 to 50 minutes in the peak periods, and 80-minutes in the midday, with a span of service from 6:23 a.m. to 8:06 p.m. Round trip mileage is 13.2 miles and takes approximately 75 minutes at an average speed of 10.5 miles an hour.

Triangle Transit Route 420 (Hillsborough Shopping Center / UNC Hospitals)

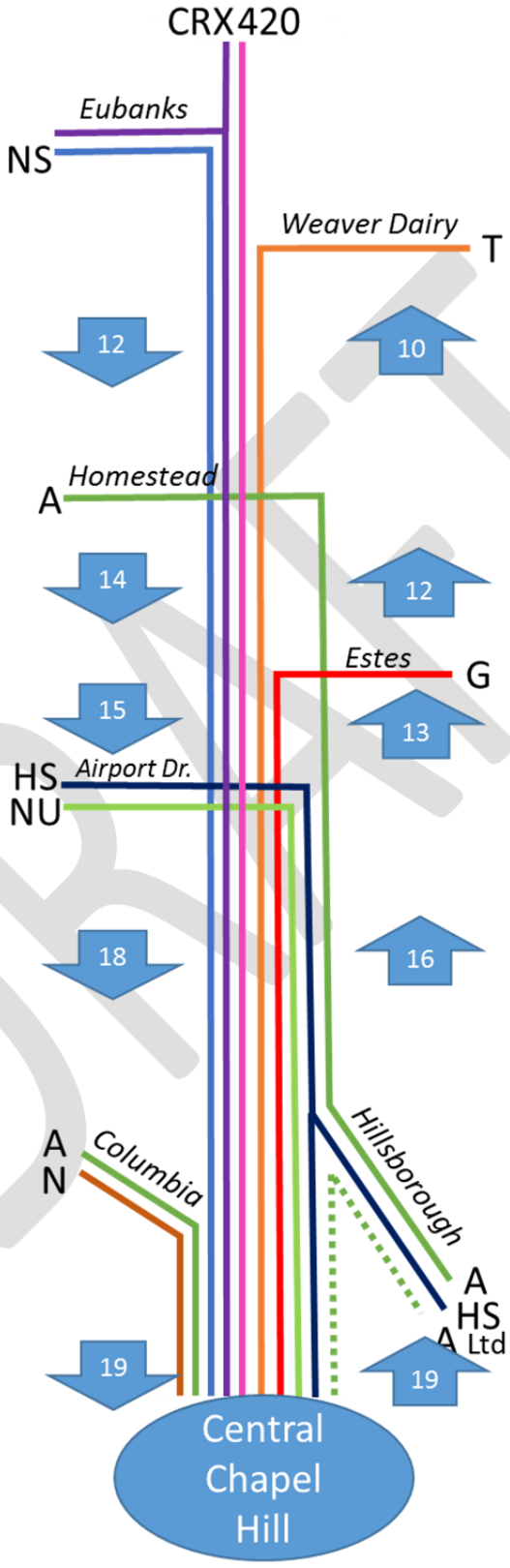
This route operates from the North Hills Shopping Center in Hillsborough to UNC Hospitals. From Hillsborough, Route 420 travels along US Highway 70 to State Highway 86 to Martin Luther King Jr. Boulevard. In Chapel Hill the route operates in the counterclockwise loop from Cameron Avenue to Pittsboro Street and Columbia Street. The route accesses UNC Hospitals from the southern side via Mason Farm Road and East Drive. From UNC Hospitals, the route takes Columbia Street to Martin Luther King Jr. Boulevard back to Hillsborough. Route 420 operates from 6:00 am to 9:15 am for morning service and from 3:40 pm to 6:55 pm for afternoon service. Service frequencies are 30 minutes for both periods. Round trip mileage is 27.8 miles and takes about 90 minutes for an average speed of about 18.5 mph.

Triangle Transit Route CRX (Chapel Hill / Raleigh)

This route operates from Chapel Hill to downtown Raleigh. In Chapel Hill, this route operates in a loop. In the morning, inbound buses enter Chapel Hill via Raleigh Road, loop around the UNC Hospitals, and then travel north on Martin Luther King Jr. Parkway to I-40 with a stop at the Eubanks Road park-and-ride lot before entering I-40. Routing is reversed in the p.m. Route CRX operates at 30-minute frequencies in the a.m. peak period (both directions of travel). Afternoon frequencies generally average 30-minutes but the time between trips ranges from 15 to 35 minutes. Service runs from 6:00 a.m. to 9:55 a.m. during the morning peak and 3:35 to 7:25 during the afternoon peak. The round trip takes about 110 minutes and is approximately 64.6 miles, at an average speed of 35 mph.

In addition to the routes listed above, many other CHT routes operate along short segments of the corridor; particularly between Franklin Street and Manning Drive. Triangle Transit Route 400, 405, 800 and 805 also operate on short segments of the corridor. Figure 2-1 presents a.m. peak hour bus volumes for corridor-designated routes along the study corridor, north of downtown Chapel Hill.

Figure 2-1: North Side Weekday AM Peak Bus Volume



2.2 Southern Corridor Routes

Route NS (Eubanks Road / Southern Village)

As noted in the prior section of this Tech Memo, Route NS is the primary bus route serving the full length of the corridor. Operating characteristics for Route NS were described in the prior section.

Route V (Southern Village / West Barbee Chapel Road)

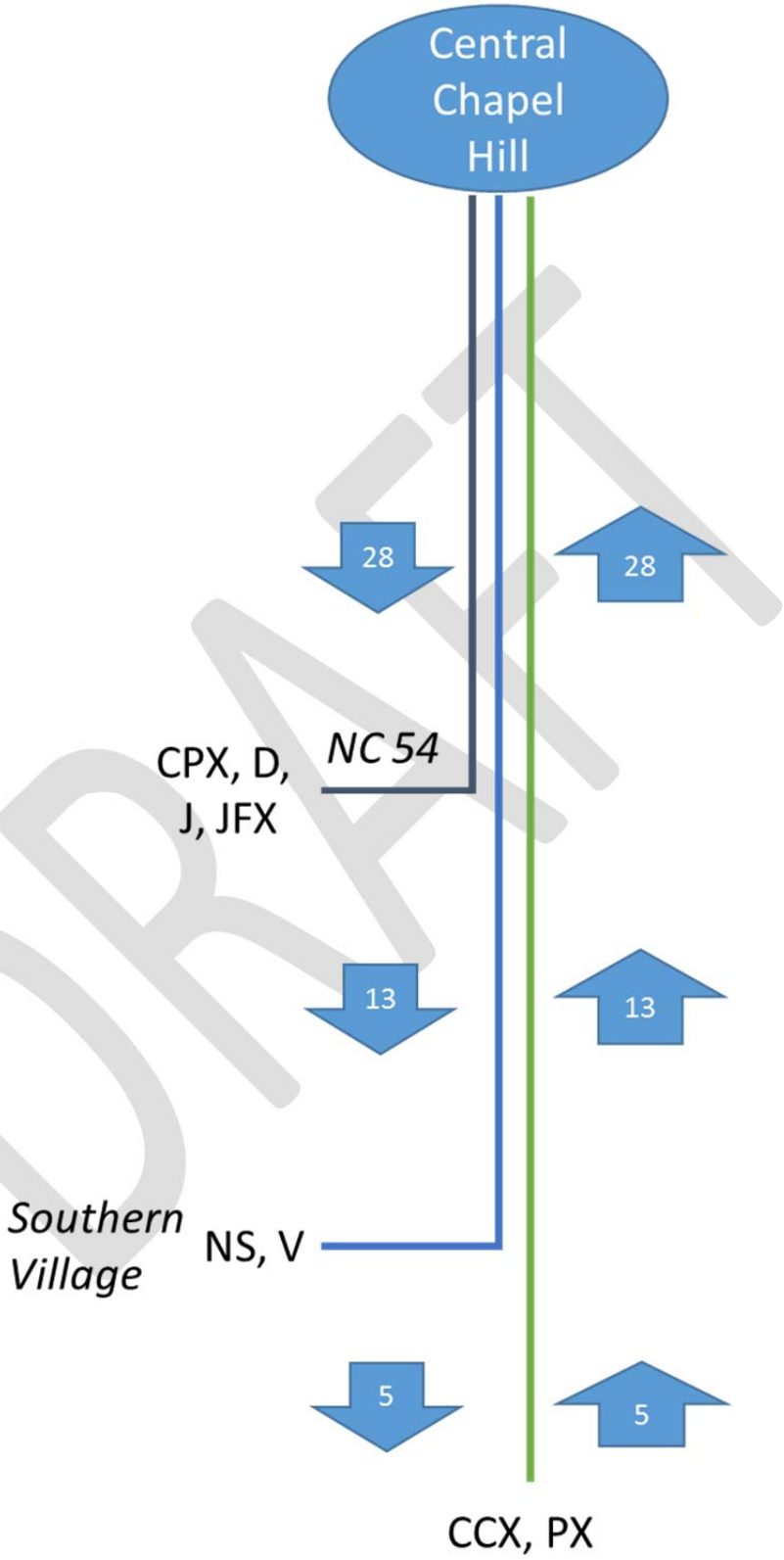
This route proceeds from Southern Village park-and-ride and travels north on US 15/501 to UNC Hospitals before continuing east on Raleigh Road to Friday Center park-and-ride and Meadowmont Apartments. Service frequencies range from 30 to 50 minutes during peak period and are as much as 80 minutes during the mid-day period with a span of service from 6:23 a.m. to 8:06 p.m. Round trip mileage is 13.14 miles which takes 73 minutes at an average speed of 10.8 mph.

In addition to the routes listed above, the following routes currently operate on short segments along the south portion of the corridor: CCX, CPX, D, J, JFX, and PX. Figure 2-2 presents a.m. peak hour bus volumes along the Columbia Street/US 15-501 portion of the corridor, south of downtown Chapel Hill.

2.3 Orange Public Transportation (OPT) Routes

Orange County Public Transportation provides the mid-day portion of the Hill to Hill service, also known as the Triangle Transit Route 420. In addition to this service, OPT provides service for elderly (60+) or disabled residents to medical care providers or shopping. These services will remain unchanged in all of the project alternatives described in this report.

Figure 2-2: North Side Weekday AM Peak Bus Volume



2.4 North-South Corridor Ridership Characteristics

Stop level ridership data provided by Chapel Hill Transit from September 2014 was used to determine ridership characteristics for the corridor-designated routes. Figures 2-3 and 2-4 present northbound and southbound stop level ridership (boardings and alightings) for Route NS. As noted earlier, Route NS carries approximately 3,500 daily riders during the UNC school year. Approximately 1,240 trip ends (620 riders) are associated with boardings or alightings at the two ends-of-line park-and-ride lots (540 boardings and alightings at Eubanks and 700 boardings and alightings at Southern Village). The maximum number of riders on Route NS bus trips typically occurs just north of the Martin Luther King Jr. Boulevard/Columbia Street intersection, just north of downtown Chapel Hill.

Ridership characteristics for other corridor-designated routes are as follows:

Route A

- Approximately 1,415 daily riders
- 33% ridership activity on-corridor
- 67% ridership activity off-corridor

Route G

- Approximately 940 daily riders
- 40% ridership activity on-corridor
- 13% ridership activity on Estes/Lakeshore segment
- 45% ridership activity on Raleigh Rd/University Mall segment

Route HS

- Approximately 160 daily riders
- 16% ridership activity on-corridor
- 52% ridership activity west of Martin Luther King Jr Boulevard
- 32% ridership activity on Franklin/Hillsborough segment

Route N

- Approximately 660 daily riders
- 45% ridership activity on-corridor
- 41% ridership activity on N Columbia Street to Estes Park Apartments
- 14% ridership activity on remainder of route

Route NU

- Approximately 1,430 daily riders
- 44% ridership activity on-corridor
- 9% ridership activity west of Martin Luther King Jr. Boulevard
- 47% ridership activity on remainder of route

Route T

- Approximately 1,030 daily riders
- 81% ridership activity on-corridor
- 19% ridership activity on northeast segments

Route V

- Approximately 565 daily riders
- 44% ridership activity on-corridor
- 56% ridership activity on Raleigh Rd to Meadowmont Apartment segments

Figure 2-3: NS Northbound Daily Boardings and Alightings (Fall 2014 Ridership)

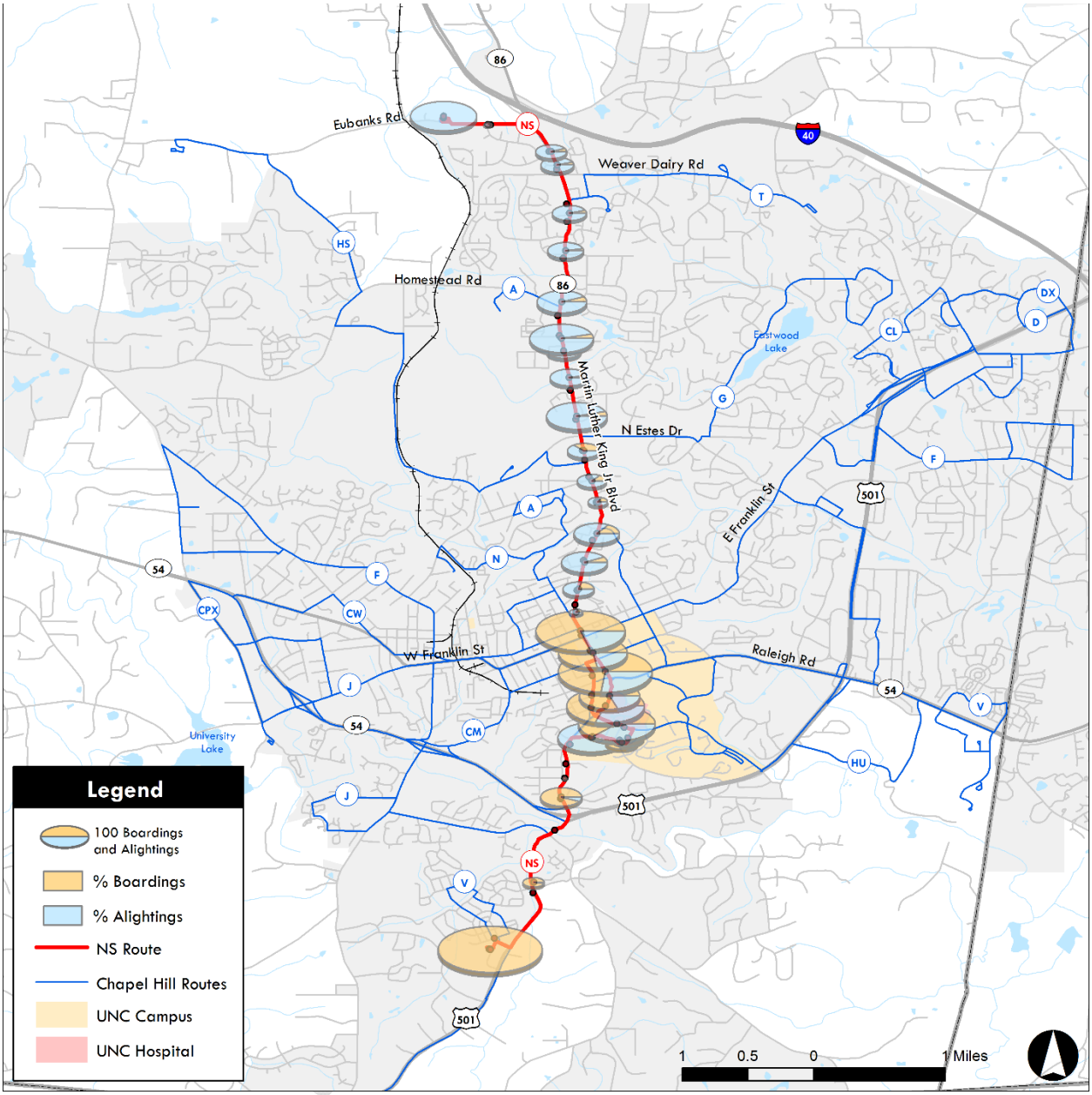
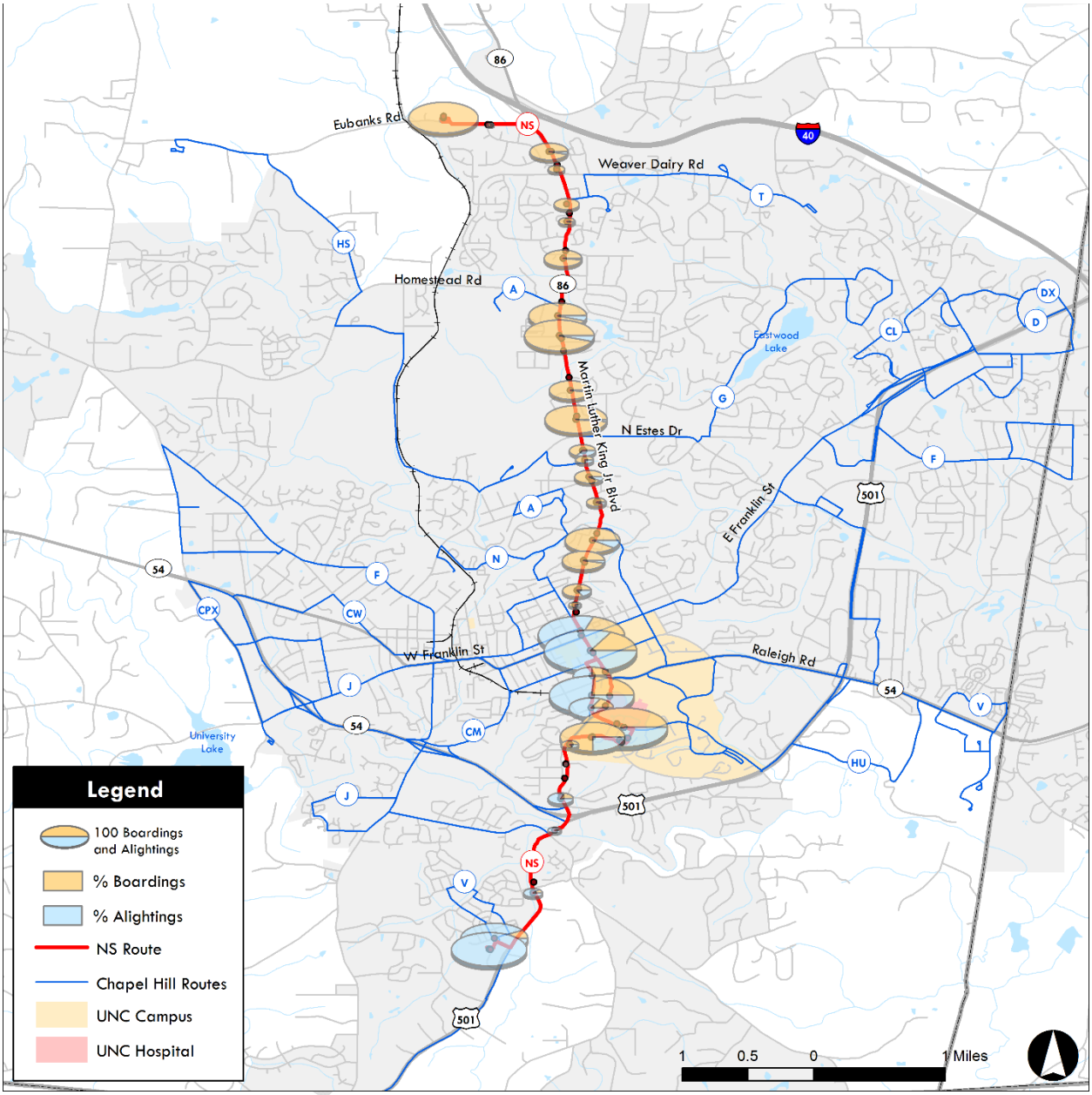


Figure 2-4: NS Southbound Daily Boardings and Alightings (Fall 2014 Ridership)



3. No Build Alternative

Evaluation of Build Alternatives requires the definition of a No Build Alternative. Project alternatives are being evaluated for a Year 2040 horizon year. This project's No Build Alternative assumes implementation of the proposed Durham-Orange Light Rail Transit (LRT) project and associated bus route changes as part of the background bus network. Several of the North-South Corridor routes are impacted by the Durham-Orange LRT Project and are proposed for modification to improve connectivity to the proposed rail line. In addition, it is assumed that CHT weekend service is expanded by 2040. As noted in the prior section, CHT operates a reduced Saturday service and minimal Sunday service. Proposed service changes are as follows:

3.1 Corridor Route Alignment Modifications

Route G

Service plans developed for the Durham-Orange LRT project propose a modification to Route G's alignment in the central Chapel Hill area. The current deviation to UNC Hospitals is eliminated. Instead, Route G would follow Raleigh Road and then turn north on Columbia Street. Reverse direction buses would follow Columbia Street to Cameron Avenue to Raleigh Road. No changes are proposed to No Build service frequencies.

Route NU

The Durham-Orange LRT project proposes minor alignment modifications in the vicinity of UNC Hospitals in the Durham-Orange LRT project for Route NU. From Manning Drive, buses would turn south on East Drive, west on the realigned William Blythe Drive, north on West Drive, back to Manning Drive and Columbia Street. No changes are proposed to service frequencies.

It should be noted that West Drive is currently one-way southbound and as such, the aforementioned route pattern assumes West Drive would be modified to accommodate two-way bus traffic flow. If this is not possible, then westbound buses would need to connect to the UNC Hospitals Station via East Street, the proposed realigned William Blythe Drive and Mason Farm Road to Columbia Street.

Route T

The Durham-Orange LRT project proposes an eastern extension of this route beyond East Chapel Hill High School to the Gateway LRT station. Proposed routing is east on Weaver Dairy Road, north on Erwin Road, south on Sage Road, and east on Old Durham Road to the Gateway LRT station. The west/south end of the route is also modified. Instead of operating south on Martin Luther King, Jr. Boulevard to UNC Hospitals, this route would continue west on the Weaver Dairy Road Extension, east on Homestead Road to the Seymour Senior Center and Southern Orange County Human Services Center. Proposed weekday frequencies are 30-minutes all-day. Additional 30-minute weekday evening service is proposed.

Route V

The Durham-Orange LRT project proposes minor alignment modifications in the vicinity of UNC Hospitals in the Durham-Orange LRT project for Route V. From Manning Drive, buses would turn south on East Drive, west on the realigned William Blythe Drive, west on the realigned Mason Farm Road and south on Columbia Drive. Northbound routing would make the reverse movement. This route would also provide a connection to the Friday Center station and the Hamilton Road Station.

Triangle Transit Routes 400 and 405

Per transit service plans in the Durham-Orange LRT project, these routes are eliminated, replaced with LRT service.

3.2 Weekend Service Expansion

As noted earlier, CHT operates a reduced schedule on Saturdays and minimal service on Sundays. As part of this project's background bus service assumptions, it is assumed that weekend CHT bus service is expanded by the horizon year 2040.

Routes that presently operate on Saturdays are: CM, CW, D, FG, JN, NU, T and U. For purposes of this project's No Build Alternative, it is assumed that Route NS service is expanded to include weekend service from approximately 8:00 a.m. to 6:00 p.m. at 45-minute frequencies (two buses). The modified Route T (Gateway LRT Station to Southern Orange County Human Services Center) is also assumed to operate on Saturdays for approximately the same span of service at 60-minute frequencies.

Routes that presently operate on Sundays are U and NU. For purposes of this project's No Build Alternative, it is assumed that all existing Saturday routes operate on Sundays at the same frequencies and span of service as currently operated on Saturdays. Routes NS and T are also proposed to operate on Sundays.

4. Bus Rapid Transit Alternative

This section of the Tech Memo presents proposed BRT service plans and background bus plan modifications. Three BRT alignment configurations are being considered: BRT in Mixed Traffic, BRT in Dedicated Side Lane and BRT in Dedicated Center Lane. Two northern end-of-line locations are also under consideration – the existing Eubanks Road park-and-ride lot and a potential new end-of-line park-and-ride lot located on Martin Luther King, Jr. Boulevard, north of I-40. Specific BRT station/stop locations are yet to be determined. Existing stop level ridership information (described earlier in this Tech Memo in Section 2.4) will be used to determine BRT stop locations that maintains corridor accessibility to transit.

Proposed BRT service plans are the same for all three alignment configuration and two north end-of-line alternatives. Background bus service, however, does vary slightly depending on the alternative.

4.1 BRT Service Plan

There are three BRT service plans proposed for consideration in this project, regardless of the alignment configuration. Service Plan Option 1 assumes a single BRT route pattern that operates from the north end-of-line (either Eubanks Road park-and-ride lot or I-40/Martin Luther King, Jr. Boulevard park-and-ride lot) to the Southern Village park-and-ride lot. BRT buses would remain on the proposed BRT corridor (Martin Luther King, Jr. Boulevard, Columbia/Pittsboro Streets and US 15-501), with no off-corridor deviations. Proposed frequencies and span of service for the BRT service are shown below in Table 4-1.

Table 4-1: Proposed BRT Service Plan – Option 1 and 2 (Single Route Pattern)

Day of Week	Time Period	Service Frequency
Weekdays	5:00 a.m. – 7:00 a.m.	20-minutes
	7:00 a.m. to 6:00 p.m.	7.5-minutes
	6:00 p.m. to 8:00 p.m.	10-minutes
	8:00 p.m. to 11:00 p.m.*	20-minutes
Saturdays and Sundays	8:00 a.m. to 10:00 a.m.	20-minutes
	10:00 a.m. to 6:00 p.m.	10-minutes
	6:00 p.m. to 11:00 p.m.*	20-minutes

** Service would be extended beyond 11:00 p.m. on Thursdays, Fridays and Saturdays during the UNC school year*

Service Plan Option 2 also consists of a single BRT route pattern that would operate the service pattern described above, but with an off-corridor deviation to serve the UNC Hospitals LRT Station via Mason Farm Road and Manning Drive. Proposed frequencies and span of service for the BRT are the same as shown for Service Plan Option 1 in Table 4-1 (above).

Service Plan Option 3 consists of two BRT route patterns – full-length and a short-turn pattern. The full-length pattern would operate the same service pattern described in Option 2. The short-turn pattern would operate from UNC Hospitals Station to Carolina North, with buses deviating off of the corridor to a turnaround location within Carolina North. The location of this turnaround will be determined in future phases of the project; construction of a transitway on the Carolina North campus is not presumed as part of the project.

This short-turn pattern would only operate on weekdays, and not in the early morning or late evening time periods. The combined frequency between the two route patterns is five minutes on weekdays (7.5-minutes on weekday evenings). Proposed frequencies and span of service for the two proposed route patterns are shown below in Table 4-2.

