

## 7.0 PRELIMINARY EVALUATION OF ALTERNATIVES

As described in Chapter 1.1, the evaluation of Alternatives in the Tier 1 DEIS has focused on those decisions ready for this level of Atlanta BeltLine analysis, which include:

- Identification of either Modern Streetcar (SC) or Light Rail Transit (LRT) technology as the transit mode;
- Identification of a general alignment of new transit and trails; and
- Establishment of ROW needs.

This chapter presents the result of the evaluations conducted for the No-Build and Build Alternatives in this Tier 1 DEIS. The first step in the evaluation process was to assure that the Build Alternatives being evaluated through the methodology described in Section 7.1 meet the Purpose and Need for the project. To summarize the Purpose and Need statement as presented in Section 1.0:

The purpose of the project is

- to improve access and mobility for residents and workers by increasing in-city transit and bicycle/pedestrian options, and providing links in and between those networks; and
- to stimulate economic activity and structure growth.

The combined transportation and land use components are to encourage balanced growth in all zones by increasing transportation options, greenspace, affordable housing, livability, and economic opportunity.

The need is based on

- Population and employment growth projections for the City of Atlanta and the study area showing the population in Atlanta, growing by 26 percent and in the study area by 29 percent by 2030 coupled with employment in Atlanta increasing by 34 percent by 2030.
- Percentages of current residents who are living below poverty, who are minorities, and who are transit dependent as presented in Table 1-1. For example, 15 percent of the residents in both Atlanta and the overall study area are transit dependent, but this percentage rises to 26.1 in the southwest zone.
- The existing low-density land use patterns as reported in Chapter 3.1 resulting in increased roadway congestion, decreased mobility, and an expected reduction in the quality of life in the northwest and northeast zones. This is paired with no effort to address the economic opportunities and quality of life issues or make use of infrastructure capacity and take advantage of redevelopment opportunities in the southeast and southwest zones.

Thus, there is a need to increase transportation options in parallel with making changes in land use and development patterns in the study area to improve economic opportunities and quality of life. These growth forecasts and travel pattern analyses present a need to expand public transit and bicycle/pedestrian options in the study area in the foreseeable future.

As all Build Alternatives provide increased transportation options and are consistent with the economic development and land use plans for Atlanta and the study area that are intended to spur development and increase density, the requirements of the Purpose and Need are met.

The intent of the evaluation process is to identify both qualitative and quantitative factors for each Alternative to compare the benefits, costs, and preliminary environmental consequences of the stated goals and objectives for the project, as set forth in Chapter 1.6, Purpose and Need. A discussion of the substantial trade-offs is also presented. The results of this comparison will facilitate the decision-making process among FTA, MARTA, public officials, interested residents, businesses, and other organizations.

Selection of a preferred alternative alignment and mode prior to completing the Tier 1 Final EIS will involve comparing the advantages and disadvantages of each of the alternatives. As FTA and MARTA consider public and stakeholder input in their decision-making, members of the public and stakeholders participating in this Tier 1 DEIS process will have an opportunity through the public comment period and hearing to provide input, value judgments, and a sense of priorities based upon the findings in this Tier 1 DEIS. The findings in this Tier 1 DEIS are intended to aid that process by highlighting the factors considered of particular importance in making a broadly-based comparative assessment of the alternatives. Public and stakeholder input will be considered in determining a preferred alternative. MARTA in partnership with ABI will select their preferred alternative; the FTA will likewise review all inputs and findings of the EIS process to make their decision.

The chapter is organized to provide three key sections. Section 7.1 provides an overview of the evaluation methodology. Section 7.2 presents the results of the evaluation that focus on the effectiveness of each Alternative in meeting each project goal and the ratings for each transit technology alternative and alignment alternative. The evaluation results section presents the performance measure ratings, a discussion on distinguishing measures, and alternative ROW needs. Section 7.3 discusses and explains in greater detail each of the performance measures by goal. The information presented in this chapter is derived from assessments and regulatory guidance presented in previous chapters.

## **7.1 Evaluation Methodology**

The No-Build and Build Alternatives were evaluated to compare their responsiveness to the project goals and objectives set forth in the Purpose and Need found in Chapter 1.6 and in Table 1-2. Detailed descriptions of each alternative transit alignment, trail alignment, and mode are found in Chapter 2.0. As the Build Alternatives differ from one another only in the northwest zone, this evaluation examines the alternatives only within the northwest zone. All goals apply to evaluation of the alignment alternatives, while Goals 2, 3, 4, and 7 also apply to evaluation of the transit mode alternatives.

At least one performance measure was identified for each objective in each goal; each goal has from two to 15 measures. Each Alternative is scored according to its responsiveness to each measure, objective, and ultimately goal. The full evaluation of the alternatives in the northwest zone is available in the *Technical Memorandum: Alternative Evaluation*. Scoring is unweighted in this Tier 1 analysis; each measure stands on its own merits and each measure carries the same weight. In Tier 2 analysis, the project sponsors may develop and apply an appropriate weighting strategy to assess performance that considers the relative importance of engineering, environmental, and public input factors.

