5.0 TIER 2 SCREENING

5.1 Tier 2 Screening Evaluation Criteria and MOEs

The Tier 2 Screening was a detailed evaluation of the final alternatives; therefore, significantly more evaluation criteria and MOEs were utilized to measure the effectiveness of the alternatives in addressing the identified project goals and objectives than were utilized in the Tier 1 Screening. However, the process by which alternatives were evaluated was similar to that of the Tier 1 Screening, in that each alternative was rated for its performance under a series of MOEs selected to assess the alternative's ability to meet the project goals.

As in the Tier 1 Screening, MOE scores are the foundation for the alternatives' goal scores, and finally, for their overall scores. The ratings and scores assigned to MOEs in the Tier 2 Screening were determined via the same means as in Tier 1 Screening. This process is described in **Section 3.2**.. For each alternative, the ratings for each MOE were averaged and then rounded to the nearest whole number to obtain a project goal score. In this way, each alternative was evaluated for how well it addressed each project goal. Project goal ratings were then summed for each alignment to produce overall ratings, which produced the candidate alternative for the LPA.

The performance of each alternative under each MOE was determined based on data obtained from a variety of sources and using a number of tools of analysis. **Table 5-1** presents the evaluation criteria and their associated MOEs, along with those analysis tools and resources utilized in the evaluation of alternatives within each of these categories. Please refer to the *Evaluation Framework Report* for a detailed explanation of all Tier 2 evaluation criteria and MOEs.

5.2 Goal 1: Increase Mobility and Accessibility

The first stakeholder identified goal of the I-20 East Transit Initiative is: **Increase Mobility and Accessibility**. As detailed in the *Purpose and Need Report*, traffic congestion and limited transportation options have led to increasingly long travel times which constrain mobility and accessibility within the corridor. Four objectives were identified by stakeholders to address this project goal:

- Objective 1.1: Improve travel times for east-west travel
- Objective 1.2: Improve transit accessibility within the corridor
- Objective 1.3: Improve connectivity with existing and planned transit investments
- Objective 1.4: Improve travel options within the corridor

For each of these project objectives, specific evaluation criteria and MOEs were utilized to measure how well project alternatives addressed each objective and overall goal. The following is a description of the Goal 1 MOEs and the results of the evaluation of Tier 2 Alternatives against these MOEs. Please refer to the *Evaluation Framework Report* for a more detailed explanation of the project evaluation criteria and MOEs.

Table 5-1: Tier 2 Evaluation

Goal 1: Increase Mobility and Accessibility		
Evaluation Criteria	**Measure of Effectiveness**	**Tools/Resources**
Travel Times	Transit Travel Times from Stonecrest to Five Points Station	• Travel Demand Model output
	Transit Travel Times from Stonecrest to Arts Center Station	• Travel Demand Model output
	Reduction in VHT	• Travel Demand Model output
	Number of transfers per linked trip	• Travel Demand Model output
Proximity of transit to corridor residents, employment, and special destinations.	Households with new access to transit*	• Census data • GIS spatial analysis
	Employment within ½ mile of new stations that is not within ½ mile of existing MARTA rail stations	• Census data • GIS spatial analysis
	Special destinations (major retail, entertainment, & university) within ½ mile of stations	• Major trip generators (GIS) and aerial photography • GIS spatial analysis
Connections to Existing and Planned Transit	Connection to Concept 3 Rapid Transit Service	• Qualitative assessment • Concept 3 Plan
Additional Travel Options	New Travel Mode/Facility	• Qualitative Assessment
Goal 2: Provide Improved Transit Service within the Corridor		
Evaluation Criteria	**Measure of Effectiveness**	**Tools/Resources**
Transit System Ridership	Total Transit Boardings	• Travel Demand Model output
	Transit Mode Share	• Travel Demand Model output
	New Transit Riders	• Travel Demand Model output
Transit Travel Times	Proposed transit travel times vs. auto travel times	• Travel Demand Model output
Proximity to Underserved Populations	Zero car households with new access to transit*	• 2000 US Census block group data • GIS spatial analysis
	ADA population with new access to transit*	• Census data • GIS spatial analysis
	Minority population with new access to transit*	• 2000 US Census block group data • GIS spatial analysis
	Number of low-income households with new access to transit*	• 2000 US Census block group data • GIS spatial analysis
	Elderly population with new access to transit*	• 2000 US Census block group data • GIS spatial analysis
Goal 3: Support Land Use and Development Goals		
Evaluation Criteria	**Measure of Effectiveness**	**Tools/Resources**
Proximity of Underutilized Land	Acres of vacant or underutilized land within ½-mile of transit stations/stops	• GIS spatial analysis • Land use maps • Aerial photography
Land Use Plans	Consistency with adopted local and regional plans	• Community Agendas from adopted Comprehensive Plans of each jurisdiction within study area • ARC Unified Growth Planning Map • Previous studies (LCIs and corridor studies) • GIS spatial analysis
Potential for TOD	Acres of transit-supportive future land uses within one-half mile of new stations/stops	• GIS spatial analysis • Future Land use maps • Aerial photography
	Acres of transit-supportive existing land uses within one-half mile of new stations/stops	• GIS spatial analysis • Existing Land use maps • Aerial photography

Goal 4: Promote Cost Effective Transit Investments		
Evaluation Criteria	**Measure of Effectiveness**	**Tools/Resources**
Cost and Cost Effectiveness	Capital costs (Stations, transitways, tracks, vehicles, and maintenance facilities) and right-of-way costs in $millions	• Capital unit costs experienced for similar transportation investments • National and local transportation projects • TPB Cost Estimates • ARC RTP Cost Estimates • Existing land use and parcel-level tax data • Right-of-way costs from recent projects in the region • Representative alignment within corridors identifying additional right-of-way required
	O&M costs in $millions	• Daily bus hours, bus miles, train miles, and train hours from transit network model • Industry average transit O&M costs
	Deliverability Risk	• Identification of construction and delivery issues associated with each alternative
	Cost Effectiveness Index (CEI)	• FTA SUMMIT Model • Travel Demand Model output
	Incremental cost per new rider	• Cost estimates • Travel Demand Model output
Goal 5: Preserve Natural and Built Environment		
	Measure of Effectiveness	**Tools/Resources**
Impact to community, cultural, and natural resources	Community Impacts (neighborhoods, churches, schools, community centers, etc.)	• GIS spatial analysis • ARC ARIS community facilities shapefile • Aerial photography
	Natural environmental impacts (streams, wetlands, T&E species, etc.)	• GIS spatial analysis using - NWI, FIRMs, GDOT's statewide DLG-F Polygonal Hydrographic dataset
	Cultural impacts (historic and archaeological resources)	• GIS spatial analysis using - Historic resources shapefile developed by Georgia Department of National Resources, ARC ARIS GIS data • GA DNR SHPO previous studies data • Windshield surveys
	Total residential and commercial displacements	• GIS spatial analysis • Aerial photography • GIS based property line information for DeKalb and Fulton Counties
Goal 6: Achieve a High Level of Community Support		
Evaluation Criteria	**Measure of Effectiveness**	**Tools/Resources**
Maintain compliance with stakeholder guidance	Compliance with SAC Guiding Principles	• SAC guiding principles
Achieve a high level of public support	Degree of Public Support (percent of votes for Mainline, Downtown Connectivity, and Panola Road Alternatives)	• Voting at public meetings and online surveys
	Average Survey Score (on a scale of 1-5) for respondents living east of I-285	• Voting at public meetings and online surveys
	Average Survey Score (on a scale of 1-5) of respondents living west of I-285	• Voting at public meetings and online surveys

5.2.1 Project Objective 1.1: Improve travel times for east-west travel

Evaluation Criterion: Travel Times

- *MOE: Transit Travel Times from Stonecrest to Five Points Station*

- This MOE measures the total transit travel time between the Mall at Stonecrest and the Five Points Station in Downtown Atlanta in 2030 for each alternative. MOE: Transit Travel Times from Stonecrest to Arts Center Station

  This MOE measures the total transit travel time between the Mall at Stonecrest and the Arts Center Station in Midtown Atlanta in 2030 for each alternative. This MOE was included to measure transit travel times to another major trip destination, Arts Center Station in Midtown Atlanta, which is the second most significant employment destination for commuters in the corridor.

- MOE: Reduction in Vehicle Hours Traveled

  This measure looks at the vehicle hours traveled (VHT) for all trips in the corridor in 2030. This measure is intended to show the potential for a reduction in the total vehicle hours traveled for all corridor trips from the various alternatives.

- MOE: Number of Transfers per Linked Trip

  This measure is designed to evaluate the efficiency of transit service based on the number of transfers a rider would have to make to complete a trip. Riders find transfers undesirable, and transfers add to trip time. Alternatives that require excessive transfers would likely be less successful transit investments.

