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8 Evaluation of Alternatives

This chapter presents a comparative evaluation of the alternatives considered in this Draft Environmental Impact Statement (DEIS). Section 8.1 summarizes how well each alternative is projected to meet the Purpose and Need of the proposed Durham-Orange Light Rail Transit (D-O LRT) Project. Section 8.2 discusses the alternatives' potential effects on transportation and the environment. Section 8.3 discusses equity, or the extent to which each alternative provides fair distribution of costs and benefits across various communities in the D-O Corridor. The information in this chapter is derived from the quantitative and qualitative data presented elsewhere in the DEIS and provides the basis for decision-makers (e.g., Federal Transit Administration [FTA], Triangle Transit's Board of Trustees), cooperating and participating agencies, major project stakeholders, non-governmental organizations, and the public to assess the benefits, costs, and environmental consequences of the alternatives against the Purpose and Need and associated goals of the proposed D-O LRT Project.

As described in DEIS chapter 1, the proposed D-O LRT Project development and evaluation process responds to the requirements of the National Environmental Policy Act (NEPA), Moving Ahead for Progress in the 21st Century Act (MAP-21), and the FTA New Starts process.

8.1 Purpose and Need

As explained in DEIS chapter 1, the purpose of the proposed D-O LRT Project is to provide a high-capacity transit service located within the D-O Corridor, between Chapel Hill and Durham, along the North Carolina (NC) 54, Interstate 40 (I-40), United States (US) 15-501, Erwin Road, and NC 147 transportation corridors, that improves mobility, increases connectivity through expanding transit options, and supports future development plans.

The need for the proposed D-O LRT Project is to attain the following:

Improve Mobility

- **Enhance mobility**: provide a competitive, reliable alternative to automobile use that supports compact development
- **Increase transit operating efficiency**: offer a competitive, reliable transportation solution that will reduce travel time

Increase Connectivity

- **Expand transit options between Durham and Chapel Hill**: enhance and seamlessly connect with the existing transit system
- **Serve major activity and employment centers between Durham and Chapel Hill**: serve the University of North Carolina at Chapel Hill (UNC), east Chapel Hill, US 15-501 Corridor, Duke West Campus, Duke and Durham Veterans Affairs (VA) Medical Centers, Duke East Campus, downtown Durham, and east Durham

Promote Future Development

- **Support local land use plans that foster compact development**: provide a transportation solution that supports compact development, promotes environmental stewardship, helps manage future growth, and maximizes the potential for economic development near activity centers

As described in chapter 2, the No Build Alternative serves as the basis of comparison for the NEPA Preferred and Project Element Alternatives.

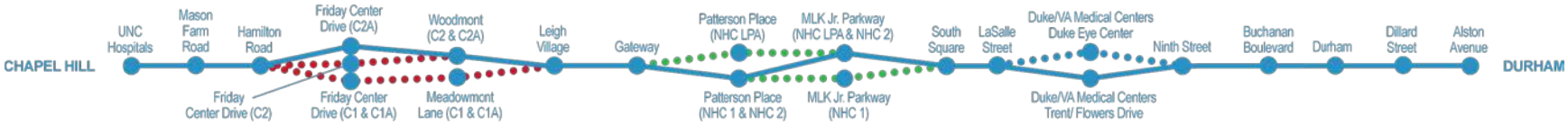
The NEPA Preferred Alternative contains the preferred alignment options, one ROMF option, and station selections in each area where alignment and station alternatives exist. As described in DEIS section 2.2.2, the majority of the proposed D-O LRT alignment and the alignment alternatives crossing New Hope Creek and Little Creek were identified during the AA process and subsequently refined during NEPA scoping in response to public and agency comments. As a result, the following alignments crossing Little Creek and New Hope Creek are evaluated in this DEIS one of each creek crossing is included in the NEPA Preferred Alternative (Alternatives C2A and NHC2).

- Four potential crossings of Little Creek between Hamilton Road and the proposed Leigh Village Station (Alternatives C1, C1A, C2, and C2A)
- Three potential crossings of New Hope Creek and Sandy Creek between Patterson Place and South Square (Alternatives NHC LPA, NHC 1, and NHC 2)

In addition, station alternative locations are being studied for the Duke/VA Medical Centers Station: Duke Eye Center and Trent/Flowers Drive. One station alternative location, Trent/Flowers Drive Station, is included in the NEPA Preferred Alternative.

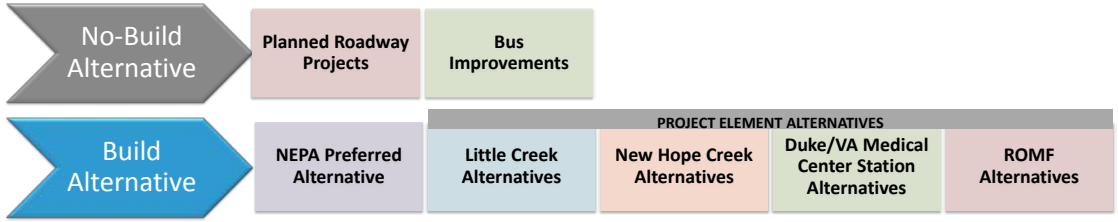
Also, to serve the proposed project, five alternative locations are under study for the ROMF. One ROMF alternative location, Farrington Road ROMF, is included in the NEPA Preferred Alternative. The other ROMF Alternatives include:

- Leigh Village ROMF
- Patterson Place ROMF
- Cornwallis Road ROMF
- Alston Avenue ROMF



The NEPA Preferred and Project Element Alternatives all have similar alignments and stations and would serve essentially the same travel markets using the same transit technology (light rail), and therefore, would have similar performance as to the project's Purpose and Need. **Table 8.1-1** summarizes the effectiveness of the NEPA Preferred and Project Element Alternatives in addressing the project needs compared to the No Build Alternative using need criteria, and highlights where there are differences in the alternatives.

The NEPA Preferred Alternative would be highly effective at meeting four of the five project need criteria, and effective at meeting the five project need criteria.



For this DEIS, the benefits and consequences of the NEPA Preferred and Project Element Alternatives are compared to the No Build condition.

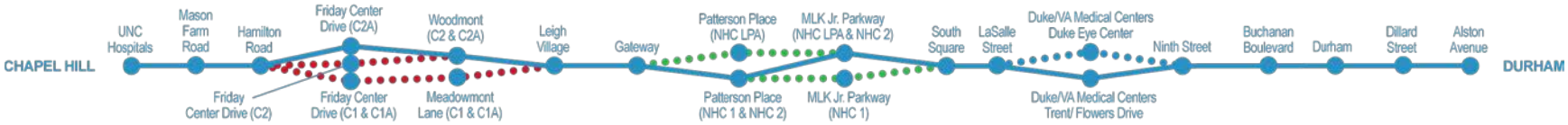


Table 8.1-1: Project Need Performance Summary for No Build, NEPA Preferred, and Project Element Alternatives

Overarching Need	Project Need	Need Criteria	No Build Alternative	NEPA Preferred and Project Element Alternatives
Enhance Mobility	Enhance mobility - provide a competitive, reliable alternative to automobile use that supports compact development	• Increase capacity of transportation system • Provide a competitive and reliable option to automobile use • Improve and expand transit access for transit-dependent persons	Not Effective • Would provide modest expansion to some elements of roadway network • Would not provide competitive and reliable options to automobile use, although some additional transit services would be provided • Would improve and expand bus access for transit-dependent persons by increasing bus frequency	*NEPA Preferred and Project Element Alternatives* Highly Effective • Would add new high-capacity transit infrastructure • Would provide a competitive and reliable option to automobile use • Would substantially improve and expand transit access for transit-dependent persons by increasing transit frequency and coverage, and by providing a new high-capacity transit alternative
	Increase transit operating efficiency – offer a competitive, reliable transportation solution that will reduce travel time	• Maintain or improve transit travel times between existing and planned activity centers	Somewhat Effective • Would not maintain or improve transit travel times between existing and planned activity centers due to future increases in congestion	*NEPA Preferred and Project Element Alternatives* Highly Effective • Would maintain or improve transit travel times between existing and planned activity centers; not affected by increases in congestion

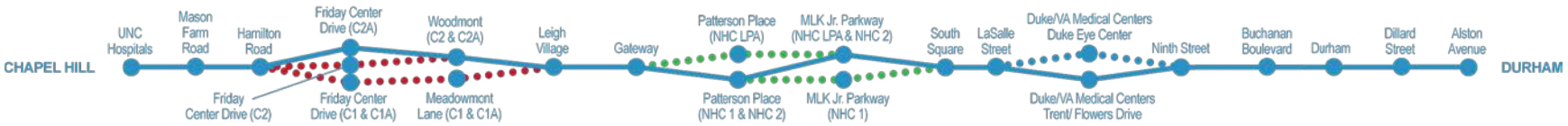


Table 8.1-1: Project Need Performance Summary for No Build, NEPA Preferred, and Project Element Alternatives

