

S. SUMMARY

The Metropolitan Transit Authority (METRO) of Harris County, Texas, in cooperation with the Federal Transit Administration (FTA), has initiated the Environmental Impact Statement (EIS) phase of project development for implementation of bus rapid transit (BRT) services and a proposed convertible fixed-guideway transit system project in the Southeast Corridor in Houston.¹ The fixed guideway would be constructed for future conversion to light rail transit (LRT) when warranted by ridership.

The BRT services would operate along a line extending from downtown Houston to a terminus on Griggs Road at Beekman Road east of Martin Luther King Boulevard, connecting downtown Houston with the universities area including Texas Southern University (TSU) and the University of Houston (UH), and the Palm Center. The services would operate in diamond lanes in downtown from Louisiana to Polk Street and in exclusive lanes along a fixed guideway alignment on Scott Street, Wheeler Street, Martin Luther King Boulevard, and Griggs Road to the terminus at Beekman Road. A total of 16 stations would be constructed for passenger access to the system.

The EIS phase of project development includes preparation of a Draft Environmental Impact Statement (DEIS) and a Final Environmental Impact Statement (FEIS) in conjunction with preliminary engineering (PE). This executive summary highlights the contents and findings of the FEIS.

S.1 Background

The Southeast Corridor is identified in both the Houston-Galveston Area Council (H-GAC) *2025 Regional Transportation Plan (RTP)* (H-GAC, February 2005) and 2025 METRO Solutions (METRO, July 2003) as a priority for a transportation investment.² In response to these regional plans, METRO prepared an *Alternatives Analysis Report* (AA) to identify transportation issues and to evaluate a range of mode and alignment alternatives to address transportation needs in the Southeast Corridor.³ The conclusions of the AA recommended both a new fixed-guideway transit line and improved bus service within the corridor.

Based on the results of the AA, and following a successful voter referendum in 2003 approving the METRO Solutions plan, the METRO Board of Directors adopted a Locally Preferred Investment Strategy (LPIS) for the Southeast Corridor. The LPIS provides for the implementation of fixed-guideway transit facilities and services in the Southeast Corridor. The Board also adopted a Minimum Operable Segment (MOS). The MOS is approximately 6.8 miles in length and extends from downtown Houston

¹ Acronyms and abbreviations are defined at their first use in each chapter. A complete list of acronyms and abbreviations used in this FEIS is contained in Appendix A.

² This FEIS incorporates by reference all technical information, studies, and other public documents produced for the Southeast-Universities-Hobby Corridor Planning Study Alternatives (AA) and the *METRO Solutions Transit System Plan* that support the DEIS. These documents are considered part of the environmental compliance record and can be requested for review at the METRO offices.

³ Parsons Brinckerhoff, Southeast-Universities-Hobby Planning Study, *Alternatives Analysis Report*, February 2004.

southeast along Scott Street and Griggs Road to the vicinity of Interstate Highway (IH) -610. The MOS is located geographically within the limits of the LPIS, which extends southeast to Hobby Airport. It is the first phase of the LPIS to be implemented.

A DEIS was prepared to assess the potential impacts of three build alternatives and a No Build Alternative in the Southeast Corridor. The DEIS was circulated for public review and comment and a public hearing was held on August 19, 2006. The public hearing took place at the Third Ward Multi-Service Center at 3611 Ennis Street, Houston, Texas 77004. The comments received during the circulation period for the DEIS and responses to the comments are contained in Chapter 6.

Based on input received during the public comment period and analysis of potential community and environmental impacts, the METRO Board adopted the BRT Convertible Alternative with the Wheeler-Martin Luther King (MLK) alignment option as the Locally Preferred Alternative (LPA) on September 21, 2006. The LPA was selected by the METRO Board from among three build alternatives and two alignment options evaluated in the DEIS (see Section S.3).

S.2 Purpose and Need for the Project

Chapter 1, Purpose and Need, summarizes the existing transportation problems and needs in the study area and identifies the goals and objectives for evaluating alternatives developed to address the study area's transportation problems and needs. Based on the transportation problems and needs identified within the study area, the purpose of the project is to implement transit improvements that:

- Provide the necessary capacity to accommodate existing and future travel demands;
- Improve services to major activity centers, including downtown Houston, the universities area including TSU and the UH, the Palm Center, and the Texas Medical Center (TMC);
- Improve the mobility of corridor residents and workers;
- Support neighborhood revitalization and economic development; and
- Reduce the demand for automobile use and parking.

The proposed project also will support METRO's goals for protecting and enhancing community and environmental resources and providing for a balanced transportation system through implementation of the METRO Solutions plan.

S.3 Alternatives Considered

Chapter 2, Alternatives Considered, describes the process used to develop and evaluate reasonable alternatives and defines the No Build Alternative, the LPA, and build alternatives evaluated in this FEIS.

S.3.1 No Build Alternative

The No Build Alternative serves as a basis for the evaluation of transportation and environmental impacts of the LPA and build alternatives. The No Build Alternative included the highway and roadway improvements from the H-GAC 2025 RTP and METRO transit services and facilities programmed through 2007.⁴ Transit services included in the No Build Alternative consist of existing METRO transit routes and schedules and passenger facilities plus services and capital improvements programmed through 2007. No improvements beyond 2007 are assumed.

S.3.2 Development and Screening of Alternatives in the Alternatives Analysis

The National Environmental Policy Act (NEPA) requires an analysis of all reasonable alternatives. The Southeast-Universities-Hobby Corridor Planning Study AA was the process used to conduct scoping for the project and to select the build alternatives from among several alternatives considered. This section summarizes the process that led to the selection of the build alternatives

The AA identified and evaluated alternatives through a two-step process. The first step consisted of the identification and screening of a long list of potential alignment segments. The alignment segments consisted of right-of-way that could accommodate advanced high-capacity transit (AHCT), which is defined as high-capacity, high-speed two-direction all-day transit). A Community Involvement Committee (CIC) participated in the screening of alignment segments by reviewing and commenting on the analysis results. The results of the screening were then reviewed in meetings with project stakeholders. Based on input from the stakeholders, a list of alignment segments was selected to carry forward for further evaluation. In addition to alignment segments, a long list of transit vehicle technologies capable of providing AHCT was also screened. Based on technical evaluations and input from the CIC and general public, the technologies of LRT and BRT were selected for detailed evaluation with the corridor alignment alternatives.

The second step involved the development of full-length corridor alternatives from the list of remaining alignment segments. The corridor alternatives were then subjected to more detailed evaluation of the benefits and the environmental, transportation, and economic impacts against the project's goals and objectives as set forth in the purpose and need for the project. Capital and operating and maintenance (O&M) cost estimates were also developed for use in the evaluation.

The alternatives and results of the two-step evaluation process were presented to the stakeholders and public in a series of meetings. Following the meetings, comments from the general public and cooperating agencies were assessed and a recommended LPIS for the Southeast-Universities-Hobby Corridor was selected and subsequently approved for inclusion in the METRO Solutions plan. The plan was subjected to a referendum and approved by voters in November 2003. Following an extensive public involvement process, the METRO Board adopted the LPIS and MOS in November 2003.

⁴ H-GAC, 2025 Regional Transportation Plan, 2005.

S.3.3 Refinements to Alternatives During DEIS Process

The METRO Board adopted MOS for the Southeast Corridor provided for LRT operating between downtown Houston and Griggs Road near IH-610. The build alternatives defined in the DEIS generally are the same as the MOS adopted by the METRO Board following voter approval of the METRO Solutions plan defined in 2003. However, as more detailed engineering and planning information was compiled and analyzed for the DEIS, and through continuing public involvement and coordination with the FTA, several refinements were made to the build alternative alignments and technologies under consideration during 2004 and 2005.

First, the MOS alignment was refined to include a terminus on Griggs Road at Beekman Road east of Martin Luther King Boulevard instead of a terminus near Griggs Road/Long Drive and IH-610. This segment was considered to represent the shortest length of the LPIS that is cost effective and would attract enough ridership to have a substantial effect on the transportation problems in the corridor.