Objective 1.1: Performance Ratings

Table 5-2 presents the performance ratings for all Objective 1.1 MOEs.

Table 5-2: Performance Ratings for Objective 1.1 MOEs

	Ratings		
Measure of Effectiveness	**2**	**1**	**0**
Transit Travel Times to Five Points Station	<45 minutes	45-60 minutes	> 60 minutes
Transit Travel Times to Arts Center Station	<50 minutes	50-65 minutes	> 65 minutes
Reduction in VHT	> 0.1%	0.05-0.1%	<0.05%
Number of transfers per linked trip	<1 transfer	1-2 transfers	>2 transfers

5.2.2 Project Objective 1.2: Improve transit accessibility within the corridor

Evaluation Criterion: Proximity of transit to corridor residents, employment, and special destinations.

- MOE: Households with New Access to Transit

  This measure seeks to capture the number of households within reasonable proximity to the new transit stations for each alternative. This measures how well each alternative provides new transit access for corridor residents. Residents within reasonable proximity to existing rapid transit stations are not included in this measurement since they already have good access to transit.

- MOE: Employment within ½ mile of New Stations that is not within ½ mile of Existing MARTA Rail Stations

  This MOE seeks to measure how well each alternative provides improved transit access to employment within the corridor. The measure captures total employment within ½ mile of the proposed stations as long as those jobs are not already within ½ mile of an existing rapid transit station.

- MOE: Special Destinations (major retail, entertainment, & university) within ½ mile of Stations

  This MOE seeks to measure how well each alternative provides improved transit access to major retail and entertainment centers as well as universities. Examples include the Mall at Stonecrest, the Gallery at South DeKalb, and Turner Field. The measure identifies how many of these special destinations are within ½ mile of the proposed stations.

Objective 1.2: Performance Ratings

Table 5-3 presents the performance ratings for all Objective 1.2 MOEs.

Table 5-3: Performance Ratings for Objective 1.2 MOEs

	Ratings		
Measure of Effectiveness	**2**	**1**	**0**
Households with new access to premium transit	>40,000 HH	35,000-40,000 HH	<35,000 HH
Employment within ½ mile of stations that is not also within ½ mile of an existing MARTA station	>10,000 jobs	5,000-10,000 jobs	<5,000 jobs
Special Destinations (major retail, entertainment, university) within ½ mile of stations	3 destinations	2 destinations	1 or 0 destinations

5.2.3 Project Objective 1.3: Improve transit accessibility within the corridor

Evaluation Criterion: Improve connectivity with existing and planned transit investments

- MOE: Connection to *Concept 3* Rapid Transit Service

  This measure quantitatively rates the potential alternatives based upon how well they further the *Concept 3* regional transit vision by enhancing connectivity to planned facilities. This MOE measures how many connections each alternative will have with *Concept 3* rapid transit service.

Objective 1.3: Performance Ratings

Table 5-4 presents the performance ratings for all Objective 1.3 MOEs.

Table 5-4: Performance Ratings for Objective 1.3 MOEs

	Ratings		
Measure of Effectiveness	**2**	**1**	**0**
Connection to Concept 3 Rapid Transit	4 connections	3 connections	<3 connections

5.2.4 Project Objective 1.4: Improve travel options within the corridor

Evaluation Criterion: Additional Travel Options

- MOE: New Travel Mode/Facility

  As identified by stakeholders, and presented in the *Purpose and Need Report*, there is a need to provide additional travel options in the I-20 East Corridor. This MOE would assess whether each alternative would provide an additional travel option beyond the existing automobile and bus transit options on surface streets.

Objective 1.4: Performance Ratings

Table 5-5 presents the performance ratings for all Objective 1.4 MOEs.

Table 5-5: Performance Ratings for Objective 1.4 MOEs

	Ratings		
Measure of Effectiveness	**2**	**1**	**0**
New Travel Mode/Facility	Yes	-	No

5.2.5 Goal 1 Evaluation Results

Table 5-6 presents the evaluation results for Goal 1: Increase Mobility and Accessibility.

Objective 1.1: Improve travel times for east-west travel

As shown in Table 5-6, all Build Alternatives would provide significant travel time savings for commuters in the corridor when compared to the No Build Alternative. With the exception of the TSM and LRT2, all Build Alternatives would provide travel times between the Mall at Stonecrest and the Five Points Station of less than 40 minutes. Thus, HRT1, LRT1, BRT1, HRT2 and HRT3 were all rated a two for this MOE. With the No Build Alternative having a transit travel time of 74.4 minutes, these alternatives all offer travel times savings of more than one half hour.

LRT2 was rated a one for its transit travel time of 54.3 minutes between Five Points Station and the Mall at Stonecrest. The TSM, with its similar travel time of 59.2 minutes, was also rated a one, while the No Build Alternative was rated a zero. LRT2 would offer longer travel times to Five Points Station for two reasons: First, this alternative connects to the existing MARTA rail system at North Avenue, causing a commuter to transfer to the north-south line to travel south to Five Points Station. Second, overall travel times would be increased by the slower operating speeds and multiple stops along the BeltLine section of this alternative. While the connection to North Avenue Station offers LRT2 some time savings to the Arts Center Station, this alternative would still offer slower travel times than all Build Alternatives except the TSM.

Results were similar for the MOE which measured travel times between Arts Center Station and the Mall at Stonecrest, with all Build Alternatives but LRT2 being a rated a two for travel times less than 50 minutes and LRT2 being rated a one for its travel time of 54.3 minutes. The TSM received a zero for a travel time of 68.5 minutes, which was 14 minutes longer than that of LRT2. The No Build Alternative was rated a zero.

Table 5-6: Goal 1 Evaluation Results

Objective	Evaluation Criteria	Measures of Effectiveness	No Build	TSM	HRT1	LRT1	BRT1	LRT2	HRT2	HRT3
Improve East-West Travel Times	Travel Times	Transit Travel Times to Five Points Station from the Mall at Stonecrest	74.4	59.2	35.7	35.7	37.2	54.3	38.6	39.9
		Rating	0	1	2	2	2	1	2	2
		Transit Travel Times to Arts Center Station from the Mall at Stonecrest	82.9	68.5	41.7	44.4	45.9	54.3	47.1	48.4
		Rating	0	0	2	2	2	1	2	2
		Reduction in VHT	0	0.01%	0.13%	0.08%	0.05%	0.04%	0.08%	0.07%
		Rating	0	0	2	1	1	0	1	1
		Number of transfers per linked trip	0.59	0.58	0.54	0.6	0.6	0.58	0.59	0.59
		Rating	2	2	2	2	2	2	2	2
Improve Transit Accessibility within the Corridor	Proximity of transit to corridor residents, employment, and special destinations.	Households with new access to transit*	0	32,690	40,334	40,334	40,334	41,886	34,408	38,224
		Rating	0	0	2	2	2	2	0	1
		Employment within ½ mile of new stations that is not within ½ mile of existing MARTA rail stations	0	5,171	6,501	6,501	6,501	13,030	4,224	5,589
		Rating	0	1	1	1	1	2	0	1
		Special Destinations (major retail, entertainment, university) within ½ mile of new stations	0	2	3	3	3	2	2	2
		Rating	0	1	2	2	2	1	1	1
Improve Connectivity with Existing and Planned Transit Investment	Connections to Existing and Planned Transit	Connection to Concept 3 Rapid Transit Service	0	3	4	3	3	3	3	4
		Rating	0	1	2	1	1	1	1	2
Improve Travel Options within the Corridor	Additional Travel Options	New Travel Mode/Facility	No	No	Yes	Yes	Yes	Yes	Yes	Yes
		Rating	0	0	2	2	2	2	2	2
Goal 1: Increase Mobility and Accessibility		**Total Rating**	**0**	**1**	**2**	**2**	**2**	**1**	**1**	**2**

All Build Alternatives would reduce corridor VHT. HRT1 would offer a 0.13 percent reduction in VHT, and so was rated a two. The remaining Build Alternatives would reduce corridor VHT from 0.05 percent to 0.1 percent, and were rated a one, with the exception of LRT2, which was rated a zero for a potential decrease in VHT of less than 0.05 percent. The TSM and No Build were also rated zero for the MOE for little or no reduction in VHT.

According to the travel demand model, HRT1 also offers a slightly lower number of transfers per linked trip. The model labels all premium transit trips as "linked trips" because the transit ride must be linked with other legs of the trip –walks, bus rides or drives – for a rider to make a complete trip from origin to destination. However, since all Build Alternatives, the TSM, and the No Build Alternative offer similar performance under this MOE, all were rated a two.

