

7. EVALUATION OF ALTERNATIVES

The purpose of this chapter is to bring together the key findings, both qualitative and quantitative, so that benefits, costs, and environmental consequences can be evaluated against the stated project goals and objectives presented in Chapter 1, Purpose and Need.¹ The various modes and alignment options for the Southeast Corridor alignment were studied as part of the Draft Environmental Impact Statement (DEIS), as described in Section 2.3 of this Supplemental Final Environmental Impact Statement (SFEIS). Based on the findings of the DEIS and public comments, on September 21, 2006, the METRO Board of Directors selected the Bus Rapid Transit (BRT) Convertible Alternative as the Locally Preferred Alternative (LPA). Under the BRT Convertible Alternative, BRT was proposed as the interim transit mode with the ultimate goal of implementing Light Rail Transit (LRT) when corridor growth and ridership warrants. A Final Environmental Impact Statement (FEIS) was prepared to document this decision and comments received during the comment period for the DEIS. The Federal Transit Administration (FTA) issued environmental approval for the project through a Record of Decision (ROD) on February 6, 2007. In October 2007, following further analysis of forecasted ridership and costs, the METRO Board of Directors selected LRT as the initial technology for the Southeast Corridor.

This chapter presents the results of the evaluation and trade-offs analysis conducted for the No Build Alternative and the LPA, as well as the summary of environmental impacts for the No Build Alternative, the BRT Convertible LPA selected in the January 2007 FEIS, and the LPA. The evaluation of all of the build alternatives is contained in the DEIS.

7.1 Evaluation Framework

The evaluation framework outlined in the Federal Transit Administration's (FTA) *Procedures and Technical Methods for Transit Project Planning* (FTA, 1990, updated 2003) was used to evaluate the alternatives developed for the Southeast Corridor and to provide data for the Section 5309 New Starts funding evaluation.²

The evaluation framework considers each alternative from five different perspectives:

- Effectiveness (Goals Achievement) – This criterion examines how well each alternative helps to achieve the purpose of, and satisfy the need for, transportation improvements in the project area. It focuses on how well each alternative helps attain the goals and objectives defined for the project in Chapter 1.

¹ This SFEIS 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 SFEIS. These documents are considered part of the environmental compliance record and can be requested for review at the METRO offices.

² 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.

- Impacts – This criterion examines the extent to which each alternative minimizes harm to the environment and is consistent with local and state plans and policies.
- Efficiency (Cost-Effectiveness) – This criterion examines the effectiveness of each alternative in generating user benefits relative to estimated capital and operating costs. In effect, it relates value received (in terms of benefits obtained) to the resources invested in each alternative compared to other alternatives. Benefits are expressed in terms of hours of travel time saved.
- Financial Feasibility – This criterion focuses on the agency's ability to pay for each alternative's capital and operating costs based on the availability of local and federal funds.
- Equity – Each alternative may benefit certain groups more effectively than other groups. This criterion examines the question of equity from the perspectives of service, financial, and environmental benefits and impacts among affected groups.

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 criteria, a trade-offs analysis was also 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 Alternative or LPA.

7.1.1 LPA versus the Previous BRT Convertible LPA

This section compares the LPA versus the previous BRT Convertible LPA. Both would meet the Southeast Corridor goals and objectives presented in Chapter 1 by providing additional transit capacity in the corridor and would encourage economic development. Both would also provide mobility benefits to the residents and businesses in the corridor and in the region.

Table 7-1 summarizes the impacts of the No Build Alternative, the previous BRT Convertible LPA in the January 2007 FEIS, and the LPA. The environmental consequences of the two alternatives are similar. The LPA would have greater noise, vibration, visual, relocations, floodplains, and historic impacts than the BRT Convertible LPA; however, the LPA would impact fewer properties and require fewer acquisitions.

The BRT Convertible LPA would cost less to construct initially than the LPA; however, the overall cost changes substantially when looking at the longer term. METRO Solutions and the 2035 RTP call for LRT in the Southeast Corridor by 2025. Therefore, the LPA meets the requirements of METRO Solutions and the 2035 RTP with no additional capital cost. The BRT Convertible LPA would require a higher capital investment than the LPA over the long-term assuming ultimate conversion to LRT. Therefore, assuming light rail service in 2025, the LPA would have the lower

Table 7-1. Summary of Impacts and Mitigation Measures

| Impact Area | No Build Alternative | Previous BRT Convertible LPA* | 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"> 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"> 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"> 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. |

