



CHAPEL HILL TRANSIT: SHORT-RANGE TRANSIT PLAN



Final Report Executive Summary

March 2020





All images from Nelson\Nygaard Consulting, except where otherwise noted.



EXECUTIVE SUMMARY

Chapel Hill Transit (CHT) is developing a Short-Range Transit Plan (S RTP) to serve as a roadmap for the future position of the agency for continued financial and operational success, improve service, manage demand, and encourage public involvement in the planning process. The S RTP provides CHT with an implementable approach to guide transit service in Chapel Hill and Carrboro for the next 10 years and beyond.

In accordance with the project goals, the S RTP takes a comprehensive approach to assess the state of the CHT system, accounting for current and previous planning initiatives, existing and projected population and employment distribution, transit propensity, operational and performance metrics, and a peer review to determine the competitiveness of CHT with similar agencies.

The S RTP builds upon this comprehensive state of the system analysis to develop service improvement scenarios, solicit public feedback, develop a single preferred service alternative, assess long-term strategic issues facing the agency, and recommend next steps necessary for moving from planning to implementation.

Project Goals

At the outset of the planning process, CHT's S RTP Technical Committee and Policy Committee developed six guiding principles designed to inform the future of transit service in Chapel Hill. The six goals are as follows:

1. Improve transit mode shift
2. Increase ridership
3. Create high frequency transit corridors
4. Emphasize equity
5. Improve weekend service
6. Enhance the convenience of living without a private vehicle



STATE OF THE SYSTEM

The SRTP contains a comprehensive evaluation of the CHT system and operating context.

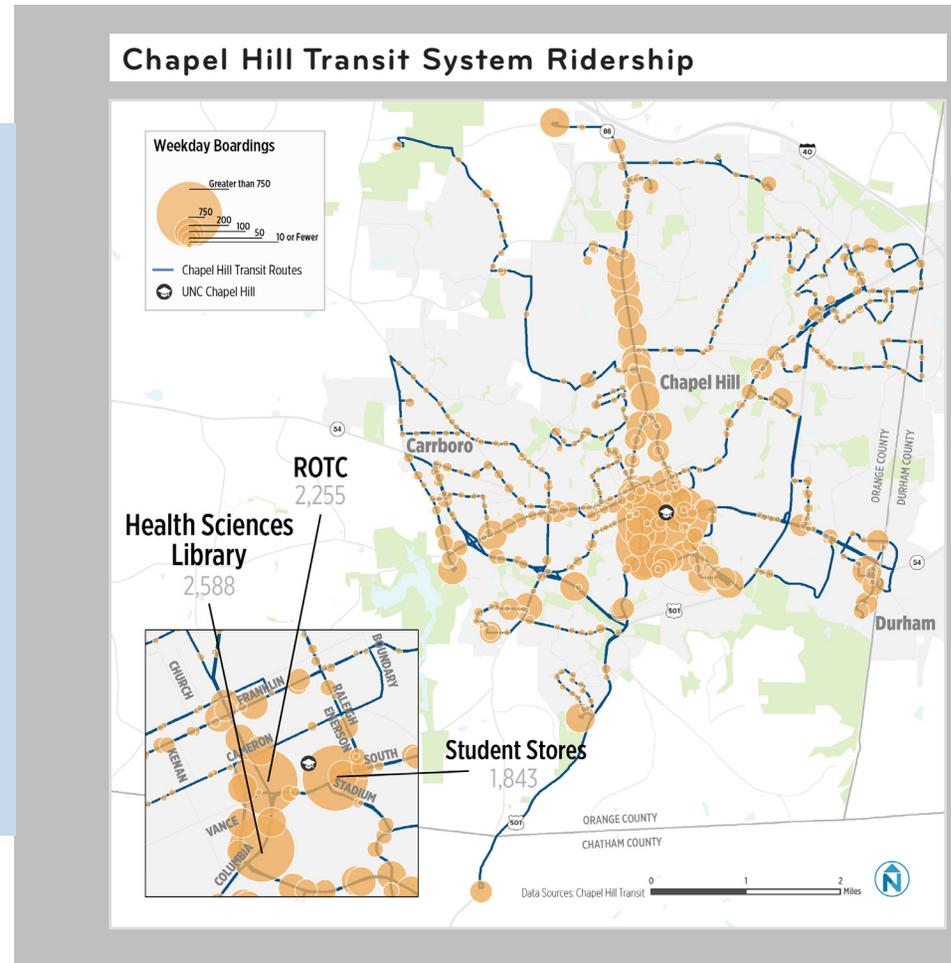
This system and operating evaluation includes:

- A review of the existing planning documents, rider and community surveys, and major development trends.
- A market analysis assessing the existing conditions and future projections for population density, employment density, transit propensity, and existing ridership activity.
- A trend analysis evaluating the evolving ridership, revenue, and operating expense trends for CHT between 2001 and 2015.

- A peer review, which provides context for the trend analysis by comparing common transit agency metrics for CHT with several similarly sized peer agencies. This review is used to determine best practices and assess the relative performance of CHT compared with other agencies throughout North America.