Objective 1.2: Improve transit accessibility within the corridor

HRT1, LRT1, BRT1 and LRT2 would offer new transit access to more than 40,000 households in the corridor and were rated a two for the MOE. HRT3 would benefit 38,224 households and was rated a one. HRT2 would offer new access to the fewest households of all the Build Alternatives because its tunnel alignment reduces the number of stations it would service. HRT2 and the TSM were rated zero for the MOE.

All Build Alternatives provide transit access to a large number of jobs, but LRT2 would provide new access to the most of them by far. This is because LRT2 is comprised of a longer route that follows the BeltLine alignment. LRT2 was therefore rated a two for the MOE. The TSM, HRT1, LRT1, BRT1 and HRT3 all would extend transit service to more than 5,000 jobs, they were all rated a one while HRT2 was rated a zero for reaching 4,224 jobs.

All Build Alternatives offer transit access to the major retail destinations of the Mall at Stonecrest and Gallery at South DeKalb, however, only HRT1, LRT1, and BRT offer access to Turner Field as well. Therefore, these alternatives were rated a two for the MOE. LRT2, HRT2, HRT3 and the TSM were rated a one, and No Build was rated zero.

Objective 1.3: Improve connectivity with existing and planned transit investments

All Build Alternatives would offer transit connectivity to the existing MARTA rail system, Atlanta BeltLine, and future regional rail such as the Madison commuter rail line. However, only HRT1 and HRT3 would also offer connectivity to the proposed Clifton Corridor light rail line, which would provide transit access to the employment center containing Emory University and the Centers for Disease Control (CDC). HRT1 would provide access at Lindberg Station and HRT3 would provide access at Avondale Station. These alternatives were rated two for the MOE, while the others were rated one.

Objective 1.4: Improve travel options within the corridor

Stakeholders identified the need for new travel modes or options. All Build Alternatives, with the exception of the TSM, would offer a new transit service in a dedicated transitway and were rated two. While the TSM would offer new service, it would remain bus service on congested roadways as exists today, so was rated one. The No Build Alternative would not improve travel options and was rated zero.

Overall Goal 1 Results: Increase Mobility and Accessibility

Goal Summary Ratings are the rounded average of the ratings received for each alternative under Goal 1 MOEs. As shown in Table 5-6, HRT1, LRT1, BRT1, and HRT3 all received a rating of two for the project goal of increasing mobility and accessibility. The travel time

performance combined with the improved transit accessibility allow these alternatives to perform better than the others. LRT2, HRT2, and the TSM received goal Summary Ratings of one.

5.3 Goal 2: Provide Improved Transit Service within the Corridor

The second stakeholder identified goal of the I-20 East Transit Initiative is: **Provide Improved Transit Service within the Corridor**. In order to evaluate how well the alternatives would provide improved transit service within the corridor, they were assessed in terms of their ability to provide transit service with sufficient capacity to accommodate growing demand. Three objectives were identified by stakeholders to address this project goal:

- Objective 2.1: Provide transit service with sufficient capacity to accommodate growing demand
- Objective 2.2: Provide travel time competitive transit service in the corridor
- Objective 2.3: Provide transit service for traditionally underserved populations

For each of these project objectives, specific evaluation criteria and MOEs were utilized to measure how well project alternatives addressed each objective and overall goal. The following is a description of the Goal 2 MOEs and the results of the evaluation of Tier 2 Alternatives against these MOEs. Please refer to the *Evaluation Framework Report* for a more detailed explanation of the project evaluation criteria and MOEs.

5.3.1 Project Objective 2.1: Provide transit service with sufficient capacity to accommodate growing demand

Evaluation Criterion: Transit System Ridership

- MOE: Total Transit Boardings

  This MOE measures the expected total boardings onto the new transit service for each alternative.

- MOE: Transit Mode Share

  This MOE measures how well each alternative attracts corridor residents to use transit. The measure indicates how well the given alternative captures new transit trips that would otherwise be made by automobile, pedestrian, or bicycle modes.

- MOE: New Transit Riders

  This measure addresses each alternative's ability to attract new transit riders. These are riders who would otherwise not utilize transit for their trip.

Objective 2.1: Performance Ratings

Table 5-7 presents the performance ratings for all Objective 2.1 MOEs.

Table 5-7: Performance Ratings for Objective 2.1 MOEs

	Ratings		
Measure of Effectiveness	**2**	**1**	**0**
Total Transit Boardings	>40,000	20,000-40,000	<20,000
Transit Mode Share	>7%	5-7%	<5%
New Transit Riders	>10,000	5,000-10,000	<5,000

5.3.2 Project Objective 2.2: Provide travel time competitive transit service in the corridor

Evaluation Criterion: Transit vs. Auto Travel Times

- MOE: Proposed Transit Travel Times vs. Auto Travel Times

  This measure compares projected transit travel times for each alternative against automobile trip times to gauge the overall competitiveness of premium transit in the corridor. Since existing bus transit service in the corridor utilizes congested roadways, stakeholders identified a need to provide transit service that would provide competitive travel times compared to automobile travel.

Objective 2.2: Performance Ratings

Table 5-8 presents the performance ratings for all Objective 2.2 MOEs. Alternatives were rated based on how many minutes they saved vs. automobile travel.

Table 5-8: Performance Ratings for Objective 2.2 MOEs

	Ratings		
Measure of Effectiveness	**2**	**1**	**0**
Transit Travel Times vs. Auto Travel Times	>20 minutes	10-20 minutes	< 10 minutes

5.3.3 Project Objective 2.3: Provide transit service for traditionally underserved populations

Evaluation Criterion: Proximity to Underserved Populations

- MOE: Zero Car Households with New Access to Transit

  This measure identifies the total number of zero-car households within proximity to the proposed stations for each alternative. Zero car households are a good indicator of transit dependant populations. This MOE measures each alternative's ability to provide premium transit service to the transit dependant population in the corridor.

- MOE: ADA Population with New Access to Transit

  This MOE identifies the disabled population living within proximity to the proposed stations along each alternative. It measures each alternative's ability to provide premium transit service to the disabled population in the corridor.

- MOE: Minority Population with New Access to Transit

  This MOE identifies the number of minority persons within proximity to the proposed stations along each alternative. It measures each alternative's ability to provide new premium transit service to minorities within the corridor.

- MOE: Low-Income Population with New Access to Transit

  This MOE identifies the number of low-income persons within proximity to the proposed stations along each alternative. It measures each alternative's ability to provide new premium transit service to the low-income population within the corridor.

- MOE: Elderly Population with New Access to Transit

  This MOE identifies the number of elderly (65+) persons within proximity to the proposed stations along each alternative. It measures each alternative's ability to provide new premium transit service to the elderly population within the corridor.

Objective 2.3: Performance Ratings

Table 5-9 presents the performance ratings for all Objective 2.2 MOEs. Alternatives were rated based on transit travel time reduction vs. automobile travel time.

Table 5-9: Performance Ratings for Objective 2.2 MOEs

	Ratings		
Measure of Effectiveness	**2**	**1**	**0**
Zero car households with new access to transit	>3,500	2,500-3,500	<2,500
ADA population with new access to transit	>15,000	10,000-15,000	<10,000
Minority population with new access to transit	>100,000	80,000-100,000	<80,000
Low-income households with new access to transit	>12,000	10,000-12,000	<10,000
Elderly persons with new access to transit	>9,000	7,000-9,000	<7,000

5.3.4 Goal 2 Evaluation Results

Table 5-10 presents the evaluation results for Goal 2: Provide Improved Transit Service within the Corridor.

Objective 2.1: Provide transit service with sufficient capacity to accommodate growing demand

As presented in Table 5-10, HRT1 is projected to attract the highest total transit boardings of all alternatives and was rated two for the MOE. Since HRT1 provides single-seat transit to all MARTA stations on the north-south line between Garnett Station and Lennox Station, this alternative was expected to attract the highest ridership. HRT1 offers direct transit access, without any transfers, to most downtown and Midtown Atlanta employment centers. All other alternatives would require a transfer onto the north-south line to access these employment centers. LRT1, BRT1, HRT2, and HRT3 attract between 27,000 and 33,000 riders each day and were given a rating of one. LRT2 and the TSM were projected to attract only 18,400 and 12,700 daily riders, respectively, and were rated zero.

All Build Alternatives are expected to improve transit mode share slightly in the corridor. Since HRT1 attracts the most riders, it also garners the highest transit mode share. However, as mode share varied only slightly across all alternatives, from 5.14 for the No Build Alternative to 5.6 for HRT1, all alternatives were rated a one for the MOE.

HRT1 also attracts the highest number of new transit riders,12,300, and was rated a two for this MOE. LRT1 and HRT2 were both projected to attract 8,200 new riders; HRT3, 6,400; HRT2, 5,300; and BRT1, 5,200. These alternatives were rated a one, while the TSM, with 1,100 projected new riders, was rated zero.

