Wake BRT: Rapid Bus Extension Study

Durham-Chapel Hill-Carrboro (DCHC)

March 22, 2023

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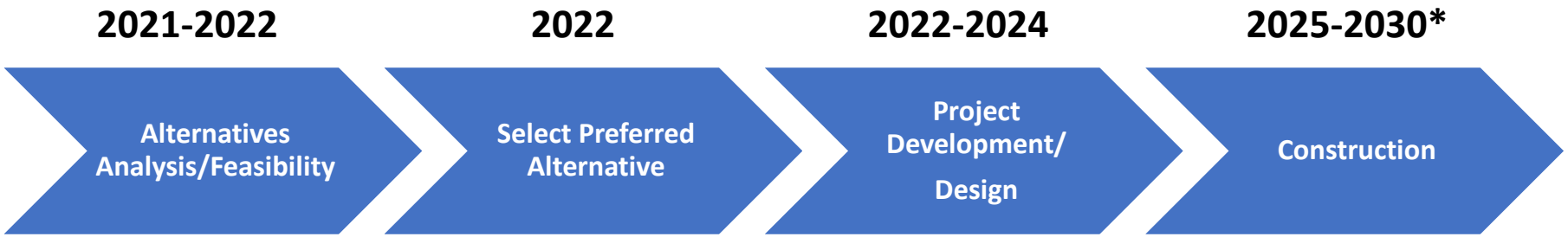
Agenda

- Project Overview
- Community Engagement Summary
- Alternatives Development and Evaluation Framework
- Recommendations
- Next Steps

Wake BRT Program

- **$115M in State Funding for Supporting Infrastructure/Vehicles for Entire Corridor**
- **Funding Currently Programmed in FYs 25-31 (in TIP)**
- **Must Integrate with Other BRT Corridors Under Development**

