

## Section 0: Executive Summary

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The Towns of Chapel Hill and Carrboro are nationally recognized as great places to live, work and go to school. While boasting world-class educational opportunities, the small town ambiance of these enviable communities is threatened by increasing traffic congestion. As a result of general population and employment growth including continued expansion of the University of North Carolina at Chapel Hill's (UNC) main campus and anticipated development of the University's Carolina North campus, community leadership initiated a long range transit plan to seek alternatives to building more and wider roads.

This Study seeks to:

- Assess the impact of anticipated future population and employment and resulting growth in travel demand
- Identify the role public transit could play in mitigation of future congestion and potential roadway expansions
- Suggest land use policies and guidelines that support and complement the viability of the transit system.

Through the guidance of the Transit Study Policy Committee<sup>1</sup>, this Chapel Hill Long Range Transit Plan (LRTP) provides a vision of the community and the public transit system in 2035. The LRTP recommends:

- Introduction of higher level transit services along six "gateway" corridors
- Expansion of local bus service to support the gateway services
- Further study of impact of parking policies and land use policies to support transit growth

The Transit Study Policy Committee has reviewed the analysis and recommends the proposed Plan be submitted for a thorough public review process. The Committee acknowledges that the Plan outlines a broad strategy and includes a menu of transit options for further consideration. A series of intermediate actions will be necessary to support these long term strategies. As this process proceeds some options eliminated by the Policy Committee may be reconsidered.

The Committee also recognizes that the Plan should be consistent with the adopted Durham-Chapel Hill-Carrboro Urban Area Long Range Transportation Plan. The Policy Committee believes that the Chapel Hill Long Range Transit Plan that emerges from public review and input should be adopted by the governing bodies of Chapel Hill, Carrboro and the University of North Carolina.

This executive summary highlights the LRTP in these sections:

- Overview of the Community and Plan Assumptions
- Findings which lay the foundation of key aspects of the LRTP
- Overview of the Recommended Plan
- Next Steps

### 0.1 The Community and Plan Assumptions

As seen in Figure 0-1, the Towns of Chapel Hill and Carrboro, North Carolina are part of the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) area which is located in metropolitan Raleigh-Durham North Carolina. As shown in Figure 0-2, the community is also home to the University of North Carolina at Chapel Hill with 30,000 students and faculty and the North Carolina Hospital. Combined, the Chapel Hill-Carrboro community has a population of nearly 70,000 people. According to regional projections, the combined community population is

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<sup>1</sup> The Transit Study Committee is composed of elected officials of the Towns of Chapel Hill and Carrboro as well as senior management of the University of North Carolina.

expected to grow to nearly 102,000 people by 2035. Along with this growth will be increased travel demand and anticipated traffic and congestion.

Growth in the Chapel Hill/Carrboro area is expected as a result of robust regional growth, including continued expansion of the University main campus and anticipated development of Carolina North. Over the next 50 years, Carolina North is planned to become a major employment center and will include classrooms, medical and research facilities. The Carolina North campus will also incorporate residential and retail uses.

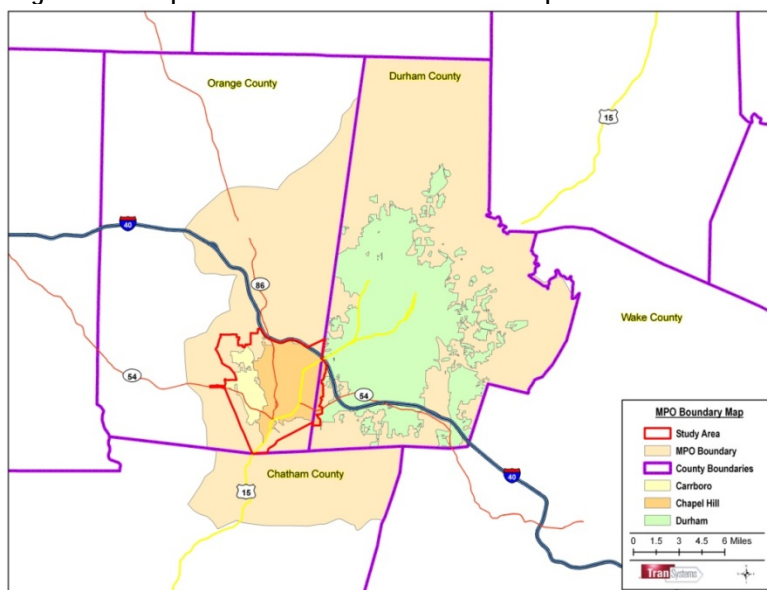
Although Chapel Hill-Carrboro has a relatively modest population the community is served by a vibrant transit system that rivals those of much larger communities. Chapel Hill Transit (CHT) operates almost 100 vehicles and has daily ridership of over 30,000 when UNC is in session. As the community is considered a desirable place to live and work, increasing pressures from a growing daytime population will result in continued growth of traffic at the interstate interchanges and along both arterial and local streets. The anticipated development of Carolina North will generate additional travel demand and the community leadership seeks to expand transit opportunities as an alternative to further roadway expansion.