Objective 2.2: Provide travel time competitive transit service in the corridor

All Build Alternatives are expected to offer faster travel times between the Mall at Stonecrest and Five Points Station when compared to automobile travel in 2030. HRT1, LRT1, BRT1, HRT2, and HRT3 are all expected to provide greater than 20 minutes of travel time savings and were rated two for the MOE. LRT1 offers only 6.7 minutes of savings due to the slow operation on the BeltLine alignment and the transfer to the north-south line to travel south to Five Points Station. The TSM offered just 1.8 minutes of travel time savings. LRT1 and the TSM were rated zero for the MOE due to the pronounced difference between their travel time savings and those of the remaining alternatives.

Table 5-10: Goal 2 Evaluation Results

Objective	Evaluation Criteria	Measures of Effectiveness	No Build	TSM	HRT1	LRT1	BRT1	LRT2	HRT2	HRT3
Provide Transit Service with Sufficient Capacity to Accommodate Growing Demand	Transit System Ridership	Total Transit Boardings	-	12,700	41,900	33,300	27,700	18,400	32,200	28,700
		Rating	-	0	2	1	1	0	1	1
		Transit Mode Share	5.14	5.19	5.6	5.47	5.34	5.33	5.46	5.37
		Rating	1	1	1	1	1	1	1	1
		New Transit Riders	-	1,100	12,300	8,200	5,200	5,300	8,200	6,400
		Rating	-	0	2	1	1	1	1	1
Provide Travel Time Competitive Transit Service in the Corridor	Transit vs. Auto Travel Times	Difference between transit travel times and auto travel times between the Mall at Stonecrest and Five Points, in minutes	-	1.8	25.3	25.3	23.8	6.7	22.4	21.1
		Rating	-	0	2	2	2	0	2	2
Provide Transit Service for Traditionally Underserved Populations	Proximity to Underserved Populations	Zero car households with new access to transit*	-	2,594	2,642	2,642	2,642	3,276	2,343	3,198
		Rating	-	1	1	1	1	2	0	2
		ADA population with new access to transit*	-	11,217	11,244	11,244	11,244	12,400	10,430	16,263
		Rating	-	1	1	1	1	1	1	2
		Minority population with new access to transit*	-	87,021	88,498	88,498	88,498	90,802	85,558	101,407
		Rating	-	1	1	1	1	1	1	2
		Number of low-income households with new access to transit*	-	11,774	11,924	11,924	11,924	13,572	10,758	14,333
		Rating		1	1	1	1	2	1	2
		Elderly population with new access to transit*	-	7,436	7,516	7,516	7,516	7,875	7,104	9,149
		Rating	-	1	1	1	1	1	1	2
Goal 2: Provide Improved Transit Service within the Corridor		**Total Rating**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**2**

*within two miles of Collector or Commuter Town Center Stations or within one-half mile of Town Center and Special Regional Destination Stations and not within ½ mile of existing Urban Core, Neighborhood, or Town Center Stations nor within two miles of existing Commuter Town Center or Collector stations.

Objective 2.3: Provide transit service for traditionally underserved populations

As shown in Table 5-10, all alternatives offer improved transit access to traditionally underserved populations. However, HRT3 outperforms all other alternatives for all categories with the exception of LRT2 which provides slightly better transit access to zero car households.

Overall Goal 2 Results: Provide Improved Transit Service within the Corridor

Goal Summary Ratings are the rounded average of the ratings received for each alternative under Goal 2 MOEs. As shown in Table 5-10, HRT3 is the only alternative that receives a rating of two for the goal of providing improved transit service within the corridor. HRT3 combines strong ridership performance and with the highest transit accessibility for underserved populations. All other alternatives receive a rating of one for Goal 2.

5.4 Goal 3: Support Land Use and Development Goals

The third stakeholder identified goal of the I-20 East Transit Initiative is: **Support Land Use and Development Goals**. Stakeholders identified a major need for development and redevelopment throughout much of the corridor. In order to evaluate how well the alternatives would address this goal, they were assessed for their potential to attract economic development and revitalization, whether they were consistent with the local land use plans, and whether station areas were supportive of TOD. Three objectives were identified by stakeholders to address this project goal:

- Objective 3.1: Promote economic development and revitalization
- Objective 3.2: Support adopted local land use plans
- Objective 3.3: Encourage transit supportive land use and development patterns

For each of these project objectives, specific evaluation criteria and MOEs were utilized to measure how well project alternatives addressed each objective and overall goal. The following is a description of the Goal 3 MOEs and the results of the evaluation of Tier 2 Alternatives against these MOEs. Please refer to the *Evaluation Framework Report* for a more detailed explanation of the project evaluation criteria and MOEs.

5.4.1 Project Objective 3.1: Promote economic development and revitalization

Evaluation Criterion: Proximity of Underutilized Land

- MOE: Acres of Vacant or Underutilized Land within ½ Mile of Transit Stations/Stops

  This MOE examines the extent of vacant or underutilized land within ½ mile of the proposed stations associated with each alternative. Underutilized land includes areas that are clearly not operating to their highest and best use. This includes areas of excessive parking, large parcels with only a small percentage of the land area improved, and developed areas with a large percentage of vacant or abandoned structures. These areas represent prime locations in which redevelopment could occur. Vacant and underutilized land around existing MARTA stations was not considered in this analysis.

Objective 3.1: Performance Ratings

Table 5-11 presents the performance ratings for the Objective 3.1 MOE.

Table 5-11: Performance Ratings for Objective 3.1 MOE

	Ratings		
Measures of Effectiveness	2	1	0
Acres of vacant or underutilized land within ½-mile of transit stations/stops	>800 acres	400-800 acres	<400 acres

5.4.2 Project Objective 3.2: Support adopted local land use plans

Evaluation Criterion: Land Use Plans

- MOE: Consistency with Adopted Local and Regional Plans

  This MOE identifies if the proposed station locations for each alternative are consistent with local and regional land use policies.

Objective 3.2: Performance Ratings

Table 5-12 presents the performance ratings for the Objective 3.2 MOE.

Table 5-12: Performance Ratings for Objective 3.2 MOE

	Ratings		
Measure of Effectiveness	**2**	**1**	**0**
Consistency with adopted local and regional plans	Complete	Partial	Inconsistent

5.4.3 Project Objective 3.3: Encourage transit supportive land use and development patterns

Evaluation Criterion: Potential for TOD

- MOE: Acres of Transit-Supportive Future Land Uses within one-half Mile of New Stations/Stops

  This MOE identifies how many acres of transit supportive land uses within ½ mile of the proposed stations/stops are included in future land use plans. This MOE measures how supportive the future land uses in the station areas will be of TOD.

- MOE: Acres of Transit-Supportive Existing Land Uses within one-half Mile of New Stations/Stops

  This MOE identifies how many acres of transit supportive land uses within ½ mile of the proposed stations/stops are included in existing land use plans. This measures how supportive the existing land uses in the station areas will be of TOD.

Objective 3.3: Performance Ratings

Table 5-13 presents the performance ratings for all Objective 3.3 MOEs.

Table 5-13: Performance Ratings for Objective 3.3 MOEs

	Ratings		
Measure of Effectiveness	**2**	**1**	**0**
Acres of transit-supportive future land uses	>2000 acres	1000-2000 acres	<1000 acres
Acres of transit-supportive existing land uses	>500 acres	300-500 acres	<300 acres

5.4.4 Goal 3 Evaluation Results

Table 5-14 presents the evaluation results for Goal 3: Support Land Use and Development Goals.

Objective 3.1: Promote economic development and revitalization

As presented in Table 5-14, all Build Alternatives provide transit access to over 800 acres of vacant or underutilized land, and were rated a two. The No Build Alternative would not offer any new access to land, developable or otherwise.

Objective 3.2: Support adopted local land use plans

Proposed stations associated with each of the Build Alignments are planned for locations at which local and/or regional plans have called for TOD or mixed-use, nodal future development. Therefore, all station locations for all alternatives are in support of adopted local land use plans. New vehicles associated with alternatives BRT1, HRT1, HRT2, and HRT3 would be maintained at existing MARTA rail or bus maintenance facilities. However, since LRT1 and LRT2 would introduce a new transit vehicle type to the MARTA system, they would require the construction of a storage and maintenance facility within the corridor. An LRT facility would require between 25 and 35 acres within close proximity to the proposed alignment. As such, the only vacant parcels suitable for the construction of such a facility are identified with residential land uses under existing and future plans. Thus, LRT1 and LRT2 would not fully comply with existing and future land use plans.

All alternatives offer full consistency with adopted land use plans with the exception of LRT1 and LRT2. Therefore, the TSM, HRT1, BRT1, HRT2, and HRT3 were rated two for the MOE. Their partial compliance garnered these alternatives a rating of one for the MOE.

