

A RESOLUTION RECEIVING AN UPDATE ON THE TRIANGLE REGIONAL TRANSIT
PROGRAM AND PROVIDING COMMENTS ON THE DURHAM-ORANGE CORRIDOR
ALTERNATIVES ANALYSIS
Draft Resolution No. 54/2011-12

WHEREAS, *Carrboro Vision 2020* (4.13) states that the “town should cooperate with Chapel Hill and other regional entities in a comprehensive transportation plan to include: regional transit service conducted by the Triangle Transit Authority, seamless connections among all the region’s public transit systems, and shorter routes and more frequent service”; and

WHEREAS, 14.1 percent of Carrboro residents take public transportation to work, according to the 2005-2009 American Community Survey, conducted by the U.S. Census Bureau; and

WHEREAS, the Durham-Chapel Hill-Carrboro 2035 Long Range Transportation Plan recommends a light rail corridor connecting Durham with the UNC campus, with a recommended future expansion to Carrboro; and

WHEREAS, Triangle Transit is conducting an Alternatives Analysis to apply for Federal Transit Administration funding for a regional fixed guideway between Durham and UNC; and,

WHEREAS, the Alternatives Analysis has recommended light rail transit as the Locally Preferred Alternative between Durham and Orange Counties; and

WHEREAS, the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC-MPO) Transportation Advisory Committee is expected to consider approval of a Locally Preferred Alternative (LPA) at its February 2012 meeting;

NOW, THEREFORE BE IT RESOLVED by the Carrboro Board of Aldermen that the Board of Aldermen receives the update on the Triangle Regional Transit Program.

BE IT FURTHER RESOLVED that the Board:

1. [recommends that the TAC approve the recommended Locally Preferred Alternative]
2. [recommends that the TAC approve the _____ alternative]
3. [does not take any action on recommending an alternative]

BE IT FURTHER RESOLVED that the Board provides the following additional comments:

- a. _____
- b. _____
- c. _____



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Executive Summary

The 2035 Long Range Transportation Plan adopted by the Durham-Chapel Hill-Carrboro and Capital Area Metropolitan Planning Organizations in April 2009 identified corridors for major investments in fixed guideway transit over the next 30 years. Through a Transitional Analysis, the first step in the Alternatives Analysis (AA) process which was begun in March 2010, three priority corridors were selected for further consideration: the Durham-Orange Corridor; the Durham-Wake Corridor and the Wake Corridor. In order to identify the most appropriate initial investment or Locally Preferred Alternative (LPA) for each corridor, a broad range of transit technology and alignment alternatives were examined through the Conceptual Evaluation of Alternatives.

This Detailed Definition of Alternatives Technical Report presents the results of the Conceptual Evaluation of Alternatives and a recommendation for the Locally Preferred Alternative (LPA) which includes the preferred alignment, transit technology and station locations for the Durham-Orange Corridor.

Alternatives Considered

In addition to the No-Build and Transportation System Management (TSM) Alternatives automatically advanced from the conceptual alternatives screening, the transit technologies and alignment options remaining after the conceptual alternatives were combined into three fixed-guideway alternatives for detailed evaluation:

Light Rail Transit (LRT) Alternative This alternative would operate light rail vehicles between University of North Carolina (UNC) Hospitals and east Durham and includes alignment options in UNC Chapel Hill (A1 – UNC Hibbard Drive and A3 – UNC Southern), Meadowmont/Woodmont (C1 – Meadowmont Lane and C2 – George King Road), and South Square (D1 – Westgate Drive and D3 – Shannon Road). A total of 17 station locations are proposed.