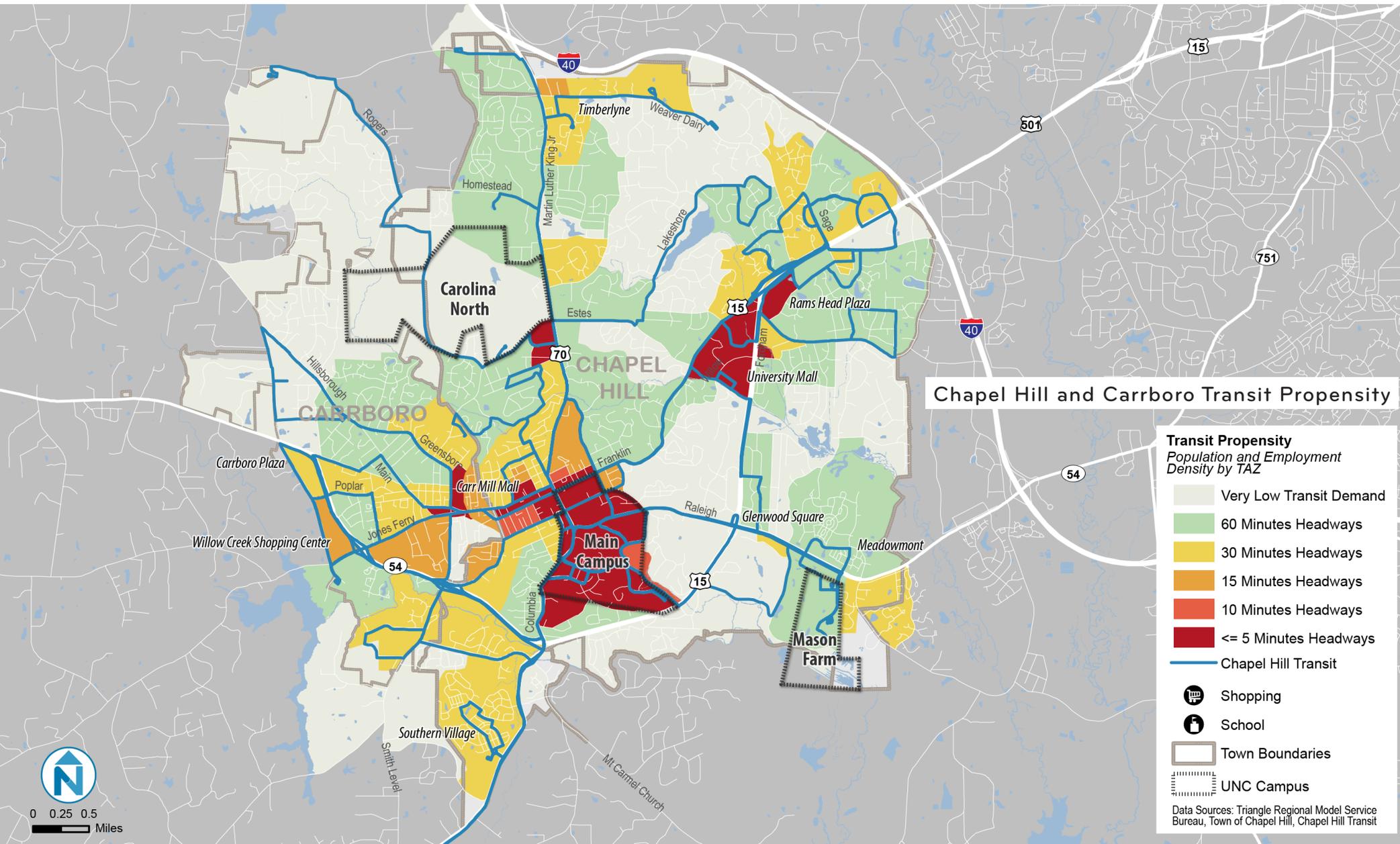
Key Findings

- ◆ In general, most areas that have a high propensity for transit are currently served by CHT.
- ◆ Transit propensity is based on the density of five combined indicators: seniors (aged 65 and up), people with low incomes (less than 200% of the federal poverty line), people with disabilities, rental units, and zero-vehicle households.
- ◆ The highest transit propensity areas in the CHT service area, the areas surrounding the University of North Carolina-Chapel Hill (UNC-Chapel Hill) and downtown Chapel Hill, are currently served by CHT service.
- ◆ UNC-Chapel Hill, the UNC Hospitals, and the MLK Jr Blvd corridor account for the highest ridership areas of the CHT system .
- ◆ As population and employment continue to grow in the Chapel Hill-Carrboro area, transit ridership is also expected to grow.
- ◆ Ridership on the CHT system has increased 121% between 2001 and 2015, corresponding to a 65% increase in revenue hours and a 34% increase in revenue miles over the same time period.



UNC-Chapel Hill and the UNC Hospitals anchor the system with nearly 7,000 average weekday boardings at the three busiest stops.

Source: Nelson\Nygaard Consulting Associates



The highest transit propensity areas in the CHT service area, the areas surrounding UNC-Chapel Hill and downtown Chapel Hill, are currently served by CHT service.

Source: Nelson\Nygaard Consulting Associates

SERVICE IMPROVEMENTS

An iterative process was utilized to develop a fiscally-constrained set of recommendations that address key goals, such as adding Sunday service, making service easier to understand, and improving frequency in key corridors.

