SOUTH/WEST CONNECTOR CORRIDOR ANALYSIS

Needs Assessment Report

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Executive Summary

The South/West Connector Corridor is a 19.9-mile, L-shaped corridor that connects the South Texas Medical Center in west San Antonio to Brooks City Base in the south. The corridor generally includes portions of Fredericksburg Road, General McMullen Drive and Zarzamora Street, and SW Military Drive. This Needs Assessment Report summarizes the mobility and accessibility needs of the local communities in the study area and identifies the transportation system deficiencies that could be addressed through the implementation of high-capacity transit improvements. Needs are summarized in the context of the project goals and objectives established at the outset of the South/West Connector Corridor and Traffic Signal Priority Analysis (SWCCA).

Mobility Improvements

While the South/West Corridor is served by some of the busiest and more frequent bus routes in the VIA system, there is still a need to improve the speed, reliability, and pedestrian accessibility of transit in the corridor. Total annual ridership along the routes serving the study area has increased at a greater rate than that of the VIA system as a whole. In combination, the total ridership on these routes comprise almost 20 percent of the total VIA system ridership. Approximately eight percent of the corridor’s residents use transit for work trips, compared to only 2.4 percent of residents in the region overall. Approximately 46 percent of transit trips stay within the corridor, while 24 percent have a destination downtown. One-third of bus riders in the corridor transfer to/from another bus. Unlike other corridors that have commuting peaks in the mornings and afternoons, ridership levels in the South/West Corridor are even throughout the day, indicating consistent demand for transit service during both peak and off-peak hours.

In the next 30 years, transit person trips are projected to grow by 59 percent in the Corridor, and transit improvements must ensure these trips connect with retail centers, universities, employment centers, medical facilities, and other activity centers in the Corridor and elsewhere in the region. New transit connections are needed that will link this corridor to the overall transit network, including the planned network of high-capacity transit lines envisioned in the Long-Range Comprehensive Transportation Plan. At the same time, pedestrian improvements are needed to improve the general low-quality of existing conditions with gaps in the sidewalk network and challenges crossing wide, fast-moving arterials.

Cost Effectiveness

Congestion on many roads in the Corridor causes transit service to run delayed, impacting on-time performance of routes and causing time and money lost to riders. Service on routes within the study corridor is generally less reliable than the VIA system average, with on-time performance below the system average of 75.9 percent. A focus on efficiency, speed, and reliability of transit service in the
South/West Connector Corridor will increase the appeal of transit use, potentially increasing ridership, reducing vehicle-miles traveled (VMT), and increasing accessibility for residents in the region.

Land Use

The Corridor is projected to experience a 33 percent growth in population and 80 percent growth in employment over the next 30 years. To accommodate this growth, adopted local and regional planning policies must continue to support urban infill development and redevelopment focused on key nodes within the Corridor. Transit developments within the Corridor need to be supportive of the scale and character of land use developments envisioned by the City of San Antonio, Bexar County, and VIA.

Economic Development

A large percentage of transit riders in the Corridor use existing transit service to commute to and from employment or shopping centers. The Corridor contains several major employment centers, and a focus on connecting residents with economic opportunities through transit routes should be key to the alternatives proposed later in this study. Transit development in the Corridor must ensure residents have access to regional employment centers in the Corridor, such as South Texas Medical Center, VA Hospital, Brooks City Base, Our Lady of the Lake University, Port San Antonio, South Park Mall, and Stinson Airport.

Current city and county policies encourage new employment within the Corridor - over half of the Corridor is designated as an Inner City Revitalization/Infill Policy (ICRIP) area. A key focus of this study should be ensuring transit connections within the Corridor to and from these sites targeted for revitalization and redevelopment. Examples of redevelopment in the Corridor include Brooks City Base and Port San Antonio; however, transit access should continue to encourage the development of more, no matter the size.

Environment

The Corridor contains some of the highest personal vehicle rates in the region, with a large proportion of employed persons in the Corridor beginning their trips outside the Corridor and outside Bexar County. A focus for transit development within the Corridor should aim to increase the share of not only residents of the Corridor, but employed persons in the Corridor, choosing transit instead of single occupancy vehicles to reduce congestion, VMT, and greenhouse gas emissions. Transit development should also, when possible, use fuel-efficient vehicles to minimize environmental impact.

Equity

The South/West Corridor is home to many low-income and minority households, particularly along McMullen-Zarzamora between Woodlawn Avenue and Highway 90. The 2010 median household
income within the Corridor was just over half of the regional average ($24,130 vs. $40,900), and is not projected to rise significantly in the next 30 years. Many residents in the corridor rely on transit as a primary means of transportation. Overall, 76 percent of the bus trips in the corridor are made by zero-car households. Ensuring accessibility to transit, employment, and recreational opportunities should be a key goal of transit development in the Corridor.
1.0 Introduction

This Needs Assessment Report summarizes the needs of the 19.9-mile South/West Corridor in San Antonio, Texas, including portions of Fredericksburg Road, Medical Drive, Babcock Road, St. Cloud Road, General McMullen, Zarzamora Street, and SW Military Drive. The purpose of this report is to develop a listing of the existing transportation and land use needs for the corridor, particularly for the major roadways that will be considered for alignments of future transit alternatives. Information was gathered from VIA Metropolitan Transit (VIA), the City of San Antonio (COSA), site visits, public meetings, and a review of recent plans and studies. Additional detailed information on the corridor characteristics is summarized in the Existing Conditions report.

1.1 Study Purpose and Process

The purpose of the South/West Connector Corridor Study and Traffic Signal Priority Analysis (SWCCA) is to determine, in detail, the benefits, costs and impacts of implementing high-capacity transit along a 19.9-mile corridor that generally follows General McMullen Drive and SW Military Drive, along the western and southern side of San Antonio respectively. The analysis will identify opportunities for long-term transit improvements and the land use changes needed to support high-capacity transit, as well as shorter-term investments such as transit signal priority, customer facilities, and bus service improvements. The SWCCA will help VIA, COSA, and other stakeholders understand how implementing a high-capacity transit project can improve transit service and increase transit ridership while encouraging sustainable development, consistent with the city’s land use policies in the corridor. The SWCCA will recommend a locally preferred transit investment in the corridor that specifies the mode and general alignment of the project.

This Needs Assessment report develops an initial statement of needs for the corridor, sets goals and objectives, and develops evaluation criteria, laying the framework for the development and evaluation of transit improvement alternatives in later tasks. The statement of needs highlights the differences between the desired level of transit system performance and current levels of transit performance along the corridor.

1.2 Study Area

The South/West Connector Corridor study area is shown in Figure 1.1. A more focused area has been used for the purpose of analyzing land use and travel characteristics that generally extends a half mile (highlighted in light blue) from General McMullen, Zarzamora, and SW Military Drive. The corridor extends from the South Texas Medical Center in the northwest to Brooks City Base in south San Antonio, utilizing several major thoroughfares: Fredericksburg Road and Babcock Road in the northwest; General McMullen and Zarzamora for the north-south corridor; and SW/SE Military Drive for the west-east corridor leg.
Figure 1.1  South/West Connector Corridor
1.3 Overview of the Report

This Needs Assessment Report builds upon the analysis laid out in the Existing Conditions report by summarizing transportation system deficiencies in relation to the study objectives. Section 2 of this report begins with a historical overview of the corridor, and summarizes recent plans and studies that led to the identification of the corridor for long- and short-term transit improvements. Section 2 also lays out the initial project goals and objectives, as well as a summary of how needs will be identified and assessed. Section 3 examines development trends, existing land uses, and the locations of existing activity centers. Section 4 identifies existing and future travel patterns in terms of person trips and transit trips, along with transit use, transit system performance, and service quality. Section 5 provides a summary of the corridor needs identified by participants in the project’s first set of public meetings. Taking all of the previous information into consideration, Section 6 summarizes the transit improvement needs in the South/West Corridor, addressing mobility, cost-effectiveness, land use, economic development, environment, and equity concerns.
2.0 Planning Context

This section provides a historical overview of the South/West Corridor and summarizes recent plans and studies that led to the identification of the corridor for long- and short-term transit improvements. One of the purposes of this review is to fully understand the history of the corridor over the past 25 years and identify key issues and challenges, such as the impact of base relocations and equity concerns.