### 0.1.1 Plan Assumptions

The Chapel Hill/Carrboro LRTP makes the following assumptions about transit:

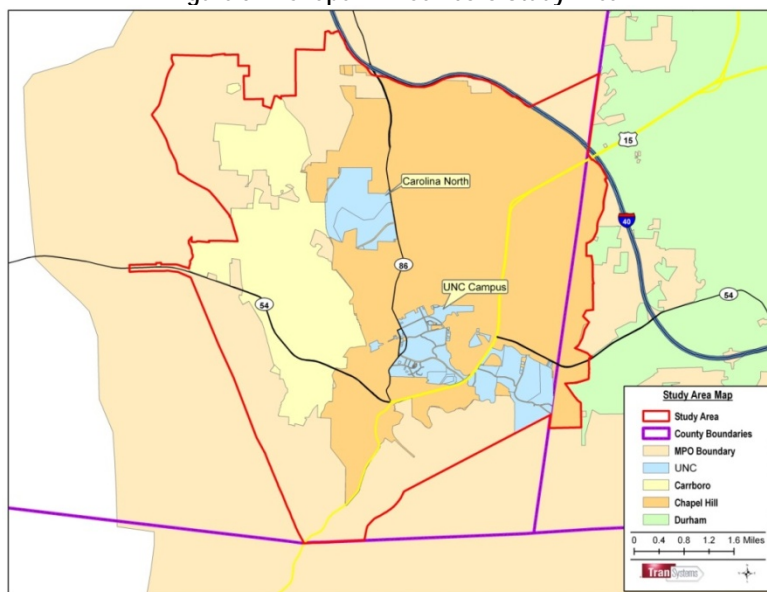
- Future transit service will expand along major travel corridors as well as throughout the Chapel Hill-Carrboro service area. Travelers would be intercepted at the community boundaries at “gateway” park and ride facilities.
- Future Chapel Hill Transit service will include a mix of local bus routes, express services and higher capacity technologies such as Bus Rapid Transit (BRT).<sup>2</sup>
- Expanded regional transit services, including express service and the implementation of regional light rail will support the Chapel Hill Transit system. Such regional services will be developed by entities outside of Chapel Hill-Carrboro.

Figure 0-1: Chapel Hill-Carrboro in the Durham-Chapel Hill-Carrboro Area



<sup>2</sup> BRT is special service characterized by distinctive service branding, high capacity and high speed vehicles, dedicated running ways, use of traffic signal priority, and upgraded stations.

Figure 0-2: Chapel Hill-Carrboro Study Area



## 0.2 Findings

The building blocks for the LRTP are based on three basic findings. These findings are crucial foundations to the plan:

1. **Analysis of 2035 travel demand suggests that six main corridors will be used by commuters to access the Chapel Hill-Carrboro community.** The traffic levels in these corridors can justify an investment in a higher order of public transit.
2. **Future travel demand necessitated the need for improved transit services**
  - Three service delivery concepts may be appropriate for higher level transit service. These include light rail (LRT), bus rapid transit (BRT) and enhanced express service (EEB). Light rail was found to be cost prohibitive if used as a Gateway service. However, this Plan recognizes LRT as a potential regional service that would serve some of the gateways while going beyond them to connect with Durham and Wake Counties.
  - Expanded local bus service will be necessary to support the Gateway services. The expansion of local transit services will compliment the proposed Gateway services, providing improved access to the Gateway stations and increasing local mobility.
3. **Transit supportive land use policies, including parking policy** need to be implemented along major transportation corridors and in the downtown to allow the preferred service concept to realize its maximum potential in attracting additional transit trips.

These findings are discussed in greater detail below.

### 0.2.1 Future Travel Demand and Gateway Corridors

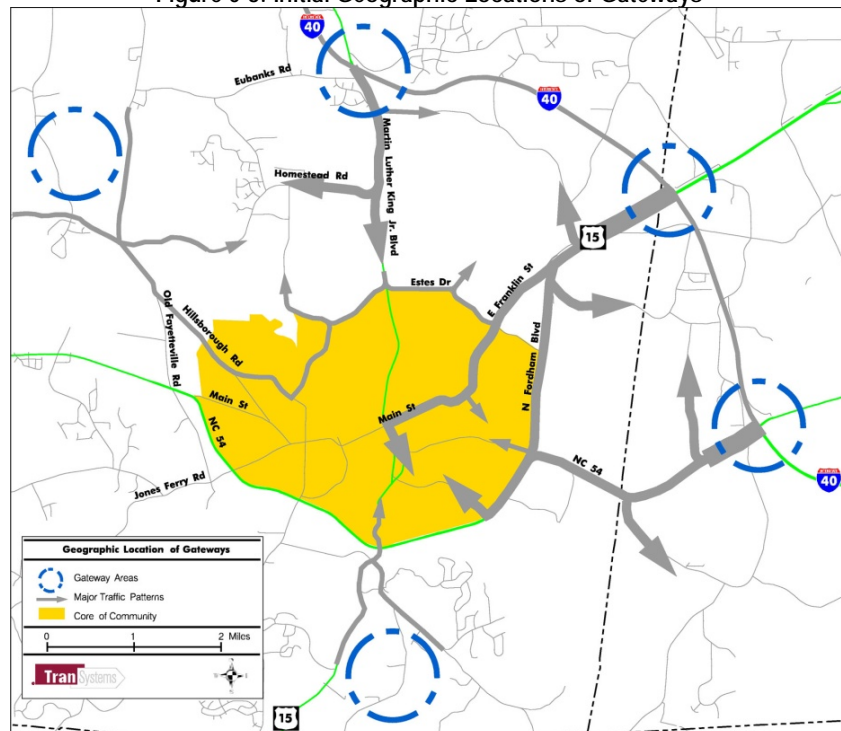
This LRTP utilizes the Raleigh-Durham regional travel demand model called the Triangle Regional Model (TRM) to project 2035 travel demand in and out of Chapel Hill-Carrboro. The purpose in using the TRM is to establish a consistent link with the overall region. The TRM is the basis of transportation planning in the Raleigh-Durham metropolitan area and is utilized by both of the area's MPOs including the DCHC. The TRM for this LRTP incorporates the latest 2035 projections of land use, socioeconomic characteristics, and demographics for the study

area. The land use information also includes population and employment assumptions about the Carolina North development. The TRM is also used throughout the LRTP to test transit service concepts.