Second, in February 2005 METRO requested approval from the FTA to enter PE for LRT in the Southeast Corridor. In April 2005, FTA approved initiation of PE in the corridor. Subsequent to this approval, METRO in an attempt to improve the cost effectiveness of the transit project for federal funding, introduced the technology of convertible BRT as an alternative to LRT for study in the Southeast Corridor. This new alternative provides for the initial implementation of a BRT system that could be converted to LRT in the future. To ensure that a reasonable range of alternatives are evaluated in the DEIS, BRT as a transit technology without conversion to LRT in the future was also added to the build alternatives under evaluation.

Finally, based on concerns identified by the public regarding impacts to abutting residences and businesses along Scott Street, community leaders requested that an alignment option avoiding Scott Street south of Wheeler Street be studied. Under the MOS, the fixed-guideway alignment would follow Scott Street south to the Southeast Transit Center and then turn east along Old Spanish Trail and Griggs Road to a terminus at Beekman Road. The proposed option to the base alignment would turn east from Scott Street to Wheeler Street and follow Wheeler Street past the UH to Martin Luther King Boulevard and southeast to connect with the base alignment at Griggs Road, where it would turn east to the terminus at Beekman Road.

S.3.4 Build Alternatives Evaluated in the DEIS

The build alternatives evaluated in the DEIS consisted of an LRT Alternative, a BRT Convertible Alternative, and a BRT Alternative. All of the build alternatives provided for the implementation of new fixed-guideway transit service operating along a line extending from downtown Houston to a terminus on Griggs Road at Beekman Road east of Martin Luther King Boulevard. The primary difference among the alternatives was the technology and guideway.

- LRT Alternative – The LRT Alternative provided for new fixed-guideway transit service operated by low-floor articulated vehicles electrically powered by an overhead wire and operating along a new bi-directional, fixed guideway between Bagby in downtown Houston and Griggs Road at Beekman Road. The new

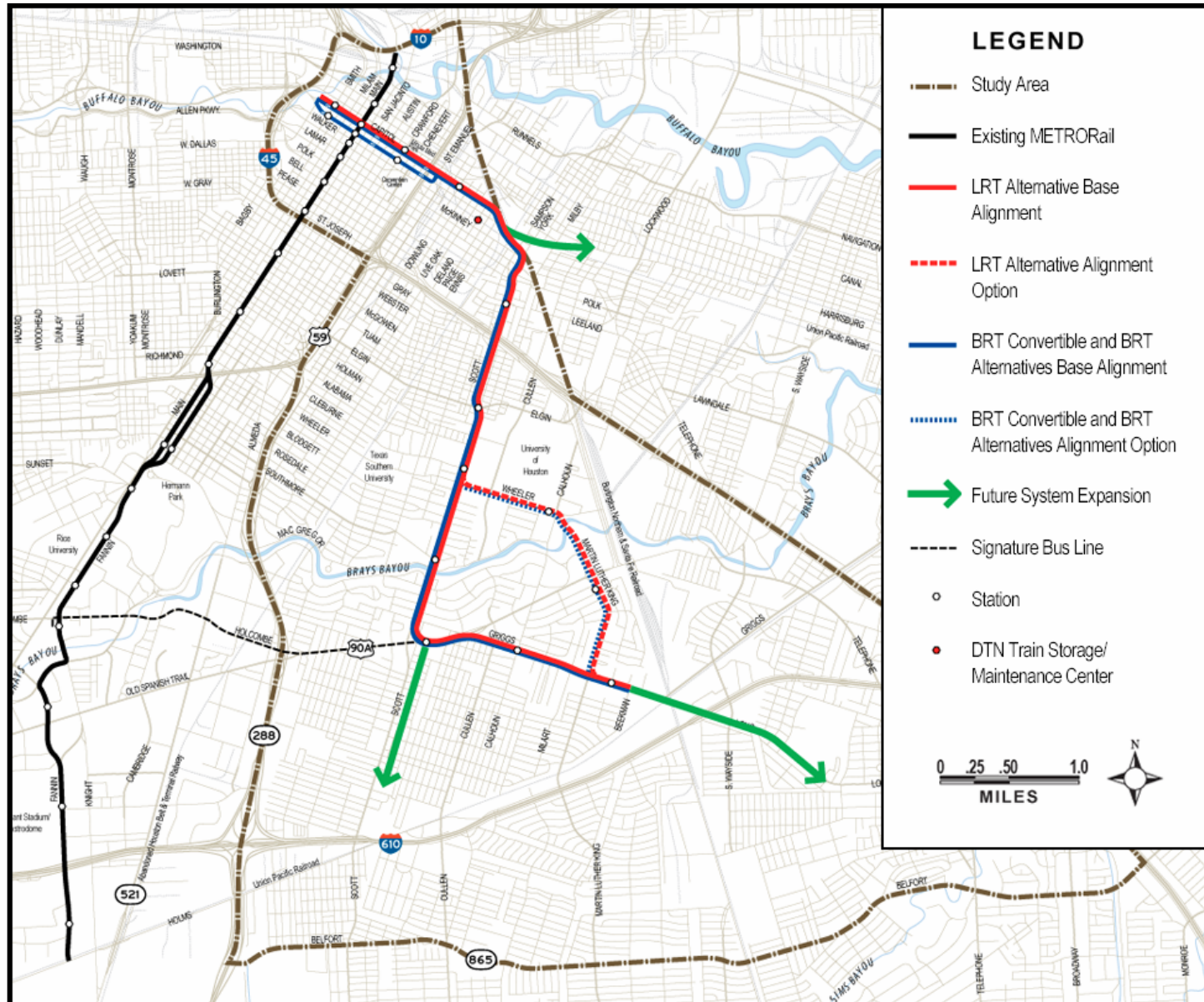
fixed-guideway system included up to 11 stations, a park-and-ride lot, bus transit transfer locations, a vehicle maintenance and storage facility, and traction power substations.

- **BRT Convertible Alternative** – The BRT Convertible Alternative provided for new fixed-guideway transit service that would be initially operated by low-floor diesel-powered articulated rubber tired vehicles traveling in reserved lanes in downtown Houston between Bagby and St. Emanuel and along a new bi-directional, fixed guideway outside of downtown between St. Emanuel and Griggs Road at Beekman Road. The fixed-guideway system outside downtown would be constructed so that it could be converted to LRT in the future with minimal disruption of service. The physical features of the LRT conversion, such as embedded trackwork and electrical ductwork for the overhead contact wire or contact system to be installed during the future conversion. The BRT system would be converted to LRT in the future when justified by ridership. The BRT Convertible Alternative included six BRT stops in downtown Houston, up to eight fixed-guideway stations outside downtown, a park-and-ride lot, and bus transit transfer locations. No new vehicle maintenance and storage facility would be required for the BRT vehicles.
- **BRT Alternative** – The BRT Alternative would be the same as described for the BRT Convertible Alternative except that the BRT fixed guideway would not be constructed so that it could be converted to LRT in the future. It did not include such convertible features as embedded trackwork, utility relocations from beneath the BRT guideway, and ductbanks to accommodate the LRT signal and communications system. The land acquisition for traction power substations for future conversion to LRT was also not included.

Figure S-1 presents the proposed alignments and station locations under the DEIS build alternatives. The build alternatives extended from Bagby in downtown Houston southeast to an end-of-the line terminus on Griggs Road east of Martin Luther King Boulevard. There were separate alignments for the LRT and BRT (i.e., BRT Convertible and BRT) alternatives between Bagby and St. Emanuel in downtown. The LRT alignment would be located on Capitol while the BRT alignment under both BRT alternatives would be located on Capitol and Rusk.

East of St. Emanuel, there was a common alignment for the LRT and BRT alternatives extending east along Capitol and then south along Scott Street to Wheeler Street. From Wheeler Street to the end of the line, the build alternatives consisted of two alignment options: (1) the base alignment on Scott Street and Griggs Road, and (2) the Wheeler-MLK alignment option on Wheeler Street, Martin Luther King Boulevard, and Griggs Road. Both alignment options would terminate on Griggs Road at Beekman Road east of Martin Luther King Boulevard.