2.1 Corridor History

The City of San Antonio has a rich history, closely interwoven with transportation development, economic growth, and military presence. As the key strategic center for the United States during wars with Native Americans, the military presence in San Antonio has been a key presence for 300 years. The city is located at the head of the San Antonio River in Bexar County, Texas. Over time, transportation technologies have greatly influenced the development of the San Antonio region, from a small frontier town to a large American region. San Antonio has been home to several different types of transportation over the years: horse-drawn mules, trains, streetcars, motorized buses, and personal vehicles. At the same time, the region has continued to grow in terms of both population and land size, requiring new transportation strategies to ensure connectivity and mobility across the growing metropolitan area.

One of the most critical elements to San Antonio’s history is that of military operations and bases. As a Spanish and American military hub for close to 300 years, the city’s land use, transportation, and economic development patterns closely intertwine with the needs of military families and operations. Not only have the presence of these military bases provided a strong legacy of stable employment to the region, they have also offered educational and research institutions to the region. While the primary military presence in the city has been related to the Air Force, Fort Sam Houston brings an Army presence to the region as well, home to the Fifth United States Army.¹

Two former bases, located in the corridor, have been converted into other land uses. Kelly Field, a very large employer for the region in military, science and research, closed in 2001, and has since been converted to an industrial and business park named Port San Antonio. Brooks AFB served as a location for many breakthroughs in aviation, and became an attraction for “academia, industry, and other government agencies,”² until it was converted to a “City-Base” in 2000 by an act of Congressional authorization. Now named Brooks City-Base, the area is now a mixed-use community

¹ http://www.samhouston.army.mil/
offering “a competitive environment for local, national, and international businesses” and “a full complement of amenities including residential, retail, environment and open green space.”

2.2 VIA Long-Range Comprehensive Transportation Plan

VIA’s Long-Range Comprehensive Transportation Plan (LRCTP), adopted in July 2011, is the agency’s framework for implementing long-range transit improvements in the region. The LRCTP outlines policies, corridor improvements, transit opportunities, timelines and funding options for transportation in the San Antonio region through 2035. High-capacity transit corridors are identified and prioritized in the Plan, as well as activity centers throughout the entire VIA service area. The South/West Connector Corridor (General McMullen/SW Military) was recommended for further study in the LRCTP, initially proposed as a bus rapid transit (BRT) corridor.

2.3 Mobility 2035

Mobility 2035, adopted in December 2009 by the San Antonio-Bexar County Metropolitan Planning Organization (MPO – now the Alamo Area MPO), is the San Antonio region’s long-range, fiscally-constrained, multimodal transportation plan. It establishes the San Antonio region’s transportation vision, goals, and objectives to address the region’s growth and mobility needs over the next 25 years, including an assessment of the region’s bicycle and pedestrian systems, public transportation, roadway needs, freight movement, environmental concerns, and congestion management. It also describes a scenario planning effort that was implemented to enhance the traditional transportation planning process and engage the public in thinking through which land use growth scenario would best meet the community’s future needs.

Specific to public transit, Mobility 2035 provides an inventory of transit services in the region and sets the context for the importance of public transportation in relation to the South/West Connector Corridor. It identifies the region’s public transportation needs and issues, which include fiscal constraints that limit VIA’s ability to expand the system, land use patterns that are not conducive to efficient transit service, and uninviting pedestrian infrastructure that dampens the ability of transit to compete with automobile travel. The Plan contains unfunded project lists outlined by mode, which give an idea of the level and degree of investment needed on bicycle, pedestrian, roadway, and transit within the South/West Connector Corridor. While not included in the fiscally-constrained plan, these project lists help provide an idea of the level of investment needed in the South/West Corridor and how different types of projects can provide enhanced connectivity and accessibility with the preferred transit investment chosen.

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2.4 Other Studies and Plans

2.4.1 Summary of Other Studies and Plans

Early in the corridor evaluation process, the South/West Corridor study team reviewed several other studies and plans to ensure that all different aspects of transportation surrounding the region and the South/West Connector Corridor were taken into account. The majority of the plans reviewed cast a welcoming vision for the overall San Antonio region to investment in innovative transit, bicycle, and pedestrian mobility. A few common themes emerged throughout the review of existing plans and can inform the evaluation of transit alternatives for the South/West Connector Corridor at different stages of the project process.

First, several of the studies and reports reviewed point to a **regional population and governance that supports transit innovation**. Since VIA began operation in 1977, San Antonio citizens and leaders have continued to vote in favor of transportation development, supporting the region’s first BRT line, VIA Primo, the Westside Multimodal Transit Center, and the Downtown Streetcar. The process that accompanied the implementation of VIA Primo, which debuted in late 2012, has laid a strong foundation in the city for the development of future innovative transit alternatives in the South/West Connector Corridor. This process is further discussed in Mobility 2035, the VIA FY 2013 Budget, the Downtown Circulator System Study, and the VIA BRT Fredericksburg Feasibility Level Analysis of Implementation Study. These studies explore the needs for transit service in the San Antonio region as a whole, and can offer valuable data for the examination of transit alternatives in the South/West Connector Corridor later in the project process.

Another recurring theme in the literature is the **need for improved connectivity between modes of transportation in the San Antonio region**, especially within the neighborhoods and communities within the South/West Connector Corridor. Even though VIA transit networks are often within the vicinity of activity centers, several of the reports explore the reasons behind the connectivity gaps, often identified as a result of citizen involvement and meetings. Regional and sub-regional level reports described this lack of transportation connectivity at the greatest length, most notably the COSA West/Southwest Sector Plan, the COSA Heritage South Sector Plan, the COSA Strategic Plan for Community Development, and the Nogalitos/South Zarzamora Community Plan. In addition, the San Antonio-Bexar County MPO Pedestrian Safety Action Plan addresses the need for improved safety in transit/pedestrian connections for existing transportation networks but also future transit in the region.

Another theme evident in the literature, and in the San Antonio region as well, is the **emphasis on investment and re-development of land**. This is evident by the large number of military re-developments in the region, most notably Kelly Air Force Base’s (AFB) redevelopment to Port San Antonio and Brooks AFB redevelopment to Brooks City-Base. The San Antonio region has been able to maintain economic stability despite the closure of two major bases, reinvest in the land uses, and promote innovative development that is changing the shape of the region. In addition, these re-developments are being designed to complement the region’s new transit initiatives, i.e., the Brooks Transit Center and the Westside Multimodal Transit Center.
Lastly, the expansive breadth and depth of these existing reports and plans has the ability to provide **land use, transportation, demographic, economic, and social data** that can be used by the project team to develop the most accurate picture of the South/West Connector Corridor. On that basis, the project team will be able to envision the corridor’s transit needs in the next twenty years, and through a series of analysis and public workshops, narrow down a few options for the Locally Preferred Alternative (LPA). The South/West Connector Corridor has been previously studied in Mobility 2035, which ultimately recommended BRT for future use in the corridor.