The TRM, as analyzed for the study area, shows that 70 percent of commuters entering Chapel Hill-Carrboro are from Durham County. These commuters come from the north and east via NC 86 (Martin Luther King, Jr. Blvd.), US15/501 (Franklin and North Fordham Blvd), and East NC54 (Raleigh Road). The main commuter destination is the core of the community which consists of downtown Chapel Hill-Carrboro, UNC main campus, and Carolina North. Other commuters are entering the community via Hillsborough Road, West NC 54 (Main Street), and South US 15/501 and are destined for the core as well.

Initial locations in which to intercept travelers external to Chapel Hill and Carrboro as well as relative importance of key corridors are found in Figure 0-3.<sup>3</sup> The Figure shows the general gateway locations as blue circles. The major travel patterns are shown with gray lines with arrowheads. Important travel corridors are represented in the Figure as thicker the gray lines. Less important corridors are represented by thinner lines.

Figure 0-3: Initial Geographic Locations of Gateways



Source: TranSystems

## 0.2.2 Travel Demand and Service Concept

In defining the transit market, a conceptual service plan was developed to capture the broader trip making evident in the study area. The service concept has two basic elements: *Gateway* services which are intended to intercept travelers entering Chapel Hill and Carrboro and, second, *Enhanced Local Bus* services were are intended to provide mobility within the towns.

<sup>3</sup> An additional Carrboro gateway is added later in the study.

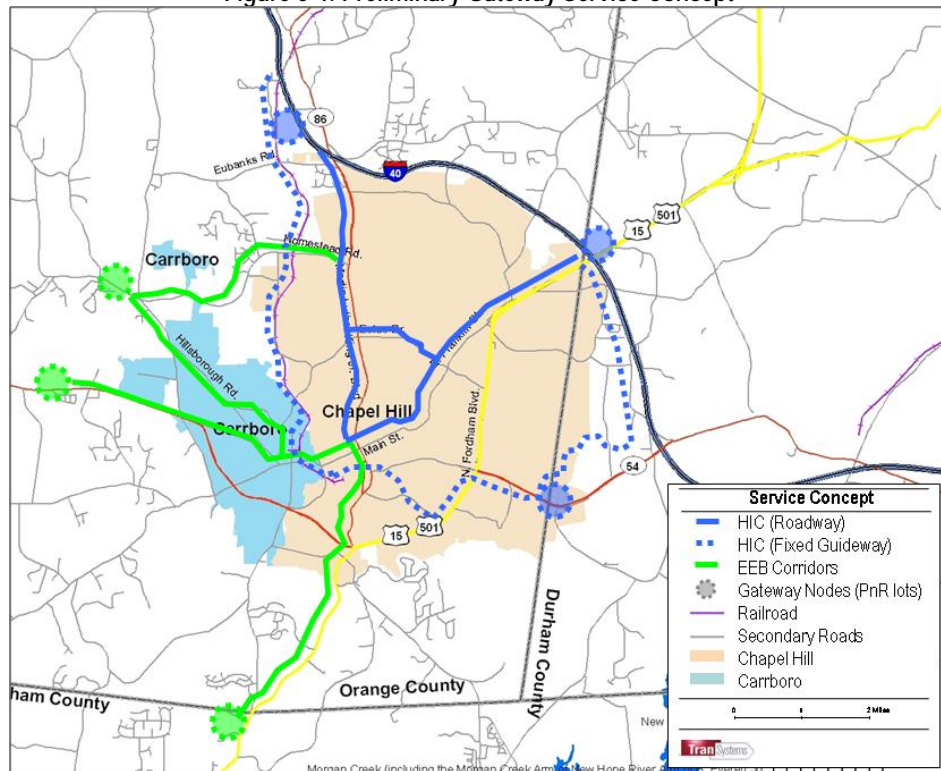
The Gateway portion of the service concept consists of two different types of services:

- High Investment Corridors (HIC)—bus and rail.
- Enhanced Express Bus Corridors (EEB)-bus.

The High Investment Corridors are designed to serve the large markets originating from the Durham and Wake County areas and therefore involve consideration of investment technologies designed for a high volume of ridership. These technologies include light rail, streetcar, and bus rapid transit (BRT).<sup>4</sup> The HIC serves the prime three entry points into the community from Durham County which, by 2035, will account for 70 percent of the travelers entering Chapel Hill-Carrboro. The Enhanced Express Bus (EEB) Corridors do not include consideration of rail modes but consider BRT options as well as limited-stop, Express Bus services. EEB is considered here as the volume of potential riders is less than half of what is expected for the HIC thus the need for rail modes is not apparent. The refinements made to overall Gateway Service Concept include additional corridors as well as refinements to the routing and the identification of general locations for the Gateway nodes where travelers can park-and-ride.

The set of corridors or gateway services is shown in Figure 0-4. The *Enhanced Local Bus* portion of the concept includes services with greater frequencies and geographic coverage than the current CHT system. The local bus system underlies the gateway services and covers much of Chapel Hill and Carrboro.

Figure 0-4: Preliminary Gateway Service Concept



Source: TranSystems

<sup>4</sup> BRT is special service characterized by distinctive service branding, high capacity and high speed vehicles, dedicated running ways, use of traffic signal priority, and upgraded stations.

**Developing the Service Concept: Identifying Transit Technologies**

A number of viable transit modes or technologies that can potentially comprise the above service concept are analyzed below. This section discusses an array of these technologies for the gateway and enhanced express bus services. The evaluation of suitable technologies involves the determination of which mode is the most cost effective in serving the intended markets.

Table 0-1 summarizes the technologies considered for the gateway services. Other technologies, such as commuter rail and heavy rail, are not considered because they are not deemed practical for the Chapel Hill-Carrboro community. Such services are intended for long distance, regional travel while the travel distances within the community are short at about five to six miles in length. The purpose of the study, to remind the reader, is to develop transit strategies that are localized, leaving regional service planning to other entities.