Bus Rapid Transit (BRT)-High Alternative This alternative would operate BRT between UNC Hospitals and east Durham, generally following the same alignment as LRT and including the same station locations. The only deviation would occur through downtown Durham to the end-of-line at Alston Avenue in east Durham where the BRT-High option would utilize Pettigrew Street, while the LRT would run in the rail corridor. During the Special Transit Advisory Commission's (STAC) deliberations representatives of CSX Transportation (CSX) and Norfolk Southern Corporation (NS) stated that they would not accept the operation of busway/high occupancy vehicle (HOV) lanes in any railroad corridor in which they operated. North Carolina Railroad (NCRR) advised the STAC that they too would not support busway/HOV lanes in the NCRR corridor. Existing Pettigrew Street is technically within the 200-foot railroad right-of-way but is currently utilized by vehicular and bus traffic. The BRT-High would operate similar to conventional bus in mixed traffic along Pettigrew Street, but would transition to exclusive running along a new Pettigrew Street connection to be constructed as part of this project between Campus Drive and Duke Street. Should BRT be selected as the Locally Preferred Alternative, the new guideway connection between these intersections would require coordination with the operating railroads and, potentially, further engineering and design analysis.

BRT-Low Alternative A second BRT alternative was developed in consideration of the greater flexibility offered by BRT operations. The BRT-Low Alternative alignment more closely follows existing roadways with less aerial structures and more mixed-traffic segments. The BRT-Low alignment is similar to the BRT-High alignment but would deviate from the BRT-High alignment in the following three segments: Hamilton Road Station to Leigh Village Station (BRT-Low Alternative 1), Gateway

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Station to MLK Jr. Parkway Station (BRT-Low Alternative 2), and Shannon Drive to Pickett Road (BRT-Low Alternative 3). A total of 18 station locations are proposed.

Evaluation Results

The alternatives were evaluated based on seven evaluation criteria directly related to the project goals. These criteria were Ridership, Transportation Operations, Expansion Potential, Economic Development Potential, Public and Agency Support, and Environmental Impacts. Table ES-1 summarizes the evaluation results.¹ A discussion of how well the alternatives performed relative to the project goals follows the table.

¹ Public and agency support is excluded from the summary table because of the limited amount of data available for evaluation. See Section 3.2.4 of the Detailed Definition of Alternatives Technical Report for more information.

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Table ES-1 Summary of Evaluation Results for LRT, BRT-High, and BRT-Low Alternatives

Goals	Evaluation Criteria (Corresponding Report Section)*	LRT	BRT-High	BRT-Low
Goal 1: Improve mobility through and within the study corridor. Goal 2: Increase transit efficiency and quality of service. Goal 3: Improve transit connections.	Ridership: Daily Project Boardings (Section 3.2.1)	12,000	BRT route: 5,700** Interlined Buses: 11,900 Total: 17,600	BRT route: 4,600** Interlined Buses: 11,700 Total: 16,300
	Ridership: System-wide Trips*** (Section 3.2.1)	140,500-141,600	142,800	141,100
	Transportation Operations: Traffic Impacts (Section 3.2.2)	Low	Low	Moderate
	Transportation Operations: Travel Time (Section 3.2.2)	35 minutes	39 minutes	44 minutes
	Expansion Potential (Section 3.2.3)	No engineering constraints & consistent with regional plans	Could be inconsistent with regional connectivity goals	Could be inconsistent with regional connectivity goals
Goal 4: Support local and regional economic development and planned growth management initiatives	Economic Development Potential (Section 3.2.5)	Demonstrated ability to influence development	Unproven ability to influence development	Unproven ability to influence development
Goal 5: Foster environmental stewardship	Environmental Impacts (Section 3.2.6)	Moderate property acquisitions, high visual impacts, moderate stream/wetland & construction impacts, no air quality impacts	Moderate property acquisitions, visual impacts, stream/wetland & construction impacts, low air quality impacts	High property acquisitions, low visual impacts, low stream/wetland impacts, moderate construction & low air quality impacts
Goal 6: Provide a cost-effective transit investment.	Estimated Cost (2011 \$) – Capital (Section 3.2.7)	\$1.37B	\$960M	\$810M
	Estimated Cost (2011 \$) – O&M Cost (based on offered peak hour capacity of 800 and 1500 pax/hr - Section 3.2.7)	800 pax/hr: \$14M 1500 pax/hr: \$15M	800 pax/hr: \$11M 1500 pax/hr: \$13M	800 pax/hr: \$11M 1500 pax/hr: \$13M