Quantitative measures were used in the Tier 1 analysis whenever possible. Examples of quantitative measures are annual operating and maintenance cost or the size of the population served.

Qualitative measures also were applied. The qualitative measures include appropriateness of scale, diversity of vista along multi-use trails, effects on human health, and consistency with local plans.

The performance measures were applied to the alternatives, and the results are rated and compared according to how each Build and No-Build Alternative performs relative to the best performing alternative. The rating system provides that, for each measure, an alternative is the best performing and “high performing”, or that it is:

- Within 10 percent of the best performing alternative(s) and considered “high performing;”
- Within 10 to 20 percent of the best performing alternative(s) and considered “moderately performing;”
- Within 20 to 30 percent of the best performing alternative(s) and considered “least performing;” or
- It differs by more than 30 percent from the best performing alternative and is considered “non-performing.”

Table 7-1 shows the rating system symbols that were applied to score both quantitative and qualitative measures. Under this system, the high or moderate performing alternatives were considered to support the project goal, while least or non-performing alternatives were considered to not support the project goal. For each alternative, high and moderate ratings were totaled per project goal.

**Table 7-1: Rating System for Quantitative and Qualitative Measures**

Symbol	Rating
++	High Performing
+	Moderately Performing
-	Least Performing
--	Non-Performing

Each performance measure is weighted equally in this Tier 1 DEIS analysis. The rating process illustrates the statistical differences between the alternatives based on the data. It is important to note that though statistical differences are recognized in this analysis, the actual differences in performance among the alternatives may be very small.

## **7.2 Evaluation Results**

### **7.2.1 Transit Mode Analysis**

Table 7-2 presents the results of the comparative rating analysis for the mode alternatives. Following each goal, the total number of measures that each alternative rates “high performing” or “moderately performing” are summed. These two ratings indicate that the alternatives respond meaningfully to the performance measure and the goal. Least and non-performing ratings indicate the alternative does not meaningfully respond to the measure or goal.

Goals 2, 3, 4, and 7 include performance measures that facilitated evaluation of the two transit technologies being considered, LRT and SC. Table 7-2 presents the results of this evaluation. The findings of the evaluation are discussed below.

**Table 7-2: Summary of Performance Measure Results – Modes**

Performance Measure	LRT	SC
Maximize number of connections to planned streetcar, light rail, bus rapid transit, and commuter rail projects	++	+
Optimize appropriateness of the scale of transit mode and stop requirements for existing neighborhoods and communities	+	++
Minimize capital cost	+	++
Minimize operating and maintenance costs	++	-
Minimize capital costs per alignment mile	+	++
Minimize operating and maintenance costs per mile	++	--
Minimize number of noise receptive land acres impacted	+	++
Total Number of High/Moderate Ratings	3/4	4/1

Key: ++ High Performing / + Moderately Performing / - Least Performing / -- Non-Performing

## 7.2.2 Transit Mode Conclusions

Examination of the desired mode characteristics for the proposed Atlanta BeltLine indicates that either LRT or SC would meet the project Purpose and Need. Specifically, the overall length of the corridor is long, which suggests a preference for LRT; however, the desire for slower operating speeds and frequent stops suggests an SC operation. In balancing these factors and the dense, urbanized environment in which the Atlanta BeltLine would run, service characteristics were identified that could be accommodated similarly by either LRT or SC.

Conceptual designs for the Atlanta BeltLine assumed the more conservative LRT geometric standards to assure that either LRT or SC could be used. In doing so, LRT or SC would be used somewhat atypically but nonetheless effectively on the Atlanta BeltLine to achieve specific project needs. By using the more conservative LRT design standards, the project sponsors are preserving the option for modal interoperability with other, future transit projects.

The results of public outreach support either LRT or SC as viable transit mode technologies.

Other similarities between the two mode technologies include:

- ROW requirements would not differ significantly, especially in those locations where the technology mode would share the street with other vehicles;
- The track configuration and gauge for either mode would be standard, meaning that either mode could use the same type of track;
- The overhead electrical power source would be the same for either mode;
- Both would have the ability to build ridership because each mode would provide a permanent physical presence, thus attracting more ridership;
- There would be opportunity for streetscape improvements and neighborhood development by enhancing urban corridors and rebuilding transportation infrastructure, which would be more pedestrian friendly and attract higher density and mixed use development; and

- The ability would exist to integrate into the existing MARTA system interfacing at existing or proposed transfer points and/or park-and-ride facilities.

These similarities far outweigh the typical differences between these modes. For this reason and because LRT is a larger vehicle than SC, requiring station lengths, track geometry, systems and structures that are typically larger than those of SC, the impacts stemming from LRT design standards in this EIS are considered to be worst case. Only those parameters that meaningfully differ between the two technologies are described in this Chapter 7.0. The differences have to do with costs, operational flexibility, and the potential for noise, vibration, and visual impacts on nearby land uses.