The technologies in Table 0-1 were evaluated for cost-effectiveness using conceptual operating characteristics including assumptions for service frequencies, length of peak periods and hours in which the service would operate. Capital and operating costs assumptions are from recent work done in the Raleigh-Durham area involving similar technologies. For HIC technologies, the deployment for each technology type is varied. For example, light rail (LRT) was tested using one, two, or three cars per train set. In all, for the HIC services, nine variations are tested. For the EEB services, five combinations of deployment are reviewed involving BRT and Express Bus. The analysis concluded that assuming the highest level of ridership, BRT and express bus are the most cost effective modes in the HIC and EEB corridors respectively. While LRT was deemed cost prohibitive as a gateway service, it was recognized that LRT as a regional service, going beyond Chapel Hill-Carrboro boundaries, should be reflected in this LRTP.

**Table 0-1: Potential Technologies for Services**

Characteristic	High Investment Corridors				
	Enhanced Express Bus				
	LRT	Streetcar	BRT busway	BRT arterial	Express Bus
<b>Vehicle type and ROW</b>	•Rail cars in exclusive ROW infrastructure	•Rail cars in arterial streets	•Buses in exclusive ROW facility	•Buses on exclusive lane in arterial street	•Limited-stop service in mixed traffic
<b>Intersections with mixed traffic</b>	•No	•Few	•Few	•Yes	•Yes
<b>Infrastructure at stops</b>	•Stations	•Enhanced shelters	•Stations	•Enhanced shelters	•Shelters
<b>Payment and boarding</b>	•Off-vehicle fare payment •At grade, multiple door boarding	•Off-vehicle fare payment •Multiple door boarding	•Off-vehicle fare payment •At grade multiple door boarding	•Off-vehicle fare payment •Multiple door boarding	•On-board payment •One-door boarding

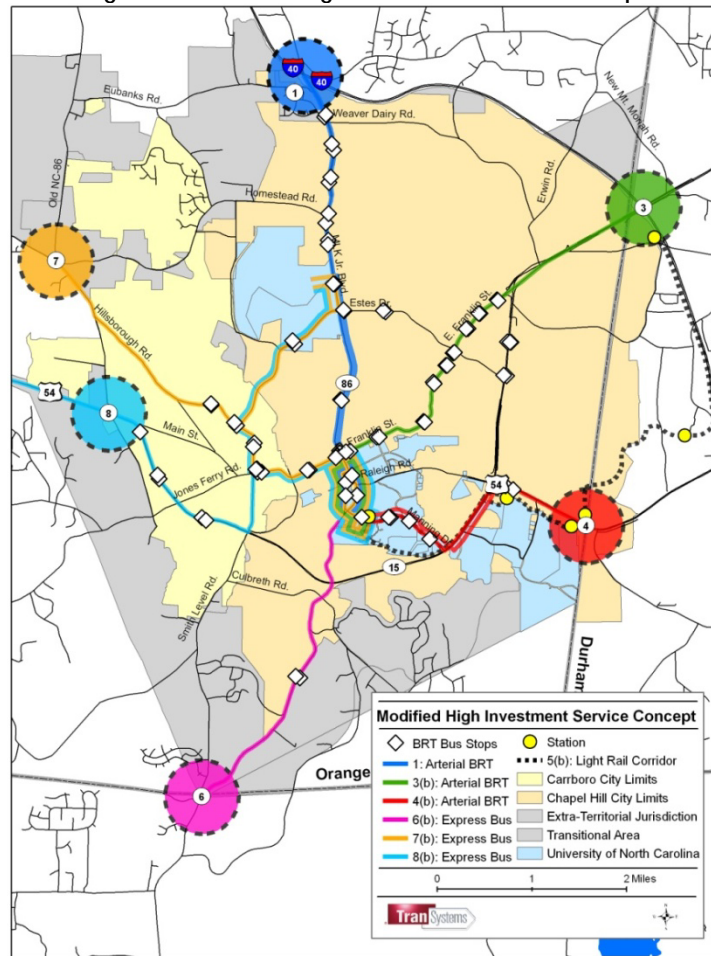
**Preferred Service Concept**

The preferred service concept involves BRT and express bus technologies (see, again, Figure 0-4) and is named the “Modified High Investment Service Concept.” This concept is shown in Figure 0-5. It should be noted that Figure 0-5 includes Light Rail Transit (LRT) as a regional mode and separate from the gateway concept which is local in nature. However, it is shown as LRT which could be added in the future. Eventually, an LRT service could replace either or both of the BRT services at Gateways 3 and 4.

The Modified High Investment Service Concept is a combination of the two investment scenarios developed for the LRTP. The first of these was called the “Low Investment scenario” with the second called the “High Investment

scenario.” The Low Investment scenario consists of arterial BRT services on gateways 1, 3, and 4. It also consists of EEB serving gateway corridors 6, 7, and 8. The High Investment concept is similar to the Low Investment concept except it involves the operation of BRT in an exclusive busway (in the LRT corridor) instead of the gateway 4 (East NC54) service. Also the High Investment assumes Gateway 1 (MLK) would have a grade separated busway. The preferred concept retains the gateway services of the Low Investment scenario with transit service in the fixed guideway corridor as considered in the High Investment scenario. As mentioned, the fixed guideway corridor would have regional LRT instead of Gateway BRT service as originally considered for the High Investment scenario.

