Wake BRT: Western Boulevard Corridor Study

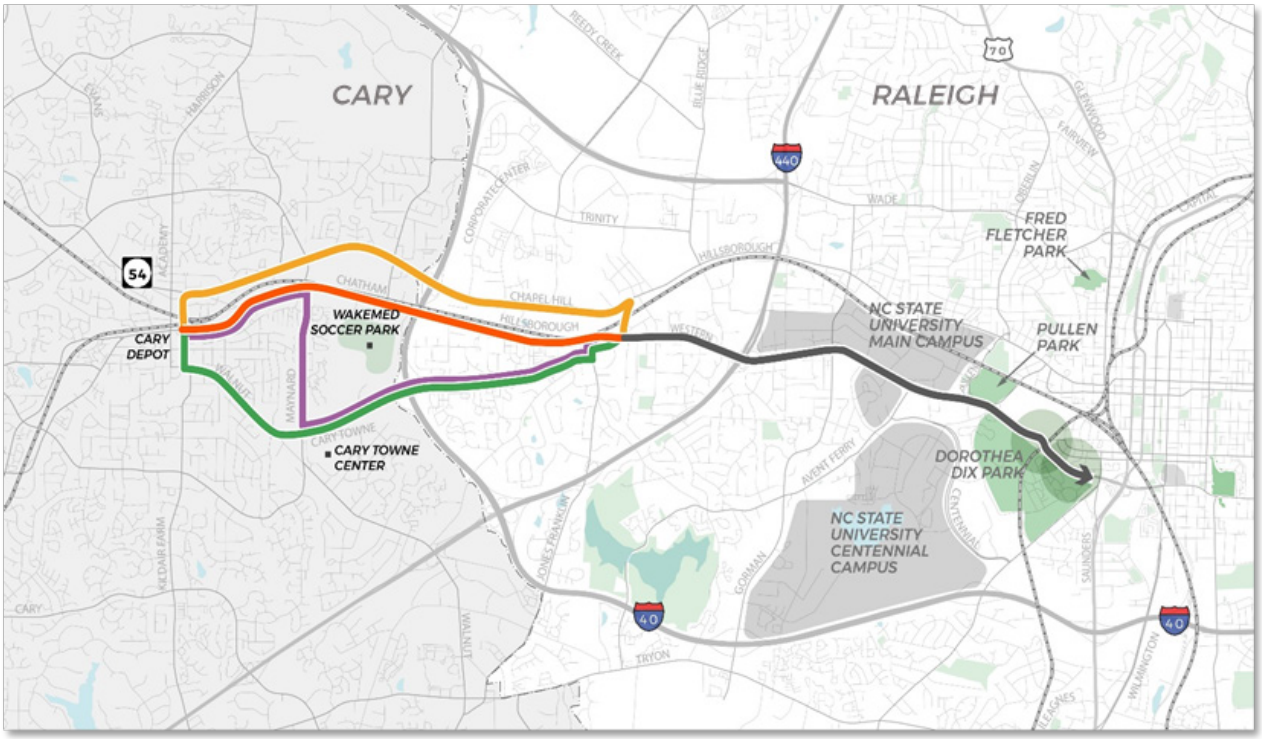
Final Report

January 2021

CONTENTS

INTRODUCTION

The Western Boulevard corridor in the City of Raleigh is a major East-West connector in the City and links downtown Raleigh and downtown Cary to destinations such as Pullen Park, Dorothea Dix Park and the North Carolina State University (NCSU) campus. The corridor is poised to transform with the introduction of new Bus Rapid Transit (BRT) service, with the Western Corridor being one of four corridors in Wake County identified in the Wake Transit Plan for BRT service to provide frequent and reliable urban mobility. This new frequent, reliable transit service will provide service every 10 minutes in peak periods and will provide an elevated transit experience with level boarding, unique system branding and off-board fare collection.



The Wake County Transit Plan identified potential corridors for future BRT connecting downtown Raleigh with downtown Cary, identifying Western Boulevard as the preferred route to a point near the intersection with Jones Franklin Road. To complete the corridor into Cary from Western Boulevard, the plan identified three alternatives including Chapel Hill Road Alternative, East Chatham Street/Hillsborough Road Alternative, and Cary Towne/Walnut Alternative. Following a proposal from the Town of Cary, the Wake BRT: Western Boulevard Corridor Study identified a fourth alternative, Cary Towne/Maynard Alternative, to be evaluated.

In early 2019, the City of Raleigh's Urban Design Center launched the Wake BRT: Western Boulevard Corridor Study with the intention of bridging the gap between prior transit planning work, accomplished under a Major Investment Study (MIS), and future Project Development work (30% design and NEPA) for the Wake BRT: Western Boulevard Corridor. The goal of this study was to synthesize existing and recently adopted studies with further technical analysis around the land use capacity and urban form of the Western Boulevard Corridor to position this important transportation corridor for successful BRT implementation.

EXISTING CONDITIONS

Multimodal and Safety Analysis + Sidewalk and Bicycle Infrastructure Inventory

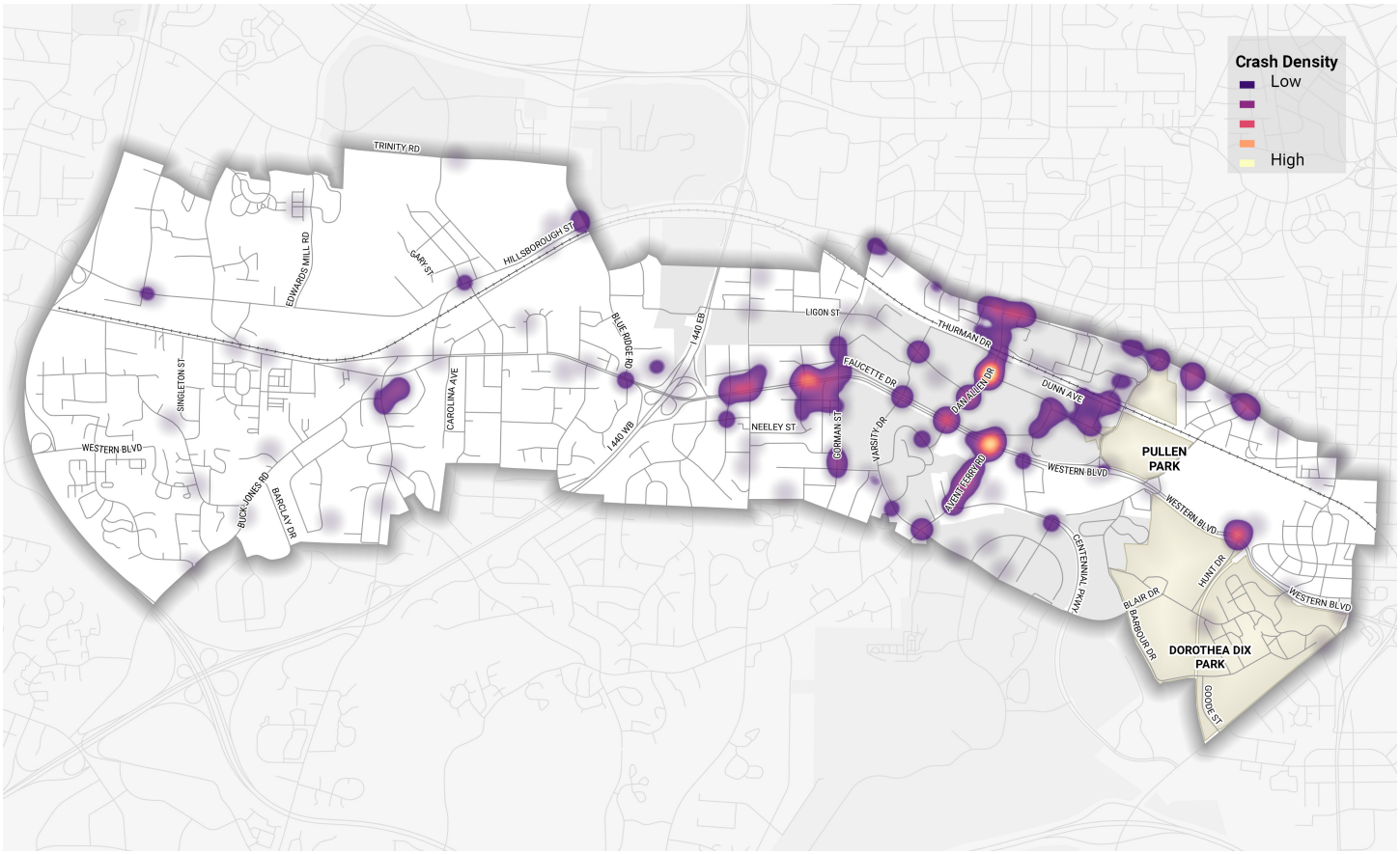
A Multimodal and Safety Analysis that studied the existing conditions surrounding bicycle, pedestrian and transit facilities along the corridor was conducted as part of the Wake BRT: Western Boulevard Corridor Study. This analysis highlighted several areas along the corridor that could benefit from proposed improvements.