- SC vehicles can operate along an alignment designed for LRT; however, LRT vehicles may not be able to operate on SC infrastructure. Implementing LRT infrastructure on the Atlanta BeltLine would allow for greater flexibility in connecting to and interlinking with other planned transit projects (Section 1.5.1).
- SC would have greater ability to access more destinations than LRT. In addition, SC has less potential for noise, vibration, and visual impacts on nearby land uses (Section 3.12).
- SC would require lower capital costs than LRT (Section 7.3).
- LRT would require less operating costs than SC because LRT is able to transport riders more cost-effectively (Section 7.3).
- SC would potentially generate less noise than LRT within a smaller geographic area; however, appropriate design can avoid or minimize many of these potential effects related to mode (Section 3.12).

## **7.2.3 Transit and Trail Alignment Analysis**

This section discusses the results of the comparative rating analysis for the Transit and Trail Build Alternatives. Goals 1 through 8 include performance measures that facilitated the evaluation of the proposed Transit and Trail Alternatives. The evaluation findings for each goal are noted below. The gray table cells indicate the best performing Build Alternative(s) for each measure and goal. Goal 5 did not apply to the Transit Alternatives and Goals 1 and 2 did not apply to the Trail Alternatives.

### **7.2.3.1 Goal 1**

Contribute to an integrated regional multi-modal transportation network that promotes seamless intermodal connectivity, increases community access to the existing transit and trails networks, and improves reliability of personal travel.

As shown in Table 7-3, all Transit Alternatives are predominantly high or moderately performing relative to Goal 1, which focuses on transportation service. The C- CSX Marietta Boulevard and D- Marietta Boulevard Alternatives have the greatest number of high performance ratings with 12 each and two moderate performance ratings each. The A- CSX Howell Junction and B- Howell Junction Alternatives have 10 high performance ratings and two moderate performance ratings each. The F- Atlantic Station Alternatives have six high performance ratings and three moderate performance ratings. The Trail Alternatives rate equally high in the one applicable measure to maximize the number of connections to other trails.

**Table 7-3: Summary of Performance Measure Results By Alignments for Goal 1**

Measure	Transit Alternative			Trail Alternative	
	A- CSX Howell Jct. / B- Howell Jct.	C- CSX Marietta Blvd. / D- Marietta Blvd.	F- Atlantic Station	Marietta Blvd./ Howell Jct.	On-Street
a Maximize improvement in travel times for typical trips between various major trip generators, economic development focus areas, and communities	+	++	++	N/A	N/A
b Maximize number of peak period express buses per hour with direct connections to Atlanta BeltLine stations	++	++	++	N/A	N/A
c Maximize number of MARTA heavy rail stations served	--	++	--	N/A	N/A
c Maximize number of peak hour local buses with direct connections to Atlanta BeltLine stations	-	++	++	N/A	N/A
	N/A	N/A	N/A	++	++
d Maximize improvement in travel times for typical trips between various major trip generators, economic development focus areas, and communities	+	++	++	N/A	N/A
e Maximize population within ½-mile of proposed transit stations	++	+	+	N/A	N/A
	++	+	+	N/A	N/A
	++	++	--	N/A	N/A
f Minimize number of transfers required for a typical trip between major trip origin and destination points	++	++	++	N/A	N/A
g Maximize low-income population within ½-mile of proposed stations	++	++	+	N/A	N/A
	++	++	++	N/A	N/A
	++	++	--	N/A	N/A
	++	++	--	N/A	N/A
	++	++	-	N/A	N/A
Total Number of High/Moderate Ratings	10/2	10/2	6/3	1/0	1/0

Key: ++ High Performing / + Moderately Performing / - Least Performing / -- Non-Performing

### 7.2.3.2 Goal 2

Manage and encourage the growth and economic development of the City, region, and state by providing transit and transportation improvements to areas designated for growth.

As shown in Table 7-4, the Transit Build Alternatives perform differently relative to Goal 2, which focuses on managing growth and economic development. The Build Alternatives that generally run within or adjacent to the CSX freight rail corridor have the greatest number of high performance ratings with three each and one to two moderate performance ratings each. The F- Atlantic Station Alternative has one high performance rating and two moderate performance ratings. The Trail Alternatives rate equally high in the one applicable measure to maximize service to the 20 economic development focus areas.

**Table 7-4: Summary of Performance Measure Results By Alignments for Goal 2**

Measure	Transit Alternative					Trail Alternative	
	A- CSX Howell Jct.	B- Howell Jct.	C- CSX Marietta Blvd.	D- Marietta Blvd.	F- Atlantic Station	CSX Marietta Blvd./ Howell Jct.	On-Street
a	Maximize service to Atlanta BeltLine 5-Year Work Plan's 20 economic development focus areas	++	++	+	+	+	++
	Maximize acres of TAD land within ½-mile of proposed transit stations	++	++	++	++	-	N/A
	Maximize service to TAD areas with higher development capacity of underutilized and undeveloped land as defined by Atlanta BeltLine Redevelopment Plan within ½-mile of proposed stations	-	++	-	++	++	N/A
	Maximize service to acres of underutilized industrial land within ½-mile of proposed stations (Excluding protected industry parcels)	++	+	++	+	--	N/A
	Maximize connections with Connect Atlanta Comprehensive Transportation Plan (all modes) and TPB Concept 3 regional transit vision	+	+	++	++	+	N/A
Total Number of High/Moderate Ratings		3/1	3/2	3/1	3/2	1/2	1/0

Key: ++ High Performing / + Moderately Performing / - Least Performing / -- Non-Performing

### 7.2.3.3 Goal 3

Preserve and revitalize neighborhoods and business districts through context sensitive design of transit and trails, increased accessibility to mobility options and provision of affordable housing and transportation, and other community benefits.