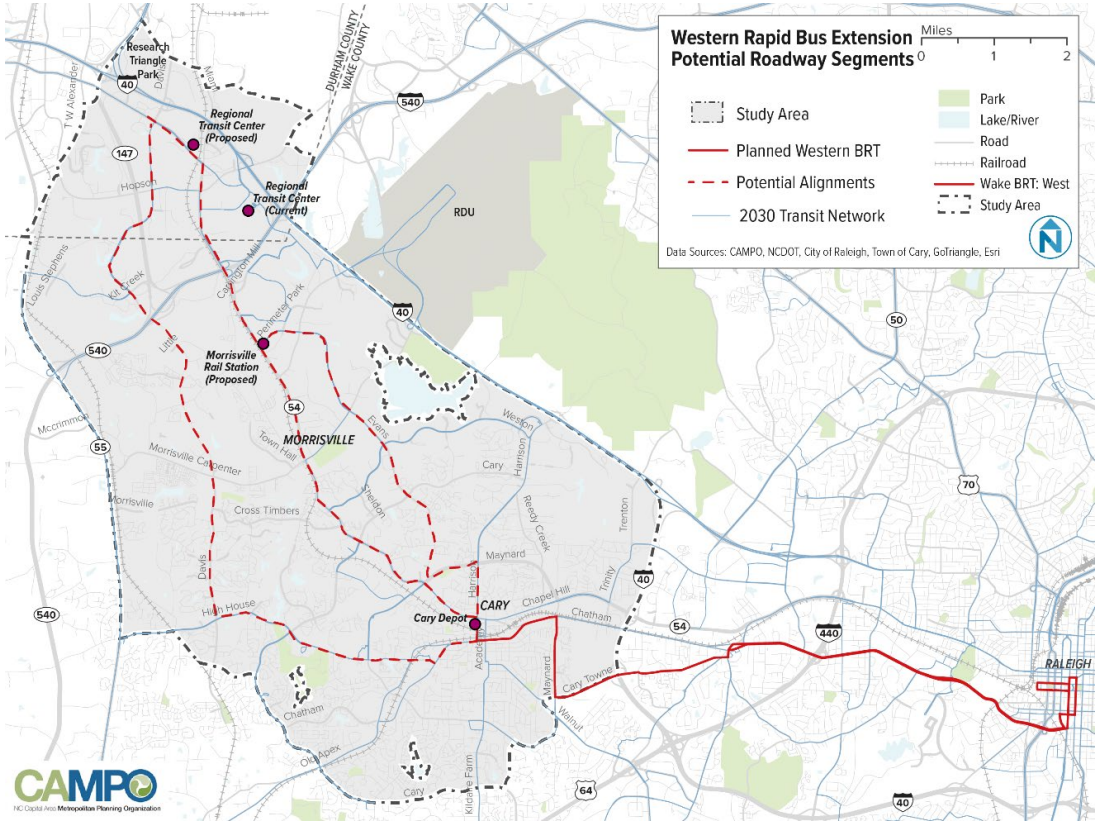
High-Level Project Schedule



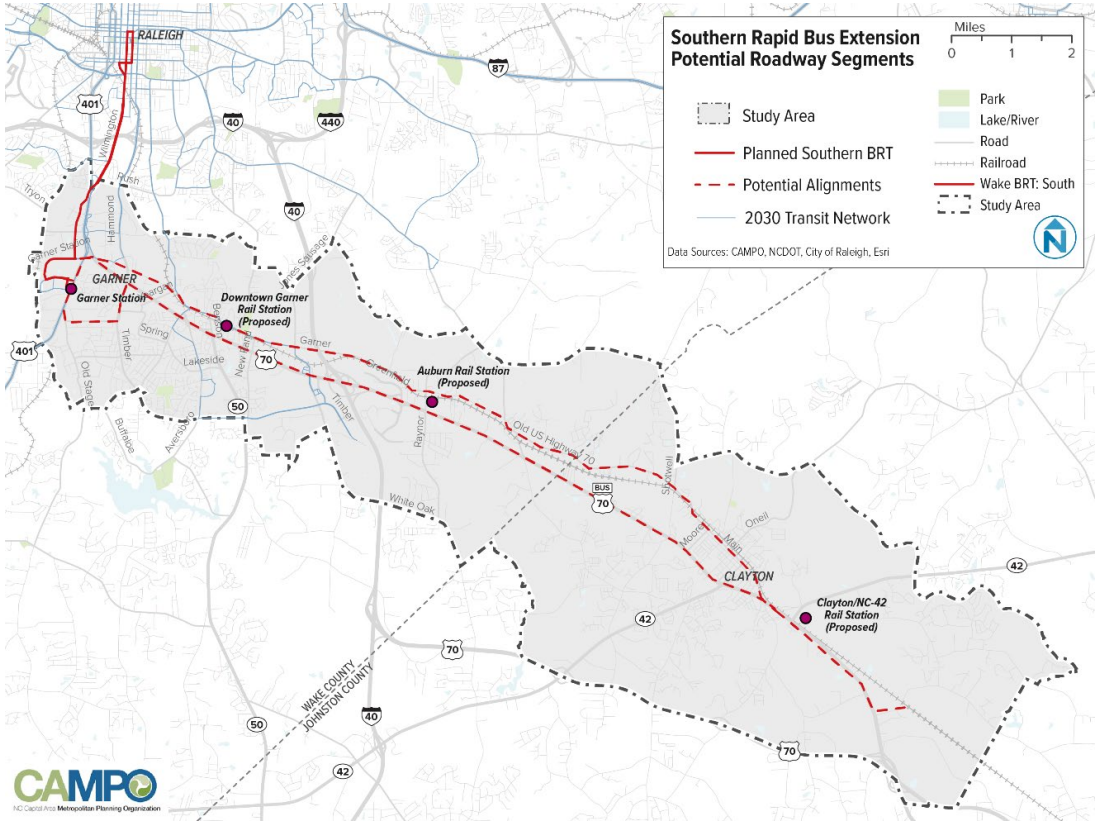
*BRT Extension projects cannot be constructed before Raleigh – Garner and Raleigh-Cary segments; and State funding must be available

Rapid Bus Extension Study Areas

Western Extension



Southern Extension



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Alternatives Analysis Milestones

Phase 1

BRT Education & Evaluation Framework

- Background Document Review
- Corridor Market Analysis & Opportunities
- High Level Environmental Scan
- Problem Statement
- Evaluation Framework

Phase 2

Alternative Development and Analysis

- BRT Configuration and Capital Improvements
- Operating Plan and Analysis
- Capital and O&M Costs
- Ridership Analysis
- Alternative Evaluation and Summary

Phase 3

Present Findings & LPA Recommendations

- Selection of Preferred Alternative
- Risk & Feasibility Assessment
- Project Sponsor & Operating Agency
- Implementation Strategy

Fall 2021 → Winter 2022 → Spring 2023

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02 | Community Engagement Summary