The build alternatives with the base alignment along Scott Street and Griggs Road would have 11 stations, while the build alternatives with the Wheeler-MLK alignment option would have ten stations.



Source: Parsons Brinckerhoff, 2006.

S.3.5 Locally Preferred Alternative Evaluated in the FEIS

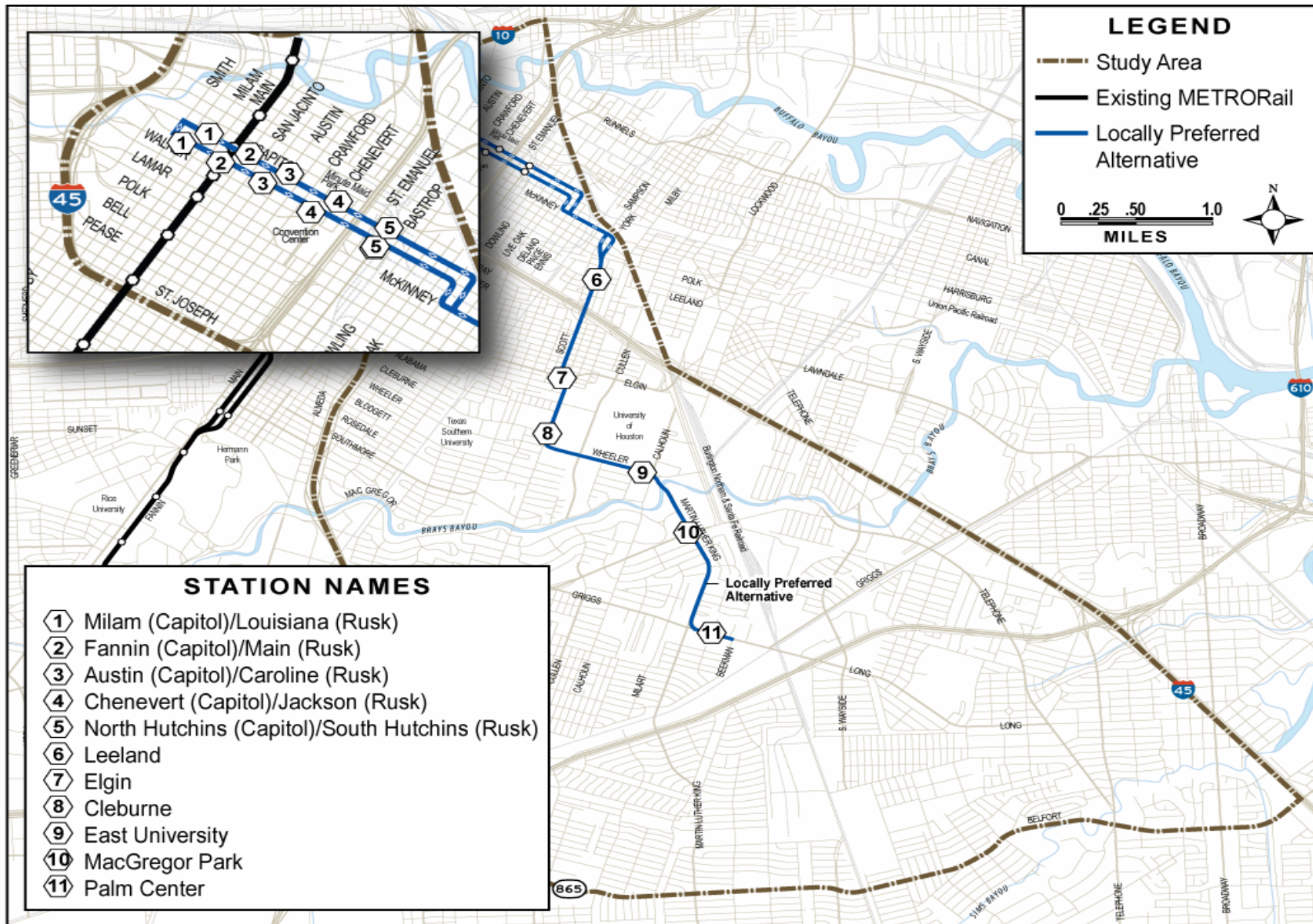
The BRT Convertible Alternative with the Wheeler-MLK alignment was selected by the METRO Board of Directors as the LPA. Figure S-2 shows the alignment and station locations under the LPA or Build Alternative.

The LPA provides for new BRT service operating along a line extending from downtown Houston to a terminus on Griggs Road at Beekman Road east of Martin Luther King Boulevard. The service would operate in diamond lanes in downtown from Louisiana to Polk Street and in exclusive lanes along a fixed guideway alignment on Scott Street, Wheeler Street, Martin Luther King Boulevard, and Griggs Road to the terminus at Beekman Road. The fixed guideway would be constructed for future conversion to light rail transit when warranted by ridership. FTA will not participate in any features of the LPA that are needed solely for the future conversion from BRT to LRT. When METRO decides that it is time to convert the BRT to LRT, if FTA is asked to participate financially in that conversion, METRO will prepare the appropriate level of documentation as determined by FTA, to address impacts and identify any needed mitigation.

The BRT Convertible Alternative was selected as the LPA following the public comment period as a result of community input and analysis of potential benefits and impacts. The LPA would serve the growing travel demands of UH as the university expands better than the other build alternatives evaluated in the DEIS due to the locations of stations on and near the campus. In addition, the number of residential and commercial relocations is less under the LPA than the other build alternatives, minimizing potential adverse impacts to the community. In part because fewer relocations would be necessary, capital, operating, and maintenance costs would be lower under the LPA compared to the DEIS build alternatives.

The Build Alternative is generally the same as the BRT Convertible Alternative with the Wheeler-MLK alignment option. However, several refinements to the definition of the Build Alternative were developed subsequent to the release of the DEIS as a result of preliminary engineering, public and agency comment on the DEIS, continuing public and agency involvement, and through efforts to avoid or minimize environmental and community impacts. The refinements to the Build Alternative are described below:

- The western terminus of the diamond lanes for the BRT services operating on Capitol/Rusk in downtown Houston was changed from Bagby to Louisiana, or two blocks to the east. This refinement was made because of geometric issues affecting the bus turning movements on Bagby.
- The portion of the BRT alignment from St. Emanuel to Scott Street has been changed from fixed-guideway to diamond lanes. This refinement was made in response to comments from the Houston Belt & Terminal (HB&T) Railway Company in opposition to acquisition of the railroad right-of-way between Paige



Source: Parsons Brinckerhoff, 2006.

and Walker Streets⁵. The diamond lanes for the BRT vehicles will follow Capitol and Rusk east to Delano and Paige Streets. From Delano and Paige, BRT vehicles will operate on McKinney east to Sampson and York Streets. Sampson will be used for southbound BRT operations and York will be used for northbound BRT operations. The BRT vehicles will operate on Sampson and York to Polk Street, where the fixed-guideway alignment will begin. The only station between St. Emanuel and Polk Streets will be on Capitol and Rusk at Hutchins Street. In the DEIS, the station was on Capitol at Dowling Street.

- BRT stations for the downtown westbound BRT alignment on Capitol are proposed at Milam, Fannin, Austin, and Chenevert. The BRT stations for the downtown eastbound alignment on Rusk are proposed at Louisiana, Main, Caroline, and Jackson. In the DEIS, stations were proposed at Louisiana, Main, Austin, and Crawford on both Capitol and Rusk.
- On Wheeler Street from east of Cullen Street to Calhoun Road, the fixed-guideway has been changed from a location in the median to the south side of the street. This refinement was made in response to comments from UH. Shifting the alignment to the south side of the street will avoid relocation of the utilities on the north side of the street; however, additional displacements will be required on Wheeler Street.
- The station on Wheeler Street at Calhoun Road has been renamed to East University Station and changed from a center platform to a side platform station for ease of passenger access.
- The existing Southeast Transit Center on Old Spanish Trail will not be relocated to the Palm Center Station as described in the DEIS. Local buses will instead connect to the BRT services at the Elgin and Palm Center Stations. This refinement reduces impacts on bus operations and passengers transferring between routes and saves substantial bus O&M costs.