As shown in Table 7-5, the ratings for the Transit and Trail Build Alternatives differ regarding Goal 3, which relates to community benefits. The D- Marietta Boulevard and the F- Atlantic Station Alternatives have the greatest number of high performance ratings at five each. The B- Howell Junction Alternative has four high performance ratings. For the Trail Alternatives, the Marietta Boulevard and Howell Junction Trail Alternatives perform best with five high performance ratings, while the On-Street Trail Alternative has three high performance ratings.

**Table 7-5: Summary of Performance Measure Results By Alignments for Goal 3**

Measure		Transit Alternative					Trail Alternative	
		A- CSX Howell Jct.	B- Howell Jct.	C- CSX Marietta Blvd.	D- Marietta Blvd.	F- Atlantic Station	Marietta Blvd. / Howell Jct.	On-Street
a	Minimize potential number of residences and businesses affected*	-	++	-	++	++	++	--
b	Maximize service to TAD areas with higher development capacity of underutilized and undeveloped land as defined by Atlanta BeltLine Redevelopment Plan within ½-mile of proposed stations	-	++	-	++	++	N/A	N/A
c	Minimize number of potential adverse environmental impacts	+	+	+	+	++	++	-
	Optimize appropriateness of the scale of transit mode and stop requirements for existing neighborhoods and communities	++	++	++	++	++	++	++
	Maximize number of positive human health impacts	++	++	++	++	++	++	++
d	Minimize potential for adverse impacts to historic resources (districts)	--	--	+	++	--	++	++
Total Number of High/Moderate Ratings		2/1	4/1	2/2	5/1	5/0	5/0	3/0

Key: ++ High Performing / + Moderately Performing / - Least Performing / -- Non-Performing

A 150-foot buffer is centered on each proposed alignment. When the alignment uses the CSX ROW, the 150' buffer is approximately centered on the railroad ROW. In contrast, when the alignment is adjacent to and on one side of the railroad ROW, the buffer covers more area on one side of the railroad ROW than the other. More structures occur close to the railroad ROW than further away from the railroad ROW. As a result, the quantity of potentially impacted structures is greater for the Transit Alternatives within the CSX freight rail corridor than for the other Transit Build Alternatives. Note that these identified structures represent full, partial, or temporary affects, such as temporary easements during construction or partial acquisition.

#### 7.2.3.4 Goal 4

Provide a cost-effective and efficient transportation investment.

As shown in Table 7-6, the Transit Build Alternatives perform somewhat differently relative to Goal 4, which focuses on cost-effective and efficient investment. Each Transit Build Alternative has six high performance ratings and two moderate performance ratings.

The Marietta Boulevard and Howell Junction Trail Alternatives have two high performance ratings for minimizing capital cost, compared with the On-Street Trail Alternative that has two moderate ratings for that measure.

**Table 7-6: Summary of Performance Measure Results By Alignments for Goal 4**

Measure		Transit Alternative					Trail Alternative	
		A- CSX Howell Jct.	B- Howell Jct.	C- CSX Marietta Blvd.	D- Marietta Blvd.	F- Atlantic Station	Marietta Blvd. / Howell Jct.	On-Street
a	Minimize capital cost (LRT)	+	+	+	+	+	++	+
	Minimize capital cost (SC)	++	++	++	++	++	++	+
	Minimize operating and maintenance costs (LRT)	++	++	++	++	++	N/A	N/A
	Minimize operating and maintenance costs (SC)	-	-	-	-	-	N/A	N/A
b	Maximize number of connections to planned streetcar, light rail, bus rapid transit and commuter rail projects	++	++	++	++	++	N/A	N/A
	Maximize ability to accommodate infill stations	++	++	++	++	++	N/A	N/A
c	Minimize capital costs per alignment mile (LRT)	+	+	+	+	+	N/A	N/A
	Minimize capital costs per alignment mile (SC)	++	++	++	++	++	N/A	N/A
	Minimize operating and maintenance costs per mile (LRT)	++	++	++	++	++	N/A	N/A
	Minimize operating and maintenance costs per mile (SC)	--	--	--	--	--	N/A	N/A
Total Number of High/Moderate Ratings		6/2	6/2	6/2	6/2	6/2	2/0	0/2

Key: ++ High Performing / + Moderately Performing / - Least Performing / -- Non-Performing

### 7.2.3.5 Goal 5

Provide a transit, bicycle, and pedestrian friendly environment.

As shown in Table 7-7, the Trail Build Alternatives perform similarly relative to Goal 5, which focuses on the performance of the Trail Build Alternatives in the bicycle and pedestrian environment. The Marietta Boulevard, Howell Junction, and On-Street Trail Alternatives have five high performance ratings. The Marietta Boulevard and Howell Junction Trail Alternatives have an additional moderate performance rating for maximizing the number of recreational facilities within ½-mile of trail access points.