Table 7-1. Summary of Impacts and Mitigation Measures (continued)

| Impact Area | No Build Alternative | Previous BRT Convertible LPA* | LPA | Mitigation Measures for LPA |
|---------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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. Loss of Assessed Property Value 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. | <p>Construction Activities</p> <ul style="list-style-type: none"> The LPA would result in an average of 703 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. Loss of Assessed Property Value 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. |
| 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. | <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. |

Table 7-1. Summary of Impacts and Mitigation Measures (continued)

| Impact Area | No Build Alternative | Previous BRT Convertible LPA* | LPA | Mitigation Measures for LPA |
|----------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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. | <p><i>LPA would result in:</i></p> <ul style="list-style-type: none"> Acquisition of 55 whole parcels consisting of 27 residential, 23 commercial, and 5 other properties. Acquisition of 85 partial parcels consisting of 7 residential, 70 commercial, and 11 other properties. Total of 85 relocations consisting of 46 residential units and 39 businesses. | <ul style="list-style-type: none"> Relocation and advisory assistance be provided to all eligible individuals and businesses displaced by the 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 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"> Noise impacts may result from the crossing bells and whistles near the University of Houston residence hall. There are no vibration impacts. There is no ground-borne noise impact on special buildings. | <ul style="list-style-type: none"> The light rail vehicle bell noise will be redirected so that it minimizes exposure to the residences. |

Table 7-1. Summary of Impacts and Mitigation Measures (continued)

| Impact Area | No Build Alternative | Previous BRT Convertible LPA* | 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"> 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. The electrification infrastructure will be designed so as to be inconspicuous (Traction Power Substation) and less cluttered (Overhead Contact System). Design of the storage and inspection facility will be consistent with the visual character and scale of the surrounding neighborhood. Lighting will be installed in a way that avoids significant spillover lighting onto the backyards of nearby residences. The site will be enclosed in fencing or walls that minimize the view of parked LRVs from nearby residences. |
| 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"> 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). Coordinate with U.S. Fish and Wildlife and U.S. Army Corp of Engineers regarding Kuhlman Gully. |

Table 7-1. Summary of Impacts and Mitigation Measures (continued)

| Impact Area | No Build Alternative | Previous BRT Convertible LPA* | LPA | Mitigation Measures for LPA |
|-----------------|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 an existing bridge so there would be 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. The design of the new bridge across Brays Bayou would include curbs that would direct storm water flows from the crest of the bridge back towards the bridge approaches. The construction of the LPA through MacGregor Park in the median of Martin Luther King Boulevard would increase impervious surface and storm water runoff. LPA would include modifications to the existing storm water management systems. Storage and inspection facility extends across Kuhlman Gully embankment. <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"> Bridge over Brays Bayou would require piers that would encroach into the floodway due to the pier displacement of water in the bayou. <p><i>Wetlands and Riverine Systems</i></p> <ul style="list-style-type: none"> No impacts to wetlands. | <ul style="list-style-type: none"> Detailed analysis of the affected storm sewers would be conducted during the design phase to ensure that the collection and conveyance of storm waters would not result in flooding to adjacent properties. A grassy swale would be constructed adjacent to the concrete pad for the rail tracks to act as a temporary detention facility and conveyance system. Water would be discharged into Brays Bayou, and if necessary, the water would flow through an oil-water separator prior to discharge. Design the proposed bridge to comply with FEMA, the City of Houston, and Harris County Flood Control District floodplain development criteria. Coordinate new bridge with Houston Flood Control District. Coordinate with U.S. Army Corps of Engineers during final design of the storage and inspection facility. |

Table 7-1. Summary of Impacts and Mitigation Measures (continued)

| Impact Area | No Build Alternative | Previous BRT Convertible LPA* | LPA | Mitigation Measures for LPA |
|---------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Historic and Archaeological Resources | <ul style="list-style-type: none"> No Impact. | <ul style="list-style-type: none"> No impact.** | <ul style="list-style-type: none"> No adverse effect on historic properties would result from implementation of the LPA. | <ul style="list-style-type: none"> A Memorandum of Agreement (MOA) has been amended to record minimization measures agreed upon by the signatories. |
| 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"> 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"> Dahlgren Building – De minimis impact. A small strip of land would be required from the parking lots west of the Dahlgren Building. This acquisition would not alter the eligibility of the building, its distinctive architecture, and would not diminish the property's aspects of integrity. MLK Place Shopping Center – De minimis impact. A small strip of land would be required. It will not diminish the property's aspects of integrity. | <ul style="list-style-type: none"> 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. The amended MOA has been agreed upon by METRO, FTA, and the THC; it documents adverse effects and identifies measures to resolve those effects. |
| 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"> 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. |