Table 4-2: Proposed BRT Service Plan – Option 3 (Two Route Patterns)

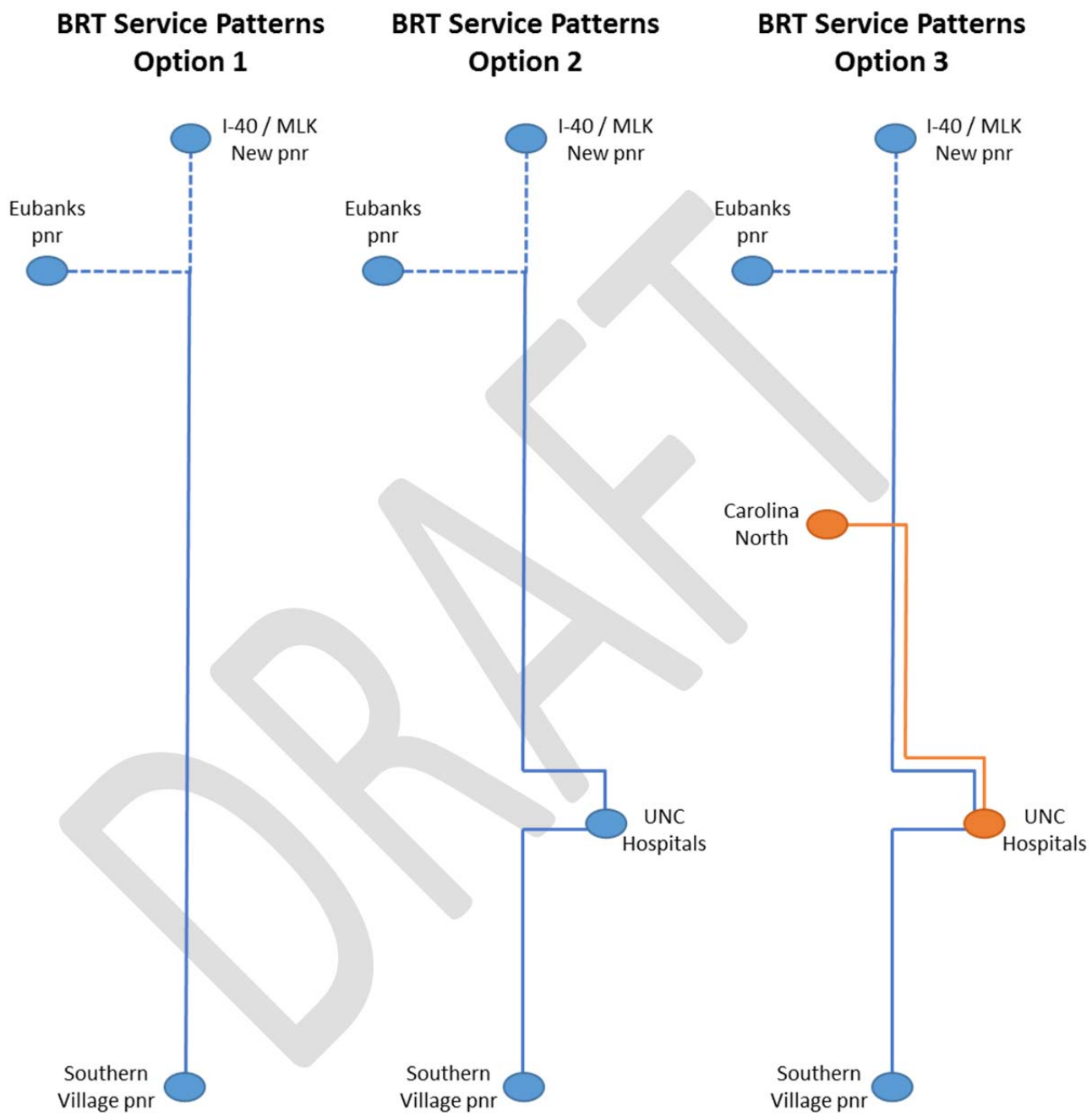
Day of Week	Time Period	Full Route Pattern Service Frequency	Short-Turn Pattern Service Frequency
Weekdays	5:00 a.m. – 7:00 a.m.	20-minutes	No Service
	7:00 a.m. to 6:00 p.m.	10-minutes	10-minutes
	6:00 p.m. to 8:00 p.m.	15-minutes	15-minutes
	8:00 p.m. to 11:00 p.m.*	20-minutes	No Service
Saturdays and Sundays	8:00 a.m. to 10:00 a.m.	20-minutes	No Service
	10:00 a.m. to 6:00 p.m.	10-minutes	No Service
	6:00 p.m. to 11:00 p.m.*	20-minutes	No Service

** Service would be extended beyond 11:00 p.m. on Thursdays, Fridays and Saturdays during the UNC school year*

All three service plan options are shown schematically in Figure 4-1 (weekday service patterns only).

Once station locations are defined, BRT travel time estimates will be calculated and BRT operating plan requirements will be determined for both BRT service plan options. Ridership forecasts will also be reviewed to determine any appropriate adjustments to the BRT service frequencies that are proposed in this service plan.

Figure 4-1: Proposed BRT Weekday Service Plans Options



4.2 Background Bus Service Modifications

The following bus service modifications are proposed in support of all three BRT alignment configuration alternatives. Some of the routes listed below will continue to operate on short segments of the North-South Corridor. In those instances, local buses will operate jointly with BRT service for the Mixed Traffic and Dedicated Side Lane Alternatives. In the Dedicated Center Lane Alternative, only BRT buses would operate in the center lanes, with local bus routes operating in mixed traffic in the curb lanes. Figure 4-2 at the end of this section illustrates the existing CHT transit network and Figure 4-3 shows how the proposed transit network would look like with the North-South Corridor BRT, the Durham-Orange Light Rail Transit service and the proposed CHT route changes that are described below.

Route NS

This route is eliminated and replaced with BRT service for all three BRT alignment configuration alternatives.

Routes A and A-Ltd.

With the addition of North-South Corridor BRT service, it is proposed that Route A Ltd. Is eliminated. Route A's alignment is also proposed to be modified, with Route A service taken off of MLK Jr. Blvd to eliminate duplicative service along the BRT alignment. Route A's new northern terminus would be the existing loop at Barclay Road and Severin Street. Route A would continue south, turning east on Umstead Drive and south on Hillsborough Street to Raleigh Street. This route would follow the existing alignment to UNC Hospitals, where Route A service would terminate. It is proposed that Route A service be interlined with modified Route N service (described later in this section) at UNC Hospitals. Proposed weekday service frequencies for the interlined Route A and N is 30-minutes. No change is needed to the weekday span of service, for Route A presently operates at a span similar to the proposed BRT span of service. Weekend service is also proposed at 60-minute frequencies during the day. Figure 4-4 illustrates the existing route alignment and Figure 4-5 shows the proposed route alignment for Route A.

This modification removes service from the Seymour Senior Center and Southern Orange County Human Services Center, however the proposed Route T (described later in this section) will serve these facilities at equivalent frequencies with the addition of weekend service. Additional service could come in the form of rerouting Route HS to stay on Estes Drive to serve the Senior Center, if needed.

New Route E

This is a proposed route that would begin at University Mall on the eastern end of the alignment and travel north to S Elliott Road to serve the East Gate Shopping Center. The route would continue along Elliott Road before traveling to N Estes Drive by way of Curtis Road, Clayton Road, and Caswell Road. Route E would travel west on Estes Drive and south on Greensboro Street to downtown Carrboro. Riders destined to the central Chapel Hill area and the UNC campus would transfer to the BRT route. Proposed frequencies are 30-minutes in the peak periods and 60-minutes in the midday and evening periods, with service provided on weekdays only (similar span of service as BRT). Figure 4-7 presents the proposed route alignment for Route E.

Route G

As noted above, a portion of the existing Route G has been proposed as new Route E service. The remaining Route G retains current routing between University Mall and UNC Hospitals. An extension from University Mall north along US 501 to Booker Creek Rd via Erwin Rd and Oxford Creek Rd is proposed to continue service to the Booker Creek residences. Proposed frequencies are 30-minutes in

the peak periods and 60-minutes in the midday period, weekdays only (no change in the current span of service). Figure 4-6 illustrates the existing alignment and Figure 4-7 illustrates proposed route alignment for Route G.

Route N

It is proposed that Route N retains its current alignment along the northwest portion of the route, continuing to Columbia Street, where it follows the Route A alignment to UNC Hospitals. As noted earlier, it is proposed that Route N be interlined with the modified Route A (described above). Proposed weekday service frequencies for the interlined Route A and N is 30-minutes. Weekend service is also proposed at 60-minute frequencies during the day. Figure 4-8 depicts existing Route N alignment and Figure 4-9 illustrates proposed route alignment for Route N.

Route NU

It is proposed that Route NU's alignment be modified to reduce duplicative service with BRT on Martin Luther King, Jr. Boulevard and Columbia Street. Proposed new routing from Airport Drive/Martin Luther King, Jr. Boulevard is south on Martin Luther King, Jr. Boulevard, south on Hillsborough and Raleigh Street, picking up its current alignment until service at the UNC Hospitals. From UNC Hospitals, this route will begin its northbound direction in the same alignment as described for the southbound direction. No changes are proposed to existing service frequencies or the span of service. Route NU would operate in the BRT lanes for the mixed traffic and dedicated side lane alternatives. Figure 4-10 shows the existing alignment and Figure 4-11 illustrates proposed route alignment for Route NU.

Route T

No changes are proposed from previously-described No Build Alternative service modifications. Riders destined to the central Chapel Hill area and the UNC campus would transfer to the BRT service. Figure 4-12 depicts the existing alignment and Figure 4-13 illustrates proposed route alignment for Route T.

Route V

It is proposed that Route V runs its current alignment on the eastern side of the route from the Friday Center park-and-ride and Meadowmont Apartments loop towards UNC Campus. However, instead of continuing the route to US 15/501 and to Southern Village (i.e., duplicating proposed BRT service), the route will terminate at UNC Hospitals. No changes are proposed to existing service frequencies or the span of service. Figure 4-14 shows the existing alignment for Route V and Figure 4-15 illustrates proposed route alignment for Route V.

SV Circulator

This is a proposed route that covers the existing Southern Village development alignment loop from the existing Route V, with service anchored at the Southern Village park-and-ride lot for transfers to and from the proposed BRT service. This route could eventually be extended to include service into the proposed Obie Creek development across US 15-501. Proposed frequencies are 15-minutes all-day, weekdays only, with a span of service similar to BRT. Figure 4-15 illustrates proposed route alignment for Route SV.

Weekend Route JN

With the proposed modifications to Routes A and N, the weekend Route JN must also be modified to reflect service only between UNC Hospitals and Rock Haven Road. The shorter route alignment allows

for an improvement in weekend service frequencies to 60-minutes with one bus. No change is proposed to the span of service.

Other CHT Routes

Nearly all other CHT routes operate on short segments of the corridor (e.g., Route CL comes in from Franklin Street, turns south on Columbia Street and loops around the UNC Hospitals). No route alignment changes are proposed for these other CHT routes. Coordination of BRT and non-BRT stop locations will be required for the BRT in Mixed Traffic and BRT in Side Dedicated Lanes alternatives.

Triangle Transit Route 420

No changes are proposed to this route. Service will parallel proposed BRT service along Martin Luther King, Jr. Boulevard

Triangle Transit Route CRX

The only proposed alignment change to this route is to serve the I-40/Martin Luther King, Jr. Boulevard park-and-ride lot, for BRT alternatives that assume this lot location in lieu of the existing Eubanks Road park-and-ride lot.

Figure 4-2: Existing CHT Route Alignments

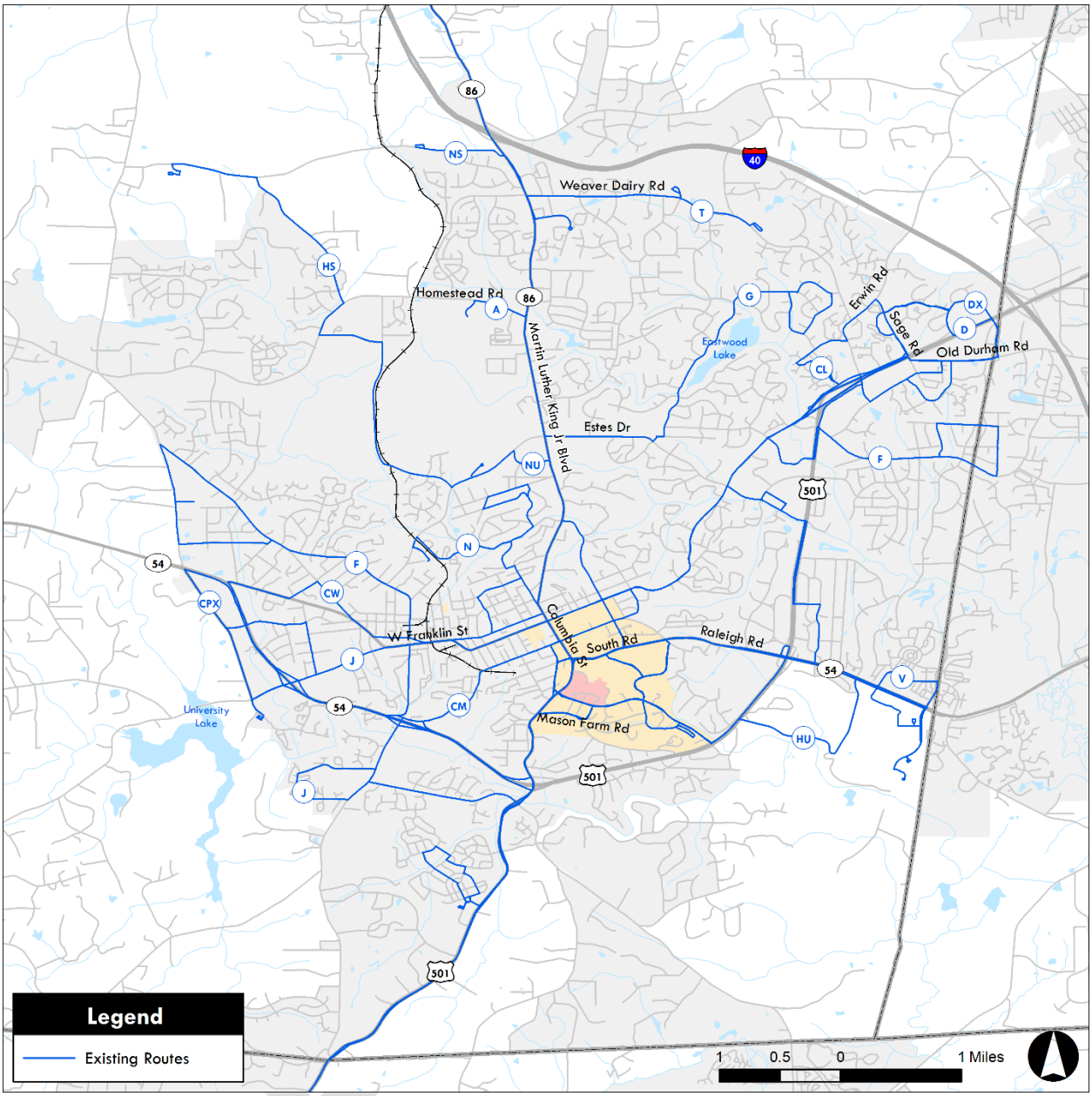
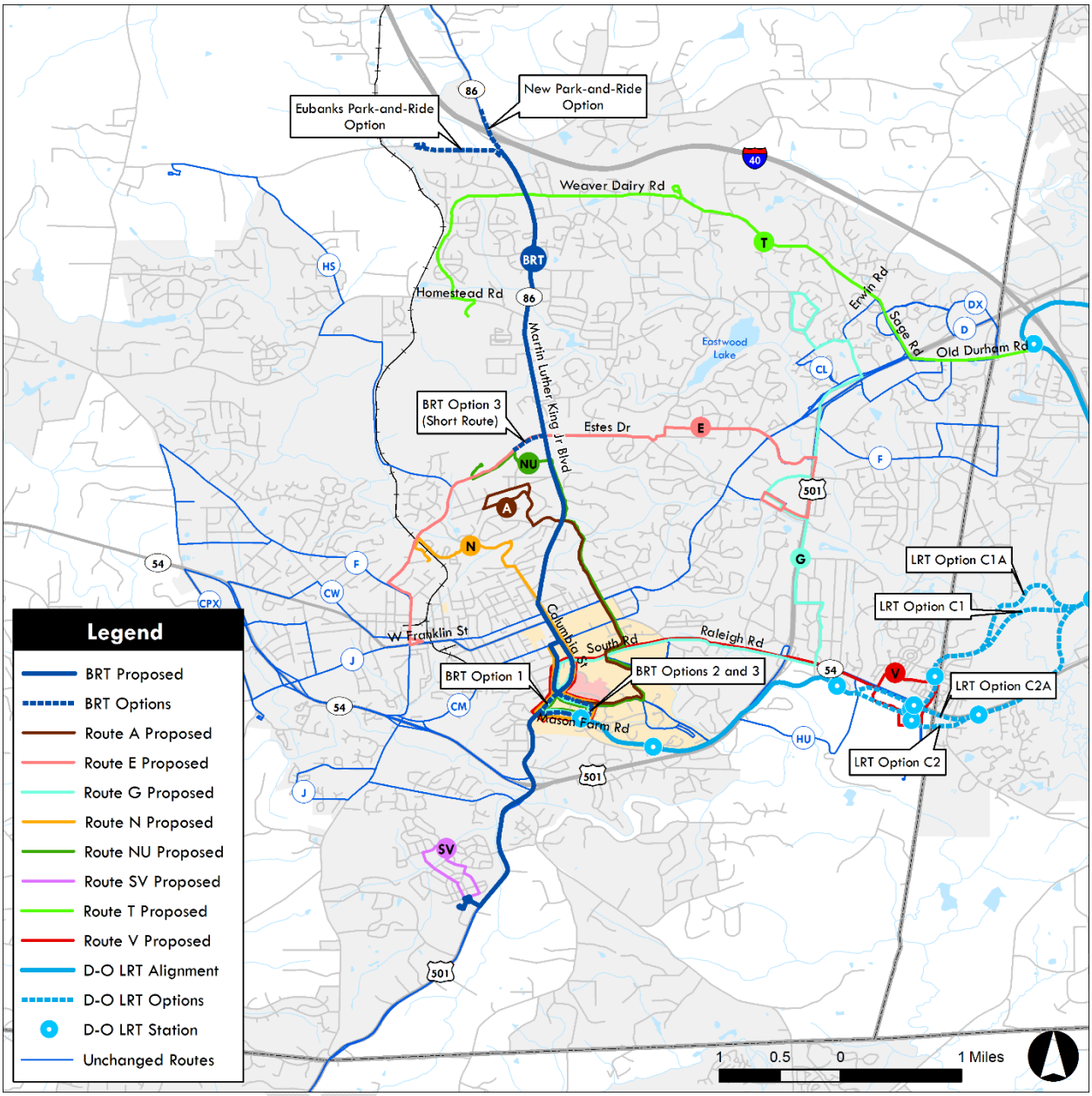


Figure 4-3: Proposed CHT Route Alignments



Note: The exact alignment of the Carolina North portion of BRT Option 3 will be determined in future project phases.

Figure 4-4: Existing Route A

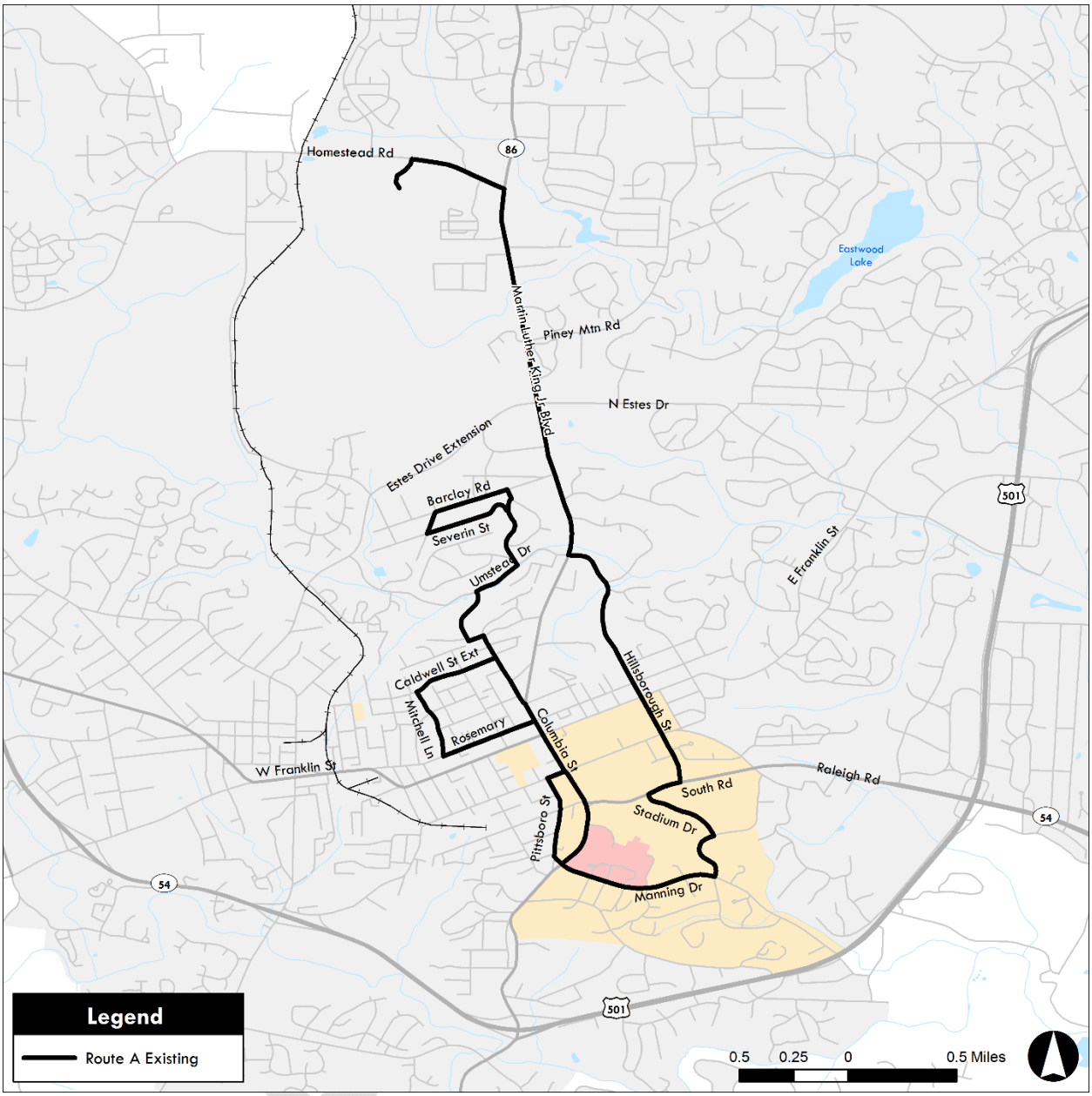
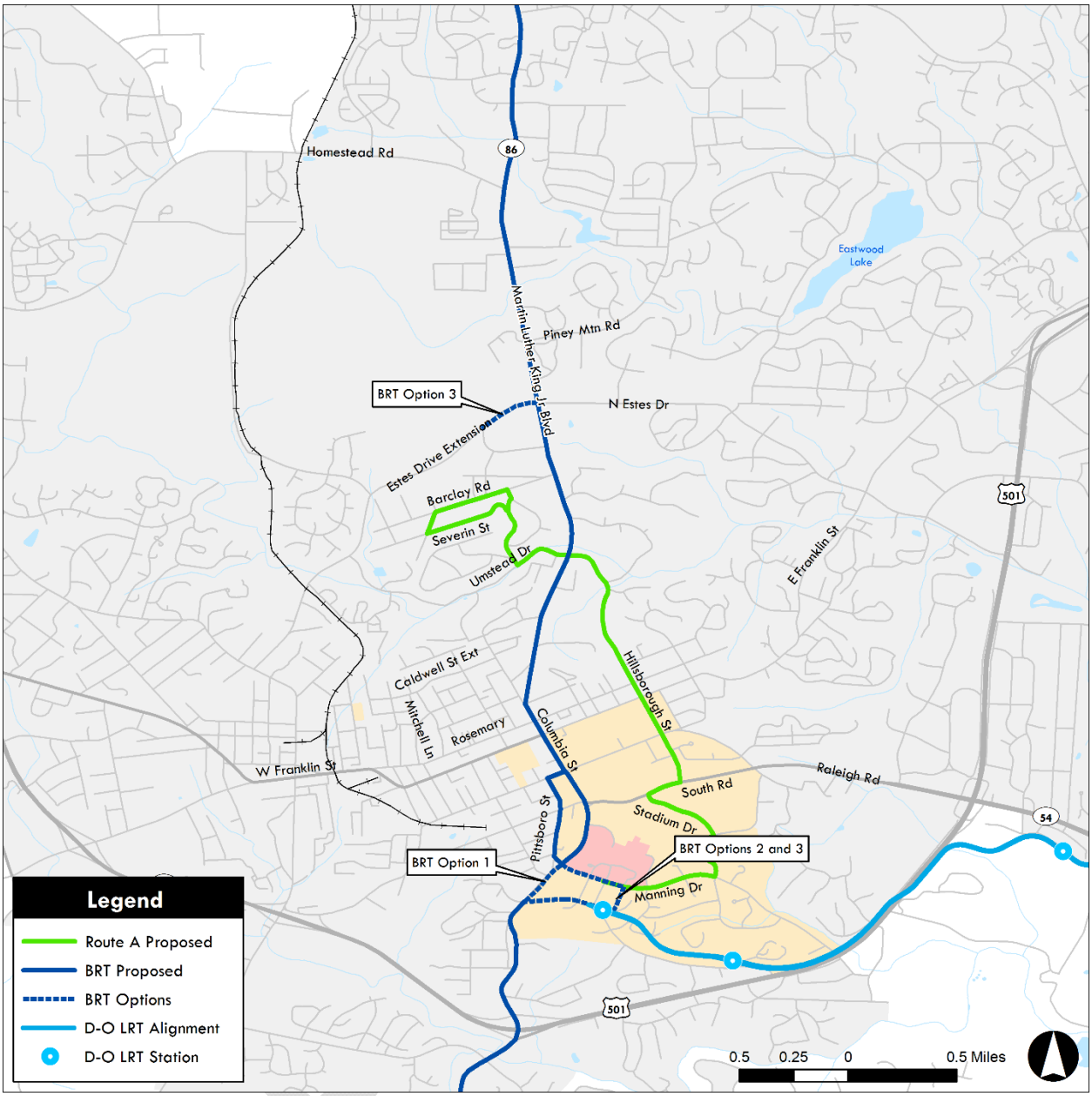


Figure 4-5: Proposed Route A Alignment Change



Note: The exact alignment of the Carolina North portion of BRT Option 3 will be determined in future project phases.