Objective 3.3: Encourage transit supportive land use and development patterns

All alternatives would build stations within close proximity to a significant amount of land that has been identified in existing and future land use plans as being supportive of TOD. Due to its alignment along the proposed Atlanta BeltLine, LRT2 would provide transit access to far more transit-supportive future land uses than the other alternatives, 2718.1 acres, or 741.3 more acres of such lands than the next best alternatives, HRT1, LRT1 and BRT1 with 1976.8 acres, would access. The worst performing alternative, HRT2, would access 1470.9 acres, approximately 500 acres less than the second-best performing alternatives. LRT2 was therefore rated a two for the MOE and the other Build Alternatives were rated a one. The No Build Alternative would offer no new access to these lands and received no rating for the MOE.

Access to existing transit-supportive land was less varied among alternatives. HRT1, LRT1, BRT1 and LRT2 would access between 500 and 570 acres of existing transit-supportive lands, and were rated two for the MOE. Other Build Alternatives would offer access between 340 and 425 acres, and were rated a one. Again, the No Build Alternative would offer no new access to these lands and received no rating for the MOE.

Overall Goal 3 Results: Support Land Use and Development Goals

Goal Summary Ratings are the rounded average of the ratings received for each alternative under Goal 3 MOEs. As shown in Table 5-14, all Build Alternatives are expected to support land use and development goals. As such, all Build Alternatives were given a rating of two.

Table 5-14: Goal 3 Evaluation Results

Objective	Evaluation Criteria	Measures of Effectiveness	No Build	TSM	HRT1	LRT1	BRT1	LRT2	HRT2	HRT3
Promote Economic Development and Revitalization	Proximity of Underutilized Land	Acres of vacant or underutilized land within ½-mile of new transit stations/stops	-	844.7	977.8	977.8	977.8	900.4	818.7	892
		Rating	-	2	2	2	2	2	2	2
Support Adopted Local Land Use Plans	Land Use Plans	Consistency with adopted local and regional plans	-	Complete	Complete	Partial	Complete	Partial	Complete	Complete
		Rating	-	2	2	1	2	1	2	2
Encourage Transit Supportive Land Use and Development Patterns	Potential for TOD	Acres of transit-supportive future land uses within one-half mile of new stations/stops	-	1584.1	1976.8	1976.8	1976.8	2718.1	1470.9	1584.1
		Rating	-	1	1	1	1	2	1	1
		Acres of transit-supportive existing land uses within one-half mile of new stations/stops	-	401.3	509.3	509.3	509.3	566.1	349.7	422.8
		Rating	-	1	2	2	2	2	1	1
Goal 3: Support Land Use and Development Goals		**Total Rating**	**0**	**2**	**2**	**2**	**2**	**2**	**2**	**2**

5.5 Goal 4: Promote Cost Effective Transit Investments

The fourth stakeholder identified goal of the I-20 East Transit Initiative is: **Promote Cost Effective Transit Investments**. Given the fiscal constraints facing transportation investments in the Atlanta region, project costs were identified as a critical measurement for the evaluation of alternatives. One objective was identified by stakeholders to address this project goal:

- Objective 4.1: Provide transit service that can be implemented, operated, and maintained with available resources

For this project objective, specific evaluation criteria and MOEs were utilized to measure how well project alternatives addressed this objective and overall goal. The following is a description of the Goal 4 MOEs and the results of the evaluation of Tier 2 Alternatives against these MOEs. Please refer to the *Evaluation Framework Report* for a more detailed explanation of the project evaluation criteria and MOEs.

5.5.1 Project Objective 4.1: Provide transit service that can be implemented, operated, and maintained with available resources

Evaluation Criterion: Cost and Cost Effectiveness

- MOE: Capital Costs (Stations, transitways, tracks, vehicles, and maintenance facilities) and Right-of-Way Costs in $millions

  This MOE compares total capital and right-of-way costs for each alternative. Since right-of-way costs are a small percentage of the capital costs, they were included in this MOE.

- MOE: Operating and Maintenance (O&M) Costs in $millions

  This MOE compares the annual O&M costs of each alternative. This is an important factor in the evaluation of alternatives since these are ongoing annual costs.

- MOE: Deliverability Risk

  The purpose of this measure is to identify key project deliverability risks or issues that could serve to delay or prevent the construction of an alternative. This is a qualitative MOE that identifies key construction and delivery issues associated with each alternative. For instance, complicated transit construction such as tunneling involves significant unknowns (e.g. underground utilities and geology) that could significantly delay or prevent implementation.

- MOE: Cost Effectiveness Index (CEI)

  The measure is computed as the annual incremental cost of the alternative compared to the TSM divided by the annual hours of user benefits provided by the alternative. The costs include annualizing the capital costs as well as the annual O&M costs. The hours of user benefits is generated by the FTA Summit program.

- MOE: Incremental Cost per New Rider

  The purpose of this measure is to capture the cost-effectiveness of each alternative in attracting new riders to the transit system. The ARC regional TDM output is

utilized to determine the number of new transit users. Capital costs and O&M costs are annualized and then divided by the new transit users to compute the value.

Objective 4.1: Performance Ratings

Table 5-15 presents the performance ratings for the Objective 4.1 MOEs.

Table 5-15: Performance Ratings for Objective 4.1 MOEs

	Ratings		
Measure of Effectiveness	**2**	**1**	**0**
Capital & Right-of-Way Costs	<$2.0B	$2.0-2.5B	>$2.5B
Operations and Maintenance Costs	<$15M	$15M-$30M	>$30M
Deliverability	<2 Deliverability Risks	2-3 Deliverability Risks	4+ Deliverability Risks
Cost Effectiveness Index (CEI)	<$120	100-150	< 100
Incremental cost per new rider	<$104	100-125	<100

5.5.2 Goal 4 Evaluation Results

Table 5-16 presents the evaluation results for Goal 4: Promote Cost Effective Transit Investments.

Objective 4.1: Provide transit service that can be implemented, operated, and maintained with available resources

As presented in Table 5-16, the projected capital and right-of-way costs for Build Alternatives vary greatly, with the most expensive nearing $3.3B and the least expensive almost half that amount. The Baseline/TSM is expected to be $71M since it is, by definition, the low cost alternative. With the exception of the TSM, HRT3 is the least expensive alternative at $1.84B. Although heavy rail is the most expensive transit mode considered in this study, the significantly shorter length of HRT3 affords this alternative the lowest cost and thus, along with the TSM, a rating of two. LRT2 and BRT1 are slightly more costly than HRT3 with costs of $2.115B and $2.111B respectively. These alternatives earn a rating of one. With costs of $3.281B, $2.700B, and $2.729B, alternatives HRT1, LRT1 and HRT2 all earn a rating of zero.

All HRT alternatives are projected to require significantly higher O&M costs than LRT or BRT alternatives. Since HRT1 would operate between the Mall at Stonecrest and the existing Lenox Station, it has the higher O+M costs of $35.2M per year. BRT1 would have the lowest O&M costs of $6.4M per year. Although the TSM/Baseline Alternative would have the lowest capital and right-of-way costs, its O+M costs are the second highest due to the large number of vehicles that this alternative would require to serve the expected demand in this corridor.

All alternatives are expected to incur some deliverability risk with the exception of the TSM, which was designed to be implemented without major capital investment and would likely require little to no risk. The TSM was rated a two for the MOE. All Build Alternatives are expected to require close coordination with GDOT for design approvals and right-of-way agreements. HRT1, LRT1, BRT1, and LRT2 are expected to require very costly and complicated construction of structures in the median of I-20 to avoid impacts to historic neighborhoods within the City of Atlanta. These structures are expected to be as tall as 50’ in locations where they are above both I-20 and cross streets. A related deliverability risk is the design exception that would be required from GDOT and FHWA in order to construct these structures in the middle of I-20. The design exception would be required since these structures would reduce the width of the interstate shoulder along I-20 current standards. These Build Alternatives were rated a one for the MOE.