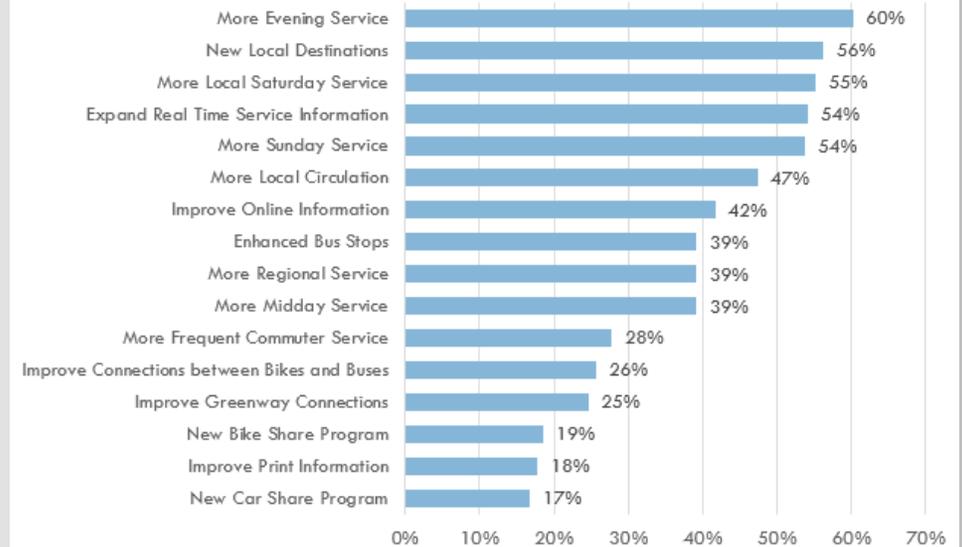
Preliminary Service Scenarios

Three different service scenarios were developed—each with a different theme that addressed key customer and stakeholder priorities.

- **Scenario 1** makes modest changes to bus routing and improves weekday service frequency and simplifies service.
- **Scenario 2** makes modest changes to bus routing and improves weekend service throughout the system.
- **Scenario 3** makes more sweeping changes to the service by simplifying routes, focusing on the highest ridership areas, and providing access to high demand destinations.

The three preliminary service scenarios were presented in a public outreach process. Key findings from the outreach process included a desire to minimize service coverage losses, strong support for improved weekend service, and strong support to improve frequency on overcrowded routes.

Transit Improvement Priorities



Transit improvement priorities identified during public outreach include additional evening service, weekend service, and service to new local destinations.

Source: Nelson\Nygaard Consulting Associates

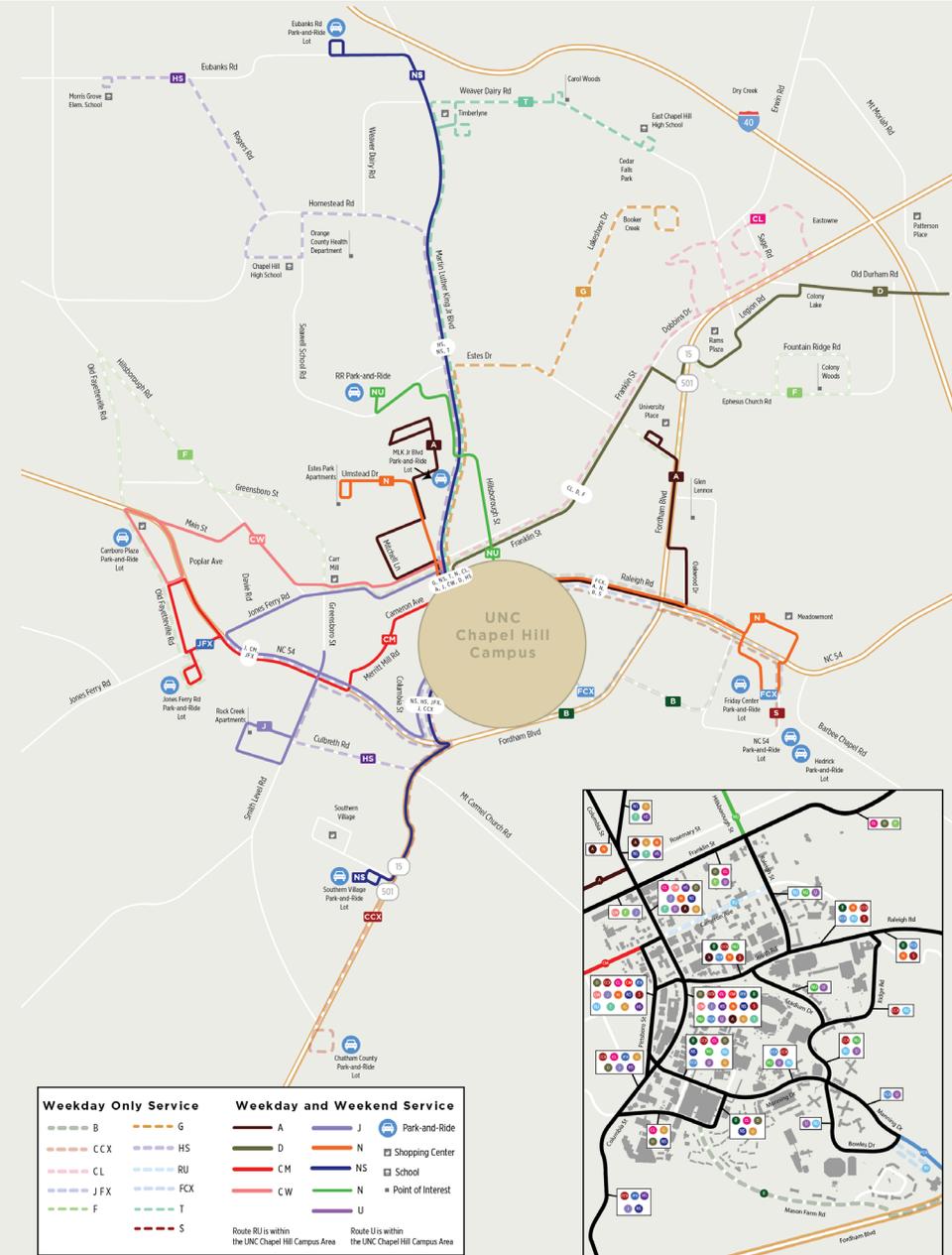


Public outreach was hosted in Chapel Hill, Carrboro, UNC-Chapel Hill, and the UNC Hospitals to provide feedback on service priorities and proposed changes.