A Sidewalk and Bicycle Inventory, conducted as part of the Multimodal Safety Analysis, highlighted several concerns. For pedestrians traveling along the corridor, it is can be difficult to cross Western Boulevard. While Western Boulevard is separated by a median throughout the study area, it is important to note that the medians do not serve as functional or accessible pedestrian refuges at many of the crossings. Additionally, where curb ramps do exist, they are often not directional, not aligned with the crosswalk, or in a state of disrepair.

For bicyclists traveling along the corridor, multi-use paths exist along much of Western Boulevard, but key infrastructure gaps prevent bicyclists from safely and comfortably traveling along corridor. As the corridor moves west out of downtown Raleigh, the presence of multi-use paths drop off as well as the presence of other bicycle facilities such as bike lanes and shared lane markings. There are currently no bicycle facilities west of Jones Franklin Road or on either Hillsborough Street or Buck Jones Road.

A major concern for pedestrian and bicycle safety along the corridor is the rate of crashes along the corridor. Looking at combined bicycle and pedestrian crashes over a twelve-year period (2007-2018) revealed 496 total crashes, with fatal and disabling crashes at 7% of this total or 37 crashes. Pedestrian failure to yield and motorist drive out crashes were the most prevalent.

The findings of this analysis will inform the design of the future BRT service with the goal of creating a multimodal corridor which provides safe and functional facilities for all users; motorists, pedestrians, transit users and bicyclists.



EXISTING CONDITIONS

Transit and Demographic Analysis

Transit Review

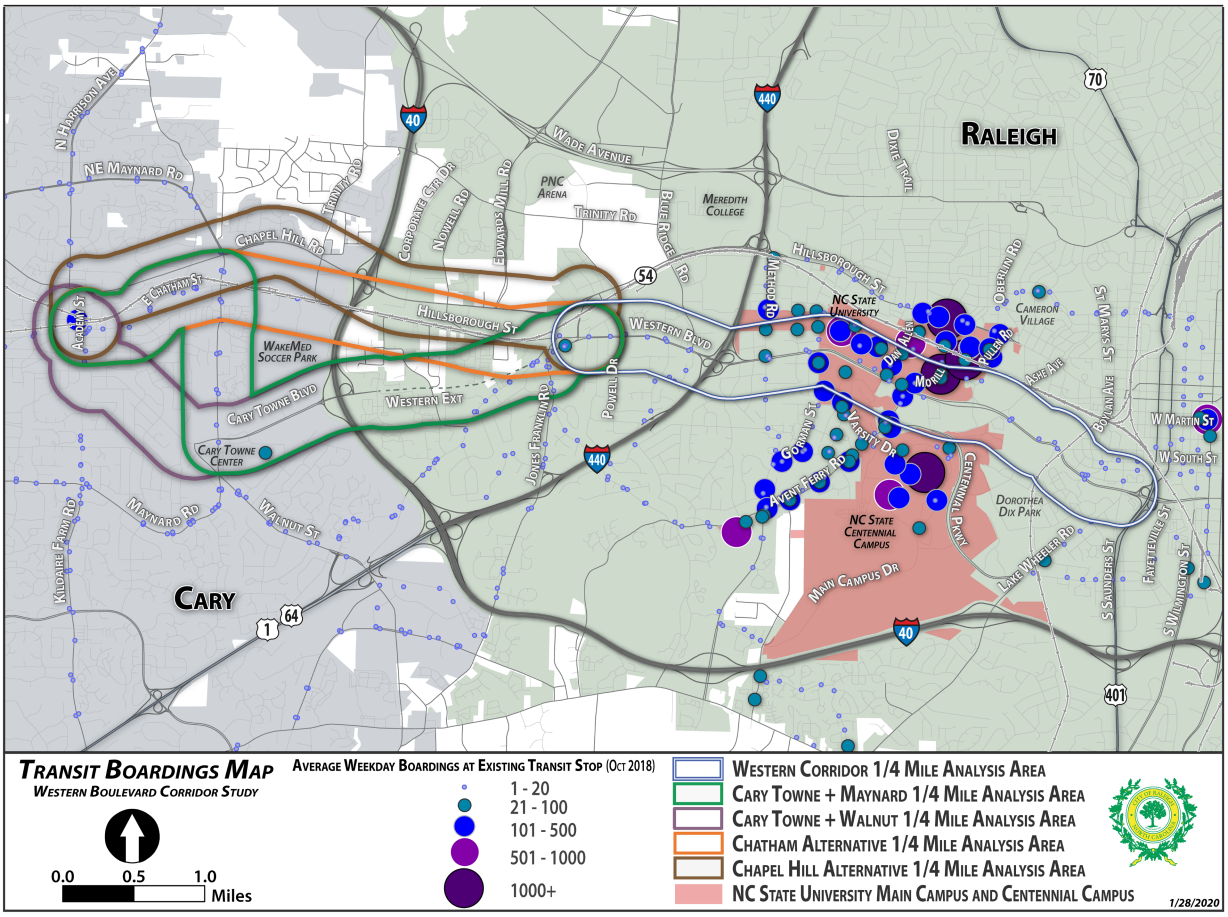
Currently GoTriangle, GoRaleigh, GoCary, and NC State's Wolfline all provide transportation and paratransit services along the corridor. To understand potential ridership of the BRT route in the corridor, ridership data from GoRaleigh, GoCary, GoTriangle and NC State's Wolfline from October 2018 was used to generate daily average for transit stops used. Once captured, transit stops boardings were tallied to determine ridership in a corridor. In total, there are 115 existing transit stops located within the quarter mile study area segment on Western Boulevard, and four alignment options for BRT. Below is the number of stops and average daily boardings for each agency in October 2018.

GoTriangle: There are 33 stops within ¼ mile of proposed station locations with a total average of 336 daily boardings.

GoRaleigh: There are 34 stops within ¼ mile of proposed station locations with a total average of 301 daily boardings.

GoCary: There are 26 stops within ¼ mile of proposed station locations with a total average of 232 daily boardings.

Wolfline: There are 15 stops within ¼ mile of proposed station locations with a total average of 5,012 daily boardings.



In addition to analysis of each agency, an analysis was conducted of potential ridership of each BRT alignment, and the percent of riders that board within a quarter mile of the alignment or a quarter mile of the proposed BRT station to assess the potential for ridership on the new BRT service. **The Cary Towne / Maynard Alternative sees almost 50% of existing transit boardings within a quarter mile of proposed stations, demonstrating the highest potential for BRT ridership.**

EXISTING CONDITIONS

Transit and Demographic Analysis

Demographic Analysis

A Demographic Analysis was conducted in order to better understand transit-dependency in various populations and to inform future public involvement processes.

Employment

Historic, existing and projected employment quantities were analyzed to understand potential ridership along the corridor segments. While the Chapel Hill Road Alternative study area segment has the largest existing employment of all four alternative corridor segments, its growth percentage is expected to grow the least by 2045. Between 2018 to 2045 employment projections, employment is expected to nearly triple in all four alternative corridor segments. Historic employment data was collected by the US Census, and projected employment data is from the Triangle Regional Model.

Corridor Segment	2010 Employment	2013 Employment	2018 Employment	Projected 2028 Employment	Projected 2040 Employment	Projected 2045 Employment
Cary Towne / Maynard	6,032	6,701	9,442	14,914	21,484	24,215
Chapel Hill Road	6,701	7,194	10,166	16,095	23,218	26,180
East Chatham / Hillsborough	9,442	5,542	8,834	15,406	23,299	26,582
Cary Towne / Walnut	14,914	4,668	6,614	10,498	15,160	17,099
Western	21,484	15,036	17,781	23,266	29,853	32,589

Disabled, Minority and Limited English Proficiency Populations

Disabled, minority, and Limited English Proficiency (LEP) populations are analyzed because these populations can benefit from transit and are sometimes reliant on transit for local and regional transportation. The ACS defines disability as a person with a serious difficulty with four basic areas of functioning – hearing, vision, cognition, and ambulation, self-care, and independent living. The ACS data defined any minority population as any non-white population. The ACS defines Limited English Proficiency as anyone above the age of 5 that can speak English less than "Very Well". The table below displays disabled, minority, and LEP population data for the corridor segments based on the American Community Survey (ACS). These statistics indicate that the Cary Towne / Maynard Alternative would serve more disabled, minority, and LEP populations than any other alternative considered, and it generally has the largest density of those individuals.

