Chapter 1: Executive Summary / Methodology

Purpose and Need

This study is in support of Hidalgo County's stated goal of assessing the feasibility of developing a commuter rail system that connects major destinations in Hidalgo County and is accessible to residents. The intended use of the study, namely identification of potential projects for advancement into the FTA New Starts evaluation process, requires the determination of planning level cost estimates and transportation impacts to support capital programming decisions at the municipal and regional levels. The commuter rail system put forward will be defined in a manner that best accomplishes the Mission and Vision statements of the Hidalgo County Rail District Board:

Mission
"The Hidalgo County Commuter Rail District is committed to create and maintain a modern self-supporting commuter transportation system that connects the important economic, educational, medical and entertainment venues of Hidalgo County, including metro and rural areas, at a low cost to the residents and visitors of the greater region of the Rio Grande Valley."

Vision
"The Hidalgo County Commuter Rail District will generate economic development along its path and provide an alternative mode of travel for the residents and visitors of the greater region of the Rio Grande Valley through efficient scheduling and services. The system will comprise modern green energy trains and interconnect convenient feeder bus lines for riders connecting to each of the cities' educational, business, medical and entertainment venues, for metropolitan and rural areas, located in Hidalgo County."

The purpose of this project was to conduct a feasibility study to determine whether a passenger rail system in Hidalgo County was feasible for future study, and what the most appropriate operating mode would be. It did not include financial or funding plans other than planning-level cost estimates and discussion of the typical Federal funding process; nor did it include operating plans beyond determining what track improvements would be necessary for differing train frequencies. These would be completed as parts of future phases of study.

Identify Study Corridors

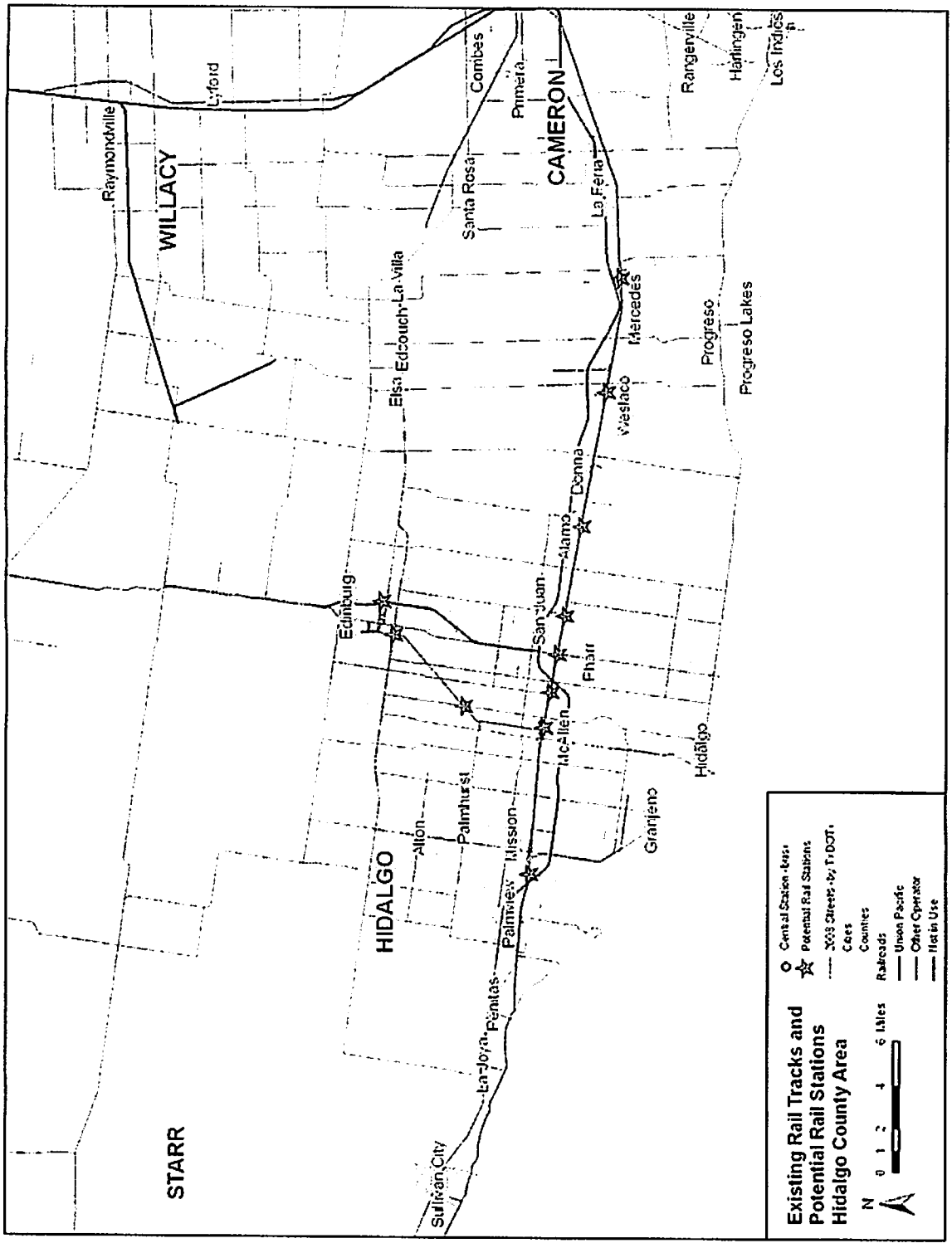
Tracks in the Hidalgo County study area are formerly Missouri Pacific (later Union Pacific) branch lines, and have been leased by the Rio Valley Shipping Company (RVSC) since March 1993. RVSC operates freight service from the Union Pacific connection in Harlingen, approximately 41 miles westward to a connection with the Border Pacific Railroad west of the city of Mission. A branch line runs southward from Mission to the town of Hidalgo, near the international border crossing, approximately 8 miles. A second branch runs northward from McAllen to Edinburg (approximately 13 miles) and was leased by RVSC in September 1997.