S.3.5.1 Alignment and Station Locations

Plan drawings of the alignment and station locations on aerial base maps are contained in Volume 2 of this FEIS. These preliminary engineering drawings were developed for the purposes of preparing cost estimates and identifying environmental impacts. Following is a description of the LPA alignment and station locations.

Downtown LPA Alignment between Louisiana and Polk

The downtown segment of the LPA alignment would be located primarily on Capitol and Rusk between Louisiana on the west and Delano on the east, but would use local streets to connect with the fixed-guideway alignment on Scott Street at Polk Street. In downtown, BRT vehicles would operate mostly in diamond lanes reserved for buses, high occupancy vehicles (HOVs), and vehicles turning into cross streets and driveways.

⁵ Letter dated September 6, 2006 from Crady, Jewett & McCulley L.L.P on behalf of Houston Belt & Terminal Railway Company.

Ten stations are proposed in this segment. Five would be on Capitol (from east to west) at north Hutchins, Chenevert, Austin, Fannin, and Milam and five would be on Rusk (from west to east) at Louisiana, Main, Caroline, Jackson, and south Hutchins.

LPA Alignment between Polk and Beekman Road

From Polk Street to the end of the line on Griggs Road at Beekman Road, the LPA alignment would consist of a bi-directional fixed guideway located within or along the side of a public roadway. The fixed guideway would comprise one exclusive transit-only lane in each direction and would be configured in accordance with LRT grade and curvature requirements for future conversion to LRT.

On Scott Street between Polk and Wheeler Streets, the guideway would be located in the median of the street. On Wheeler Street between Scott Street and Calhoun Road, the guideway would be located in an exclusive right-of-way along the north side of the street from east of Scott Street to a point between Cullen Boulevard and Rockwood Street. There it would transition across Wheeler Street into an exclusive right-of-way along the south side of the street and would continue east to Calhoun Road, where it would turn south at-grade into the median of Martin Luther King Boulevard, and follow an alignment south to Griggs Road and east, to the end of the line at Beekman Road.

Six stations are proposed for this segment of the LPA alignment. The stations would be located on Scott Street at Leeland, Elgin, and Cleburne Streets; on Wheeler Street west of Calhoun Road (i.e., East University); on Martin Luther King Boulevard at Old Spanish Trail (i.e., MacGregor Park); and on Griggs Road at Beekman Road (i.e., Palm Center).

S.3.5.2 Support Facilities

The BRT vehicles used in the operation of the service under the LPA would be stored and maintained at the Polk and Kashmere METRO Bus Operating Facilities. No new maintenance and storage facilities would be required for the LPA.

Construction of the LPA would include signaling and communication systems. The fixed-guideway portion of the LPA from Polk to Beekman Road will also include all physical features for future conversion to LRT as described under the BRT Convertible Alternative, such as imbedded tracks.

S.3.5.3 Vehicles

The vehicle used in the operation of the BRT services will, at a minimum, be a 60-foot, low-floor vehicle with a seating for 35 passengers, and articulated with a predominantly level floor throughout the vehicle. It will be powered by a diesel electric hybrid system. The vehicle will have a precision docking system that meets Americans with Disabilities Act (ADA) requirements for level boarding at station platforms. The vehicle exterior and interior will be an aesthetically appealing design giving a railcar appearance and be visually distinguished from other METRO bus services. The operator's position will be located forward of the front entrance door and over the front

axle. The vehicle will have a minimum of three passenger doorways each side utilized for ingress and egress.

S.3.5.4 Operating Plan

Service would be provided from approximately 4:30 a.m. to 1:00 a.m., Monday through Saturday. Sunday and holiday service would begin at approximately 5:30 a.m. and end at approximately 1:00 a.m.

Weekday BRT service in 2030 would operate approximately every 6 minutes during peak periods (i.e., 7:00 to 9:30 a.m. and 3:00 to 7:00 p.m. and every 10 minutes during the off-peak midday and early evening periods (i.e., 9:30 a.m. to 3:00 p.m. and 7:00 to 9:00 p.m.). Service frequencies would be at 15 minutes during the early morning and late night periods (i.e., 5:00 to 7:00 a.m. and 9:00 p.m. to 1:00 a.m.).

S.3.6 Cost Estimates

The capital cost estimates (in constant 2006 dollars) prepared for the LPA and build alternatives are presented in Table S-1. These capital costs are considered preliminary and are based on standardized unit costs and categories that are customary for projects at this stage of development. METRO has established project budgets for each element of the METRO Solutions Phase 2 plan and will continue to refine the design and costs of each element in final design with the goal of substantially reducing the capital cost as more detailed design is completed.

Based on the O&M cost methodology and proposed BRT operating plan, the annual O&M cost of the LPA is estimated to be approximately \$639,000 in 2006. As the Southeast Corridor project proceeds into final design, the supporting transit operating plan will be refined. These refinements will consider other proposed and planned transportation projects in the vicinity of the corridor and their proposed operations. As a result, the final operating assumptions for the Southeast Corridor project may affect how many vehicles would operate in the corridor.

S.4 Affected Environment

Chapter 3, Affected Environment, describes the existing conditions in the Southeast Corridor and project study area that could be affected by the alternatives. It also establishes the focus and baseline for Chapter 4, Transportation Impacts, and Chapter 5, Environmental Consequences. The study area for the description of existing conditions is also identified in Figure S-1 previously shown.

The conditions described in this chapter include those related to: land use; population and employment; transportation services and facilities; air quality; noise and vibration; visual quality and aesthetics; ecosystems; water resources; historic and archaeological resources; parklands; geology and soils; hazardous materials or contamination; and safety and security.

Table S-1. Summary of Capital Cost Estimates (Millions 2006 Dollars)

Item	Build Alternatives with Scott St./Griggs Rd. Alignment Option			Build Alternatives with Wheeler-MLK Alignment Option			LPA with BRT Convertible and Wheeler-MLK Option
	LRT	BRT Convertible	BRT	LRT	BRT Convertible	BRT	
Guideway and Track Elements	\$50.3	\$53.5	\$25.5	\$45.1	\$46.0	\$22.0	\$22.0
Stations, Stops, Terminals, Intermodal	\$17.6	\$17.7	\$17.7	\$18.8	\$19.4	\$19.4	\$19.4
Support Facilities: Yards, Shops, Administrative Buildings	\$4.4	\$0.0	\$0.0	\$4.4	\$0.0	\$0.0	\$0.0
Sitework and Special Conditions	\$68.6	\$37.8	\$37.4	\$61.8	\$28.0	\$27.7	\$27.7
Communication Systems	\$46.6	\$24.0	\$24.0	\$41.6	\$21.7	\$21.7	\$21.7
ROW, Land, Existing Improvements	\$27.1	\$19.3	\$19.3	\$20.0	\$12.04	\$12.4	\$12.4
Vehicles	\$27.4	\$8.3	\$8.3	\$27.4	\$8.3	\$8.3	\$8.3
Professional Services	\$86.3	\$42.8	\$33.9	\$79.3	\$37.2	\$29.4	\$29.4
Unallocated Contingency	\$312.8	\$20.3	\$16.6	\$30.6	\$18.0	\$14.38	\$14.38
Finance Charges	<u>\$0.0</u>	<u>\$0.0</u>	<u>\$0.0</u>	<u>\$0.0</u>	<u>\$0.0</u>	<u>\$0.0</u>	<u>\$0.0</u>
Total Cost (2006) Dollars	\$361.1	\$223.7	\$182.7	\$329.0	\$191.0	\$155.7	\$155.7
Total Length in Miles	6.84	6.84	6.84	6.03	6.03	6.03	6.03
Cost per Mile (2006) Dollars	\$52.8	\$32.7	\$26.7	\$54.6	\$31.7	\$25.8	\$25.8

Source: METRO, 2006.