Figure 0-5: Modified High Investment Service Concept



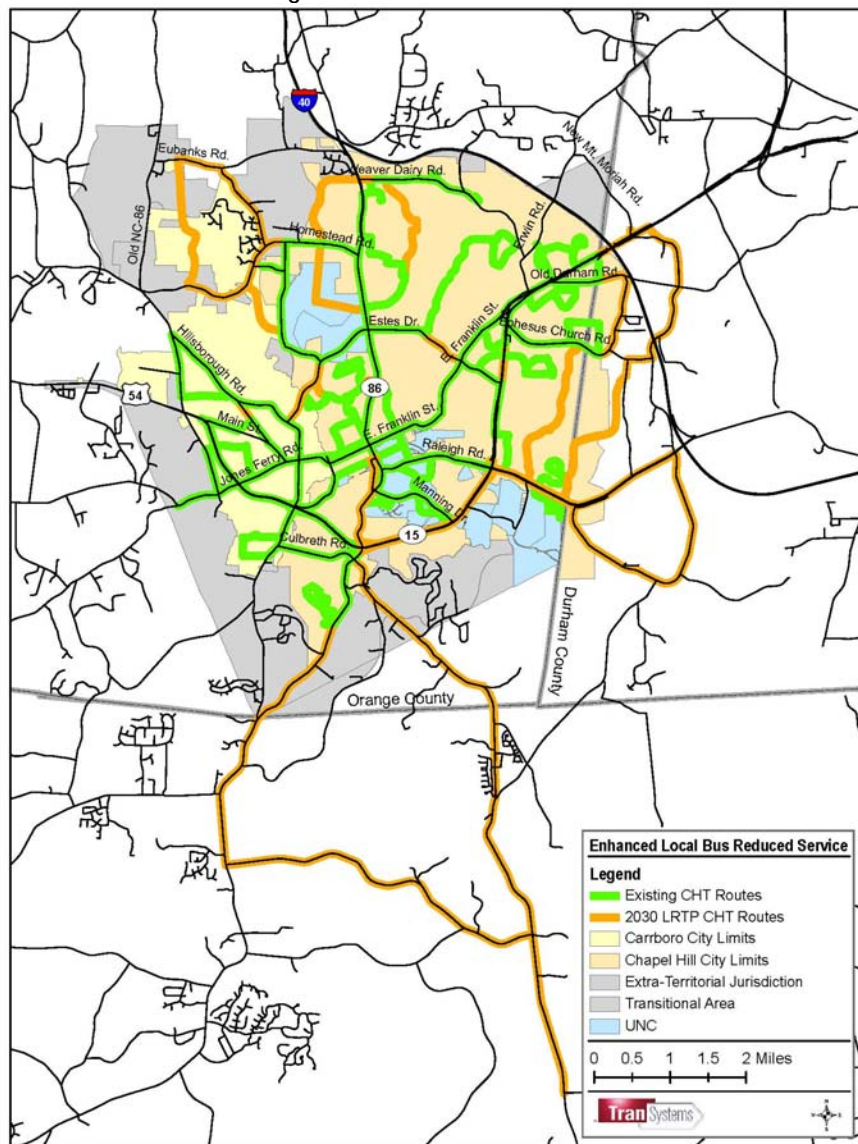
It is assumed that services on Gateways 3 and 4 would be re-evaluated as plans for regional LRT move forward. The Modified High Investment Service Concept would also include the enhanced local bus system described below. Together, the Modified High Investment Strategy and the Enhanced Local Bus Service comprise the “preferred service concept” to be further analyzed.

Enhanced Local Bus Service

While the current CHT system provides good geographic coverage, a local transit system that can compete with the attractiveness of the automobile would need not only more extensive coverage than the current service but will also need more frequent service and expanded hours of service. The 2030 and 2035 adopted long range plans developed by the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization contain an extensive bus network for Chapel Hill Transit. That network includes services with, respectively, 10-minute and 20-minute peak and off-peak service frequencies. It also contains services in support of a regional commuter rail service as well as bus services supplied

by the Triangle Transit Authority (TTA). Further, services similar to some of the gateway services described above were included in both plans. Figure 0-6 depicts a map of the Enhanced Local Bus service used as part of the “preferred service concept”. In this LRTP, the local transit networks included in the 2030 and 2035 plan’s were modified and tailored to the gateway service concept. This includes eliminating routes which duplicate the gateways or support a planned, fixed guideway service. The 2030 plan calls for 53 routes as a part of 2030 CHT system including the commuter rail service. Thus, they are eliminated for the purposes of the 2035 LRTP ultimately leaving 23 routes as part of the LRTP.

Figure 0-6: Enhanced Local Bus



Modeling the “Preferred Service Concept”

The “preferred service concept” consists of the Modified High Investment Strategy and the Enhanced Local Bus network. These were modeled using TRM and combined with an off model technique to evaluate the effects of potentially restrictive parking policies which are not able to be accommodated in the current regional model. An off model technique is used that associates travel trips with parking supply at UNC and Carolina North. Trips that could not be accommodated by the parking supply are generally and proportionally assigned to the new transit network.



Table 0-2 presents the model results for the Modified High Investment Service Concept<sup>5</sup> using the off-model parking analysis as well as the TRM analysis. As can be seen in Table 0-2 the projected Gateway service ridership is substantially increased by restrictive parking. Out of 45,386 total Gateway riders under the Low Investment scenario, nearly 33,600 daily riders (adding parking deficit related ridership for both UNC main campus and Carolina North) would be attributed to the parking restrictions. This represents almost 75 percent of the Gateway riders or a 285 percent increase over the model results in which no restrictive parking policies were assumed. Restrictive parking policies will be a key ingredient in a future transit strategy.

A parking analysis more rigorous than conducted in this study is recommended.

### 0.2.3 Need for Transit Supportive Land Use Policies to Support Expanded Transit Services

It is recognized that even with exceptional transit service within the community, other policies will be needed to promote transit as a preferred mode of choice for residents, employees and visitors. Policies for future development that promote transit supportive design and the expanded use of bicycles and walking will be necessary. Additional policies needed include controlling the availability of parking on the UNC main campus, Carolina North, and the downtowns of Chapel Hill and Carrboro.

#### *Transit Supportive Development*

Experience from around the country suggests that that success in expanding transit use depends on many factors, including transit supportive and coordinated land development. Transit supportive policies include a mix of uses – housing, retail, office – and higher density. The other key factors include provision of an attractive, safe and inviting pedestrian environment, and the use of public space integrated with the transit station and commercial space to create a “sense of place.” This type of development is often called Transit Supportive Development or TSD.