Corridor Segment	Disabled Persons		Minority Population		Limited English Proficiency	
Cary Towne / Maynard	**712**	**6.9%**	**5,429**	**52.9%**	**1,347**	**17.2%**
Chapel Hill Road	406	6.9%	2,442	45.4%	548	13.0%
East Chatham / Hillsborough	456	7.3%	3,355	50.4%	824	16.1%
Cary Towne / Walnut	693	7.6%	4,172	47.5%	913	13%
Western	535	4.4%	4,640	38.4%	545	5.0%

EXISTING CONDITIONS

Transit and Demographic Analysis

Poverty

Poverty rates are analyzed to ensure transit connects these populations to amenities, education, and employment areas. Areas with the most poverty have the lowest rates of single occupancy vehicle use, and the highest usage of less costly travel modes including transit. Table 6 displays the percentage of people below, at least 50% under the Poverty Level, and between 100% and 149% under the poverty level.

Corridor Segment	Persons Below Poverty Level		Persons Under 50% of Poverty Level		Persons Between 100% and 149% of Poverty Level	
Cary Towne / Maynard	**1,883**	**18.4%**	**1,082**	**10.6%**	**1,995**	**19.5%**
Chapel Hill Road	685	12.8%	181	3.4%	716	13.3%
East Chatham / Hillsborough	1,290	19.4%	590	8.9%	1,267	19.1%
Cary Towne / Walnut	1,546	17.6%	803	9.2%	1,418	16.2%
Western	2,267	40.0%	1,223	21.6%	742	13.1%

Household Automobile Ownership

Vehicles per household rates are studied because households with fewer vehicles may rely on alternative forms of transportation including walking, bicycling, and using transit. Table 8 displays the percentage of households with one or no vehicles for the corridor segments. This data was collected by the US Census's American Community Survey and was provided at the Block Group level. Over ten percent of the households along the Western Boulevard study area segment have no vehicles. The location of the Block Groups with significant quantities of no vehicles is west of I 440 east of Jones Franklin Road.

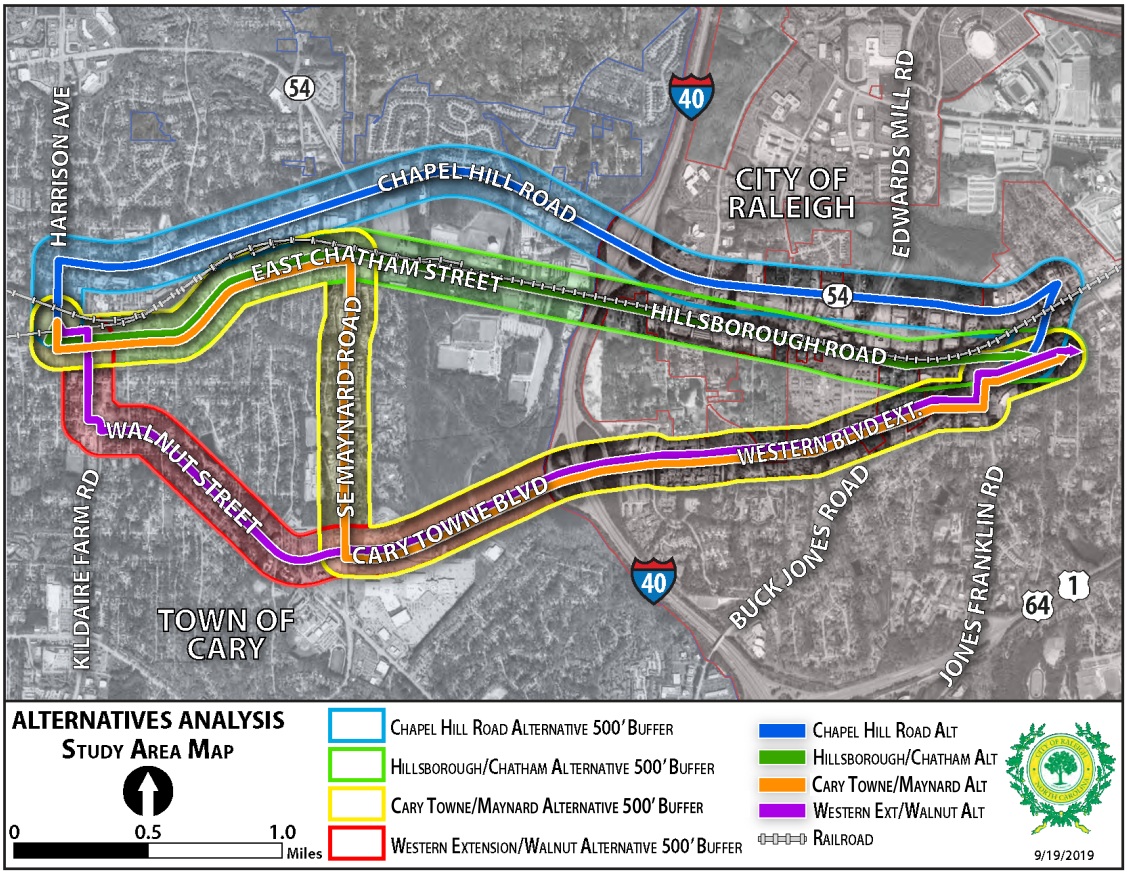
Corridor Segment	Households with 1 Automobile		Households with No Automobile	
Cary Towne / Maynard	1,701	44.3%	140	3.6%
Chapel Hill Road	812	39.2%	85	4.1%
East Chatham / Hillsborough	1,085	44.2%	90	3.7%
Cary Towne / Walnut	1,464	42.1%	150	4.3%
Western	883	41.2%	250	11.6%

EXISTING CONDITIONS

Critical Issues Memorandum (NEPA Red Flag Screening)

The purpose of the Critical Issues Memorandum was to provide a preliminary review of potential environmental resources within or adjacent to the Western Boulevard Corridor that may be affected by the implementation of the proposed BRT. This review was aimed at simplifying future analysis and documentation required by the National Environmental Policy Act (NEPA). The project study area for this review of potential environmental resources followed the the proposed transit alignments for all four BRT alternatives. Online databases were used to identify known resources within the project study area and provide an overview of the resources present within a 500-foot buffer of each BRT alternative.

Each alternative has environmental resources present along their route, but no alternative has a fatal flaw that would eliminate it from future analysis due to the presence of these resources. Below is a summary of the findings for each alternative.



Cary Towne / Maynard Alternative

- This alternative has the highest number of community resources present.
- This alternative has the potential for 10 residential relocations, due to the Western Boulevard Extension (a new, proposed roadway).
- There is the potential habitat for Threatened and Endangered Species with this alternative. Surveys will need to be completed and coordination held with USFWS during project development to determine the impact to these species and any other species of concern in the study area.
- There are a significant number of hydraulic features within this alternative. Mitigation may be required due to the potential impacts to these hydraulic features.
- A significant number of hazardous materials are located within the study area for this alternative. A geo-environmental assessment will be needed for further details of the potential impacts to the sites that contain hazardous materials.

EXISTING CONDITIONS

Critical Issues Memorandum (NEPA Red Flag Screening)

Cary Towne / Walnut Alternative

- This alternative has the most parks along the corridor and the most linear feet of greenway. Most of the linear feet of greenway runs parallel to the route.
- This alternative has the potential for 10 residential relocations, due to the Western Boulevard Extension being a new, proposed roadway.
- This alternative has the second highest number of historic resources present along the alternative, but unlike other alternatives the route runs through a National Register Historic District. This could require additional coordination to mitigate any potential impacts to the National Register Historic District.
- There is the potential habitat for Threatened and Endangered Species with this alternative. Surveys will need to be completed and coordination held with USFWS during project development to determine the impact to these species and any other species of concern in the study area.
- There are a significant number of hydraulic features within this alternative. Mitigation may be required due to the potential impacts to these hydraulic features.
- A significant number of hazardous materials are located within the study area for this alternative. A geo-environmental assessment will be needed for further details of the potential impacts to the sites that contain hazardous materials.

East Chatham Street / Hillsborough Road Alternative

- This alternative has the highest number of historic resources present along the alternative.
- This alternative has the highest number of hazardous materials/incidents. A geo-environmental assessment will be required to provide further details of the potential impacts to the sites that contain hazardous materials.
- There is the potential habitat for Threatened and Endangered Species with this alternative. Surveys will need to be completed and coordination held with USFWS during project development to determine the impact to these species and any other species of concern in the study area.
- There are hydraulic features within the this alternative but not as significant as the Western Boulevard Extension/Maynard Road and Western Boulevard Extension/Walnut Street alternative. Mitigation may be required due to the potential impacts to these hydraulic features.

Chapel Hill Road Alternative

- This alternative has the most linear feet of streams. Mitigation may be required due to the potential impacts to these hydraulic features.
- There is the potential habitat for Threatened and Endangered Species with this alternative. Surveys will need to be completed and coordination held with USFWS during project development to determine the impact to these species and any other species of concern in the study area.
- A significant number of hazardous materials are located within the study area for this alternative. A geo-environmental assessment will be needed for further details of the potential impacts to the sites that contain hazardous materials.