**Table 7-7: Summary of Performance Measure Results By Alignments for Goal 5**

Measure	Transit Alternative					Trail Alternative	
	A- CSX Howell Jct.	B- Howell Jct.	C- CSX Marietta Blvd.	D- Marietta Blvd.	F- Atlantic Station	Marietta Blvd. / Howell Jct.	On-Street
a	Maximize number of economic development focus areas and activity centers within ½-mile of trail access points	N/A	N/A	N/A	N/A	N/A	++
	Maximize number of recreational facilities within ½-mile of trail access points	N/A	N/A	N/A	N/A	N/A	+
	Maximize housing units within ½-mile of trail access points	N/A	N/A	N/A	N/A	N/A	++
	Maximize employment within ½-mile of proposed trail access points	N/A	N/A	N/A	N/A	N/A	++
b	Maximize miles of exclusive trails separated from automobile traffic	N/A	N/A	N/A	N/A	N/A	++
	Maximize number of trail access points	N/A	N/A	N/A	N/A	N/A	--
c	Maximize number of locations where full and partial trail amenities can be provided	N/A	N/A	N/A	N/A	N/A	++
Total Number of High/Moderate Ratings		0/0	0/0	0/0	0/0	0/0	5/1
Key: ++ High Performing / + Moderately Performing / - Least Performing / -- Non-Performing							

### 7.2.3.6 Goal 6

Provide transit, bicycle, and pedestrian connectivity among communities, and between communities and existing and planned recreational opportunities.

As shown in Table 7-8, the Transit Build Alternatives perform somewhat differently relative to Goal 6, which focuses on connectivity. The A- CSX Howell Junction and B- Howell Junction Alternatives perform slightly better than the remaining Transit Build Alternatives with one high performance rating each.

The On-Street Trail Alternative has two high performance ratings in the number of trail access points and compatibility with master plans, while the Marietta Boulevard and Howell Junction Trail Alternatives have one high performance rating each.

**Table 7-8: Summary of Performance Measure Results By Alignments for Goal 6**

Measure		Transit Alternative					Trail Alternative	
		A- CSX Howell Jct.	B- Howell Jct.	C- CSX Marietta Blvd.	D- Marietta Blvd.	F- Atlantic Station	Marietta Blvd. / Howell Jct.	On-Street
a	Maximize number of trail access points	N/A	N/A	N/A	N/A	N/A	--	++
b	Maximize number of schools, community facilities and cultural/historic sites within ½-mile of proposed transit stations	++	++	-	-	+	N/A	N/A
	Maximize number of schools, community facilities and cultural/historic sites within ½-mile of trail access points	N/A	N/A	N/A	N/A	N/A	++	++
Total Number of High/Moderate Ratings		1/0	1/0	0/0	0/0	0/1	1/0	2/0

Key: ++ High Performing / + Moderately Performing / - Least Performing / -- Non-Performing

### 7.2.3.7 Goal 7

Minimize adverse impacts to the environment and foster positive environmental impacts.

As shown in Table 7-9, the performance of the Transit and Trail Build Alternatives differs in Goal 7, which focuses on minimizing adverse impacts to the environment. The F- Atlantic Station Alternatives are the best performers among the Transit Alternatives with seven high performance ratings. The C- CSX Marietta Boulevard and D- Marietta Boulevard Alternatives have five high performance ratings and zero or one moderate rating, respectively. The A- CSX Howell Junction Alternative has four high and one moderate performance ratings while the B- Howell Junction Alternatives have five high and zero moderate ratings.

The Marietta Boulevard and Howell Junction Trail Alternatives perform better than the On-Street Trail Alternative with eight high performance ratings versus four because of fewer potential impacts on cultural resources and streams, and requiring fewer acres of impervious surfaces.

**Table 7-9: Summary of Performance Measure Results By Alignments for Goal 7**

Measure	Transit Alternative					Trail Alternative	
	A- CSX Howell Jct.	B- Howell Jct.	C- CSX Marietta Blvd.	D- Marietta Blvd.	F- Atlantic Station	Marietta Blvd. / Howell Jct.	On-Street
a Minimize number of historic districts, sites, and archaeological resources potentially affected	+	++	++	++	+	++	++
b Minimize number of stream crossings and size of wetlands potentially affected	--	--	--	--	++	++	--
	++	++	++	++	++	++	++
c Maximize the potential for air quality benefits	++	++	++	++	++	++	++
	--	--	-	+	++	++	-
	--	--	--	--	--	--	--
	++	++	++	++	++	++	++
d Minimize the number of potential adverse environmental impacts per mile	--	--	--	--	++	++	--
e Minimize acres of existing park land used for transit and multi-use trails facilities	++	++	++	++	++	++	--
Total Number of High/Moderate Ratings	4/1	5/0	5/0	5/1	7/1	8/0	4/0

Key: ++ High Performing / + Moderately Performing / - Least Performing / -- Non-Performing

### 7.2.3.8 Goal 8

Ensure consideration of public input throughout project planning and development.