The development and implementation of a TSD strategy is not only essential for the future success of transit it is also an integral criterion in the federal government’s evaluation of Small Starts and Very Small Start funding proposals. Projects can receive higher ratings in communities with robust land use policies which include TSD regulations.

Working with the Towns of Chapel Hill and Carrboro, 20 sites were identified as potential locations for TSD. (See Figure 0-7). These sites represent properties that are located on potential transit corridors. For each property, the gross and net developable area was determined. In discussions with representatives from the Town Planning Departments, a land use mix and development density was defined for each property, based on the surrounding land use patterns, site configuration and planning objectives. Based on the land use mix and development density defined for each site, the resulting number of residential units and square footage of office and retail space was calculated.

In addition, a set of design guidelines to implement a TSD strategy is developed in this LRTP. The purpose of these TSD Design Guidelines is to ensure that new development around transit stops/stations/corridors supports transit use, encourages ridership, reduces auto dependency and leverages the transit investment. These design guidelines support the Town of Chapel Hill’s existing Design Guidelines and are supplemental to those Guidelines. The guidelines establish basic principles that include pedestrian oriented design, building design, site layout, connectivity, density, and transportation amenities.

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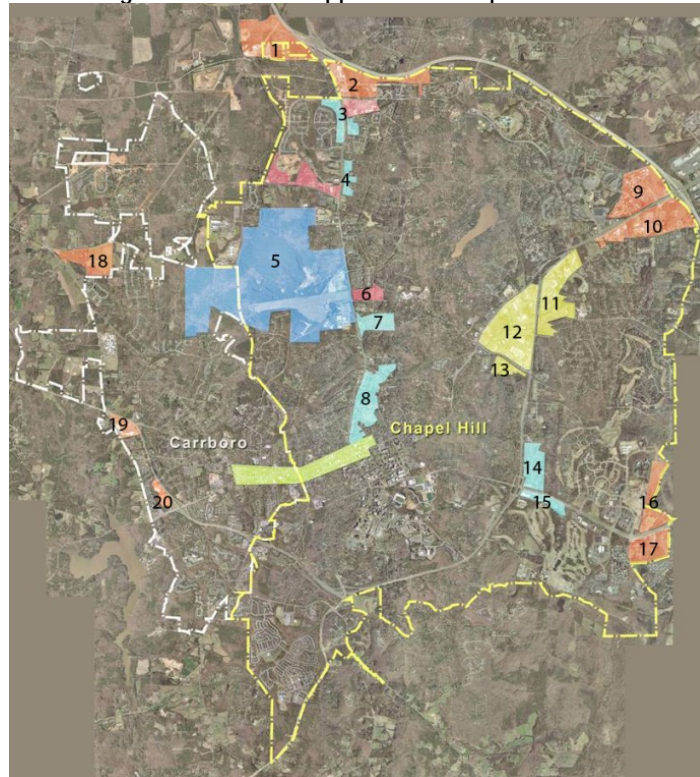
<sup>5</sup> Since the Gateway and local bus portions of the Modified High Investment Service Concept is the same for these services as under the Low Investment scenario, the ridership numbers reflect the Low Investment scenario.

Table 0-2: 2035 Ridership Forecast for Modified High Investment Service Concept Using TRM and Off- Model Parking Analysis

RIDERSHIP														
<i>Daily Ridership</i>														
Modified High Investment	Gateway Services											Local Bus	Grand Total	
	GW 1	GW 3A	GW 3B	GW 3C	GW 4	GW 5	GW 6	GW 7-UNC	GW 7-CN	GW 8-UNC	GW 8-CN			Total GW
Model Run	2,832	1,253	714	1,618	1,699		1,666	302	417	606	690	11,798	43,184	54,981
Due to Parking Deficit at UNC Main	5,037	3,276	1,865	4,230	7,621		2,764	378	521	952	1,080	27,723	9,241	36,964
Due to Parking Deficit at Carolina N	1,872	693	395	1,701	0		585	80	110	201	228	5,885	1,955	7,820
Totals	9,741	5,222	2,973	7,549	9,319		5,014	760	1,049	1,760	1,998	45,386	54,379	99,765
Gateway P&R Parking Spaces	4,067	3,226	1,385	3,648	5,457		1,436	70	671	162	565	20,688		
New Riders	7,931	4,723	2,243	7,502	4,137	N/A	887	0	0	0	0	28,513		
<i>Annualized Ridership</i>														
Modified High Investment	GW 1	GW 3A	GW 3B	GW 3C	GW 4	GW 5	GW 6	GW 7-UNC	GW 7-CN	GW 8-UNC	GW 8-CN	Total GW	Local Bus	Grand Total
Model Run	829,700	367,200	209,100	474,200	497,800		488,100	88,500	122,200	177,700	202,300	3,456,800	12,652,800	16,109,600
Due to Parking Deficit at UNC Main	1,475,900	959,800	546,400	1,239,300	2,232,800		809,700	110,700	152,800	279,000	316,300	8,122,700	2,707,600	10,830,300
Due to Parking Deficit at Carolina N	548,500	203,000	115,600	498,400	0		171,300	23,400	32,300	59,000	66,900	1,718,400	572,800	2,291,200
Totals	2,854,100	1,530,000	871,100	2,211,900	2,730,600		1,469,100	222,600	307,300	515,700	585,500	13,297,900	15,933,200	29,231,100
New Riders	2,323,700	1,383,700	657,200	2,198,200	1,212,100		259,800	0	0	0	0	8,034,700		

Notes: GW= gateway; CN= Carolina North; UNC=University of North Carolina main campus  
Modified High Investment ridership reflects ridership totals for the Low Investment scenario.