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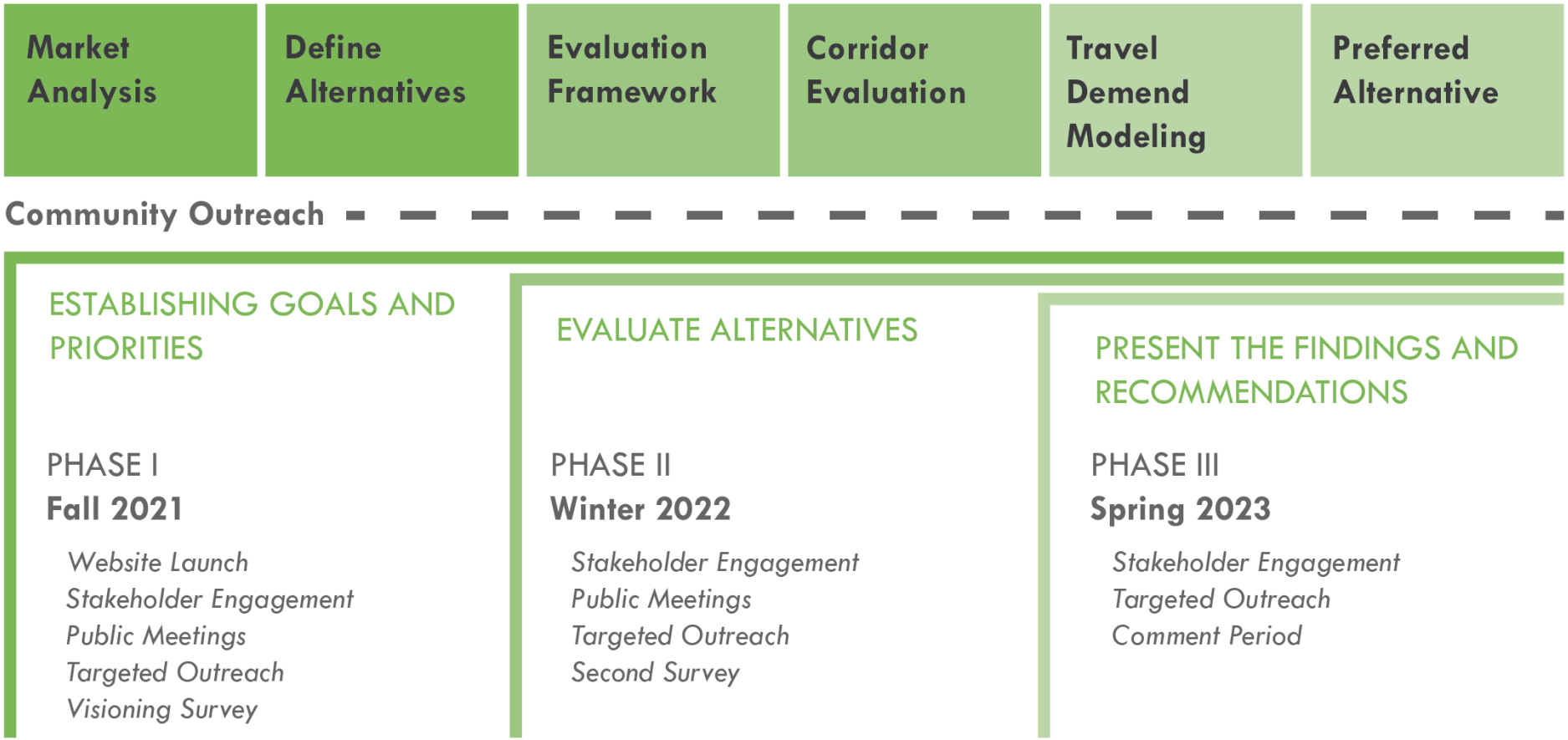
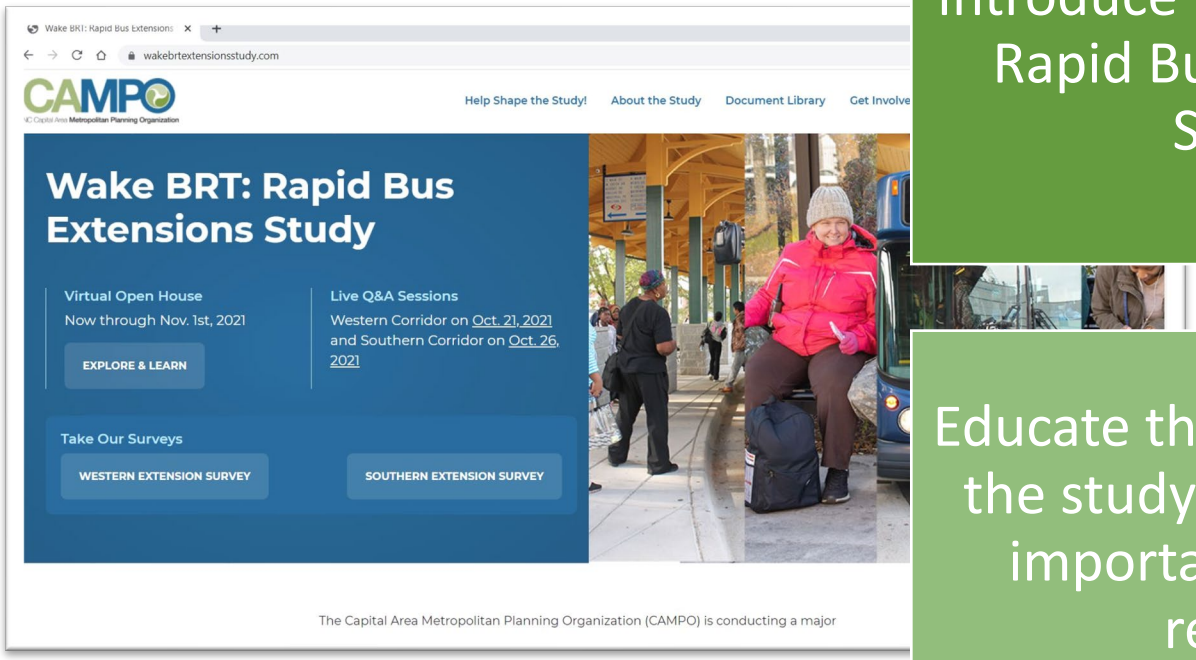
Public and Stakeholder Engagement Schedule



Phase I Engagement

Wake BRT: Southern Corridor Rapid Bus Extension



Introduce the Wake BRT: Rapid Bus Extension Study

Educate the public about rapid bus and BRT

Educate the public about the study purpose and importance for the region

Seek input on the vision for the corridor and regional and community transportation goals and needs

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Phase 1 Community Survey Results – Western

159 Survey Responses

Goal: Provide access to local and regional destinations and major activity centers.

- Connect to daily activities (grocery, retail, healthcare, and education facilities)
- Connect to transfer opportunities between different travel modes (other bus routes, trains, airplanes, etc.)
- Support economic development through connectivity with planned land-uses and transit-oriented development

Goal: Improve access to transit services.

- Locate stations and stops in areas to reach a wide range of potential transit users

Goal: Ensure safety and compatibility with the surrounding environment.

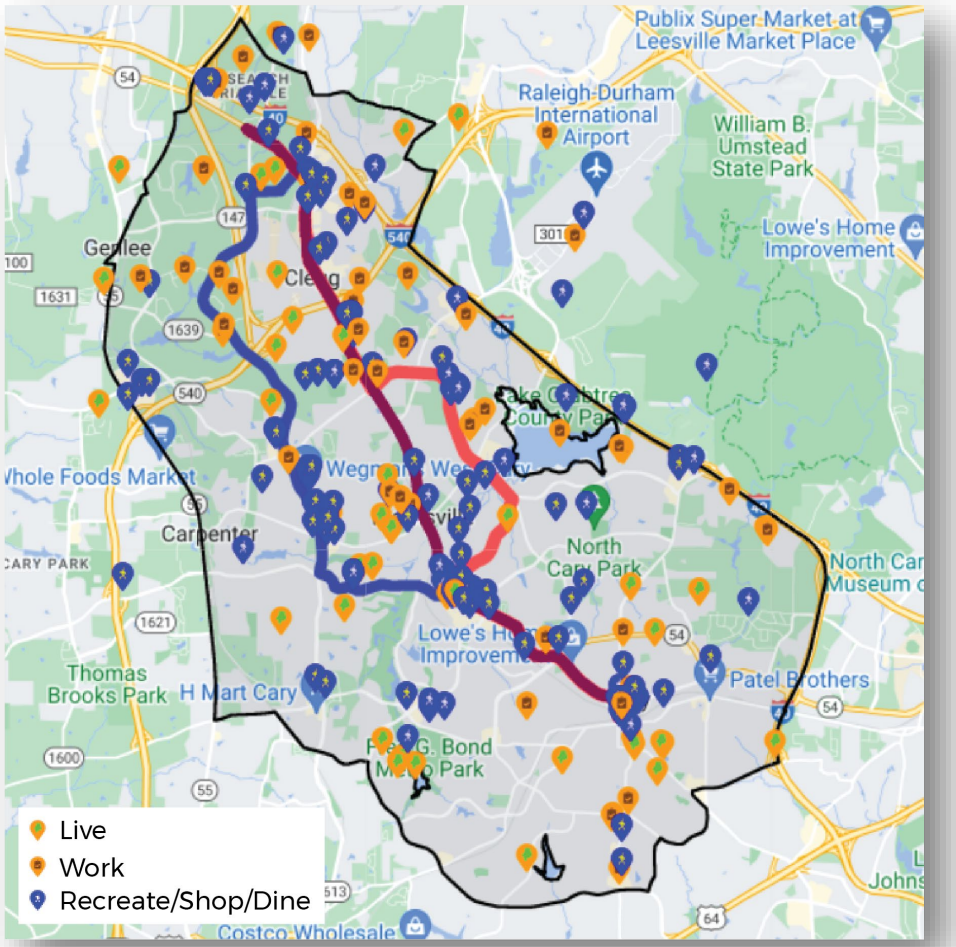
- Transit-specific infrastructure to improve service speed and reliability