The map on the following page depicts the incorporated cities in Hidalgo County, as well as the rail corridors described above and the proposed station locations discussed in the next section. The study corridors correspond to the operating freight rail segments in the most urbanized portions of the County, centering on McAllen and extending northward to Edinburg, eastward to Mercedes, and westward to Mission. The southern branch was not considered for passenger rail service at this time, since population and employment forecasts did not predict a sufficient density of development along the southern spur to make service feasible.

If conditions change over the next few years, it may be possible to serve the city of Hidalgo and the international bridge area, either along the existing southern branch, or via new alignment further to the east. The County (or the operating entity chosen for the passenger rail service) should continue to monitor population and employment projections generated by the MPO, to determine where future service corridors, or changes such as infill stations, may be warranted.

Further study should also be conducted about the timeframe for extending service east into Cameron County (to Harlingen and/or Brownsville); this study should be conducted in conjunction with the MPOs of Harlingen / San Benito and Brownsville. Assuming the Hidalgo system begins operating first, some Cameron County commuters into Hidalgo County may be expected to take advantage of the service; more discussion of this issue is located in the discussion of the Mercedes station. Finally, long-term planning should include examination of the feasibility and/or timeframe of connecting the Hidalgo system to more distant destinations such as Laredo, Corpus Christi, or San Antonio.

Map 1: Existing Rail Corridors and Proposed Station Locations



Station Locations

Eleven station location areas were selected for analysis. It must be emphasized that these locations are conceptual for the purposes of determining potential ridership and the feasibility of the system. When the system development project moves into engineering and design phases, station locations may shift for reasons of infrastructure or utility conflicts, localized traffic concerns, or land availability at the level of individual parcels.

The preceding map shows the location of the proposed stations. The locations (identified by nearest roadway intersection) are:

- Mission – Business 83 and Los Ebanos Road
- McAllen Central – Business 83 and 15th Street
- McAllen North – 10th Street and Hawk Avenue
- Edinburg Central – University Drive and 6th Avenue
- Edinburg 281 – US-281 and Jasman Road
- McAllen East – Business 83 and McColl Road
- Pharr – Business 83 and Cage Boulevard
- San Juan – Business 83 and Nebraska Avenue
- Alamo/Donna – Business 83 and Whalen Road
- Weslaco – Business 83 and Border Avenue
- Mercedes – W 2nd St (Business 83) and Virginia Avenue

Existing Conditions

At-Grade Crossings and Railroad Spurs

The project team identified a total of 313 at-grade railroad crossings in the whole of Hidalgo County, through the use of aerial and roadway photography. This includes all crossings, not just the ones within the corridors later selected for the operating segment. Of these 313, 11 (3.5%) were not accessible to field investigators.