LOCALLY PREFERRED ALTERNATIVE

Alternatives Analysis Memo

After the completion of the Major Investment Study (MIS), the Wake BRT: Western Boulevard Corridor Study was initiated to continue the evaluation of BRT alignments with the goal of recommending a Locally Preferred Alternative (LPA). Existing conditions were analyzed to understand potential environmental resources and existing transit conditions and demographics along the alternatives. An Alternatives Analysis memorandum summarized the findings of these various existing conditions and walked through the process of determining the recommended LPA. This section summarizes the memorandum, discusses how alternatives were eliminated from consideration and summarizes evaluation categories analyzed for the alternatives highlighting the benefits of the LPA.

The four alternatives considered for the LPA included:

- **Chapel Hill Road Alternative**
- **Cary Towne / Maynard Alternative**
- **Cary Towne / Walnut Alternative**
- **East Chatham Street / Hillsborough Road Alternative**

At the beginning of the analysis, Walnut Street was examined as part of the Cary Towne / Walnut Alternative. Walnut Street is a 2-lane facility in an older, established neighborhood. This area has extremely limited development potential and possible right-of-way issues. Moreover, BRT routing along Academy Street did not align with the Town of Cary's vision for downtown as recent improvements on Academy Street have created a pedestrian friendly place between the Arts Center and E. Chatham, which does not allow right-of-way for a high frequency transit service. During the course of analysis, routing the BRT corridor along Walnut Street was deemed infeasible.

Furthermore, a right-of-way (ROW) analysis was conducted to understand the potential for incorporating dedicated BRT lanes and intersection designs. The North Carolina Railroad (NCRR) company has a rail line and 200 feet of associated right-of-way through the general study area, parallel to Hillsborough Road and East Chatham Street between Jones Franklin Road and SE Maynard Road in Cary. Existing right-of-way along Hillsborough Street and East Chatham Street is between 50-80 feet. There is a general concern of constructability when any proposed work falls within the railroad ROW. Due to the physical location of railroad, the ridership catchment area of this alternative will be limited, and development potential will also be restricted. Because of this rail conflict, the East Chatham Street / Hillsborough Road Alternative was taken out of consideration because it would be unlikely that any BRT infrastructure could be constructed within the NCRR right-of-way.

After eliminating East Chatham Street / Hillsborough Road Alternative and Cary Towne / Walnut Alternative, two alternatives remained for further evaluation:

- **Chapel Hill Road Alternative**
- **Cary Towne / Maynard Alternative**

These remaining two alternatives were analyzed based on a series of factors including adherence to existing plans, public input, right-of-way availability, transit propensity, travel time, future employment and population, and development potential. Each of these factors are summarized below.

Lower Rail Conflict

Chapel Hill Road Alternative has two railroad conflicts requiring a rail crossing with crossing gates. The first would be the proposed NCRR crossing on Hillsborough Street that links Western Boulevard to Chapel Hill Road. The second would be an NCRR crossing entering downtown Cary from the north. While the existing railroad is currently used for freight and Amtrak service, this NCRR rail line is the proposed corridor for the future commuter rail service that could potentially have up to 40 trains a day in each direction.

The Cary Towne / Maynard Alternative will potentially have a rail crossing conflict in downtown Cary at the CSX crossing on South Harrison Avenue. Generally, this rail line is used less frequently by Amtrak.

LOCALLY PREFERRED ALTERNATIVE

Alternatives Analysis Memo

Public Input

The Major Investment Study (MIS) conducted between 2017 and 2018 included public outreach for this corridor. Respondents from Raleigh expressed a strong preference for connecting Raleigh and Cary via Cary Towne Boulevard. The alternatives presented during that study did not include the Cary Towne / Maynard Alternative. However, since this modified alignment also runs primarily on Cary Towne, similar preference can be attested to the Cary Towne/ Maynard alignment.

The City of Raleigh held a community open house kickoff meeting for the Wake BRT: Western Boulevard Corridor Study on November 12, 2019. The purpose of the meeting was to introduce the project, share information on current conditions, relate potential BRT alignment options, and obtain initial community feedback. Input was sought on potential trip destinations and important activity centers in the corridor. The question regarding potential destinations was asked separately for locations in Raleigh and Cary. The Cary Towne / Maynard Alternative connects the largest number destinations the public indicated were important to access via BRT.

Existing Plans

The Adopted Capital Area Metropolitan Planning Organization (CAMPO) 2045 Metropolitan Transportation Plan (MTP) was examined to identify projects with the potential to affect the two alternatives.

The extension of Western Boulevard from Saddle Seat Drive to Buck Jones Road, as shown in the Raleigh Streets Plan, benefits the Cary Towne / Maynard Alternative because the alignment is planned to run along this section of Western Boulevard. Additionally, Edwards Mill Road is also planned to be extended over the railway line to the proposed Western Boulevard Extension. It should be noted that the current MTP mentions 2045 as the horizon year for these projects. For the feasibility of the Cary Towne / Maynard Alternative, the 2045 MTP will require an amendment to reflect the earlier delivery of these projects. Operation of the Wake BRT: Western Boulevard Corridor service from Raleigh to Cary is envisioned within the ten-year program of improvements under the Wake Transit Plan (by 2027).

The extension of Jones Franklin Road to Chapel Hill Road using a grade separation with the railroad is included in the MTP as a 2-lane facility in the horizon year of 2045. However, a proposed amendment to the Raleigh Comprehensive Plan to add this proposed extension was rejected by the Raleigh City Council, and the next edition of the MTP will likely be amended to reflect this deletion. The section of Chapel Hill Road from the proposed intersection with Jones Franklin Road extension to Corporate Center Drive is planned to be widened to 4 lanes, also with a horizon year of 2045. This project would require advancement to allow for implementation of the Chapel Hill BRT corridor.

Right-of-Way Availability

Overall, both alternatives have adequate right-of-way for potential dedicated BRT lanes. There are a few locations along each alternative where the available right-of-way gets constricted and additional right-of-way may be required for effective implementation of dedicated BRT.

Transit Propensity

The Cary Towne / Maynard Alternative reaches a higher number of zero and one-car households than the Chapel Hill Road Alternative.

The Cary Towne / Maynard Alternative serves a higher number of persons living in poverty than the Chapel Hill Road Alternative.

Future Employment and Population

The Cary Towne / Maynard Alternative serves more people and jobs than the Chapel Hill Road Alternative in 2018 and in 2045. Future projections do not include newly proposed large-scale developments such as Fenton and Cary Towne Center. These new developments may lead to the Cary Towne/Maynard alternative serving an even higher number of people and jobs in 2045 than the official projections.

LOCALLY PREFERRED ALTERNATIVE

Alternatives Analysis Memo

Travel Time

Travel time along the Cary Towne / Maynard Alternative is slightly higher than the Chapel Hill Road Alternative. This is partly because the difference in their lengths is 0.9 miles and mostly because Cary Towne/ Maynard alternative serves more stations than Chapel Hill alternative. Even though the end to end travel time is 10% higher in Cary Towne/ Maynard alternative, this difference will be too small for travelers to perceive.

Development Potential

Only the industrial parcels located between I-440 and I-40 render themselves to potential future development along the Chapel Hill corridor. However, current land use policy which advocates for preserving industrial land might restrict further development of these parcels. Alternatively, the Cary Towne / Maynard alternative connects Raleigh to the new planned developments at Fenton and Cary Towne Center, which include residences, workplaces and shopping centers. In this regard, the Cary Towne / Maynard Alternative ranks higher than the Chapel Hill Road Alternative.

NEPA Impacts

A NEPA screening was carried out for all the alternatives. There were a few concerns highlighted for both alternatives in the NEPA screening, however neither alternative contained a fatal flaw which would eliminate it from consideration.