Figure 4-6: Existing Route G Alignment

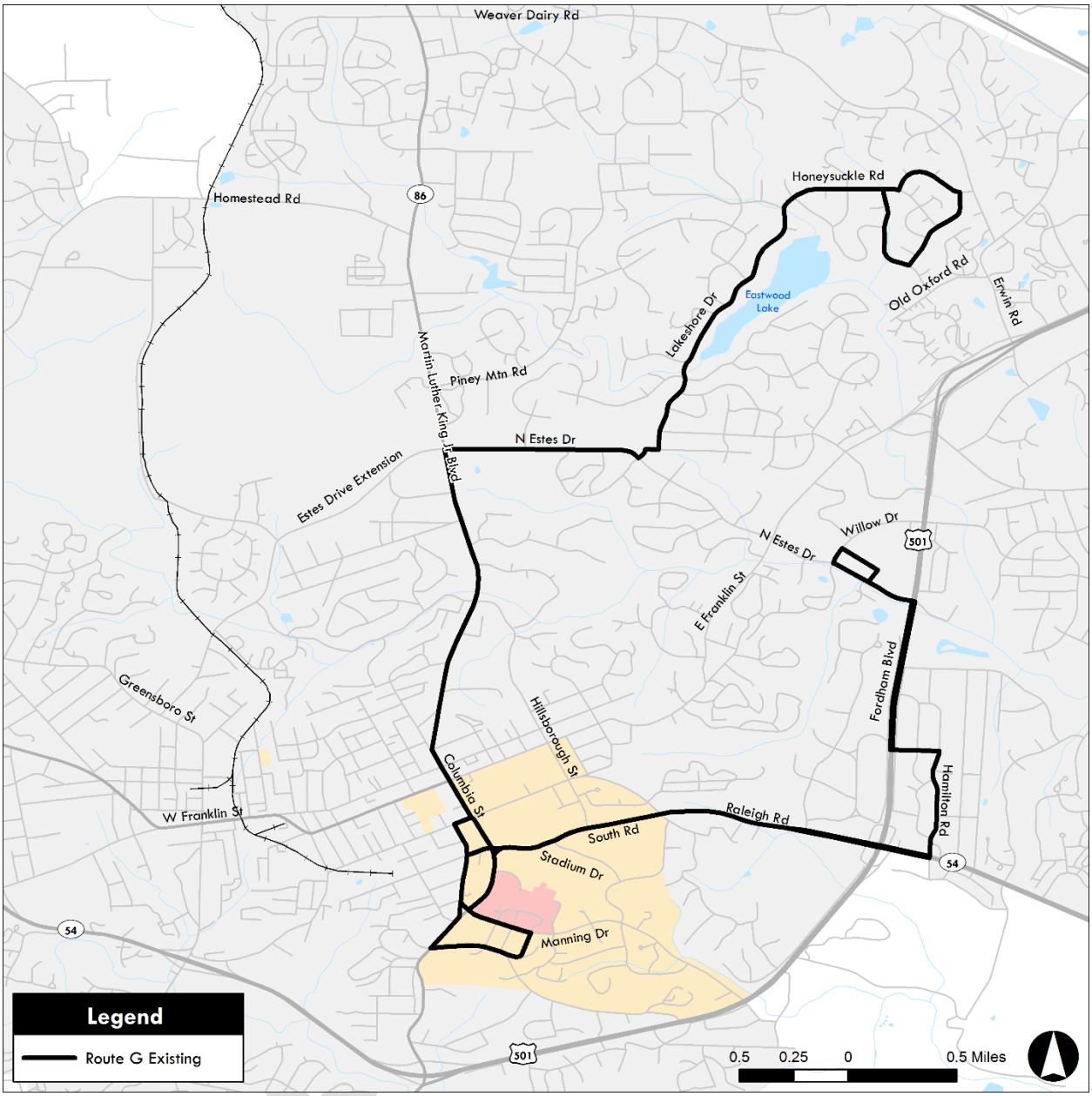
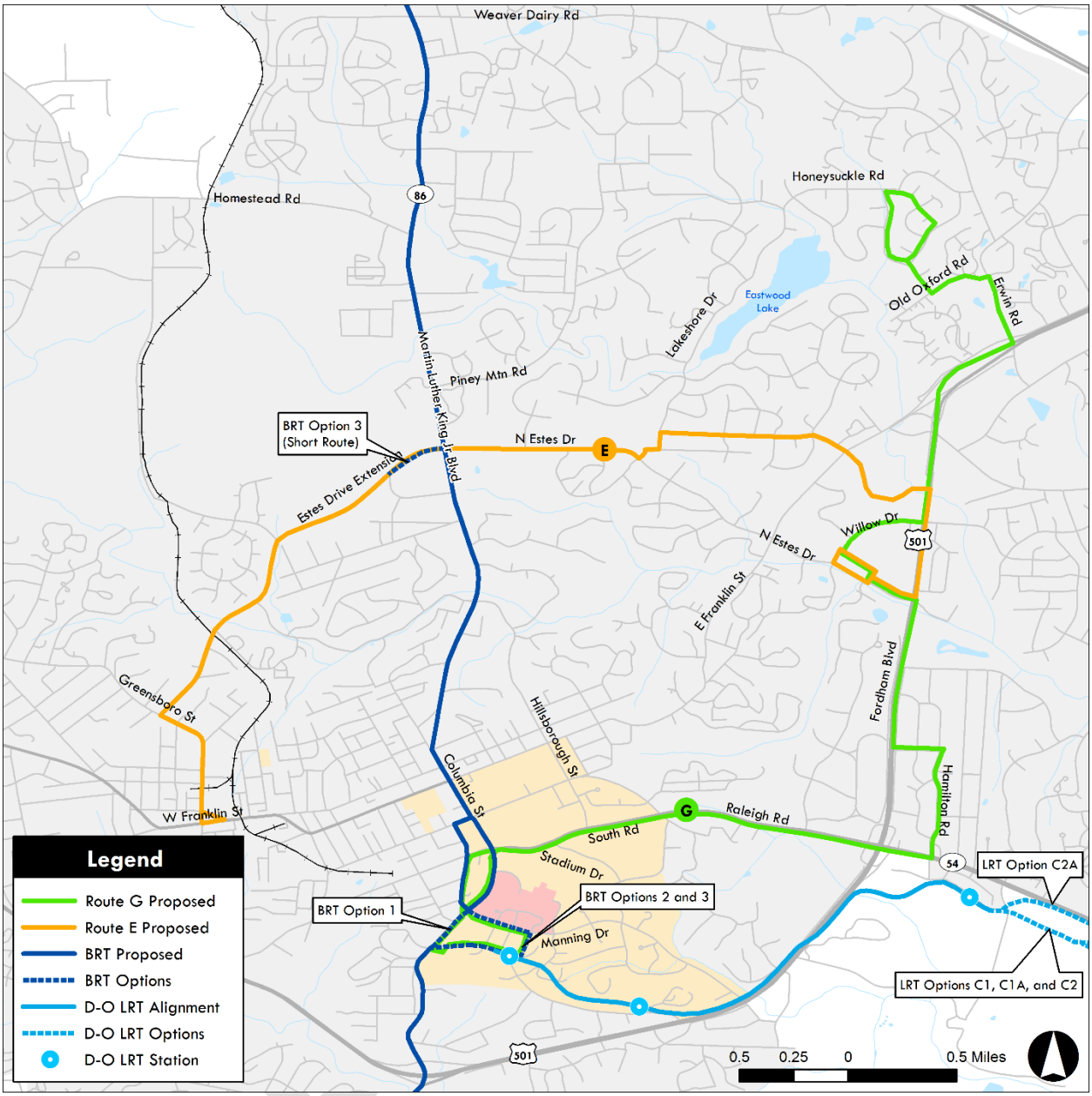


Figure 4-7: Proposed Routes E and G Alignment Change



Note: The exact alignment of the Carolina North portion of BRT Option 3 will be determined in future project phases.

Figure 4-8: Existing Route N Alignment

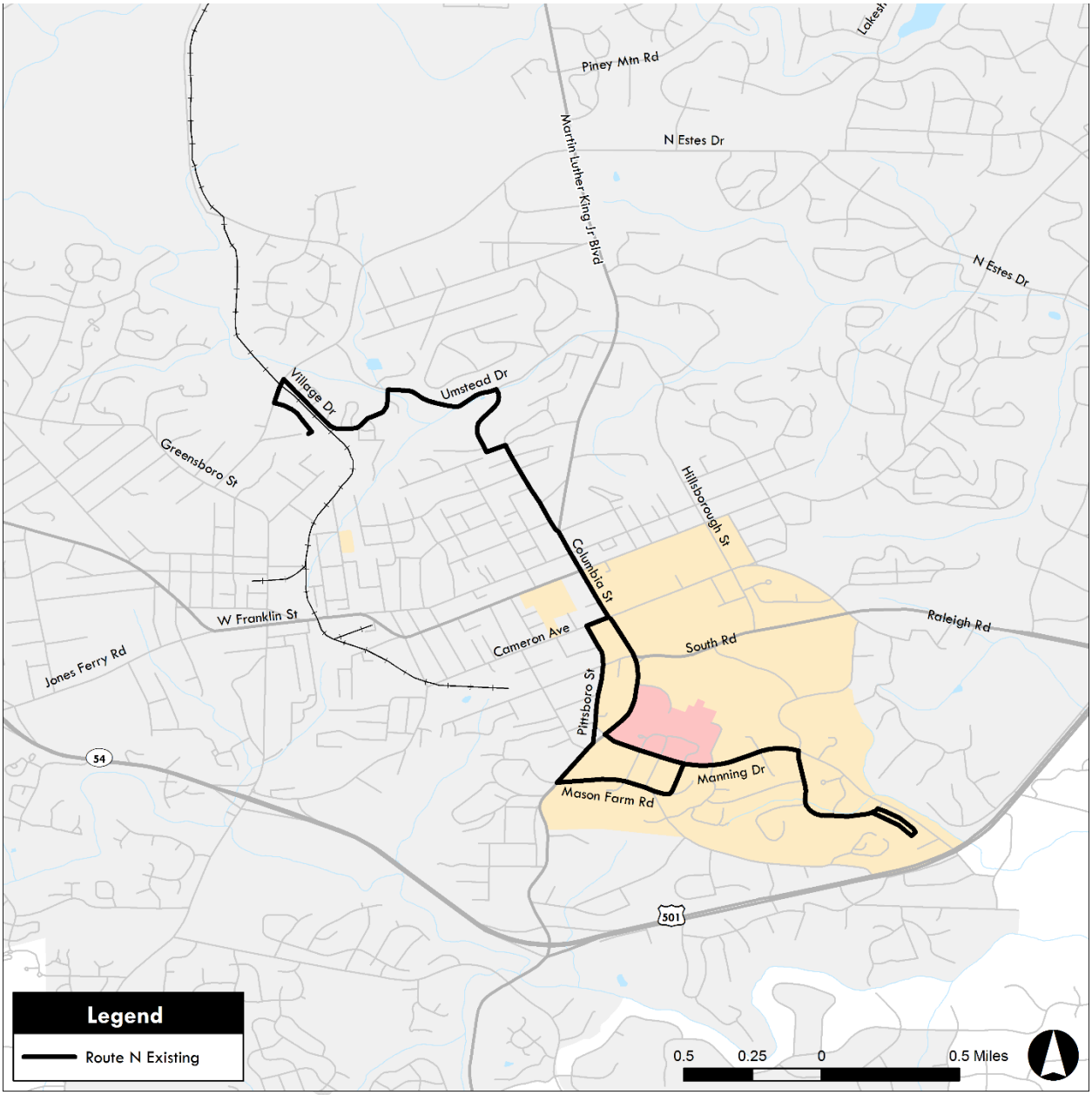
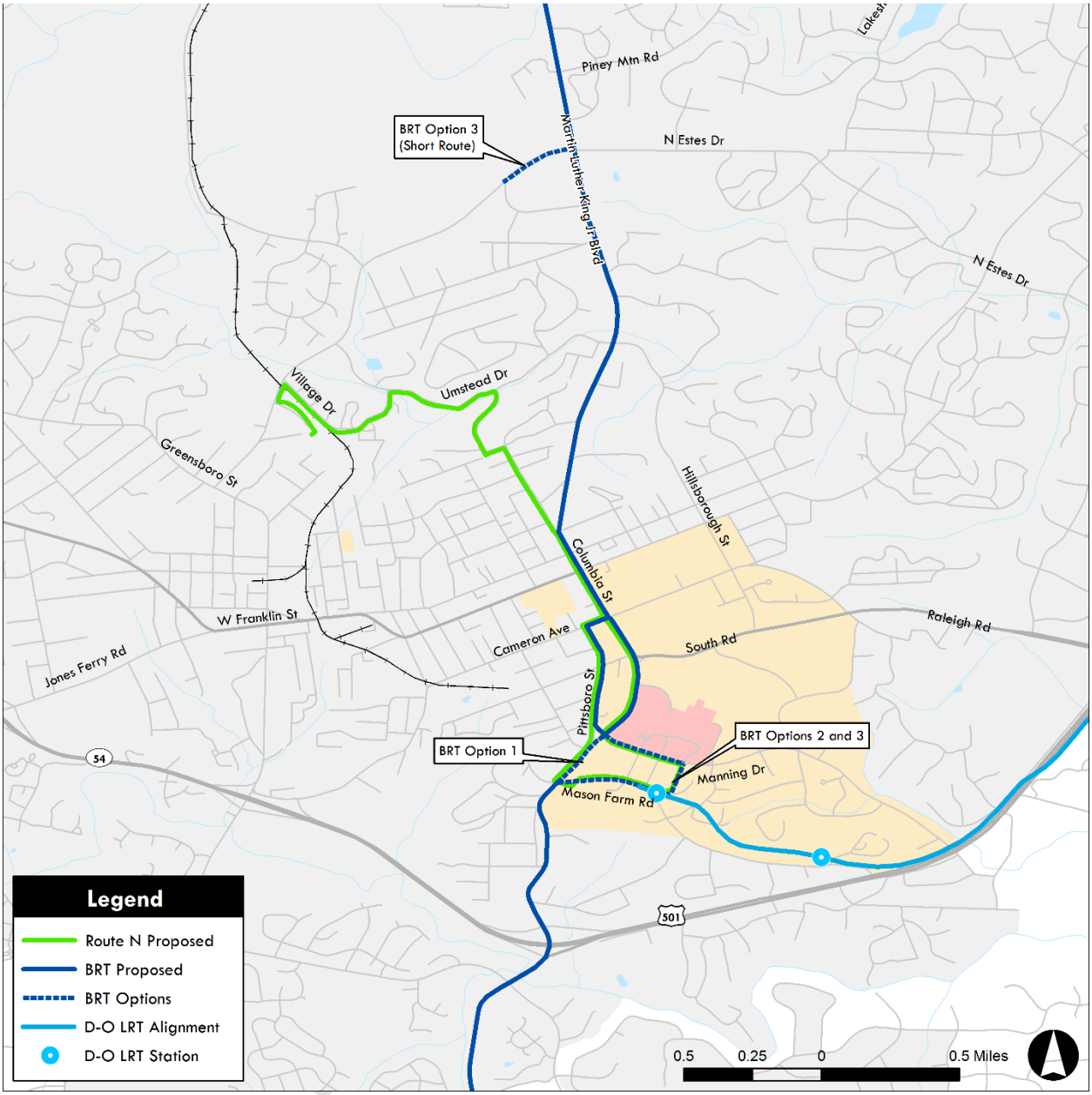


Figure 4-9: Proposed Route N Alignment Change



Note: The exact alignment of the Carolina North portion of BRT Option 3 will be determined in future project phases.

Figure 4-10: Existing Route NU Alignment

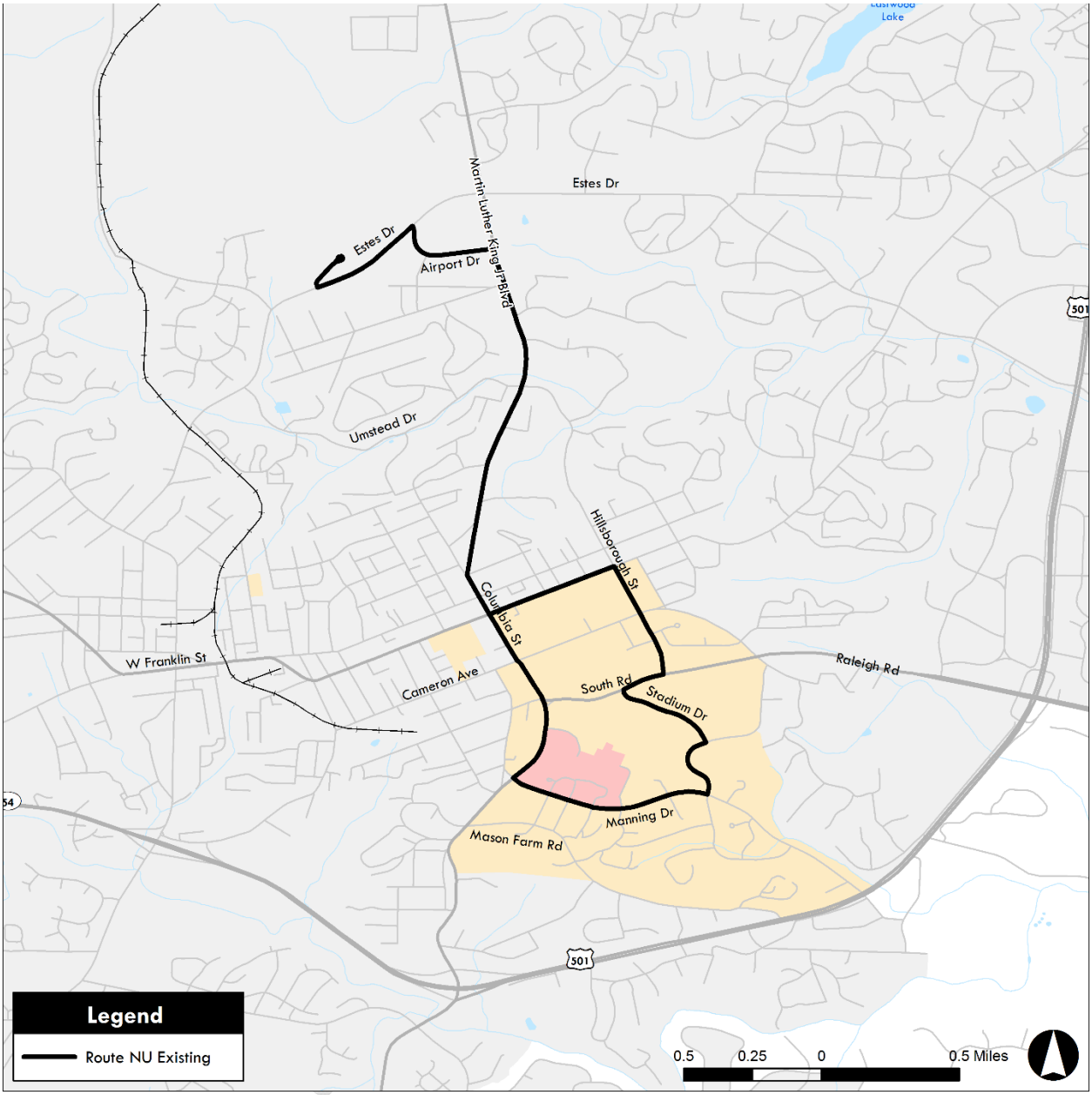
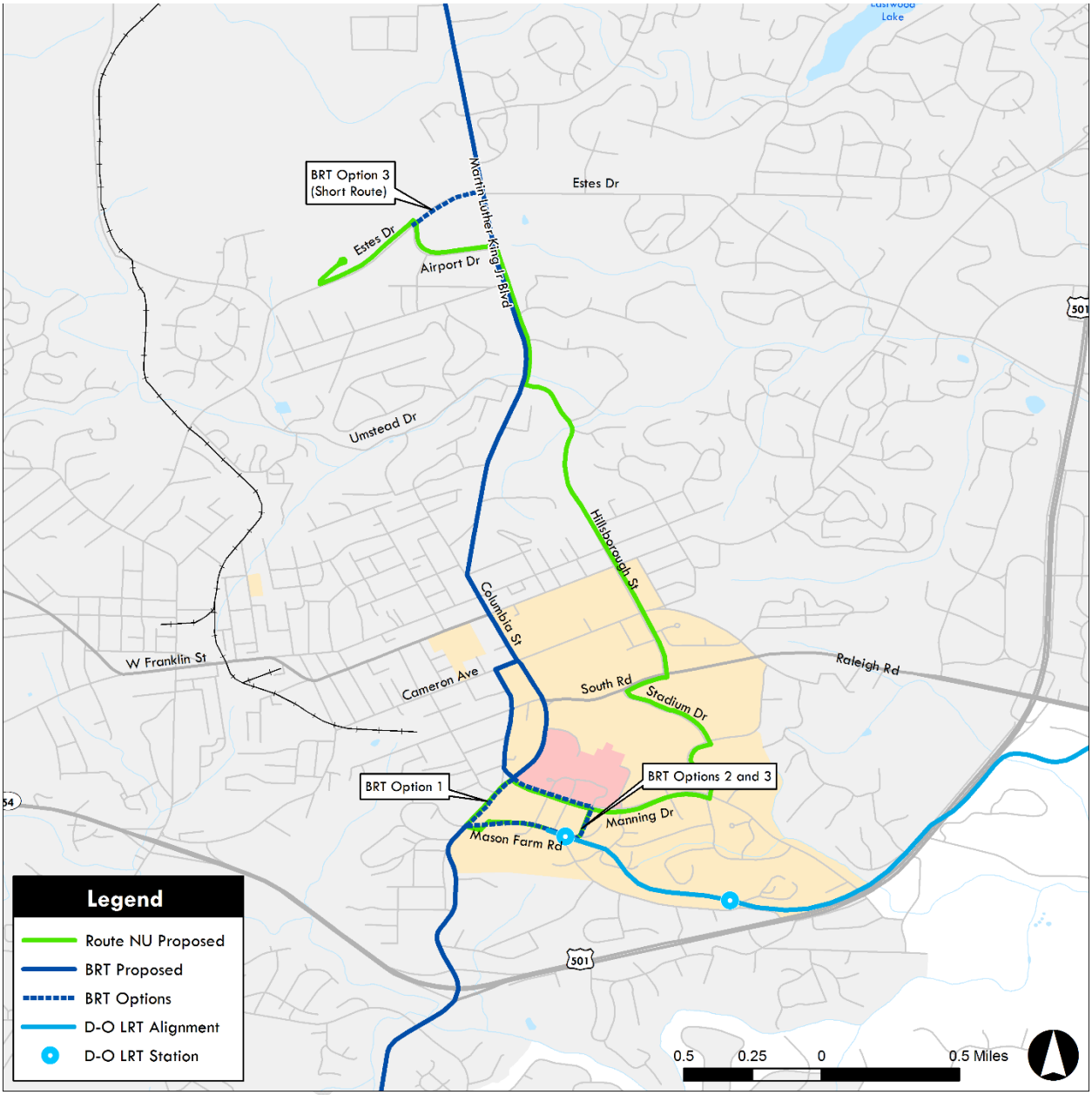


Figure 4-11: Proposed Route NU Alignment Change



Note: The exact alignment of the Carolina North portion of BRT Option 3 will be determined in future project phases.

Figure 4-12: Existing Route T Alignment

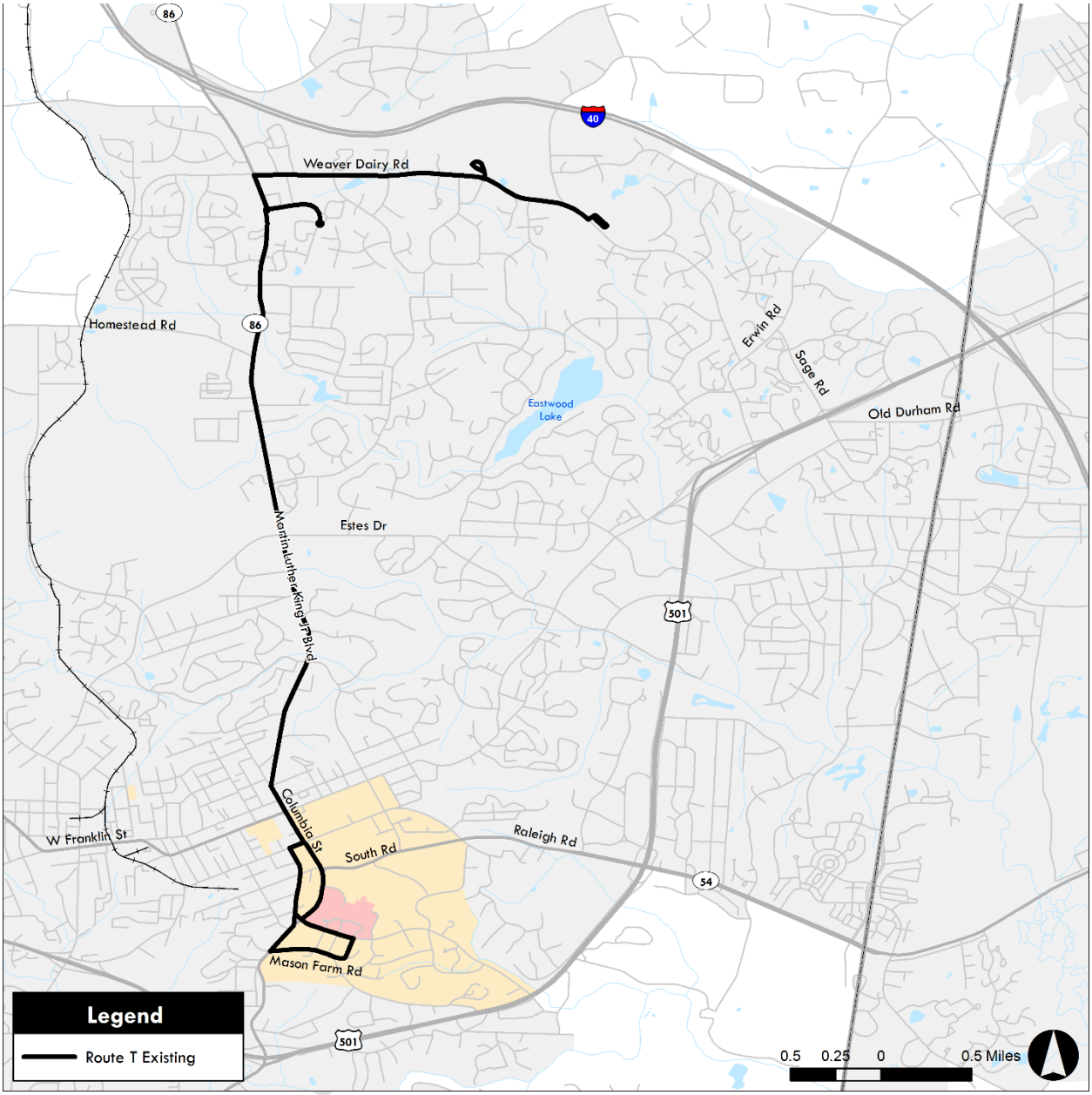
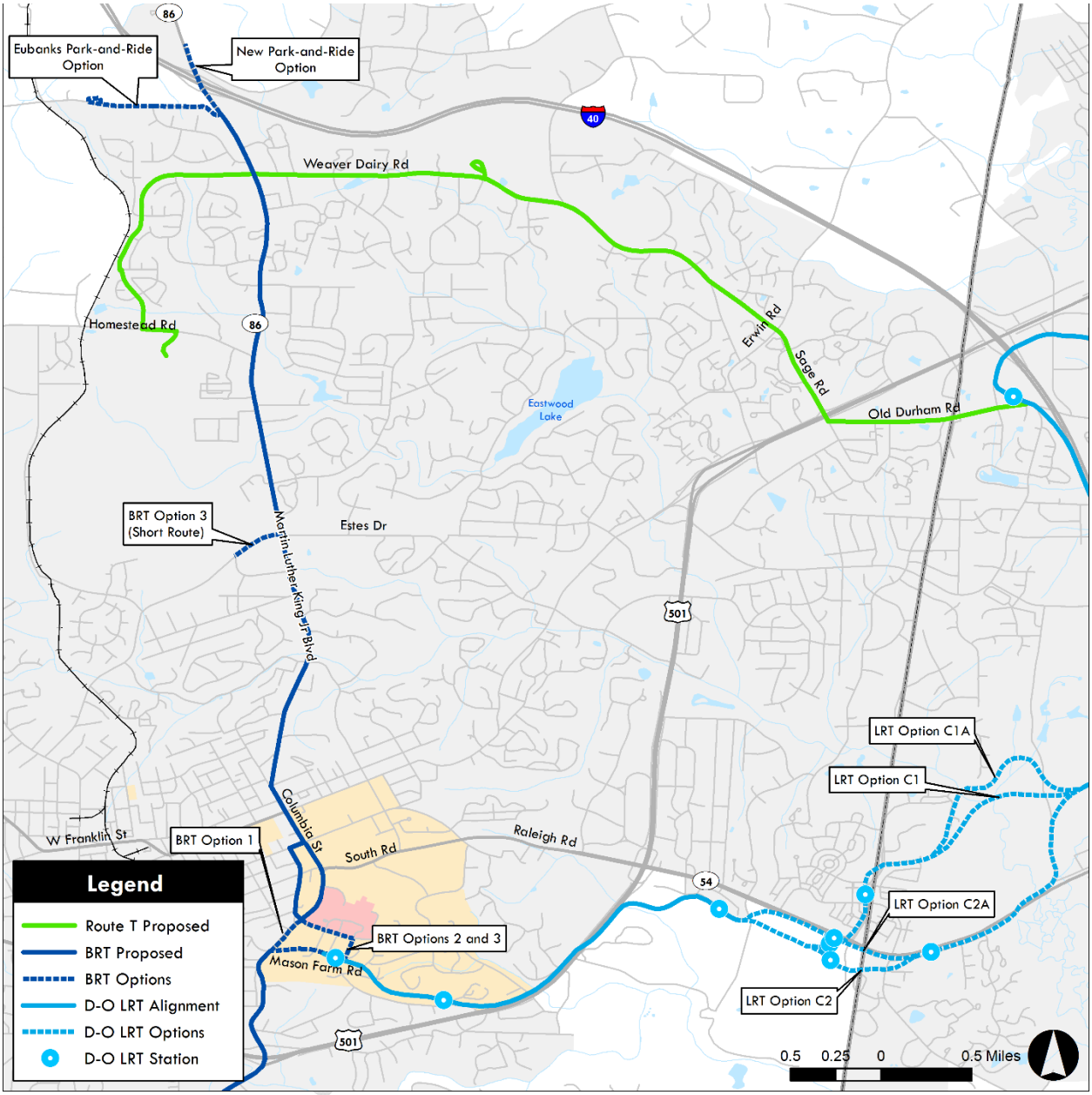


Figure 4-13: Proposed Route T Alignment Change



Note: The exact alignment of the Carolina North portion of BRT Option 3 will be determined in future project phases.