S.5 Transportation Impacts

Chapter 4, Transportation Impacts, describes the potential impacts that the No Build Alternative and Build Alternative would have on public transportation, highways, parking, railroads, and bikeways and major pedestrianways.

In general, the roadway impacts have been assessed for a horizon year of 2025. This is consistent with the data available from the H-GAC 2025 *RTP*. The transit impacts have been assessed using a horizon year of 2030 in order to be consistent with the requirements of the FTA.

S.5.1 Public Transportation Impacts

The public transportation impacts of the LPA and build alternatives in comparison to the No Build Alternative are measured by their effects on route miles, revenue vehicles in service, and vehicle miles and hours of service operated within the study area. These measures form the basis for the transit level of service (LOS) analysis of the build alternatives. The result of the improvement in LOS under the build alternatives should be reflected by an increase in the number of transit patrons or riders.

S.5.1.1 Transit Service

Overall regional route miles operated during peak and off-peak periods would increase slightly under the Build Alternative. In addition, the number of revenue transit vehicles in service would increase during both the peak and off peak. An estimated 23 additional vehicles would be in service during the peak and 26 vehicles during the off peak. These vehicles include buses and fixed-guideway vehicles.

Vehicle miles and hours of service under the Build Alternative would increase overall, although there would be a slight reduction in local bus service vehicle miles and hours of service as the result of the elimination of duplicate service. Additionally, under the Build Alternative the average speed of transit service within the study area would increase slightly.

S.5.1.2 Transit Ridership

The results of the forecast of transit ridership indicate that the transit improvements proposed under the LPA and build alternatives would increase the number of transit work trips in the region by 0.59 percent, and transit non-work trips by 1.32 percent. The percentages are small because the transit improvements for the Southeast Corridor would be focused on only a small portion of the overall METRO service area. The results indicate an increase of about 11,650 additional passenger boardings, 34,150 additional passenger miles and 1,117 additional passenger hours under the LPA and build alternatives.

Total daily ridership in 2030 for the LPA would be approximately 12,300. Table S-2 summarizes ridership by station under the LPA and build alternatives.

Table S-2. Average Weekday Station Boardings

Station Name	Build Alternatives		LPA
	Scott/Griggs Alignment Option	Wheeler-MLK Alignment Option	
Bagby/Capitol	2,120	1,860	-
Milam (Capitol) / Louisiana (Rusk)	-	-	2,050
Main/Capitol	3,240	2,910	-
Fannin (Capitol) / Main (Rusk)	-	-	2,550
Crawford/Capitol	690	630	-
Austin (Capitol) /Caroline (Rusk)	-	-	800
Chenevert (Capitol) / Jackson (Rusk)	-	-	200
Dowling/Capitol	645	660	-
North Hutchins (Capitol) / South Hutchins (Rusk)	-	-	200
Leeland	475	495	950
Elgin	1,740	1,820	1,850
Cleburne	870	1,240	1,200
East University	-	515	500
MacGregor Park	-	545	300
Southmore/Scott	765	-	-
Southeast Transit Center	1,670	-	-
Calhoun/Griggs	475	-	-
Palm Center	1,210	1,325 ^a	1,700
Total	13,900	12,000	12,300

^a For this alignment option the Southeast Transit Center would be relocated to the Palm Center Station.
Source: METRO/GPC Travel Demand Forecasts, September 2005, January 2006, and November 2006.

S.5.1.3 Mitigation Measures

No mitigation required because the LPA would have not adverse effects on the transit system. The transit service and ridership effects would be beneficial to persons residing and working in the study area.

S.5.2 Highway and Roadway Impacts

This section presents the highway and roadway system impact analysis results under the LPA and build alternatives in comparison to the No Build Alternative. On a corridor level, the proposed transit improvements under the Build Alternative would improve mobility by providing an alternative mode of travel to the automobile; as a result, travel by auto may be reduced by the proposed transit improvements. However, at a localized level, some negative impacts may result from fixed-guideway vehicle movements along and across public streets; physical impacts from station and fixed-guideway features, pedestrian access to the fixed-guideway stations, and changes to the local or express bus service feeding into the proposed stations.

S.5.2.1 Regional Traffic Impacts

Travel on the regional highway system would be anticipated to be only minimally affected by the implementation of either the LPA or build alternatives. The inclusion of a park-and-ride facility at the southeastern end of the project is expected to attract some vehicle trips in the Southeast Corridor to transit. However, the reduction in overall regional vehicle trips is expected to be minimal.

S.5.2.2 Localized Traffic Impacts

Traffic Volumes

Forecast year (2025) average daily traffic (ADT) volumes along the roadways outside of the downtown area are projected to range: from 18,480 to 30,450 vehicles along Scott Street; approximately 15,800 vehicles along Wheeler Street; and from 7,620 to 15,020 vehicles along Martin Luther King Boulevard. These volumes represent an approximate 27 percent increase from the existing ADT volumes observed along these roadways. Traffic volume projections are anticipated to be similar between the No Build Alternative, the LPA, and the build alternatives.

Corridor Street Modifications

A number of street modifications would be required to accommodate the fixed-guideway project under the Build Alternative.

Non-signalized Intersection Impacts

Location of the fixed guideway in the median of the roadway would restrict left-turn and through movements at non-signalized intersections. Under the LPA, localized impacts are anticipated at 21 non-signalized intersections, as compared to 23 intersections under the build alternatives with the Wheeler-MLK alignment option and 35 intersections under the build alternatives with the base alignment option. Traffic that currently makes these left-turn movements would need to divert to adjacent signalized intersections. While this diversion of traffic is not anticipated to be substantial, the diverted traffic volumes have been accounted for in the analysis. In addition, pedestrian movements across the median at these intersections would be prohibited.

Signalized Intersection Impacts

Under the LPA, the following signalized intersections improvements would be required:

- At six existing signalized intersections, left turns would be accommodated across the fixed guideway with a new left-turn signal phase that would operate as a protected only phase.
- Six new traffic signals with protected left-turn movements would be required.
- Four other existing signalized intersections would require traffic control modifications to accommodate the fixed guideway at the intersection.

- The modification of the streets to accommodate the fixed guideway would also result in five new non-intersection guideway crossings. Traffic signals and/or flashing light and automatic gate control would be required at each of these non-intersection crossings.

The intersection improvements under the other build alternatives would affect up to 13 existing signalized intersections with new left-turn signal phases, nine new traffic signals with protected left-turn movements, nine with traffic control modifications, and five intersections new non-intersection guideway crossings.

Impacts on Level of Service at Intersections

Levels of service at signalized intersections during the a.m. and p.m. peak hours in 2025 were identified for the No Build Alternative, LPA, and build alternatives. The analysis was based on the revised traffic signalized operations needed to accommodate the transit vehicle movements through intersection crossings and modified intersection geometrics as shown on the plan drawings contained in Volume 2 of this FEIS. The results of the analysis are discussed below.

The level of service analysis for the signalized intersections on Capitol and Rusk assumes that the BRT vehicles would operate through the intersections in diamond lanes parallel to the adjacent through traffic. The results indicate that overall intersection levels of service at most intersections on Capitol and Rusk would remain similar to those conditions identified under the No Build Alternative. This is a result of the similar operations at intersections under the No Build Alternative, LPA and build alternatives.

The results of the level of service analysis for intersections outside of downtown under the LPA and build alternatives indicate that all of the intersections are expected to operate with acceptable overall levels of service during both the a.m. and p.m. peak hours.

S.5.2.3 Mitigation Measures

Mitigation measures for impacts on signalized intersections have been identified and included in the traffic design and signal operations for the LPA. The measures to be implemented at signalized intersections include the following:

- A corridor-wide 90-second cycle length;
- Optimized signal timing splits at each intersection;
- A corridor-wide interconnected coordinated traffic signal system;
- New traffic signal controllers , pedestrian controls, and signage at signalized intersections;
- Traffic signal phasing operations with a special fixed guideway vehicle phase; and
- Protected left turn phases for traffic turning across the fixed guideway from parallel lanes.
- METRO Police would continue to coordinate with state and local authorities on public safety and traffic within the corridor. Educational programs to alert the

traveling public of the presence of new transit vehicles will be conducted in the corridor.