Figure 0-7: Transit Supportive Development Sites



### 0.3 Recommended Plan

The recommended Chapel Hill/Carrboro Long Range Transit Plan calls for the development a network of “gateway” and local bus services to enable residents, employees, and visitors to use transit instead of cars while within the Chapel Hill-Carrboro community. Gateway services provided in the six corridors would include a combination of:

- Higher level transit services such as BRT
- Improved local service to provide connectivity
- Connections to regional transit services
- Park and ride facilities where practical
- Transit supportive development

This network is identified as the “Modified High Investment Service Concept” and anticipates the implementation of regional Light Rail Transit (LRT) service connecting gateways at NC54 (East) and US15/501 (East). If LRT were to move forward, gateway services proposed in those corridors might need to be re-evaluated.

The primary gateway services (corridors 1, 3, and 4) would utilize “Bus Rapid Transit” BRT service. BRT is special service characterized by distinctive service branding, high capacity and high speed vehicles, dedicated running ways, use of traffic signal priority, and upgraded stations. Figure 0-8 and Figure 0-9 show, respectively, the stations and vehicles envisioned for the service. The remaining gateway services (6, 7, and 8) would use standard vehicles in express service though they will be branded similar to the BRT service and, as planned for BRT, have upgraded

stations. All these services would utilize state-of-the-art passenger information systems to enable riders to know when their buses are expected to arrive. The gateway services would be supported by a much increased local system. It is assumed that services on Gateways 3 and 4 would be re-evaluated as plans for a regional LRT move forward. The Modified High Investment Service Concept, described on page 0-7 would also include the enhanced local bus system described on page 0-8. Together, they comprise the “preferred service concept”.

Table 0-3 and Table 0-2 (on page 10), present statistical information about the Gateway and Enhanced Local Bus components of the recommended system.

**Table 0-3: Summary Gateway Service Statistics**

Priority/Service	Frequency <i>(weekdays mins)</i>		Days of Operation	Service Day <i>(hours)</i>	Peak Vehicle Requirement*	Vehicle Hours		Gateway Parking Spaces	Estimated Daily Ridership
	Peak	Off Peak				Daily	Annual		
	<b>Initial Implementation</b>								
GW 1–Martin Luther King Jr., Blvd	5	8	Mon-Sun	17	11	120	33,240	4,067	9,741
GW 3B (via Franklin)	10	15	Mon-Sun	17	8	80	23,040	1,385	2,973
GW 3C (via Estes)	10	15	Mon-Sun	17	6	63	18,705	3,648	7,549
GW 3B/3C Total	5	8	Mon-Sun	17	14	143	41,745	5,034	10,522
<b>Future Implementation</b>									
GW 3A I40 to UNC via US 15/501	10	15	Mon-Sun	17	9	97	28,591	3,226	5,222
GW 4 via NC 54	5	8	Mon-Sun	17	12	126	34,770	5,457	9,319
GW 6 via US15/501 South	10	15	Mon-Sun	17	11	120	34,664	1,436	5,014
GW 7 to Carolina North	10	15	Mon-Sun	17	7	80	23,040	671	1,049
GW 7 to UNC Main Campus	10	15	Mon-Sun	17	9	97	28,591	70	760
GW 7 Total	5	8	Mon-Sun	17	16	177	51,631	741	1,808
GW 8 to Carolina North	10	15	Mon-Sun	17	10	103	30,121	565	1,998
GW 8 to UNC Main Campus	10	15	Mon-Sun	17	8	97	28,591	162	1,760
GW 8 Total	5	8	Mon-Sun	17	18	200	58,712	727	3,759

\*Includes spares, does not include ADA paratransit vehicles.

The enhanced local bus service anticipates (in 2008 dollars) a \$43.5 million annual operating cost and \$49 million in initial capital costs. The capital costs include the acquisition of expansion vehicles, expansion of the CHT Millhouse Road operations center and the installation of additional passenger amenities such as shelters.

### 0.3.1 Initial Implementation and Funding

The results of the TRM and off-model parking analysis (Table 0-2) were used to identify two gateway corridors for more detailed analysis in the form of conceptual operating plans. The conceptual operating plans for these “prototype” corridors form the basis of cost information for the remaining services. The Transit Study Policy Committee identified Gateway 1 (MLK Boulevard) and two branches of Gateway 3 (US 15/501 via Franklin and via Estes to Carolina North) as corridors to be developed further. Gateway 4 was not targeted because the committee believed that corridor (along with the HIC rail corridor in the Modified High Investment Service Concept) would be studied through a regional transit planning process that is underway. The remaining gateways (6, 7, and 8) are not selected because they show relatively modest ridership levels.

The operating plan for each prototype gateway is conceptual. It includes a running way definition, ridership estimate, station and vehicle description, and operating parameters (i.e. span of service, fleet size, headway, running time). For both of these gateways, the five characteristics of the service are defined:

1. *Running Way improvements*—which include adding travel lanes, signal priority, and other enhancements to the street in which the BRT service would operate.
2. *BRT Station improvements*—which would be up-graded versions of the standard bus stops with shelters now in use by CHT. An example of upgraded stations is found with Kansas City's BRT serviced branded as "MAX." See Figure 0-8 for one such station.
3. *Gateway Park-and-Ride Facilities*— which are parking facilities to intercept people entering the community who will park their vehicles and board the BRT to their final destination.
4. *Vehicles*—which are primarily the BRT vehicles, and in the case of the priority corridors, are articulated vehicles similar to ones now in use in Chapel Hill. See Figure 0-9.
5. *Operating Facility and Miscellaneous*—which include additional vehicle storage and maintenance areas at CHT's main operating base.

Figure 0-8: BRT Station— Shelter and Station Sign for the MAX BRT Service in Kansas City



Figure 0-9: Chapel Hill Transit Articulated Buses



Table 0- 4 below summarizes capital costs for both BRT corridors. All capital costs are projected (in 2008 dollars) to range from about \$133 million to just over \$142 million. As can be seen from the table, well over 60 percent the costs are associated with the Gateway park-and-rides. The MLK service would have nearly 4,100 parking spaces at the gateway with the US15/501 service having just over 5,000 parking spaces.