Table 7-1. Summary of Impacts and Mitigation Measures (continued)

| Impact Area | No Build Alternative | Previous BRT Convertible LPA* | LPA | Mitigation Measures for LPA |
|---------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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"> Total of 11 sites proposed for right-of-way acquisition under the LPA may be affected by contamination. | <ul style="list-style-type: none"> 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 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. 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. | <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 during construction. 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. 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. Turbidity and the potential for harm to fish due to pile driving during Brays Bayou bridge construction. | <ul style="list-style-type: none"> During construction, 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 immediately. Wash truck tires before leaving construction site. Remove dirt piles after construction. Limit noise-generating operations such as pile driving to normal working hours. Route trucks on non-residential streets. Have a maintenance program for machinery. |

Table 7-1. Summary of Impacts and Mitigation Measures (continued)

| Impact Area | No Build Alternative | Previous BRT Convertible LPA* | LPA | Mitigation Measures for LPA |
|----------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Construction Impacts (continued) | | <ul style="list-style-type: none"> • Potential removal or disturbance of contaminated soils. | <ul style="list-style-type: none"> • The construction of the in-water piers for the Brays Bayou Bridge would require compliance with a Section 401 permit. • Water quality degradation as a result of storm water runoff is expected to be minimal. • Potential removal or disturbance of contaminated soils. | <ul style="list-style-type: none"> • A temporary erosion and sedimentation plan, spill containment and countermeasure plan, clearing and grading plan, and landscaping or re-vegetation plan will be prepared and implemented prior to the start of construction activities. • Implementation of BMPs to minimize the potential release of petroleum, paint, concrete, and other potentially toxic materials during construction over and near Brays Bayou. • Implement other BMPs, including siltation fences, straw matting, hay bales, siltation curtains, temporary caissons, and/or coffer dams. • 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. • Obtain a Section 401 permit for the proposed bridge over Brays Bayou. |

Table 7-1. Summary of Impacts and Mitigation Measures (continued)

| Impact Area | No Build Alternative | Previous BRT Convertible LPA* | LPA | Mitigation Measures for LPA |
|----------------------------------|----------------------|-------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Construction Impacts (continued) | | | | <ul style="list-style-type: none"> • 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. |

*Information shown for the BRT Convertible LPA are based on the January 2007 FEIS.

**On July 16, 2007, it was decided between METRO and the THC to conduct additional research on historic development patterns of the Third Ward. After the additional study and reconnaissance, it was agreed that an appropriate method to record the Third Ward was as part of a multiple property documentation rather than as a historic district; therefore, no impacts on historic resources were associated with the BRT Convertible Alternative.

Source: Parsons Brinckerhoff, 2008.

long-term capital cost. There is no difference between the alternatives in terms of geographical distribution of equity, benefits, and cost being equitably spread in the Southeast Corridor.

7.1.2 Selection of the LPA

The transportation goals and objectives set forth in Chapter 1 provided the overall framework for analyzing and comparing the alternatives and selecting the best alternative for implementation. As described in Chapter 2 in detail, the LPA provides for new LRT 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 above FTA criteria described in the evaluation framework, 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; updated ridership projections, and financial feasibility; and the Wheeler-MLK alignment option.³ In October 2007, following further analysis of forecasted ridership and costs, the METRO Board of Directors selected LRT as the initial technology for the Southeast Corridor. The LPA meets the purpose and need of the Southeast Corridor project as defined in Chapter 1. In addition, the LPA meets the requirements of METRO Solutions and the *2035 RTP*.

The remaining sections in this chapter describe in detail each of the evaluation criteria, the evaluation findings associated with each FTA evaluation criterion, and the relevance of those findings to the decisions by comparing trade-offs between the No Build Alternative and LPA.

7.2 Effectiveness

This evaluation criterion examines how well each alternative achieves the purpose of, and satisfies the need for, transportation improvements in the study area. It focuses on how well each alternative attains the goals and objectives defined for the project in Chapter 1. Because the LPA is considered reasonable and meets purpose and need, the primary focus is on what the Southeast Corridor fixed-guideway project could achieve over the No Build Alternative.

Attainment of the goals of the Southeast Corridor project and the effectiveness of the LPA in achieving them are summarized below.