Figure 4-14: Existing Route V Alignment

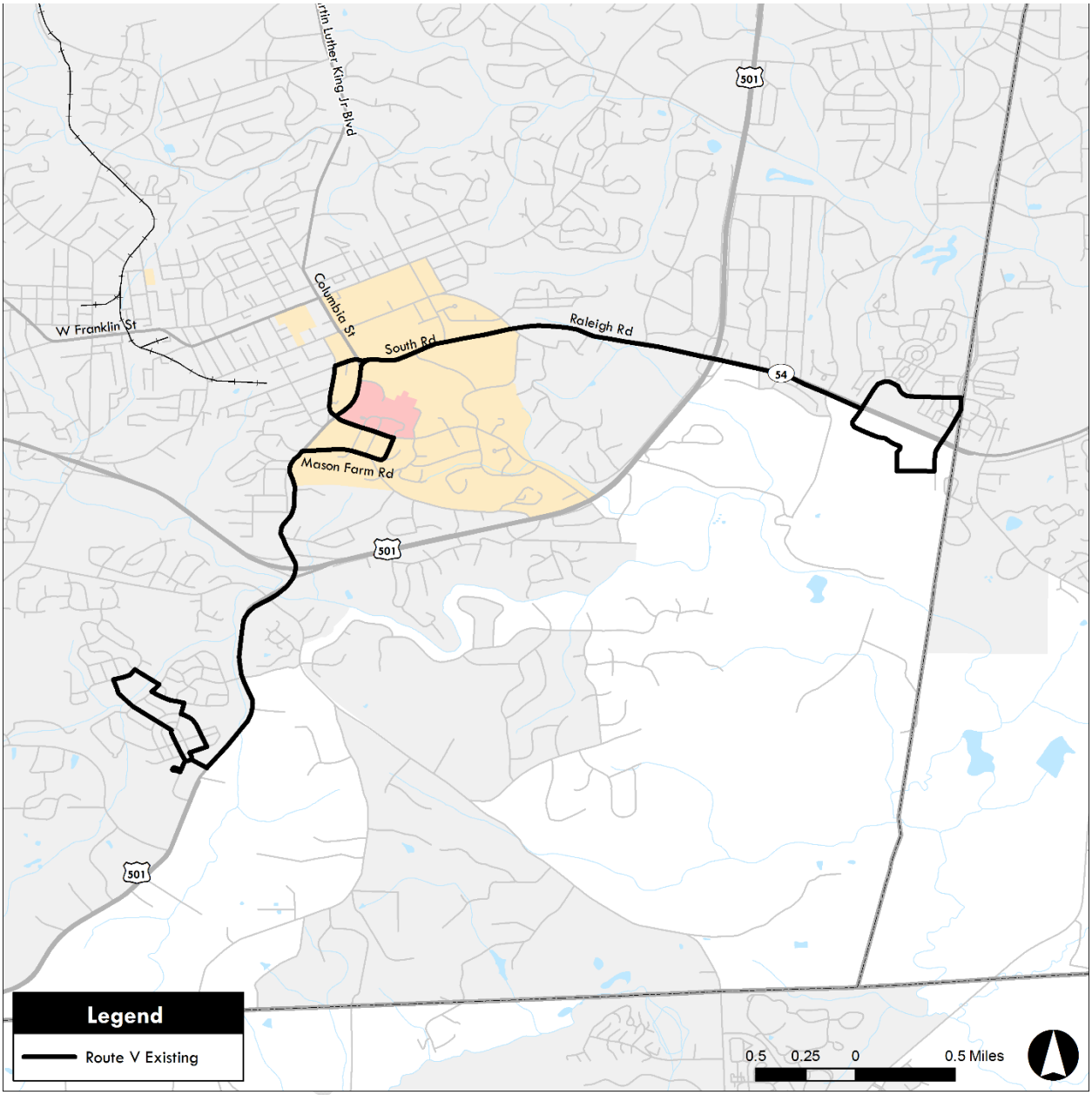
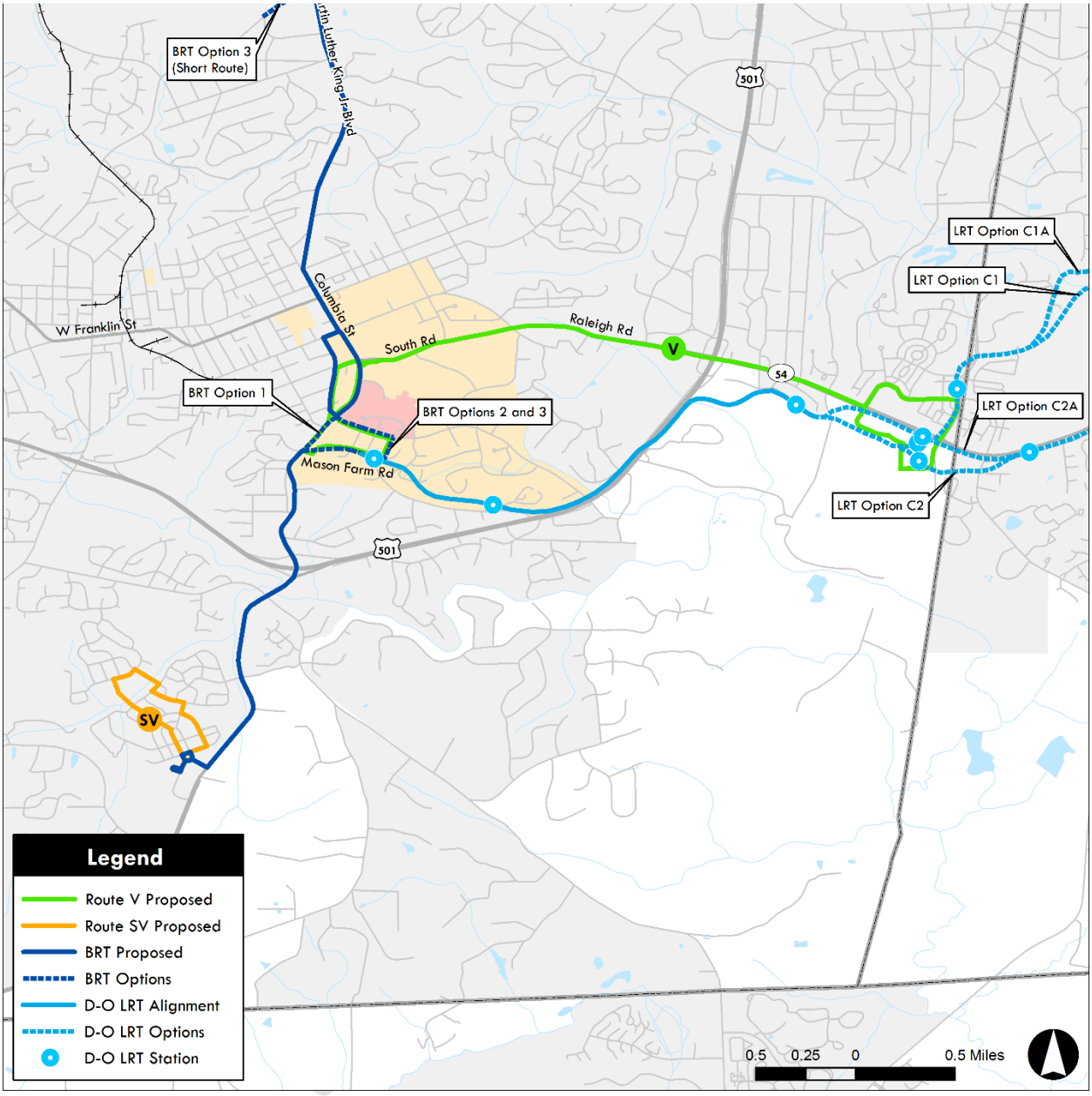


Figure 4-15: Proposed Route V Alignment Change and New Route SV



Note: The exact alignment of the Carolina North portion of BRT Option 3 will be determined in future project phases.

4.3 Corridor Bus Volumes

Service plan proposals described above were used to estimate a.m. peak hour bus volumes along the corridor. Figures 4-16 and 4-17 illustrated projected hourly bus volumes by direction. Within each segment, two bus volumes are shown – the top number within an arrow identifies projected hourly bus volumes under BRT service plan Option 1 (single route pattern). The bottom number within an arrow identifies projected hourly bus volumes under BRT service plan Option 2 (two BRT route patterns). Generally, the introduction of BRT service, combined with background bus service modifications, result in slight reductions of bus service in the corridor. It is anticipated BRT service would be provided with articulated buses, thus offsetting the reduction in bus volumes with improved bus trip capacity.

Figure 4-16: North Side Proposed Weekday AM Peak Bus Volumes

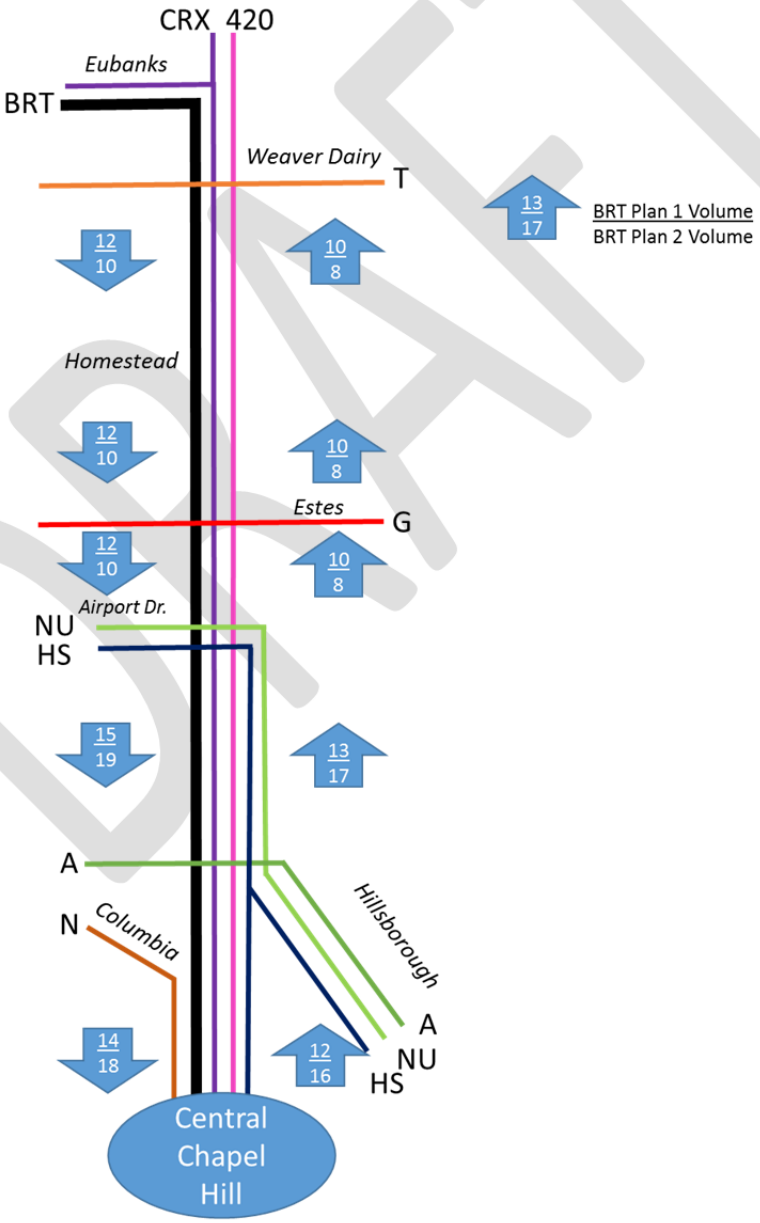
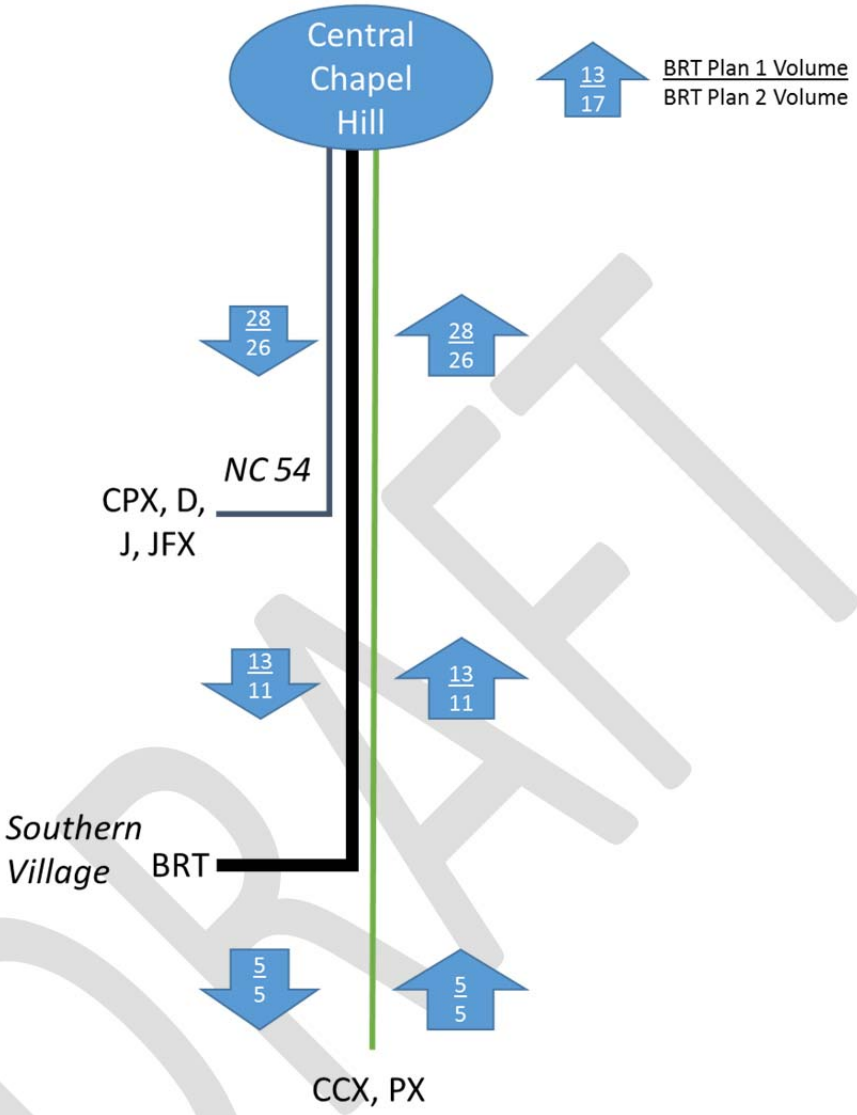


Figure 4-17: South Side Proposed Weekday AM Peak Bus Volumes



DISCUSSION ITEM March 24, 2015

4B. Long Range Financial Sustainability Plan Update
Action: 1. Receive information and provide staff and consultant team with feedback.

Staff Resource: Rick Shreve, Budget Manager
Brian Litchfield, Director

Overview

- At the March 24, 2015 meeting the consultant team will provide an update on the Fare Implementation Analysis.

Attachments

- (DRAFT) Fare Implementation Analysis

Recommendation

- Partners discuss the information provided in the presentation and provide staff and the consultant team with feedback.

FARE IMPLEMENTATION ANALYSIS

EXECUTIVE SUMMARY

Chapel Hill Transit (CHT) transitioned from charging fares to operating fare free in 2002. Shortly after this change, ridership began to increase and ultimately grew from approximately 3.5 million to nearly 7 million between 2002 and 2012. CHT credits this growth—in part—to its decision to operate fare free. CHT has not collected fares since 2002; therefore, the agency does not have capital or administrative systems in place to charge a fare.

However, financial constraints have led CHT and the CHT Partners[1] to re-evaluate the potential benefits and costs associated with re-instituting fares, including:

- Policy and administrative implications associated with charging a fare
- Estimated capital and operating costs and benefits
- Expected ridership and revenue impacts raised by different fare scenarios
- Estimated return on investment associated with charging a fare

Fare Collection Considerations

Charging a fare—or not charging a fare—encompasses a wide range of costs and benefits for CHT. By not charging a fare, CHT loses revenue. With ridership close to seven million passengers annually, the potential for fare revenue may be significant. In addition, CHT as an agency is subjected to some negative perceptions that users of the service are not "paying its way."

The costs of operating fare free, however, are balanced by benefits. These benefits include not only increased ridership, but also easier administrative and operational systems. Operating fare free is less complex because it simplifies accounting systems and reduces the need for secure storage of cash. CHT also does not need to manage and distribute fare media. As part of transitioning to a fare system, CHT would need to invest in capital equipment (fareboxes) and hire administrative staff to administer and manage the fare collection system. There are also operating costs associated with charging a fare because passengers boarding the bus and stopping to pay their fare will slow routes.

Fare Policies

Fare collection would also require that CHT develop and implement a fare policy to address financial matters (fare levels and revenue), customer relations, and cost control (administrative/ management issues). An additional fare policy issue for CHT is consideration of the regional transit network and developing a fare system that is consistent with existing regional practices, including transfers, fare technology, and the GoPass regional fare card.

[1] Includes representatives from the Town of Chapel Hill, the Town of Carrboro, and the University of North Carolina-Chapel Hill.

Social equity and environmental justice are also important considerations in establishing and setting transit fares. Transit agencies typically work hard to offer equitable fares because they recognize that riders may have a hard time paying their fares.

Fare Implementation Costs

Capital Cost

Implementing a fare requires capital investment because the vast majority of CHT's vehicles do not have fareboxes and where fareboxes exist, they are outdated. For purposes of this analysis, it is assumed that fareboxes would need to be purchased for all CHT vehicles. There are also a series of other capital equipment needs associated with fare collection systems. In total, the estimated capital investment necessary to purchase and install a fare collection system is estimated to be between $1.8 million and $2.8 million.

Operating Cost

In addition to capital investments, implementing a fare would also have ongoing operating costs associated with administering the fare system. These costs include developing and distributing fare media (tickets and passes), managing reduced fare programs, and customer service questions. Ongoing operating costs for fare implementation are estimated at roughly $530,000 annually. About half of the costs are associated with increased staff, maintenance of the fareboxes, and purchasing fare media. The other half reflect contributions to a capital reserve fund so new equipment can be purchased at the end of its useful life.

Additionally, introducing fare payments to a transit system inevitably will create boarding delays. These delays are related to passengers paying their fares as well as asking questions and talking to the driver. For a single stop, these small delays may seem insignificant. However, over the course of a full route, they can aggregate and create noticeable issues with on-time performance and schedule adherence. Annual operational impacts associated with slower boarding times are estimated to cost approximately $390,000.

Revenue

Ridership and revenue assumptions are based on three fare scenarios developed as part of this analysis.[2] Figure ES-1 shows gross and net revenue projections for the low, medium, and high fare scenarios. These gross revenue projections do not include the cost of collecting fares, capital investments, or additional operating costs.

When accounting for annual operating costs, fare revenue set at the high ($1.25) level would generate a net positive return of just over $100,000 annually, or less than 1% of CHT's annual operating budget. The middle and low fare levels are estimated to result in a net revenue loss for CHT.

[2] The low-end fare reflects a "charge something" fare to address potential concerns about riders not paying their way, or could be seen as an introductory fare to get passengers accustomed to a fare structure. The high-end fare represents a level used in a number of peer systems, while also acknowledging CHT passengers' ability to pay. These fares are in line with fares charged for local service by other transit services in the Triangle Region (see also Appendix A).

Figure ES-1 Revenue Estimates

Fare Revenue Alternatives	Low	Medium	High
Fixed Route Fare Structure ***(Three fare scenarios)***	*$0.50*	*$1.00*	*$1.25*
Fixed Route Passenger Revenue	**$467,572**	**$870,222**	**$990,365**
EZ Rider Fare Structure ***(Three fare scenarios)***	*$1.00*	*$1.25*	*$1.50*
EZ Rider Passenger Revenue	**$11,594**	**$21,708**	**$34,007**
Estimated Gross Fare Revenue (Fixed Route + EZ Rider)	***$479,177***	***$891,930***	***$1,024,372***
Estimated Annual Operating Costs	$922,905	$922,905	$922,905
Estimated Annual Net Revenue Gain (Loss)	**($443,728)**	**($30,726)**	**$102,014**

Notes:

1. Assumed 50% of the full fare would be collected because of discounted fares, pre-paid passes, etc. This percentage is within the industry norm for a small-sized system like CHT.

Return on Investment

A relatively straightforward way to understand the impact of the investment in terms of benefits produced is the return on investment (ROI), which compares the capital and operating cost (investment) against the total benefits over a ten-year period. For purposes of this analysis, it was assumed CHT would be able to pay for all capital investments associated with the fare collection equipment without borrowing money. It was also assumed that operating costs would increase at a rate of 2% per year, while revenues would remain flat for the first five years; in year five, fare revenue would increase by 5% and then remain constant until the end of the 10-year period.[3]

The ten-year analysis suggests that implementing fares will not generate positive benefits for CHT even if fares are set at the high level (see Figure ES-2).

Figure ES-2 Return on Investment for Ten-Year Period

	Low Capital Investment	High Capital Investment
Low Fares	(59%)	(61%)
Medium Fares	(23%)	(28%)
High Fares	(12%)	(18%)

Source: Nelson\Nygaard Consulting Associates

[3] Transit industry experience nationally suggests it is difficult for transit agencies to raise fares on an annual basis. Instead fares are raised periodically, roughly every five years.

1 OVERVIEW

Chapel Hill Transit (CHT) transitioned from charging fares to operating fare free in 2002. Shortly after this change, ridership began to increase and ultimately grew from approximately 3.5 million to nearly 7 million between 2002 and 2012. CHT partially credits this growth to its decision to operate fare free.

Currently, there are two exceptions to CHT's fare free operations: the Pittsboro Express (PX)—which is jointly operated with the Chatham Transit Network and provides service between the Town of Chapel Hill and Pittsboro; and the Tar Heel Express, which provides transit service to/from football and men's basketball games on the University of North Carolina-Chapel Hill (UNC) campus. The PX and the Tar Heel Express cost $3 for a one-way trip. Tar Heel Express fares are collected off-board, with a contractor handling the sale and collection of fares. In addition, the majority of riders on the PX pay their fares with a monthly pass. As a result, CHT's system is not equipped or experienced with fare collection.

Despite its success operating fare free, financial constraints have led CHT and the CHT Partners[4] to re-evaluate the potential benefits and costs associated with re-instituting fares. As part of the Strategic and Financial Sustainability Plan, the Nelson\Nygaard team explored the likely benefits and costs associated with instituting fares as one potential method for raising revenues. The analysis includes:

- Policy implications associated with charging a fare
- Estimated capital and operating costs and benefits
- Expected ridership and revenue impacts raised by different fare scenarios
- Estimated return on investment associated with charging a fare

The cost-benefit analysis relied on several critical assumptions for estimating capital and operating costs, as well as projecting ridership. The assumptions are referenced throughout this report and are summarized in Chapter 3 for reference.

[4] Includes representatives from the Town of Chapel Hill, the Town of Carrboro, and the University of North Carolina-Chapel Hill.

2 IMPLEMENTING A FARE STRUCTURE: BENEFITS AND CHALLENGES

Charging a fare—or not charging a fare—encompasses a wide range of costs and benefits for CHT. The costs largely include revenue losses, plus a public perception held by some that users of the service are not "paying its way." The costs of operating fare free are balanced by benefits, which include not only increased ridership, but also administrative, operational, and customer service benefits. Not charging a fare simplifies much of CHT's administration, including back-end accounting, secure storage of funds, or distribution of fare media.

Eliminating fares also helps system operations because it reduces the amount of time buses wait at stops (i.e., vehicle dwell time[5]) because passengers board the bus more slowly as they stop and pay their fare. The lack of fares also avoids disputes between operators and passengers regarding properly paid fares. Finally, operating fare free is consistent with the high-level goals of the Town of Chapel Hill—to support a sustainable environment and vibrant local economy as well as technical policies associated with limiting the expansion of existing roadway capacity and limiting parking growth on the UNC campus.