S.5.3 Impacts on Railroads

Under the build alternatives, a short section of non-operational railroad tracks along Walker near Ennis would be eliminated. Because the tracks along Walker are currently non-operational, the removal of the tracks is not expected to impact the operations of the railroad or service to customers of the railroad and, therefore, no mitigation would be required. The LPA would not require the elimination of the railroad tracks at this location.

Additionally, the LPA and build alternatives would end east of Martin Luther King Boulevard on Griggs Road and would not have any impact to the existing at-grade railroad crossing of the Union Pacific Railroad (UPRR) and Burlington Northern Santa Fe Railway (BNSF) railroads near the intersection of Griggs Road and Long Drive. No mitigation would be required.

S.5.4 On-Street Parking Impacts

Construction of the LPA and build alternatives will require the removal of both on- and off-street parking. The No Build Alternative would have no impact to parking.

S.5.4.1 Off-Street Parking

Off-street parking consists of designated parking spaces on property adjacent to the LPA and build alignments. Off-street parking may be provided for customer usage to support businesses or for residences. No for-fee parking facilities would be affected.

Under the LPA and build alternatives, property in the form of right-of-way will be acquired in order to provide for the appropriate cross-section of the fixed guideway and adjacent roadways. The spaces would be eliminated from facilities supporting specific commercial properties that would be acquired for the project and from the UH in the segment between Elgin Street and Wheeler Street. Off-street spaces will also be removed from the Palm Center for use as a parking garage for the proposed station at this location. The impact at Palm Center is expected to be minimal because of the excess parking at this site.

S.5.4.2 On-Street Parking

Removal of parking under the LPA and build alternatives would be largely confined to downtown Houston. Outside of downtown, on-street parking is generally prohibited.

In the downtown area under the LPA, on-street parking would be eliminated along the north curb of Capitol and the south curb of Rusk at the station platforms and in blocks where the diamond lane would be next to the curb. Access to existing parking garages and loading dock driveways would be maintained since general traffic would be able to utilize the BRT reserved diamond lane for right turns. Vehicles exiting from existing parking garage structures will be able to cross the BRT reserved diamond lane to enter the roadway.

Under the LRT Alternative, all curb loading zones and on-street parking along Capitol in the downtown area would be eliminated. The reduction in the number of travel lanes along Capitol and the location of the LRT trackway along the south curb from Travis to the east would require the elimination of loading and parking zones to reduce interference with the through traffic lanes.

Under the BRT Alternatives, all curb loading zones and on-street parking along the north curb of Capitol and the south curb along Rusk in the downtown area would be eliminated.

S.5.4.3 Mitigation Measures

The impact of the removal of parking under the LPA will be primarily limited to the downtown area. The impact will be partially mitigation through the enhancements made in the blocks along the alignment. The restriping and reconfiguration of on-street parking could result in some new spaces.

Removal of off-street parking from commercial properties acquired by the project will be mitigated through compensation to property owners. The parking spaces removed at the UH and Palm Center will be partially mitigated through restriping and reconfiguration of existing parking.

S.5.5 Impacts on Bicycle and Pedestrian Facilities

Impacts to bicycle and pedestrian facilities would be minor and limited to perpendicular crossings at existing roadway intersections. The LPA and build alternatives would not introduce any new barriers along the proposed alignment. There would be no impact to the signed, shared-lane bicycle routes on Wheeler Street, between Scott and Cullen Road, and on Griggs Road, from Scott Street to Mykawa Road, because in both locations sufficient right-of-way would be available or obtained to preserve the existing number of traffic lanes, while the fixed guideway would be added as exclusive transit lanes. No mitigation would be required.

S.6 Environmental Impacts

Chapter 5, Environmental Consequences, identifies the potential impacts on the social, cultural, and natural environment that would result from the construction and operation of the LPA and build alternatives in comparison to the No Build Alternative. The analysis of impacts is based on the environmental setting described in Chapter 3, Affected Environment. Mitigation measures for impacts under the LPA are also identified in Chapter 5. The specific impacts analyzed in this chapter include those related to the following: land use; population and employment; air quality; noise and vibration; visual quality and aesthetics; ecosystems; water resources; historic and archaeological resources; parklands; geology and soils; hazardous materials or contamination; and safety and security.

Table S-3 summarizes the environmental impacts of the LPA in comparison to the No Build Alternative along with the potential mitigation measures that have been identified for implementation. All environmental impacts and mitigation measures summarized in the table are discussed under the appropriate headings in Chapter 5.

Table S-3. Summary of Impacts and Mitigation Measures

Impact Area	No Build Alternative	LPA	Mitigation Measures for LPA
Land Use	<ul style="list-style-type: none"> No impact. 	<ul style="list-style-type: none"> May redistribute some of the expected regional growth as a result of improved quality of life, image, and overall mobility. Could attract transit-supportive development to the corridor, including employment opportunities, higher-density residential development, and new services and amenities. Support continued development and redevelopment activity within the corridor which may become more intense and focused around stations. Enhanced development / redevelopment potential in the immediate vicinity of stations. 	<ul style="list-style-type: none"> No mitigation required.
Compatibility with Land Use Plans, Policies, and Controls	<ul style="list-style-type: none"> Not fully supportive of the goals and objectives for the communities stated in planning documents. 	<ul style="list-style-type: none"> Compatible with the plans, policies, and regulations of the local jurisdictions and planning agencies. Potential concern of future land use compatibility with existing deed-restricted neighborhoods (Greater Third Ward Community). 	<ul style="list-style-type: none"> Design stations to be compatible with each location and respectful of existing land use; coordinate station design with adjacent developments.
Environmental Justice	<ul style="list-style-type: none"> No adverse, disproportionate impacts on minority, low-income, or other special populations. No disproportionate benefits to these populations. 	<ul style="list-style-type: none"> No adverse, disproportionate impacts on minority, low-income, or other special populations. Positive benefit of increased accessibility for disproportionately minority and low-income neighborhoods, or those with large numbers of elderly residents or youth. 	<ul style="list-style-type: none"> Use community outreach and public involvement programs to involve the traditionally under-represented populations in station design and in construction mitigation.
Economic Impacts	<ul style="list-style-type: none"> No impact 	<p>Construction Activities</p> <ul style="list-style-type: none"> The LPA would result in an average of 185 jobs per year for 3 years. <p>Operations Activities</p> <ul style="list-style-type: none"> The LPA would result in an additional 350 weekday transit vehicle hours that would require approximately 100 new employees. <p>Loss of Assessed Property Value</p> <ul style="list-style-type: none"> Right-of-way acquisitions would result in a temporary reduction in property tax revenues that would be offset in the long-term by redevelopment along the corridor and in station areas. 	<ul style="list-style-type: none"> No mitigation required.

Table S-3. Summary of Impacts and Mitigation Measures (continued)

Impact Area	No Build Alternative	LPA	Mitigation Measures for LPA
Neighborhoods, Community Facilities, and Services	<ul style="list-style-type: none"> No Impact. 	<p><i>Community Facilities</i></p> <ul style="list-style-type: none"> Increased accessibility to community facilities. Displace a small number of parking spaces and property frontage along Griggs near the MLK intersection and at Palm Center and Young Library. <p><i>Neighborhoods</i></p> <ul style="list-style-type: none"> Greater access and mobility that would be provided would support existing neighborhood functions without significantly changing the overall character of the neighborhoods. Station areas could become centers of neighborhood activity and investment and; therefore, could serve to boost neighborhood social cohesion. 	<ul style="list-style-type: none"> Hold educational awareness programs to alert residents to the presence of fixed-guideway service and vehicles.
Acquisitions and Displacements / Relocations	<ul style="list-style-type: none"> No Impact. 	<p><i>LPA would result in:</i></p> <ul style="list-style-type: none"> Acquisition of 70 whole parcels consisting of 38 residential, 29 commercial, and 3 other properties. Acquisition of 91 partial parcels consisting of 30 residential, 43 commercial, and 18 other properties. Total of 68 relocations consisting of 42 residential units and 26 businesses. 	<ul style="list-style-type: none"> Relocation and advisory assistance be provided to all eligible individuals and businesses displaced by a proposed project in accordance with federal laws. Property acquisition will occur after the Record of Decision. Property owners will be paid fair market value for property acquired. Relocations will be accomplished either by providing compensation for moving residences and businesses back from the proposed right-of-way (where possible), or by providing assistance to locate and acquire available properties elsewhere.
Air Quality	<ul style="list-style-type: none"> No Impact. 	<ul style="list-style-type: none"> No violation of National Ambient Air Quality Standards. No increase in emissions. 	<ul style="list-style-type: none"> No mitigation required.
Noise and Vibration	<ul style="list-style-type: none"> No Impact. 	<ul style="list-style-type: none"> No noise impacts are projected for the LPA. 	<ul style="list-style-type: none"> No mitigation required.