- Goal 1 – Develop a Multimodal Transportation System – The LPA would achieve this goal more effectively than the No Build Alternative by providing new fixed-guideway services in the Southeast Corridor. The new service would improve accessibility and connectivity by providing direct linkage and notably reducing travel times between major activity centers as compared to the conventional bus transit services under the No Build Alternative. The new LRT service would be an accessible mode providing a higher level of service than available in the corridor

³ 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.

under the No Build Alternative and would be capable of attracting riders who currently use automobiles. By providing a higher level of schedule adherence than is currently possible, and a frequent, all-day, bi-directional service, the LRT service under the LPA would offer an attractive alternative to the congestion and uncertainties facing travel by automobile.

- Goal 2 – Improve the Efficiency, Reliability, Capacity, and Safety of Existing Transportation Services – The proposed LRT services under the LPA would operate at almost twice the average speed of the conventional bus transit services under the No Build Alternative. The number and spacing of the stations would reduce the more frequent stops associated with local buses and provide for more efficient movement between activity centers and transfer locations than with local bus services. The well-located Palm Center park-and-ride station would meet the needs of passengers whose preferred mode is to drive to a fixed-guideway station. Operating efficiencies would be improved for the transit system as a whole under the LPA by introducing faster fixed-guideway service.
- Goal 3 – Preserve Social Integrity and Support of Urban Communities – The LPA would provide for improved transit services in the Southeast Corridor through the introduction of new LRT service. The increased access and mobility provided by the new fixed-guideway service is anticipated to be supportive of existing land uses and land use plans. The LPA also has the potential to encourage new social and economic opportunities for neighborhoods. The social integrity of the community would be preserved by using existing transportation corridors and minimizing new right-of-way acquisition. By maintaining the existing number of lanes on streets in the corridor, diversion of traffic to local streets in the study area would be minimized.
- Goal 4 – Plan for Transportation Improvements that Enhance the Quality of the Environment – The LPA would enhance the quality of the environment by introducing a physical project of high quality and attractive appearance in appropriate settings and by providing an alternative that emits fewer pollutants than autos and local buses under the No Build Alternative.
- Goal 5 – Define a Sound Funding Base – The implementation of LRT service in the Southeast Corridor would constitute a major capital investment that contributes to a more equitable supply of transportation services and benefits within the region. The costs of the improvements would be shared equitably among those who benefit.

7.3 Impacts

This evaluation criterion examines the extent to which each alternative minimizes harm to the environment, and is consistent with plans, policies, and regulations of local jurisdictions and planning agencies. The criterion also measures the economic impacts of the alternatives in terms of jobs added, tax base impacts, and development/redevelopment opportunities that may result from implementation of the LPA.

Chapter 5, Environmental Consequences, identifies the potential impacts on the social, economic, cultural, and natural environment that will result from the construction and operation of the Southeast Corridor LRT services under the LPA in

comparison to the No Build Alternative. Table 7-1 summarizes the impacts of the No Build Alternative, the previous BRT Convertible LPA in the January 2007 FEIS, and the LPA along with proposed mitigation measures for implementation of the LPA. 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 additional environmental impacts. The information shown for the previous BRT Convertible LPA is based on the January 2007 FEIS.

7.4 Cost-Effectiveness

This evaluation criterion provides local decision-makers with a means to compare the total expected costs of each alternative to its expected user benefits, which is the number of annual hours of travel time for all users of the transportation system. The evaluation of cost effectiveness uses the FTA New Starts cost-effectiveness measures. Cost per hour of transportation user benefits are reported in comparison with the New Starts Baseline Alternative.⁴ The cost per hour of transportation user benefits for the LPA was calculated to be \$21.71.

7.5 Financial Feasibility

A further consideration in the selection of a preferred alternative is METRO's ability to finance the associated capital and operating costs. Chapter 8, Financial Analysis summarizes METRO's financial analysis including costs and proposed funding sources for the LPA. The financial analysis confirms the ability of METRO to fund the capital and operating costs of its existing and expanded bus services and the METRO Solutions Phase 2 plan (METRO, 2004) through 2012, including the Southeast Corridor project, from existing and planned revenue sources. METRO is requesting from FTA less than 50 percent of the funds required to implement the fixed-guideway component of the METRO Solutions plan. Local financial commitment is one of the FTA New Starts criteria, which are discussed in Section 7.7. No new local revenue sources are required.

The LPA is consistent with the goals of the METRO Solutions Phase 2. It would provide for implementation of guided rapid transit in the Southeast Corridor and allow the funding to be used for implementation of rapid transit for the other corridors in the METRO Solutions plan.