Overarching Need	Project Need	Need Criteria	No Build Alternative	NEPA Preferred and Project Element Alternatives
Increase Connectivity	Expand transit options between Durham and Chapel Hill – enhance and seamlessly connect with existing transit system	• Complement existing and planned transportation systems, plans, and infrastructure • Develop a seamless interface with other local and regional transit systems	Not Effective • Would be inconsistent with plans and future infrastructure • May improve connections with some local and regional bus systems	*NEPA Preferred and Project Element Alternatives* Highly Effective • Would complement existing and planned transportation systems, plans, and infrastructure. Local transportation planners are developing roadway, pedestrian, and bicycle infrastructure to support and complement the D-O LRT Project • Would develop a seamless interface with other local and regional transit systems
	Serve major activity and employment centers between Durham and Chapel Hill - serve the UNC Campus Area, east Chapel Hill, Leigh Village, US 15-501 Corridor, Duke West Campus, Duke and Durham VA Medical Centers, Old West Durham, Duke East Campus, downtown Durham, and east Durham	• Provide convenient and accessible transit services for employment and non-employment trips • Serve regional trips as well as trips between and within major activity centers	Somewhat Effective • Would modestly increase convenience and accessibility of bus service for employment and non-employment trips • Would serve regional trips as well as trips between and within major activity centers, but frequency and reliability would be constrained by traffic conditions and geographical considerations	*NEPA Preferred and Project Element Alternatives* Highly Effective • Would substantially increase convenience and accessibility of transit service for employment and non-employment trips • Would serve regional trips as well as trips between and within major activity centers; service would be unconstrained by traffic conditions and geographical considerations

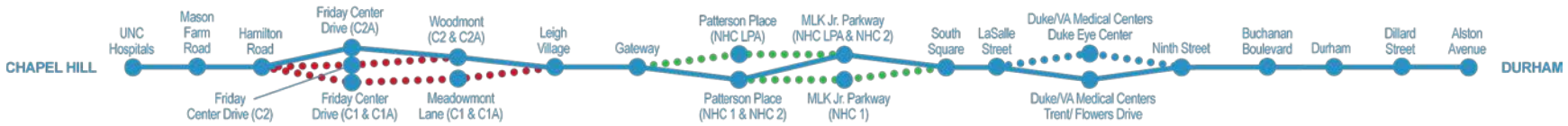
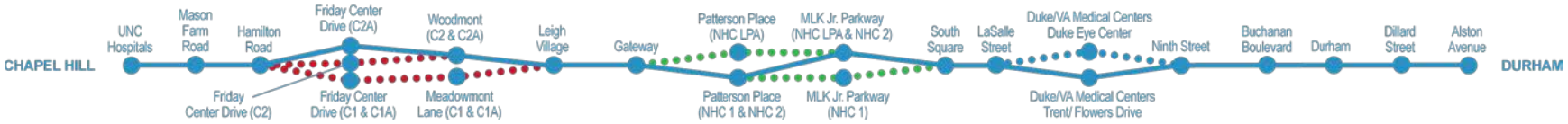


Table 8.1-1: Project Need Performance Summary for No Build, NEPA Preferred, and Project Element Alternatives

Overarching Need	Project Need	Need Criteria	No Build Alternative	NEPA Preferred and Project Element Alternatives
Promote Future Development	Support local land use plans that foster compact development – support compact development, promotes environmental stewardship, helps manage future growth, and maximize the potential for economic development near activity centers	• Develop transit investments that help focus development near activity centers • Maximize the potential for economic development consistent with regional and local plans and policies • Minimize adverse impacts to the natural and built environment • Utilize and enhance existing and underutilized transportation rights-of-way • Maintain or improve regional and corridor air quality	Not Effective • Bus transit investments would not help focus development near activity centers, as bus investments do not typically attract development • Would not maximize the potential for economic development • Is inconsistent with regional and local plans and policies Somewhat Effective • Would minimize adverse impacts to some resource areas of the natural and built environment; potential for impacts as existing roadways are expanded and further conventional auto-oriented development occurs • Would utilize existing transportation rights-of-way; potential for additional right-of-way acquisition as roadways are expanded • Would maintain regional and corridor air quality	*NEPA Preferred Alternative* Highly Effective • Would develop transit investments that help focus development near activity centers, as rail investments tend to attract compact development • Would maximize the potential for economic development • Is consistent with regional and local plans and policies Effective • Would minimize adverse impacts to some resource areas of the natural and built environment; potential for impacts as existing roadways are expanded and the D-O LRT Project is implemented • Would utilize and enhance existing transportation rights-of-way for the D-O LRT Project, potential for additional right-of-way acquisition as roadways are expanded • Would maintain or improve regional and corridor air quality *Project Element Alternatives* *Little Creek Alternatives – C1/C1A Alternatives* Somewhat Effective • Would not promote transit-oriented development in the vicinity of Woodmont Station compared to the NEPA Preferred (C2A) and C2 Alternatives. This area was identified as a target area for transit-oriented development in the *Chapel Hill 2020* comprehensive plan. *Other Project Element Alternatives* • Would perform similarly to NEPA Preferred Alternative

[a] The NEPA Preferred Alternative includes C2A, NHC 2, Trent/Flowers Drive Station, and the Farrington Road ROMF



8.2 Transportation and Environmental Consequences

This section discusses the potential transportation and environmental consequences of the NEPA Preferred and Project Element Alternatives, in comparison to the No Build Alternative.

8.2.1 No Build Alternative

The No Build Alternative serves as the basis for comparing the travel benefits and environmental impacts of the other proposed alternatives. The No Build Alternative includes existing and planned transit services; highway, bicycle, pedestrian, and transit facilities; and railroad improvements that are proposed to exist in 2040 and are included in the fiscally constrained Long Range Transportation Plan (LRTP) adopted by the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO), known locally as the 2040 Metropolitan Transportation Plan (MTP). The No Build Alternative excludes only the proposed rail transit improvements and related bus transit modifications. No major transit investment is proposed in the D-O Corridor in the No Build Alternative. The transportation improvements included in the No Build Alternative are listed in DEIS chapter 2.

8.2.2 Build Alternative

The evaluation of the Build Alternative, including the NEPA Preferred and Project Element Alternatives, is presented in this section. A detailed description of each alternative is included in section 8.1 and DEIS chapter 2.

A summary of analysis results of the alignment alternatives is included in **Table 8.2-1** and **Table 8.2-2**, and the evaluation of the ROMF sites is included in **Table 8.2-3**. Stakeholder and public comments are included in DEIS chapter 9 and appendix J.

All of the proposed highway, transit, bicycle, pedestrian, and railroad projects included in the No Build Alternative are assumed to be built and in operation as scheduled in the MTP, with a subset operational at the time the proposed D-O LRT Project begins revenue service (2026).

The NEPA Preferred and Project Element Alternatives' effects on transportation and the environment would differ substantially from the No Build Alternative, but would only vary in some specific areas among the NEPA Preferred and Project Element Alternatives. The NEPA Preferred and Project Element Alternatives would all introduce a new high capacity light rail line that would improve mobility and accessibility within the D-O Corridor. Both Durham and Orange counties have included the light rail line in the D-O Corridor as a key component of their respective land use and transportation plans for more than a decade. All of the NEPA Preferred and Project Element Alternatives serve similar populations and employment centers.

Differentiating impacts and benefits of the No Build, NEPA Preferred (including the preferred alignment options, one ROMF option, and station selections in each area where alignment and station alternatives exist), and Project Element Alternatives are described below.

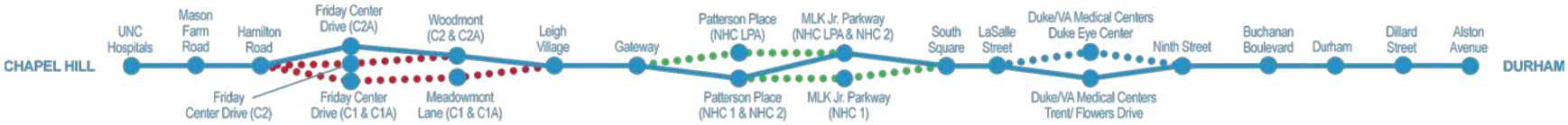


Table 8.2-1: D-O LRT Alternatives' Benefits and Consequences Matrix

Factor	No Build Alternative	NEPA Preferred Alternative [a]	Little Creek Alternatives			New Hope Creek Alternatives		Duke/VA Medical Centers
			C1	C1A	C2	NHC LPA	NHC 1	Duke Eye Center
Project Features								
Stations	0	17						
Vehicles	0	17						
Park and Ride Locations	0	8						
Park and Ride spaces	0	5,100						
Maintenance Facilities	0	1						
Transportation								
Forecasted average weekday light rail boardings in 2040	-	23,020	-560	-1,020	-300	+180	+120	-160
Forecasted average weekday Corridor bus boardings in 2040	20,240	16,990	-40	+480	-830	+60	+0	+80
Forecasted average weekday Corridor total boardings in 2040	20,240	40,010	-600	-540	-1,130	+240	+120	-80
Travel time		42 to 44 minutes each way						
Pedestrian and Bicycle Facility Crossings	0	80	+0	+4	-6	+3	-4	+0
Pedestrian and Bicycle at-grade crossings	0	48	+4	+4	+0	+0	+0	-1
Parking Spaces Impacted (after mitigation)	0	545	+180	+180	+0	-50	+75	+5
Land Use and Zoning								
Consistency with local planning efforts	Not consistent with local planning efforts	Consistent with local planning efforts	Somewhat consistent with local planning efforts	Somewhat consistent with local planning efforts	Consistent with local planning efforts	Somewhat consistent with local planning efforts	Consistent with local planning efforts	Somewhat consistent with local planning efforts
Socio-economic and Demographic Conditions								
Station area population 2040	0	53,000	-1,000	-1,000	+0	+0	+0	-200
Station area employment 2040	0	119,100	+0	+0	+0	+0	+0	-100

