



TOWN OF CARRBORO
NORTH CAROLINA

TRANSMITTAL**PLANNING DEPARTMENT**

DELIVERED VIA: ☒ *HAND* ☐ *MAIL* ☐ *FAX* ☒ *EMAIL*

To: Carrboro Board of Aldermen
David Andrews, Town Manager

From: Zachary Hallock, Transportation Planner

Date: October 11, 2019

Subject: Review of NC 54 West Corridor Study – Phase 2

Introduction

This document aims to explain the technical complexities and assess the completeness of the Phase 2 memo provided by Don Bryson and VHB Engineering as it relates to the questions submitted to the DCHC MPO by Carrboro Alderman Seils and Mayor Lavelle, which prompted the NC 54 West Corridor study and Phase 2 follow-up memo. This document will summarize the questions initially posed and whether they were answered by Phase 2 then describe the content of the memo and figures provided to the DCHC MPO Technical Committee and DCHC MPO Board.

Initial Questions

As a starting point, the Phase 2 memo was reviewed under the lens of the questions initially posed by Alderman Seils and Mayor Lavelle to the DCHC MPO Board in 2015, which prompted this study. Each question will be assessed as to whether the Phase 2 memo answered it, with accompanying details describing the information supporting the answer.

- 1) How would a four-lane median-divided roadway in this location align with NCDOT's and the Town of Carrboro's commitment to Complete Streets? How would bicyclists and pedestrians be accommodated?**
 - a) The extent to which bicyclists and pedestrians would be accommodated in this proposed improvement would be through a sidepath. However, due to right-of-way limitations, the Phase 1 study indicated that only the four-lane median-divided improvements could be built without additional right-of-way acquisition. The implication that any additional ROW costs would be attributed to the bicycle and pedestrian facility along the corridor makes it clear that providing this facility is not a priority of these improvements and does not align with the Town of Carrboro's commitment even though it may align with

NCDOT's policy. The sentiment that NCDOT is overly focused on highway/automobiles at the expense of other modes of transportation is one which was echoed by interviewees as part of an evaluation of the NCDOT complete streets policy in 2018. While the Study's recommendations align with NCDOT's previously adopted complete streets policy, that policy was updated in August 2019 and other changes to the policy are expected in the next few months.

This question was answered by the phase 2 study.

2) What are and will be the origins and destinations of trips along the corridor?

- a) The Triangle Regional Model, BGMPO Travel Demand Model, and North Carolina Statewide model all contain information about the origins and destinations of trips within their respective geographies. The use of Streetlight data and the Select Link tool within the TRM provide additional information relating the origins and destinations of trips along the NC 54 corridor with Orange County west of Carrboro.

This question was answered by the phase 2 study.

3) What is the estimated number of new employees of UNC Chapel Hill and UNC Hospitals and of other existing, proposed, and expanded uses?

- a) There is no indication of what the existing, or future employment growth of UNC Chapel Hill and UNC Hospitals would be or how that would affect travel patterns. Analysis of UNC Chapel Hill and Hospitals was limited to reviewing the home addresses of employees.

This question was not answered by the phase 2 study.

4) Will parking be provided on-site at those destinations (UNC Chapel Hill and UNC Hospitals), or will travelers be expected to use park-and-ride lots to travel into and get around the downtown areas?

- a) There was no discussion of on-site parking at UNC-CH and UNC Hospitals or if travelers are expected to use park and rides. The study did identify current and potential, park and ride locations along the NC 54 and I-40 corridors which link the Chapel Hill-Carrboro and Burlington-Graham areas.

This question was partially answered by the phase 2 study.

5) How will proposed transit service improvements along the Martin Luther King Jr. Boulevard portion of the North-South Corridor in Chapel Hill affect commuters traveling to UNC Chapel Hill UNC Hospitals from the west? Will these travelers be more likely to use the I-40 corridor rather than NC 54 to reach planned park-and-ride lots?

- a) The study identified current transit providers and summarized transit services connecting UNC-CH and UNC Hospitals to the west, and that park and rides serving the NSBRT project could be utilized by commuters thus limiting the traffic reduction potential for park and ride locations along NC 54. There was no detailed analysis as to the impacts

which the NSBRT would have on regional transit service to Burlington/Graham, other than the assumption that it would reduce bus travel times along NC 86 in Chapel Hill.

This question was partially answered by the phase 2 study.