Benefits of Implementing a Fare

In the current fiscally-constrained environment, transit agencies around the U.S. are looking for any and all opportunities to increase their operating revenue by securing new funding sources and increasing or introducing transit fares. Indeed, the need for additional revenue is a key factor behind CHT's decision to reevaluate its decision to operate fare free. Some of the key benefits of introducing a fare include:

- Increasing revenue to help close a funding gap, including potentially supporting capital purchases
- Reducing reliance on federal and state funding
- Supporting the perception that the public helps pay for public services (addressing the question: why should transit riders get a "free ride"?)
- Addressing potential problems with individuals who may ride the bus seeking shelter or for other non-transportation reasons

Costs of Implementing a Fare

While offering potential for increased revenue, instituting a fare would require capital investments, create new or expanded responsibilities for staff, and increase operating costs for CHT. Implementing a fare structure requires significant planning activity and policy

[5] More formally, this refers to the amount of time that a bus will "dwell" at a stop to load and unload passengers.

considerations by staff, the Town of Chapel Hill, and the CHT Partners, as well as capital investments and increased staff responsibilities. Some of the significant challenges CHT would face if a fare were introduced are:

- **Investment in fare collection hardware and office/accounting infrastructure**
  - Installing fareboxes on the majority of the vehicle fleet (approximately 115 fixed-route and demand response vehicles)
  - Developing secure space for accounting, auditing, and fare reconciliation
  - Installing a vault for secure money storage
- **Increase in staff responsibilities**
  - Accounting, auditing, and fare reconciliation
  - Additional marketing and customer service responsibilities to convey and educate passengers and drivers about the fare structure and policies
  - Point of sale administration and staffing for selling passes at CHT and distributing passes to retail locations and ticket vending machines (TVMs)
  - New and increased responsibilities for drivers in operating the farebox and conducting fare enforcement
  - Resources needed to conduct public outreach around introduction of fares and future increases in fares
  - Additional responsibility for maintenance/administrative staff to "empty" fareboxes and count fares

Implementing a fare also creates operational costs and challenges, such as:

- **Increased dwell times** (additional boarding time at bus stops) and operational delays associated with collecting a fare.
- **Development of fare validation and enforcement policies**. The collection of fares requires operators to oversee fare validation and enforce policies, and can result in altercations with passengers and inconsistent execution of agency policies.
- **Consideration of Title VI impacts**. CHT must ensure that fare implementation would not disproportionately affect low-income and minority passengers.
- **Training operators and supervisors.** CHT must train drivers, supervisors and dispatchers about fare collection policies, procedures and passenger interactions.
- **Potential conflicts between operators and passengers**. Although some assaults occur without reason, many assaults do have one or more contributing factors. According to a study by the Transit Cooperative Research Program (TCRP), fare enforcement was reported by 67% of respondents as the most common contributing factor in driver assaults.[6]
- **Customer complaints** would likely increase as a result of fare policy implementation.

Each of these issues is explored in this technical memo.

[6] TCRP Synthesis 93: Practices to Protect Bus Operators from Passenger Assault

3 ANALYSIS PROCESS, APPROACH, AND KEY ASSUMPTIONS

This analysis was designed to be understandable and replicable. However, it relies on a series of assumptions regarding behavioral changes anticipated from passengers if CHT were to implement a fare, as well as the costs of different capital and administrative systems.

Resources and Sources

Transit Cooperative Research Program (TCRP) research on fare policy as well as fare collection technical and operational issues was an important resources for this study. TCRP is a national professional research organization that works cooperatively with the Federal Transit Administration (FTA); the National Academies, acting through the Transportation Research Board (TRB); and the Transit Development Corporation, Inc. (TDC), a nonprofit educational and research organization. The TCRP serves as one of the principal means by which the transit industry develops innovative solutions on a wide variety of topics through transit research in fields such as planning, service configuration, equipment, facilities, fares, operations, human resources, maintenance, policy, and administrative practices.

In particular, the study team relied on TCRP Report 94: Fare Policies, Structures, and Technologies [7] to identify several elements associated with fare collection and corresponding cost factors such as capital equipment needs and ongoing costs to print and distribute passes, handle cash, and perform other administrative tasks. The TCRP research is based on transit industry standards drawn from a cross section of large and small transit agencies. These factors were used in estimating initial capital costs and ongoing administrative expenses. The TCRP report was updated in 2003, so in many cases assumptions were supplemented with peer review research, the consulting team's professional experience with fare studies conducted across the country, and consultation with a major manufacturer of farebox equipment and facilities.

The final step in the process was collaboration with CHT staff to ensure that the approach reflects CHT's operating environment and that the ridership and revenue analysis is tailored to Chapel Hill's unique atmosphere and high student ridership. Projected administrative costs for new responsibilities were calibrated to CHT's pay structure.

CHT Existing Funding

In combination with federal and state funds, CHT's operating revenues are provided by partner contracts with the Town of Carrboro and UNC as well as funding contributions from the Town of Chapel Hill. In the short-term, additional revenues are expected to be available to CHT through the Orange County sales tax and vehicle registration fees. These revenues were not included in

[7] TCRP 94 – Fare Policies, Structures, and Technologies: Updated 2003.

this analysis because the funding mechanisms are still being developed and are not expected to structurally change this analysis.

One of the unique characteristics of CHT is the funding arrangement with its partners and the Town of Chapel Hill—combined, the three entities contribute roughly 60% of CHT's operating and capital resources. As discussed, UNC provides roughly 38% of CHT revenues[8], which are paid for in part by the Student Transit Fee included in student tuition. The Student Transit Fee pays for access to and around campus for students and largely reflects a "pre-paid" transit fee for students, faculty, and staff at UNC. The Town of Chapel Hill contributes roughly 17% of CHT's operating revenues, and the contract with the Town of Carrboro provides approximately 6%.[9] Contributions made by the individual towns are not directly tied to any rider groups or associated with pre-paid fares.

Key Assumptions

In developing this report, the consultant team relied on several key assumptions for estimating capital and operating costs and projecting ridership. The assumptions are referenced throughout this report when the topics are discussed; however they are highlighted below for easy reference.

Capital Investments

- Capital costs are presented as low-end and high-end unit costs consistent with TCRP unit costs and refined based on consultation with major manufacturers.
- Ten percent of initial costs are added for spare parts and to ensure high end equipment is fully functional at all times.
- One hundred percent of capital costs are funded by CHT. It is possible that federal funds could potentially cover up to 80% of the capital costs, but given the existing demand for capital funds, it is assumed CHT would use all local revenues to implement a fare collection system. Ongoing operating costs include a capital reserve replenishment line item based on capital life-cycle periods.

Ongoing Operating Costs

- Cost estimates are based on CHT operations of roughly 158,000 annual hours at $92/hour, for a total of $14.5 million.
- The study team evaluated impacts based on three different fare levels or scenarios. The suggested fare levels reflect regional fares, which are summarized in Appendix A.
- Tickets/passes assume a hybrid magnetic stripe (transfers and casual pass purchases—30% of monthly passes) and smart card (U-Pass and regular monthly pass users—70% of monthly passes) system. This assumption is consistent with the regional GOPass.
- Two new full-time employee equivalents (FTEs) would be required: an administrative position and a mechanic at $55,000/year (each).
- Assumes no federal funds are used for purchasing capital equipment. Replenishes capital reserves based on lifespan of equipment.

[8] UNC contributions to CHT include funding to support fare free access to the system for UNC affiliates. The contributions also include funding for specific CHT services.

[9] Chapel Hill Transit FY 2013 operating budget.

- Boarding delay (dwell time impact) is estimated on a per-boarding basis. Assumptions about the impact on dwell time associated with different fare payment methods assume:
  - An additional 1.5 seconds is needed for each individual boarding a CHT vehicle.
  - Impacts on schedules and on-time performance. Many trips currently exceed cycle time[10], resulting in additional trips needed on select routes.

Ridership and Passenger Revenue Estimates[11]

- Ridership estimates are based on 2012 fixed-route ridership of 7 million and assume a low transfer rate of 3.4%. This assumption reflects data collected on CHT's most recent rider survey.
- Ridership elasticity is based on TCRP Research and peer agency experience.
  - Assumes a downtown environment where walking is viable option for short trips.
  - Assumes fixed-route ridership losses ranging from a low of 28% to a high of 39%.
  - EZ Rider ridership loss is assumed to be less than fixed-route because riders are highly transit dependent. Losses are anticipated to range from a low of 20% to a high of 30%.
- Revenue estimates are based on average fare per rider. This number is lower than the actual fare because of passengers paying discounted fares.
- Ridership and farebox revenues are based on a "snapshot" in time. The analysis does not provide projections over time.

[10] Cycle time is the roundtrip travel time including layover and recovery time. Recovery or wait time allows the bus driver to recover from traffic and passenger boarding delay resulting in being able to leave next bus trip on time and avoid ongoing off-schedule domino effect.

[11] Refer to page 15 for additional details.

4 IMPLEMENTING A FARE: POLICY AND STRATEGY

There are a series of fundamental and interrelated considerations associated with implementing a fare:

1. Fare Policy
2. Fare Strategy and Structure
3. Payment Type and Technology
4. Fare Validation/Collection

Each of these four elements is discussed in greater detail in this section.

Fare Policy

As part of implementing fares, CHT would need to implement a fare policy to address financial matters (revenue), equity, customer relations, simplicity, and cost control (administrative/ management issues). An additional fare policy issue for CHT is consideration of the regional transit network and developing a fare system that is consistent with existing regional practices. Developing and prioritizing fare policy goals are important first steps in establishing a fare structure.

Revenue Objectives and Measurements

One of the main reasons for charging a fare is to generate a revenue stream that will help fund agency operations and investments. As part of instituting a fare, the Town of Chapel Hill and the CHT Partners may want to set policies or expectations for fare revenues. Goals for fare revenue are typically identified in terms of a farebox recovery target[12] or level of subsidy such as (for example):

- Achieve a fixed-route farebox recovery ratio of at least 20%.
- Subsidy per fixed-route passenger should not exceed $2.15[13].

Most—although certainly not all—transit systems have established a target for achieving the percentage of costs to be recovered by passenger fares. Standard transit industry practice is for farebox recovery ratio targets for fixed-route local bus service to range between 15% and 30%. Based on current data and assuming all the revenue provided by UNC's local proportional share was counted as pre-paid fare revenue, CHT would already achieve a farebox recovery ratio of 25%, a larger proportion than industry practices.

[12] Farebox Recovery Ratio is calculated by dividing all passenger (farebox) revenue by total operating costs. Farebox recovery evaluates both system efficiency (through operating costs) and productivity (through boardings).

[13] CHT's cost per passenger was $2.12 in 2012.

For paratransit and Americans with Disabilities Act (ADA) services, it is more expensive to produce a trip, and the number of passengers carried per hour is significantly lower compared to fixed-route service. As a result, a lower farebox recovery is expected, typically in the range of 5% to 10%.

CHT may choose to set a farebox recovery target as part of a larger effort to help set fares and balance affordability for passengers versus maximizing revenues. Another valuable measurement is subsidy per passenger, which is calculated by subtracting passenger fares from operating costs and dividing this number by ridership. In addition to these quantitative measurements, CHT may want to consider some basic qualitative measures such as maximizing revenue while minimizing ridership loss.

EZ Rider

One area where equity will be important for Chapel Hill is CHT's paratransit service, EZ Rider. Federal rules limit the amount a fare can be charged to riders on ADA-mandated complementary paratransit service to twice the cash fare that is charged for a comparable fixed-route trip (i.e., if a local adult cash fare is $1, the maximum ADA fare is $2).

EZ Rider service is expensive to provide but highly valued by the older adults and people with disabilities living in Chapel Hill and Carrboro. Charging a fare after many years of offering the service may be a difficult transition for many. For the purposes of this analysis, it is assumes that fares would be implemented on EZ Rider in conjunction with fixed-route services.

Public Involvement

As a sub-recipient of FTA funds for transit service, CHT must comply with Title VI including evaluating any and all fare changes to determine whether those changes will have a discriminatory impact based on race, color, or national origin of the transit riders. Specifically, the transit provider shall engage the public in a decision-making process to develop a major service change policy and fare change policy. FTA guidance requires public engagement when developing service change and disparate impact policies.

Transfer Policies and Regional Considerations

Other key fare strategy considerations are transfers and transfer policy. Many systems are designed so that many riders must transfer between bus routes, which require agencies to address transfers. Transfers are issued at the time of boarding and are intended for passengers who need to change buses to get where they're going without paying a fare every time they board. Surveys show a very small percentage (estimated at 3-4%) of CHT riders transfer between CHT routes as part of their trip. This means that if CHT were to introduce a fare structure, the financial impact of one decision over another will not be significant. However, the decision does have regional implications because some riders may transfer from other services to CHT or from CHT to other services.

Agencies that offer transfers—either free of charge or at a discounted rate—typically allow a set time for their use, often a two-hour period, and allow them to be used in one direction only. In this case, a driver issues the rider a transfer with the time stamped on it, and the rider can get on and off as many buses as necessary within the allotted time period as long as travel is generally in one direction. Other agencies allow transfers to function as a two-hour pass, allowing passengers unlimited travel in any direction. Typically the rider displays the valid transfer as proof of payment.

Transfers have become an increasingly sensitive and controversial issue at many transit agencies because of problems associated with their use. For example, a common complaint is that passengers use transfers improperly, such as with an expired time stamp or on a return trip when that is not allowed. Such improper use causes conflicts between operators and passengers and boarding delays when operators take time to validate transfers. Agencies lament that improper use of transfers contributes to fare evasion and creates on-time performance problems. An increasing trend in the transit industry is to eliminate transfers and offer day passes, which allow passengers unlimited ride privileges in a 24-hour period. Day passes and other types of pre-paid fare instruments are discussed in the following section.

Regional Considerations and Inter-Agency Transfers

CHT is one of seven transit operators in the Research Triangle region in North Carolina (see Appendix A). Of these seven agencies, all but two (CHT and the North Carolina State University Wolfline) charge a fare. While not required, it is likely that if CHT charged a fare, the fare would roughly be consistent with other operators in the region. Generally speaking, transit agencies in the Triangle Region:

- Charge between $1 and $1.25 for local service.
- Vary fares based on distance – fares on longer distance and regional services start at $2.00.
- Vary fares based on service types – transit agencies charge more for premium services, such as regional express and special event services. Regional express routes, for example, cost $2.50 for a one-way cash fare. The cash fare on CHT's Tar Heel Express route is $3 for a one-way trip.
- Offer free fares to adults aged 65+ and children aged 12 or less.
- Accept the regional fare card, GoPass. The GoPass is accepted by four of the transit operators in the region.

The GoPass is the Triangle Region's regional fare card. It can be used on the four transit operators in the area that currently charge a fare: CAT in Raleigh, C-Tran in Cary, DATA in Durham, and regional services operated by Triangle Transit Authority (TTA). The only operator not participating in the GoPass is Orange County Public Transportation. GoPasses can be purchased as a day pass, a five-day pass, or a 31-day pass. UNC students, faculty, and staff may receive a free GoPass if they live off campus and ride TTA to get to campus.

In the case of CHT, transfer policies are further complicated by the fact that other transit services (TTA, for example) operate in Chapel Hill and Carrboro. As part of developing a transfer policy, CHT would need to negotiate transfers between systems. The negotiation includes CHT's willingness to accept transfer riders from other systems as well as other system's willingness to accept CHT riders transferring to their services, including participation in regional fare cards such as GoPass.

Most transit agencies in the Triangle Region do not charge for a transfer, although some charge a nominal amount. Currently, only TTA in the Triangle Region charges for transfers, requiring an additional $0.50 for riders transferring between local and express services. GoPass holders, however, are able to transfer free of charge between nearly all of the regional service providers.

Fare Strategy and Structure

Fare strategy refers to the general type of fare collection and payment structure. Possible approaches include flat fares, differential pricing (by distance traveled, time of day, or type of service), market-based or discounted payment options, and transfer pricing. Other options are fares based on a zonal system, peak/off-peak differentials, and express or other special surcharges. Fare structure represents the combination of one or more fare strategies with specific fare levels. CHT has already established a fare for its longest distance trips. Beyond the handful of routes, CHT only operates short distance local trips and short distance express trips. Therefore, a fare structure will likely not be as complex as other transit agencies.

The process of establishing pricing levels is influenced by political and social equity concerns and closely tied to revenue objectives. A common practice for transit agencies is to monitor farebox recovery ratio as an indicator of when and how much to raise fares. For example, if a transit agency has a farebox recovery target of 20% for its fixed-route service and this ratio is declining as costs increase, then it will consider increasing fares. However, such decisions need to be carefully considered because ridership typically drops after a fare increase. A rule of thumb in the transit industry is that for every 10% increase in fares, ridership will decrease by 3%. This "–0.3 elasticity" has proven to be a very accurate estimate of the relationship between overall ridership and fares over the years.

When establishing a fare structure, it is important to consider the types of passengers carried and the types of services offered. Typically, transit agencies have four to five categories:

- Adult (full or base fare)
- Seniors and people with disabilities (federally mandated discounted fare)
- Students (discounted fare)
- Children (under five years old ride free with paying adult)
- Premium fares (express or limited-stop service)

The base cash fare for local bus service should be at a level that is reasonably affordable for riders and represents a "fair share" of the costs of operating transit services, although in both cases these are value judgments. While there is no one "right" answer, the standard in the industry for a transit agency operating in a relatively compact service area with a fleet size of about 100 buses ranges between a 15% and a 25% farebox recovery ratio systemwide.

Reduced Fares and Title VI Considerations

Social equity and environmental justice are important considerations in establishing and setting transit fares. Transit agencies try to offer equitable fares because they recognize that some passengers who depend on the service for their mobility needs may have a harder time paying for it. Environmental justice considerations also address equitable and fair treatment for all segments of the population.

The FTA requires that fixed-route services that receive FTA operating assistance offer older adults and persons with disabilities a 50% discount from the full fare during off-peak hours. Many transit agencies go beyond the legal requirements and offer a 50% discount throughout the day for cash fares as well as discounted monthly pass or tickets.

Many transit agencies also have a variety of fare instruments and discounted fares to address these social equity/justice concerns. Reduced and discounted fares for young children and

students (elementary and high school), for example, are frequently available, as are discounted monthly passes or ticket books. Many transit agencies also offer free fares for children less than five years of age, provided they are traveling with a fare-paying adult. Regionally, several agencies, including CAT and DATA, offer discounted cash fare for students (aged 17 or less) and youths (aged 12 or less).

Additionally, many transit agencies negotiate special fare pricing or fare mechanisms with human and health service organizations. Human and health service agencies want to ensure their clients can get to programs, services and employment and work with transit agencies to develop appropriate fare media, such as ticket books or tokens. These arrangements are usually negotiated between staff from both agencies.

As part of identifying special fare classifications, agencies must also determine how people will qualify or demonstrate eligibility for reduced fares, including the federal half-fare program. Chapel Hill and Carrboro have expressed interest in investigating implementation of a low-income fare program if fares were reinstated. A policy decision would need to be made as to whether UNC students would qualify for such a program.

Secure Cash Fare Handling

All cash farebox revenue must be securely counted and reconciled. Revenue controls, processing, and handling can be particularly difficult for small to mid-sized agencies because they often do not have large administrative staff to manage these systems. Reconciling fare collections serves as both a preventive and detective control and can deter and identify a potential misappropriation of farebox receipts. CHT would need to ensure the proper administrative and handling controls to securely convey any cash collected for deposit.

Customer Relations Objectives and Measurements

The structure and policy of passenger fares at many transit agencies has evolved over several years, sometimes resulting in a complex fare structure with a myriad of fare instruments that are confusing to both riders and operators alike. An important consideration when establishing a fare structure is to create a system that is relatively simple, easy to understand, and easy to use for both riders and operators alike. This means that if transfers (paper slips issued upon boarding that allow passengers to change from one bus to another without paying additional fare) are offered, the rules governing them should be straightforward.

Similarly, how tickets and passes work should be simple to understand, and it should be easy to pay fares. For many agencies, the challenge arises when they balance the goal of simplicity against other goals addressing customers' ability to pay. A common outcome is various multiple-ride passes with discounts and/or convenience for those who can't afford a full monthly pass.

Payment Type and Technology

Payment type refers to the type of fare payment media (i.e., cash, token, paper ticket, or advanced payment media) and equipment used to collect fares. Agencies are increasingly offering a broad range of payment options that segment the market based on frequency of use and willingness to prepay. Most agencies offer one or more types of multiple-ride pass as well as some form of discounted multi-ride options; the most common types are described below. They include monthly, weekly, and daily passes as well as special or innovative pass types through partnerships

with universities, employers, and other institutions.[14] The passes sold below can be sold as "rolling" or calendar date passes. A rolling pass will become valid upon first use for the specific duration on that pass (e.g., 31 days, seven days, one day). A calendar pass will be valid on a specific date or date range.

In the Triangle region, most of the transit agencies that charge a fare have very similar fare structures, which are consistent with the GoPass. These fare levels include:

- **Day passes** are usually offered as an alternative to transfers and priced between 2.5 and 4 times the base cash fare. They are valid for a 24-hour period or a calendar date and are the only type of pass sold on board vehicles.
- **Weekly passes** provide unlimited rides for seven days or a calendar week. Weekly passes are typically activated when they are first used rather than a set Sunday-through-Saturday schedule. The GoPass is available as a five-day pass; DATA and C-Tran also offer a seven-day pass.
- **Monthly pass** or 31-day rolling passes allow unlimited rides for a given month or for a 31-day period starting on the day it is issued. Pass prices are based on the cash fare and a multiplier[15]. Agencies also offer discounted monthly passes to seniors and people with disabilities.

Fare Collection Technology

Part of CHT's decision regarding technology would also reflect a decision to become part of the regional GoPass. GoPass uses smart card technology to track ridership and assign fares. If CHT were to implement a fare and wanted to participate in the GoPass, it would need—at a minimum—to develop smart card reader technology. If CHT is not interested in participating in the GoPass system, then it would be free to adopt the fare collection technology that it determines to best meet local needs.

Generally speaking, there are two primary types of fare collection technology: smart cards and magnetic strip cards (see Figure 1). There are also different types of smart card systems—open and closed systems. An "open" system is a smart card system that is reliant on existing "third party" cards with built-in RFID (proximity card) capabilities. As an example, if one already has a proximity-enabled debit or credit card or employer ID, these can be used as a "smart" card on transit vehicles. A "closed" system is a more traditional smart card where a transit agency is in control of the fare media, including sales, distribution, reconciliation, and support.

[14] The multiple-ride instruments in this section are usually sold at several points of sale including retail outlets, agency administrative offices, schools, employers, and through TVMs. Day passes are often sold on board buses as is the case at GET (Bakersfield), C-Tran (Vancouver, WA) and Capital Metro Transit (Austin). Passengers deposit cash directly in the farebox, and a pass is produced. Drivers are not required to handle cash when passengers purchase day passes on board vehicles.

[15] The term "multiplier" refers to the number that is multiplied by the cash fare to determine the price of a monthly pass. This can also be considered the "break even" point for a customer purchasing the pass. For example, a multiplier of 30 would mean a monthly pass price of $30 with a base cash fare of $1. A customer would need to ride a system using their monthly pass 30 times within a month before breaking even on their purchase.

Figure 1 Electronic Fare Collection: Advantages and Disadvantages

	Magnetic Stripe Card	Smart Card (Open System)	Smart Card (Closed System)
Enhanced Data Collection	+	++	++
Safeguards against fare evasion	+	++	++
Enables fare simplification	+	++	++
Provides information for focused marketing	+	++	++
Reduces printing and cash handling	0	+	+
Requires technology upgrades and infrastructure	—	—	—
Improves customer experience and fare security	+	++	++
Costs of distribution network infrastructure[16]	0	+	—
Transit agency experience with this technology	0	0	—

Negative Impact — ←--------- **0** *Neutral*----------→ **+** *Positive Impact*

Fare Validation/Collection

The type of fare validation refers to the manner in which fares are enforced or inspected. The basic fare validation options are:

- Pay fare upon boarding – passengers pay, purchase fare media or validate fare media when getting on the bus.
- Pay fare at barriers – passengers pay or validate fare at barriers, such as turnstiles, to control access to the transit vehicle.
- Proof of payment (POP) – passengers purchase fare before they get on the vehicle. Enforcement of fare payment is done by random inspection or 100% conductor validated.

Of the four options, only fare purchase or fare instrument validation on board is currently the most relevant for a bus operator like CHT. The other three options are generally appropriate for rail or bus rapid transit systems. However, given CHT is exploring implementation of a bus rapid transit service and a rail light rail system regionally, CHT may want to consider the ability of any fare validation method proposed now to be integrated with new systems in the future.

The latest generation fareboxes are "validating" fareboxes, such as GFI's "Odyssey."[17] They can verify that magnetic stripe or smart card passes and/or transfers are valid. In addition, they can validate cash payments, verifying the amount and authenticity of bills and coins.

[16] Includes required new equipment for participating retailers to sell and recharge smart cards.

[17] GFI is a farebox manufacturer.

5 COSTS ASSOCIATED WITH IMPLEMENTING A FARE

Introduction of a fare structure and fare collection system involves numerous up-front and ongoing costs to establish and maintain fare collection equipment, as well as internal and external processes to print and distribute tickets and passes, collect and reconcile fares, and conduct other customer relations and financial transactions.

This section presents a detailed review of equipment that would be necessary to begin fare collection at CHT and a range of corresponding costs. It also estimates ongoing operating costs that reflect new administrative responsibilities for CHT. These cost estimates are used in tandem with ridership and fare revenue projections to determine the "bottom line," i.e., whether a net income gain or loss would result if CHT were to introduce a fare (see Chapter 8).

The basic facts about CHT that are used as inputs for this analysis are listed in Figure 2 below. The inventory of CHT's fare collection resources shows that roughly two-thirds of the fixed-route vehicles do not have any fare collection equipment installed. The remaining vehicles have fare collection equipment, but in every case, the fareboxes are already more than 10 years old and are unlikely to be compatible with new technology. Therefore, the study team assumed that new fareboxes would be required for all vehicles.

Figure 2 Inputs for Estimating Costs

Annual Fixed Route Ridership (unlinked) [1]	6,715,000
Estimated Transfer Rate [2]	3.4%
Fixed Route Vehicles without Farebox (fleet vehicles purchased since 2002) [3]	67 (68%)
Annual EZ Rider Trips	59,620
EZ Rider (Paratransit) Vehicles without Farebox	19 (100%)

Source: NTD 2013

1. Includes Safe Routes but not Tar Heel Express.
2. A transfer rate of 49% is assumed due to the timed-transfer design of the CHT system coupled with 2012 survey results.
3. CHT's fixed-route fleet has 99 vehicles, 67 of which were purchased after 2002 (the year CHT became fare free). For purposes of this analysis, it is assumed that CHT would need to purchase fareboxes for all 67 vehicles, regardless of the remaining useful life of the vehicle.

FARE LEVELS

To estimate the potential impacts on ridership and the resulting farebox revenues if a fare were introduced, three different fare scenarios were included in this analysis (see Figure 3). The three scenarios are designated "Low," "Medium," and "High," to reflect corresponding fare levels. The low-end fare reflects a "charge something" fare to address potential concerns about riders not paying their way, or could be seen as an introductory fare to get passengers accustomed to a fare structure. The high-end fare represents a level used in a number of peer systems, while also acknowledging CHT passengers' ability to pay. These fares are in line with fares charged for local service by other transit services in the Triangle Region (see also Appendix A).