Goal: Develop an efficient and sustainable service.

- Provide a reliable, convenient and competitive alternative to driving
- Provide rapid bus solutions that are scalable/can grown with future needs

Online Survey Results – Western

94 Survey Responses



Western Corridor Results – Online Survey	Alt 1	Alt 2	Alt 3
Meets community needs very well	**43**	17	**40**
Somewhat meets community needs	29	**39**	27
Doesn't meet community needs well	7	22	13
Total Responses	79	78	80

Qualitative feedback will be considered in the technically ***Recommended Alternative***, and (future) selection of station locations

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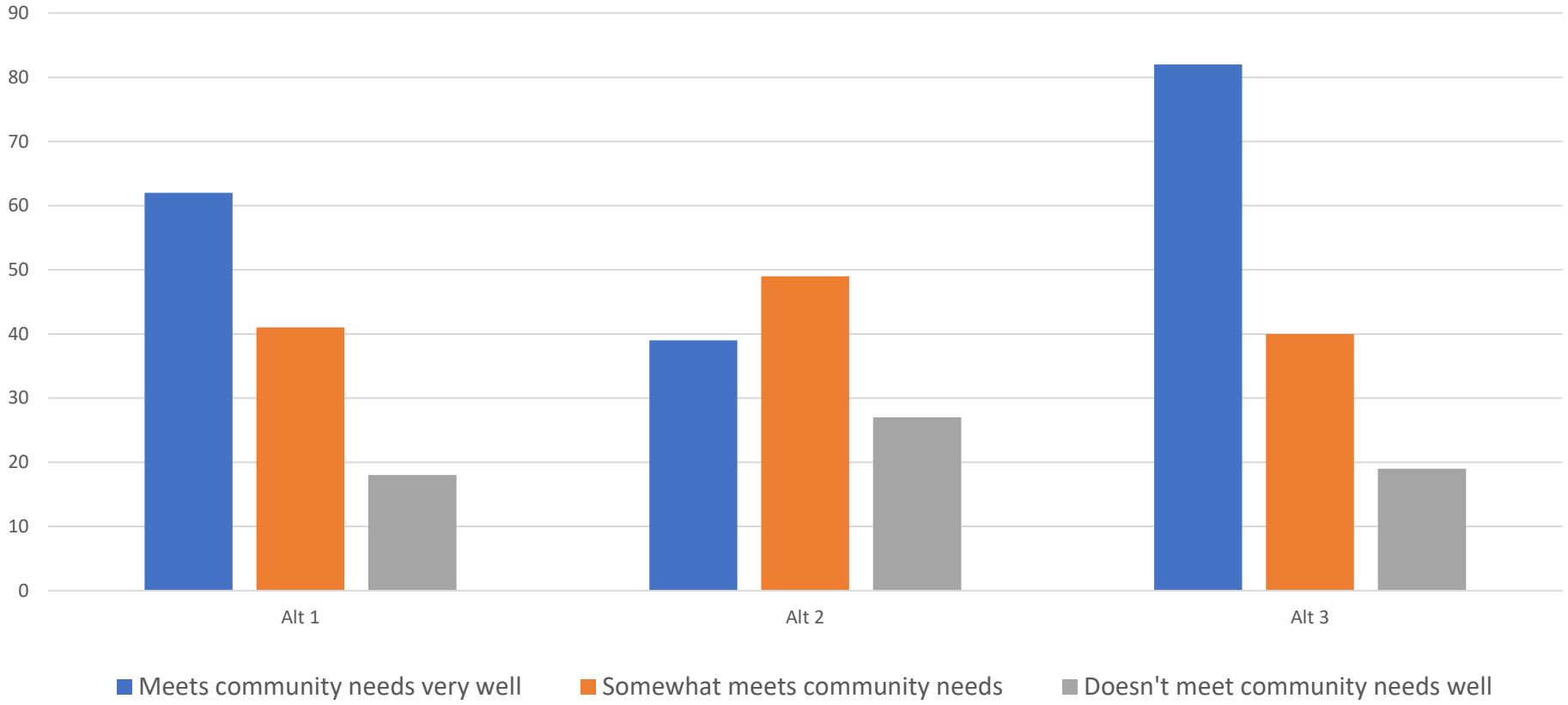
Western Corridor Results – All Responses (online + pop-up)



We Also Heard:

Safety (especially for pedestrians) needs to be strongly considered

How will potential Rapid Bus and CRT service work together?