*Evaluation criteria include references to sections of the report where more information can be found. | **Daily boardings for BRT-High and BRT-Low routes without Interlined buses could potentially be higher as the model estimated the ridership assuming interlined buses. Interlining refers to the ability of local bus routes to use of the guideway in addition to the exclusive BRT service. The BRT numbers thus do not account for passengers that would transfer from feeder buses to BRT if the feeder buses were not sharing the BRT guideway | ***System-wide trips refer to total transit trips in the three county Triangle Region (Durham, Orange, and Wake Counties).



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Based on the information presented in Table ES-1, the BRT-High and BRT-Low Alternatives clearly rate well in their ability to meet Goal 1: Improve mobility through and within the study corridor, Goal 2: Increase transit efficiency and quality of service, and Goal 3: Improve transit connections. In terms of ridership, a significant difference between LRT and BRT is that local bus routes can make use of the guideway in addition to the exclusive bus rapid transit service. This is termed interlining. The interlined buses include not only feeder buses, but also additional bus routes that could make use of portions of the bus guideway (busway). Riders could opt for a one-seat ride along the guideway onboard the feeder buses or could transfer to another route at one of the busway stations, thus potentially double-counting the boardings for BRT where the LRT would only see one boarding. It is not surprising that the sum of the ridership from the interlined bus routes and the BRT exceeds the LRT ridership. When looking at total transit trips in the region, however, this phenomenon is equalized between LRT and the BRT Alternatives. All three alternatives would increase system-wide transit trips in the region by a comparable amount.

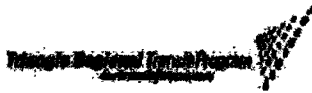
The end-to-end travel time for the BRT Alternatives is slightly longer than the LRT Alternative; however, travel time does not seem to be a major differentiator with regard to passenger preference, as ridership on the BRT-High and BRT-Low Alternatives exceeds that of the LRT Alternative, even with a longer travel time. It should be noted that the travel time estimate for the BRT-High and BRT-Low Alternatives assume that the BRT-High Alternative will be permitted to run along the existing and proposed Pettigrew Street, which is within the NCRR corridor. If the alignment is not permitted to operate within the rail corridor, alternate alignment options could increase travel times by 3 to 4 minutes. Additionally, while BRT-Low would result in marginally worse traffic impacts than LRT and BRT-High, traffic impacts are also not a major differentiator among the Build Alternatives.

Each of the three alternatives – LRT, BRT-High, and BRT-Low – meets Goal 5: Foster environmental stewardship; however, the use of fossil fuels by buses makes LRT a more sustainable and desirable technology over the long term. And, while each would result in limited impacts to the natural and built environments, environmental impacts have not proven to be a major differentiator between the alternatives.

From a cost perspective, the BRT-High and BRT-Low Alternatives best meet Goal 6: Provide a cost-effective transit investment by providing a lower capital cost investment and O&M costs within the planning horizon for the proposed project. In terms of capital costs, while LRT presents substantially higher costs than BRT, the cost of the LRT Alternative is still within the range of affordability as detailed in the Financial Plan being prepared for Durham, Orange, and Wake Counties. For O&M costs, as noted in Section 3.2.7, decision-makers must also consider that long-term, the O&M costs of the BRT Alternatives will likely escalate higher than those of the LRT Alternative due to the shorter life span of buses compared to trains, operations (driver) costs, and, potentially, fuel costs.

Ultimately the decision of whether BRT or LRT is a cost-effective technology choice will depend largely on ridership. Currently, the BRT Alternatives do have slightly higher forecasted boardings but, as discussed in Section 3.2.7, as peak hourly volumes reach the range more comparable to existing LRT and BRT systems, LRT can meet the increased demand at a lower capital and O&M investment than BRT.