Figure 3 Three Fare Scenarios Used for Analysis

Service	Base Fare Level		
	Low	Medium	High
Fixed Route	$0.50	$1.00	$1.25
EZ Rider	$1.00	$1.25	$2.00

INITIAL CAPITAL INVESTMENTS

Implementing a fare requires several capital investments (see Figure 4). Most of CHT's vehicles do not have fareboxes. As discussed, although some of CHT's older vehicles have fare collection equipment, the technology is old and would not be compatible with a new system purchased in 2015 or 2016. For purposes of this analysis, it is assumed that fareboxes would need to be purchased for all CHT vehicles. All capital costs are listed separately, including initial marketing and education costs plus a 10% contingency for all capital costs. On the low end, the required capital costs are estimated at $1.9 million, and the high end costs are estimated at just over $2.8 million.

ONGOING OPERATING COSTS

In addition to capital investments, implementing a fare would also have ongoing operating costs associated with administering the fare system (see Figure 5). Implementing fares also includes recurring direct costs such as purchasing fare media (passes, tickets, etc.), plus ongoing marketing activities and administrative tasks. There is some variation in the ongoing operating costs that reflect different fare levels and how many fare media would be needed. Differences between options are minor; ongoing operating costs are estimated at roughly $530,000.

Administration Impacts

There are many administrative responsibilities associated with a fare structure, from printing, selling, and distributing tickets/passes, to procuring fareboxes and other capital investments, to reconciling monthly financial transactions and monitoring and measuring farebox recovery ratios. Systems with a complex fare structure typically devote several full-time staff members to administering fares.

Figure 4 One-Time Capital Investments

Fare Collection Implementation Costs					
One-Time Capital Investments	**Qty**	**Unit Cost Low**	**Unit Cost High**	**Total Cost Low**	**Total Cost High**
Fixed Route Fareboxes[1]	99	$12,000	$15,000	$1,188,000	$1,485,000
EZ Rider (Demand-Response) Fareboxes[2]	19	$2,500	$9,000	$47,500	$171,000
Farebox Installation Costs[1]		3%	10%	$37,065	$165,600
Ticket Vending Machines (TVMs)[1]	4	$30,000	$55,000	$120,000	$220,000
Attended Card Encoders[1]	2	$13,000	$19,000	$26,000	$38,000
Data Processing Software and Hardware[1]	1	$35,000	$55,000	$35,000	$55,000
Vault (on wheels)[1]	1	$30,000	$40,000	$30,000	$40,000
Spares Parts (10% of fareboxes and TVMs)[2]				$135,500	$187,600
Money Room and Clean Room Build Out[3]	1	$160	$220	$57,600	$99,000
Contingency Budget (10% of all Capital Costs)[4]				$167,672	$246,120
One-Time Capital Costs [5]				$1,844,387	$2707,320
Initial Marketing and Education				$45,000	$60,000
Total Capital Costs				**$1,889,387**	**$2,767,320**

Notes:

Bus probes and garage probes will be needed for data collection from vehicles (these will likely be provided by hardware vendor at no cost as noted from GFI).These are needed for downloading data from fareboxes into data processing computers, typically via infrared emitters/sensors. Attended Card Encoders are devices to program (encode) blank fare media (magnetic stripe or smart cards). They can be used to generate multi-ride passes and/or smart cards from individuals participating in partner program.

1. Farebox, TVM, other hardware and installation costs are based on figures from TCRP Report 94.

2. Cost for spares (additional spare parts and pieces) is factored only for high-use equipment such as fareboxes and TVMs. Ongoing spare parts costs is determined by taking 10% of the initial capital cost of spare parts.

3. Room Build Out costs assumes 360 Sq Ft (small) and 450 Sq Ft (large). Per unit costs reflect per-square-foot costs.

4. Contingency budget has been developed to cover 10% of all above capital costs.

5. Capital costs are FTA eligible; however, this analysis assumes capital costs would be funded by CHT. If federal funds are secured, then it would cover 80% of the cost, reducing CHT's contribution to 20%.

Figure 5 Ongoing Costs Associated with Fare Collection

Annual Costs for Fare Media and Personnel Functions	Unit Cost	Low Fare	Medium Fare	High Fare
Procure annual transfer media (paper stock, mag stripe)[1,2,8]	$0.02	$763	$710	$647
Procure annual pass media (plastic stock, mag stripe)[1,2]	$0.03	$26	$24	$22
Procure annual smartcard media[1,2]	$1.45	$2,738	$2,548	$2,320
Cost to purchase and install farebox		$32,315	$32,315	$32,315
Procure annual EZ Rider smartcard media[1,2]	$1.45	$66	$62	$58
Equipment Maintenance Costs[4]	6%	$96,945	$96,945	$96,945
Additional Ongoing Marketing Costs		$5,000	$5,000	$5,000
Annual FTE Employee Costs: includes media distribution and reconciliation, maintenance, revenue handling, and software maintenance[5]	2 FTE	$105,000	$105,000	$105,000
Capital Reserve Replenishment[6]		$288,456	$288,456	$288,456
Annual Ongoing Operating Costs		**$531,309**	**$531,060**	**$530,763**

Notes:
1. Assumes hybrid smart card/mag stripe system.
2. Assumes that pass media is purchased at 50% over required demand for that fare class, based on ridership projections from Figure 7. Costs for media are higher at lower fare levels because ridership is projected to be higher and thus a higher quantity of fare media is necessary.
3. Based on TCRP Report 94, staff costs for various aspects of fare collection is taken as a percentage of overall revenue. The suggested FTE cost of $52,500 is roughly at the midpoint of TCRP's range from that report.
4. Equipment maintenance costs range between 5% and 7% of equipment costs. An average of 6% is used for fareboxes and TVMs.
5. Assumes one new full-time mechanic ($55,000) and one new full-time administrative employee ($50,000). To reflect the customer service CHT riders have come to expect, additional administrative/customer relations staff may be needed.
6. Capital Reserve Replenishment takes the average between low and high FTA-eligible capital costs and annualizes it over the intended lifespan (10 years for farebox related equipment and 30 years for structures).
7. Dwell Time Costs: We assumed four lines would require an additional 15.5 hours total of operating time per day, 255 weekdays/year times $92/hour.
8. Transfer rate is estimated to be 3.4% given 2012 survey results.

While it can be difficult to quantify staff time and expense dedicated to these activities, an increasing concern at many transit agencies is how to reduce the time and effort spent on administering fares. Agencies should quantify the costs to administer the fare collection system and monitor the costs over time. One way to ensure that administrative responsibilities do not become burdensome is to routinely adjust fares so that the cost of fare collection is maintained or declines as a percentage of total fare revenue. Administrative costs typically range between 10% and 15% of total operating costs.

Capital Reserves

Ongoing costs also include assume a capital set aside for fare collection system. Replenishing the capital reserve account is calculated based on annualized costs of capital equipment. The sum of $105,658 shown in Figure 5 scenarios assumes that 100% of capital projects will be covered by CHT. A ten-year life cycle is assumed for all capital equipment (fareboxes, TVMs, etc.), and a 30-year life cycle is assumed for the money room. Additionally, a 6% annual maintenance cost was assumed for fare equipment.

6 PROJECTED REVENUE GENERATION

The purpose of charging a fare to riders is to raise revenues. For example, if each of CHT's seven million riders each paid $1 every time they boarded the bus, the system would collect nearly $7 million annually. However, as discussed, not all riders pay the full cash fare, potentially because they are over the age of 60, have a disability, hold a monthly pass, or are transferring between systems. In addition, experience also shows that when asked to pay a fare, some riders will use a different way to travel, rather than pay the fare. The cumulative effect of these factors means that not every rider pays a fare, not every rider pays the full fare, and some existing riders will stop riding. Revenue projections, therefore, will reflect these circumstances. Previous sections of this memo outlined the costs associated with setting up the fare collection infrastructure and costs to manage the system. This section evaluates the revenue potential.

FARE ELASTICITY

Consumption of transit, like other goods and services, reacts to cost. Significant research over time has examined the sensitivity of transit ridership to fare increases. In economic terms, the change in the product purchase pattern with respect to the change in price is referred to as "elasticity." Ridership elasticity with respect to fare (commonly referred to as "fare elasticity") measures the percentage change in ridership in response to a change in transit fare. In transit, the standard fare elasticity is –0.3. This means that for every 10% increase in fares, ridership will decrease by three percent.

The notion of fare elasticity is not applicable to the case when fares are instituted for a free-fare system, as this represents an infinite increase in fares. But research into fare elasticity for the elimination of fares can be used to predict ridership losses when reversing the situation and adding a new fare.

Based on limited research into fare-less demonstration projects for a number of years, TCRP Report 95, Chapter 129[18], demonstrates the effect of eliminating fares. This implies the percent increase in ridership is equal to elasticity value given the 100% drop in fares. The report found that in central business districts (CBDs), a higher average fare elasticity of -0.52 (+/- 0.13) can be applied, since in a CBD short walking trips and transit trips are more interchangeable than longer trips. For example, in London, trips under one mile in length were found to be almost twice as sensitive to fare changes as longer trips; fare elasticity for trips shorter than a mile ranged from £0.50 to £0.55. The average fare elasticity for a limited number of non-CBD studies averaged -0.32. The higher CBD elasticity value is also applicable to CHT, as walking is an option for a number of trips, especially those to/from UNC.

[18] TCRP 94 – Fare Policies, Structure, and Technologies: Updated 2003.

Therefore, the nominal elasticity value of -0.52 suggests that a 52% increase in ridership will result if fares are eliminated in a CBD or other area where transit competes with other modes. Conversely, the addition of a fare under these conditions will result in a (34%)[1] loss in ridership. Figure 6 highlights the range of expected ridership losses given the range of elasticity cited for the free-fare systems. When analyzing a potential fare for the CHT system, the greater loss (39%) is assumed for the high-end fare assumption and the lesser ridership loss (28%) is assumed for the low-end fare assumption.

Figure 6 Elasticity-Based Ridership Losses when Instituting a Fare

Case	Elasticity	Ridership Loss if Free Fare is Eliminated
CBD – high end	-0.65	(39%)
CBD – nominal value	-0.52	(34%)
CBD – low end	-0.39	(28%)
Non-CBD – high end	-0.45	(31%)
Non-CBD – nominal value	-0.32	(24%)
Non-CBD – low end	-0.19	(16%)

Source: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c12.pdf 12-32

The elasticity is less for dial-a-ride (EZ Rider) services because many of these passengers are seniors and/or persons with disabilities who rely heavily on these services (these individuals' demand would be considered fare inelastic). The transit industry has generally found that ADA ridership does not decline after a fare increase, primarily because there is enough pent-up demand that any rider who does discontinue using the service is immediately replaced by another rider. As an example, the Metropolitan Transit District (MTD) in Santa Barbara reports that when it doubled its ADA fares (from $1 to $2) and also eliminated multi-ride discounts, there was no measurable impact on ADA ridership. However, it is reasonable to assume that when transitioning from a free-fare system to charging a fare, there would be a small percentage of riders who would seek a different travel options or choose to travel less often. Therefore, a range between 20% and 30% is used when estimating a loss in ridership.

The ridership and revenue assumptions are based on three fare scenarios shown in Figure 7 and Figure 8. The top third of the figure presents current (2010) EZ Rider and fixed-route ridership with an assumed 3.4% transfer rate based on CHT 2012 ridership surveys. The estimated ridership loss under the three fare scenarios is shown for each service. Figure 8 lists the low, medium, and high fares, the percent of the fare collected, and the average fare per rider. For fixed-route service it is assumed that 50% of the full fare would be collected, based on the high percentage of riders that would be paying a reduced fare.

If every rider on CHT paid a $1 fare for every trip taken, the system would collect roughly $6.7 million annually through the farebox. Based on these parameters, CHT would receive between $785,000 and $1.6 million in fare revenues annually, depending on the fare level. These figures do not include the cost of collecting fares, capital investments, or additional operating costs; costs associated with these activities are discussed in detail in other sections of this report.

Figure 7 Ridership Estimates

Current (2013) Ridership	Low	Medium	High
Annual Fixed Route Ridership (**Unlinked** Trips)			6,715,000
% Pre-Paid Ridership (UNC and UNC Health Care Students, Faculty and Staff)			60%
Annual Fixed Route Ridership (Linked Trips) [1]			2,686,000
Adjusted Linked Trips			2,597,679
CHT EZ Rider /Lifeline Service			59,620
Assumed Transfer Rate[2]			3.4%
Estimated Fixed Route Ridership			
Non-CBD % Loss due to Fare[3]	(16%)	(24%)	(31%)
Estimated Ridership Loss in non-CBD	(454,157)	(689,566)	(882,763)
CBD % Loss due to Fare[3]	(28%)	(33%)	(39%)
Estimated Ridership Loss in CBD	(294,577)	(359,915)	(414,448)
Trips that will Charge a Fare	3,147,784	2,847,037	2,599,308
Potential Transfers	107,025	96,799	88,376
Estimated EZ Ride Ridership			
% Loss due to Fare[4]	(20%)	(26%)	(30%)
Estimated Ridership Loss	(12,205)	(15,233)	(17,899)
Ridership with Fare	47,415	44,387	41,721

Notes:

1. A linked trip represents the entire passenger trip from trip origin to trip destination regardless of the number of transfers that may be involved. An unlinked trip represents a single bus boarding whether at the trip origin or at a transfer location.
2. A transfer rate of 49% is assumed due to the timed-transfer design of the CHT system coupled with 2012 survey results.
3. Loss of fixed-route ridership due to fare increases is assumed at all three levels, with losses between 28-39%.
4. Loss of ADA ridership is assumed at all three levels. Since ADA riders are highly transit dependent, they have few travel choices, and the projected loss is lower than the fixed-route ridership loss rate.

Figure 8 Revenue Estimates

Fare Revenue Alternatives	Low	Medium	High
Fixed Route			
Fixed Route Fare Structure ***(Three fare scenarios)***	*$0.50*	*$1.00*	*$1.25*
Percent collected[1]	50%	50%	50%
Assumed Avg Fare Per Passenger	$0.25	$0.50	$0.63
Fixed Route Passenger Revenue	**$467,572**	**$870,222**	**$990,365**
Dial-a-Ride			
EZ Rider Fare Structure ***(Three fare scenarios)***	*$1.00*	*$1.25*	*$1.50*
Percent collected[1]	95%	95%	95%
Assumed Avg Fare Per Passenger	$0.95	$1.19	$1.43
EZ Rider Passenger Revenue	**$11,594**	**$21,708**	**$34,007**
Estimated Total Fare Revenue (Fixed Route + EZ Rider)	***$479,177***	***$891,930***	***$1,024,372***

Notes:

1. Assumed 50% of the full fare would be collected because of discounted fares, pre-paid passes, etc. This percentage is within the industry norm for a small-sized system like CHT.

7 OPERATIONAL IMPACTS

Introducing fare payments to a transit system inevitably will create boarding delays. These delays are related to passengers paying their fares as well as asking questions and talking to the driver. For a single stop, these small delays may seem insignificant. However, over the course of a full route, they can aggregate and create noticeable issues with on-time performance and schedule adherence. This section will briefly outline the potential operations impacts that can be caused by the introduction of fare payment and how it specifically may impact CHT.

Boarding delay caused by fare payment is quantifiable and is often measured on a per-boarding basis. However, the magnitude of the delay can vary depending on the fare payment type. Fare media that require visual inspection only (such as flash passes) are likely to cause the least delay per boarding, whereas an individual paying cash fare (and requiring exact change) may take significantly longer. As one can imagine, fareboxes that require exact change may prompt customers to spend several seconds digging for correct change. Other fare media such as swipe (magnetic stripe) cards or proximity smart cards fall between the above two examples in terms of delay.

National research has considered the delay caused by passengers paying a fare (see Figure 9). Based on CHT's existing free-fare service model and this research, it is assumed that current CHT boardings take approximately 2.5 seconds per passenger. If CHT were to introduce fare payment on its services, it would likely add boarding delay on top of the existing 2.5 seconds.

Figure 9 Boarding Delay by Fare Payment

Situation	Suggested Default Passenger Service Time (Seconds/Passenger)
Pre-Payment (includes no fare)	2.5
Exact change	4.0
Swipe or dip card	4.2
Smart card	3.5

Source: Transit Cooperative Research Program (TCRP 100- Transit Capacity and Quality of Service Manual

Based on TCRP research, the Nelson\Nygaard team assumed that requiring a fare payment on CHT routes would add approximately 1.5 seconds to each boarding (the difference in time between free fares and delay from requiring exact change). It is understood that not all future passengers will have exact change (4.0 total seconds per boarding is a middle ground between those using smart cards, change, and swipe cards).

Impacts on CHT Routes

Based on the CHT Comprehensive Operations Analysis (COA), there are several routes in the CHT network that consistently show on-time performance issues. Our analysis assumes on-time performance issues will be exacerbated with fare collection, such that additional resources may be needed. The analysis only examines routes that currently have on-time performance issues. If a route did not have on-time performance issues, the study team assumed the route could absorb incremental dwell time increases associated with fare collection. Express routes, for example, did not report on-time performance issues and therefore were not included in the dwell time analysis.

Figure 10 shows the individual routes and number of trips currently exceeding "cycle time"[19] based on a count the week of September 12, 2011, excluding the routes that entirely or mostly serve the UNC campus (NU, RU and U). "Exceeded Cycle Time" refers to the trip exceeding its scheduled cycle time. For instance, if Route 1 is scheduled for a 30-minute round trip and has a trip that took 31 minutes to complete, it exceeded its cycle time.

The travel time plus recovery time per trip collected as part of the COA was used to inventory the percentage of trips that were experiencing difficulty adhering to their schedule. The ridership on each route was reduced by 34%, the mid-range assumption for ridership loss if fares were implemented. The longer boarding time was then applied to the reduced ridership for each trip (see Figure 10). The "Max Added Dwell Time per Trip" column shows the additional dwell time added to each trip. While this amount may not seem significant in many cases, it pushes trips at their current scheduling limit over the edge. If the additional dwell times increased the travel time by 2% or more and/or 30% of all trips were not on-time, then we assumed additional investment in the route would be required. The additional investment was broadly estimated by adding trips in proportion to the number of delayed trips. In sum, the additional costs incurred by CHT due to operational issues are estimated to be roughly $400,000.

In addition to delays caused by passengers paying fares, operators may see an increased role in helping to explain, educate, and enforce fare policies to CHT customers. Again, on a case-by-case basis, the delay caused by these activities may seem minor, but can quickly accumulate over the course of a route. These types of interactions were not factored into the above estimations given their unpredictable nature, but should be considered, particularly during the initial rollout of fare collection when numerous customers may have questions and concerns about the policy and each time the fare structure is changed.

[19] Route cycle time includes the scheduled route round trip travel time to and from the Transit Center plus recovery time of three to four minutes.

Figure 10 Estimated Dwell Time Analysis

		Existing Conditions		With Fare and Additional Dwell Time					
Route	Daily Trips 1)	Current Trips Exceeding Cycle Time 2)	Adjusted Ridership	Max Added Dwell Time Per Trip (seconds)	Percent Trips Missing Transfers 6)	Recommendation	New Daily Hours Needed	Annual Hours	Annual Cost ($92/hr)
A	20.5	7	818	100	1.2%	Add service	5.3	1348.695	$105,535
CL	6	3	95	39	0.7%	No change			
CM	19.5	7	416	53	1.5%	Add service	2.2	551.9475	$43,190
CW	20	6	485	61	1.2%	No change			
D	30	7	1098	92	1.0%	No change			
F	17.5	3	626	89	1.1%	No change			
G	16.5	4	570	86	0.9%	No change			
HS	7	1	96	34	0.7%	No change			
J	47	8	2559	136	1.8%	Add service	5.6	1438.2	$112,539
N	19	3	344	45	0.9%	No change			
NS	31	8	2008	162	2.8%	Add service	4.2	1067.175	$83,506
S	48	6	783	41	1.0%	No change			
T	20	4	855	107	1.7%	Add service	2.3	598.4	$46,825
V	17	3	464	68	0.5%	No change			
Total	**97**	**28**			**2%**		**19.6**	**5004.4**	**$391,596**

Notes: Current Trips Exceeding Cycle Time means trip has no recovery time and no time for transfers

2014 Ridership data are averages collected from Jan 26-Feb 2, 2011

1) Daily Trips - The number of round trips to/from the Transit Center
2) Current Trips Exceeding Cycle Time - This counts the number of trips that currently exceed their scheduled cycle time.
3) Percent Trips Missing Transfers - If the cycle time was not hit, then transfers were likely missed. This is the percentage for the week of September 12, 2011.
4) Maximum Added Dwell Time per Trip - Using Ridership data collected the week of Jan 26-Feb 2, 2011, the number of passengers per trip for each trip was calculated, as was the dwell time for this trip, using 2.5 seconds/passenger. If a fare is instituted, ridership will drop by an estimated 34% and the dwell time will increase to 4 seconds/passenger. The maximum difference between the existing dwell time and the projected dwell time per trip is reported in this column.
5) Projected Trips Exceeding Cycle Time - This counts the number of trips that are projected to exceed their scheduled cycle time with the additional dwell time caused by a fare.
6) Percent Trips Missing Transfers - If the cycle time was not hit, then transfers were likely missed. This is the projected missed transfer rate.

8 FARE IMPLEMENTATION COST AND REVENUE SUMMARY

This technical memo lays out the costs and benefits associated with implementing a fare. A key goal of the analysis is to determine if the benefits (revenues) associated with implementing a fare outstrip the costs associated with implementing a fare, and if so, by how much and under what circumstances.

The data identifies the following costs:

- One time capital investment of between $1.8 million and $2.8 million to purchase and install fareboxes and other equipment necessary to implement a fare.
- Ongoing operational costs of roughly $530,000 annually. About half of the costs are associated with increased staff, maintenance of the fareboxes and purchasing fare media. The other half reflect contributions to the capital reserve fund so new equipment can be purchased at the end of its useful life.
- Operational impacts that account to costs on the order of $390,000 annually that account for operational delays associated with slower boarding times.

Charging a fare, on the other hand, would generate revenue. Based on a one-way cash fare of between $0.50 and $1.25, CHT could raise between $500,000 and $1.0 million annually (see Figure 11). On an annual basis, including only operating costs, fare revenue set at the high ($1.25) level would generate a net positive return of just over $100,000 annually.

Figure 11 Net Annual Revenue to CHT by Fare Level

Fare Level	Operating Costs	Operating Revenues	Net Gain (Loss)
$0.50	$922,905	$497,177	($443,728)
$1.00	$922,656	$891,930	($30,726)
$1.25	$922,358	$1,024,372	$102,014

Source: Nelson\Nygaard Consulting Associates

Return on Investment

A relatively straightforward way to understand the impact of the investment in terms of benefits produced is the return on investment (ROI), which compares the capital and operating cost (investment) against the total benefits. For purposes of this analysis, it was assumed CHT would be able to pay for all capital investments associated with the fare collection equipment without borrowing money. It was also assumed that operating costs would increase at a rate of 2% per

year, while revenues would remain flat for the first five years; in year five, fare revenue would increase by 5% and then remain constant until the end of the ten-year period[20].

The analysis suggests that implementing fares will not generate positive benefits for CHT even if fares are set at the high level (see Figure 12).

Figure 12 Return on Investment for Ten-Year Period

	Low Capital Investment	High Capital Investment
Low Fares	(59%)	(61%)
Medium Fares	(23%)	(28%)
High Fares	(12%)	(18%)

Source: Nelson\Nygaard Consulting Associates

SCENARIO ANALYSIS

The fare analysis suggests potential for a positive return on investment if fares are charged. However, there are a number of assumptions or potential risks associated with charging a fare. As part of understanding the return on investment, therefore, the study team tested a handful of these scenarios to test the robustness—or risk—of the ROI. The analysis examines, for example, how sensitive the rate of return is to factors that CHT may or may not be able to control.

FTA and State Transit Funding Programs

FTA administers approximately eight programs, roughly half of which are formula programs that provide basic financial support for transit services. Federal funds account for roughly $1.9 million (about 12%) of CHT's revenues annually. The majority of these funds are administered through FTA Section 5307 program, which distributes resources based on formula set by law. This formula is designed to allocate resources based on factors such as population, population density and the number of low-income individuals as well as bus revenue vehicle miles and bus passenger miles.

Likewise, the State of North Carolina provides funding for public transportation services. The State Maintenance Assistance Program (SMAP), the largest of these programs, provides operating costs for urban, small urban and regional transit systems. Allocations are based on a formula that reflects ridership. In 2013, CHT received $2.7 million (about 17%) from the State of North Carolina.

There is the possibility, therefore, that if ridership on CHT declines, CHT could receive less federal and state funding. For purposes of this analysis, our team tested the impact of a small decline in FTA and State funding assistance (roughly 2.5%) and estimated the ROI for charging fares. The analysis suggests if a decline in federal and state funds is included, fares remain unprofitable at all fare levels (see Figure 13).

[20] Transit industry experience nationally suggests it is difficult for transit agencies to raise fares on an annual basis. Instead fares are raised periodically, roughly every 5 years.

Figure 13 Return on Investment for Ten-Year Period with Potential Loss of Federal and State Funds

	Low Capital Investment	High Capital Investment
Low Fares	(62%)	(64%)
Medium Fares	(30%)	(34%)
High Fares	(31%)	(35%)

Source: Nelson\Nygaard Consulting Associates

Assumption Test: Fare Elasticity

Two assumptions that drive the revenue projections is the portion of riders lost from the system due to the fare and the portion of people who pay the full fare. To understand the sensitivity of revenue projections to these assumptions, the study team reduced the ridership loss by half (to between 14% on the low end and 20% on the high end), and, at the same time, assumed that 75% of the riders paid a full fare. Under this scenario, the potential for revenue from the farebox increases to between $850,000 and $2 million, and the investment in fare collection systems would show a positive rate of return under the both the medium and high fare scenarios (see Figure 14).

Figure 14 Return on Investment for Ten-Year Period: Lower Fare Elasticity and Fare Collection Rate

	Low Capital Investment	High Capital Investment
Low Fares	(27%)	(32%)
Medium Fares	41%	32%
High Fares	70%	60%

Source: Nelson\Nygaard Consulting Associates

The analysis also suggests that even taking into account a loss of federal and state revenue, this scenario also produces a positive rate of return under the both the medium and high fare scenarios (see Figure 15).

Figure 15 Return on Investment for Ten-Year Period: Lower Fare Elasticity and Fare Collection Rate with loss of Federal and State Revenue

	Low Capital Investment	High Capital Investment
Low Fares	(32%)	(36%)
Medium Fares	29%	22%
High Fares	27%	20%

Source: Nelson\Nygaard Consulting Associates

Assumption Test: Portion of Riders who are UNC Affiliates

Another key assumption of the fare analysis is that roughly 60% of all CHT riders are formally affiliated with UNC as faculty, staff, or students. These riders would pay their fare as part of the pre-paid program administered by UNC. The analysis assumes no loss in ridership for these individuals.

The assumption that 60% of riders are UNC affiliates is based on survey data that shows roughly 60% of the riders begin or end their trip at UNC. It is possible that some riders may get on/off the bus near the UNC campus but are not directly affiliated with UNC. They may, for example, transfer to other transit routes (TTA), work on Franklin Street, or travel to campus for another purpose.

This assumption is critical to the analysis because if CHT ridership contains a higher portion of non-UNC affiliates, a larger number of riders may be influenced by fares. If, for example, only 40% of the CHT riders are affiliated with UNC, then the potential cash revenue increases to between $700,000 and $1.5 million. The analysis shows that the medium and high fare scenarios would have a positive ROI in this assumption test (see Figure 16).