Moving forward into the examination of transit alternatives and recommendations, these studies and reports will be very helpful in the identification of needs and alternatives for the Corridor. A listing of the studies and plans reviewed is located below, and many of these can be used for reference later in the project process:

- Brooks City-Base Development Plan;
- Port San Antonio Master Plan;
- City of San Antonio (COSA) City Center Office Projects (2013);
- COSA Inner City Revitalization Infill Policy Plan (2013);
- San Antonio-Bexar County MPO Pedestrian Safety Action Plan (2012);
- COSA Car-Sharing Feasibility Study (2011);
- VIA Fiscal Year 2013 Budget (2011);
- VIA Primo – Fredericksburg Road BRT Environmental Assessment (2010);
- COSA Heritage South Sector Plan (2010);
- Freight Rail Corridors Reuse Study (2010);
- COSA Strategic Plan for Community Development (2010);
- Housing and Transportation Affordability in the San Antonio Metropolitan Region (2008);
- Central Texas Rail Relocation Study (2008);
- Westside Multimodal Center Site Feasibility Study (2007);
- VIA Bus Rapid Transit Fredericksburg Feasibility Level Analysis of Implementation Study (2007);
- South Central San Antonio Community Plan (2005);
- Austin-San Antonio Commuter Rail Project: Feasibility Study Update (2004);
2.5 Goal Areas, Objectives, and Preliminary Evaluation Criteria

The project evaluation framework lists six goal areas for the South/West Connector Corridor Analysis, including mobility improvements, cost-effectiveness, land use, economic development, environment, and equity. From the outset of the corridor analysis, these goal areas have set the foundation for the existing conditions analysis, and will continue to guide the needs assessment, evaluation of alternatives, and selection of an LPA. At this stage, these six goals areas are used to critically inform and assess the needs of the South/West Connector Corridor. Each of these goal areas will be examined more thoroughly in this report and are described below. Table 5.1 presents project objectives under each of the goal areas. These objectives helped guide the identification of needs. Table 5.2 summarizes preliminary evaluation criteria that are based on the LRCTP and will be considered for application in the evaluation of transit improvement alternatives in the corridor.

Table 2.1 Project Objectives

<table>
<thead>
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<th>Goal Areas</th>
<th>Objectives</th>
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| Mobility Improvements | • Increase the number of people using transit, walking, or bicycling  
                          • Improve transportation access to major destinations and activity centers  
                          • Enhance connectivity within the regional transportation system  
                          • Identify opportunities to improve transit reliability  
                          • Improve safety and security of transit passengers in the corridor, while walking to, waiting for, or riding transit |
| Cost-Effectiveness  | • Maximize transit service performance with operating resources available  
                          • Invest capital resources wisely |
| Land Use            | • Enhance the vitality and character of existing neighborhoods  
                          • Promote local land use and zoning policies that encourage revitalization and infill with compact, walkable development form  
                          • Support accessibility to affordable housing  
                          • Promote consistency and collaboration between planned transportation improvements, local planned growth, and economic development policies |
| Economic Development| • Promote redevelopment and new investment in corridor neighborhoods and job centers  
                          • Support City economic development goals through transit investment |
| Environment         | • Minimize disruptions to environmental resources  
                          • Reduce greenhouse gas emissions and rate of VMT growth |
| Equity              | • Enhance accessibility for all populations in the corridor |
Goal Areas | Objectives
--- | ---
| • Minimize disproportionate impacts on protected populations (Title VI/Environmental Justice)

Table 2.2  Project Evaluation Criteria

<table>
<thead>
<tr>
<th>Goal Areas</th>
<th>Criteria</th>
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<tbody>
<tr>
<td>Mobility Improvements</td>
<td>Annual Transit Trips in the Corridor</td>
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<tr>
<td>Cost-Effectiveness</td>
<td>Annual Capital Cost Per Trip</td>
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<td>Land Use</td>
<td>Population Density</td>
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<td></td>
<td>Employment Served</td>
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<td></td>
<td>Pedestrian Environment</td>
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<td></td>
<td>Affordable Housing</td>
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<tr>
<td>Economic Development</td>
<td>Supportive Existing Land Use Policy</td>
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<td></td>
<td>Tax Increment Reinvestment Zones (TIRZ)</td>
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<td></td>
<td>Inner City Revitalization Infill Policy (ICRIP)</td>
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<tr>
<td></td>
<td>Vacant Land Potential</td>
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<tr>
<td>Environment</td>
<td>Change in Vehicle Miles Traveled (VMT)</td>
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<tr>
<td>Equity</td>
<td>Title VI/Environmental Justice Population</td>
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</table>

**Mobility Improvements.** Improving mobility within the South/West Corridor is a key goal area of this analysis. To measure progress in this category, Annual Transit Trips in the Corridor will serve as the main criteria. This project goal area aligns with:

- Mobility 2035 Overall Goal 2: “Commit to expanding service in *transit supportive areas* while continuing to serve existing customers;”
- Mobility 2035 MTP Goal 1: “Invest in the development of a regional transportation system that serves to increase the *mobility and efficiency* of the movement of persons and goods;”
- Mobility 2035 MTP Goal 6: “Incorporate the spirit and intent of the Americans with Disabilities Act pertaining to *mobility and accessibility* into all levels of transportation system.”
Cost-Effectiveness. In combination with each of the other goal areas, cost-effectiveness is one of the focuses of this analysis. To measure progress in this category, Annual Capital Cost per Trip will serve as the main criteria. This project goal area aligns with:

- Mobility 2035 Overall Goal 3: “Pursue efforts at state, local, and federal levels to expand and diversify its funding sources.”
- Mobility 2035 MTP Goal 1: “Encourage the cost-effective expansion of the regional transportation system to meet the growing mobility needs while ensuring good air quality; enhancing the safety of the traveling public; fostering appropriate land use patterns; advancing alternative modes of transportation; and, increasing accessibility for the traditionally underserved segments of the community.”

Land Use. One of the other primary goals is to promote an efficient and balanced land use mix. To measure progress in this category, several criteria will be used: Population Density, Employment Served, Pedestrian Environment, and Affordable Housing. This project goal area aligns with:

- Mobility 2035 Goal 1: “Pursue regional partnerships that encourage transit supportive land use and joint development policies.”

Economic Development. One of the other primary goals is to promote economic development within the South/West Corridor. To measure progress in this category, several criteria will be used: Supportive Existing Land Use Policy, Tax Increment Reinvestment Zones (TIRZ), Inner City Revitalization Infill Policy (ICRIP), and Vacant Land Potential. This project goal area aligns with:

- Mobility 2035 Overall Goal 4: “Pursue opportunities to support economic development initiatives.”
- Mobility 2035 MTP Goal 10: “Promote the development of a regional transportation system that enhances economic activity; provides for economic growth; and encourages public-private partnerships.”

Environment. One of the other primary goals is to minimize environmental degradation. To measure progress in this category, Change in Vehicle Miles Traveled (VMT) will serve as the main criteria. This project goal area aligns with:

- Mobility 2035 Overall Goal 5: “Commit to the protection of the environment for present and future generations,”
- Mobility 2035 MTP Goal 7: “Enhance the effectiveness of the regional transportation system by addressing the social, economic, energy and environmental issues of the region in all transportation planning efforts.”
- Mobility 2035 MTP Goal 8: “Improve the opportunities for alternative means of transportation that diminish the growth in single occupancy vehicles and improve air quality by providing bicycle and pedestrian facilities.”
**Equity.** Equity is very important aspect of any project, ensuring no population is disproportionately affected. To measure progress in this category, Title VI/Environmental Justice Population will serve as the main criteria. This project goal area aligns with:

- Mobility 2035 Goal 6: “Commit to promote awareness, understanding, appreciation, and stewardship of the benefits of public transit through public education and outreach programs.”