While the BRT Alternatives have demonstrated ability to be competitive regarding most project goals, the LRT Alternative clearly surpasses the BRT Alternatives under Goal 4: Support local and regional economic development and planned growth management initiatives. The LRT Alternative has demonstrated public support and a proven record of producing local and regional economic



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development benefits by enhancing and focusing growth within LRT corridors. LRT enhances opportunities for transit oriented development (TOD), and the resulting development can achieve rental rate premiums and higher land values over non-light rail served properties. Impressive levels of development have been constructed along LRT lines in many examples across the nation. As demonstrated by the dollars of investment with LRT corridors such as the Charlotte Blue Line, developers are interested in constructing TOD at LRT stations, as they see the value in the transportation advantage afforded by LRT. Further, in support of planned growth management initiatives, LRT's proven ability to focus growth would, in the long run, have a more substantial impact on mobility because the land use impacts will result in more choices.

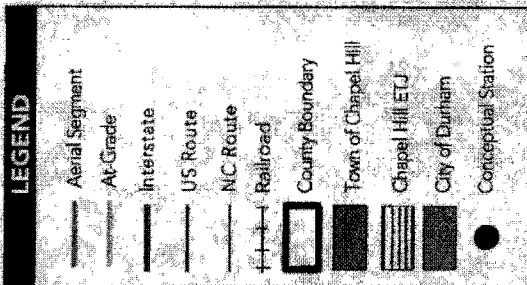
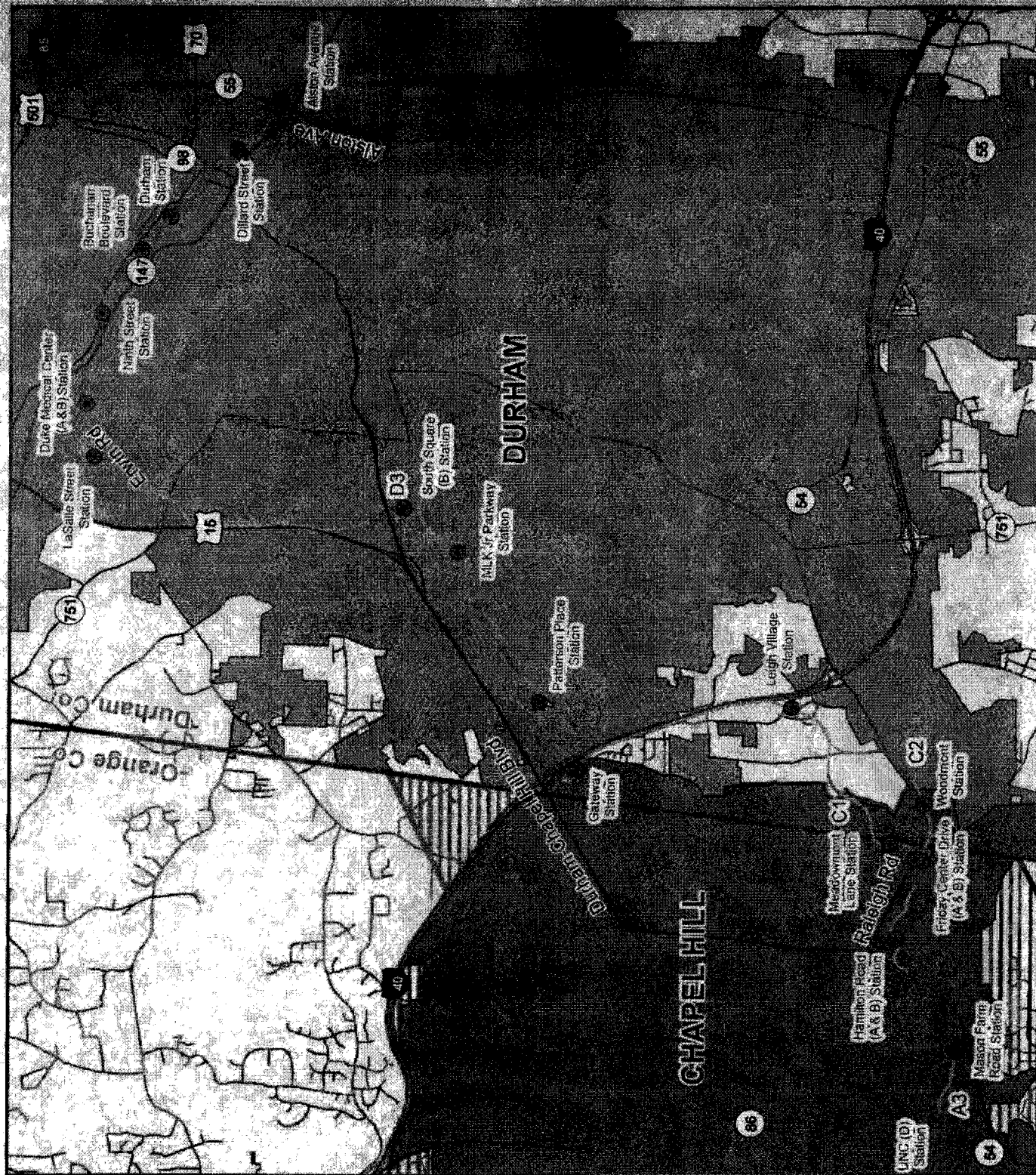
Locally Preferred Alternative (LPA) Recommendation