Rd 3 Comments Received

- 8 Public comments about Western Ext
  - alignment preferences, connectivity interests and opportunities
- 2 Public comments about Southern Ext
  - both supportive of recommendations
- 3 General comments
  - Zero emission vehicles, implementation timeline, network investment and frequency improvements

- NC Dept of Natural and Cultural Resources -- State Historic Preservation Office (SHPO)
  - Section 106 – National Historic Preservation Act
  - Section 4(f) – National Transportation Act
- Town of Morrisville
  - Supportive of Western Alt 2 recommendation
  - City's continued investment in TOD plans and land uses

03 | Alternative Development and Evaluation Framework

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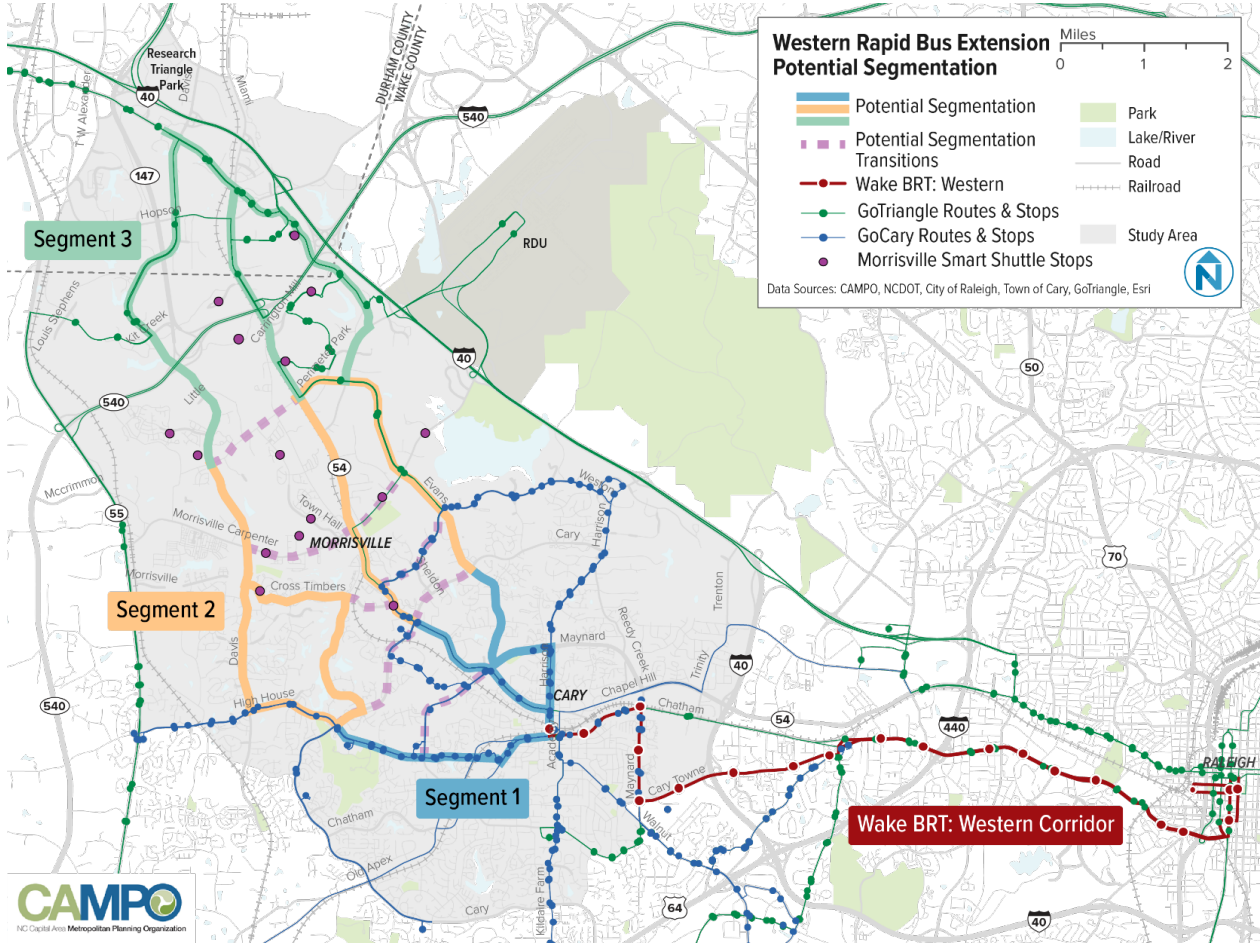
STEP 1: Identification & Initial Screening

- **Corridor Segmentation** – routing and alignment options throughout the corridor, and potential travel markets might they serve
- **Context and Fatal Flaws** – determine the critical factors, considerations, and components for transit supportive conditions
- **Initial Screening** – qualitative assessment of potential roadway segments to guide development of potential Alternatives
- **Draft Alignments** - combinations of roadway segments that best support rapid bud operation from terminus-to-terminus

Define Draft Alternatives

Approximate Segment Limits

	From	To
Segment 1	Cary Depot	Cary Pkwy
Segment 2	Cary Pkwy	McCrimmon Pkwy
Segment 3	McCrimmon Pkwy	(future) RTC site
Transitions	Varies (TBD)	Varies (TBD)



NOTE: I-40 Corridor does not address transit access and activity center connectivity needs within the corridor

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04 | Western Corridor: Draft End-to-End Alignments