Figure 16 Return on Investment for Ten-Year Period with Fewer UNC-Affiliated Riders

	Low Capital Investment	High Capital Investment
Low Fares	(39%)	(43%)
Medium Fares	14%	7%
High Fares	30%	22%

Source: Nelson\Nygaard Consulting Associates

APPENDIX A: RESEARCH TRIANGLE PARK TRANSIT AGENCY FARE STRUCTURES

Agency	One-Way Cash Fare	Discount for People +65 and with a Disability	Other Fare Categories	Pass Types
Chapel Hill Transit (CHT)	Free	Free	Pittsboro Express - $3.00 one-way Tar Heel Express - $3.00 one-way	31 Day Pass for Pittsboro Express ($65)
Capital Transit Authority (CAT)	$1.00	$0.50	Children less than 12 – Free Adults aged 65+	CAT Day Pass ($2) CAT 5 Day Pass ($8.50) CAT 31 Day Pass ($36) $25 Stored Value Card ($20)
C-Tran (Cary)	$1.25	$0.60		C-Tran Day Pass ($2) C-Tran Weekly Pass ($12) C-Tran 31 Day Pass ($45)
Durham Area Transit Authority (DATA)	$1.00	$0.50	Children less than 12 – Free Adults aged 65+ - Free Students less than 17 - $0.25	DATA Day Pass ($2) DATA 5 Day Pass ($8.50) DATA 7 Day Pass ($12) DATA 31 Day Pass ($36)
Triangle Transit Authority (TTA)	$2.00	$1.00	Express - $2.50 Transfers (regular to express) - $0.50	Express Day Pass ($5) Express 31-Day Pass ($85) 10-Ride Pass ($16) Discounted Bundles of Day Passes $25 Stored Value Card ($20)
North Carolina State University Wolfline	Free	Free	n/a	n/a
Orange County Public Transportation (OPT)	Fixed Route Service - $2.00 Hillsboro Circulator – Free	$1.00 (persons with disabilities) Free (adults 60+)	OPT Route 420 - $2.00	None

Agency	One-Way Cash Fare	Discount for People +65 and with a Disability	Other Fare Categories	Pass Types
Regional Pass (GoPass) – unlimited rides on CAT, C-Tran, DATA and TTA				Regional Day Pass ($4) Regional 5-Day Pass ($17) Regional 31 Day Pass ($68)

Source: GoTriangle Webpage (2014)

DISCUSSION ITEM March 24, 2015

4C. FY2015-16 Chapel Hill Transit Budget Development
Action: 1. Receive information/presentation and provide staff with feedback.

Staff Resource: Rick Shreve, Budget Manager
Brian Litchfield, Director

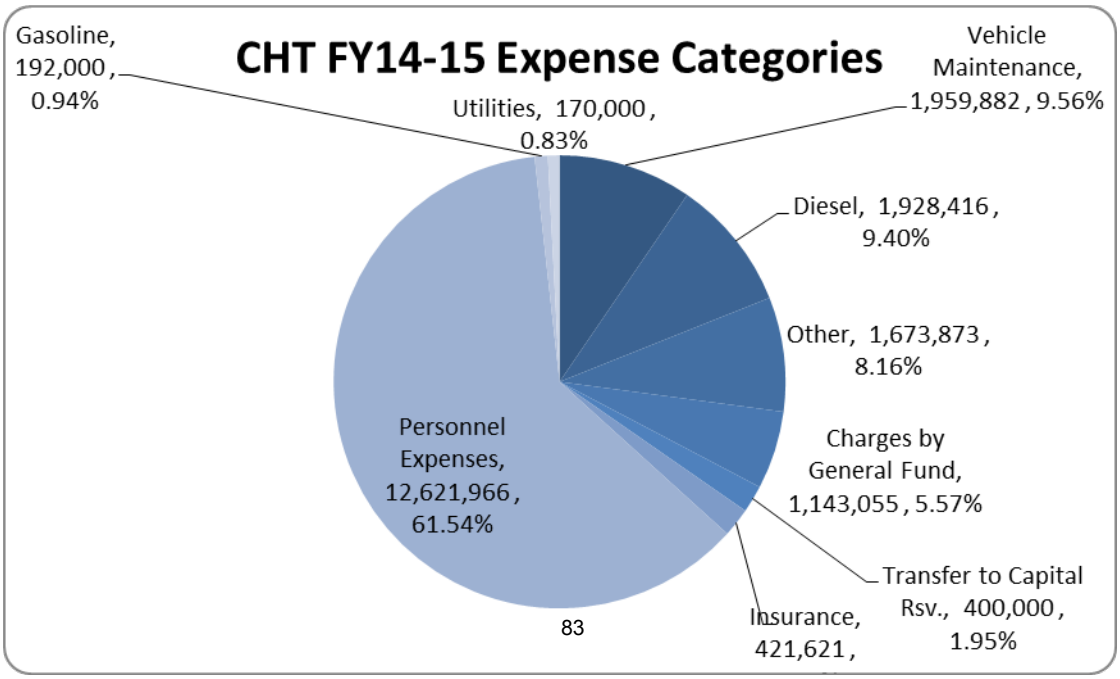
Overview

Chapel Hill Transit (CHT) staff have begun work internally and with the Town's Business Management Department (BMD) towards developing our FY15-16 budget proposal. We are meeting at the end of this month to go over preliminary expenditure numbers, and to revisit revenue expectations for next year. Staff will present additional information at the Partners meeting.

At this point in the typical budgeting process, major areas of identifiable increases or decreases are assessed (e.g. a large swing in the markets for fuel, a spike in employee medical insurance costs, a change in a major source of revenue), and we are beginning to hone in on the details in our key areas. We currently see only modest changes in key areas of operating expenditures – separate from any capital expenditures towards vehicle replacements. While we are likely to realize fuel savings in the next fiscal year, this will be a temporary savings, and staff recommend that any such buffers be reallocated towards contingent costs for maintenance and repair of aging vehicles, and new capital funding.

Current Year Budget as an Approximation

Without major identifiable changes in our key expense areas, the current year budget serves as a reasonable approximation for our expenses for next year, *at current service levels.* The original CHT budget for the current year was $20,510,813. The following charts highlight the breakdown and relative percentages of our various expense categories:



Expense Category	FY14-15 Original Budget
Personnel Expenses	$ 12,621,966
Vehicle Maintenance	1,959,882
Other	1,673,873
Utilities	170,000
Gasoline	192,000
Diesel	1,928,416
Insurance	421,621
Charges by General Fund	1,143,055
Transfer to Capital Rsv.	400,000
Total Expenditures	**$ 20,510,813**

Using these expenses as a model will assume no changes in service or staffing levels from the current fiscal year.

Anticipated Expense Changes for Next Year's Budget Proposal

We are likely to experience a modest increase in the areas of Salaries and Benefits. The magnitude of such is not yet known, as medical insurance costs and other items are still under consideration. We also have information from the Maintenance Audit and the Strategic & Financial Sustainability that indicate our staffing levels in key areas of Maintenance and Operations are well under what they should be for a system of our size.

One significant area for which it is difficult to budget is in the maintenance of our vehicles. All of our remaining fleet is going to be one year older, and in varied states of needing more maintenance and repairs, simply by virtue of having been on the roads for one more year. A number of our buses aged beyond their warranty periods in the past year, which will lead to more expenses as non-warranty repairs arise. We have faced some extraordinary repairs of buses this year, and expect that trend to increase, which would likely offset temporary savings in fuel costs.

For the reasons above, all adjustments to these line items are likely to approximate the original budget for FY14-15.

All of this discussion on next year's budget assumes current service levels. Any increases in service levels will obviously lead to increased expenses: The additional mileage and other efforts to accommodate any increases will exact inputs incrementally from nearly every line throughout our budget – from increased salaries and benefits for operators and mechanics, to increased fuel consumption, to increased maintenance and repair needs.

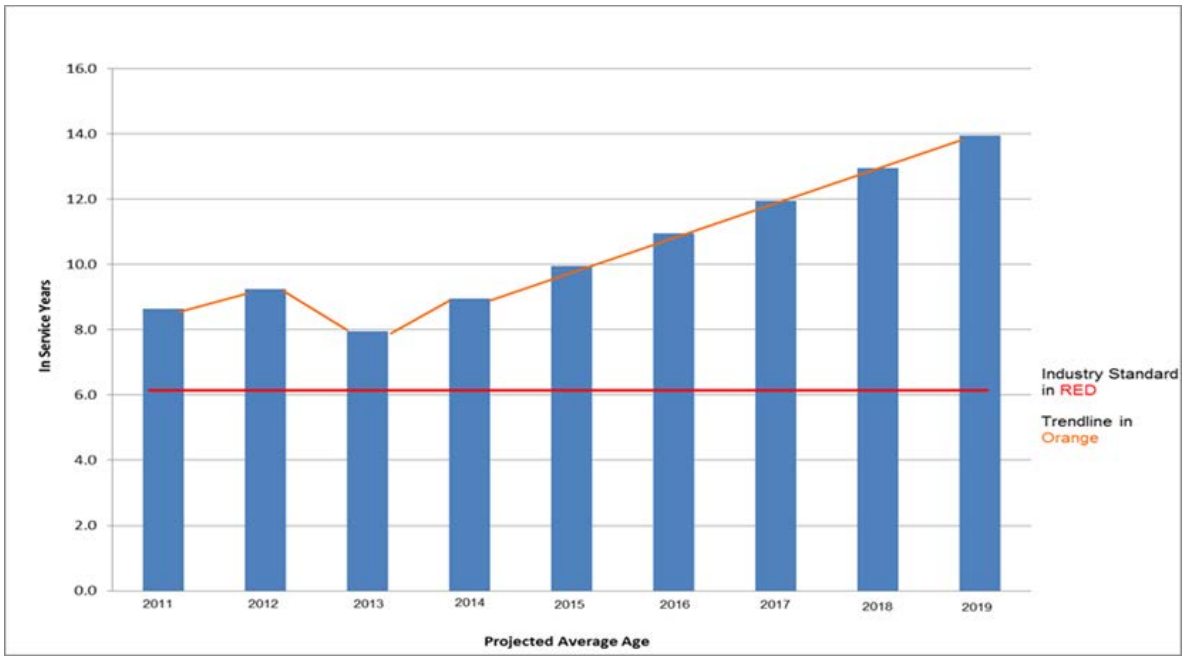
We hope this information serves as impetus to discuss the merits of increased funding options, of the Partners' goal of maintaining and possibly increasing the CHT fund balance, and of considerations for building capital reserves.

Capital Funding

In all of the talk over the next year budget, it would be prudent to keep an eye on the longer term picture as well, and with a particular concern over capital needs. The financial study consultants have addressed this at length, and their presentation should be referenced for a fuller treatment of this issue.

- Fleet age should be maintained at 7 years. With an older fleet dependability declines as maintenance costs increase.
- 42 buses need to be replaced.
- 13 EZ Rider vehicles need to be replaced.
- Partners funded $400,000 towards capital replacement in the current year: $360,000 for fixed route buses, and $40,000 for service vehicles. We are in the process of procuring these vehicles (no expenditures have been approved at this point), and these funds will remain dedicated to that purpose in the likely event that we have not expensed them by the end of this year.

Should the Partners decide to further fund capital replacements, that would obviously factor into any increases in contributions.



Next Steps

- CHT staff will provide a presentation on the FY2015-16 budget at the March Partners meeting.
- Staff will be working with Partners to establish meetings to review proposed contributions for FY15-16, service improvements/adjustments and capital needs.

Upcoming Town of Chapel Hill Budget Process Dates

- March 27: CHT staff meet with BMD and Chapel Hill Town Manager on budget for next fiscal year.
- May 11: Presentation of Chapel Hill Town Manager's Recommended Budget.
- May 13: Budget Work Session.
- May 18: Public Hearing on Recommended Budget and budget work session.
- June 1: Budget work session (if needed).
- June 3: Budget work session (if needed).
- June 8: Adoption of FY15-16 budget.

Action

- Partners Committee receive information/presentation and provide staff with feedback.

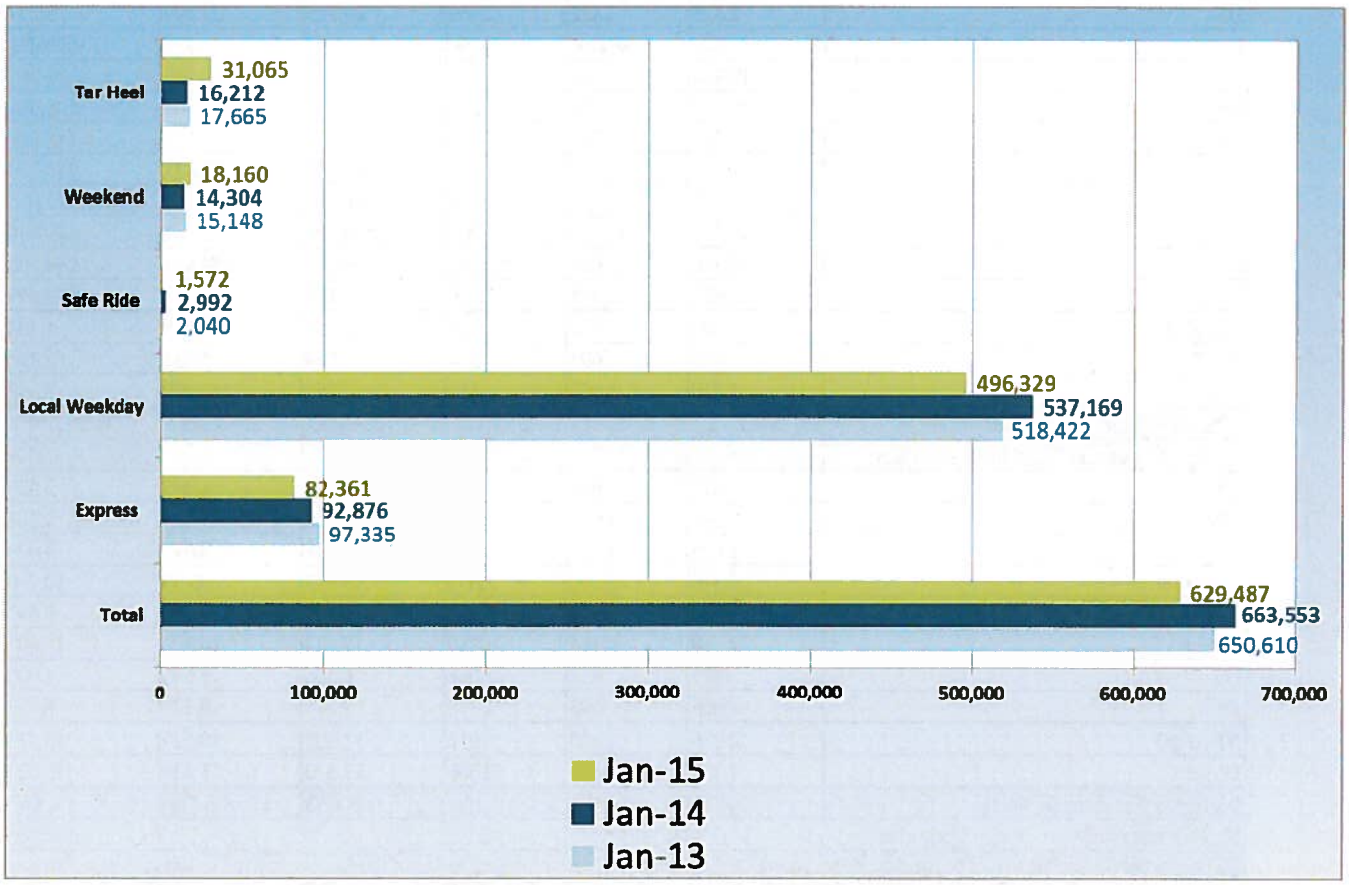
DISCUSSION ITEM February 24, 2015

4D. January Performance Report

Staff Resource: Mila Vega

January 2015 Ridership and Service Days

	Jan-13	Jan-14	Jan-15
Total	650,610	663,553	629,487
Express	97,335	92,876	82,361
Local Weekday	518,422	537,169	496,329
Safe Ride	2,040	2,992	1,572
Weekend	15,148	14,304	18,160
Tar Heel	17,665	16,212	31,065



	Jan-13	Jan-14	Jan-15	FY12-13	FY13-14	FY14-15
Weekday Service Days	21	21	20	145	147	145
Safe Ride Service Days	10	11	12	53	57	57
Saturday Service Days	5	5	6	34	33	35
Sunday Service Days	4	4	4	21	20	21
Tarheel Express Service Days	3	3	5	19	21	21
FCX	36,045	44,604	37,720	250,593	305,307	274,814
HU	11,920	8,421	7,620	80,990	74,231	58,199
JFX	20,136	11,277	10,400	121,702	81,423	73,844
CPX	13,626	12,558	10,820	89,799	81,796	77,239
CCX	12,048	10,836	9,780	79,225	69,278	67,666
DX	2,205	2,058	2,240	19,013	16,321	13,468
PX	1,355	3,122	3,781	15,275	25,483	23,147
A	29,178	34,123	27,837	168,774	188,686	176,105
CL	4,092	3,360	3,160	26,112	27,890	20,853
CM	15,897	14,259	12,800	88,774	91,897	86,661
CW	20,019	20,580	19,340	113,305	133,123	123,975
D	40,113	36,991	35,820	263,682	291,483	255,557
F	18,658	19,299	15,880	134,720	135,628	128,096
G	17,997	22,337	17,140	109,828	135,874	124,820
HS	2,855	3,822	2,860	19,213	24,494	20,277
J	82,607	84,084	72,360	534,193	542,938	519,972
N	12,944	13,629	13,260	75,140	89,517	89,785
NS	76,246	74,276	73,652	488,670	499,563	505,951
NU	30,209	39,396	35,000	170,880	185,572	188,298
RU	38,737	37,096	43,600	192,455	200,637	218,707
S	43,352	36,897	35,000	286,181	232,613	222,335
T	24,371	23,919	17,700	160,189	152,981	129,849
U	48,326	60,606	59,600	269,991	284,401	294,183
V	12,821	12,495	11,320	84,103	85,104	76,899
SAFE G	200	396	252	1,783	3,265	1,303
SAFE J	630	693	504	4,689	5,531	2,798
SAFE T	1,210	1,903	816	7,157	11,080	7,592
Weekday Fixed Route Total	**617,797**	**633,037**	**580,262**	**3,856,437**	**3,976,115**	**3,782,393**
Change from previous year (%) weekday		2%	-8%		3%	-5%
CM	375	684	666	2,663	4,295	3,326
CW	985	1,012	1,494	6,462	7,535	9,101
D	1,605	1,272	1,914	11,241	9,692	9,079
NU (sat)	2,346	2,000	2,372	13,315	9,433	10,730
T	1,580	1,228	1,758	10,401	10,791	9,847
U (sat)	2,319	4,116	3,280	17,123	16,808	16,894
FG	865	656	1,068	6,306	5,550	6,008
JN	1,065	692	1,116	7,245	6,722	6,768
NU (sun)	2,276	1,800	1,632	11,807	10,525	12,375
U (sun)	1,732	844	2,860	11,673	11,435	13,527
Weekend Fixed Route Total	**15,148**	**14,304**	**18,160**	**98,238**	**92,786**	**97,655**
Change from previous year (%) weekend			27%			5%
Total Fixed Route Passenger Trips	**632,945**	**647,341**	**598,422**	**3,954,675**	**4,068,902**	**3,880,048**
Change from previous year (%)		**2%**	**-8%**		**3%**	**-5%**
Tar Heel Express/Special Service	17,665	16,212	31,065	102,195	109,158	99,466
All Service Categories Ridership	**650,610**	**663,553**	**629,487**	**4,056,870**	**4,178,060**	**3,979,514**
Change from previous year (%)		**2%**	**-5%**		**3%**	**-5%**

DISCUSSION ITEM March 24, 2015

4D. February Performance Report

Staff Resource: Mila Vega, Service Planner

- The February Performance Report will be provided to the Partners at the March 24, 2015 meeting.

INFORMATION ITEM March 24, 2015

5A. Request to Extend Service on T Route Beyond East Chapel Hill High School

Staff Resource: Nick Pittman, Fixed Route Operations Manager
Brian Litchfield, Director

Background

- As a partnership between the Town of Chapel Hill, Town of Carrboro and the University, a request for new service and/or an expansion of services is typically discussed by the Transit Partners Committee, which provides a recommendation to the jurisdiction(s) from which the request was generated.
- If approved, the jurisdiction(s) in which the service originates is responsible for paying the full cost of the new service for at least one year. If the service meets performance standards, the Partners Committee then discusses sharing the cost of the new service through the current Transit funding formula.

Overview of Service Request

- The Chapel Hill Town Council has received a petition (Attachment 1) and an email request (Attachment 2) to extend service on the T Route beyond its current terminus at East Chapel Hill School on Weaver Dairy Road.

Overview of Existing Service

- Days of Operation: Monday-Friday from 6:50 a.m. to 6:44 p.m. and Saturday from 8:15 a.m. to 6:13 p.m.
- Service Frequency: Weekdays 35 to 70-minute service and Saturday 60-minute service; requires 2 buses during peak-hours.
- Major Destinations: East Chapel Hill High School, Timberlyne Shopping Center, YMCA 725 Park and Ride (CAP Permit), Downtown Chapel Hill, University Campus, Ambulatory Care Center and University Hospital Campus.

Service Benefits and Challenges

- Additional information on this item will be presented during at the Partners meeting.

Fiscal Note

- The FY2014-2015 Chapel Hill Transit budget did not include funding for service improvements/expansions beyond those undertaken with funds from the Orange County Bus and Rail Investment Plan.

Next Steps

- That the Partners Committee review and discuss this request, along with other service requests during the April Partners Meeting.

Attachments

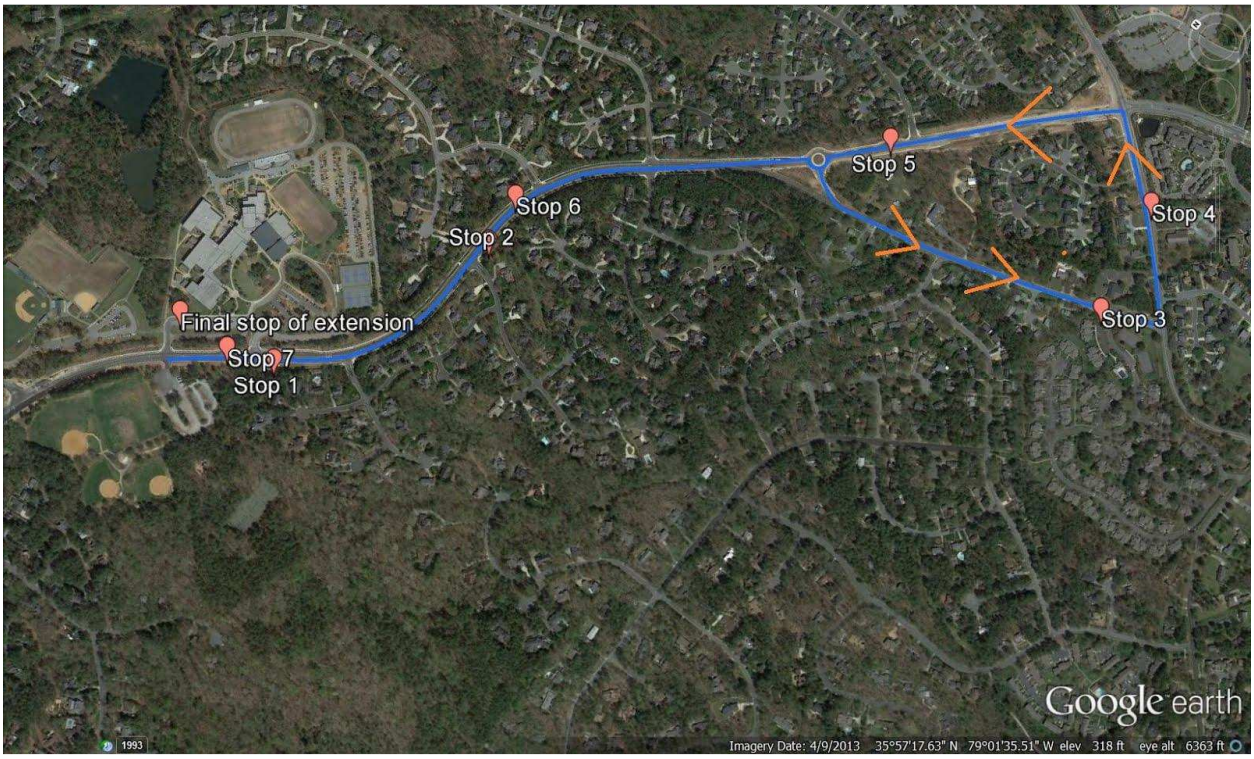
- Petition to Council and Email to Council.

T Route Realignment Plan master plan

Overview: This extension is put forth for the benefit of the residents living on Weaver Dairy Road and the surrounding residential areas. With very minimal impact on the existing schedule, this proposed extension would serve a large portion of one of Chapel Hill's larger residential areas as well as establishing Weaver Dairy Road as an east west thoroughfare. The extension would serve to link the shopping complexes at Chapel Hill North and Timberlyne to the residential areas of East Weaver Dairy and Sage roads. The addition of this deviation to an already established line will serve as a net benefit to the citizens and business in this part of Chapel Hill and will help to promote the use of suitable transit alternatives.