As shown in Table 7-10, the performance of the Transit and Trail Build Alternatives differs in Goal 8, which focuses on considering public input. The A- Howell Junction, B- Howell Junction, C- CSX Marietta Boulevard and D- Marietta Boulevard Transit Alternatives have two high performance ratings each. Although differences of opinion exist, in general, the public favors these Transit Alternatives over the F- Atlantic Station Alternatives because the entire alignments are within the TAD, would serve Piedmont Hospital, would access Westside Park, and would extend transit service further north on Peachtree Street. In addition, the Transit Alternatives that generally run within or adjacent to the CSX freight rail corridor appear to enable expansion of economic development into more new areas, thereby being closer to the original Atlanta BeltLine vision. The C- CSX Marietta Boulevard and D- Marietta Boulevard Alternatives were identified by the public as having many development opportunities along it, and offering more design flexibility due to there being relatively less development along the alignments than the F- Atlantic Station Transit Alternatives. On the downside, the public noted that the Transit Alternatives that generally run within or adjacent to the CSX freight rail corridor would not serve existing population centers such as Georgia Tech.

**Table 7-10: Summary of Performance Measure Results By Alignments for Goal 8**

Measure	Transit Alternative					Trail Alternative		
	A- CSX Howell Jct.	B- Howell Jct.	C- CSX Marietta Blvd.	D- Marietta Blvd.	F- Atlantic Station	Marietta Blvd. / Howell Jct.	On-Street	
a	Number of public comments favoring a particular alternative	++	++	++	++	+	++	-
	Stakeholder Advisory Committee comments favoring a particular alternative	++	++	++	++	+	++	-
	Total Number of High/Moderate Ratings	2/0	2/0	2/0	2/0	0/2	2/0	0/0

Key: ++ High Performing / + Moderately Performing / - Least Performing / -- Non-Performing

The F- Atlantic Station Alternatives have two moderate performance ratings. Positive public opinion for these alternatives concerned the proximity to existing developed, business areas with potentially transit-supporting land uses, potentially more direct alignments, and the potential to serve more one-car households than the other Transit Alternatives. On the downside, the public voiced concern that the overlap of existing and planned transit services to Atlantic Station makes the F- Atlantic Station Transit Alternatives somewhat redundant and less desirable. In addition, the F- Atlantic Station Transit Alternatives are only partially within the TAD.

The Marietta Boulevard and Howell Junction Trail Alternatives have two high performance ratings each, while the On-Street Trail Alternative has no high or moderate performance ratings. The Marietta Boulevard and Howell Junction Trail Alternatives were generally preferred by the public because they would be co-aligned with the Transit Alternatives, thereby providing increased transportation options. The On-Street Trail Alternative was viewed as less consistent with the Atlanta BeltLine vision because it does not predominantly align with existing railroad corridors, and is not aligned with a transit component.

## 7.2.4 Transit and Trail Alignment Conclusions

Table 7-11 presents the scores for each alignment alternative based on the number of high or moderate performance measures that apply to each alternative not including those that apply to all alternatives. For example, C- CSX Marietta Boulevard Transit Alternative is rated High Performing for a total of 30 measures, but for 12 of these, all of the Transit Build Alternatives are rated as High Performing. Therefore, in Table 7-11, that alternative has a score of 15 High Performing. It also was rated Moderate Performing five times and in none of those cases were all alternatives rated moderate, therefore it has a score of five for moderate in Table 7-11. This gives the C- CSX Marietta Boulevard Transit Alternative a combined score of 20.

Of the Transit Build Alternatives, the D- Marietta Boulevard Alternatives have both the highest High Performing score of 18 and the highest combined score of 24. The lowest High Performing score of 10 is found for the F- Atlantic Station Alternatives while the lowest combined score of 18 was found for the A- CSX Howell Junction Alternatives.

**Table 7-11: Build Alternative Alignments Performance – Distinguishing Measures**

Goal	Transit Alternative						Trail Alternative	
	A- CSX Howell J ct.	B- Howell Jct.	C- CSX Marietta Blvd.	D- Marietta Blvd.	E- Atlantic Station	F- Marietta Blvd. / Howell Jct.	On-Street	
<b>Goal 1:</b> Contribute to an integrated regional multi-modal transportation network that promotes seamless intermodal connectivity, increases community access to the existing transit and trails network, and improves reliability of personal travel.	High Performing	7	7	9	9	3	0	0
	Moderately Performing	2	2	2	2	3	0	0
<b>Goal 2:</b> Manage and encourage the growth and economic development of the City, region and state by providing transit and transportation improvements to areas designated for growth.	High Performing	3	3	3	3	1	0	0
	Moderately Performing	1	2	1	2	2	0	0
<b>Goal 3:</b> Preserve and revitalize neighborhoods and business districts through context sensitive design of transit and trails, increased accessibility to mobility options and provision of affordable housing and transportation, and other community benefits.	High Performing	0	2	0	3	3	2	0
	Moderately Performing	1	1	2	1	0	0	0
<b>Goal 4:</b> Provide a cost-effective and efficient transportation investment.	High Performing	0	0	0	0	0	2	0
	Moderately Performing	0	0	0	0	0	0	2
<b>Goal 5:</b> Provide a transit, bicycle, and pedestrian friendly environment.	High Performing	N/A	N/A	N/A	N/A	N/A	2	2
	Moderately Performing	N/A	N/A	N/A	N/A	N/A	1	0
<b>Goal 6:</b> Provide transit, bicycle, and pedestrian connectivity among communities, and between communities and existing and planned recreational opportunities.	High Performing	1	1	0	0	0	0	1
	Moderately Performing	0	0	0	0	1	0	0
<b>Goal 7:</b> Minimize adverse impacts to the environment and foster positive environmental impacts.	High Performing	0	1	1	1	3	4	0
	Moderately Performing	1	0	0	1	1	0	0
<b>Goal 8:</b> Ensure consideration of public input throughout project planning and development.	High Performing	2	2	2	2	0	2	0
	Moderately Performing	0	0	0	0	2	0	0
Total Numbers of Distinguishing Measures:	High Performing	13	16	15	18	10	12	3
	Moderately Performing	5	5	5	6	9	1	2
	High and Moderately Performing Combined	18	21	20	24	19	13	5