Mobility 2035 MTP Goal 9: “Promote the development of a regional transportation system that recognizes the unique characteristics of the San Antonio-Bexar County area and ensures respect for neighborhoods, historic and archeological resources, the Edwards Aquifer, and other social and environmental issues.”
3.0 Growth Trends and Forecasts

3.1 Development Trends

San Antonio has grown significantly in both geographic area as well as population over the past 50 years. A pattern of suburbanization can be seen as a whole, with an increasing percentage of the region’s population residing farther away from the central core. Between 1960 and 2006, the City of San Antonio annexed approximately 300 square miles of land, increasing the City’s land area by over 200 percent (Figure 3.1).

Figure 3.1  City of San Antonio Land Area by Decade (sq. miles)

Note: Based on Growth Trends presentation by former planning director, Emil R. Moncivais. Does not include 49 mile limited purpose annexation area

During this time, the region also added over a million people, increasing nearly 150 percent in population from 687,475 in 1960 to 1,714,773 in 2010 (Figure 3.2).
South/West Connector Corridor Analysis

Figure 3.2  San Antonio Population Growth

Note: Based on Growth Trends presentation by former planning director, Emil R. Moncivais. Does not include 49 mile limited purpose annexation area

With land area outpacing population growth, the population density in the City declined steadily from 1960 to 2000. Between 2000 and 2010, however, the trend started to shift, with population density increasing by more than five percent (Figure 3.3).

Figure 3.3  Population Density by Decade (people/sq. mile)

Note: Based on Growth Trends presentation by former planning director, Emil R. Moncivais. Does not include 49 mile limited purpose annexation area

Population trends in the South/West Corridor differ substantially from overall growth trends in the City. Over the past five decades while the City population grew by 150 percent, the population in the
South/West Corridor actually decreased by 9 percent (Figure 3.4). Key factors contributing to the population decline in the corridor include the closure of Kelly AFB in 2001 and Brooks AFB in 2011.

**Figure 3.4  South/West Corridor Population by Decade**

Development in San Antonio has largely been fueled by freeway expansion and transit service expansion. As transit service has expanded beyond the historic streetcar, and freeway capacity increased, populations ventured further outside of the downtown core of the city. Population density maps show a decline in people per square mile between 1960 and 2010, corresponding with population growth and land annexations as well as a vast expansion of VIA’s transit service area, from the historic streetcar in 1960 to the far reaching regional bus service in place today (Figure 3.5).

Regional development was guided largely by the expansion of the region’s highway network, particularly State Loop 410 and Loop 1604. The expansion of these facilities over time served as a catalyst for populations to take root farther from the city center. As can be seen in Figure 3.5, population density outside the urban core has increased as infrastructure has expanded beyond earlier city limits. As a result of continued growth of the city both in terms of land area and population, expanding transportation options beyond the city center, especially to the north and west, is an identified need in order to provide mobility and accessibility both to and from the city center as well as among various neighborhoods outside of the core.
3.2 Summary of Existing Land Use and Activity Centers

Activity centers in the South/West Corridor include the South Texas Medical Center, St. Mary’s University, Our Lady of The Lake University, Port San Antonio, Mission San Jose, and San Antonio City Base. Population and job centers in the region are generally single purpose areas, either residential, institutional, or commercial in nature. Most residents commute from home to work via personal automobile. This has created a need for significant parking and automobile access in the corridor. Providing options aside from single occupant automobile travel can help alleviate congestion for those commuting by car and has the potential to encourage mixed-use development and reduced parking requirements. A brief description of land use and activity centers within the South/West Corridor is broken down into the following segments.

Fredericksburg Road/Babcock Northwest Segment – 4.5 miles. This segment contains the South Texas Medical Center, a 900-acre campus of medical facilities, including the University of Texas (UT) Health Sciences Center and UT Hospital, the Veterans Affairs (VA) Hospital, and eleven Methodist Hospital centers. The Medical Center is the second largest employer in the San Antonio area, second only to the downtown region. Providing alternative transportation modes and enhanced accessibility to South Texas Medical Center employees can provide incentive to further development in proximity to the campus and provide job opportunities for residents of the City.

Commercial properties front Fredericksburg Road throughout the length of the segment, providing opportunities for shopping as well as employment. Employee and resident access to commercial developments along the corridor are expected to remain a need into the future.
Loop 410 bisects this segment with land use patterns north of Loop 410 mostly suburban. South of Loop 410, Monticello Park and Los Angeles Heights communities have a tight grid pattern. The City has planned this area as the Near Northwest Community.

**General McMullen/Zarzamora Segment – 7.5 miles.** These paralleling thoroughfares traverse a historic neighborhood. From Babcock Road south to Highway 90, the Westside streets form a regular grid pattern which is interrupted by several major creeks. Several of the Westside creeks are currently being restored as greenway trails to be an important future part of the citywide trail system. Planning of future transit alignments must be considerate of both historically significant neighborhoods as well as future trails and creeks. A potential future alignment also has the opportunity to provide connectivity to the citywide trail system.

Employee access to universities slightly west of this segment is an important consideration. St. Mary’s University, slightly west of the corridor, and Our Lady of the Lake University, central to the corridor, are two of the largest university employers. In addition, three neighborhood plans – University Park, Prospect Hill and Guadalupe-Westside – address the Westside and areas between Babcock Road and Highway 90, providing a concentration of residents, who as employees and commuters will need access, to-fro and through the corridor. South of Highway 90, neighborhood plans include Nogalitos – South Zarzamora and Kelly-South San Pueblo.

South of Highway 90, the land use pattern is generally industrial, with several active freight lines. The rail tracks, highway and diagonal arterials create a disjointed land use pattern with poor internal corridor connectivity. Potential conflict between transit and freight activity is a concern in this area.

Port San Antonio – the former Kelly Air Force Base - is another major employer located south of Highway 90. Providing employee accessibility to this site is important given the significance of the military to the economy of the region. This segment is also included in the Westside Development Corporation (WDC). The WDC is an economic development corporation focused on revitalization of a five square mile area directly west of Downtown.

**SW Military Drive – 7.75 miles.** SW Military Drive, also known as State Loop 13, connects two major former military bases – Port San Antonio and Brooks City Base. These two employment hubs, along with the existence of commercial properties spanning the length of this segment, provide significant attractions for current and potential employees as well as other residents in the region. Port San Antonio is a transportation and aerospace hub while Brooks City Base is being redeveloped as a science and technology center with a VIA transit hub. SW Military Drive is developed with commercial properties throughout its length, backed by mostly low-density neighborhoods. Neighborhood plans include United Southwest, South Center, Stinson Airport Vicinity, Highlands, and Pecan Valley. The VIA transit hub at Brooks City Base is an important connection point for any potential service in the corridor and can result in enhance accessibility and efficiency of services for the neighborhoods in this area.
3.3 Regional Land Use and Socioeconomic Forecasts

3.3.1 Land Use

Where information is available, the predominant land use tends to be low density residential or urban low density residential (Figure 3.6). Low density areas are typically not as transit competitive as areas with higher dwelling units per acre.\(^5\) The areas with the highest land use density in the South/West Corridor are located along Fredericksburg Road and Zarzamora Street. Regional commercial and business park uses are located in the north at Babcock and Fredericksburg, S Zarzamora/Kelly Annex and along SW Military Drive. Within the corridor, 113 sites totaling 929 acres are zoned high density residential and 49 sites totaling 147 acres are zoned mixed use. These represent potentially transit supportive developments in the future.

3.3.2 Population and Households

In 2010, the population within the South/West Corridor study was 550,000. Approximately 37 percent of the population (204,500) is located within a half-mile buffer of the potential study area alignments. The corridor population is expected to increase to 278,752 by 2040, an increase of 36 percent. Population density is relatively low within the South/West Corridor study area, at 3,900 persons per square mile. However, population densities are higher (4,500 persons per square mile) within a half-mile buffer of the study area alignments (Figure 3.7). Areas with higher population densities tend to be more walkable and amenable to frequent transit stops. The highest densities are observed near the South Texas Medical Center, Guadalupe-Westside, Highlands, Prospect Hill, and Kelly/South San Pueblo neighborhoods.