Tables 1-4: At-Grade Crossing Characteristics

Grade Crossing Material		
Type	Number	Percent
Asphalt	73	23.3%
Gravel	23	7.3%
Caliche	9	2.9%
Concrete	128	40.9%
Wood	62	19.8%
Rubber	7	2.2%
NA	11	3.5%
TOTAL	313	100.0%

NA = Not Accessible

Lighting at Crossing		
Type	Number	Percent
YES	110	35.1%
NO	192	61.3%
NA	11	3.5%
TOTAL	313	100.0%

NA = Not Accessible

Signage at Crossing		
Type	Number	Percent
YES	273	87.2%
NO	29	9.3%
NA	11	3.5%
TOTAL	313	100.0%

NA = Not Accessible

Gates at Crossing		
Type	Number	Percent
YES	61	19.5%
NO	241	77.0%
NA	11	3.5%
TOTAL	313	100.0%

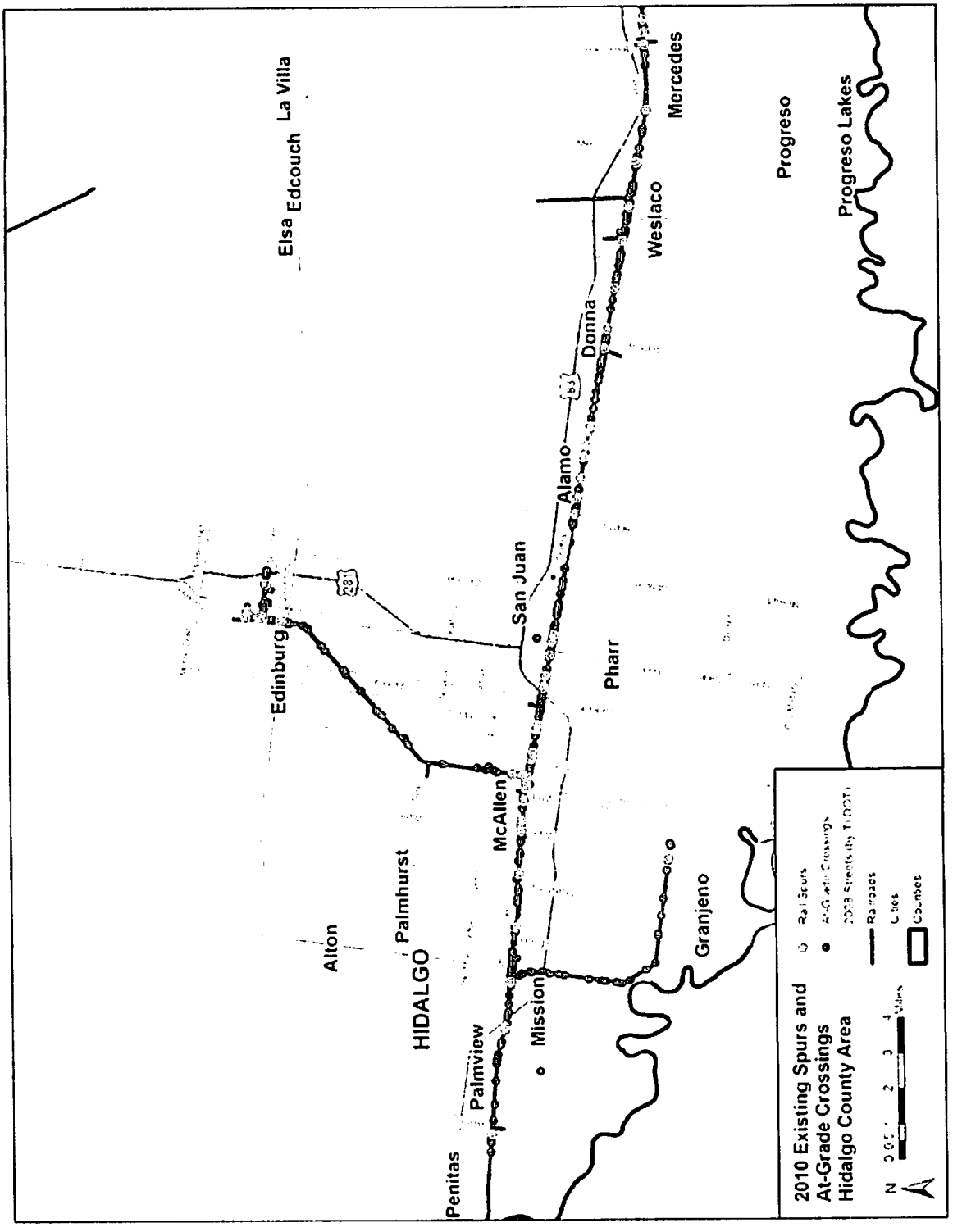
NA = Not Accessible

All statistics come from field investigations in 2010 and 2011.