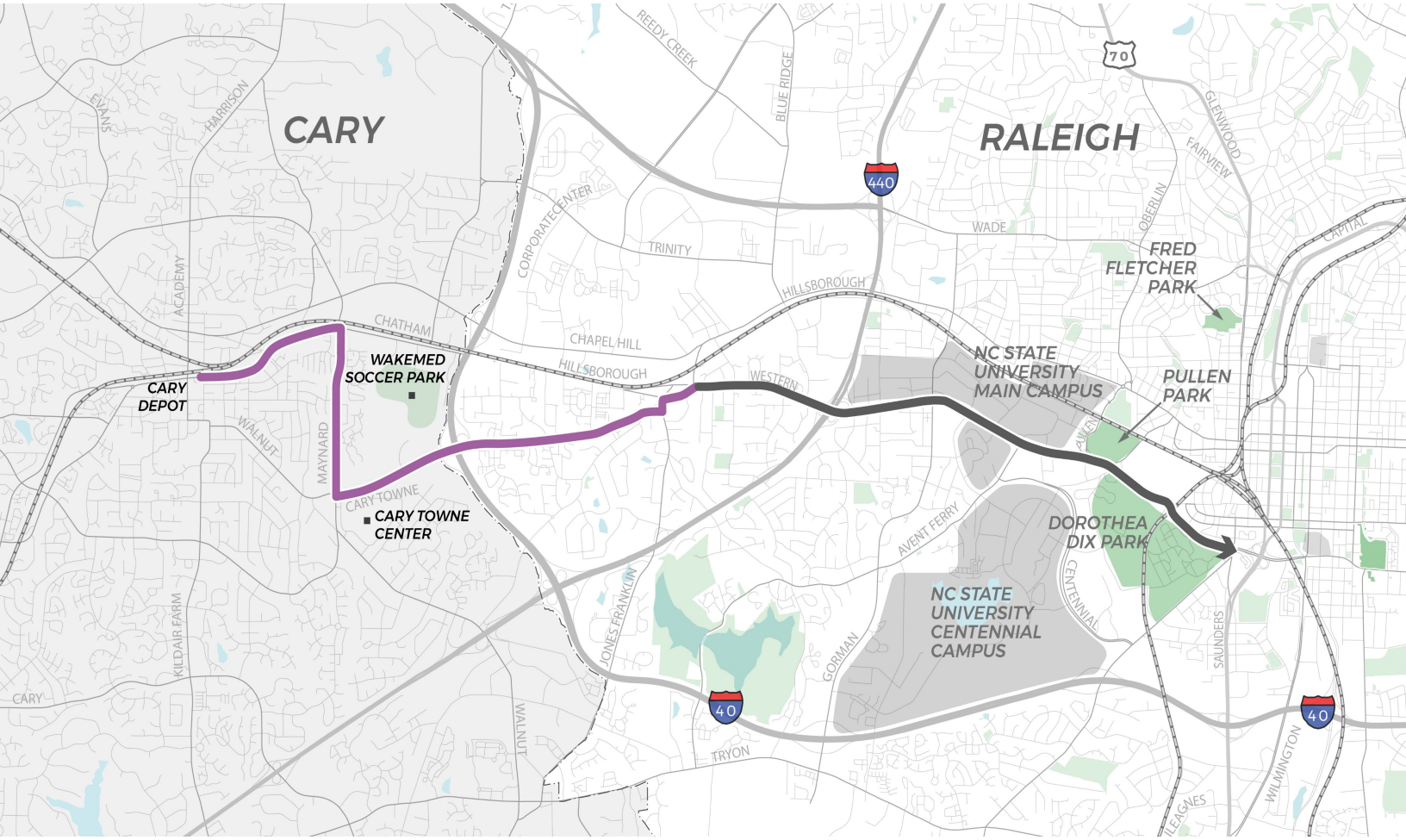
Qualitative Evaluation of Corridor Alternatives

Category	Cary Towne / Maynard	Chapel Hill Road
Lower Rail Conflict	⇧	⇩
Public Preference	⇧	⇩
Adherence with MTP projects in the corridor	⇧	⇩
Right-of-Way Availability	⇔	⇔
Transit Propensity	⇧	⇩
Population and Employment Within Catchment Area	⇧	⇩
Shorter Travel Time along the BRT corridor	⇩	⇧
Future Development Potential	⇧	⇩
NEPA Impacts	⇔	⇔
Overall	⇧	⇩

LOCALLY PREFERRED ALTERNATIVE

Alternatives Analysis Memo

The Cary Towne / Maynard Alternative performed better than the Chapel Hill Road Alternative in almost all categories evaluated.



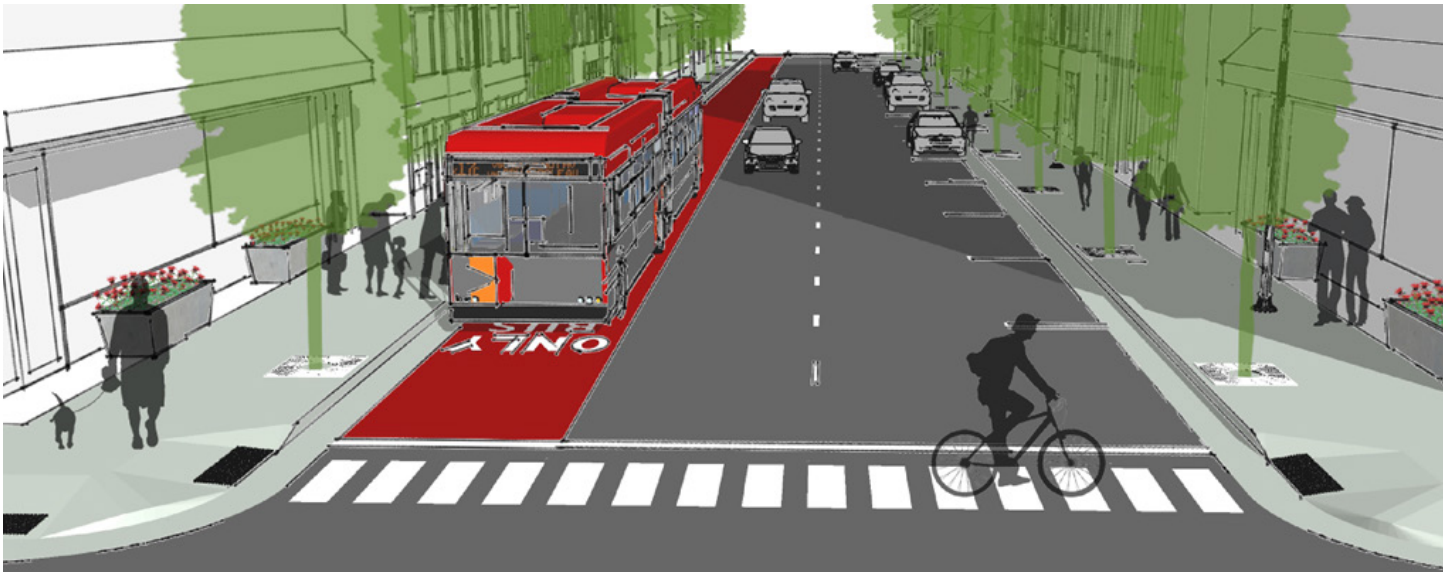
Based on this evaluation, the Cary Towne / Maynard Alternative is the most suitable alignment for BRT along the Wake BRT: Western Boulevard Corridor. Both the Town of Cary Council and Raleigh City Council endorsed this route as the LPA for the Western BRT corridor, and it was adopted by the Capital Area Metropolitan Planning Organization in November 2020.

LAND USE AND URBAN FORM

Zoning and Regulatory Analysis

Raleigh is a fast-growing city located in the fastest-growing region of the state. With a current population of nearly 465,000, an increase of approximately 15% since 2010 and 110% since 1990, the City is expected to continue to grow to 600,000 by 2030. Raleigh's economy has diversified and strengthened, and its cultural, dining, and nightlife scene has expanded to provide residents and visitors with engaging year-round activities. Growth of this magnitude makes planning for the future critically important to ensure that growth leverages existing and future assets such as transit and walkable neighborhoods wihtout causing widespread displacement or negatively affecting local character.

While the city's transportation network is positioned to support future land uses, growth has put a strain on the overall transportation system. By 2035, Raleigh's roadway network is projected to become even more congested. Vehicle miles traveled and vehicle hours traveled are projected to increase by over 50% from 2005 levels, as will the total number of trips on Raleigh's road network.



This memorandum analyzed the city's zoning and regulatory policies and tools to understand the extent to which they encourage not only transit oriented development (TOD), but also equitable development around transit by aligning transit investments with the preservation of affordability for housing and small businesses and by enhancing access for low-income residents. The memorandum included:

- **A review of Raleigh's existing toolkit to encourage equitable TOD**, including policies, zoning provisions, and incentives focusing on TOD and affordable housing.
- **Best practices from communities nationwide** that have successfully fostered TOD, affordable housing, and the retention of existing residents and businesses.
- **Preliminary areas for exploration** focusing on potential changes to the City's zoning code and overall toolkit to spur equitable TOD. These initial areas of exploration were refined into recommendations to foster equitable development around transit, outlined in the Equitable Transit-Oriented Development guidebook published in July 2020.

Examining practices from around the country, the memorandum highlighted that there are a variety of strategies to implement equitable transit-oriented development. The cities that do so successfully tend to:

- Leverage existing organizations and non-profits to form partnerships for implementation and to serve as thought leaders;
- Offer financing and/or technical assistance in addition to prescriptive development standards; and
- Target a minimum of at least one program or policy that tackles TOD and affordability in tandem as opposed to standalone programs.

LAND USE AND URBAN FORM

Zoning and Regulatory Analysis

Preliminary Areas for Exploration

The City of Raleigh has taken important first steps to implement equitable TOD by proposing policies in its 2030 Comprehensive Plan that encourage TOD and affordability for both residents and businesses. The City has also established zoning mechanisms within its Unified Development Ordinance to enable equitable development around transit stops. The available mechanisms, however, fall short of encouraging the type of equitable TOD that the City strives for, and Raleigh's overall toolkit is currently too limited to be truly impactful. This landscape creates an exciting opportunity to determine how the City can utilize existing policies and programs and propose new ones to create thriving transit-oriented nodes while expanding affordable housing options and retaining and attracting businesses. The following table highlights the applicability of each of the above tools based on existing conditions and the political and regulatory environment in Raleigh along with key considerations. Each of these preliminary areas will be further explored and refined through the City's implementation of the Equitable Transit Oriented Guidebook.