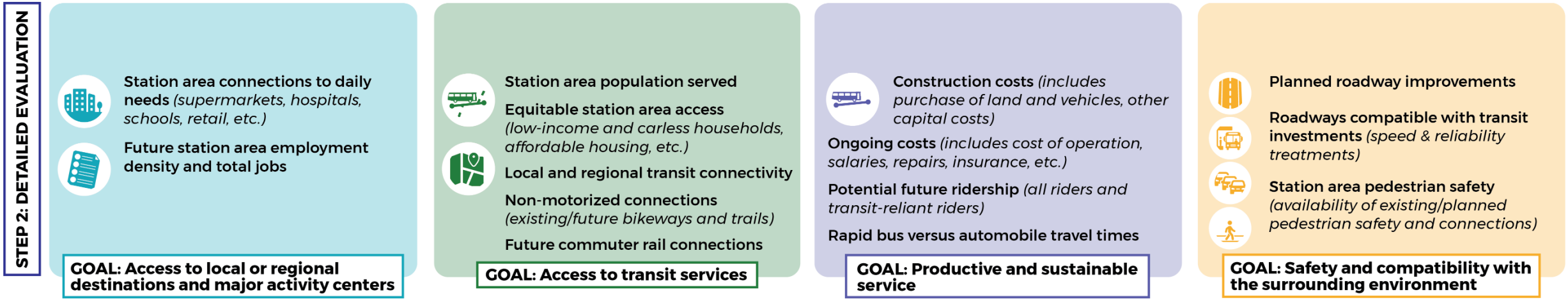
	Description	Rating
Alignment 1	Chapel Hill Rd >> NC 54	21
Alignment 1B	Chapel Hill >> Evans / McCrimmon >> NC54	18
Alignment 2	Chatham / High House >> Davis	17
Alignment 3	Chatham / High House >> Davis >> NC 54	19
Alignment 4	Chapel Hill >> Morrisville Pkwy >> Davis	16

- Tradeoffs between direct service to commercial/employment centers or residents in Southern segment
- Qualitative assessment did not include detailed operational constraints (traffic and transit; NC RR)
- Alignment 1B includes 'hybrid' roadway combination to take advantage of land uses and NCRR offset
- Alignments along High House were determined 'too indirect' and not carried forward

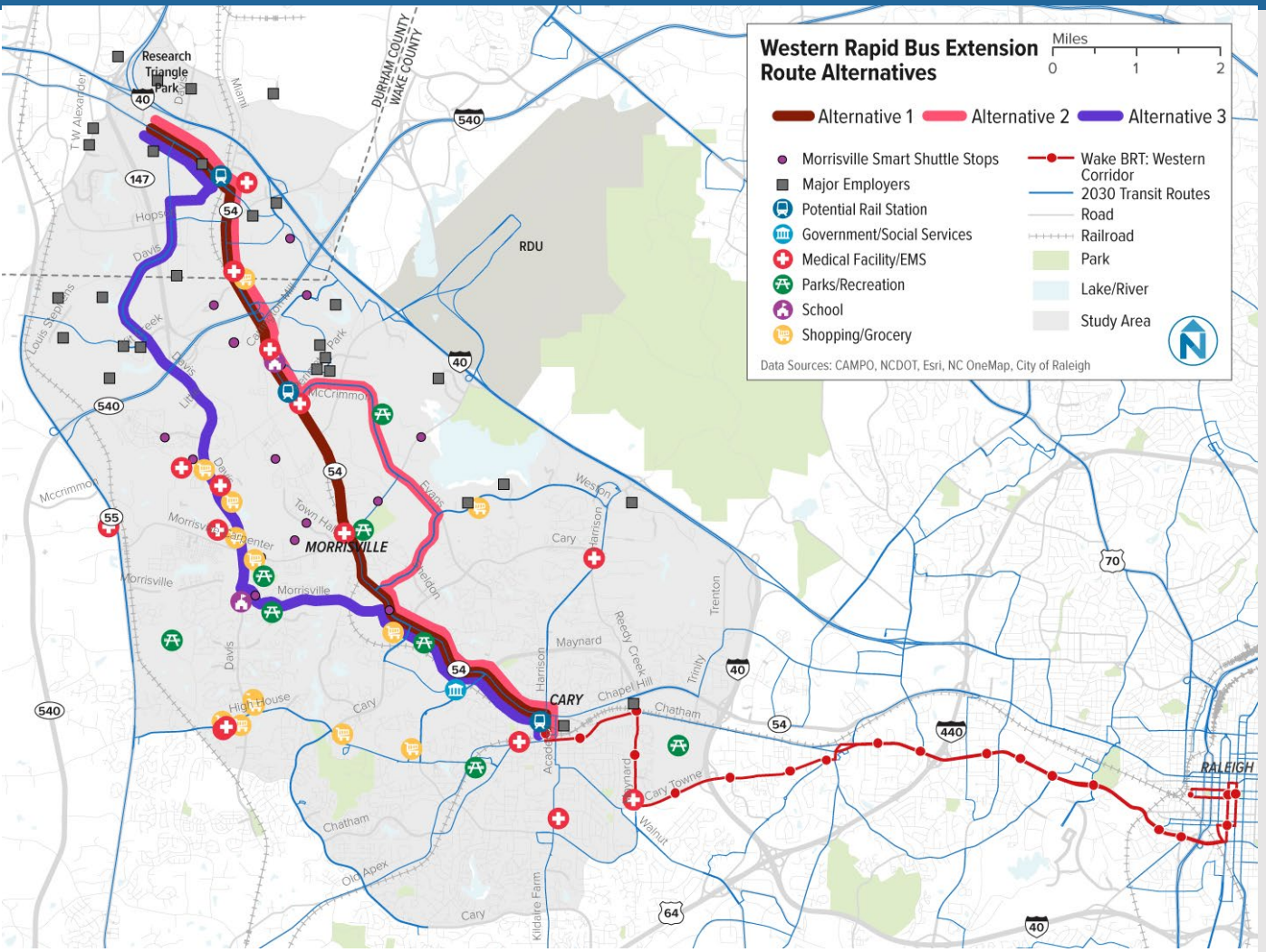
Step 2 Objectives and Criteria

Alternative Refinement & Evaluation

- Develop detailed capital investment and operating assumptions to analyze potential benefits and tradeoffs



Western Extension Alternatives



Screening results from step one of the evaluation process identified three (3) alternatives that could support rapid bus service from Cary to RTP.