A photographic survey was conducted of these locations, and the 1,300+ photos taken are included on the CD which accompanies this report. Further discussion of the implications of and future considerations for at-grade crossings is located in Chapter 6, Costs Analysis.

Through a field survey of the existing rail system, a record of all railway spurs in Hidalgo County was collected. Most of the spurs are located in the three largest cities of McAllen, Edinburg, and Pharr, which is expected given that these are the largest concentrations of business activity and thus that of potential freight rail customers. An additional concentration of spur tracks exists in the area between Alamo and Donna, which serve some of the large-scale agricultural operations in the Valley. The map on the following page depicts the concentration of at-grade crossings and spur tracks throughout Hidalgo County.

Map 2: At-Grade Crossings and Spur Tracks



Railroad Traffic

RVSC traffic is indicated by www.lagrangerailworks.com at 8,000 railcars per year. Further information on train consists, peak traffic times and freight rail travel patterns was not available from RVSC. The rail company was interviewed on June 7, 2011. They identified some coordination issues, such as liability standards, public education, and infrastructure upgrades, that will be necessary to operate mixed freight and passenger rail. Further detail is provided in Appendix D. Additional coordination with RVSC and with Union Pacific, the owner of the tracks (RVSC has trackage rights as part of a long-term lease), will be necessary as the project moves forward into Alternatives Assessment and design.

Population and Employment Projections

Hidalgo County, according to the US Census Bureau, grew in population from 569,000 in 2000 to 775,000 in 2010, an annualized growth rate of 3.14%, which is quite substantial, especially when compared to the annualized growth rates of 1.89% for the state of Texas, and 0.98% for the United States as a whole. This is consistent with local assessments of rapid population growth.

The Hidalgo County Metropolitan Planning Organization (MPO) forecasts that countywide population in 2030 will total approximately 1,644,000 persons, or more than double the existing 2010 population of approximately 775,000. Future growth is largely predicted to occur in the incorporated areas, though this is not only due to densification of the existing urban areas, but also development around the existing periphery. The 11 stations that have been proposed for the operating system have within a 2-mile radius of the stations a total of 19.8% of the county's 2030 population, or 326,000 persons.

The MPO forecasts that countywide employment in 2030 will total approximately 445,000 jobs. Future growth is largely predicted to occur in existing areas of high job concentration, and growth in employment is much more centralized than growth in population. The only areas which show high job density in 2030 which did not also have such in 2004 are a few isolated locations on the eastern and northern sides of McAllen. These are presumably due to individual large employers such as hospitals or shopping areas, either new ones or expansions of existing ones. The 11 stations that have been proposed for the operating system have within a 2-mile radius of the stations a total of 30.1% of the county's 2030 employment, or 445,000 jobs.

Existing Transit Service.

McAllen Express Transit (MET) provides service within the City of McAllen, running seven routes throughout the day. Buses operate continuously from 6:00 AM to 6:50 PM, six days a week (excluding Sunday). All seven routes run a 50-minute loop beginning and ending at McAllen Central Station. Total system ridership is approximately 427,000 riders annually.

RioMetro provides inter-city transit service and is the only operator in Hidalgo County outside of McAllen. Four of their seven routes provide service to Edinburg, McAllen, and along the US 83 corridor through the commuter rail study area. However, the schedule is

extremely limited, operating only two to three trips each in the morning and afternoon. Trips typically operate between about 6-9 AM and 2-5 PM. Total ridership is lower than the MET system, with approximately 58,000 riders annually*. RioTransit, a related service, provides various rural routes, typically once per day.