Mechanism	Positive Factors	Constraining Factors	Potential Program Design	Key Considerations
Zoning Tools				
Incentive Zoning	Widely used with many precedents to draw from. Can be incorporated as a facet of the TOD Overlay District, and function as a further inducement to delivering TOD and affordable housing in station areas.	Legal concerns. City staff do not want to create a program that encourages the development of affordable housing by making it more difficult and/or expensive to build market rate housing. City staff do not want to create a program that marginally moves the needle toward more affordable units.	Implement by-right zoning that aligns with current development standards, and then add a bonus density above and beyond the designation for the inclusion of affordable units at 60% or 80% AMI (avoid negotiated upzonings) within ½ mile of a proposed BRT station.	Must determine that this approach will pass legal challenges. Must determine how many additional market rate units are needed to subsidize the inclusion of affordable units at different levels of affordability, and how many stories this would add. Should development bonuses solely focus on affordable housing or other public amenities, such as open spaces, as well?
Transit Overlay Zoning Districts	Raleigh already has defined a Transit Overlay District. Appropriately restricts uses that conflict with goals for TOD.	Not currently mapped. Is dependent on the base zoning code, which may not always be best suited for TOD. Does not include a density bonus.	Modify the existing Transit Overlay District: • Move away from a units/acre requirement • Remove parking requirements	Will it be feasible to create a standalone TOD Zoning District not tied to existing base zoning?
Transit Supportive Zoning Districts	Raleigh has expressed an interest in developing a framework to encourage incremental density and "missing middle housing" within walking distance of transit stations.	It may be challenging to enact incentive zoning, modifications to the Transit Overlay District, and a new Transit Supportive Zoning District.	Whether via an overlay or modifications to the base zoning, regulations could include: • Eliminate minimum lot sizes • Revise low density residential designations to include duplexes, triplexes, quadplexes, and cottage courtyards, along with accessory dwelling units by right • Parking reductions	Is it feasible to enact a new zoning designation? Determining the level of density that is preferred between 1/4 mile and 1/2 mile from a transit station.

LAND USE AND URBAN FORM

Zoning and Regulatory Analysis

Mechanism	Positive Factors	Constraining Factors	Potential Program Design	Key Considerations
Financing Mechanisms				
Tax Increment Financing	Synthetic TIFs are a viable option in Raleigh.	TIFs do not have a history of utilization in Raleigh. City staff are concerned about the viability of TIFs given the limited success of the Atlanta BeltLine TIF.	Implement a TIF district and leverage a portion of the generated increment to either 1) contribute to an affordable housing fund or 2) serve as gap financing for projects with an affordable housing component.	Which department would operate the TIF district? Does Raleigh have a preferred approach for program design or is the City interested in exploring different ways that a TIF could be enacted? Are there any legal concerns? Would Raleigh be interested in allowing increment sharing if more than one district is established? How much development would need to occur for the TIF to generate a significant increment that could be used for affordable housing projects?
Land Acquisition	Raleigh is set to launch a citywide land acquisition program to purchase land along transit corridors for affordable housing. Voters approved this Affordable Housing Bond in November 2020.	Capacity of City staff to launch a new program. Escalating cost of land in a robust market.	Purchase land for disposition to affordable housing developers through competitive process. Set up a revolving loan fund to offer capital to private developers to purchase land along transit corridors for affordable housing.	Which department will administer this program? Will the City purchase land itself and offer to developers or set up a fund to incentivize private developers? Would the City consider offering other city-owned land to developers for affordable projects?
Tax Abatement and Tax Relief Programs	Abatement and tax relief programs tend to be successful in encouraging new development and/or reducing displacement, and abatements can be effective in guarding public resources with an appropriate "but for" test.	Tax abatement programs are not legal in North Carolina, but programs could be designed as a grant. There may be limited capacity to run either an abatement-like program or a tax relief program.	Offer a grant in the amount equivalent to a 10-year property tax abatement for the inclusion of affordable units in developments along transit corridors. Reduce property taxes for socially vulnerable populations along transit corridors as an anti-displacement solution.	If the City chose to explore a grant program, would the City want to encourage the development of TOD generally, or affordable housing in developments near transit? What is the appropriate grant amount to offer to encourage desired uses? The amount equivalent to a 10-year property tax abatement? 20 year? If the City chose to explore a property tax relief program, what populations would it apply to? What should be the income threshold to qualify and what would be the percent reduction? How could the programs be funded?

LAND USE AND URBAN FORM

Zoning and Regulatory Analysis

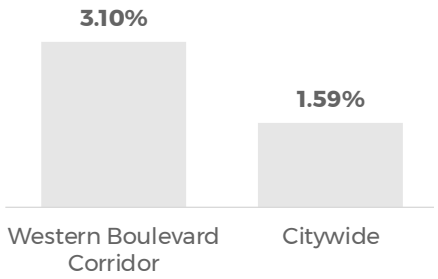
Mechanism	Positive Factors	Constraining Factors	Potential Program Design	Key Considerations
Business Assistance Fund	There is a desire to reduce the impact to small business owners during transit construction and the displacement of business owners once implemented. The City of Raleigh already offers incentives to business owners.	There may be limited capacity for a Department to run a new program. Capitalizing the program such that it can be a useful resource for multiple businesses may be challenging. Legal concerns.	Design a process for offering grants to small business owners during transit construction to offset potential losses from reduced visitation.	How can the City generate funding to contribute to a new business assistance fund? What is the appropriate amount to offer small business owners? Should the program be limited to owners that earn less than a specific amount of revenue each year?
Comprehensive Programs				
Comprehen-sive Programs	A branded program could elevate Raleigh to the forefront of the equitable TOD conversation nationwide.	There may be limited capacity for an existing Department to spearhead an effort to establish a comprehensive program bundling multiple resources.	Bundle together the proposed citywide land acquisition and public-private partnership programs with the existing support for developers pursuing 4% tax credits to encourage equitable TOD.	Which department should run this multifaceted program? How should zoning mechanisms be tied into a comprehensive program?
Public Private Partnerships	Raleigh currently leverages public private partnerships for the development of affordable housing.	There may be limited capacity for a Department to run a new program.	Operationalize a program to encourage public private partnerships between the City and private developers where the City could pay for public amenities such as stormwater and open space requirements or parking to help make development feasible.	What types of incentives would most encourage private developers to enter into public private partnerships with the City? Which department should run this program? How will the City raise money to provide these incentives to developers?

LAND USE AND URBAN FORM

Market Analysis

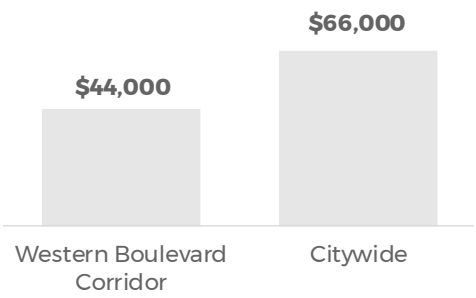
The market analysis explores current market conditions and future potential for residential, office, and retail uses along the corridor by identifying demand drivers for each use and the relative feasibility of delivering the different uses within different segments of the corridor. Understanding the existing conditions and potential for change within the corridor and within distinct areas of the corridor is essential to laying the groundwork for integrated land use and transportation planning that accounts for the people who live, work, and travel in the corridor. The analysis is a critical step in identifying catalytic development sites and development capacity, and to prepare a redevelopment strategy to ensure that future opportunities fully leverage the BRT system. The redevelopment strategy will identify where BRT stations maybe located given development opportunities to maximize ridership.

Annual Growth Rate for Residents
(2019 - 2040)



The analysis draws upon a synthesis of third party socioeconomic and real estate data for the corridor and the city, complemented by stakeholder conversations with developers and brokers active in the Raleigh market. These conversations allowed members of the development community to provide feedback on Western Boulevard as a location for new development and to gauge their perspectives on its potential to accommodate transformative mixed-use projects given the provision of new transit and place-making infrastructure and amenities. Analysis and findings in the market analysis were also informed by national best practices in transit-oriented development and supportive land use regulations. Below is an overview of the Market Analysis findings.

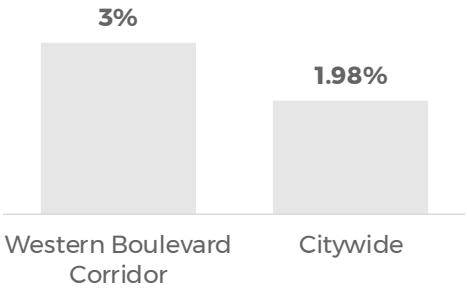
Median Household Income
(2019)



Poverty

Over 30,000 residents live along Western Boulevard, with over one-third of the population located near NC State University and nearly half between the ages of 20 and 34. Median household income for residents along the corridor is less than citywide median household income, a higher percentage of households do not own cars, and a higher percentage of the population has a relatively short commute time. These statistics likely reflect the significant university student population residing along this corridor.