7.6 Equity

Equity is defined as the fairness of the distribution of costs, benefits, and impacts across various population subgroups. The equity of the alternatives considered was evaluated with respect to the following three categories:

⁴ 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.

- Service Equity – The extent to which transit provides service to various population segments, particularly those that tend to be transit-dependent;
- Financial Equity – The distribution of the project's cost across population segments through funding arrangements covering the local contribution to construction and operation; and
- Environmental Equity – The incidence of any substantial environmental impacts, particularly in low-income and minority communities immediately adjacent to proposed facilities.

This criterion relates to the decisions to be made by addressing the following questions:

- Would the service provided by the LPA be equitably distributed among various population groups?
- Would funding the LPA place an unequal burden on any particular community or population group?
- Would the implementation of the LPA place an inequitable burden on minority or low-income populations or are the impacts evenly distributed among communities of various socio-economic characteristics?

Following is a summary of the findings on the service, financial, and environmental equity of the alternatives considered.

7.6.1 Service Equity

Transit service equity is the extent to which the proposed transit project provides service to various population groups in the area, particularly low-income and minority residents. Persons served by the LPA are defined as those living within a one quarter-mile radius of proposed station locations for purposes of this evaluation.

Approximately 10 percent of all people residing within the study area live within one quarter-mile of the station locations under the LPA. Approximately 9 percent of all study area minority residents live in the LPA station areas, rates that are similar to the study area as a whole. Black or African-American and Hispanic or Latino residents comprise the largest proportions of the population.

The population within the LPA station areas is approximately 30 percent low income. This poverty rate is slightly lower than the 33 percent poverty rate for the study area as a whole. These enhanced transportation services would provide increased mobility options and access within the study area as well as to and from low-income and minority communities.

The No Build Alternative would provide accessibility to transit service (bus service) similar to the LPA for all population groups and employment centers but would lack the speed, reliability, and frequency of service provided by the proposed fixed-guideway project.

7.6.2 Financial Equity

Financial equity relates to the distribution of capital and operating funds for transportation improvements across population groups. Funding may include a variety of sources including federal, state, and local revenues, or other sources such as user fees or costs, and fares paid by transit passengers. Financial equity is a function of how the sources of those funds and the operating costs of the system relate to the users of the services and to various income groups. For example, general revenue funds are usually based on broad taxes such as sales taxes and are not directly related to an individual's use of a mode of transportation, where transit fares apply directly to users.

In 1978, voters approved a one percent sales tax dedicated to transit. In November 2003, voters in the METRO service area demonstrated their commitment to METRO Solutions, including the Southeast Corridor project, with majority approval of plan and financing elements. With voter approval, authorization was given for the issuance of up to \$640 million in bonds to fund the overall plan through 2012. The local sales tax and the new local funding provided by the bonding authorization will enable METRO to implement and operate the plan through 2012, including the Southeast Corridor fixed-guideway project.

Sales taxes are generally regressive and, as such, the lower socioeconomic groups tend to pay a higher percentage of their incomes in sales tax. In terms of service under the LPA, minority and low-income populations would be served well. This would negate any financial equity issue.

7.6.3 Environmental Equity

Because of the diverse demographic characteristics of the study area and the City of Houston, some low-income and/or minority communities could be affected by the proposed project. Many low-income and/or minority neighborhoods are adjacent to the proposed alignment. This proximity would expose homes and businesses that abut the alignment to potential impacts, as discussed earlier. The primary potential impacts would be related displacement of some homes and businesses, and visual changes to the area.

The LPA would not result in disproportionately adverse impacts on low-income and minority communities and businesses. Although the adverse effects that would occur would be predominantly borne by the minority and low-income populations, these effects are not appreciably more severe or greater in magnitude than adverse effects upon the non-minority population and/or the non-low-income population. As with any major transportation project, it is likely that residents within the study area would endure some short-term impact because of the construction of the proposed project.

In addition, the LPA would provide offsetting benefits and opportunities that would enhance minority and low-income communities, neighborhoods, and individual quality of life. Among the positive effects of the project for all residents in the study area are enhanced mobility options, greater access to local jobs, and non-job opportunities such

as educational, shopping and entertainment activities, and potential economic development and redevelopment in communities within the study area.

7.7 New Starts Evaluation Process

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 (NEPA), for which this SFEIS is being prepared. This section describes how FTA evaluates projects for New Starts funding recommendations. The Southeast Corridor LRT project is seeking New Starts funding and, therefore, is subject to this evaluation and rating process.