Table 5-16: Goal 4 Evaluation Results

Objective	Evaluation Criteria	Measures of Effectiveness	No Build	TSM	HRT1	LRT1	BRT1	LRT2	HRT2	HRT3
Provide Transit Service that Can be Implemented, Operated, and Maintained with Available Resources	Cost and Cost Effectiveness	Capital costs (Stations, transitways, tracks, vehicles, and maintenance facilities) and Right-of-Way costs in $millions	-	$71	$3,281	$2,700	$2,111	$2,115	$2,729	$1,840
		Rating	-	2	0	0	1	1	0	2
		O&M costs in $millions	-	$24.20	$35.20	$10.40	$6.40	$10.40	$23.80	$18.00
		Rating	-	2	0	2	2	2	1	1
		Deliverability Risk	-	No Deliverability Risk	3 Deliverability Risks	3 Deliverability Risks	3 Deliverability Risks	4 Deliverability Risks	4 Deliverability Risks	1 Deliverability Risk
		Rating	-	2	1	1	1	0	0	2
		Cost Effectiveness Index	-	-	$95.37	$118.79	$193.55	$178.84	$121.94	$125.21
		Rating	-	-	2	1	0	0	1	1
		Incremental cost per new rider	-	-	$91.09	$108.85	$143.30	$135.52	$110.34	$94.38
		Rating	-	-	2	1	0	0	1	2
Goal 4: Promote Cost Effective Transit Investments		**Total Rating**	**0**	**2**	**1**	**1**	**1**	**1**	**1**	**2**

LRT2 would face another key deliverability risk due to the construction of a tunnel under the CSX railroad and rail yard. This tunnel would require complicated construction methods as well as an agreement with CSX. HRT2 would face a key deliverability risk due to a very complicated, approximately two mile tunnel required under multiple neighborhoods. This tunnel would also require that vents be constructed in the historic neighborhoods above. These vents may face significant environmental constraints if they require the purchase of property from historic resources. Finally, HRT2 is likely to face significant public opposition of the neighborhoods it traverses. These two Build Alternatives were rated a one for deliverability risk.

Although HRT1 would incur the highest capital and right-of-way cost, its high ridership allows it to attain the lowest CEI of $95.37 and thus a rating of two. LRT1, HRT2 and HRT3 all attained a rating of one with CEIs ranging from $118.79 to $125.21. BRT1 and LRT2 had far higher CEIs, more than $50.00 above the previous alternatives, and each was rated zero. The TSM was used in calculating this MOE and was not rated. The No Build had neither costs nor riders and was not rated.

HRT1 and HRT3 both attained a rating of two for incremental cost per new rider with $91.09 and $94.38, respectively. LRT1 and HRT2 had incremental costs approximately $15.00 to $18.00 higher than the top performers, and were rated one for the MOE. BRT1 and LRT2 had incremental costs that were over $30.00 above LRT1 and HRT2, and were rated zero. The TSM was used in calculating this MOE and was not rated. The No Build had neither costs nor riders and was not rated.

Overall Goal 4 Results: Promote Cost Effective Transit Investments

Goal Summary Ratings are the rounded average of the ratings received for each alternative under Goal 4 MOEs. As shown in Table 5-16, HRT3 and the TSM are the only alternatives that received an overall rating of two for Goal 4. At $1.84B, HRT3 has the lowest total cost of all alternatives and almost one half the cost of the most expensive alternative (HRT1). Furthermore, HRT3 is more than $300M less expensive than the next lowest cost alternative (LRT2). The primary reason HRT3 has significantly lower costs is because it would utilize the existing MARTA east-west line to provide a direct transit connection into downtown Atlanta. By utilizing the existing transit investment, HRT3 avoids the construction of an expensive and complicated connection into downtown Atlanta, and its use of existing GDOT right-of-way reduces its overall cost.

5.6 Goal 5: Preserve the Natural and Built Environment

The fifth stakeholder identified goal of the I-20 East Transit Initiative is: **Preserve the Natural and Built Environment**. This goals seeks to minimize project impacts on natural, cultural, and community resources within the corridor. With the I-20 East Corridor largely developed, there are limited natural resources such as wetlands, streams, and undisturbed habitat. However, because the corridor is so developed, there is the potential for significant impacts to community resources such as residences and businesses. The objective identified by stakeholders to address this project goal:

- Objective 5.1: Minimize Impacts to Environmental Resources

For this project objective, specific evaluation criteria and MOEs were utilized to measure how well project alternatives addressed this objective and overall goal. The following is a description of the Goal 5 MOEs and the results of the evaluation of Tier 2 Alternatives against these MOEs. Please refer to the *Evaluation Framework Report* for a more detailed explanation of the project evaluation criteria and MOEs.

5.6.1 Project Objective 5.1: Provide transit service that can be implemented, operated, and maintained with available resources

Evaluation Criterion: Impact to community, cultural, and natural resources

- MOE: Community Impacts (neighborhoods, churches, schools, community centers, etc.)

  This MOE provides a quantitative measure of the number of direct impacts to identifiable community resources each project alternative would have. Community resources include neighborhoods, churches, schools, community centers, and others.

- MOE: Natural Environment Impacts (streams, wetlands, threatened and endangered species, etc.)

  This MOE provides a quantitative measure of the number of direct impacts to natural resources each project alternative would have. For purposes of this evaluation, natural resources include streams, wetlands, and threatened and endangered species and habitat.

- MOE: Cultural Resource Impacts (historic properties, cemeteries, etc.)

  This MOE provides a quantitative measure of the number of direct impacts to cultural resources each project alternative would have. For purposes of this evaluation, cultural resources include historic and archaeological resources that are eligible for inclusion in the National Register of Historic Places (NRHP).

- MOE: Total Residential and Commercial Displacements

  This MOE provides a quantitative measure of the number of residential and commercial displacements that each alternative would have. While all projects would have right-of-way requirements, the physical displacement of a resident or business is seen as a significant impact.

Objective 5.1: Performance Ratings

Table 5-17 presents the performance ratings for the Objective 5.1 MOEs.

Table 5-17: Performance Ratings for Objective 5.1 MOEs

	Ratings		
Measure of Effectiveness	**2**	**1**	**0**
Community Impacts (neighborhoods, churches, schools, community centers, etc.)	None	Potential	Direct
Natural environmental impacts (streams, wetlands, T&E species, etc.)	<2,000+ linear feet of stream impacts	2,000-2,500 linear feet of stream impacts	>2,500 linear feet of stream impacts
	Less than one acre of potential wetland impacts	One to five acres of potential wetland impacts	More than five acres of potential wetland impacts
Cultural resource impacts (historic properties, cemeteries, etc.)	None	Potential	Direct
Total residential and commercial displacements	<20	20-40	40+

5.6.2 Goal 5 Evaluation Results

Table 5-18 presents the evaluation results for Goal 5: Preserve the Natural and Built Environment

Table 5-18: Goal 5 Evaluation Results

Objective	Evaluation Criteria	Measures of Effectiveness	No Build	TSM	HRT1	LRT1	BRT1	LRT2	HRT2	HRT3
Minimize Impacts to Environmental Resources	Impact to community, cultural, and natural resources	Community Impacts (neighborhoods, churches, schools, community centers, etc.)	-	Potential for noise and vibration impacts	Direct impacts to three neighborhoods & potential for noise and vibration impacts	Direct impacts to three neighborhoods & potential for noise and vibration impacts	Direct impacts to three neighborhoods & potential for noise and vibration impacts	Direct impacts to three neighborhoods & potential for noise and vibration impacts	Direct impacts to one neighborhood & potential for noise and vibration impacts	Potential for noise and vibration impacts
		Rating	2	1	0	0	0	0	1	1
		Natural environmental impacts (streams, wetlands, T&E species, etc.)	-	None	2,110 linear feet of potential stream impacts and .077 acres of potential wetland impacts	2,110 linear feet of potential stream impacts and .077 acres of potential wetland impacts	2,110 linear feet of potential stream impacts and .077 acres of potential wetland impacts	2,110 linear feet of potential stream impacts and .077 acres of potential wetland impacts	2,705 linear feet of potential stream impacts and .077 acres of potential wetland impacts	524 linear feet of potential stream impacts and 1.2 acres of potential wetland impacts
		Rating	2	2	1	1	1	1	0	1
		Cultural resource impacts (historic or archaeological resources)	-	Potential indirect impact to multiple historic resources	Direct impact to one historic resource & potential indirect impact to multiple historic resources	Direct impact to one historic resource & potential indirect impact to multiple historic resources	Direct impact to one historic resource & potential indirect impact to multiple historic resources	Direct impact to one historic resource & potential indirect impact to multiple historic resources	Potential indirect impact to multiple historic resources	Potential indirect impact to multiple historic resources
		Rating	2	1	0	0	0	0	1	1
		Total residential and commercial displacements	-	10	47	47	47	41	35	13
		Rating	2	1	0	0	0	0	0	1
Goal 5: Preserve the Natural and Built Environment		**Total Rating**	**0**	**2**	**0**	**0**	**0**	**0**	**1**	**1**

Objective 5.1: Minimize Impacts to Environmental Resources

As shown in Table 5-18, all Build Alternatives would have some impact to community, natural and cultural resources in the corridor. HRT1, LRT1, BRT1, and LRT2 would all incur more impact to neighborhoods and historic resources since the development within the I-285 Perimeter is much closer to the interstate. Furthermore, there is very little GDOT right-of-way along I-20 inside the Perimeter when compared to I-20 outside the Perimeter.