Annual Growth Rate for Workers
(2019 - 2040)



Office

Over 30,000 residents live along Western Boulevard, with over one-third of the population located near NC State University and nearly half between the ages of 20 and 34. Median household income for residents along sub-markets in close proximity to downtown are beginning to see high densities, with higher density projects of up to 20 stories being planned. This represents a shift in the stock from stick-built to concrete construction with structured parking. The opening of BRT will accelerate the transition of the corridor from a low-rise residential housing market to a mid- and even high-rise market and will most likely help extend the area that sees higher densities to nodes further from downtown.

Retail

With the opening of a BRT system, the corridor is poised for new ground floor, transit-oriented retail that draws local residents attracted to mixed-use environments. Re-positioning of existing assets and co-locating residential and office development with retail centers as part a transit-oriented development strategy could support existing retail and facilitate the success of new retail concepts.

LAND USE AND URBAN FORM

Catalytic Area Redevelopment Strategy Memo

Station Area Types

Downtown center of commercial, civic, and cultural activities with regional destinations. A regional employment center.

Larger mixed-use centers of commercial and community activities.

Smaller centers that generally focus on providing services for the local community, where commercial areas are largely confined to a single intersection.

Regional employment centers consisting of a medical or university campus.

City park with entrance next to a BRT station that serves as a regional destination.

As part of the Wake BRT: Western Boulevard Corridor Study, the project team conducted an analysis of the Corridor's Transit Oriented Development (TOD) Potential. Based on the nine catalytic growth nodes identified in this analysis, the City of Raleigh designated three growth nodes. These nodes were chosen because they represent diverse development contexts, are particularly catalytic to the future of the Corridor, and include sites that pose significant questions related to the future development character of the corridor. Each of these growth nodes was assigned a Station Area type from the ETOD guidebook. Three examples are shown below.

- The node that surrounds the intersection of **Western Boulevard and Method Road/Kent Road** is a Neighborhood Center Station Area along a retail/commercial strip. This area can support higher density residential uses with neighborhood-serving retail and community services along Western Boulevard. This node also contains office and community mixed-use development opportunities owing to its proximity to I-440 and North Carolina State University's Main Campus.
- The node that surrounds the intersection of **Western Boulevard and Blue Ridge Road** is an Emerging Urban Center Station Area that serves as a community mixed-use center with potential for higher-density development west of I-440. This may include densities of up to 8 stories on the former K-Mart site via the TOD Overlay density bonus policy. The K-Mart site offers a significant opportunity for transformative mixed-use development and commercial activity in this node.
- The node that surrounds the intersection of **Western Boulevard, Hillsborough Road, and Jones Franklin Road** is an Emerging Urban Center Station Area and community mixed-use district. This node has the potential to support moderate to medium-density residential and commercial uses, particularly on and around the Harris Teeter. Mixed-use development will serve the Fairview Acres and Fairview Hills residential neighborhoods as well as neighborhoods around Jones Franklin Road intersection.

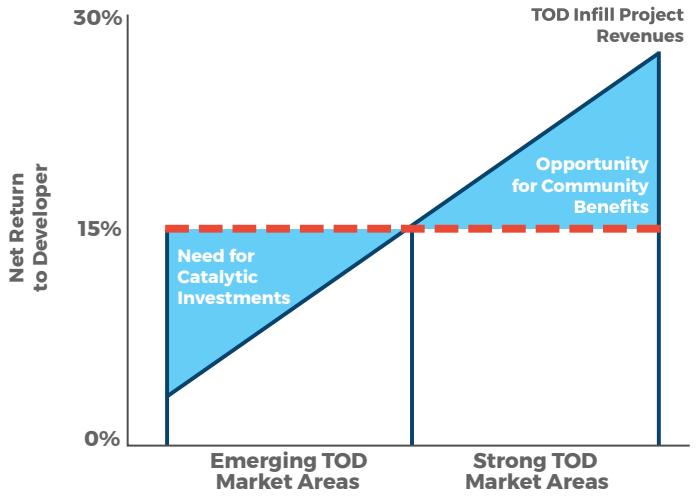
For each growth node, a redevelopment strategy was developed that includes:

- Policies, financing tools, and/or physical investments to realize the potential identified in the TOD Scenario.
- A description of the total amount of square footage and types of development that are likely to be feasible.

LAND USE AND URBAN FORM

TOD Precedents Book

Real Estate Market Needs and TOD Investment Needs



The Transit-Oriented Development (TOD) Precedent Book gives guidance to developers who want to participate in the dynamic evolution of Raleigh's BRT corridors. Increasingly, Raleigh's BRT corridors will be conduits of economic and community activity – as BRT and transit-oriented development connect a complementary mix of homes, jobs, and other destinations with fast reliable affordable transportation.

TOD offers unique advantages to developers but is not without challenges. For this reason, the book focuses on "lessons learned." The book explains why TOD locations enjoy more market demand than auto-dependent locations and describes critical factors for market-based success. Lessons learned have been derived from TOD case studies and literature. Case studies selected capture places where original conditions are like Raleigh's BRT corridors today. The lessons learned consider how TOD development came to be, and describe important features for economic feasibility and community benefits.

The book builds on Raleigh's Equitable Transit-Oriented Development (ETOD) Guidebook. The ETOD Guidebook encourages future growth around transit with an emphasis on equity and affordability. Once implemented, BRT will connect Raleigh residents to jobs, housing options, education, health care, and other needs, with reliable speed and without a car. The ETOD Guidebook recognizes that there are many economic, social and environmental benefits of building near BRT.

The Precedent Book is broken into the following sections to support developers pursuing opportuities for TOD around the Raleigh BRT Corridors.

WHY invest in TOD?

- **Strong Market Demand**
  - Easy Regional Access
  - Walkable Neighborhoods
  - Community-Centered Lifestyle
- **Higher Development Yields**
  - Compact Development
  - Reduced Driving and Parking
  - Flexibility in Meeting Demands
- **Policy Incentives**
  - Zoning Tools
  - Equity Fund
  - Land Partnerships and Affordable Housing Fund
  - Neighborhood Stabilization
  - Equitable Participation

WHAT are the types of TOD?

- **Station Area Types** (see previous page)
- **Site Size**

HOW to succesfully build TOD?

- **TOD Lessons Learned**
  - Advance a Shared Vision
  - Form Partnerships
  - Leverage Incentives
  - Tailor TOD to Market Demands
  - Respect the Neighborhood Context
  - Create a Great Public Realm
  - Maximize Development
  - 8. Program a Mix of Uses
  - 9. Be Flexible in Identifying Sites for TOD
- **Case Studies**
  - Saltillo Railyard Development (Austin, TX)
  - Clarendon Market Common (Arlington, VA)
  - Campus TOD, Virginia Commonwealth University & Medical Center (Richmond, VA)