Local and regional stakeholders place a high level of importance on economic development potential and focusing growth within the proposed transit corridor through TOD. LRT has consistently been proven to bolster economic development and focus growth. These potential development dollars are not insignificant. The LRT Alternative alone can fully address the stated Purpose and Need for a fixed-guideway investment in the Durham-Orange Corridor; it can enhance mobility, expand transit options between Durham and Chapel Hill, serve populations with high propensity for transit use, and foster compact development. For these reasons, the project team's recommendation is to carry forward the LRT Alternative as the LPA. The LRT Alternative is recommended for advancement with alignment options A3, C1 and C2, and D3 and the associated station locations for the following reasons:

- *Alignment option A3:* As the preferred alignment option, supported by Town of Chapel staff and UNC & UNC Hospitals, this alignment and a future extension of the A3 option would mitigate the constraint of the extended walking distances to existing major employment and student centers.
- *Alignment options C1 and C2:* Alignment option C1 is the preferred alignment because it serves Meadowmont Village, an existing community that was designed to be a TOD. Long-term plans for fixed-guideway service within Meadowmont Village are also evidenced by the dedication of right-of-way, which would result in fewer private property acquisitions for alignment option C1 relative to alignment option C2. In addition, it should be noted that the ridership potential of Woodmont relies on potential development rather than on an existing community as in the case of Meadowmont. Although the alignment option C1 is recommended, the crossing of wetlands and US Army Corps of Engineer (USACE) owned property to the east of Meadowmont Village warrants additional coordination with the USACE and continued dialogue with community stakeholders to fully vet this issue. Therefore, the project team also recommends advancing alignment option C2 through to the Preliminary Engineering (PE)/National Environmental Policy Act (NEPA) phase in order to provide an opportunity for continued study.
- *Alignment option D3:* The potential for development for alignment option D3 and the surrounding land uses is, in the opinion of the project team, a very significant factor for the recommendation of D3 above and beyond the constraints cited in Table 3-24 of the Detailed Evaluation of Alternatives Technical Report.

Figure ES-1 illustrates the recommended LPA.

FIGURE ES-1
DURHAM-ORANGE
LOCALLY PREFERRED
ALTERNATIVE (LRT)



0 0.3 0.6 1.2 Miles

JUNE 2011

BEGIN SEGMENT A
ALTERNATIVE 1
UNC STATION (A)

UNC (A) LRT
STATION

UNC (C) LRT
STATION

MANNING DR

WILLIAM BLYTHE DR

HIBBARD DR

SHEET A3-02

SHEET A1-01(A)
& A1-01(C)

PROPOSED
DURHAM
CORRIDOR

MASON FARM RD

BALDY HILL

00+00

20+00

40+00

50+00