Preferred Alternative

After the three preliminary service scenarios were presented in a public outreach process, the most highly supported aspects of the scenarios were combined to create a single cost-constrained Preferred Alternative. The Preferred Alternative makes modest changes to bus routing and aims primarily to improve service frequency on key routes, maintain service area coverage, simplify service, and improve weekend service. The key themes of the preferred alternative include:

- High frequency transit core (service every 15 minutes or better) with supporting lower-frequency routes (service approximately every 20-60 minutes).
- Improved weekend service throughout the system, with a focus on Sunday service.
- Improved frequency on overcrowded routes.
- Making service simpler and easier to understand.
- Maintaining existing service area coverage.
- The preferred alternative was presented to the public through a third phase of public outreach. Changes to the plan were made to respond to feedback.



Preferred Alternative system level route alignments and availability of weekend service.

Source: Nelson\Nygaard Consulting Associates

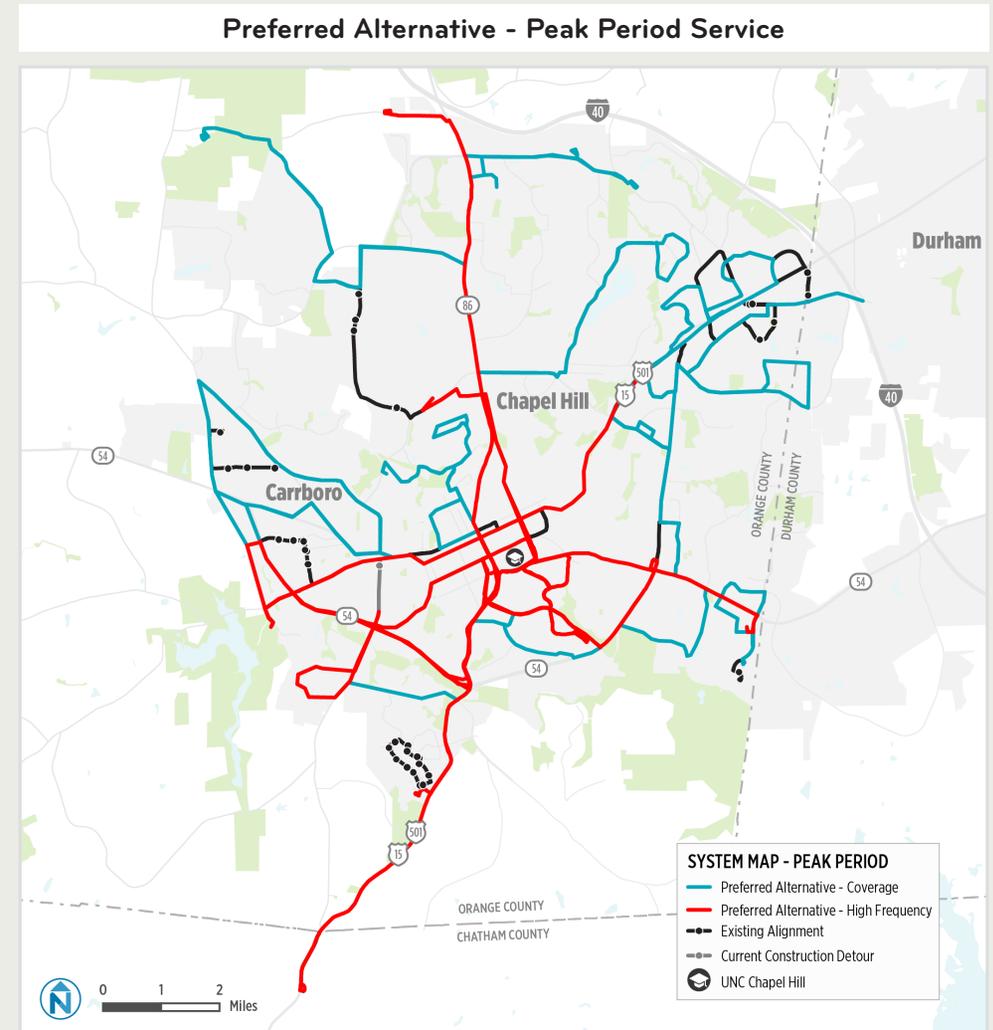
High Frequency Transit Core

The Preferred Alternative emphasizes a high-frequency transit core, providing service at least every 15 minutes on key routes within the CHT system, including Routes CCX, CM, FCX, JFX, J, NS, NU, RU, and U during the peak period and Routes NS, RU, and U all day. Additionally, Routes D and CL would provide a combined 10-minute frequency on East Franklin Street during the peak period. The high frequency core provides service between key destinations including UNC-Chapel Hill, The UNC Hospitals, downtown Chapel Hill, downtown Carrboro, and CHT park-and-ride lots.

High frequency service generally decreases time passengers spend waiting for transit, improves the passenger experience, and is an identified priority for existing transit riders and non-transit riders in the CHT service area. This core network is complemented by the remaining routes in the system in order to maintain coverage within the existing service area, an identified priority resulting from public outreach.