\(^5\) Future land use analysis was only possible for those neighborhoods that have completed community plans. Areas without future land use information available include the area above Loop 410, including the Medical Center and suburban areas, Prospect Hill, large areas of the McMullen corridor on the Westside, and a large section south of SW Military Drive.
Figure 3.6 Future Land Use
Figure 3.7 2010 Population Density
3.3.3 Employment

In 2010, there was a total of 233,000 jobs located within the 2.5-mile South/West Corridor study area. Of this total, approximately half of the jobs (116,705) were located within one-half mile of the study area alignments. The three employment centers with the highest densities within the corridor are the South Texas Medical Center, Port San Antonio, and Brooks City Base, anchoring the three nodes of the L-shaped corridor (Figure 3.8). South/West Corridor employment within a half-mile walking distance is projected to increase to 201,513 in 2040. Nearly all areas show an increase in employment, with the largest increases around the Medical Center, at Port San Antonio, and the far eastern end of SW Military Drive.

Current city policies are aimed at encouraging new employment for the South/West Corridor. Over 50 percent of the corridor is within the Inner City Revitalization/Infill Policy (ICRIP) area. The corridor is expected to receive program assistance and funding from ReNewSA, a new interagency program that will deploy City of San Antonio resources to revitalize inner-city neighborhoods. The Westside Redevelopment Corporation promotes development through financing options, marketing assistance and improved communication with the City.

3.3.4 Income

The South/West Corridor is home to many of San Antonio’s low-income households, with many residents relying on transit as a primary means of transportation. The South/West Corridor’s median household income in 2010 ($24,130) was almost half of the regional average ($40,900). While median income is expected to increase in the South/West Corridor through 2040, it will likely remain well below the regional average. Accessibility and mobility for transit dependent populations is important in providing job access and recreational opportunities throughout the corridor and region as a whole. See the South/West Connector Corridor Existing Conditions Report for additional information.

Specifically, the lowest income areas in the corridor fall in the west and the south. A large concentration of low-income households can be seen along the McMullen-Zarzamora segment of the South/West Corridor between Woodlawn Avenue and Highway 90 (Figure 3.9). Overall, 76 percent of the bus trips in the corridor are made by zero-car households.

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Figure 3.8 2010 Employment Density
Figure 3.9 2010 Household Income
4.0 Travel in the Corridor

4.1 Travel Patterns, Existing and Future

This section examines existing and future travel patterns within the South/West Corridor and various adjacent districts. These districts are outlined in Figure 4.1 below. The South/West Corridor is divided into three segments for analysis which are discussed in Section 3.2, the Fredericksburg Rd./Babcock Northwest Segment, the General McMullen/Zarzamora Segment, and the SW Military Drive Segment. Districts were created following general land use patterns and using transportation barriers such as freeways as boundaries.

Figure 4.1 San Antonio Districts
4.1.1 Total Person Trips

Total daily person trips in Bexar County (home to San Antonio) in 2010 totaled 7,604,880. Between 2010 and 2040, the region is projected to experience an 87 percent increase in total person trips, reaching 14,232,494 daily person trips by 2040.\(^7\) Table 4.1 lists the top origin zones by district for both 2010 and 2040. The majority of travel occurring within the corridor originates in outer districts, evidence of the measurable role that suburbanization and expansion of City limits has played in the region’s travel patterns. Between 2010 and 2040, the proportion of trips originating outside of the county is projected to increase, from 10 to 14 percent.

The South/West Corridor segments are not listed among the top origin districts or destination districts in both 2010 and 2040 (Tables 4.1 and 4.2). Travel to/from Districts 5 and 9, as well as growth in District 8 as a destination, also support projections for development and population growth in suburban parts of the City away from the central core. As a result, future analysis may choose to focus efforts on northwest segment of the South/West Corridor.

### Table 4.1 Top Origins, Total Person Trips

<table>
<thead>
<tr>
<th>District</th>
<th>Total Trips 2010</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>1,219,620</td>
<td>16%</td>
</tr>
<tr>
<td>10</td>
<td>1,022,415</td>
<td>13%</td>
</tr>
<tr>
<td>8</td>
<td>791,335</td>
<td>10%</td>
</tr>
<tr>
<td>6</td>
<td>755,977</td>
<td>10%</td>
</tr>
<tr>
<td>Outside Bexar County</td>
<td>732,042</td>
<td>10%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>District</th>
<th>Total Trips 2040</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>2,293,055</td>
<td>16%</td>
</tr>
<tr>
<td>Outside Bexar County</td>
<td>1,951,157</td>
<td>14%</td>
</tr>
<tr>
<td>10</td>
<td>1,876,717</td>
<td>13%</td>
</tr>
<tr>
<td>9</td>
<td>1,843,380</td>
<td>13%</td>
</tr>
<tr>
<td>6</td>
<td>1,406,698</td>
<td>10%</td>
</tr>
</tbody>
</table>

In 2010, the top five origin districts comprised 59 percent of all regional trips. By 2040, travel is projected to become more concentrated to those same five districts, with the top five origin districts comprising 66 percent of all trips.

\(^7\) Travel projections provided by the Alamo Area Metropolitan Planning Organization’s Travel Demand Model using the CLRP Scenario.
Table 4.2  Top Destinations, Total Person Trips

<table>
<thead>
<tr>
<th>District</th>
<th>Total Trips 2010</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>1,248,974</td>
<td>16%</td>
</tr>
<tr>
<td>10</td>
<td>995,717</td>
<td>13%</td>
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<tr>
<td>5</td>
<td>896,457</td>
<td>12%</td>
</tr>
<tr>
<td>8</td>
<td>663,296</td>
<td>9%</td>
</tr>
<tr>
<td>11</td>
<td>654,910</td>
<td>9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>District</th>
<th>Total Trips 2040</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>2,035,623</td>
<td>14%</td>
</tr>
<tr>
<td>9</td>
<td>1,955,392</td>
<td>14%</td>
</tr>
<tr>
<td>10</td>
<td>1,867,431</td>
<td>13%</td>
</tr>
<tr>
<td>11</td>
<td>1,690,128</td>
<td>12%</td>
</tr>
<tr>
<td>5</td>
<td>1,232,928</td>
<td>9%</td>
</tr>
</tbody>
</table>

Travel to and from District 7 shows the highest rate of growth between 2010 and 2040, though the absolute amount of travel in this District remains modest. Travel to/from the district increases from two percent of total daily trips in 2010 to 4.5 in 2040. On the other hand, overall District 7 travel grows nearly 300 percent from 162,577 total trips in 2010 to 638,969 in 2040.

Travel between District 7 and Districts 8 and 2 as well as travel outside of Bexar County represent those specific origin-destination (O-D) pairs with the highest percent growth. Areas outside of Bexar County are a significant source of daily travel within the region as seen in Figure 4.2 and Figure 4.3, and are projected to remain significant sources of daily travel in the region in the next 25 years. Providing services to these residents as well as those to the north and west of the corridor will be important given the significant increase of trips originating in the South/West Corridor by 2040.
Figure 4.2  Daily Trip Origins by District, 2010

Figure 4.3  Daily Trip Origins by District, 2040
4.1.2 Person Trip Flows, To/From Corridor and Districts, Work vs. Non-work

Trips to/from the South/West Corridor show a smaller percentage growth than that of the entire region. Person trips in the Corridor are expected to rise by approximately 57 percent, from 1,520,927 in 2010 to 2,384,781 in 2040. The SW Military Drive segment shows the most rapid growth in the South/West Corridor, increasing 70 percent from 496,981 trips in 2010 to 846,927 trips in 2040. Growth in person trips by segment is broken down in Table 4.3. Trip growth within the SW Military Drive segment may be largely due to a rise in development and travel in District 7. Providing access to a growing population south of the city center is an additional need beyond serving the more established neighborhoods to the north. Overall, the amount of person trips in the South/West Corridor declines from approximately 20 percent to 17 percent. Additional information on travel patterns between the various segments of the corridor are discussed below.