Table S-3. Summary of Impacts and Mitigation Measures (continued)

Impact Area	No Build Alternative	LPA	Mitigation Measures for LPA
Visual/Aesthetics	<ul style="list-style-type: none"> No Impact. 	<ul style="list-style-type: none"> Introduction of a vehicle that is currently not commonly observed within the local view shed. Introduction of a fixed guideway in areas where this infrastructure is not currently part of the local streetscape. The removal of grass and vegetation from existing median areas could result in a visual impact since these areas generally provide aesthetic value to the surrounding environment. Introduction of structural elements that do not currently exist in the corridor. 	<ul style="list-style-type: none"> Plant screening vegetation between the guideway and adjacent properties to replace removed vegetation and enhance visual environment.
Ecosystems	<ul style="list-style-type: none"> No Impact 	<ul style="list-style-type: none"> The LPA will pass through MacGregor Park and will require removal of young, recently landscaped vegetation within the median of Martin Luther King Boulevard and potentially several trees adjacent to the roadway. 	<ul style="list-style-type: none"> Minimize clearing and cutting trees where possible. Clear trees with bird nests outside of nesting season (spring).
Water Resources	<ul style="list-style-type: none"> No Impact 	<p><i>Surface Waters</i></p> <ul style="list-style-type: none"> Surface waters of Brays Bayou could potentially be affected by the LPA. Short-term effects may include a temporary increase in turbidity because of erosion and sedimentation. Long-term effects to surface water quality may occur as a result of pollutants emitted from passing vehicles, which would be carried by sheet flow to surface waters. <p><i>Ground Water</i></p> <ul style="list-style-type: none"> No impact. <p><i>Floodplains</i></p> <ul style="list-style-type: none"> No impact. <p><i>Wetlands and Riverine Systems</i></p> <ul style="list-style-type: none"> No impacts to wetlands. LPA will cross Brays Bayou using a bridge so there would be no impact. 	<ul style="list-style-type: none"> Design bridge over Brays Bayou to match the profile of the existing bridge to minimize fill and impact on floodplains. Coordinate new bridge with Houston Flood Control District.
Historic and Archaeological Resources	<ul style="list-style-type: none"> No Impact. 	<ul style="list-style-type: none"> Potential adverse effect on one eligible resource (historic district) – acquisition of district land on the east side of Scott Street, two contributing properties, and displacement of one contributing structure. 	<ul style="list-style-type: none"> Mitigation measures to minimize harm to the resources are addressed in the Section 106 MOA developed for the project. Measures include: Conduct research and prepare the NHRP nomination form to nominate a portion of the Third Ward with significance as a historic district.

Table S-3. Summary of Impacts and Mitigation Measures (continued)

Impact Area	No Build Alternative	LPA	Mitigation Measures for LPA
Parklands and Other Section 4(F) Properties	<ul style="list-style-type: none"> No Impact. 	<p><i>Parkland and Recreational Resources</i></p> <ul style="list-style-type: none"> MacGregor Park – De minimis impact. Small amounts of park property would be used in the median of MLK Boulevard and the park access road. No impairment of park functions or activities. <p><i>Historic Resources</i></p> <ul style="list-style-type: none"> Third Ward East Historic District – acquisition of right-of-way on the east side of Scott Street, two contributing properties, and displacement of one contributing structure. 	<ul style="list-style-type: none"> The MOA has been executed among METRO, FTA, and the SHPO documents adverse effects and identifies measures to resolve those effects. Impacts to the park will be mitigated by installation of a traffic signal at the park entrance road, a transit station at Old Spanish Trail for access to the park, and replacement of any trees removed or damaged.
Geology and Soils	<ul style="list-style-type: none"> No Impact. 	<ul style="list-style-type: none"> No Impact. 	<ul style="list-style-type: none"> During final design additional detailed geotechnical investigations could be performed to develop site specific design criteria, selection of construction methods, and impacts to adjacent property. See construction impacts.
Hazardous / Regulated Materials	<ul style="list-style-type: none"> No Impact. 	<ul style="list-style-type: none"> Total of 8 sites proposed for right-of-way acquisition under the LPA could be affected by contamination. 	<ul style="list-style-type: none"> Identify potential contamination (Phase I ESA), and if found, determine extent of contamination (Phase II ESA) and remediate (or negotiate for remediation with landowner) any contaminated soil or groundwater
Safety and Security	<ul style="list-style-type: none"> No Impact. 	<ul style="list-style-type: none"> No Impact. 	<ul style="list-style-type: none"> No mitigation required.
Construction Impacts	<ul style="list-style-type: none"> No Impact. 	<ul style="list-style-type: none"> Increased traffic congestion and vehicular detours. Temporary limits on parking and short term blockages of driveways. Interrupted access to businesses. Short term disruption of utilities. Airborne dust and possible mud on roadways. Noise and vibration from construction equipment and vehicles. Removal of or damage to vegetation (e.g., trees, shrubs, grass). Short term use of vacant land for staging, and storage of construction equipment. 	<ul style="list-style-type: none"> Maintain access to adjacent businesses during hours of operation. Minimize utility disruptions and notify business owners ahead of time. Use appropriate dust control on construction sites and haul roads. Sprinkle water on construction sites. Use tarpaulins on trucks hauling and transferring materials. Use windbreaks to reduce wind velocity at construction sites. Stabilize dirt piles if not removed

Table S-3. Summary of Impacts and Mitigation Measures (continued)

Impact Area	No Build Alternative	LPA	Mitigation Measures for LPA
Construction Impacts (continued)		<ul style="list-style-type: none"> • Sediment-laden runoff from construction sites can alter sensitive areas receiving these discharges. • Spillage of petrochemicals (fuels and lubricants) during operation, servicing, and maintenance of construction equipment. • Water quality degradation as a result of storm water runoff is expected to be minimal. • Potential removal or disturbance of contaminated soils. 	<p>immediately. Wash truck tires before leaving construction site. Remove dirt piles after construction.</p> <ul style="list-style-type: none"> • Limit noise-generating operations such as pile driving to normal working hours. Route trucks on non-residential streets. Have a maintenance program for machinery. • File NOI with TCEQ at least 48 hours before construction. Use temporary stabilization (mulch, seeding) to protect construction sites from erosion. Filter or impound runoff to prevent sediment from entering streams. Use containment around fuel tanks. • Replace screening vegetation removed during construction. • Prepare an Emergency Response Plan to establish response procedures if hazardous materials are encountered or spilled during construction. Prepare a Hazardous Materials Management Plan for disposal procedures for contaminated soil.

Source: Parsons Brinckerhoff, 2006.

In addition to the environmental impacts summarized in the table, NEPA requires an analysis of the secondary and cumulative effects of the project. The secondary effects assessment examines whether reasonably foreseeable actions by others in response to the implementation of the LPA and build alternatives could create substantial social, cultural resource, or natural resource impacts. Cumulative effects are defined as the “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency was responsible.” The LPA and build alternatives have the potential for producing secondary and cumulative effects related primarily to land use changes. Effects would most likely occur in the areas around the fixed-guideway stations reflecting increased residential and commercial development because of the improved access provided by the fixed-guideway service and the increased pedestrian

traffic in and around the station areas. The land use changes are not expected to create any substantial social, cultural resource, or natural resource impacts.