Weekend Service

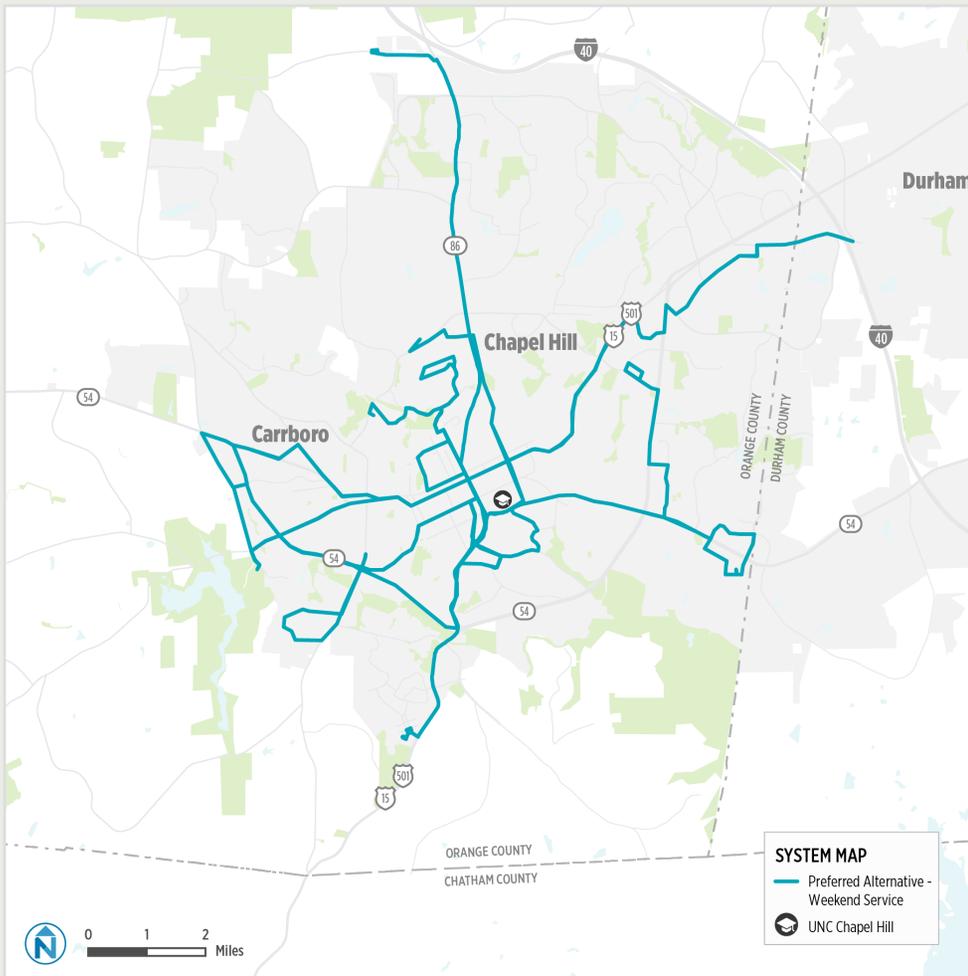
In the Preferred Alternative, weekend service is dramatically improved across the system so that service is offered weekdays, Saturdays, and Sundays on Routes A, CM, CW, D, J, N, NS, NU, and U. Expanding weekend service—particularly Sunday service—improves the usefulness of CHT service, allowing passengers to make transit trips any day of the week. Expanding weekend service was both an identified project goal and a highly prioritized improvement for transit riders.



The high-frequency core during peak period service is greatly expanded over existing conditions, providing 15-minute or better service on 10 routes with Routes D and CL combining to provide 10-minute frequency on East Franklin Street through downtown Chapel Hill.

Source: Nelson\Nygaard Consulting Associates

Preferred Alternative - Weekend Service



The weekend service area is expanded significantly in the Preferred Alternative, with Saturday and Sunday service provided on nine routes. Combined weekend only Routes FG and JN are also removed to simplify service and make weekend routes less confusing for passengers.

Source: Nelson\Nygaard Consulting Associates

Unfunded Improvements

As part of the SRTP planning process, a number of desirable service improvements were identified that could not be achieved within the existing budget. Over the next few years, CHT should continue to evaluate available funding and pursue partnerships to advance implementation of these improvements.

Suggested improvements include the following:

- New or enhanced weekend service on Route CL, D, J, and NS
- Frequency improvements on Route CW, J, and NS
- Later evening service on Route S
- Improved connections and service to new areas, including Patterson Place, Estes Drive, and the West NC 54 corridor

The estimated total operating cost for these improvements is approximately \$3 million, and proposed service would require an additional 10 peak vehicles to operate.

SERVICE IMPROVEMENTS (CONTINUED)

Unfunded Improvements

Route	Service Summary	Additional Annual Operating Cost	Frequency: Peak	Frequency: Midday	Frequency: Night	Frequency: Weekend	Service Span
CL	Add weekend service.	\$130,000	20	30	60	60	6:30 AM - 10:00 PM (M-F) 8:00 AM - 9:00 PM (Sat) 8:00 AM - 7:00 PM (Sun)
CW	Improve midday service to 30 minutes	\$150,000	20/30	30	60	60	7:00 AM - 9:00 PM (M-F) 8:30 AM - 6:30 PM (Sat-Sun)
D	Extend service to Patterson Place and provide Saturday service until 9 PM.	\$540,000	20	30	60	60	6:30 AM - 10:00 PM (M-F) 8:00 AM - 9:00 PM (Sat) 8:00 AM - 7:00 PM (Sun)
J	Improve morning peak service to every 10 minutes and offer 15-minute service until noon. Provide Saturday service until 11 PM and Sunday service until 9 PM.	\$320,000	10/15	15/20	30	40	6:30 AM - 12:00 AM (M-F) 8:00 AM - 11:00 PM (Sat) 8:00 AM - 9:00 PM (Sun)
NS	Improve morning peak service to every 6 minutes. Provide Saturday service until 11 PM and Sunday service until 9 PM.	\$230,000	6/10	15	40	30/40	5:30 AM - 11:30 PM (M-F) 8:00 AM - 11:00 PM (Sat) 8:00 AM - 9:00 PM (Sun)
West NC 54	New weekday peak-only service from White Cross to UNC-Chapel Hill	\$150,000	70	-	-	-	6:30 AM - 9:30 AM; 3:30 PM - 6:30 PM (M-F)
Estes Drive	New service connecting UNC-Chapel Hill, University Place, and Glen Lennox via Estes Drive.	\$1,300,000	30	30	30	30/45	6:30 AM - 8:30 PM (M-F) 8:00 AM - 7:00 PM (Sat-Sun)
Total		\$2,870,000					

Source: Nelson\Nygaard Consulting Associates



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LONG-TERM STRATEGIC ISSUES

While developing a transportation plan, there is a degree of uncertainty surrounding the future planning and operating context. These uncertainties are represented by a number of developmental, operational, and interagency variables that occur over a 10-year planning horizon.