Work trips comprise approximately 15 percent of total trips traveling through the South/West Corridor in 2010, remaining relatively steady through 2040. Furthermore, work trips make up between 10 and 12 percent of trips originating in the corridor and between 11 and 21 percent of trips terminating in the corridor, depending on the segment in question. Overall, 20 percent of all work trips in the region (231,015 out of 1,146,194) are traveling to/from the corridor. This number takes a slight decline through 2040. While the total number of work trips in the region nearly doubles, increasing 99 percent to 2,279,468, the number of work trips in the region traveling to/from the corridor increases 71 percent to 394,109.

<table>
<thead>
<tr>
<th>Segment</th>
<th>2010 Person Trips*</th>
<th>2040 Person Trips*</th>
<th>Percent Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fredericksburg Road/Babcock Northwest Segment</td>
<td>571,178</td>
<td>823,673</td>
<td>44%</td>
</tr>
<tr>
<td>General McMullen/Zarzamora Segment</td>
<td>534,374</td>
<td>831,070</td>
<td>56%</td>
</tr>
<tr>
<td>SW Military Drive</td>
<td>496,981</td>
<td>846,927</td>
<td>70%</td>
</tr>
</tbody>
</table>

*Total Person Trips with an origin and/or destination in each segment.

Fredericksburg Road/Babcock Northwest Segment. Travel in this segment of the Corridor is primarily concentrated within the segment and Districts directly adjacent to it, notably Districts 5, 8, and 9. Of the 263,229 trips originating in this portion of the corridor in 2010, 28 percent (74,976) of them are internal to this segment of the Corridor. An additional 28 percent (73,095) terminate in District 9, north of the Corridor. District 5 represents an additional 16 percent of destinations (40,820) for trips originating in this segment.

Travel to/from this segment is forecasted to grow 44 percent by 2040, from 571,178 to 823,673, with Districts 9 and 5 still comprising a large portion of travel to/from the segment. District 8 more than doubles and emerges as the third highest origin for trips terminating in the segment, behind
District 9 and intra-segment travel. Nearly one-third of trips (32 percent) originating in this segment in 2040 also terminate in one of the three segments of the South/West Corridor (120,787 out of 372,935), the majority of them (101,326) within this Fredericksburg Road/Babcock Northwest segment.

**General McMullen/Zarzamora Segment.** Travel in this segment running north south is also concentrated within the segment. Of the 371,598 trips originating from this portion of the Corridor, 92,379, or 25 percent, of them also terminate in this segment. Travel to District 1 and travel to District 5 represent and additional 29 percent of trips originating in the Corridor. Travel primarily originates from within the segment as well as Districts 1 and 4. Trips between this segment to/from downtown District 1 (83,595) make up over 15 percent of all trips to/from this segment (534,374).

Travel to/from this segment is forecasted to grow approximately 56 percent by 2040, from 534,374 to 831,070, with Districts 1 and 5 remaining as prominent destinations, and District 4 as a prominent origin of travel terminating in the segment. Similar to the Fredericksburg Road/Babcock Northwest Segment, District 8 emerges as the third highest origin for trips terminating in the segment, increasing nearly 150 percent by 2040 to 37,754 total trips. Over one-third of trips (36 percent) originating in this segment in 2040 terminate in one of the three segments of the South/West Corridor (202,839 out of 555,842), the majority of them (129,194) representing intra-segment travel.

**SW Military Drive Segment.** Travel to/from this southernmost east-west running segment is concentrated primarily within the segment itself and adjacent Districts 1, 2, and 3. A large portion of travel originating in the segment also ends in the segment (93,314 of 235,752 trips, or 40 percent). An additional 13 percent (29,919) of trips terminate in District 1 and 11 percent (25,002) in District 3. These patterns remain relatively consistent. Travel to the corridor comes mostly from Districts 2 and 3 - 48,031 (14 percent) and 65,083 (18 percent respectively).

Travel to/from this segment is forecasted to grow 70 percent by 2040, from 496,981 to 846,927 to/from daily trips. Districts 1 and 3 remain as prominent destinations and Districts 2 and 3 as primary origins. Approximately 45 percent of trips originating in this segment in 2040 terminate in one of the three segments of the South/West Corridor (170,810 out of 377,718). The overwhelming majority of these 170,810 trips also terminate within the segment. Overall, 147,027 trips originating in this segment also terminate within it, representing 39 percent of all trips beginning in the SW Military Drive segment.

### 4.1.3 Transit Trips and Mode Share

Daily transit trips in the region are 79,368 in 2010 and 105,863 in 2040, a 33 percent increase. Transit trips make up approximately one percent of total trips in the region, decreasing slightly from 1.04 percent in 2010 to 0.74 percent in 2040. However, transit travel occurs to/from the corridor at over twice the rate of the regional mode share. In 2010, transit trips made up over 2 percent of total trips to/from the corridor, 33,768 of 1,520,927 daily person trips. Transit mode share remains consistent into 2040, with the South/West Corridor serving as the origin or destination of 44,737 out
of 2,384,781 daily person trips (1.9 percent). This represents 31 percent increase in total transit trips to/from the corridor.

As shown in Figure 4.4, overall population and employment growth in the San Antonio region is projected to outpace growth in the South/West Corridor. As a result, total person trips are expected to increase more rapidly in faster growing areas outside the South/West Corridor. That said, the growth in total transit trips in the South/West Corridor is expected to outpace growth in total person trips, resulting in a higher transit market share by 2040.

**Figure 4.4  2040 Growth Projections**

*Note: Trips made by residents of the South/West Corridor study area

### 4.2 Transit Use

#### 4.2.1 Transit Ridership and Trip-Making

The South/West Corridor is served by a number of key VIA bus routes – Routes 520, 524, 550/551, and 100 (Figure 4.5). Total annual ridership along the routes serving the study area has increased at a greater rate than that of the VIA system as a whole (Figure 4.6). In combination, the total ridership on these routes comprised almost 20 percent of the total VIA system ridership in 2013.
Figure 4.5  Existing VIA Bus Routes in the South/West Corridor

Figure 4.6  Annual Ridership for the Study Corridor Routes
An on board survey conducted by VIA in 2010 gathered ridership information related to travel in the total VIA service area, including routes that are now served by Primo service Route 100. The top four VIA bus routes in the South/West Corridor are routes 91 and 92 (serving a proxy for Primo service) as well as routes 520 and 550/551. As can be seen from Figure 4.7, the vast majority of travel occurring in the South/West Corridor along Routes 92 and 520 originates within the corridor. Travel along all other Routes (550, 551, and 91) tends to originate in districts external to the corridor. Figure 4.8 sheds light on the destinations for travelers taking VIA bus within the corridor. The South/West Corridor remains the primary origin and destination for riders on Routes 520 and 92, while the majority of riders on the other routes represent through riders who originate and terminate in districts outside the corridor.

**Figure 4.7 Origins Districts by Route, 2010**
Route 91

Route 91 is a limited-stop route, making stops up to Medical Drive, serving the Medical Center campus. From there, it returned to Fredericksburg Road and continued northward, making all stops on Fredericksburg Road to Clarke (just before the IH-10 entrance ramp), where it turned into West Telemarketing. That northern portion was replaced by the existing UTSA branch of Primo. In downtown, the route had a north-south alignment, operating on the St. Mary’s-Navarro couplet, San Pedro Avenue, and Cypress Avenue to the beginning of Fredericksburg Road.