The projected number of park ride spaces at GW1 could also be reduced if regional transit services were expanded in conjunction with the provision of park ride facilities in outlying areas. The total cost of providing park ride at any of the Gateways will also depend on whether the spaces are surface or provided in a structure. Opportunities for the integration of parking into a joint development may also be possible and might reduce the overall cost.

Table 0-4: Preferred Gateway Corridor Capital Costs—2008 Dollars

Item	Gateway			
	MLK (GW 1)	Franklin/Estes (GW 3B/C)		
		Totals	Franklin Only (GW 3B)	Estes Only (GW 3C)
Vehicles	\$ 9,693,000	\$ 12,285,000	\$ 7,006,500	\$ 5,278,500
Ops Facilities & Miscellaneous	1,210,000	1,540,000	770,000	770,000
Gateway Park & Rides (deck parking)	82,359,000	101,929,000	29,849,000	78,101,000
Stations	3,591,400	4,317,900	2,158,950	2,158,950
Running Way	36,099,000	22,018,500	21,019,500	999,000
Gateway Parking Spaces	4,067	5,034	1,385	3,648
Totals	\$ 132,952,400	\$ 142,090,400	\$ 60,803,950	\$ 87,307,450

**Operating Costs**

Based on the above conceptual operating plans, the Martin Luther King, Jr. (Gateway 1) and US 15/501 (Gateway 3 serving downtown Chapel Hill and the UNC Main Campus via Franklin and Carolina North via Estes) project first year operating costs (in 2008 dollars) of \$3.21 million and \$4.03 million respectively. Both of these costs assume the base operations shown in Table 0- 5 as well as an assumption for complementary ADA paratransit service.<sup>6</sup> The services would be anticipated to operate on weekdays from about 6:00 am until 11:00 pm for a 17 hour service day. Service would also be provided on Saturdays and Sundays though for shorter periods of time.

Table 0-5: Summary Operating Statistics for Preferred Gateway Services

Service	Frequency		Days of Operation	Service Day (hours)	Peak Vehicle Requirement*	Vehicle Hours	
	(weekdays mins)					Daily	Annual
	Peak	Off Peak					
GW 1--Martin Luther King Jr., Blvd	5	8	Mon-Sun	17	11	120	33,240
GW 3B/C--US 15/501 (via Franklin/Estes)	5	8	Mon-Sun	17	14	143	41,745

\*Includes spares, does not include ADA paratransit vehicles.

<sup>6</sup> Any cost savings by reducing overlapping local service in the preferred corridors have not been taken into account.



### ***Funding Options***

There are four main sources of funding that are typically used for public transit services in North Carolina and could possibly help fund the gateway and expanded local services. They are:

1. Passenger Fares—which are charges to people who ride the service.
2. Federal grants and innovative financing—are from a variety of grant programs including Small Starts and Very Small Starts funding.
3. State grants—the State of North Carolina through its Department of Transportation (NCDOT) also has a number of operating and capital funding programs.
4. Local funds—can be from general funds, dedicated taxes, and special assessments and fees.

For Chapel Hill Transit (CHT) all of the above are viable options with the possible exception of passenger fares. Currently, the CHT is fare free. It is assumed that any future BRT system would likewise be fare free. Thus, passenger revenue is not considered a funding source for the BRT service.

In developing either or both of the BRT lines, all of the above funding sources are available. However, the Small Starts program would offer a potentially new source of funding that the towns, to this point, have not previously utilized. Much of the capital funding for the MLK service could come from the federal government's Very Small Starts program. The MLK service would be implemented in phases with a version scaled down from the 2035 plan to match projected demand for services in 2025 or earlier.

This plan also will depend upon the adoption of land use regulations that promote "transit supportive development."

## **0.4 Next Steps**

This LRTP developed conceptual operating plans for two selected gateway corridors. The Plan recommends proceeding with public review of the findings of this Plan and adoption by the Towns of Chapel Hill and Carrboro and the University of North Carolina at Chapel Hill. This Plan included conceptual operating plans for two selected gateway corridors and recommends consideration of Gateway 1—MLK as the first gateway service to be implemented.

### ***Action Steps***

The following steps should be taken to implement the Chapel Hill Long Range Transit Plan:

- *Initiate an extensive public input process to review the findings, strategies and recommendations of the Chapel Hill LRTP.*
- *Consideration of adoption of the Plan by the governing bodies of Chapel Hill and Carrboro.*
- *Development of short range transit plans providing more detail on the implementation of the approved strategies of the Chapel Hill LRTP.*
- *Consider further study of the Martin Luther King Jr. Boulevard corridor including the development of an Alternatives Analysis (AA) study.*

### ***Potential Timeline***

The Very Small Starts funding strategy is anticipated to require approximately six years to complete. It is possible this timeline, Figure 0-10, can be further compressed if the communities wished to forego funding under New Starts (using Section 5307 funding or other sources instead). The AA could be reduced in time as well as engineering period (as under project development) could also be made faster.

Figure 0-10: Very Small Starts Implementation Time Line

Step	Year 1				Year 2				Year 3			Year 4		Year 5		Year 6	
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	2nd half	1st half	2nd half	1st half	2nd half	1st half	2nd half
Prepare Alternatives Analysis (AA) justification and review with FTA	█	█															
Conduct Parking Policy Study			█	█	█	█											
Begin process to acquire funds for AA while parking study underway.			█	█	█	█											
Conduct AA on corridor that seems most viable					█	█	█	█									
Submit AA for FTA review and approval into Project Development stage.									█								
Project Development										█	█	█					
Submit to FTA for review.													█	█			
Project Construction Grant Agreement. (Construction)														█	█	█	█
Begin service																	█