Analyzing these variables and assessing probabilities and outcomes for CHT provides insight into the role the transit agency will play in the future.

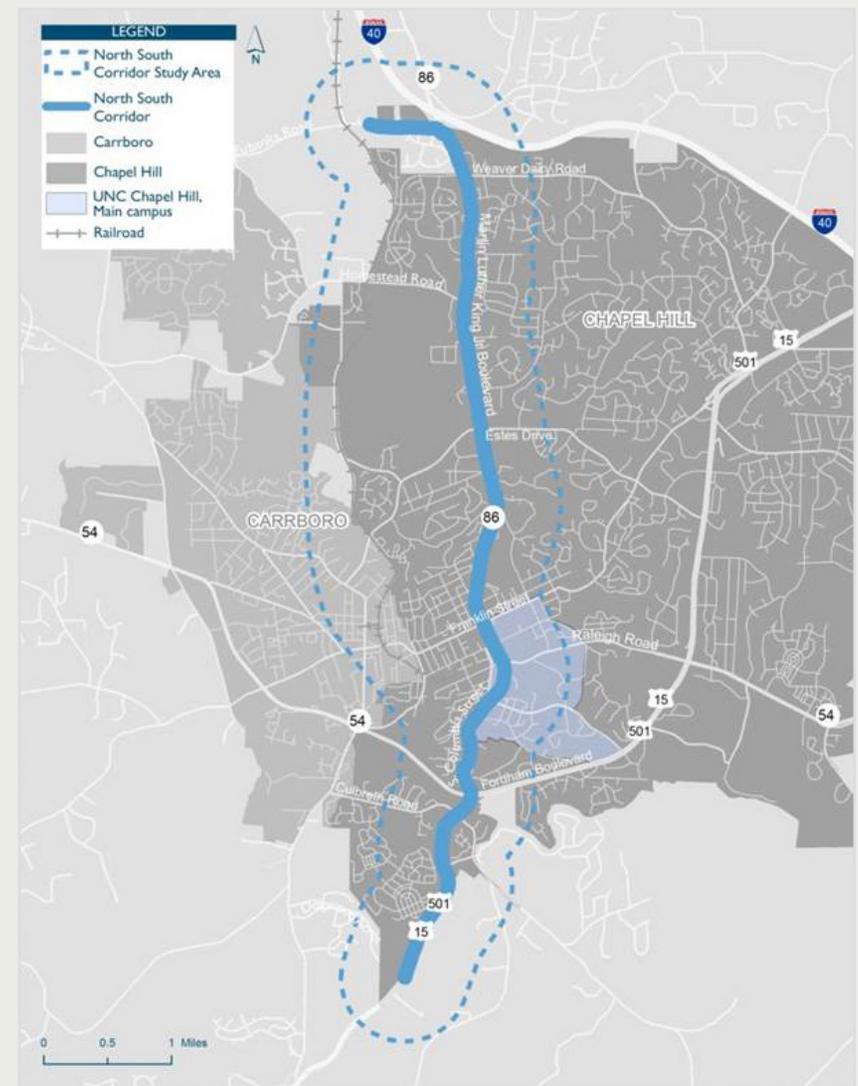
Bus Rapid Transit (BRT) Financing and Implementation

- The North-South BRT project is designed to meet existing demand and build the foundation for a high-capacity transit system to serve growing transit demand along CHT's highest ridership corridor.
- This service is not intended to replace existing service, and no cost savings are assumed as a result of BRT implementation.
- Currently, there is a \$12 million non-federal funding gap that must be bridged to qualify for federal grant funding.
- After funding is secured for the North-South BRT project, there is an opportunity to begin planning and design on a complementary East-West BRT corridor.

Regional Transit Service Coordination

- CHT operates on shared corridors with other agencies, including GoTriangle, Orange Public Transportation, Piedmont Authority for Regional Transportation, and Chatham Transit.
- There is currently a discrepancy between CHT's fare free service and the other agencies, which charge fares at the point of service, making CHT service more attractive to riders and creating additional capacity concerns.
- Leveraging shared corridors and exploring an interagency regional fare agreement could ease capacity constraints for the agency and help delay the implementation of costly new service to meet demand.

North-South BRT Project Locally Preferred Alternative



Multimodal Transportation System Planning

- There are numerous opportunities to coordinate planning between CHT service and the multimodal transportation network.
- Integrating bicycle lanes, on-board and off-board bicycle storage, sidewalks, and pedestrian crossings with transit infrastructure are key strategies for improving accessibility and meeting the needs of all users.
- Taking an integrated, multimodal approach to transit planning in order to promote first mile-last mile connectivity and complete streets policies may increase ridership, bolster the multimodal transportation system, and improve accessibility to transit.

Environmental Impacts

- Investing in electric vehicles could result in significant emissions reductions for CHT, but have high capital costs associated, approximately \$300,000 more per vehicle than standard buses.
- CHT should continue to evaluate improvements for electric vehicle technology, including ability to operate in hot temperatures and on steep grades to best meet the local needs of the agency.