According to VIA’s 2010 On Board Survey, there are 2,891 daily transit trips along this route in the corridor, with the Fredericksburg Road/Babcock Northwest Segment representing the most common origin. Approximately 36 percent of daily trips (1,035) along Route 91 originate from this segment, with 32 percent of daily trips terminating in this segment (926). The second highest origin is District 9, north of this segment. Trips through the entire South/West Corridor that either originate or end in District 9 make up 40 percent of all trips. This concentration of transit trips to and from either the Fredericksburg Road/Babcock Northwest Segment or District 9 are shown in Figure 4.9 and Figure 4.10.
Figure 4.9  Daily Trip Origins, Route 91

Figure 4.10  Daily Trip Destinations, Route 91
**Route 92**

Route 92 is a local route on Fredericksburg Road, making all stops on Fredericksburg Road up to Louis Pasteur (just south of Medical Drive.). Like Route 91, this too served the Medical Center campus. According to a 2010 On Board Survey, there are 4,952 daily transit trips along this route in the corridor, with the Fredericksburg Road/Babcock Northwest Segment representing the most common origin. Nearly 45 percent of daily trips (2,218) along Route 92 originate from this segment. The second highest origin is District 5, directly to the east of the northwest segment. Top O-D pairs are between the Fredericksburg Road/Babcock Northwest Segment and districts 5 and 1, demonstrating a significant amount of travel between the northern part of the South/West Corridor study area and downtown and areas directly north of downtown. These transit travel patterns are observed in Figure 4.11 and Figure 4.12.

**Figure 4.11  Daily Trip Origins, Route 92**
Route 520

Service along Fredericksburg Road is provided by Primo BRT Route 100 as well as Frequent tier Route 520. According to the 2010 On Board Survey, there are 6,033 daily transit trips occurring in the South/West Corridor along this route. The General McMullen/Zarzamora Segment represents 45 percent of all trip origins (2,692). The majority of transit travel along Route 520 both originates and terminates within the South/West Corridor area TAZs. This is evident in Figure 4.13 and Figure 4.14. Travel that originates in General McMullen/Zarzamora Segment and terminates within the Fredericksburg Road/Babcock Northwest Segment represents the top O-D pair with nearly 15 percent of daily travel (887).
Figure 4.13  Daily Trip Origins, Route 520

Figure 4.14  Daily Trip Destinations, Route 520
**Routes 550/551**

Skip service Routes 550 and 551 serve the Military Drive portion of the study corridor, as well as portions of the inner loop of San Antonio formed in part by W.W. White Road, Interstate 410, and US Route 90. Both routes share the same general alignment, with Route 550 operating in a clockwise direction and Route 551 operation counter-clockwise.

Total daily ridership is 4,066 on Route 550 and 3,444 on Route 551, for a total of 7,510 daily riders. Over 25 percent of riders along 550 and 27 percent of riders on 551 originate from the SW Military Drive Segment of the South/West Corridor. Travel between this segment and Districts 2 and 3 represent the most popular travel patterns along this route. Riders also travel to Districts 5 and the outer District 8 as well. Figure 4.15 and Figure 4.16 show this concentration of transit trips along these routes.

Over 10 percent of transit trips along these routes start and end in the SW Military Drive Segment of the South/West Corridor, 779 daily trips in total.

**Figure 4.15** Daily Trip Origins, Route 550/551
4.2.2 Transit system performance

Transit system performance can be assessed through a number of metrics. System performance for individual routes can help to gain a better understanding of how each route functions within the system, their service effectiveness, and any future needs related to system performance. Transit system performance utilizes metrics related to ridership and financial effectiveness. To examine ridership, two primary metrics are used:

- **Passenger Boardings per Revenue Vehicle Hour**: The number of unlinked passenger boardings (ridership) generated per revenue hour of service operated. This measure shows ridership generated per unit of service provided by VIA.

- **Passenger Miles per Revenue Hour**: Similar to the previous metric, but adds the influence of passenger trip lengths. This is a typically productivity measure used by airlines because it allows productivity comparison across types of services and trips. It is also an excellent metric for comparing performance of BRT and local services in the same corridor – while the local may have higher passenger boardings per revenue vehicle hour (RVH) and successful BRT will have much higher passenger miles per RVH compared with the local (indicative of overall corridor success).

In addition, financial effectiveness provides an indication of how well a route’s revenues offset its costs. It uses the following metrics:
- **Farebox Recovery Ratio**: Ratio of operating revenue to operating costs. Subsidized services have farebox recovery ratios below 100 percent, while profitable services are over 100 percent. This measure is also referred to as the operating ratio.

- **Net Subsidy per Passenger Boarding**: Measures the average passenger fare less the operating cost per unlinked passenger boarding. This metric indicates the amount of public subsidy necessary to support each passenger trip.

Together, these metrics provide an indication of how well a route’s revenues offset its costs.

**Passengers per Revenue Hour**

Routes 550 and 551 are the leaders in passenger boardings per each revenue hour of bus service among routes in the study corridor, while Routes 520 and 524 also exceed the total system average rate. Route 100 carries many passengers along a substantial portion of its route, but due in part to the large number of revenue hours required to operate the less productive transit service beyond the South Texas Medical Center to the UT San Antonio campus, service effectiveness is lower than might otherwise be expected.

**Figure 4.17  Passengers per Revenue Hour by Route**
Passenger Miles per Revenue Hour

The passenger miles per revenue hour metric measures the cumulative distance traveled by all passengers for every hour of revenue service. It adds to the passengers per revenue hour metric by not only accounting for passenger boardings per revenue hour, but how quickly those passengers are transported. For a fixed level of passengers per revenue hour, faster routes such as limited-stop routes or BRT services will have a higher ratio of passenger miles to revenue hours than slower routes.

Of the services in the South/West Corridor, Routes 550 and 551 perform best at 221 passenger miles per revenue hour, while the Route 100 Primo service carries 121 passenger miles per revenue hour. It is important to note that while Route 100 performs slightly better than the local routes in this metric, it does not perform as well with respect to passenger boardings per revenue hour, indicating that it is operating more efficiently per passenger. However, relative to 2012 NTD figures, Route 100 performs below the VIA system average of 136 passenger miles per revenue hour.

Figure 4.18 Annual Passenger Miles per Revenue Hour by Route

Routes 520, 524, 550, and 551 all perform above the total VIA system average with respect to farebox recovery due to their higher levels of ridership. Route 100 is below the VIA system average.
Figure 4.19    Farebox Recovery Ratio by Route

The net subsidy per passenger boarding will show an inverse relationship with the lower the operating costs offset by passenger fare revenue, the greater the effective operating subsidy per passenger. In this metric, Routes 520, 524, 550, and 551 again all perform better than the VIA system average by requiring a smaller uncaptured operating expenditure per passenger, while Route 100 requires a greater net subsidy.

Figure 4.20    Operating Subsidy per Passenger by Route
4.2.3 Service Quality and Customer Experience

While it is naturally beneficial to transit agencies to maintain an efficient transit system from the perspectives of ridership and cost, it is equally important to maintain a system that provides a high-quality ridership experience for its customers. Transit consumer research has identified passenger wait experience and in-vehicle travel time as the top two attractors to transit use, with reliability as the key metric in retaining customers over the long term. To that end, this section presents a number of service quality metrics:

- Passenger Wait Time – Service Frequency
- Travel Time – Operating speed
- Service Reliability – On-time performance

These metrics measure factors that affect a customer’s perception of service quality, and it is critical to ensure that passengers can expect a satisfactory transit experience to continue to make gains in ridership.