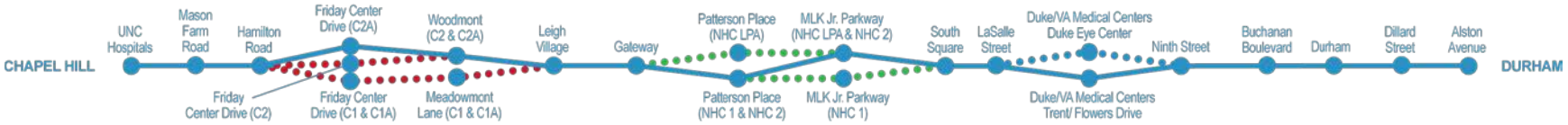


Table 8.2-1: D-O LRT Alternatives' Benefits and Consequences Matrix

Factor	No Build Alternative	NEPA Preferred Alternative [a]	Little Creek Alternatives			New Hope Creek Alternatives		Duke/VA Medical Centers
			C1	C1A	C2	NHC LPA	NHC 1	Duke Eye Center
Neighborhoods and Community Resources								
Neighborhoods and Community Resources	N/A	Impacts to Access, Mobility, and Community Resources	Impacts to Community Cohesion	Impacts to Community Cohesion	Same as NEPA Preferred Alt.	No Impact	Same as NEPA Preferred Alt.	Same as NEPA Preferred Alt.
Public Parkland and Recreational Areas								
Parklands (acres)	0	13.4	+3.3	+1.3	+1.1	+0	+0	+0
Air Quality								
Air Quality	All modeled concentrations are below the NAAQS							
Visual and Aesthetic Considerations								
#1 University (UNC Campus Area)	N/A	Moderate	N/A	N/A	N/A	N/A	N/A	N/A
#2 Mixed use/ Institutional (East Chapel Hill)	N/A	Low - Moderate	Moderate	Moderate	Moderate	N/A	N/A	N/A
#3 Natural (East Chapel Hill)	N/A	Moderate	High	High	Moderate	N/A	N/A	N/A
#4 Interstate (Leigh Village)	N/A	Moderate	N/A	N/A	N/A	N/A	N/A	N/A
#5 Suburban Commercial (US 15-501 Corridor)	N/A	Moderate - High	N/A	N/A	N/A	Moderate - High	Moderate - High	N/A
#6 Recreational (Duke West Campus)	N/A	Moderate	N/A	N/A	N/A	N/A	N/A	N/A
#7 University (Duke West Campus)*	N/A	Low - Moderate	N/A	N/A	N/A	N/A	N/A	Low - Moderate
#8 Historic/Emerging Urban (Old West Durham/Duke East Campus)*	N/A	Moderate	N/A	N/A	N/A	N/A	N/A	N/A
#9 Downtown Urban (Downtown Durham)*	N/A	Low	N/A	N/A	N/A	N/A	N/A	N/A
#10 Urban Industrial (East Durham)*	N/A	Low - Moderate	N/A	N/A	N/A	N/A	N/A	N/A

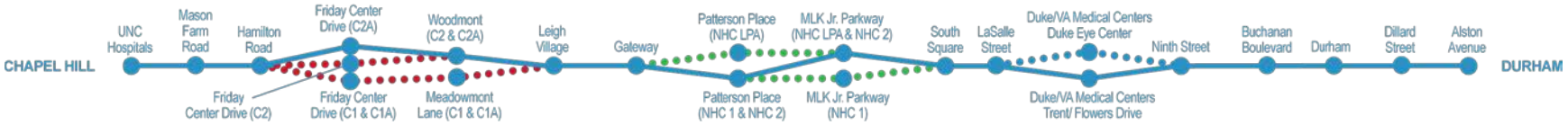


Table 8.2-1: D-O LRT Alternatives' Benefits and Consequences Matrix

Factor	No Build Alternative	NEPA Preferred Alternative [a]	Little Creek Alternatives			New Hope Creek Alternatives		Duke/VA Medical Centers
			C1	C1A	C2	NHC LPA	NHC 1	Duke Eye Center
Cultural, Historic, and Archaeological Resources								
Historic Properties Potentially Adversely Affected	0	0	0	0	0	0	0	0
Natural Resources								
Biotic Resources (acres)	0	316	+19	+22	+23	+27	+29	+0
Bottomland	0	4	+3	+1	+1	+4	+2	+0
Alluvial	0	4	+1	+1	+1	+0	+0	+0
Mesic Mixed	0	88	+5	+9	+8	+5	+5	+0
Maintained/Disturbed	0	220	+10	+11	+13	+18	+22	+0
Water Resources								
Streams (linear feet)	0	3,413	-110	+98	+94	+11	-210	+0.00
Riparian Zone 1 (square feet)	0	216,455	-1,647	+10,424	+3,934	+2,565	-14,051	+0.00
Riparian Zone 2 (square feet)	0	178,517	-6,322	+1,755	-2,605	+5,083	-18,110	+0.00
Wetland (acres)	0	0.56	-0.05	-0.05	-0.05	+0.00	Less than 0.1	+0.00
Ponds (acres)	0	Less than 0.1	+0.02	+0.02	+0.07	+0.00	+0.00	+0.00
Floodplain 100-year (acres)	0	6.42	+0.84	-0.33	+0.00	+0.09	+0.48	+0.00
Floodway (acres)	0	0.88	+0.00	+0.00	+0.00	+0.08	-0.03	+0.00
Noise and Vibration								
Noise Impacts	0	5	+0	+0	+0	+1	+0	+0
Vibration Impacts	0	8	+2	+1	+1	-1	+0	+0
Ground-borne Noise Impacts	0	13	+2	+1	+1	-1	-1	+0
Hazardous, Contaminated, and Regulated Materials								
High Risk Sites	N/A	41	+0	+0	+0	+0	+1	+0
Medium Risk Sites	N/A	83	+0	+0	+0	+0	+6	+0
Energy								
Annual Transportation related energy consumption (BTUs billions)	137,051	136,968	+13	+12	+17	-24	-10	+0
Acquisitions, Relocations, and Displacements								
Full Acquisitions	0	92	+0	+2	+1	-1	+2	+0

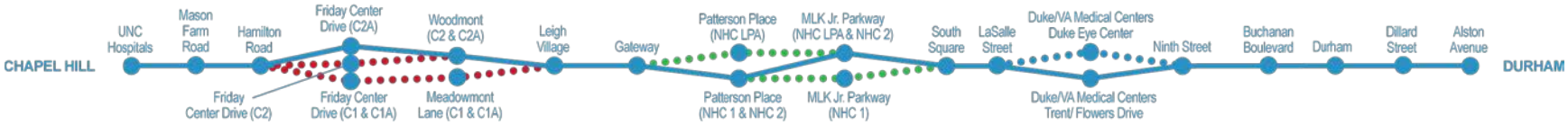


Table 8.2-1: D-O LRT Alternatives' Benefits and Consequences Matrix

Factor	No Build Alternative	NEPA Preferred Alternative [a]	Little Creek Alternatives			New Hope Creek Alternatives		Duke/VA Medical Centers
			C1	C1A	C2	NHC LPA	NHC 1	Duke Eye Center
Partial Acquisition	0	145	-5	-3	+5	-1	-1	+0
Relocations/Displacements	0	65	+1	+0	+2	-1	+1	+0
Operations and Maintenance (O&M) Costs								
Annual Light Rail O&M Cost	N/A	$17,944,000	-$45,000	+$35,000	+$9,000	-$74,000	+$25,000	+$0

Note:

[a] The NEPA Preferred Alternative includes C2A, NHC 2, Trent/Flowers Drive Station, and the Farrington Road ROMF (A comparison of the ROMF Alternatives is shown in Table 8.2-3).

Table 8.2-2: Comparative Costs for New Hope Creek and Little Creek Alignment Alternative Combinations (2015 dollars)

Alternative	Low Range	High Range	Cost Difference Above Apparent Low	Comment
C2A NHC LPA	$1,458,000,000	$1,612,000,000	$0	Apparent Lowest Cost Alternative – used as the basis of cost comparison
C2 NHC LPA	$1,463,000,000	$1,617,000,000	$5,000,000	
C2A NHC 2	$1,468,000,000	$1,622,000,000	$10,000,000	NEPA Preferred Alternative
C2 NHC 2	$1,473,000,000	$1,628,000,000	$15,000,000	
C2A NHC 1	$1,493,000,000	$1,651,000,000	$37,000,000	
C1A NHC LPA	$1,498,000,000	$1,656,000,000	$42,000,000	
C2 NHC 1	$1,499,000,000	$1,657,000,000	$43,000,000	
C1 NHC LPA	$1,502,000,000	$1,660,000,000	$46,000,000	
C1A NHC 2	$1,508,000,000	$1,666,000,000	$52,000,000	
C1 NHC 2	$1,511,000,000	$1,671,000,000	$56,000,000	
C1A NHC 1	$1,533,000,000	$1,695,000,000	$79,000,000	
C1 NHC 1	$1,537,000,000	$1,699,000,000	$83,000,000	

Assumptions: Variance between low and high is plus or minus 5%.

Note: The NEPA Preferred Alternative includes C2A, NHC2, Duke/VA Medical Centers Station: Trent/Flowers Alternative, and Farrington Road ROMF.

Note: The total estimated cost of the ROMF based upon Farrington Road is accounted for in Table 8.2-2. The variance in cost for the ROMF alternatives is addressed in Table 7.1 -3 and discussed later in this document. The selection of the Duke/VA Medical Centers Station Alternative is not anticipated to affect the project cost. Costs for stations associated with alignment alternatives are included in each alternative.