Note: The scores shown are for the entire Atlanta BeltLine corridor.

Of the Trails Alternatives, the Marietta Boulevard and Howell Junction Trail Alternatives have the higher High Performing score and the higher combined score. The On-Street Alternative has a High Performing score of three and a combined score of five.

## 7.2.5 Required Right-of-Way by Alternative

The alternatives evaluations assumed that wherever possible existing transportation ROW would be used. However, additional ROW would be required in several locations as discussed in Chapter 3.2 and summarized in Table 7-12.

**Table 7-12: Development Status of Required ROW by Alternative in the Northwest Zone**

Zone	Build Alternatives	Development Status in Required ROW (acres)					
		Developed	Vacant	No Data	Transportation/ Utility	Total	
Northwest	Transit	All A- CSX Howell Jct.	4.2	1.8	12.5	4.4	22.9
		All B- Howell Jct.	10.6	4.5	3.4	4.4	22.9
		All C- CSX Marietta Blvd.	2.6	2.0	18.9	0.9	24.4
		All D- Marietta Blvd.	7.8	4.0	11.7	0.9	24.4
		All F- Atlantic Station	4.8	3.0	10.0	4.9	22.7
	Trail	Howell Jct.	6.2	2.4	1.9	2.2	12.5
		Marietta Blvd.	5.5	2.1	5.5	0.2	13.1
		On-Street	8.1	1.3	4.7	2.2	16.3

In the northeast, southeast, and southwest zones, total ROW for both the Transit and Trails Alternatives is estimated to occupy 72.1 acres including the in-street running section along Bill Kennedy Way and 1.9 acres of developed land. Developed land represents parcels that containing residential, commercial, industrial, institutional, and recreational land uses rather than the vacant, transportation/utility, and no data categories. This latter group contains the active and abandoned rail corridors and roadways as well as utility ROW and vacant parcels.

In the northwest zone, the required ROW differs by Alternative. As would be expected, the alternatives that run adjacent to but not within a freight rail corridor (B- Howell Junction, D- Marietta Boulevard, and F- Atlantic Station Transit Alternatives) require more developed land than the alternatives that run within a freight rail corridor (A- CSX Howell Junction and C- Marietta Boulevard Alternatives). The total required, however, does not differ greatly among the Transit Alternatives with the C- CSX Marietta Boulevard and D- Marietta Boulevard Alternatives requiring slightly more ROW than the others.

In the northwest zone, the Howell Junction Trail Alternative would require the least ROW, while the On-Street Trail Alternative would require the most ROW.

This preliminary ROW analyses identified only a portion of the ROW required. In the Tier 2 analysis there will be a parcel-level assessment of additional required ROW needs for the selected Alternative, including examination of alignments in MARTA Station Connectivity Areas, a refined analysis of cross-sections developed to avoid or minimize potential adverse effects, the sizes and locations of stations, and the location of a storage and maintenance facility.

### 7.3 Preliminary Cost Estimates

Preliminary capital, operations, and maintenance costs were developed to enable alternatives performance comparison for Goal 4, which relates to cost-effective and efficient transportation investment. This section presents preliminary costs relative to the Goal 4 performance measures. Preliminary cost estimates were calculated for the entire Atlanta BeltLine study corridor, including all four zones.

### 7.3.1.1 Preliminary Cost Analysis (Goal 4)

**Minimize project costs, but not at the expense of quality design and materials.**

***Measure: Minimize capital cost***

#### Transit Alternatives

Preliminary capital cost estimates for each Transit Build Alternative are shown in Table 7-13. The estimates consider typical unit costs for similar existing transit systems (LRT and SC) expressed in year 2009 dollars. The costs of alignment specific needs associated with implementing each of the alternatives, such as bridges and tunnels, were considered. All cost estimates assume the use of high quality design and materials.