7.7.1 Background

Each year FTA submits its *Annual Report on New Starts* to Congress as a companion document to the annual budget submitted by the President. The report provides recommendations for the allocation of New Starts funds under Section 5309 of Title 49 of the United States Code. As required by the Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), FTA uses the following project justification criteria to evaluate New Starts projects: mobility improvements; environmental benefits; cost effectiveness; operating efficiencies; transit-supportive existing land use, policies and future patterns; and other factors. FTA must also consider the local financial commitment for the proposed project. In total, the criteria are intended to measure the overall merits of the project and the sponsor’s ability to build and operate it.

FTA reviews the project justification and local financial commitment criteria for each candidate project and assigns a rating for each criterion. For some of the project justification criteria, the proposed project is compared against a New Starts “Baseline Alternative.” The New Starts Baseline Alternative consists of improvements to the transit system that are relatively low in cost and represent the “best that can be done” to improve transit without a major capital investment in new guideway infrastructure. As such, it is usually different than the baseline (represented by the no-build condition) against which environmental impacts are measured in the NEPA document.

A candidate project is given an overall rating of “High”, “Medium-High”, “Medium”, “Medium-Low” or “Low”, based on ratings assigned by FTA to each of the project justification and local financial commitment criteria described above. These ratings are important, as FTA considers them in its decision to recommend projects for New Starts funding. Specifically, FTA will not recommend funding for projects which are rated “Medium-Low” or “Low.” It is important to note, moreover, that a “High”, “Medium-High” or “Medium” rating does not automatically translate into a funding recommendation, although the potential for receiving New Starts funding is much greater.

Project evaluation is an on-going process. FTA’s evaluation and rating process occurs annually in support of budget recommendations presented in the *Annual*

Report on New Starts and when projects request FTA approval to enter into preliminary engineering or final design. Consequently, as proposed New Starts projects proceed through the project development process, information concerning costs, benefits, and impacts is refined and the ratings updated to reflect new information.

7.7.2 Current Ratings for the Southeast Corridor LRT Project

METRO is currently seeking New Starts funding for the Southeast Corridor LRT Project. Although criteria ratings and the overall rating of a project may change throughout the planning and development process, the Southeast Corridor LRT Project is currently rated as “medium” based on the criteria described in the following sections. An overall Medium rating for both the project justification and local financial commitment criteria combined is sufficient for the project to be advanced in the federal project development process and for the project to be recommended for federal funding.

7.7.2.1 Project Justification

Rating: Medium

Mobility Improvements

Rating: Medium

In its evaluation of the mobility improvements that would be realized by implementation of a proposed project, FTA reviews three measures:

1. User benefits per project passenger mile;
2. Number of current low-income households which would be served by the proposed New Starts investment; and
3. Number of current jobs served by the proposed New Starts project.

User benefits essentially represent all the travel time savings to transit riders in the forecast year that result from the New Starts project as compared to not building the project (the baseline alternative). They include reductions in walk times, wait times, transfers, and, most importantly, in-vehicle times. In order to rate projects in comparison to other proposed New Starts, this measure is normalized by the annual passenger miles traveled on the New Starts project in the forecast year. The Number of Low-Income Households and Jobs Served measures reflect the absolute number of low-income households (defined as below the poverty level) and jobs located within ½-mile of “boarding points”, or stations, associated with the proposed project. The total number of low-income households and jobs located within these ½-mile zones is then divided by the total number of stations to determine both the average number of low-income households and average number of jobs per station.

Table 7-2 presents the mobility improvement measures for the Southeast Corridor LRT Project.

Table 7-2. Mobility Improvements

| Measure | New Starts (LPA) versus Baseline |
|-----------------------------------------------------------------------------|----------------------------------|
| Transportation System User Benefits Per Project Passenger Mile (in minutes) | 3.0 |
| Total Number of Low Income Households Within 1/2 Mile of Stations | 2,600 |
| Total Number of Jobs Within 1/2 Mile of Stations | 147,900 |

Source: METRO, 2008.