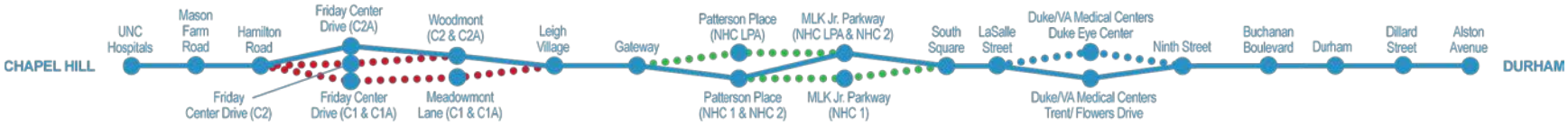


Table 8.2-3: D-O LRT ROMF Benefits and Consequences Matrix

Factor	Leigh Village	Farrington Road (NEPA Preferred) [a]	Patterson Place	Cornwallis Road	Alston Avenue
Project Features					
Site Size (acres)	21	25	16	20	21
Transportation					
Pedestrian and Bicycle at-grade crossings	0	0	0	0	2
Parking Spaces Impacted	0	0	0	0	0
Land Use and Zoning					
Consistency with Local Planning Efforts	Not consistent with local planning efforts	Not consistent with local planning efforts	Not consistent with local planning efforts	Somewhat consistent with local planning efforts	Consistent with local planning efforts
Existing Land Use	Residential- single family homes	Residential- single family homes	Not developed, vacant	Commercial/ Warehouse, Vacant	Commercial, Commercial/ Warehouse, Railroad, Residential, Vacant
Zoning	Residential Suburban Multi-family	Residential Suburban Multi-family	Residential Suburban - 20	Commercial General	Industrial Light
Socio-economic and Demographic Conditions					
Net employment at ROMF site	+85 to +175	+85 to +175	+85 to +175	+85 to +175	-140 to +25[B]
Neighborhoods and Community Resources					
Neighborhoods and Community Resources	Impacts to Community Resources	Impacts to Community Resources	Impacts to Community Cohesion	Impacts to Access and Mobility; Community Cohesion; Community Facilities	Impacts to Access and Mobility; Community Cohesion
Visual and Aesthetic Considerations					
Visual and Aesthetic Considerations	High	Moderate	High	Moderate-High	Low
Cultural, Historic, and Archaeological Resources					
Historic Properties Potentially Adversely Affected	1	0	0	0	0
Parklands and Recreational Areas					
Parklands (acres)	0.0	0.0	0.3	0.0	0.0
Natural Resources					

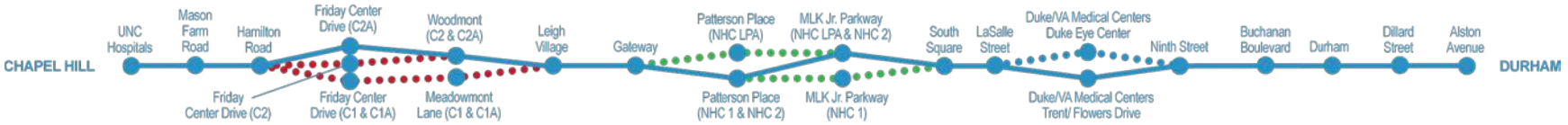
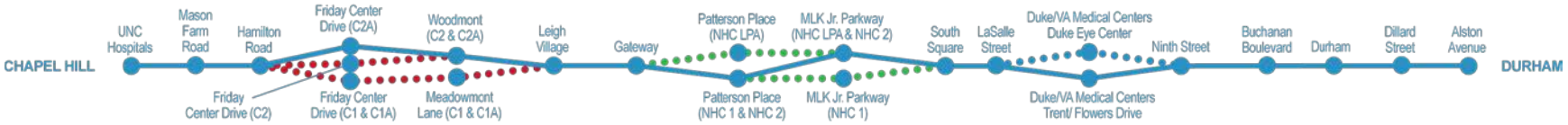


Table 8.2-3: D-O LRT ROMF Benefits and Consequences Matrix

Factor	Leigh Village	Farrington Road (NEPA Preferred) [a]	Patterson Place	Cornwallis Road	Alston Avenue
Biotic Resources (acres)	21	25	16	20	21
Bottomland	0	0	0	0	0
Alluvial	0	0	0	1	0
Mesic Mixed	17	9	16	12	0
Maintained/Disturbed	4	16	0	7	21
Water Resources					
Stream (linear feet)	587	638	0	154	0
Riparian Zone 1 (square feet)	25,405	45,713	0	0	0
Riparian Zone 2 (square feet)	19,909	37,767	0	1,461	0
Wetland (acres)	0.23	0.33	0.00	Less than 0.1	0.00
Pond (acres)	0.18	0.00	0.00	0.00	0.00
Floodplain (100-Year) (acres)	0.00	0.00	0.00	0.07	0.00
Noise and Vibration					
Noise Impacts	0	0	0	0	0
Vibration Impacts	0	0	0	0	0
Ground-Borne Noise Impacts	0	0	0	0	0
Hazardous, Contaminated, and Regulated Materials					
High Risk Sites	0	0	0	0	2
Medium Risk Sites	0	0	0	1	8
Acquisitions, Relocations, and Displacements					
Full Acquisitions	11	11	2	1	19
Partial Acquisitions	2	2	3	1	0
Relocations/Displacements	8	8	1	2	8

[a] Included in NEPA Preferred Alternative in Table 8.2-1.

[B] Net neutral or loss of employment due to displacement of existing employment at the site.

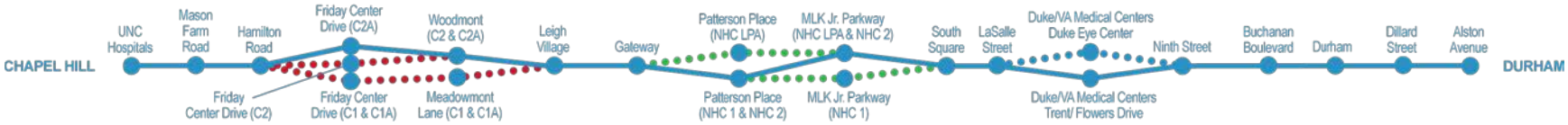


8.2.2.1 Differentiating Impacts and Benefits of the NEPA Preferred Alternative

Differentiating benefits of the NEPA Preferred Alternative, compared to the other alternatives considered, include:

- **Uses or parallels existing transportation rights-of-way** to avoid or minimize impacts to the natural and built environments such as the Upper Little Creek Waterfowl Impoundment, the Jordan Game Lands, the US 15-501 and NHC Bottomlands, and businesses along US 15-501 and in downtown Durham
- **Avoids or minimizes natural and built environment impacts**, particularly historic properties and parklands
- **Is consistent with local land use plans and policies.** In earlier transportation planning studies, portions of the NEPA Preferred Alternative were identified as the preferred corridor for high capacity transit and the areas around the proposed Friday Center, Woodmont, Leigh Village, Patterson Place, MLK Jr. Parkway, South Square, Duke/VA Medical Centers Trent/Flowers, Ninth Street, and Alston Stations were identified for future growth
- **Has most stakeholder and public support**
  - US Army Corps of Engineers (USACE) stated in letters dated January 7 and May 20, 2015, that it considered the C2A Alternative a viable alternative for crossing USACE property and that the C2A Alternative (or C2 Alternative) may result in less overall impacts to natural resources than the C1 or C1A Alternatives given their incorporation of existing transportation easements and rights-of-way crossing USACE government property (appendix G)
  - In an email dated July 13, 2015, EPA indicated that it "supports the choice of Trent/Flowers for the Duke/VA Medical Centers Station" and "supports the NEPA Preferred Alternative for the crossings of New Hope Creek (NHC 2 Alternative) and Little Creek (C2A Alternative) as the LEDPA [Least Environmentally Damaging Practicable Alternative]." (appendix G)
  - UNC noted its support for the NEPA Preferred Alternative, including the C2A Alternative, as it relates to UNC property in an e-mail dated May 15, 2015 and a letter to Triangle Transit dated May 22, 2015 (appendix G)
  - Durham County supports the C2A Alternative as stated at the Technical Committee Meeting on May 15, 2015 (appendix J)
  - Town of Chapel Hill supports C2A and C2 Alternative as stated in a resolution passed January 23, 2012 at the Technical Committee Meeting on May 15, 2015 (appendices G and J)
  - USACE and EPA staff, Durham County, and City of Durham support the NHC 2 Alternative as stated at the Technical Committee Meeting on May 15, 2015 (appendix J)
  - Durham VA Medical Center supports the Trent/Flowers Drive Station Alternative as stated in a letter to Triangle Transit dated December 18, 2014 and confirmed at the Technical Committee Meeting on May 15, 2015 (appendices G and J)
  - Duke University supports the Trent/Flowers Drive Station Alternative in a letter to Triangle Transit on January 12, 2015 (appendix J)

Differentiating impacts of the NEPA Preferred Alternative, compared with the Project Element Alternatives include:

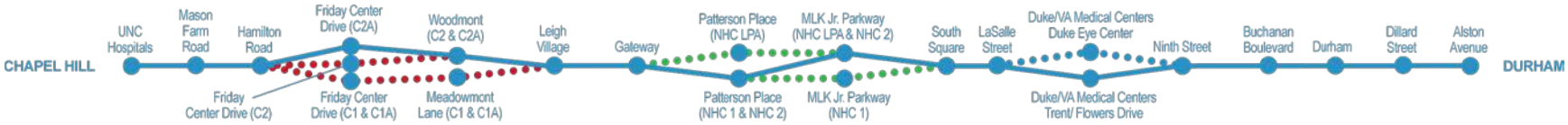


C2A Alternative

- **Supports Land Use Plans and Policies**: This alternative is consistent with local land use plans and policies. In earlier transportation planning studies, portions of the C2A Alternative were identified as the preferred corridor for high capacity transit and the areas around the proposed Friday Center Drive and Woodmont Stations were identified for future growth.
- **Minimizes Impacts to Public Parklands**: Impacts to two parks with use of approximately 0.3 acre of land. This includes impacts to Finley Golf Course (0.1 acre) and USACE's Jordan Game Lands (0.2 acre). Within USACE owned property, an existing improved transportation corridor would be utilized. Triangle Transit has coordinated with both USACE and UNC and involved them in the development of the C2A Alternative. The C2A Alternative also avoids impacts to the existing Town of Chapel Hill public park and recreation facilities, Meadowmont Park and Little Creek Trail.
- **Avoids Fragmentation of Natural Heritage Area**: Minimizes adverse impacts to the Little Creek Bottomlands and Slopes Significant Natural Heritage Area and parallels an existing improved transportation corridor, so no new fragmentation of these sensitive resources would occur.
- **Minimizes Vibration Impacts**: A single residence on George King Road would experience impacts from vibration and ground-borne noise impacts.
- **Moderates Property Acquisitions and Displacements**: The C2A Alternative has fewer acquisitions than the C1A and C2 Alternatives; additionally, there are fewer displacements than the C2 Alternative and an equal number of displacements as the C1A Alternative.

NHC 2 Alternative

- **Minimizes Total Impacts to Natural Resources**: The NHC 2 Alternative is located within NCDOT right-of-way adjacent to the existing US 15-501 bridge over New Hope Creek. It avoids dividing the US 15-501 and New Hope Creek Bottomlands and has the least overall impact to biotic resources. Light rail operations are less likely to disturb wildlife within the forested areas in the US 15-501 and New Hope Creek Bottomlands than the NHC LPA Alternative. The NHC 2 Alternative does not fragment habitats as the NHC LPA Alternative would do. However, as the NHC 2 Alternative bridges Sandy Creek it may disturb wildlife that could be avoided with the NHC 1 Alternative.
- **Moderates Impacts to Water Resources**: The NHC 2 Alternative would result in more impacts to streams and riparian zones than NHC 1, but less impacts than NHC LPA.
- **Minimizes Impacts to Public Parklands**: The NHC 2 Alternative avoids crossing the New Hope Creek Preserve Trail, which is impacted by the NHC LPA Alternative. The NHC 2 Alternative, like the other two NHC crossing alternatives, would cross over, on a bridge, the planned New Hope Creek Trail. It would cross the planned New Hope Creek Trail within the right-of-way for US 15-501 and lessen the potential for adverse impacts on trail users as compared to the NHC LPA Alternative.
- **Moderates Visual Impacts**: Would result in substantial visual impact to residents along US 15-501 west of Garrett Road. However, by passing behind businesses along US 15-501, there would be less visual impacts to the businesses east of Garrett Road as compared to the NHC 1 Alternative.
- **Moderates Property Acquisitions and Displacements**: Would require more property acquisitions and displacements than the NHC LPA Alternative, but fewer than the NHC 1 Alternative.



Trent/Flowers Drive Station Alternative

- **More Supportive of Land Use Plans**: Duke University's *Illustrative Master Plan Update* (2010) calls for the development of a pedestrian corridor on the east side of Emergency Drive, one block from the Trent/Flowers Drive Station Alternative.

Farrington Road ROMF Alternative

Compared to the four other ROMF alternatives considered, the Farrington Road ROMF Alternative site is the most desirable from a construction and operations standpoint. It is a 25-acre site, the largest site of the alternatives considered. The Farrington Road ROMF site is located on a long straight section of track which accommodates cross-overs for access to the yard (access to cross-overs is provided through the yard). The site is reasonably flat making preparation of the site for construction easier. Effective screening buffers can be provided around the site. The largest land owner on the site has expressed support for the Farrington Road ROMF Alternative. A number of comments received encourage the selection of another alternative.

- **Requires Changes to Land Use Plans**: This site is designated as Commercial and Office on the Durham Future Land Use Map and is currently zoned suburban residential. This site would require rezoning and an amendment to the comprehensive plan.
- **Moderates Visual Impacts**: The Farrington Road ROMF has visual impacts to residences, but would have less visual impacts than the Patterson Place and Cornwallis Road Alternatives. Because it is the largest of the sites evaluated, it has more space on the site to install screening to mitigate visual impacts.
- **Avoids Impacts to Historic Resources**: No adverse effects to historic resources compared to one adverse effect at the Leigh Village ROMF Alternative.
- **Moderates Impacts to Sensitive Natural Resources**: The Farrington Road ROMF impacts fewer acres of alluvial and mesic mixed forests than the Leigh Village, Patterson Place, and Cornwallis Road ROMF Alternatives.
- **Moderates Impacts to Water Resources**: Would result in the least impact to floodplains, floodway, and ponds, but has the largest impact to streams, stream buffers, wetlands and riparian zones.
- **Avoids Hazardous, Contaminated, Regulated Materials**: No sites were identified at this location, compared with the 2 high-risk sites and 8 medium-risk sites identified for the Alston Avenue ROMF.
- **Moderates Property Acquisitions and Displacements**: Would require more property acquisitions than the Patterson Place and Cornwallis Road ROMF Alternatives, but less than or equal to the Leigh Village or Alston Avenue ROMF Alternatives. Will require fewer tenant relocations than the Cornwallis Road ROMF Alternative (site is under construction to become a self-storage facility).

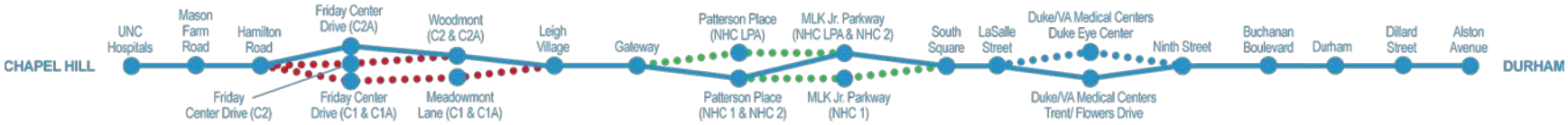
Recommendation

The NEPA Preferred Alternative would achieve the Purpose and Need, perform very effectively in terms of project goals and objectives, is the least environmentally damaging practicable alternative, and has the most stakeholder support as compared with the Project Element Alternatives considered in this DEIS.

8.2.2.2 Differentiating Impacts and Benefits of the Project Element Alternatives

Little Creek Alternatives

This section discusses the Little Creek crossing alternatives that are not



recommended as part of the NEPA Preferred Alternative.

C1 Alternative

The C1 Alternative would impact undisturbed natural areas including the Little Creek Bottomlands and Slopes Significant Natural Heritage Area, and the Upper Little Creek Waterfowl Impoundment. The C1 Alternative introduces a new transportation corridor on USACE land. In a letter from USACE dated January 7, 2015, the USACE stated that a request to use government property for the C1 Alternative "would not be authorized considering the availability of other less environmentally damaging alternatives." USACE reaffirmed that it would not authorize the C1 Alternative in a letter dated May 20, 2015 (appendix G).

Recommendation

The C1 Alternative is not recommended for further consideration as the NEPA Preferred Alternative.

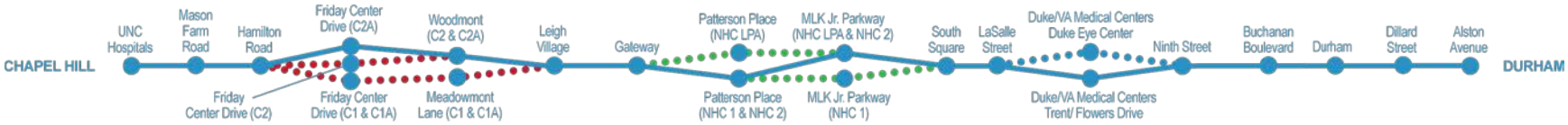
C1A Alternative

The C1A Alternative has the longest length of the Little Creek Alternatives. As a result, it has the longest travel times and least ridership of the Little Creek Alternatives. In terms of impacts to the natural environment, the C1A Alternative would impact undisturbed forested areas and wetlands associated with Little Creek, in particular, the Little Creek Bottomlands and Slopes Significant Natural Heritage Area on the periphery of the USACE-owned property. Therefore, as compared to the NEPA Preferred Alternative (C2A) and the other alternatives, the C1A Alternative would not minimize adverse impacts to the natural environment or use and enhance existing and underutilized transportation rights-of-way.

Differentiating Impacts and Benefits

Differentiating impacts and benefits of the C1A Alternative, as compared with the NEPA Preferred Alternative (C2A) include:

- **More Impacts to Public Parklands**: The C1A Alternative impacts to two public parks with a use of approximately 1.6 acres of land, which is more than the NEPA Preferred Alternative (C2A). This includes impacts to UNC's Finley Golf Course (1.0 acre), and the Town of Chapel Hill's Meadowmont Park and Little Creek Trail (0.6 acre).
- **More Vibration Impacts**: Residences along Cedar Berry Lane and Iron Mountain Road would experience impacts from vibration and ground-borne noise impacts.
- **More Residential Acquisitions**: The C1A Alternative requires more acquisitions than the NEPA Preferred Alternative (C2A).
- **Less Supportive of Land Use Plans and Policies**: The C1A Alternative does not include a station at Woodmont, although Woodmont was identified as an area targeted for future growth and Transit Oriented-Development in the *Chapel Hill 2020* comprehensive plan. As noted previously, the Town of Chapel Hill has expressed a preference for the NEPA Preferred (C2A) and C2 Alternatives which include a station at Woodmont.
- **Longest Travel Time and Fewer Riders**: The C1A Alternative has a longer travel time and lower ridership than the NEPA Preferred Alternative.
- **More Impacts to Sensitive Biotic Resources**: The C1A Alternative has more impacts to bottomlands and forests.
- **More Imports to Water Resources:** Streams and riparian buffers are impacted more by the C1A Alternative as compared to the C2A Alternative.
- **Higher Anticipated Capital Cost:** The estimated capital cost of the C1A Alternative is higher than the NEPA Preferred Alternative (C2A).