**Table 7-13: Preliminary Capital Cost Estimates, Transit Alternatives**

Technology Mode	Cost (millions, 2009\$)				
	A- CSX Howell Jct.	B- Howell Jct.	C- CSX Marietta Blvd.	D- Marietta Blvd.	F- Atlantic Station
Light Rail Transit	\$1,764	\$1,787	\$1,770	\$1,792	\$1,760
Modern Streetcar	\$1,571	\$1,609	\$1,579	\$1,611	\$1,578

Source: AECOM

Overall, LRT capital costs are higher than those of SC due to higher costs for the LRT technology and infrastructure requirements. Among the alignments, the costs for the B- Howell Junction and D- Marietta Boulevard Alternatives are somewhat higher than those of the other alternatives due to additional costs for ROW acquisition and infrastructure. The C- CSX Marietta Boulevard Alternatives have the least cost when comparing cost among identical technologies.

#### Trail Alternatives

Preliminary capital cost estimates for each Trail Build Alternative are shown in Table 7-14. The estimates are expressed in year 2009 dollars. The costs of alignment specific needs associated with implementing each of the alternatives, such as bridges, were considered. All cost estimates assume the use of high quality design and materials. Overall, the On-Street Trail Alternative has a higher cost than the Marietta Boulevard and Howell Junction Trail Alternatives.

**Table 7-14: Preliminary Capital Cost Estimates, Trail Alternatives**

Trail Alternative	Cost (millions, 2009\$)
Marietta Blvd. / Howell Jct.	\$129
On-Street	\$135

Source: AECOM

***Measure: Minimize annual operating and maintenance costs***

Preliminary annual operating and maintenance costs for each Transit Build Alternative are shown in Table 7-15. The estimates are expressed in year 2009 dollars. The preliminary estimates for each of the alignment alternatives would be approximately the same within the same mode. SC would cost more to operate and maintain than LRT as the vehicles are smaller therefore, more SC vehicles may be required to serve the same number of riders.

**Table 7-15: Preliminary Operating and Maintenance Cost Estimates\***

Technology Mode	Cost (millions, 2009\$)				
	A- CSX Howell Jct.	B- Howell Jct.	C- CSX Marietta Blvd.	D- Marietta Blvd.	F- Atlantic Station
Light Rail Transit	\$11.54	\$11.54	\$11.63	\$11.63	\$11.49
Modern Streetcar	\$14.36	\$14.36	\$14.49	\$14.49	\$14.31

Source: AECOM

\* Total cost is doubled to account for trains running in two directions, one time around.

#### **Support existing and planned transit infrastructure investments.**

##### **Measure: Maximize number of connections to planned streetcar, light rail, bus rapid transit, and commuter rail projects**

The No-Build and Build Alternatives, regardless of mode, would perform differently in terms of the number of connections to planned transit services. As reported in Chapter 3.1.3.2, the No-Build Alternative would serve 14 planned transit services, while all the Build Alternatives would serve 24.

#### **Maximize operating and cost-efficiency**

##### **Measure: Minimize capital costs per alignment mile**

###### **Transit Alternatives**

Preliminary capital cost estimates per alignment mile for the Transit Build Alternatives are presented in Table 7-16. The preliminary capital cost estimates would be approximately the same within the same mode. LRT capital cost estimates per mile are higher than those for SC, due to higher costs for the LRT technology and infrastructure requirements. The B- Howell Junction Alternatives have a slightly higher cost per mile than the other alternatives due to additional costs for ROW acquisition and infrastructure.

**Table 7-16: Preliminary Capital Cost Estimates per Mile, Transit Alternatives**

Technology Mode	Cost (millions, 2009\$)				
	A- CSX Howell Jct.	B- Howell Jct.	C- CSX Marietta Blvd.	D- Marietta Blvd.	F- Atlantic Station
Light Rail Transit	\$74	\$76	\$73	\$74	\$74
Modern Streetcar	\$66	\$68	\$65	\$66	\$66

Source: AECOM

Note: Cost per mile is calculated for the full corridor, which is the total cost divided by the length of each alternative.

#### **Trail Alternatives**

Preliminary capital cost estimates per alignment mile for the Trail Build Alternatives are presented in Table 7-17. Overall, the On-Street Trail Alternative has a higher cost per mile than the Marietta Boulevard and Howell Junction Trail Alternatives.

**Table 7-17: Preliminary Capital Cost Estimates per Mile, Trail Alternatives**

Alternative	Cost (millions, 2010\$)
Marietta Blvd. / Howell Jct.	\$5.9
On-Street	\$6.1

Source: AECOM

**Measure: Minimize operating and maintenance costs per seat mile**

Preliminary annual operating and maintenance costs per seat mile for each Transit Build Alternative are shown in Table 7-18 and expressed in year 2009 dollars. The costs per seat mile are higher for SC than for LRT. The preliminary operating and maintenance cost estimates for each Alternative would be approximately the same within the same mode.

**Table 7-18: Preliminary Operating & Maintenance Cost Estimates per Seat Mile\***

Technology Mode	Cost (millions, 2009\$)				
	A- CSX Howell Jct.	B- Howell Jct.	C- CSX Marietta Blvd.	D- Marietta Blvd.	F- Atlantic Station
Light Rail Transit	\$0.84	\$0.84	\$0.83	\$0.83	\$0.87
Modern Streetcar	\$1.39	\$1.39	\$1.38	\$1.38	\$1.44

Source: AECOM

\* Length is one time around the alignment in one direction.