Future Development Impacts on Transit Demand

- New residential development planned in the Chapel Hill area is expected to increase demand on already overcrowded routes.
- Large-scale developments under construction could add 4,500 new transit trips, including Carraway Village, Obey Creek, and Glen Lennox.
- There may be an opportunity to explore payment-in-lieu programs or transit improvement districts to generate additional funding and improve capacity to meet growing demand.



Off- and on-board bicycle storage improve multimodal integration with transit

Source: Bike Link, Nelson\Nygaard Consulting Associates, Community Transit, King County Metro



Large-scale construction is likely to increase demand for CHT transit service

Source: The Daily Tar Heel

Park-and-Ride Corridors

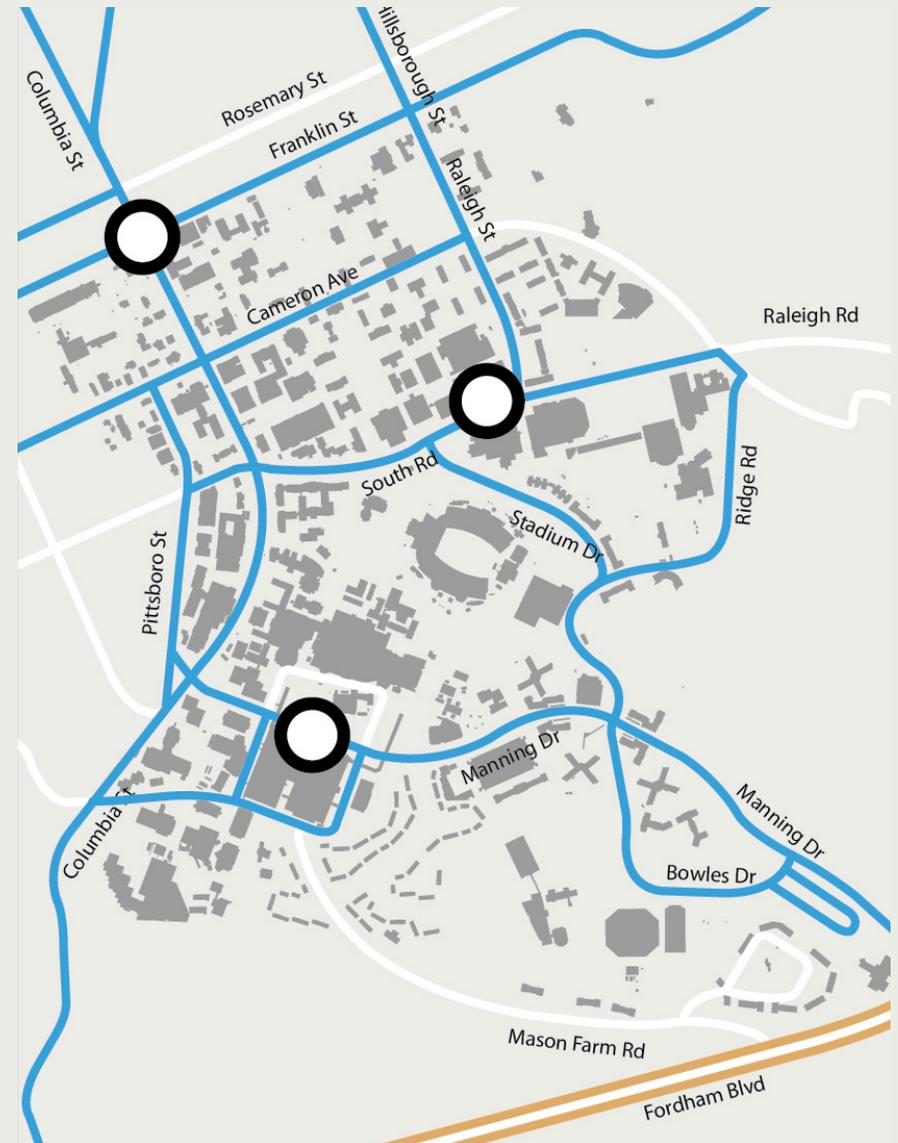
- In the short-term, CHT has sufficient park-and-ride capacity to meet demand. However, there is an opportunity to re-evaluate the existing park-and-ride model in the long-term.
- There is an opportunity to offer park-and-ride based service along the west NC 54 corridor.

Transit Hubs

- The CHT system does not currently have any dedicated transit hub space for bus layover, but there are opportunities for transit hubs or bus pull-outs in downtown Chapel Hill, at the UNC Student Union, and at the UNC Hospitals.
- The highest priority transit hub is at the UNC Hospitals, which is currently served by 25 routes and 53 buses per hour in each direction.



Park-and-Ride policies and priorities should continue to be assessed.



Potential transit hub locations near downtown Chapel Hill, UNC-Chapel Hill, and the UNC Hospitals

Source: Nelson\Nygaard Consulting Associates



The North Boulder Mobility Hub provides off-street space for bus layover and passenger loading. (Boulder, CO)

Source: City of Boulder, Colorado

NEXT STEPS

While the SRTP takes a comprehensive approach to operational improvements within the agency, many of the next steps in the process will require coordination with external agencies.