Recommendation

The C1A Alternative is not recommended for further consideration as the NEPA Preferred Alternative. While the C1A Alternative would avoid USACE property, the adverse impacts outweigh the benefits as compared to the NEPA Preferred Alternative (C2A).

C2 Alternative

In terms of impacts to the natural environment, the C2 Alternative would cross an undisturbed natural area associated with the Upper Little Creek Waterfowl Impoundment and property owned by the USACE, and have a greater impact on a public park— UNC's Finley Golf Course when compared to the NEPA Preferred Alternative (C2A). Despite this adverse impact, the C2 Alternative performs moderately well with respect to environmental stewardship compared to the NEPA Preferred and Project Element Alternatives. The C2 Alternative also uses and enhances existing underutilized transportation rights-of-way by following NC 54 (including an existing transportation easement through USACE property) and George King Road to minimize impacts to the Jordan Game Lands.

Differentiating Impacts and Benefits

Differentiating impacts and benefits of the C2 Alternative, as compared to the NEPA Preferred Alternative (C2A) include:

- **More Impacts to Public Parklands**: Impacts to two parks with use of approximately 1.4 acres and includes impacts to Finley Golf Course (1.2 acres) and Jordan Game Lands (0.2 acre).
- **More Vibration Impacts**: Multi-family residences along Brookberry Circle and a single residence on George King Road would experience impacts from vibration and ground-borne noise impacts.
- **More Impacts to Natural Resources**: The C2 Alternative affects 23 additional acres of biotic resources as compared to the NEPA Preferred Alternative (C2A) because a longer length of the alignment is outside of the existing NC 54 transportation right-of-way (west of East Barbee Chapel Road).
- **Higher Acquisitions and Displacements:** The C2 Alternative has more acquisitions and displacements than the NEPA Preferred Alternative (C2A).
- **Public and Stakeholder Input:** As part of the public involvement process, UNC has stated its preference for the C2A Alternative. USACE and the Town of Chapel Hill indicated their support for the C2A and C2 Alternatives.

Recommendation

The C2 Alternative is not recommended for further consideration as the NEPA Preferred Alternative. The adverse impacts outweigh the benefits as compared to the NEPA Preferred Alternative (C2A).

New Hope Creek (NHC) Alternatives

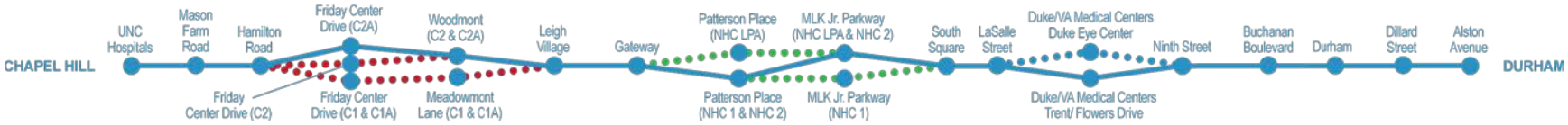
New Hope Creek LPA Alternative

The NHC LPA Alternative would impact and fragment undisturbed forested areas and wetlands associated with New Hope Creek and therefore, would not minimize adverse impacts to the natural environment by utilizing and enhancing existing and underutilized transportation rights-of-way.

Differentiating Impacts and Benefits

Differentiating benefits and impacts of the NHC LPA Alternative, as compared with the NEPA Preferred Alternative (NHC 2) include:

- **Visual Impacts to Fewer Sensitive Viewers**: The alternative would not introduce a visual impact to businesses or residences along US 15-501. However, it would introduce a substantial change to the viewshed of



users of the New Hope Preserve County-owned property and trail.

- **More Impacts to Natural Resources**: The NHC LPA Alternative would introduce a new transportation corridor in the sensitive NHC Bottomlands, resulting in a new fragmentation of habitat. The NHC LPA Alternative also impacts more acres of hardwood forests. Light rail operations may disturb wildlife within the more interior forested areas in the US 15-501 and NHC Bottomlands.
- **More Impacts to Water Resources**: The NHC LPA Alternative would impact the most linear feet of streams and riparian buffers. However, all the NHC alternatives will have similar impacts on water resources as they are within an acre to riparian buffers, within a half-acre of floodplains, within a tenth of an acre for floodway impacts, and within a tenth of an acre of wetlands.
- **More Impacts to Public Parklands**: The NHC LPA Alternative would cross over the New Hope Creek Preserve Trail and proposed New Hope Creek Trail on a bridge. This introduces a new visual element for trail users.
- **Fewer Property Acquisitions**: Would require acquisition of fewer properties than the NEPA Preferred Alternative (NHC 2).
- **More Noise and Vibration Impacts**: Would result in a noise impact to users of the New Hope Creek Preserve Trail.
- **Somewhat Consistent with Land Use Plans**: While the NHC LPA was recommended in prior plans, it is only somewhat consistent with local planning policies because it would not prevent the NHC Bottomlands from being divided.

Public and Stakeholder Input

During public involvement, stakeholders expressed concern about the NHC LPA Alternative's impacts to the NHC Bottomlands, including NCWRC, NC Natural Heritage Program, USACE, Durham County, and the NHC Corridor Advisory Committee.

Recommendation

The NHC LPA Alternative is not recommended for further consideration as the NEPA Preferred Alternative. The NHC LPA Alternative would divide the undisturbed area of the New Hope Creek Bottomlands, which would introduce an interruption of bottomlands that may impact wildlife, water resources, and recreational users. These impacts would not outweigh the benefits in other resource areas that the NHC LPA Alternative would provide.

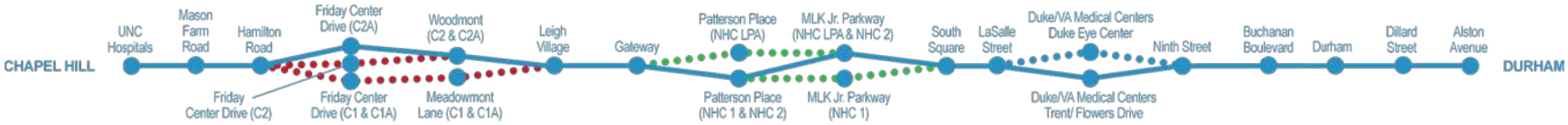
New Hope Creek 1 Alternative

Similar to the NEPA Preferred Alternative (NHC 2), this alternative crosses New Hope Creek adjacent to the existing US 15-501 bridge crossing, and thereby widens an existing improved transportation corridor. In terms of supporting local and regional economic development, the NHC 1 Alternative would impact apartments and businesses along US 15-501, which would be avoided with the NEPA Preferred Alternative (NHC 2).

Differentiating Impacts and Benefits

Differentiating benefits and impacts of the NHC 1 Alternative, as compared with the NEPA Preferred Alternative (NHC 2) include:

- **Visual Impacts to More Viewers**: Would result in substantial visual impact to residents and business owners along US 15-501.
- **More Impacts to Natural Resources**: Similar to the NEPA Preferred Alternative (NHC 2), light rail operations are less likely to disturb wildlife within the forested areas in the US 15-501 and NHC Bottomlands due to crossing in a previously disturbed area along US 15-501, as compared to the NHC LPA Alternative. However, the NHC 1 Alternative would affect 7 additional acres of hardwood forests as compared



to the NEPA Preferred Alternative (NHC 2).

- **Less Impact to Water Resources**: Would result in least impact to streams and riparian buffers.
- **More Property Acquisitions and Displacements**: Would require more acquisitions and displacements than the NEPA Preferred Alternative (NHC 2).
- **More Hazardous and Regulated Materials**: The NHC 1 Alternative has one additional high risk site and six additional medium risk sites as compared to the NEPA Preferred Alternative (NHC 2).

Recommendation

The NHC 1 Alternative is not recommended for further consideration as the NEPA Preferred Alternative. The adverse impacts outweigh the benefits of this alternative as compared to the NEPA Preferred Alternative (NHC 2).

Duke/VA Medical Centers Station: Duke Eye Center Alternative

Duke Eye Center Alternative performs similarly to the NEPA Preferred Alternative (Trent/Flowers Drive) in all respects with the exception of stakeholder input and consistency with future land use plans. Duke University's Master Plan includes a prominent north-south pedestrian corridor in close proximity to the Trent/Flowers Drive Station. The Duke Eye Center Alternative would not complement this planned pedestrian corridor as well as the NEPA Preferred Alternative. In addition, both Duke University and the Durham VA Medical Center expressed a preference for the Trent/Flowers Drive Alternative.

Recommendation

The Duke Eye Center Alternative is not recommended for further consideration as the NEPA Preferred Alternative. Because the two station alternatives perform very similarly, strong support for the Trent/Flowers Drive Alternative by major institutions and employers located in the vicinity of the station (Durham VA Medical Center, Duke University, and Duke University Medical Center) was used as the basis of this evaluation.