In terms of impacts to the surrounding community, only the No Build alterative was rated a two, as it was the only alternative that could be expected to incur no impacts. HRT1, LRT1, BRT1, and LRT2 performed poorly, with estimated direct impacts to three neighborhoods as well as the potential for noise and vibration impacts resulting from their longer alignments. These alternatives were rated zero. The TSM, HRT2 and HRT3 were determined to have the potential to impact one or no communities and the potential for noise and vibration impacts, and were rated one.

In the environmental analysis, the No Build and TSM were the only alternatives to rate a two for having little to no potential for negative impacts. HRT1, LRT1, BRT1 and LRT2 had 2,110 linear feet of potential stream impacts and .077 acres of potential wetland impacts along a shared portion of their alignments and rated a one. HRT2 was projected to have the same potential for wetland impacts as well as 2,705 linear feet of potential stream impacts and was rated a zero. While HRT3 was projected to have just 524 linear feet of potential stream impacts, it was also projected to have 1.2 acres of potential wetland impacts, and so was rated a one.

The cultural resource analysis found that HRT1, LRT1, BRT1, and LRT2, with their longer alignments, could be expected to have a direct impact to one historic resource as well as the potential for indirect impact to multiple historic resources, for which they were rated zero for the MOE. The TSM, HRT2 and HRT3 were rated one for their potential for indirect impact to multiple historic resources. Again, the No Build rated a two for having no potential for negative impacts.

The main difference between Build Alternatives in the Goal 5 evaluation is the number of expected residential and commercial displacements. As stated above, development along I-20 inside the Perimeter is generally closer to the interstate. Therefore, HRT1, LRT1, BRT1, LRT2, and HRT2 are all expected to incur more than 35 displacements. HRT3 is only expected to incur 13 displacements. For this reason HRT3 received a rating of one, the TSM received a rating of two, and all other alternatives received a rating of zero.

Overall Goal 5 Results: Preserve the Natural and Built Environment

Goal Summary Ratings are the rounded average of the ratings received for each alternative under Goal 5 MOEs. Since HRT3 utilizes existing MARTA rail infrastructure to provide rail service from I-285 to and from downtown, this alternative also incurs the least impacts to community, natural, and cultural resources.

5.7 Goal 6: Achieve a High Level of Community Support

The sixth stakeholder identified goal of the I-20 East Transit Initiative is: **Achieve a High Level of Community Support**. In order to evaluate how well the alternatives would address Goal 6, they were assessed in terms of their ability to provide transit investments that are supported by local stakeholders and the general public. This support was quantified in terms of each alternative's compliance with SAC Guiding Principles, the support each received in an on-line public survey. The objective identified by stakeholders to address this project goal is:

- Objective 6.1: Provide Transit Investments that are Supported by Local Stakeholders and the General Public

For this project objective, specific evaluation criteria and MOEs were utilized to measure how well project alternatives addressed this objective and overall goal. The following is a description of the Goal 6 MOEs and the results of the evaluation of Tier 2 Alternatives against these MOEs. Please refer to the *Evaluation Framework Report* for a more detailed explanation of the project evaluation criteria and MOEs.

5.7.1 Project Objective 6.1: Provide Transit Investments that are Supported by Local Stakeholders and the General Public

Evaluation Criterion: Maintaining Compliance with Stakeholder Guidance

- MOE: Compliance with SAC Guiding Principles

The I-20 East SAC identified six primary functional and operational characteristics that a new transit service in the corridor should have. This MOE evaluates how well each alternative addresses these Guiding Principles for Transit Service in the I-20 East Corridor. These Guiding Principles are:

- Transit should be a rapid service to downtown Atlanta serving commuters with few stops.
- There should be dedicated transitway for length of project. No, or very limited, transit operation on surface streets in mixed traffic.
- A new transit line in the corridor must have direct connection to MARTA heavy rail system.
- There must be a way for riders to transfer to/from the Atlanta BeltLine.
- It is important to limit number of transfers to reduce travel times.
- The most desirable connection to downtown would be at the Five Points/MMPT since it would provide a connection to the north-south and east-west MARTA rail lines without additional transfers.

Each alternative was reviewed for compliance with these principles, receiving two points for full compliance, one point for partial compliance, and zero points when it failed to comply. The degree to which each alternative in each category complies with the SAC Guiding Principles can be found in **Table 5-19**. These six scores were then summed for each alternative to create a SAC Guiding Principle compliance score, which was then translated into a performance rating of zero, one, or two in the Goal 6 evaluation.

Evaluation Criterion: Achieve a high level of public support

As detailed in the *Purpose and Need Report* and *Travel Trends Assessment Report*, those residents living east of I-285 experience significantly more congestion and longer travel times to and from central Atlanta compared to those residents who live west of I-285 (i.e. inside the Perimeter). With different transportation challenges facing the eastern and western portions of the study corridor, it was necessary to separately measure the public's opinion from each area. This way the public's support for, or opposition to, of the project alternatives would reflect the specific travel challenges of residents within each portion of the study area.

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Table 5-19: Alternatives' Compliance with SAC Guiding Principles

SAC Guiding Principles	No Build	TSM	HRT1	LRT1	BRT1	LRT2	HRT2	HRT3
Transit should be a rapid service to downtown serving commuters with few stops.	0	0	2	2	2	1	2	2
Dedicated transitway for entire length of project. None, or very limited, operation on surface streets in mixed traffic	0	0	2	2	2	1	2	1
System must have direct connection to MARTA heavy rail system	0	2	2	2	2	2	2	2
There must be a way for riders to transfer to/from the BeltLine	0	0	2	2	2	2	2	2
Important to limit number of transfers to reduce travel times	0	1	2	1	1	1	2	2
The most desirable connection to downtown would be at the Five Points/ MMPT since it would provide a connection to the north-south and east-west MARTA rail lines without additional transfers	0	2	2	2	2	1	2	2
Total Score	**0**	**5**	**12**	**11**	**11**	**8**	**12**	**11**

- MOE: Average Survey Score (on a scale of 1-5) for Respondents Living East of I-285

The MOE evaluates the support, or opposition to, of each of the Tier 2 Alternatives by corridor residents living east of I-285 (i.e. outside the Perimeter). The residents east of I-285 in the study area experience long travel times and heavy congestion in traveling to Downtown Atlanta. In addition, they currently have access to little, if any, bus service, and no premium transit service options in their area that connect to downtown Atlanta.

- MOE: Average Survey Score (on a scale of 1-5) for Respondents Living West of I-285

The MOE evaluates the support for, or opposition to, of each of the Tier 2 Alternatives by corridor residents living west of I-285 (i.e. inside the Perimeter). The residents west of I-285 in the study area experience congestion on local roads, but their proximity to downtown Atlanta leads to shorter travel times overall. Residents in this area have access to bus service, and in some cases, premium transit service that connects to downtown Atlanta

Objective 6.1: Performance Ratings

Table 5-20 presents the tiered ratings for Goal 6 MOEs. Under the first MOE, Compliance with SAC Guiding Principles, an alternative was rated a two if it scored 11-12 points, it was rated a one if it scored an 8-10, and rated a zero if it scored less than an eight.

In order to measure public support of the alternatives, an online public survey was prepared. The survey was opened in September 2011 and was available until the end of October 2011. The survey was promoted at public meetings, on the project website, and on the project Facebook page. The respondents were given an overview of each of the six Tier 2 Build Alternatives and then asked to rate each alternative on a scale from one to five, in which one is the least appropriate for the corridor and five is the most appropriate. The survey received 653 responses. It is important to note that the voting results do not represent a statistically accurate representation of all I-20 East Corridor residents. Rather, it is just the voting results of those who took the survey.

Table 5-20: Performance Ratings for Objective 5.1 MOEs

	Ratings		
Measure of Effectiveness	**2**	**1**	**0**
Compliance with SAC Guiding Principles	11-12	8-10	<8
Average Survey Score (on a scale of 1-5) for respondents living east of I-285	>3.0	2.0-3.0	<2.0
Average Survey Score (on a scale of 1-5) for respondents living west of I-285	>3.0	2.0-3.0	<2.0

Alternatives that received an average voting score of higher than 3.0 received two points. Those alternatives with average scores between two and three received one point and those which received an average score less than two were given zero points.

5.7.2 Goal 6 Evaluation Results

Table 5-21 presents the evaluation results for Goal 6: Achieve a High Level of Community Support.