6) What proportion of UNC Hospital's employees who live in Alamance or western Orange Counties will commute to the UNC Health Care Hillsborough Campus rather than the main facility in Chapel Hill?

- a) The study did not address future changes in UNC Hospital employment locations, the UNC Health Care Hillsborough Campus, or changes to the proportion of employee residence distribution.

This question was not answered by the phase 2 study.

7) Will travelers heading east toward Raleigh/Durham use the I-40 corridor rather than the NC 54 corridor?

- a) The study did not address the likelihood of trips with destinations in Raleigh/Durham utilizing I-40 instead of NC 54, commuter routing and travelsheds were only analyzed for the areas west of Carrboro.

This question was not answered by the phase 2 study.

Corridor Trip Origins and Destinations

- This section of the report reviews existing traffic volume, areas from which people are likely to use NC 54 to access UNC & Southern Village based on readily available travel time information, and more specialized data sets which assess corridor level routing.
- Traffic volumes are highest on either end of the corridor and lowest in the middle near the county line.
- Figures 1 and 2 depict areas where people living would use NC 54 as the shortest commute route to UNC Chapel Hill or to Southern Village.
 - These are not exact calculations, and other personal preferences may affect the route somebody chooses to take.
 - Figure 3 shows the reverse of this, the area where people commuting to Burlington from would use NC 54 as the shortest route
- Figures 4 through 9 show the distribution of traffic along NC 54 based on a specialized data source (Streetlight) which the DCHC MPO has access to use.
 - For total daily traffic starting on NC 54 east of Orange Grove Road (Figure 6) about half will continue through Carrboro (east of Poplar Ave).
 - This proportion increases to about two-thirds during the AM peak period (Figure 7)
 - For total daily traffic starting on W Main St (Figure 8), only about 10% makes it to Orange Grove Road but nearly half end in Carrboro Plaza.
 - For total daily traffic starting on NC 54 east of Poplar Ave (Figure 9), about one-quarter makes it to Orange Grove Road with nearly one-third of traffic entering Carrboro Plaza

- Based on this data, Carrboro Plaza is likely acting as a pass-by destination for commuters as they stop to access retail and grocery at the Plaza prior to heading further west where there is less development.
 - The potential impact of these pass-by trips has not been assessed by the Phase 2 memo due to the limitations of the data source, not capturing these trips.
- The Streetlight data relies on the location services of smartphones and mobile devices which have agreed to share that information as part of the terms of service for an application.
 - There is no personal identifying information associated with this data.
 - The underlying demographics for the Streetlight data is based on the census tract where individual devices “sleep” at night (or spend approximately 7 hours in the same location).
 - The Streetlight data assumes demographics for its sample of trips starting in census tract as having the same distribution of that tract.
 - This can fail to account for difference in smartphone/mobile device ownership between different groups based on age, race, income or other demographic factors.

Travel Demand Models

- The Triangle Regional Model (TRMv6, used by the DCHC MPO) and the Piedmont Triad Regional Model (PTRM, used by the BGMPO) are statistical models use to forecast traffic volumes within the NC 54 West corridor.
 - Figures 10 and 11 show the assumed population and employment growth contained within these two models from 2013 to 2045.
 - Much growth within the 5 mile project buffer is occurring in central Chapel Hill, with more distributed growth also occurring in northern Chapel Hill/Carrboro and urban areas of Burlington and Graham north of I-40. The models assumed growth along the middle of the corridor (rural areas in Orange and Alamance counties) would be very low.
- These models are also capable of displaying the travel patterns within the model (Figure 12) showing distributions of traffic in a similar fashion to figure 6 through 9
 - TRM shows that over 4/5th of traffic starting at NC 54 east of Orange Grove Road continues to old Fayetteville and over half continues through Carrboro (east of Poplar Ave). Both of these numbers are consistent with the Streetlight data discussed previously.
 - There are some differences between them: the model shows lower traffic on Old Fayetteville north of NC 54, higher traffic on W Main St, and does not capture trips ending in Carrboro Plaza.
- The Triangle Regional Model can also be used to compare between two different roadway network scenarios, such as the daily traffic differences between a 2-lane and 4-lane NC 54 (Figure 13)
 - In this figure red lines are increases in traffic (caused by drivers taking a route to access NC 54 with higher capacity), blue lines are decreases in traffic (a now slower route which drivers are no longer taking), or yellow lines which don't see a significant change in traffic volume (<100 vehicles per day).
- These models are just tools and there are several potential issues which raise concern:

- First is the accuracy of the rural network in the model, which shows Arthur Minnis Road as carrying 400 daily trips (which shift onto NC 54) even though a section of the road is currently unpaved.
- Second is the determination if these models can accurately capture new travel demand which is induced by new capacity on NC 54 under two conditions:
 - Commuters who choose to drive earlier or later than rush hour (to avoid congestion) may choose to travel during rush hour if traffic isn't as bad. These models do not capture this shift as time periods are modeled individually.
 - Commuters from Burlington/Graham who choose to take the existing PATH bus service which runs along I-40 may choose to drive on NC 54 instead due to the decrease in travel time. Travel Demand Models calculates mode split (proportion of transit use) independent of the roadway network, so this change is likely not captured.

Historical Trends

- Results from the travel demand model are compared against projections of traffic volume based on historical data (Figure 14).
 - This comparison shows both a 1% & 1.5% annual linear traffic growth rate; this is contrary to the historical volumes on NC 54 west of Old Fayetteville, which have been flat for the past 10 years.
 - Also shown is the capacity for two-lane and four-lane roadways, the latter of which is not reached in the 2045 Build scenario.
- Figures 16 and 17 show comparisons between Historical Population vs AADT and Forecast Population vs AADT for the geographic areas defined in Figure 15.
 - The memo also indicates that “overall growth trends are reasonably consistent” which is directly in contrast to observations of other roads in Carrboro which have seen flat or even declining trends in traffic volume over the past 5 to 10 years.

Transit Service

- This section summarized current transit services from Chapel Hill Transit, Piedmont Authority for Regional Transportation, Link Transit (Burlington/Alamance) and GoTriangle.
 - Figure 18 displays current bus service and potential park and ride locations.
- Transit ridership along NC 54 is expect to be limited to park and ride users due to existing development restrictions.
 - The memo poses a potential park and ride at Anderson Park, yet this is not feasible due to the current level of utilization of existing parking. Yet creation of park and rides further out along NC 54 would require a substantial increase in transit service for a difficult to quantify benefit.
 - Transit services currently being operated by PATH along the I-40 corridor into Chapel Hill are standing room only during the peak hour, travel a route which is available for additional urban development, and are poised to benefit from the proposed bus lanes of the NSBRT along NC 86 in Chapel Hill.
 - If the goal of transit along the NC 54 corridor is to connect commuters located to the north and west of Carrboro with a direct route into UNC-CH and UNC Hospitals,

- improving service on an already successful route is more likely to lead to increased transit ridership.
- If the goal of transit along the NC 54 corridor is to provide service to rural residents, other demand-responsive services or emerging rideshare technologies could be considered.

UNC-CH and UNC Hospital System

- There is minimal discussion of policies or employment locations related to UNC, but focuses on the locations of residences of employees.
 - Figures 19 and 20 show the residence locations of UNC-CH and UNC Hospitals within the region and NC 54 study corridor
 - Figure 21 depicts the distribution of UNC-CH and Hospital employee residences by commute corridor.
- Missing from this section was any discussion of future increases/changes to UNC parking capacity, future increases/changes to total employment in the UNC Hospitals area, current parking prices & how they could be used to manage demand for roadway capacity or fund transit service.

Conclusion

Both of the Phase 1 and Phase 2 studies for NC 54 read as though they are attempting to justify the need to increase roadway capacity by adding new lanes (as was described in the initial SPOT 3.0 project which prompted this study), as opposed to determining the need of the corridor. The current limitations on development, watershed restrictions, and rural character of the corridor do not align with the proposed recommendation of widening the road to four lanes divided. There appears to have been minimal considerations for the impacts on the properties adjacent to the current right of way, both active farmland and rural properties which rely on septic systems.

Additionally, the Phase 2 memo poses that transit service users along the NC 54 corridor would likely be limited to park and ride users due to the development restrictions. The case can be made that widening a two-lane rural road to a four-lane median divided facility sends a signal to developers that this land should be developed, despite the fact that may be contrary to the long-term vision for land use in this corridor.

The Phase 2 study also indicated that it would consult with the Planning Directors at the local jurisdictions (Carrboro and Orange County) to determine the validity of the growth assumptions made in the travel demand models. There was no indication that this was done, nor was it confirmed that the assumptions contained within the models reflect the long term land use visions of the local planning departments.