Crucial next steps to continue improving CHT service and ensuring future viability of the agency include:

Monitor System Performance

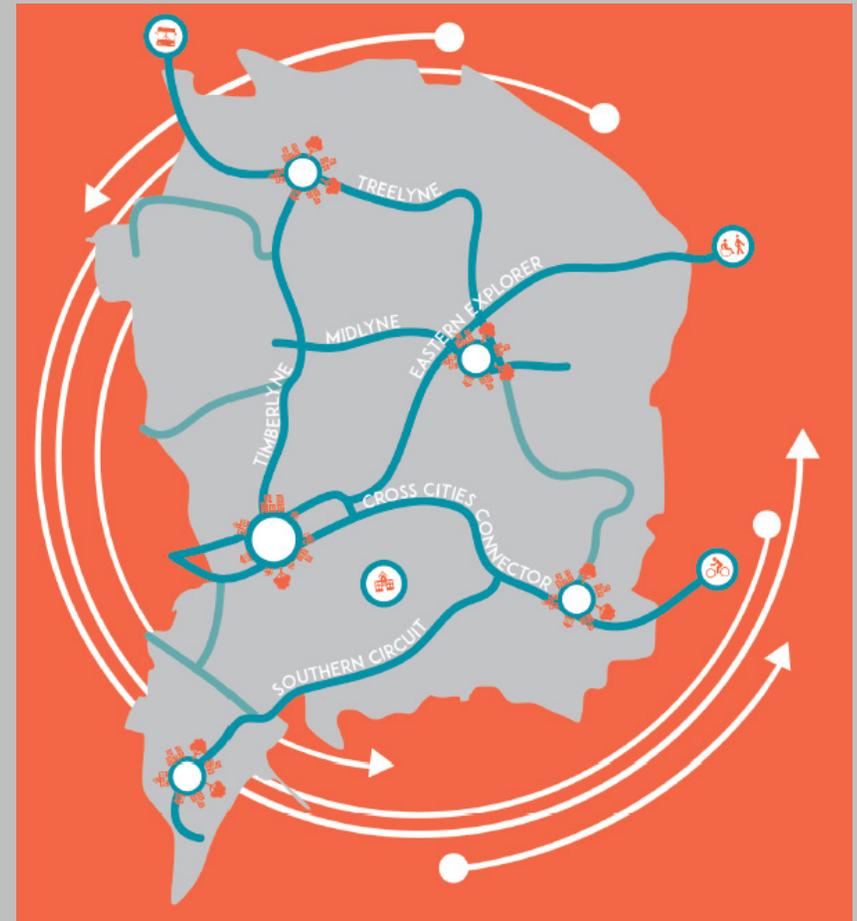
- Following the implementation of the Preferred Alternative, it may be necessary to make small adjustments to schedules or service frequency.
- Projected travel times and demand for service may vary after implementation. To ensure the system continues to perform at a high level, it will be necessary for CHT to continue monitoring performance and ridership at the stop and route level.

Finance and Develop BRT System

- The planned North-South BRT project currently has a \$12 million funding gap that must be bridged before the project will be eligible for federal grant funding. CHT should continue exploring funding mechanisms for the North-South BRT project.
- During Phase II Outreach, a proposed dedicated East-West route was positively received by survey respondents. Given existing demand and proposed additional development between Carrboro, Franklin Street, and the 15-501 corridor, there is an opportunity for CHT to begin planning for a potential East-West BRT line to complement the North-South BRT project.

Investigate Service Expansion and Transfer Opportunities with Regional Providers

- CHT service currently approaches, but does not serve, Patterson Place—a high ridership location served by GoTriangle and GoDurham. Coordination with these agencies will allow CHT to determine if it is practical to expand to reach this destination in the future.



Non-motorized priority network identified in the 2014 Chapel Hill Bike Plan

Source: Town of Chapel Hill



Fare discrepancies between CHT and GoTriangle presents capacity challenges for the agencies on shared service corridors

Maximize Demand Response Resources

- Currently, CHT operates paratransit service in the urban areas of Orange County, while OPT and Chatham Transit provide service in rural areas.
- There is an opportunity to consider consolidation of paratransit service in Orange County to better meet the needs of riders, as well as facilitating easier integration with region-wide services. Consolidated paratransit service would allow for coordinated dispatching and potential cost savings for the county as a whole.

Pursue Coordinated Fare Policy

- One major difference between CHT and other regional operators is CHT's fare free policy. This policy creates an incentive for passengers to take CHT service instead of other regional options since they can use the service for free; in some cases, this results in partner agency routes operating with excess capacity.
- CHT should continue to pursue opportunities for fare policy partnerships with regional providers. In return, CHT may have more flexibility to delay capital expenditures and operating costs associated with adding capacity to meet growing demand on high ridership routes.

Coordinate Multimodal Transportation Network Development

- Continue coordination with the Towns of Chapel Hill and Carrboro to foster an effective multimodal transportation system with limited right-of-way.

Monitor Improvements to Electric Vehicle Technology

- Ongoing bus replacement and fleet modernization will continue to have financial implications for CHT. There is interest in incorporating electric vehicles and alternative fuels into the fleet modernization process. CHT should continue monitoring the progress and development of electric vehicle technology and wait for the technology to fully mature before making large-scale investments.



Electric bus in operation for King County Metro (Seattle, WA)
Source: King County Metro

Identify Funding to Meet Transit Demand Associated with New Developments

- New large-scale developments planned in Chapel Hill are expected to increase demand for transit on some of the systems most congested routes.
- CHT should investigate opportunities to incorporate payment-in-lieu programs and transit improvement districts into the development process to ensure that developers are paying their fair share to meet increased demand on the transit system.

Evaluate Future Park-and-Ride Strategy

- Explore the opportunity for new park-and-ride based service and re-evaluate the existing park-and-ride service model.

Coordinate Transit Hub Development

- The UNC Hospitals stop currently serves 53 buses per hour in each direction and is a highly space constrained location. GoTriangle, PART, and potentially CHT routes could all end at the Hospital, but do not due to lack of layover space. Layover space for each route terminating near the Hospital is desirable



There is an opportunity to explore payment-in-lieu and transit improvement districts to generate additional revenue from new large-scale developments, including Carraway Village.



There is an opportunity to reevaluate how park-and-ride service is provided and to explore potential locations for new park-and-ride based services.

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