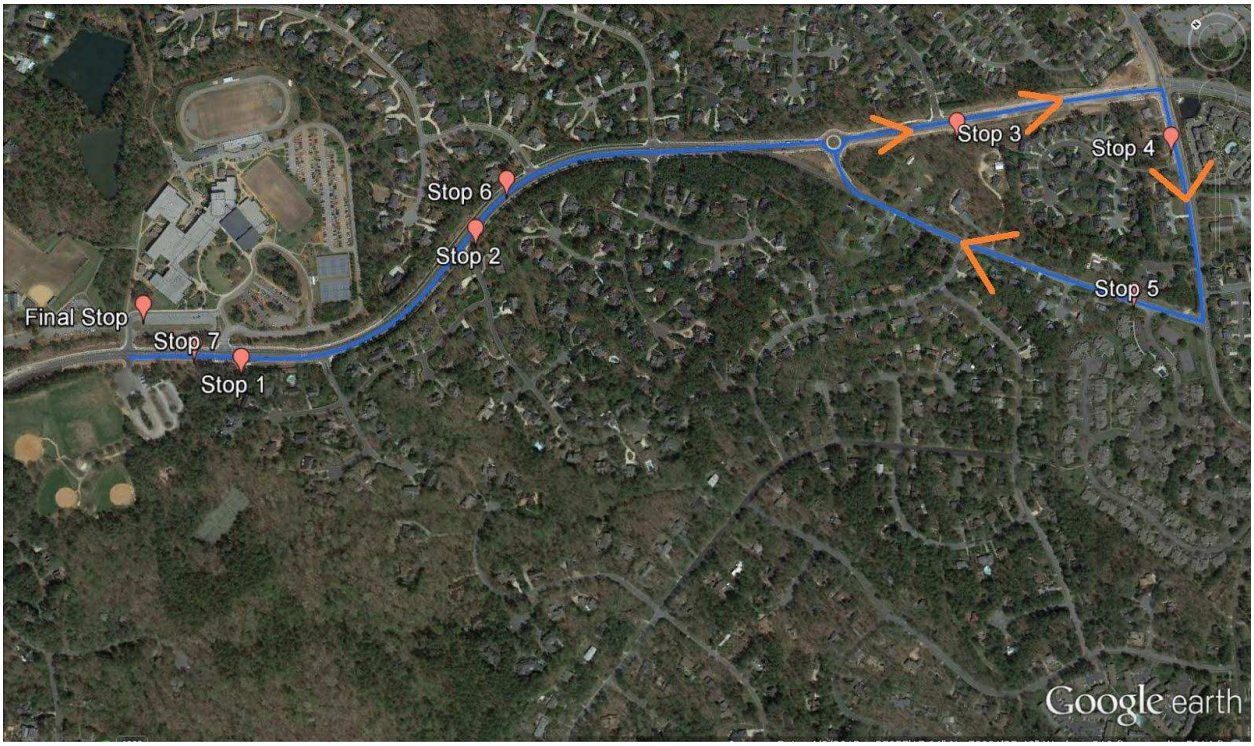
Proposed Route Alterations

Alignment A



The first of the two proposed alignments would have the bus continue beyond East Chapel Hill High and utilize designated bus stops for stops 1, 2, 5, 6, and 7. These stops were built into Weaver Dairy/Sage Road during the recent construction along its length. Stops 3 and 4 have been selected due to availability of a turn lane that could be utilized for passenger pickup without obstructing the flow of traffic. Following stop 4, the route will continue along Erwin in the northward direction until turning on Sage Road were stop 5 is located. Following stop 5 the route would enter the traffic circle and making the first right to continue up Weaver Dairy Road in the direction of East Chapel Hill High. Upon arrival at East Chapel Hill High, the route would resume normal service.

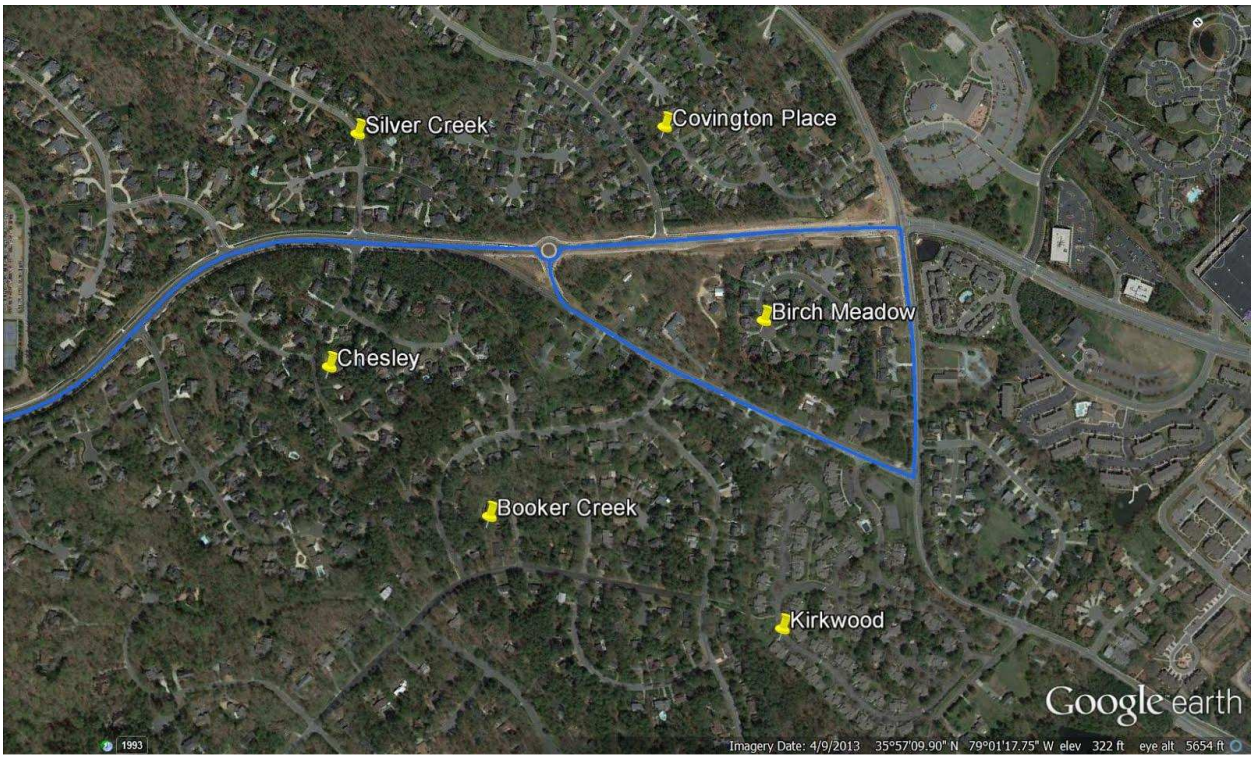
Alignment B



The second of the two proposed alignments would continue beyond East Chapel Hill High and utilize designated bus stops for stops 1, 2, 3, 6, and 7. These stops were built into Weaver Dairy/Sage Road during the recent construction along its length. Stop 4 has been selected due to availability of a turn lane that could be utilized for passenger pickup without obstructing the flow of traffic. Stop 5 has been selected to provide route access to those living in the vicinity of the end of Weaver Dairy Road. It should be noted that in this alignment no right turn lane is available to use as a stop pull off and traffic would indeed be obstructed during passenger Boarding. Following stop 5, the route would continue down old Weaver Dairy Road until entering the traffic circle at which point the second right would be made to continue on towards East Chapel Hill High. Upon arrival at East Chapel Hill High, the route would resume normal service.

Communities Served

- Silver Creek
- Covington Place
- Birch Meadow
- Kirkwood
- Booker Creek
- Chesley



Community Benefit:

This proposed extension would link the residential communities of Birch Meadow, Kirkwood, Booker Creek, Chesley, Silver Creek, and Covington Place to the retail stores at Chapel Hill North and beyond. By establishing Weaver Dairy Road as an east west corridor those living in the heavily residential area to the east are are able travel to the commercial centers in the west through the medium of public transit. Furthermore the prospect of convenient bus travel would act as an incentive for greater utilization of Cedar Falls park by the surrounding residents.

Target Demographics

While this proposed initiative will have great impact on all those living along the route, the benefits will be especially acute for individuals in the following demographics: Young persons in the 12 to 15 range that are independent but not yet able to drive, and late 50's through early 70's who would greatly benefit from the Transit system but do not qualify for the EZ Rider program.

From: Alice De Bellis [mailto:acdebellis@gmail.com]
Sent: Friday, February 06, 2015 10:14 AM
To: Town Council
Subject: Suggestion for improving bus service for residents along Weaver Dairy Road

To the Honorable Mark Kleinschmidt and the esteemed members of the Chapel Hill Town Council:

I have recently been restricted from driving for medical reasons. One consequence of this is that I have spent a lot of time studying Chapel Hill Transit's bus maps, looking for the best way to get to the places I need to go.

I live a few blocks from Weaver Dairy Road, which means that the T is the only bus close enough to be practical. While its route is ideal for traveling downtown and to the businesses on Martin Luther King Jr. Boulevard, the T terminates at East Chapel Hill High School, and does not allow for easy travel to any of the businesses on the east end of Franklin Street, including Eastgate Shopping Center, University Mall, Village Plaza, Gateway Commons, and the public library. Currently, the only access to any of these locations from my neighborhood involves either a long walk to Honeysuckle to catch the G bus, followed by another long walk to Franklin Street, or a ride downtown and a transfer to the CL, D or F, a long and circuitous route.

I propose that the T's route be extended past ECHHS on Weaver Dairy Road and to Dobbins Drive via Erwin Road. This way, the T's route would intersect those of the D, DX and CL, and also give easy access to the G route. This would provide access to the businesses on the east end of Franklin Street, and would enhance bus service for the many residents living along Weaver Dairy Road east of the high school.

I realize that this possibility may have already been considered and rejected based on ridership projections, but I ask you to reconsider it, based on recent increases in population and Chapel Hill Transit's stated mission to "provide safe, convenient, affordable, reliable, and *responsive* public transportation services to residents and visitors of the Chapel Hill, Carrboro, and University of North Carolina communities" (italics mine).

Thank you all for your hard work in the service of the Town of Chapel Hill.

Warmest regards,

Alice C. De Bellis
104 Saddle Ridge Road
Chapel Hill,NC 27514
(919) 928-9780
ACDeBellis@alumni.pitt.edu

INFORMATION ITEM March 24, 2015

5B. FTA Grant Update

Staff Resource: Brian Litchfield, Director

Background

- In November 2014, we received a closeout warning notice from the Federal Transit Administration (FTA) Region IV Office regarding grant numbers NC-04-0005 and NC-04-0040 that were awarded to Chapel Hill Transit in 2006 and 2011 as part of 2006 earmark award. The grants included around $420,108 in federal funds that were to be used to design and build a structured parking facility at Eubanks and represent about half of the original award.
- Chapel Hill Transit utilized most of the funds awarded in 2006 to conduct a feasibility study that was completed in 2013 (Executive Summary: http://www.townofchapelhill.org/Modules/ShowDocument.aspx?documentid=18455). The study identified the need for 1,200 structured parking spaces in the Eubanks area by the year 2020 (~$15M) and a total of 2,400 by 2035 (contingent upon Carolina North development of 200,000 S.F. of research floor area built by 2015). The Partners received the feasibility study in January 2013 and agreed not to pursue the development of a structured parking facility at that point and asked staff to review the feasibility of expanding the existing flat lot. As a result, we've not had a need to spend these grant funds.
- On November 11, 2014 staff requested permission from FTA to utilize these remaining grant funds to fund replacement buses.
- Despite our best efforts, on February 3, 2015 we received a response from FTA denying our request to move the remaining grant funds to bus replacement. The request was not approved due the nature (earmark) and age of the award.

Attachments

- Letter to FTA Region IV staff requesting funds in grants NC-04-0005 and NC-04-0040 be redirected to bus replacement.
- Response letter from FTA Region IV staff.

CHAPEL HILL TRANSIT
Town of Chapel Hill
6900 Millhouse Road
Chapel Hill, NC 27514-2401

phone (919) 969-4900 *fax* (919) 968-2840
www.townofchapelhill.org/transit

November 11, 2014

Mr. Guanying Lei
Program Manager
Federal Transit Administration – Region IV
230 Peachtree Street, Suite 800
Atlanta, GA 30303

RE: NC-04-0005 and NC-04-0040

Dear Mr. Lei:

The Town of Chapel Hill was awarded earmark funds in July 2006 (NC-04-0005) and August 2011 (NC-04-0040) to purchase land for a new park and ride facility in the northern area of Chapel Hill. Since that time, Chapel Hill Transit has completed a park and ride feasibility study that identified the potential need for 1,200 structured parking spaces by the year 2020 (~$15M) and a total of 2,400 by 2035 in the area of an existing park and ride (Eubanks). The study's executive summary is available at:
http://www.townofchapelhill.org/home/showdocument?id=18455

Based on the results of the feasibility study and the lack of funding to fully design and construct a structured park and ride, we have not had a need to spend the grant funds for their original purpose. However, we do have significant needs for replacement heavy-duty transit buses as 43 of our 98 fixed-route buses are beyond their useful life as defined by Federal Transit Administration (FTA) guidelines, with five (5) of them being at least 18 years of age. Due to our significant bus replacement needs, we are requesting that the remaining funds ($420,108 federal share) in NC-04-0005 and NC-04-0040 be redirected from park and ride to bus replacement. The earmark awards are enclosed for your review.

We appreciate your consideration of this request. Please do not hesitate to contact me if you have any questions and/or we can provide additional information.

Sincerely,

Brian Litchfield
Director

Enclosure
cc: Mr. Dudley Whyte, Deputy Regional Administrator

U.S. Department
of Transportation
Federal Transit Administration

REGION IV
Alabama, Florida, Georgia,
Kentucky, Mississippi,
North Carolina, Puerto
Rico, South Carolina,
Tennessee, Virgin Islands

230 Peachtree St., N.W.,
Suite 1400
Atlanta, GA 30303
404-865-5600
404-865-5605 (fax)

FEB 03 2015

Mr. Brian Litchfield
Transit Director
Chapel Hill Transit
Town of Chapel Hill
6900 Millhouse Rd
Chapel Hill, NC 27516

Re: NC-04-0005 and NC-04-0040

Dear Mr. Litchfield:

The Federal Transit Administration (FTA) has reviewed your letter dated November 11, 2014, in which Chapel Hill Transit (CHT) requested to modify grants NC-04-0005 and NC-04-0040. You requested to use the remaining $65,223 in NC-04-0005 and $338,580 in NC-04-0040 to procure buses. After carefully reviewing your request and other documents provided by CHT, FTA cannot support your request.

- NC-04-0005: A total $285,536 of earmarked FTA 5309 funds was awarded for the engineering work for a park and ride lot project in August 2006. The grant has experienced unusual delays. So far $220,313 has been spent as programmed. The remaining $65,223 cannot be used because the grant and earmark will not allow for a bus purchase.
- NC-04-0040: A total $1,079,349 of earmarked FTA 5309 funds was awarded to the Town of Chapel Hill in November 2011 for the following two projects.
    - A bus replacement project was programmed at a cost of $740,769, which was completed in February 2012.
    - Engineering work for a park and ride lot project was programmed at a cost of $338,580. After several delays, CHT has decided not to use the funds for the original purpose of the grant and requested to modify the grant for bus replacement. Because the park and ride lot is earmarked in law, FTA is bound to honor the project as described. Therefore, the $338,580 cannot be used for the purchase of a bus.

The FTA is responsible for ensuring that the transit projects we finance are implemented expediently. To this end, we annually review grants that have been awarded three or more years

ago, and have not had a disbursement of funds in twelve or more months. Both of these grants have met our criteria for inactivity. We are concerned that CHT has not made sufficient progress in bringing the projects funded in this grant towards completion. As you stated in your letter, the park and ride project is not moving forward, therefore please work with Guanying Lei of my staff on the grant closeout.

If you have any questions, please contact Guanying Lei at (404) 865-5615 or via email at guanying.lei@dot.gov.

Sincerely,

Yvette G. Taylor Ph.D.
Regional Administrator

MONTHLY REPORT March 24, 2015

6A. Operations

Staff Resource: Tyffany Neal, Demand Response Operations Manager
Nick Pittman, Fixed Route Operations Manager

Good Friday

- Chapel Hill Transit will operate Saturday services on Friday, April 3, 2015, in observance of the Good Friday holiday. The following Saturday routes will operate: CM, CW, D, FG, JN and T. The Saturday U and NU routes will not operate on Friday (April 3rd) or Saturday (April 4th). EZ Rider services will end at 6:52 p.m. on Friday and Saturday. The last scheduled pick-up window will be 6:42 p.m. – 7:02 p.m.
- Safe Rides will operate on Thursday, April 2, 2015, but will not operate Friday, April 3, 2015 through Saturday, April 4, 2015.
- Chapel Hill Transit will return to regular service on Sunday, April 5, 2015.

Chapel Hill Carrboro City Schools Make Up Days

- Staff worked with the Chapel Hill-Carrboro City Schools to provide additional trips on Saturday, March 21, 2015 to assist with their scheduled make-up day.
- Chapel Hill Transit provided additional trips on the Saturday JN Route (serving Carrboro High School), Saturday T Route (serving East Chapel Hill High School) and the HS route (serving Smith Middle School, Chapel Hill High School, Morris Grove Elementary and Seawell Elementary).

Demand Response – Tyffany Neal

- Demand Response's On-Time Performance (OTP) for the month of February 2015 – 89.29%; February 2014 – 93.05%; February 2013 – 93.53%.
- Demand Response's Negative Cancellations (Less than 1 Hour in Advance of the Scheduled Pick-up) for the month of February 2015 – 5.67%; February 2014 – 6.29%; February 2013 – 4.76%.
- Demand Response had five (5) Missed Trips in February 2015 and two (2) Missed Trips in both February 2014 & February 2013.
- Demand Response had zero (0) preventable accidents in February 2015.
- Demand Response currently has five (5) trainees in two (2) training classes which began February and March 2015. The February 2015 class of three (3) will graduate from training during the week of March 23rd and the March 2015 will graduate during the week of March 30th, 2015.

Fixed Route – Nick Pittman

- This month, fixed route would like to honor its Supervisory and fill-in Supervisor staff. During February, Chapel Hill Transit faced numerous winter weather storms and our supervisory staff should be commended for their hard work and dedication in ensuring that service was provided to the customer. They all worked long hours both on the street and in the office to do whatever it took.
    - Ty Edwards
    - Richard Roberts
    - Shanika Nickerson
    - Deborah Davis
    - Joe McMiller
    - Melissa Tillman
    - Cheonna Boyd
    - Quentin Craven

- Fixed Route currently has 4 new operators in new hire training. They are expected to graduate our training program on April 2nd.
- Due to Inclement Weather, February Operations/Safety Meeting were not held. During March's meetings, all safety sensitive staff will receive training on the Drug and Alcohol Policy and also the effects and signs of drug and alcohol use.
- Fixed Route's On-Time Performance (OTP) for the month of February 2015 – 81%.

MONTHLY REPORT March 24, 2015

6B. Director

Staff Resource: Brian Litchfield

- The March Director's Report will be provided at the meeting on March 24, 2015.

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CHAPEL HILL TRANSIT PUBLIC TRANSIT COMMITTEE

FUTURE MEETING ITEMS

MARCH 24, 2015

April 28, 2015 11:00 a.m.	
Action Items	Informational Items
	AA Study Update Financial Sustainability Study Update FY 15-16 Budget
May 19, 2015 11:00 a.m.	
	AA Study Update Financial Sustainability Study Update FY 15-16 Budget Update
June 23, 2015 11:00 a.m.	
Actions Items	Informational Items

Key Meetings/Dates

MPO Board – April 8, 2015, 9-11AM, Committee Room, Durham City Hall

TCC Meeting – April 22, 2015, 9-11AM, Committee Room, Durham City Hall

APTA Bus & Paratransit Conference – May 3-6, 2015, Fort Worth, TX

APTA Transit Initiatives & Communities Conference – June 1-3, 2015, Grand Rapids, MI

APTA Transit Board Members & Board Support Seminar - July 18-21, 2015, Denver, CO

Government Issues

Will Federal Officials Fix the Trust Fund or Just Play Games?

Posted on February 24, 2015 by Cliff Henke

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By now, it is common knowledge both the Highway Trust Fund (HTF), and the Mass Transit Account within it — the
latter established by the 1982 surface transportation bill that was signed by President Ronald Reagan — will run out of money this year, even if the law that governs these funds didn't expire on May 31. These are no longer "what ifs" being chewed over in policy circles.

Nor is the range of options of what to do about it. Some have argued for simply letting the trust fund run out, while others are proposing a range of "bailouts" and longer-term fixes. Still, others are pointing to a series of measures, such as new bond funding and other financing ideas, that go beyond a trust fund fix.

How we got here

This has been a problem that members of Congress have known about for many years, and several blue-ribbon panels have been organized to address the challenge. Now, the reckoning has come. Put simply, both the Highway Trust Fund and Mass Transit Account are nearing insolvency — for the latter, that point legally comes when the account's balance goes below $2 billion. However, members of Congress refuse to raise the HTF's revenues — mostly taxes on gasoline and other

fuels — sufficiently to pay for how much we want to spend on highway, public transportation and other surface transportation programs.

Each year since about 2006, Americans have driven less than the year before. A recent study by the Pew Foundation showed the trend really started in all but a handful of states in the 1990s, dispelling the notion that somehow the trend would reverse itself when the economy finally started getting better.

Even if their driving had not peaked, however, U.S. cars and trucks have been consuming less fuel, thanks to regulations and technology. That, of course, means less gas taxes paid and less HTF revenue. This long-term challenge will worsen even further when the fuel economy standard the Obama Administration negotiated with auto manufacturers kicks in, which will push fuel efficiency well above 50 miles per gallon for new cars and light trucks sold in the next decade.

At the same time, demand for new and repaired transportation infrastructure has grown. According to the World Economic Forum, the U.S. is now ranked 18th for the condition of its transportation network, which drags its overall competitiveness ranking downward further each year. America now only spends a paltry 1.5% of its gross domestic product on infrastructure, a rate that is one-half of what it used to be several decades ago; the U.S. now ranks in the mid-30s in infrastructure spending as a share of its economy and its ranking continues to drop with the issuance of each report.

Hampered by concern about mounting federal debt and annual deficits, members of Congress and presidents of both parties have tried to address the issue with record nominal levels of funding in the various authorization bills that have been passed, but none of them since the Transportation Equity Act for the 21st Century that was passed in 1998 have come with new gas tax increases to pay for them. Even the 1990s-era tax increases began as deficit reduction, and then, were transferred to the HTF later when deficit reduction cooled as an issue.

At the same time, states and local jurisdictions through direct referenda began to accelerate spending on roads and public transportation faster than the federal government. More than 70% of such measures have passed each year, a trend that began in the 1990s and continues to this day, according to data compiled by the Center for Transportation Excellence.

The Great Recession produced another bipartisan call for more surface transportation spending, but the consensus has ended as to how to pay for it on any sustainable basis. Several histories of the Obama Administration's response to the crisis with the Recovery Act of 2009 note that pushing the stimulus money through existing surface transportation programs — which also meant a deficit-

financed bailout of the HTF — was the only way to meet the Recovery Act's goals of "timely, targeted and temporary" spending. While that approach succeeded in pushing through the programs what former FTA Administrator Peter Rogoff called "an extra year of spending" in those fiscal years, has since worsened the hole in the HTF and increased the "bailout need," even if funding is to remain constant, Rogoff and others explain.

Conservative thoughts

Some conservatives, such as former Nixon transportation official Ken Orski as well as Sen. Mike Lee (R-UT), have argued that the time has come for simply ending the HTF. While a fringe wants to end the federal programs altogether, a line of thinking that was defeated before in the mid-1990s, most in this camp simply want to have Congress pay for any spending on a year-to-year basis. After all, they argue, since the HTF is basically broken, the arguments for how the HTF's "contract authority," which allows state officials to contract with the private sector ahead of the grants' actually arriving, is breaking down anyway.

Other conservatives say this is nihilistic and not really even conservative. For example, Pete Weyrich and former Virginia Gov. Jim Gilmore, who now heads the Free Congress Foundation, say that such devolution of the federal highway and transit programs is not consistent with conservative principles of restraint and long-term planning based on realistic assumptions. Others, like current House Transportation and Infrastructure Committee chairman Bill Shuster, have said that ending any long-term federal commitment ignores the country's founding principles of federal leadership in building the nation and promoting and regulating commerce. He also likes to quote political philosopher Adam Smith, who argued for a governmental role in infrastructure with fees on the users as necessary to the health of capitalism.

Courtesy the White House

President Obama's FY 2016 budget, announced at press time, calls for a mandatory 14% repatriation fee to fund a variety of programs, including a six-year, $478 billion surface transportation reauthorization proposal.

Ideas for solutions abound

Even conservative Senators James Inhofe (R-OK), chair of the Environment and Public Works Committee, and Orrin Hatch (R-UT), chair of the Finance Committee, respectively in the Senate, are warming to the idea of a gas tax increase, with possibly an indexation provision raising it with inflation increases in future years. Although President Obama has not supported such an increase in the past, some have said he might do so if it were in the context of a tax reform package.

However, the tax increases proposed by Inhofe and Hatch would only erase the hole in the funds and allow some short-term program spending increases, and no one except liberal Congressman Earl Blumenauer (D-OR) and Sen. Bernie Sanders (I-VT.) support tax increases to pay for long-term trust solvency. Such proposals amount to well more than a dollar per gallon tax increase.

What appears to be gaining traction at press time are ideas for "repatriation" of cash held by U.S.-based multinational corporations overseas to avoid U.S. taxes. Congressman John Delany (D-MD) has proposed a scaled-down version of his infrastructure repatriation bond fund idea that he introduced in the last Congress. This year's version would dedicate $120 billion of an estimated $170 billion that would come from a one-time repatriation tax rate of 8.25% to fill the Highway Trust Fund with $70 billion, including the traditional 20% designated for the Mass Transit Account, for the next six years, but also put another $50 billion to the creation of an American Infrastructure Fund, which would provide loans and other financing tools to states and cities for a gamut of infrastructure projects, from sewer improvements to broadband access. The rest of the $170 billion repatriation would be used in corporate tax reform.

A similar idea was announced in the Senate at press time. The unlikely duo of U.S. Sens. Barbara Boxer (D-CA) and Rand Paul (R-KY) have introduced their own Highway Trust Fund solvency bill with repatriation of overseas corporate revenues, now. Their proposal calls for a repatriation rate of 6.5%.

“I hope this proposal will jumpstart negotiations on addressing the shortfall in the Highway Trust Fund, which is already creating uncertainty that is bad for businesses, bad for workers and bad for the economy,” said Boxer during the idea’s press announcement. She also pledged to work with Chairmen Inhofe and Hatch, with whom she had a productive relationship when they worked together to craft MAP-21.

Still other ideas abound for repatriation and infrastructure financing, including resurrection of the Recovery Act’s successful Build America Bonds, a National Infrastructure Bank, expansion of existing or new state infrastructure banks with tax-preferred investment incentives as part of a tax reform package, or even the creation of a government-sponsored enterprise for transportation investment similar to the mortgage-backed enterprises Fannie Mae and Freddie Mac. None of those ideas, however, have gained much traction, particularly the last, in the wake of the financial crash of 2008, and certainly not nearly the traction recently gained by repatriation in the wake of tax reform.

Expiration focuses attention

Ironically, lawmakers seem to be gravitating toward the ideas floated by the Obama Administration in their recent budgets. The president has called for tax reform and using money from winding down the Middle East wars to pay for a HTF bailout and a national infrastructure bank. His FY 2016 budget, announced at press time, calls for a mandatory 14% repatriation fee to fund a variety of programs, including a six-year, $478 billion surface transportation reauthorization proposal.

The real short-term challenge looms as we get nearer to the end of May, the expiration deadline. Most experts, including some members of Congress, privately expect to see a short-term extension while longer-term legislation is worked out. While no one will admit it, the deal will likely be very similar to the president’s proposals.

Some have said that ever since his opposition party took over the House majority, the president is most successful when he allows others to craft the bill ultimately adopted. Surface transportation funding looks increasingly likely to be one of those instances this year.

Cliff Henke is an assistant VP and senior analyst with Parsons Brinckerhoff. Any views expressed herein are solely his own.

- Tags:
- Highway Trust Fund
- insolvency
- MAP-21
- President Barack Obama
- transportation authorization

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More News

FTA awards Fla. BRT project $26M grant

The 9.4-mile Jacksonville Transportation Authority's North Corridor line is the second segment of a five-phased First Coast Flyer BRT system planned for the area. It will connect to the first BRT line in downtown Jacksonville now under construction and extend north to Interstate 295.

Bill to extend PTC deadline introduced

Sen. Roy Blunt (R-MO) introduced the bipartisan bill, which would extend the deadline for full implementation of Positive Train Control to 2020 to help ease the regulatory burden and costs for passenger and freight railroads.