Rail Operations and Maintenance Facility (ROMF) Alternatives

All the ROMF Alternatives, with the exception of the NEPA Preferred Alternative ROMF (Farrington Road), are discussed in this section.

Leigh Village ROMF

The Leigh Village ROMF Alternative is a 21-acre site located on the west side of I-40 south of Farrington Road. Part of the site is currently occupied by the National Register-eligible Walter Curtis Hudson Farm.

Recommendation

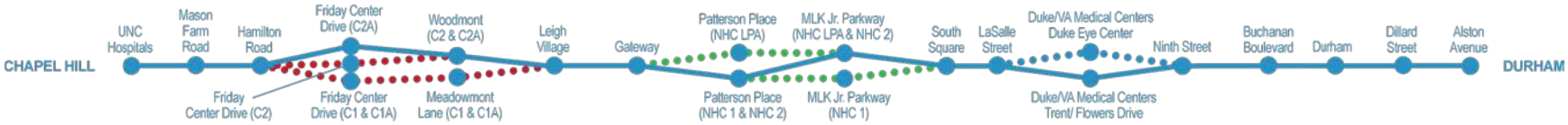
The Leigh Village ROMF Alternative is not recommended for further consideration as the NEPA Preferred Alternative. The Leigh Village ROMF Alternative would permanently use National Register of Historic Places-eligible Walter Curtis Hudson Farm. When compared against the other ROMF alternatives, there are other viable alternatives that would avoid this resource.

Patterson Place ROMF

The Patterson Place ROMF Alternative is a 16-acre site (the smallest of the five alternatives considered) adjacent to US 15-501 and SW Durham Drive. The Patterson Place ROMF is not compatible with the NHC 1 and NHC 2 Alternatives because its location conflicts with the existing track alignment of these two alternatives.

Recommendation

The Patterson Place ROMF Alternative is not recommended for further consideration as the NEPA Preferred Alternative. The selection of NHC 2 as a component of the NEPA Preferred Alternative precludes the selection of this ROMF alternative.



Cornwallis Road ROMF

The Cornwallis Road ROMF Alternative is a 20-acre site located east of US 15-501 Business and Western Bypass and south of Cornwallis Road.

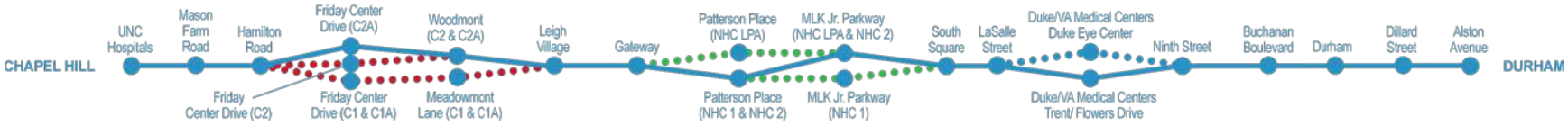
Differentiating Impacts and Benefits

Differentiating benefits and impacts of the Cornwallis Road ROMF Alternative, compared with the NEPA Preferred Alternative (Farrington Road) include:

- **More Ongoing Light Rail Operational Issues**: The location and physical constraints of the site make the Cornwallis Road ROMF Alternative a more challenging site for rail operations when compared to the NEPA Preferred Alternative.
  - In order to access the ROMF site and yard, a rail vehicle would exit from the main LRT alignment and travel along a long segment of single track, which could result in delays to service.
  - The Cornwallis ROMF Alternative yard layout would not have space necessary to allow for trains to turn around in the yard. This movement is important for rail operations and maintenance to allow the wheels to wear evenly.
  - Since trains would be unable to turn around in the yard, they would need to enter the ROMF from either side of the building. This is undesirable from an operations standpoint, as it could pose a safety risk to operators and maintenance staff.
  - The physical constraints of the Cornwallis Road ROMF Alternative limit the size of the yard, as it would only allow for enough vehicle storage required for initial operations. Thus, the Cornwallis Road ROMF Alternative does not allow for vehicle fleet or system expansion.
- **More Impact to Roadways**: Construction of the Cornwallis Road ROMF Alternative would require the reconstruction and relocation of Western Bypass roadway farther to the east, adjacent to the Judea Reform Congregation, the Levin Jewish Community Center (Levin JCC), and the Lerner Jewish Community Day School (Lerner School). This would require approval by NCDOT.
- **More Consistent with Land Use Plans**: This site is currently zoned commercial and would require rezoning. It is consistent with the *Durham Comprehensive Plan*.
- **More Impacts to Community Resources**: Access to and use of the Judea Reform Congregation, Levin JCC, and Lerner School Campus may be impacted. The Campus has outdoor facilities including a swimming pool, track, playgrounds, gardens, and reflection areas. The use of the Campus resources may be impacted by the presence of the Cornwallis Road ROMF. Additionally, the Jewish Federation of Durham-Chapel Hill is expanding the Campus and has been gifted a 2.5 to 3.5 acre parcel within the proposed Cornwallis Road ROMF site.
- **Less Impact to Water Resources**: Would have less impact to streams, riparian buffers, wetlands, and floodways than the NEPA Preferred Alternative (Farrington Road).
- **Property Acquisitions**: Would require the acquisition of a commercial facility under construction to become a self-storage facility.
- **Higher Anticipated Capital Cost:** The estimated capital cost of the Cornwallis ROMF Alternative is higher than the NEPA Preferred Alternative (C2A).

Public and Stakeholder Input

During public involvement, many people who use the Levin JCC and associated facilities



expressed their concern that the ROMF may negatively impact community cohesion, introduce safety concerns adjacent to the Lerner School, and result in nuisance impacts such as reduction of visual quality, light pollution, and noise. A substantial number of comments were received encouraging selection of another alternative.

Recommendation

The Cornwallis Road ROMF Alternative is not recommended for further consideration as the NEPA Preferred Alternative. Although this alternative would result in fewer overall impacts to water resources than the NEPA Preferred Alternative (Farrington Road), this alternative may result in adverse impacts to community resources. In addition, the NEPA Preferred Alternative would allow for a superior yard layout from an operational perspective, whereas the Cornwallis Road ROMF site would require operational compromises and higher operations and maintenance costs.

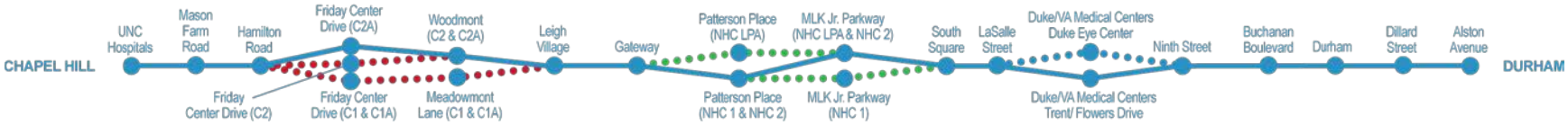
Alston Avenue ROMF

Alston Avenue was not initially considered as a potential ROMF site by Triangle Transit. However, due to a request from the City of Durham and after further evaluation by Triangle Transit to ascertain the reasonableness of this site, the Alston Avenue ROMF Alternative was carried forward for further study in the DEIS.

Differentiating Impacts and Benefits

Differentiating impacts and benefits of the Alston Avenue ROMF Alternative, compared with the NEPA Preferred Alternative (Farrington Road) include:

- **More Consistent with Land Use Plans**: This site is currently zoned industrial; it would not require a rezoning and is consistent with the *Durham Comprehensive Plan*.
- **No Impacts to Natural and Water Resources**: This is a fully developed site; as a result development of this site would not impact natural or water resources.
- **Less Desirable Light Rail Operations**: The Alston Avenue ROMF Alternative would include a single track entering and exiting the yard from one direction. This is less desirable for operations compared to the ROMF sites that include track access from more than one direction.
- **More Hazardous and Regulated Materials**: The Alston Avenue ROMF Alternative would introduce two high risk and eight medium risk sites for hazardous material to the project. The additional risks associated with these sites could result in higher costs associated with site remediation and schedule delay to allow for site remediation, if necessary.
- **More Acquisitions, Relocations, and Displacements**: The Alston Avenue ROMF Alternative would require the acquisition and displacement of the most parcels and businesses. The relocation of these businesses introduces additional risk to the project associated with the potential of hazardous material remediation. Additionally, one of the existing businesses at this site is served by an active freight railroad spur.
- **Likely Net Loss of Jobs**: The Alston Avenue ROMF site is located in an active industrial area and would displace multiple businesses with between 150 and 250 existing jobs. Due to the operating requirements of these businesses, it is possible, even likely, that a suitable site for relocation would not be found within the neighborhood or even within Durham (e.g., need for active rail spur and proximity to major highway access). As a result, the Alston Avenue ROMF site is the only ROMF alternative that is likely to result in a net loss of jobs.
- **Higher Anticipated Capital Cost:** The estimated capital cost of the Alston Avenue ROMF Alternative is significantly



higher than the NEPA Preferred Alternative (C2A).

- **Environmental Justice**: The Alston Avenue ROMF Alternative is within an EJ area. As noted previously, it is also the only ROMF site likely to result in a net loss of jobs. From an equity perspective, this ROMF alternative is the least desirable of the five alternatives considered.