**considering only Hidalgo County routes; RioMetro operates other routes in Cameron County, which do not connect to the Hidalgo routes and are not considered in this analysis.*

Considering which proposed station locations are best served by existing bus routes, McAllen Central has far and away the most service, with Edinburg Central and Mission also having multiple routes. In all cases, however, the bus system will have to coordinate with the train schedules, as well as ensuring service from the train station to nearby major destinations. *The ridership projections for each of the proposed stations assume suitable feeder bus service at all locations*; McAllen Central alone qualifies under the model's parameters as a "transportation center / rail trunk" for having four or more bus routes and two potential rail lines. Complete information on existing bus routes serving proposed station areas is provided in Appendix A.

Preferred Modal Alternative

In order to fully assess the viability of commuter rail operations within Hidalgo County, it was necessary to identify the range of potential rail technologies to consider. High capacity heavy rail, most often referred to as subway/elevated systems, was ruled out as a possible mode due to the preponderance of grade crossing issues to resolve in the system. There was also the need to secure the right-of-way through multiple CBDs, if electrified third rail power supply was employed. Streetcar or trolley service was similarly ruled out. The smaller, more agile, but slower vehicles are more suitable for urban circulator routes, providing high frequency of service over small areas.

Traditional commuter rail technology marries locomotives and coach cars into consists, similar to service operated by Amtrak. The nearest example of traditional commuter service to Hidalgo County as of this writing is the Trinity Railway Express between Dallas and Fort Worth.

Light rail transit (or LRT), by contrast, integrates vehicle propulsion with one or more passenger car (i.e., no locomotive). Cars are generally smaller than commuter rail coaches with less overall capacity per scheduled trip. The closest example of an LRT service to Hidalgo County as of this writing is the Houston METRO Main Street Line, which operates entirely on exclusive tracks.

Some transit agencies have elected to operate LRT systems using diesel electric motor equipped passenger cars, referred to as Diesel Multiple Units (or DMUs). The closest example of a DMU service to Hidalgo County as of this writing is the Capital Metro's Leander Line in Austin, which uses vehicles that are not FRA compliant.

The recommended mode for Hidalgo County is commuter rail, due to the increased ridership potential, the necessity of operating in mixed traffic with freight rail, the higher operating speeds necessary for longer-distance travel, and the greater station spacing envisioned for the Hidalgo system. The use of FRA compliant vehicles—meaning they are certified as sufficiently crashworthy (meaning able to survive a crash with no more than a certain specified level of vehicle damage and/or passenger injury) to operate in situations with mixed passenger and freight trains—is recommended because of their extensive use in other commuter rail operations, and to ensure the preservation of operational flexibility along active freight lines.

Benefit Analysis

The Benefit Analysis examines operating characteristics (e.g., running speeds, dwell times, bus transfer opportunities and park and ride lot locations) based upon peer systems and best practices for the modes and corridors studied. It is intended to use ridership data and local operating characteristics relative to peer systems operating the same modal alternatives to determine initial service standards (e.g., headways by time of day and spans of service). The analysis will identify the number of vehicles used in peak period service, refine operating assumptions for each modal alternative (e.g., dual tracking, station configurations and access requirements) to reflect service standards, and evaluate alternative governance and policing structures used by peer systems for applicability to Hidalgo County, with further consideration of possible future extension of service into Cameron County.

Daily Ridership projections are required to evaluate the adequacy of system capacity and to provide a basis for entering the federal New Starts/Small Starts project development pipeline. This study uses techniques and peer analyses established by the Transportation Research Board to project ridership based on multivariate regression. Transit oriented development (TOD) and international traffic are among the special variables considered by ridership projection regression equations. As alternatives were refined, such as changing station locations or headways, ridership projections were updated to reflect the corresponding changes in commuter rail benefit. Station locations were proposed and adjusted based on local input regarding relative attractiveness to ridership and potential to drive growth.

For the selected operating mode, commuter rail, the average Year 2030 weekday boardings obtained by the ridership model total approximately 16,200, assuming an operating speed averaging 25 miles per hour (top speed of 50 mph) and a midday headway not exceeding 30 minutes. Attempting to develop a comparable service standard with light rail yields ridership projections of less than half this amount, which was part of the reason for selecting commuter rail as the operating mode. Note also that projected light rail ridership is comparable to that of commuter rail at the more urban stations, but falls far short of commuter rail at the suburban and outlying stations. This again reinforces the concept that light rail is suited for much more urban conditions than typically occur in Hidalgo County. The following tables and charts illustrate the station-by-station ridership projections.