Environmental Benefits

Rating: Medium

In its evaluation of environmental benefits that would be realized through the implementation of a proposed project, FTA considers the current air quality designation by EPA. This measure is defined for each of the transportation-related pollutants (ozone, CO, and PM-10) as the current air quality designation by EPA for the metropolitan region in which the proposed project is located, indicating the severity of the metropolitan area's noncompliance with the health-based EPA standard (NAAQS) for the pollutant, or its compliance with that standard. New Starts project sponsors also submit information to FTA on the forecast reductions in emissions resulting from the New Starts project for each transportation-related pollutant. FTA has found that information submitted in support of the environmental benefits criterion does not distinguish with any meaning the merits of competing New Starts projects. While FTA reports the information submitted by project sponsors on environmental benefits to Congress and other stakeholders, it does not formally incorporate this measure in its evaluation of New Starts projects.

Table 7-3 presents the information used to determine the environmental benefits rating for the Southeast Corridor LRT project.

Table 7-3. Environmental Benefits

| Measure (tons per year) | New Starts (LPA) versus Baseline |
|-----------------------------------------------------------|------------------------------------------------|
| Change in Carbon Monoxide | -19.75 |
| Change in Oxides of Nitrogen Oxides | -1.28 |
| Change in Volatile Organic Compounds | -1.33 |
| Change in Particulate Matter (PM 10) | -0.25 |
| Annual Energy Savings (millions of British Thermal Units) | -59153.39 |
| EPA air quality designations | Moderate non-attainment for ground-level ozone |

Source: METRO, 2007.

Operating Efficiencies

Rating: Medium

FTA measures this criterion by evaluating the change in systemwide operating costs per passenger mile in the forecast year, comparing the Section 5309 New Start investment to the baseline alternative. FTA assigns a rating of “Medium” to all projects that have information submitted for this measure. Like the environmental benefits measure, FTA has found that information submitted in support of the operating efficiencies criterion does not distinguish with any meaning the merits of competing New Starts projects. While FTA reports the information submitted by project sponsors on operating efficiencies to Congress and other stakeholders, it does not formally incorporate this measure into its evaluation.

Cost Effectiveness

Rating: Medium

Significant among the project justification criteria is cost effectiveness, which is the annualized capital and operating cost per hour of user benefits for the forecast year. It captures the additional costs of the New Start project compared to the transportation benefits to transit riders. User benefits are defined identical to the measure used in the mobility improvements criterion.

New Starts projects must be rated "Medium" for cost effectiveness, in addition to receiving an overall "Medium" rating, in order to be considered by FTA for New Starts funding.

Transit-Supportive Land Use

Rating: Medium-Low

This criterion addresses the extent that transit-oriented development is likely to occur in the New Start project corridor.

- Outside of the high-density CBD, most of the Southeast Corridor is characterized by low-density commercial, light industrial, and mixed residential development laid out on a grid pattern of streets.
- Pedestrian access is hindered by drainage ditches, wide streets, a lack of curb cuts, expansive parking lots, and in some cases, missing sidewalks. Two universities are present, with many of their athletic facilities, housing and academic buildings within a half mile of the proposed alignment.
- Station area population densities rate “Low” by FTA benchmarks, averaging 3,200 persons per square mile. A total of 150,000 jobs are located in proximity to the corridor’s stations, mostly in the Houston CBD, which has a total employment of 130,000.
- Limited efforts have been made at regional planning and growth management. In 2005 the Houston-Galveston Area Council (local metropolitan planning organization) joined with the citizen-led Blueprint Houston to undertake Envision

Houston Region, an initiative designed to create a regional “vision” for the future growth of the area. The results informed the long-range transportation plan update, but have not led to further implementation activities to shape regional land use patterns.

- Some station area planning activities have been initiated. METRO is undertaking a Station Area Work Program to address barriers to station area development, tools to leverage development, and policy for the development of each station area. The City of Houston is developing an Urban Corridor Planning Ordinance, which will provide a planning framework for development in high capacity transit corridors and in specific station areas. METRO has established a joint development/transit-oriented development program that will initiate specific development projects.
- The City of Houston is not zoned. Private deed restrictions are often used for both residential and commercial land development to ensure that standards for land use are maintained, but many of the neighborhoods in the Southeast Corridor lack such covenants. Plans for two Tax Increment Reinvestment Zones in the corridor include design guidelines to promote a more densely developed, pedestrian-friendly, walkable environment, but do not identify implementation mechanisms aside from financing infrastructure improvements.
- Local officials believe the existing Red Line, which opened in January 2004, has been a catalyst for residential and commercial development in the city’s downtown and Midtown areas. However, aside from a significant amount of townhouse development just east of the CBD there is no evidence to date of transit-supportive development in the Southeast Corridor.

Strong growth is forecast for the corridor and small and large vacant and underutilized lots throughout the corridor provide additional development potential, if land use policies and market forces can be aligned.