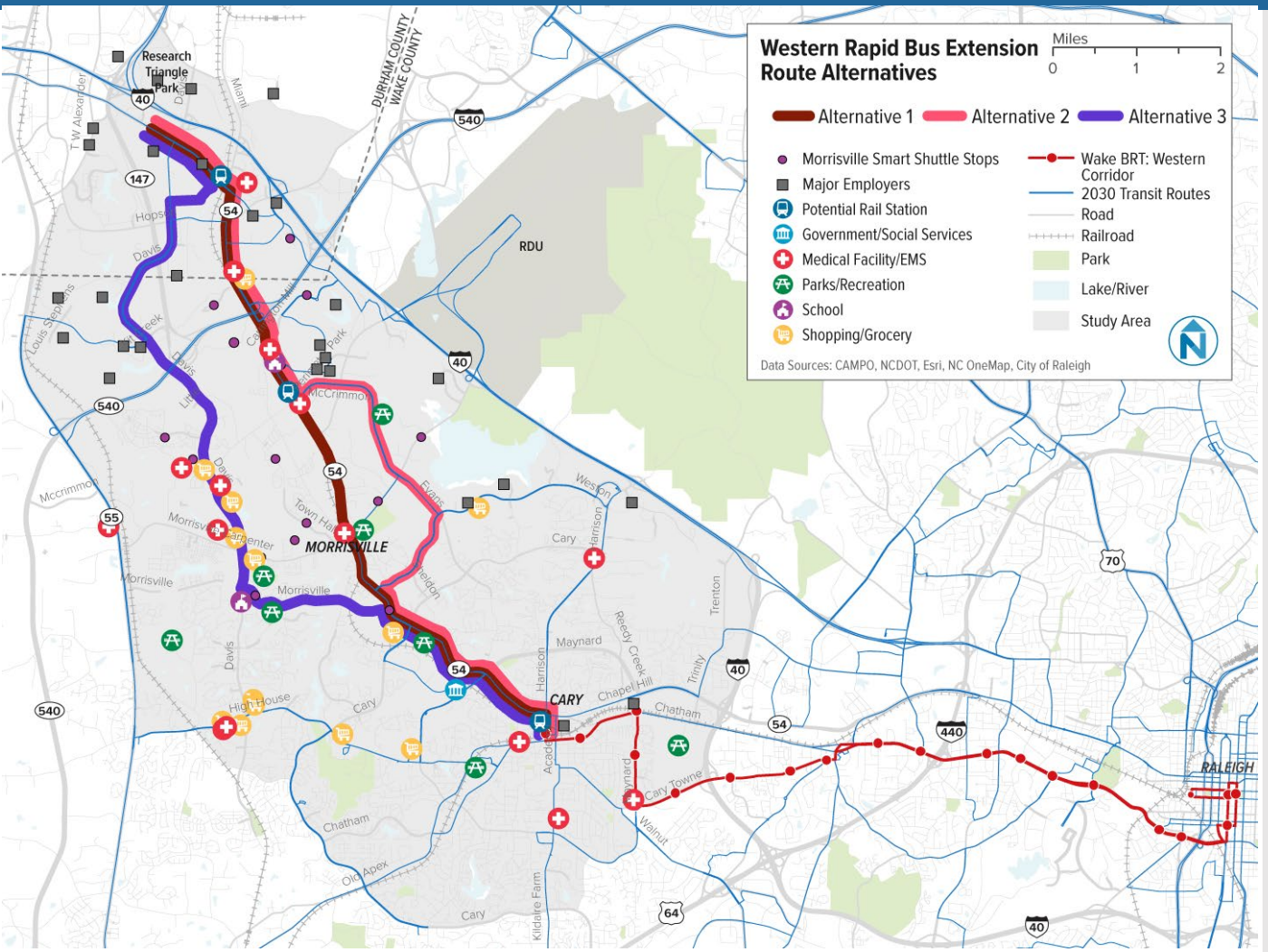
Alternative 1: Chapel Hill Road Route (NC 54)

Alternative 2: NC-54/Chapel Hill Road & Evans Road

Alternative 3: Davis Drive, Morrisville Pkwy & Chapel Hill Road

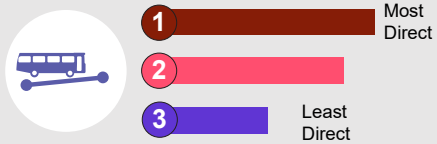
Each alternative supports connection to the (future) Hub at RTP but has unique strengths and challenges. Public input was collected to inform selection of a preferred alternative.

Western Extension Alternatives

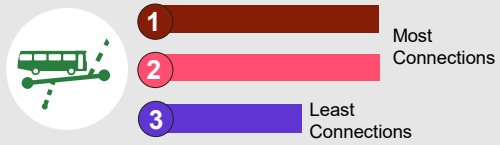


Screening results from step one of the evaluation process identified three (3) alternatives that could support rapid bus service from Cary to RTP. Each alternative also supports connection to the (future) Hub at RTP but has unique strengths and challenges.
Public input will help identify a preferred alternative.

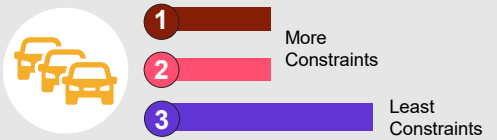
Direct Service



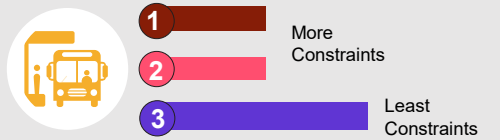
Transit Connections



Transit Priority and Traffic Operations



Capital infrastructure Needs/Costs



04 | Recommendations

Comparison of Alternatives - Western

Alt	Description	Weekday Ridership	Capital Cost	Annual O&M Cost	Pk Run Time	Annualized Cap Cost per Rider	Annualized Boarding/RH
1	Chapel Hill Rd / NC 54	1,050	$26.1	$1.8 to $2.4 M	**28:20**	$53	10 to 16
2	Evans / McCrimmon to NC 54	750	$29.2	$1.8 to $2.4 M	**30:35**	$60	
3	Davis Dr	600	$27.6	$1.8 to $2.4 M	**33:40**	$56	
--	**1-Seat Ride (RTP to Raleigh)**	2,200	$36 M to $43 M	$3.6 M to $4.8 M	**(+) 26:20**	$19 to $20	16 to 17