Table 5-21: Goal 6 Evaluation Results

Objective	Evaluation Criteria	Measures of Effectiveness	No Build	TSM	HRT1	LRT1	BRT1	LRT2	HRT2	HRT3
Provide Transit Investments that are Supported by Local Stakeholders and the General Public	Maintain compliance with stakeholder guidance	Compliance with SAC Guiding Principles	0	5	12	11	11	8	12	11
		Rating	0	0	2	2	2	1	2	2
	Achieve a high level of public support	Average Survey Score (on a scale of 1-5) for respondents living east of I-285	-	-	3.7	3.5	2.1	3.1	2.6	3.6
		Rating	-	-	2	2	1	2	1	2
		Average Survey Score (on a scale of 1-5) of respondents living west of I-285	-	-	3.4	3.8	2.2	2.5	3.0	2.5
		Rating	-	-	2	2	1	1	2	1
Goal 6: Achieve a High Level of Community Support		**Total Rating**	**0**	**0**	**2**	**2**	**1**	**1**	**2**	**2**

Objective 6.1: Provide Transit Investments that are Supported by Local Stakeholders and the General Public

As presented in Table 5-21, all alternatives, with the exception of the TSM and LRT2 alternatives, achieved a rating of two with respect to their compliance with the SAC Guiding Principles regarding new transit service in the I-20 East Corridor. LRT2, as it earned only eight of 12 possible points in the assessment, was rated a one, while the TSM was rated a zero for earning less than one-half of the points available.

In the public voting on Tier 2 Alternatives from residents living east of I-285, HRT1 received the highest average score, 3.7, followed closely by HRT3 at 3.6. LRT1 and LRT2 received average scores of 3.5 and 3.1, respectively. These four Build Alternatives were rated two for the MOE. BRT1, with an average score of 2.1, and HRT2 with 2.6, were both rated one. Neither the No Build nor the TSM were presented for public rating in the survey.

In the public voting on Tier 2 Alternatives from residents living west of I-285, LRT1 received the highest average score, 3.8, followed closely by HRT1, at 3.4, and HRT, at 3.0. LRT2 and HRT3 both had average scores of 2.5, while BRT1 again received the lowest average score. These alternatives were rated one for the MOE.

Overall Goal 6 Results: Achieve a High Level of Community Support

Goal Summary Ratings are the rounded average of the ratings received for each alternative under Goal 6 MOEs. As shown in Table 5-21, alternative HRT1, LRT1, HRT2, and HRT3 all

achieved a rating of two for Goal 6. BRT1 and LRT2 proved least popular with the public and earned Summary Ratings of one.

5.8 Cumulative Tier 2 Alternatives Evaluation Results

The Tier 2 Screening was a comprehensive evaluation of alternatives that reflected both quantitative and qualitative analyses as well as input from corridor stakeholders and the general public. The purpose of the Tier 2 Screening was to identify the LPA utilizing a more robust list of evaluation criteria and MOEs. These evaluation criteria and MOEs were identified and utilized to measure the identified project goals and objectives. The analysis presented in the previous sections quantifies how well each of the Tier 2 Alternatives meet these goals and objectives. As described previously, the Tier 2 Alternatives were given a rating for each MOE, and then a rounded average of MOE ratings for each project goal was used to obtain a project goal score. In this way, each alternative was evaluated for how well it addressed each project goal. Project goal ratings were then summed for each alignment to produce overall ratings and determine a recommended LPA.

Table 5-22 presents the cumulative results of the Tier 2 Screening. As shown in this table, HRT3 attained the highest total evaluation rating for all alternatives with 11 points. HRT1, LRT1, HRT2, and the TSM/Baseline Alternatives all ranked second with eight points. BRT1 and LRT2 received ratings of seven and six respectively.

Table 5-22: Overall Tier 2 Evaluation Results

Project Goal	No Build	TSM	HRT1	LRT1	BRT1	LRT2	HRT2	HRT3
Goal 1: Increase Mobility and Accessibility	0	1	2	2	2	1	1	2
Goal 2: Provide Improved Transit Service within the Corridor	0	1	1	1	1	1	1	2
Goal 3: Support Land Use and Development Goals	0	2	2	2	2	2	2	2
Goal 4: Promote Cost Effective Transit Investments	0	2	1	1	1	1	1	2
Goal 5: Preserve the Natural and Built Environment	0	2	0	0	0	0	1	1
Goal 6: Achieve a High Level of Community Support	0	0	2	2	1	1	2	2
Tier 2 Alternatives: Cumulative Rating	0	8	8	8	7	6	8	11

5.9 Tier 2 Screening Summary

The Tier 2 Screening considered a wide variety of MOEs supporting six Project Goals in order to determine which of the Tier 2 Alternatives would best fulfill the Purpose and Need of the I-20 East Transit Initiative. In summary, the performance of the Tier 2 Build Alternatives across a series of key metrics is presented in **Table 5-23.**

Table 5-23: Summary Comparison of Tier 2 Alternatives

	HRT1	LRT1	BRT1	HRT2	LRT2	HRT3
Projected Travel Time from Mall at Stonecrest to Five Points	36 minutes	36 minutes	37 minutes	39 minutes	54 minutes	40 minutes
Projected Travel Time from Mall at Stonecrest to Arts Center	42 minutes	44 minutes	46 minutes	47 minutes	54 minutes	48 minutes
Projected Daily Boardings	41,900	33,300	27,700	32,200	18,400	28,700 - HRT
Projected New Riders	12,300	8,200	5,200	8,200	5,300	6,400 - HRT
Projected Capital Costs	$3.05B	$2.47B	$1.88B	$2.61B	$2.00B	$1.73B
Projected Right-of-Way Costs	$233.7M	$233.7M	$233.7M	$112.7M	$116.7M	$107.4M
Projected Annual O & M Costs	$35.2M	$10.4M	$6.4M	$23.8M	$10.4M	$18.0M
Alignment Length	19.2 miles	19.6 miles	19.6 miles	18.2 miles	20.3 miles	12.0 miles - HRT 12.8 miles - BRT
Capital Cost per Mile	$168M	$138M	$108M	$147M	$104M	$148M per rail mile
Projected Residential and Commercial Displacements	47	47	47	41	35	13

The relative performance of the Tier 2 Build Alternatives in these metrics translates into a series of advantages and disadvantages among the alternatives in the case of their implementation. These advantages and disadvantages are presented in **Table 5-24**.

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Table 5-24: Advantages and Disadvantages of Tier 2 Alternatives

Alternative	Advantages	Disadvantages
HRT1	• Attracts the most riders • Single seat ride to all existing stations along the north-south line in Downtown and Midtown Atlanta • Serves Turner Field • Would utilize existing heavy rail vehicles & maintenance facilities	• Most expensive • Within City of Atlanta, alignment is in close proximity to existing MARTA rail service • High number of displacements • Longer implementation timeline due to high cost & construction limitations along I-20 inside the Perimeter • Not likely to serve areas outside I-285 in first implementation phase
LRT1	• Attracts the second most riders • Serves Turner Field • Less expensive to implement than HRT1	• Within City of Atlanta, alignment is in close proximity to existing MARTA rail service • High number of displacements • Longer implementation timeline due to high cost & construction limitations along I-20 inside the Perimeter • Not likely to serve areas outside I-285 in first phase of implementation • Would require 25-35 acres along corridor for LRT maintenance and storage facility
BRT1	• Serves Turner Field • Second least expensive alternative • Could utilize existing MARTA bus maintenance facilities	• Within City of Atlanta, alignment is in close proximity to existing MARTA rail service • High number of displacements • Longer implementation timeline due to construction limitations along I-20 inside the Perimeter • Attracts the second fewest riders
HRT2	• Utilizes existing infrastructure to provide rapid transit service to central Atlanta • Avoids redundant service within the City of Atlanta • Would utilize existing heavy rail vehicles & maintenance facilities	• Strong community opposition • High number of displacements • Longer implementation timeline due to high cost and complicated tunnel alignment • Not likely to serve areas outside I-285 in first phase of implementation • Would not serve Turner Field
LRT2	• Uses BeltlLine alignment to provide connection to Midtown Atlanta • Less expensive to implement than LRT1	• Attracts the fewest riders • Longest travel times due to slow operation along BeltLine segment • High number of displacements • Would require 25-35 acres along corridor for LRT maintenance and storage facility • Longer implementation timeline due to tunnel alignment under CSX rail yard & construction limitations along I-20 inside the Perimeter • Unlikely to serve areas outside I-285 in first phase of implementation • Would not serve Turner Field
HRT3	• Least expensive • Fewest displacements • Would serve areas outside I-285 in first implementation phase • Would utilize existing heavy rail vehicles & maintenance facilities • Connects residents in South DeKalb County to Decatur (DeKalb Co. Seat), downtown Atlanta, and the proposed Clifton Corridor transit line to Emory/CDC • Utilizes existing infrastructure to provide rapid transit service into central Atlanta • Avoids redundant service within the City of Atlanta	• Would not provide rail service to areas along I-20 inside the Perimeter • Attracts fewer new riders and daily boardings than most other alternatives.