7.7.2.2 Local Financial Commitment

Rating: Medium

Proposed New Starts projects must be supported by evidence of stable and dependable financing sources to construct, operate and maintain the transit system. The measures FTA uses to evaluate local financial commitment are:

Local Share

Rating: Medium-High

FTA examines the proposed share of total project costs from sources other than Section 5309 New Starts, including Federal formula and flexible funds, the local match required by federal law, and any additional capital funding.

Strength of Capital Financing Plan

Rating: Medium

FTA looks at the stability and reliability of the proposed capital financing plan, including the current capital condition of the project sponsor, the level of commitment of capital funds to the project, the financial capacity of the project sponsor to withstand cost overruns or funding shortfalls, and the reliability of the capital cost estimates and planning assumptions.

Strength of Operating Financing Plan

Rating: Medium-High

FTA looks at the ability of the sponsoring agency to fund operation and maintenance of the entire system (including existing service) as planned, once the guideway project is built. This includes: an examination of the current operating condition of the project sponsor; the level of commitment of operating funds for the transit system; the financial capacity of the project sponsor to operate and maintain all proposed, existing and planned transit services; and the reliability of the operating cost estimates and planning assumptions.

The quantitative measures listed below represent some of what FTA relies on in rating a project’s local financial commitment. Table 7-4 shows the quantitative measures for the Southeast Corridor LRT project.

Table 7-4. New Starts Financial Criteria

| Measure (in Year of Expenditure Dollars) | Cost |
|--------------------------------------------------------------------------|----------------|
| Total Capital Cost (Year Of Expenditure Dollars) | \$ 680,391,000 |
| Proposed Federal Section 5309 New Starts Share of Capital Costs (49.0%) | \$ 333,490,000 |
| Proposed Local Sources for Capital Funding (51.0%) | \$ 347,101,000 |
| Estimated Annual Incremental Operating Costs in the Forecast Year (2030) | \$ 12,500,000 |

Source: METRO, New Starts FTA Financial Template, 2008.

Additional information on the financial plan for this project can be found in Chapter 8 of this document.

7.8 Trade-Offs

The purpose of the trade-offs analysis is to provide decision-makers with a comparison of the alternatives using the key differences among the alternatives across all five perspectives – effectiveness, impacts, cost-effectiveness, financial feasibility, and equity. In selection of the preferred alternative, decision-makers considered the evaluation results presented in the DEIS and comments from agencies and the public during the public hearings and circulation period for the DEIS.

As described in Chapter 5, the LPA was evaluated on the basis of impacts, compared the No Build Alternative. The trade-offs analysis highlights the impacts

that were found to be distinctly different. These include residential and business displacements and construction impacts.

Table 7-5 presents a comparison of trade-offs between the No Build Alternative and LPA.

Table 7-5. Comparison of No Build Versus LPA Trade-Offs

| Evaluation Criterion | Alternatives | |
|---------------------------------------------------------------------------------------------------|--------------|-----|
| | No Build | LPA |
| Effectiveness | | |
| • Develop a Multimodal Transportation System | ● | + |
| • Improve the Efficiency, Reliability, Capacity, and Safety of Existing Transportation Facilities | ● | + |
| • Preserve Social Integrity and Support of Urban Communities | ● | + |
| • Plan for Transportation Projects that Enhance the Quality of the Environment | ● | + |
| • Define a Sound Funding Base | ○ | ○ |
| Cost-Effectiveness | ○ | + |
| Financial Feasibility | ○ | ○ |
| Equity | ○ | + |
| Transportation Impacts | | |
| • Transit Travel Time | ● | + |
| • Transit Ridership | ● | + |

Rating: + Better ● Worse ○ Neutral

Source: Parsons Brinckerhoff, 2006.

The Southeast Corridor LRT services under the LPA 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. Although implementation of the LPA represents a substantial investment of local financial resources, the LPA is financially feasible. The new LRT 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 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 LRT and to fixed guideway that would be less affected by traffic congestion, and would consistently provide lower transit travel times than the No Build Alternative. The proposed 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.

7.9 Conclusion

In making a decision on LPA versus No Build, the costs, impacts, and benefits of the Southeast Corridor LRT 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 they are financially feasible. The principal trade-offs are environmental impacts, which are summarized in Table 7-1. The No Build Alternative would cause no new environmental impacts and would continue existing impacts unchanged, but it would not have the benefits (or impacts) of the LPA.