S.7 Public and Agency Coordination

Chapter 6, Public and Agency Coordination, describes the on-going community and stakeholder participation and coordination program conducted during the AA and the DEIS process. The primary tool for organizing and coordinating community and stakeholder participation in the AA/DEIS process is the Public Involvement Plan (PIP). The PIP is an effective tool in implementing an active involvement approach, and providing an open, proactive, and participatory process for the public, affected agencies, and others to become partners and engage with the project team. The PIP uses a variety of consensus-building tools to involve the public and to assure it has opportunities to participate.

During the course of the project, over 90 meetings, ranging from scoping meetings to open houses and workshops, were held in order to inform and obtain input from the participants. The results of these efforts have been documented and can be obtained from METRO upon request. Additionally, extensive media and public relations activities occurred, including maintaining a dedicated website, issuing press releases, providing interviews, and mailing printed informational material, including newsletters.

In accordance with federal regulations, the DEIS was available for public comment for 45 days after the publication of the Notice of Availability (NOA) in the *Federal Register* (July 28, 2006 – September 11, 2006). Copies of the document were sent to affected and interested local, regional, state, and federal agencies. Parties with a known interest in the project were notified by direct mailing of the availability of the document and the public comment period.

The public hearing took place on August 29, 2006 at 6:30 p.m. at the Third Ward Multi-Service Center at 3611 Ennis Street, Houston, Texas 77004. The comments received during the circulation period for the DEIS and responses to the comments are contained in Section 6.9 of Chapter 6, Public and Agency Coordination.

S.8 Evaluation of Alternatives

Chapter 7, Evaluation of Alternatives, presents the results of the evaluation and trade-offs analysis conducted for No Build Alternative and LPA.⁶ The purpose of this chapter is to bring together the key findings, both qualitative and quantitative, for each alternative so that benefits, costs, and environmental consequences can be evaluated against the stated project goals and objectives presented in Chapter 1, Purpose and Need.

⁶ This FEIS incorporates by reference all technical information, studies, and other public documents produced for the Southeast-Universities-Hobby Corridor Planning Study Alternatives Analysis (AA) and the *METRO Solutions Transit System Plan* that support the FEIS. These documents are considered part of the environmental compliance record and can be requested for review at the METRO offices.

S.8.1 Evaluation Framework

The transportation goals and objectives set forth in Chapter 1 provide the overall framework for analyzing and comparing the alternatives and selecting the best alternative for implementation. The alternatives are a No Build Alternative and the LPA.

The evaluation considers each alternative from five different perspectives:

- Effectiveness (Goals Achievement) – This criterion examines how well the alternatives help achieve the purpose of, and satisfy the need for, transportation improvements in the project area.
- Impacts – This criterion examines the extent to which the alternatives minimize harm to the environment and is consistent with local and state plans and policies.
- Efficiency (Cost-Effectiveness) – This criterion examines the effectiveness of the alternatives in generating user benefits relative to estimated capital and operating costs.
- Financial Feasibility – This criterion focuses on the agency's ability to pay for the alternatives' capital and operating costs based on the availability of local and federal funds.
- Equity – The alternatives may benefit certain groups more effectively than other groups. This criterion examines equity from the perspectives of service, financial, and environmental benefits and impacts among affected groups.

The evaluation of alternatives also incorporates the results of the Section 5309 New Starts funding evaluation.⁷ The criteria required by FTA for the New Starts funding evaluation are mobility improvements, environmental benefits, operating efficiencies, cost effectiveness, transit supportive land use and future patterns, and local financial commitment.

In addition to the evaluation of the alternatives against the five different perspectives, a trade-offs analysis has been conducted. In the trade-offs analysis, the important differences among alternatives are highlighted. This permits decision-makers to apply value judgments with respect to costs and benefits, i.e., what is being given up relative to what is being gained for each alternative. The objective of the trade-offs analysis is to substantiate the rationale for the selection of the No Build or LPA.

The above criteria, as well as public, agency, and other stakeholder comments on the findings of the DEIS were used to make three decisions related to the LPA for the Southeast Corridor. These decisions included: a build decision, which affirms continuing the implementation of the Southeast Corridor fixed-guideway transit project; the BRT

⁷ The Section 5309 "New Starts" program is the Federal government's primary program for providing financial support to locally-planned, implemented, and operated fixed guideway transit major capital investments. The New Starts evaluation process is used in conjunction with the evaluation process under the National Environmental Policy Act, for which this Environmental Impact Statement is being prepared.

Convertible technology, which METRO selected based primarily on environmental impacts and financial feasibility; and the Wheeler-MLK alignment option.⁸

S.8.2 Summary of Evaluation Results

The Southeast Corridor fixed guideway under the Build Alternative would be more effective in meeting the project goals and objectives identified in Chapter 1, Purpose and Need than the No Build Alternative. Most importantly, the LPA would improve transportation system accessibility and connectivity between activity centers and provide a transit investment supportive of redevelopment/development and local land use plans. The No Build Alternative would continue to operate local bus service without any major transit investment in the study area.

In terms of cost-effectiveness, the LPA would achieve the purpose and need in an efficient manner. The cost per hour of transportation user benefits for the LPA was calculated to be \$11.38. Cost per hour of transportation user benefits is based on the FTA New Starts cost-effectiveness measures and are reported in comparison with the New Starts Baseline Alternative.⁹

Although implementation of the LPA represents a substantial investment of local financial resources, the LPA is financially feasible. Although criteria ratings and the overall rating of a project may change throughout the planning and development process, the Southeast Corridor BRT Project is currently rated as medium by the FTA based on the criteria described below. A Medium rating is sufficient for the project to be advanced in the federal project development process and for the project to be recommended for federal funding.

The new BRT Convertible service under the LPA would be provided on an equitable basis in terms of population groups served, sources of funds, and, in general, environmental impacts.

Because the No Build Alternative encompasses planned transit and highway improvements that will be built whether or not the Southeast Corridor project is built, the No Build Alternative is considered to have no environmental impacts, but the project benefits of the LPA, likewise, would not occur. The alternatives would differ from the perspectives of transportation and air quality impacts.

Implementation of the LPA would have only a minimal effect on forecast vehicle miles traveled (VMT) in 2025 in the region encompassed by the regional travel model compared to the No Build Alternative. The LPA would result in a slight increase in total transit trips because of the higher level of transit service and greater reliability provided by the project. However, travel-time benefits for transit users would be notable for transit trips that divert from bus to fixed guideway under the LPA. In addition to attracting new transit riders from the automobile, the LPA would shift some transit trips from buses to BRT and to diamond lanes and fixed guideway that would be less

⁸ The financial feasibility evaluation includes the ability for each mode to meet: (1) the overall financial requirements of the METRO Solutions plan; and (2) the FTA's cost-effectiveness criteria.

⁹ The Baseline Alternative for purposes of the New Starts evaluation consists of improvements to the transit system that are relatively low in cost and the "best that can be done" to improve transit without major capital investment for new infrastructure.

affected by traffic congestion, and would consistently provide lower transit travel times than the No Build Alternative. The proposed diamond lane and fixed-guideway service provided under the LPA would have modest localized traffic impacts at intersections. The LPA would contribute to a small reduction in regional motor vehicle emissions. .

S.8.3 Conclusion

In making a decision on LPA versus No Build, the costs, impacts, and benefits of the Southeast Corridor BRT Convertible services under the LPA must be weighed against achievement of the project goals and objectives. The LPA addresses the transportation needs of the study area, particularly the need for improvements in mobility for the minority and low-income populations within the study area. It also provides the necessary improvements in transportation facilities and services to support development/redevelopment efforts in the area. Although the LPA represents a major investment of local financial resources, it would achieve the purpose and need in an efficient manner, and is financially feasible. The principal trade-offs are environmental impacts. The No Build Alternative would cause no new environmental impacts, but it would not provide the mobility and redevelopment benefits of the LPA.



CHAPTER 1

PURPOSE AND NEED