† *includes 30% allocated + 20% unallocated contingencies*

†† *Variations in 1-seat ride run time may require additional resources to maintain frequency, resulting in increased O&M cost*

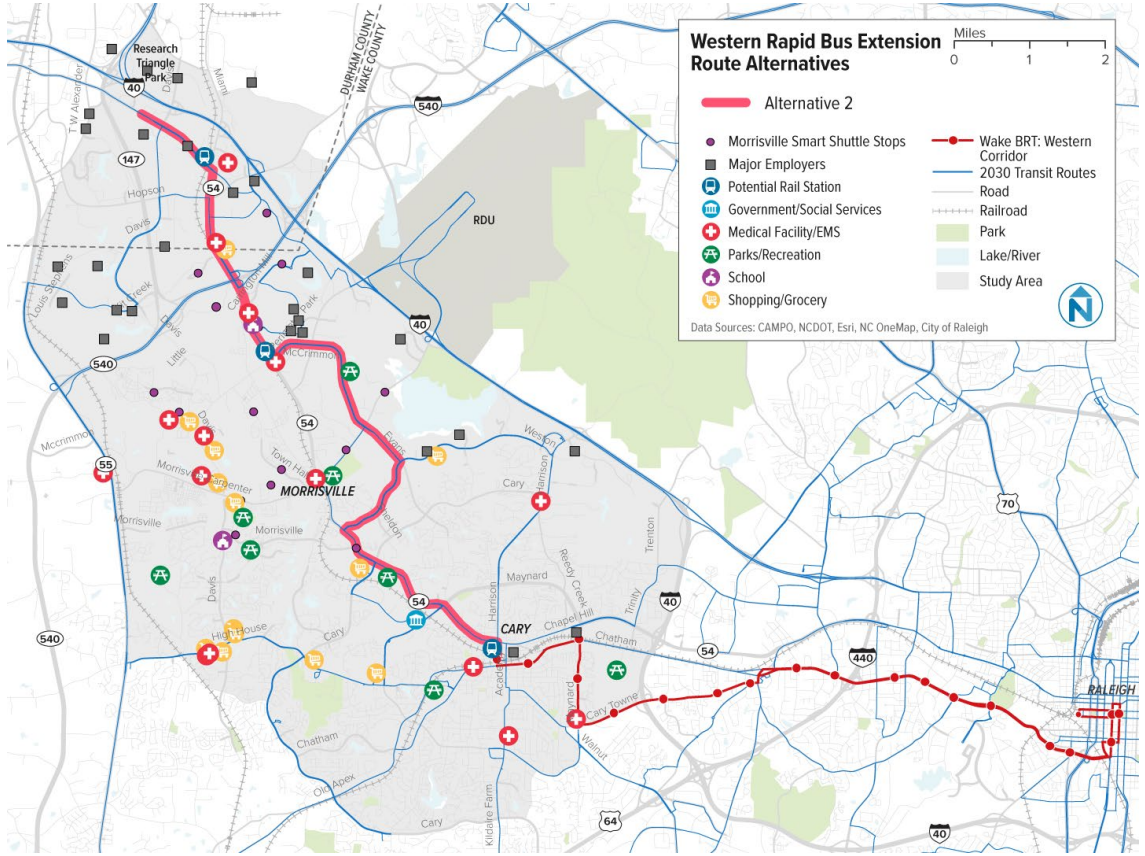
Recommended Locally Preferred Alternative (LPA)

Recommended Mode: Zero-emission buses, with speed and reliability investments (TSP and queue jump lanes) were feasible.

Recommended Alignment: Alternative 2 (NC 54 and Evans Rd) has better redevelopment opportunity and potential for transit speed and reliability treatments. It also avoids constrained segments of NCRR right of way.

Opening year: beyond 2035

LPA may be amended following future studies



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05 | Recap and Next Steps

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Path to Project Development

- Update Wake BRT standards — 2023 - 24
- Rapid Bus Ext: Concept of Operations (Con-Ops) and analyses — 2024 - 25
- Update demand-modeling forecasts — 2025 - 26
- Project Sponsorship determination — 2025 - 26
- Local funding and FTA competitiveness and/or application — 2026 - 27

Further Study and Analyses

Operational Questions

- Should Express Bus extensions operate at the same (or lower) frequency as Core BRT?
- Can Express Bus segment operate at different frequency than BRT if they are using the same/interlined fleet?
- Will Rapid Bus operate as an overlay to BRT (Cary to Raleigh)?
  - If yes, is Rapid Bus serving all stops vs skip-stop?

Zero Emissions Vehicles

- Compatibility with Western BRT (Cary to Raleigh)
  - 40’ standard or 60’ articulated
  - Equipped for left-door boarding at center-running BRT stations
- Supporting facilities

Additional Considerations and Inputs

Future Iterations

- Wake Bus Plan updates
- MTP updates
- Land Use and Travel Demand Modeling
  - Effects of Commuter rail
  - Changes to regional travel patterns
  - Continued land use changes
- Operation of critical first-last mile mobility services (circulators, microtransit, shuttles, etc.)

Project Funding and Sponsorship

- Incorporation into MTP
- Unfunded in TIP/STIP
- End operator of Rapid Bus extensions - TBD

Rapid Bus Corridor Extension: LPA Adoption Process Next Steps

- TCC (Mar 2)
- CAMPO Exec Board, TPAC (Mar 15)
- DCHC (Mar 8, 22)
- Additional Operational Study; Project Sponsor Determination; LPA Adoption
- Wake Transit concurrence

Thank You

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