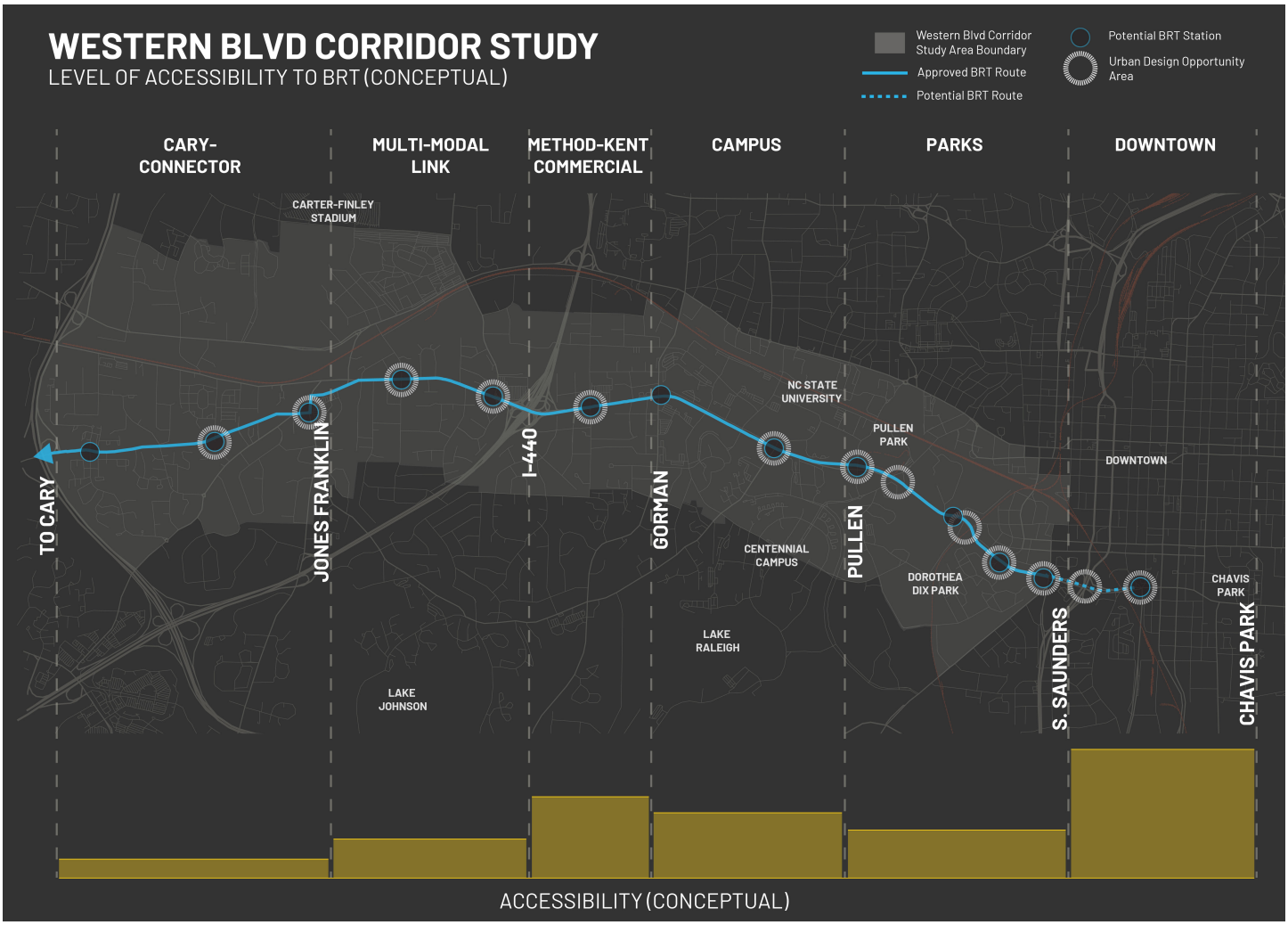
LAND USE AND URBAN FORM

Mobility Considerations for Character Zones

An essential outcome of the Wake BRT: Western Boulevard Corridor Study is to create a plan for BRT service between downtown Raleigh and downtown Cary, while leveraging BRT as a catalyst to create a vibrant corridor through development opportunities. Six character zones are identified along the corridor based on existing context and overarching attributes of the area. Those six character zones are:

- Cary Connector
- Multi-Modal Link
- Method-Kent Commercial
- Campus
- Parks
- Downtown

Recommendations for development and mobility along Western Boulevard have been generated as part of the Mobility Considerations for Character Zones memorandum to both identify consistent attributes as BRT is implemented along with key differences as context transitions through the corridor. While Western Boulevard is the focus area for most of the study, the following considerations emphasize mobility to, from, and across the corridor and proposed BRT stations throughout the study area (1/2 mile from Western Boulevard). Mobility considerations may be related to connectivity, walkability, bikeway facility types, curbside management, trip-chaining transitions, station access, and key non-motorized connections. The memorandum presents mobility considerations for the entire Western Boulevard BRT corridor along with each character zone.



LAND USE AND URBAN FORM

Mobility Considerations for Character Zones

Corridor-Wide Expectations

Changing context along Western Boulevard between downtown Raleigh and downtown Cary presents a range of opportunities and challenges for mobility to and from proposed BRT stations; however, the ability for people of all ages and abilities to move along the corridor is paramount. While differences for nonmotorized mobility within each character zone are highlighted in detail within the memorandum, there are key expectations that remain consistent for users traveling along Western Boulevard - for a short segment or in its entirety. These include:

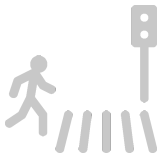
Safe mixing zones

Wayfinding for major destinations and greenway connections

Two park-and-ride lots located along the corridor

ADA accessible pedestrian facilities and curb ramps on both sides of the street

New or upgraded on- and/or off-street bikeways (separated bike lanes, shared use paths, greenway trails)



Upgrades to corridor crossings

Connections to other transit services such as Wolfline, GoRaleigh, GoCary, and GoTriangle

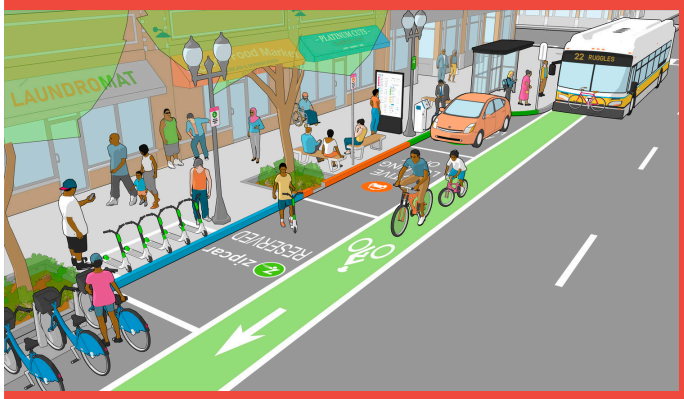
Considerations for

The memorandum reviews each character zone and provides the following for each:

- **Defining Characteristics:** community destinations, current land use, and travel patterns that distinguish the character zone from one another.
- **Mobility Vision:** future-looking ideas of how people can travel within the character zone when BRT is implemented.
- **Accessibility:** how the frequency and legibility of connecting to, from, and across Western Boulevard changes between character zones as a result of implementing the mobility vision.
- **Existing Conditions:** what the character zone looks like today in terms of bicycle and pedestrian infrastructure, parking, and safety.
- **Mobility Opportunities:** opportunities to move the character zone towards the mobility vision.
- **Key Connections:** specific recommendations that enhance existing or create new crucial connections to Western Boulevard and are essential for BRT implementation. Note that these will not provide all facilities necessary for a priority bicycle and pedestrian network.

In addition to considerations for each character zone, the memorandum explores tools for implementation including:

- Unified Development Ordinance (UDO)
- Street Design Manual
- Road Resurfacing Schedule
- Capital Improvement Program (CIP)
- Greenway Master Plan Update
- BikeRaleigh Plan Update
- Complete Streets Implementation Program



PUBLIC INVOLVEMENT

Kickoff Meeting

157
Attendees

429
Online Survey Respondents

The City of Raleigh held a community open house kickoff meeting on November 12, 2019, to introduce the project, share information on current conditions, relate potential BRT alignment options, and obtain initial community feedback.

Participants had multiple options to provide feedback and comment via a community comment wall, comment map, voluntary demographic survey, event exit survey, and online survey. Key questions asked during this meeting and in the online survey were:

1. If BRT service were provided along Western Boulevard, where would you go using the service?
2. Are there any other locations that you would use BRT to travel to along Western Boulevard between downtown Raleigh and Hillsborough Street that aren't listed on the map? If so, what are they?
3. If BRT services were provided along Chapel Hill Road, E. Chatham, or Cary Towne Boulevard, where would you go using this service?
4. Are they any other locations along Chapel Hill Road, E. Chatham Street, or Cary Towne Boulevard you would like to go using the BRT service?

Virtual Engagement

As a part of Phase 2 of the Western Boulevard Bus Rapid Transit (BRT) project, the City of Raleigh hosted a Virtual Engagement (VE) site. While originally planned to be an in-person public meeting, this phase of engagement was conducted virtually due to public health concerns arising from the COVID-19 pandemic. The VE site included information on the Western Boulevard BRT corridor project and opportunities for public engagement. The site launched on September 15, 2020 and remained live until October 19, 2020.

The VE site featured 5 pre-recorded videos explaining project concepts and opportunities. On September 30, the project team conducted a live question and answer session to address public questions and comments regarding the Wake BRT: Western Boulevard Corridor Study. This Q&A session, attended by 33 citizens, was recorded and posted on the VE site for viewers to watch afterwards.

The site also featured an overview of the Catalytic Transit-Oriented Development (TOD) Areas. Participants were invited to share their input and land use visions for the TOD areas via an online survey.

What We Heard:

"Density is key. Bring some fresh development patterns to this under-utilized corridor!"

"Dix Park should be a major draw for transit ridership. The BRT should be promoted, not only as a service for quick commuting, but as one's gateway to leisure following the workday as well!"

"A bike and pedestrian/greenway is vital in addition to the proposed bus rapid system. The link between Cary Towne Blvd and Jones Franklin/Western Blvd."

"I'd like to see the work here produce some real ideas about how to create strong connections from surrounding neighborhoods to Western Blvd.

"Please add Citrix Cycle docks along the route and more in a half-mile radius of each station to provide additional last-mile options."

"Please have focus groups that involve low-income stakeholders and leaders within those communities."

2,075
Site Visits

Online Survey:

96
Participants

571
Question Responses

189
Comments

46
Email Subscriptions