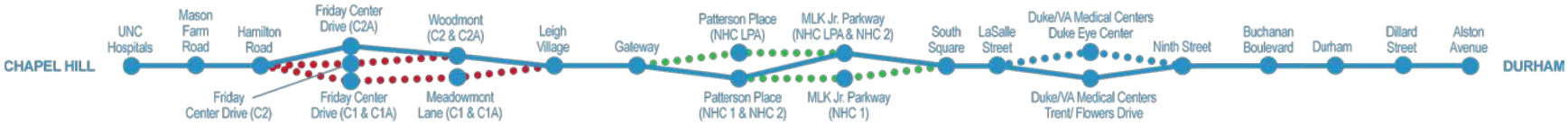
Public and Stakeholder Input

Citizens, including PAC 1 (a citizens' group representing this area of Durham), have expressed opposition to this alternative. Businesses that would be displaced, including Brenntag Midsouth and Eastern Carolina Organics, have indicated that selection of the Alston Avenue ROMF Alternative would cause harm to their operations. The North Carolina Railroad Company and the NCDOT Rail Division have also expressed opposition to this ROMF alternative.

TJ COG and a member of the NECD Leadership Council have inquired about the impacts, benefits, and viability of the Alston Avenue ROMF Alternative.

Recommendation

The Alston Avenue ROMF Alternative is not recommended for further consideration as the NEPA Preferred Alternative. Although this alternative would not require rezoning, it would introduce several risks to both the project schedule and budget, associated with the potential of hazardous materials remediation and relocation of businesses. It also has the potential to result in net loss of employment within the D-O Corridor if the existing businesses that would be displaced could not be relocated within the D-O Corridor. This alternative has the highest capital cost of all of the alternatives considered in this DEIS.



8.3 Equity

Equity considerations generally fall within the following three classes:

- The extent to which the transit investments improve transit service to various population segments, particularly those that tend to be transit-dependent.
- The distribution of the cost of the alternatives across population segments through the funding mechanism used to cover the local contribution to construction and operation.
- The incidence of any significant environmental effects, particularly in communities immediately adjacent to proposed facilities.

The mobility and accessibility, economic and community development, and environmental benefits of the proposed D-O LRT Project would generally accrue to the residents, businesses, and institutions within the D-O Corridor as well as to the Triangle region. The relatively few adverse effects would be borne primarily by those persons residing in the D-O Corridor, not other Triangle residents. Established local, state, and federal funding mechanisms will be used for construction and operation of the selected alternative, and new funding sources will be used to prevent diversion of resources (funding, service, or infrastructure) from other parts of the region.

Pursuant to the Civil Rights Act of 1964, and to ensure compliance with FTA's Title VI regulatory requirements, Triangle Transit conducted a Title VI equity analysis in conjunction with the Rail Operations and Maintenance Facility siting decision. The above referenced Title VI equity analysis is available online (www.ourtransitfuture.com).

8.3.1 Service Equity

The NEPA Preferred and Project Element Alternatives would improve both the travel time and the reliability of the transit service within the D-O Corridor. The NEPA Preferred and Project Element Alternatives would connect the major activity centers and communities along the D-O Corridor and would provide improved access to the corridor's employment centers; educational facilities; health centers; and institutional, cultural, recreational, entertainment, open space, retail, and governmental resources. No one group would receive a disproportionate share of these benefits to the detriment of another group. Prior to opening the line for revenue service, a Service and Fare Equity Analysis will be completed in accordance with the requirements of Title VI of the Civil Rights Act of 1964.

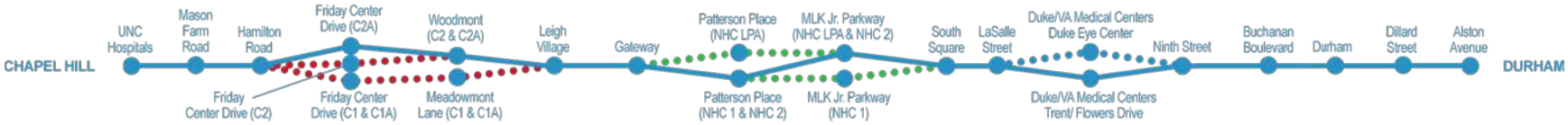
8.3.2 Financial Equity

If the proposed D-O LRT Project is built, it is expected that it would be funded by a combination of federal, state, and local funds. Dedicated local funding for bus and rail transit investment was identified when citizens of both Durham and Orange counties passed referenda to increase sales taxes to support transit improvements. Effective April 1, 2013, Durham and Orange counties adopted resolutions to levy an additional one-half cent local sales tax to be used only for public transportation systems.

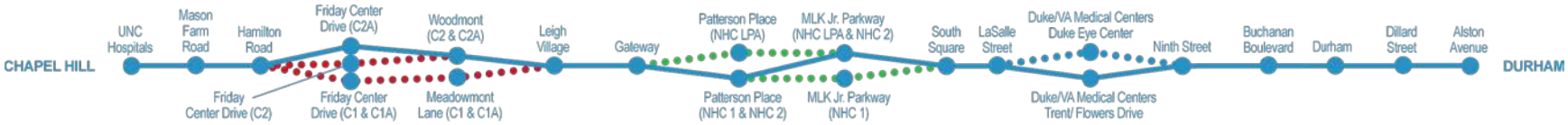
Established federal and regional funding sources means no one group in the D-O Corridor or the region would receive a disproportionate share of the financial burden of the capital and operating and maintenance costs relative to the benefits received. No financial equity considerations would be raised by the project, either in terms of the source of subsidy or the level of fare payments required of passengers.

8.3.3 Environmental Equity

Expanded transit services would provide environmental benefits to the region. By increasing transit use, any of the NEPA Preferred and Project Element Alternatives would reduce emissions and energy beyond that of the No Build Alternative, although these reductions would be a relatively small proportion of the regional totals. Each alternative is expected to provide enhanced economic development benefits to residents of the region and the D-O Corridor compared to the No Build Alternative. While



there would be some adverse effects for those communities located adjacent to and along some of the street-running surface alignments, these communities would have access to the improved transit services provided and would be among the beneficiaries of the mobility and accessibility improvements.



8.4 NEPA Preferred Alternative

This DEIS describes the transportation, economic, community, and environmental impacts associated with the construction and operation of the proposed D-O LRT Project. The effects of the NEPA Preferred and Project Element Alternatives as compared to the No Build Alternative were evaluated across a range of subject areas related to the built and natural environment.

As described in **Table 8.1-1**, the No Build Alternative would not be effective in meeting the Needs for the project.

As described in this chapter, the NEPA Preferred Alternative (C2A, NHC 2, Trent/Flowers Drive Station, and Farrington Road ROMF) would achieve each element of the Purpose and Need of the proposed D-O LRT Project and is a highly effective performer in terms of the project goals and objectives for improving mobility, increasing transit efficiency, improving transit connections, supporting economic development and plans, fostering environmental stewardship, and providing a cost-effective transit investment. The NEPA Preferred Alternative would cause the least damage to the biological and physical environment and best protect, preserve, and enhance historic, cultural, and natural resources. It has the most stakeholder support compared with the other Project Element Alternatives considered in this DEIS.

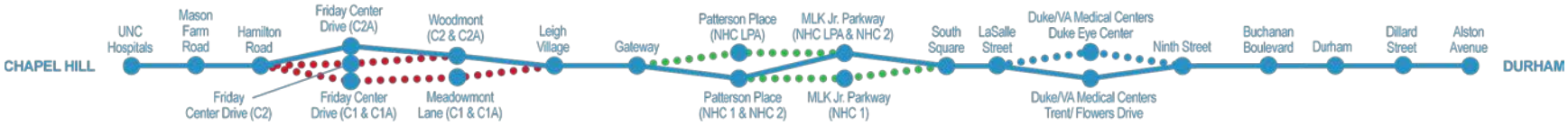
Identifying and developing the environmentally preferred alternative included extensive public and stakeholder outreach in addition to technical analysis of issues identified during Scoping. The identification process considered the transitway alternatives in their respective component pieces (alignments, stations, and ROMF). Ultimately, the adverse environmental, physical, and community impacts of the Project Element Alternatives were found to outweigh the benefits they would provide as compared to the NEPA Preferred Alternative. This was the case when comparing the Little Creek, New Hope Creek, and ROMF Alternatives. The choice between Duke Eye Center and Trent/Flowers Drive Station Alternatives focused on the support received by key stakeholders since the alternatives have very similar benefits and impacts.

Throughout the DEIS evaluations leading to the recommendation of the NEPA Preferred Alternative, Triangle Transit has refined the design and alignment, where feasible, to avoid or minimize and mitigate adverse effects with input from the affected communities and the public. However, some adverse effects cannot be overcome due to:

- The design and safety standards that must be met for the project;
- The developed character of the communities in the D-O Corridor; and,
- The need to design the proposed D-O LRT Project to be compatible with future operations of other transportation facilities in the D-O Corridor and local land use plans.

Consequently, the NEPA Preferred Alternative involves recognizing and understanding that there are trade-offs between the benefits and the effects of the proposed D-O LRT Project.

Where adverse effects of the NEPA Preferred Alternative remain, FTA and Triangle Transit have identified mitigation measures intended to offset those remaining effects to the natural and human environment. Mitigation measures are described in this DEIS and will be finalized in the combined Final EIS/Record of Decision (ROD).



8.5 Next Steps

This DEIS will be distributed to local, regional, state, and federal agencies as well as the public for their review and comment. Comments on the DEIS will be considered and addressed in the combined Final EIS/ROD.

Project stakeholders, members of the public, local governments, elected officials, non-governmental organizations, and state and local federal agencies have been, and will continue to be, involved in the D-O LRT Project throughout engineering, construction, and operations through public meetings, advisory committee and stakeholder meetings, and individual briefings.