Table 5: Projected 2030 Rail Ridership by Station

Station	2030 Ridership	
	Commuter Rail	Light Rail
Mission	2,320	409
McAllen Central	1,612	1,760
McAllen East	1,528	417
Pharr	550	570
McAllen North	2,305	429
Edinburg Central	796	882
Edinburg 281	1,322	361
San Juan	1,623	422
Alamo-Donna	1,512	275
Weslaco-STCC	1,464	553
Mercedes	1,196	541
TOTAL	**16,229**	**6,620**

Other issues that the benefits analysis will consider are station-area related Enterprise Zones and use of the Texas Rail Relocation and Improvements Fund. Station Enterprise Zones are underdeveloped areas that receive favorable business incentives such tax breaks or regulatory exemptions. The Texas Rail Relocation and Improvements Fund was created by 2005 to relocate freight rail lanes outside urban areas.

Cost Analysis

The methodology used for generating the project capital cost estimates is consistent with the Federal Transportation Administration (FTA) guidelines, consisting of all those costs associated with constructing, testing and commissioning the commuter rail system, occurring prior to the start of revenue service. As required by the FTA guidelines, these costs have been broken into the Standard Cost Categories "SCC".

Table 6: Cost Estimate by SCC Category

SCC	Description	15-Min. Peak Headways	30-Min. Peak Headways
10	Guideway & Track Elements	$65,193,000	$55,774,000
20	Stations	$8,506,000	$8,506,000
30	Support Facilities	$21,861,000	$21,861,000
40	Sitework	$15,805,000	$14,340,000
50	Systems	$29,697,000	$29,897,000
60	Row	$5,287,000	$5,287,000
70	Vehicles	$55,216,000	$35,728,000
80	Soft Cost	$36,681,000	$33,803,000
90	Contingency	$71,496,000	$61,511,000
Total Baseline Project Cost		**$309,742,000**	**$266,707,000**

Hidalgo County Rail Operating & Maintenance Costs are expected to be within the range of $13.8 and $18.8 Million annually.

Drainage and grade crossing eliminations are major potential cost drivers for the HCCR. Major recent flooding events are mostly associated with Hurricane Alex in June 2010. Alex made landfall in northern Mexico, but the outer rain bands caused 6-7 inches of rainfall in McAllen in one day. Of the thirty locations of concern that were identified, only two are within the limits of the proposed rail system operations. One location in Edinburg has been reported by the City to not be of concern, and at the other, the floodway between Weslaco and Mercedes, the estimated replacement cost of the viaduct structure has been included in the system cost estimates.

A total of 313 at-grade rail intersections are located in Hidalgo County. Automobile traffic growth and increased rail use could justify a grade-separated rail crossing, or low auto traffic could justify the crossing's closure. Grade-separated rail crossings influence the design of the rail as well as that of nearby roadways, and increase the overall costs of the system.

As part of further analysis phases, it will be necessary to determine which at-grade crossings may be eliminated. As part of the design of the system, it will be necessary to classify the at-grade crossings into three groups: those to remain, those to be closed, and those to grade separate. Some high-traffic locations may warrant grade separation in order to reduce conflicts with train operations and delay to vehicle traffic. Low-traffic locations might simply be closed; these will also depend on the nearby street pattern and its ability to absorb diverted traffic.

The 2005 Rail Study recommended four in particular for further study, as listed below. That study estimated each grade separation would cost $7 million to $10 million in 2005 dollars.

- SH 107 (University Drive) in central Edinburg
- SP 115 (23rd Street) in central McAllen
- Bicentennial Boulevard, also in central McAllen
- US 281 (Cage Boulevard), in Pharr

Geometric issues to be resolved in the design of a grade separation include access to adjacent properties; the addition of retaining walls or embankments; whether nearby intersecting streets will be closed, elevated, or rerouted; and whether any sight distance issues are created with nearby intersections or driveways. Other considerations of developing a grade separation are environmental issues such as noise or loss of sunlight to adjacent properties, and the geotechnical evaluation of soil conditions.

Decision Matrix

As stated in Chapter 4, the recommended mode for Hidalgo County is commuter rail, due to the increased ridership potential, the necessity of operating in mixed traffic with freight rail, the higher operating speeds necessary for longer-distance travel, and the greater

station spacing envisioned for the Hidalgo system. A decision matrix has been prepared listing selected attributes of commuter rail and light rail, to determine the feasibility of continuing with future study. A commuter rail system appears to be feasible and further study is warranted to refine the plan and secure funding commitments.

Table 7: Feasibility Decision Matrix

Consideration	Light Rail	Commuter Rail
Can Operate in Mixed Traffic with Freight Rail?	NO	YES
Station Spacing Appropriate for Hidalgo County Area	NO	YES
Attracts New Development to Station Areas	YES	YES
Will Require Track Reconstruction	YES	YES
Will Require External Power	YES	NO
Typical Seating Capacity	less than 200	200 to 500
Potential Weekday Ridership	6,600	16,300
Cost of Development	not estimated	$267 Million to $310 Million
Cost of Annual Operations	not estimated	$13.7 Million to $17.3 Million
Feasible for Pursuit?	**NO**	**YES**

Green = more feasible mode

Receive Public Comments

Throughout the course of the study, the project team interviewed various community stakeholders, to educate and inform them of the purpose of the study, convey its general schedule and scope, detail the potential passenger rail system being investigated and the expected recommendations to come from the study, and solicit general input.

The majority of the interviewees expressed interest and appreciation that the study was being conducted. Stakeholder organizations are listed below. Further discussion of the common themes brought up is provided in Chapter 8. The transcripts of each interview are included in Appendix D.

Stakeholder Organizations Interviewed

- Edinburg Economic Development Corporation
- McAllen Economic Development Corporation
- Mercedes Economic Development Corporation
- Mission Economic Development Authority
- Rio South Texas Economic Council

- San Juan Economic Development Council
- Hidalgo County Metropolitan Planning Organization
- City of Alamo
- City of Donna
- City of Edinburg
- City of McAllen
- City of Mercedes
- City of Pharr
- City of San Juan
- City of Weslaco
- South Texas College
- The University of Texas Pan American
- Donna ISD
- Edinburg CISD
- Mercedes ISD
- Mission CISD
- Sharyland ISD
- Capote International Business Park, Pharr
- Doctors Hospital at Renaissance
- Hunt Valley Development (Sharyland Plantation)
- Rio Grande Premium Outlets
- Rio Valley Shipping Company (Short-Line Railroad)

A public meeting was held on Monday, May 9, 2011, at the International Room on the campus of the University of Texas Pan-American, in Edinburg. Officials and representatives were invited from each of the community stakeholders listed above. In addition, a general mailing was conducted to members of the public who had attended previous County events, as compiled by the Hidalgo County Judge's Office.

A total of 31 people attended the meeting. The Project Team gave a PowerPoint presentation on the purpose, methodology, and recommendations of the project, then answered questions. Full detail of the comments from this meeting is located in Appendix E, along with sign-in sheets and a copy of the PowerPoint presentation.

Recommendations and Next Steps

The results of the initial analyses of potential rail modes affirm the future viability of the studied commuter rail system relative to the demographic conditions forecasted by the Hidalgo County MPO. Hidalgo County and the adjoining cities now have the opportunity and challenge to work together to bring about policy, financial, physical, and institutional environments that will maximize the benefits of such as system.

From a policy perspective, further consideration of station locations needs to be performed in a cooperative regional setting, a role which is ideally suited to the Hidalgo County MPO. The MPO will also provide a good setting to plan for development of various selected station locations as hubs for feeder transit services.

The magnitude of capital and operating expenditures needed to construct and sustain a commuter rail operation will inherently require the leveraging of a wide range of public and private resources. Hidalgo County officials should track the federal transportation bill reauthorization process and meet with federal representatives to lobby for federal funding. Local officials should also make contact with representatives from Federal Transit Administration (FTA) Region VI, Federal Railroad Administration (FRA) Region V, and TxDOT Public Transportation Division, as well as the Union Pacific Railroad and Rio Valley Switching Company to pursue capital assistance for various aspects of the system.

Lastly, Hidalgo County must examine the institutional relationships that will be needed to accomplish and sustain a regional commuter rail operation. Rio Metro and McAllen Express Transit both provide fixed route bus service within the study area using FTA formula allocations along with other resources. It is recommended that Hidalgo County work with study area cities to explore the creation of a regional transit authority that will subsume the roles of both providers. Note that this is already an action item in the MPO's *2010-2035 Metropolitan Transportation Plan*. Chapter 4 lists as a "Long-Range Priority Objective" the development of a "more formal transit governance structure."