**Passenger Wait Time**

VIA offers borderline “spontaneous use” service frequency for Routes 520 and 524 with 15 minute headways, minimizing the amount of time a prospective customer is required to wait for the next bus. The Route 100 Primo service offers 10 minute headways, which allows for spontaneous use of the route without the need for the customer to consult a schedule or app, which is a benefit that has been shown to attract many “choice riders” who would not otherwise use the bus. Routes 550 and 551 offer only half-hourly headways, which requires more careful planning of travel and limits the market reach of the service.

Figure 4.21 shows the number of trips per hour per route, which is inversely proportional to service frequency. Reduced service frequencies offer a greater number of buses per hour for passengers.

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8 “Spontaneous use” refers to the ability of a customer to “just show up and ride” without timing their arrival at the stop (with either a timetable or a smart phone app). Research has shown that 15 minutes is the borderline where significant numbers of customers start to arrive randomly – a much larger potential market than those riders who plan their arrivals. 10 minute service levels is where significant penetration of this on-demand market starts to take place.

9 “Choice” riders are associated with all income brackets. This means that growing transit ridership and mode share require “selling” the transit value proposition to all customers, not just those outside of the traditional urban core.
Figure 4.21 Number of Trips per Hour by Route

Travel Time

Average in-service operating speeds for the routes serving the study corridor are generally above the system average, indicating a faster travel time for passengers between their origins and destinations. Factors that reduce travel time are high levels of passenger boarding and alighting activity, traffic signal delays, alignments that require many turning movements, and delays due to other vehicle traffic or at-grade rail crossings. Routes 550 and 551 have a relatively high operating speed due to their largely highway-centered operating environment, while Route 100 operates more quickly along its alignment than it otherwise might with the levels of ridership and traffic due to BRT enhancements such as limited-stop service and transit signal priority.\(^\text{10}\) Route 520 exhibits high levels of boarding and alighting activity throughout its length, and is consequently the slowest-performing route in the study corridor.

\(^{10}\) Typically, BRT with transit priority and limited stops will operate approximately 20-30 percent faster than underlying local service depending on the level of priority treatment.
Service Reliability

Service on routes within the study corridor is generally less reliable than the VIA system average of 75.6 percent for February 2014, the most recent data available. Route 100 performs the best, with 73.9 percent of trips arriving on time. The other routes in the corridor perform below the system average, with Route 520 arriving on time 70.9 percent of the time, Route 524 arriving on time 71.6 percent of the time, and Routes 550 and 551 together arriving 69.1 percent of the time. Each route suffered principally from late rather than early running in its poor on-time performance.
5.0 Public Input

5.1 Public Involvement Process

The SWCCA public involvement process was designed to engage individuals, neighborhoods, community and special interest groups, agency representatives and policy leaders in meaningful discussions about opportunities and challenges to improve transit service in the South/West corridor. The project schedule includes four rounds of public meetings at key milestones throughout the study to target active participation from the corridor’s target audiences (Figure 5.1).

The first round of public outreach was held in May 2014. Public meetings were held on the evenings of May 20 (Harlandale Community Center) and May 22 (The Neighborhood Place). In addition, VIA and the project team set up information booths at the Crossroads Park & Ride and Madla Transit Center on May 21 during the morning and evening peak periods, respectively. The locations, dates, and times of the public meetings and information booths were selected to provide convenient access for residents and workers in the SWCCA study area.

Figure 5.1 SWCCA Project Schedule
The first round of public meetings began with an open-house format, which allowed members of the public to view exhibits, pick up handouts, ask the staff questions, and provide comments prior to the formal presentation. Attendees were provided with an agenda, discussion questions, and a comment card. Project staff completed a welcome, introduction, and a presentation. The presentation provided an overview of the SWCCA project objectives, schedule and expected outcomes. Stakeholders then participated in an audience poll with questions related to transit needs and potential transit improvements in the corridor, before breaking into two discussion groups to talk in more depth about challenges and opportunities for improved transit service in the corridor.

5.2 Key Issues Identified

Feedback from the first round of public meetings and information booths supports the need for transit improvements in the SWCCA study area. Participants identified several opportunities to improve transit service in the corridor:

- **Pedestrian Accessibility** – Several participants indicated that improvements are needed to improve pedestrian accessibility to bus stops in the corridor. Better sidewalks are needed that adhere to Americans with Disability Act (ADA) standards and are free of obstructions or continuity gaps. In addition, given the wide cross-sections of some of the roadways in the corridor (e.g., SW Military Drive and General McMullen), participants suggested designating pedestrian crossings at key locations and improving pedestrian accommodations and visibility at crosswalks.

- **Speed and Reliability** – Participants identified several challenges that impact the speed and reliability of transit service in the corridor. Congestion, particularly on SW Military Drive, 1604, and Culebra, causes buses to arrive late and riders to miss their transfers. In addition, at-grade rail crossings impact the on-time performance of several routes (e.g., Route 520) due to detours or delays while waiting for the train to pass. Participants stated that many of these travel time-related issues lead to bus crowding and multiple buses arriving at the same bus stop simultaneously. Suggestions for improving the speed and reliability of transit service in the corridor include dedicated bus lanes, bus pull outs for loading/unloading, improved coordination and timing of transfers, and fewer stops and transfers along major routes.

- **Frequency and Hours of Service** – A common request among participants was to extend service hours, particularly for express routes and weekend service. Others requested that VIA increase off-peak frequency (some routes operate one-hour headways during off-peak times resulting in long total travel times, particularly if transfers are required).

- **Traveler Information** – Many participants identified a need for more user-friendly and accessible transit information to help riders identify and choose the best routes. For example, participants suggested that VIA provide more real-time information to help riders anticipate the timing of the next bus as well as more signage along the bus routes to help less frequent riders navigate the system. One participant suggested that VIA print a listing of key destinations on the sides of the buses themselves so that residents and drivers can become more familiar with where
the service operates. Other suggestions include leveraging technology solutions to communicate real-time route and schedule information, such as installing VIA information centers along the corridor and improving the VIA mobile application, phone service center, and text messaging services. Participants also requested more timely information from VIA about expected delays and/or detours due to road construction in the corridor.

- **Safety and Security** – Several participants identified safety and security as important issues in the corridor. Participants identified a need to improve lighting along sidewalks and bus stops, increase police/security patrols, and provide an anonymous VIA tip phone number to report illegal behavior.

- **Regional Connections** – Participants provided several suggestions to improve transit connectivity within the South/West corridor as well as connections to other activity centers in the San Antonio region. Examples included improving transit connectivity between retail centers, including Brooks City Base and South Park Mall; between universities, such as Our Lady of the Lake or St. Mary’s University; improve connectivity to and from Fort Sam Houston, to and from Madla Transit Center and Lackland Air Force Base; add more east/west connections to the South Texas Medical Center; improve connectivity to Sea World; and improve connectivity from Ingram Road to Crossroads Park & Ride. A couple participants also suggested providing express service between transit centers on Route 550/551.
6.0 Summary of Needs

Based on the analyses outlined in the previous sections and the Existing Conditions report, the following statement of transportation needs has been developed for the South/West Connector Corridor. This statement of needs provides the framework for the identification of corridors to be considered for more detailed analysis in the next steps of the Corridor Study process, and contains the following elements categorized according to the study objectives:

6.1 Mobility Improvements

Transit Service Quality. Although this corridor is served by some of the busiest and more frequent bus routes in the VIA system, there is still a need to improve the speed and reliability of transit in the corridor. High-capacity transit with some dedicated right-of-way or priority treatment at selected intersections would offer a more reliable service than local bus. Some of the key aspects of service quality include:

- Congested roadways in the study area have resulted in long trip times and unreliable bus service;
- Transfer activity between bus routes is relatively high, suggesting the need for more direct service and/or improved transfer facilities;
- Short distances between bus stops increases overall dwell time and makes it difficult to travel longer-distances by bus in the corridor;
- Transit waiting areas and facilities may need to be expanded to handle increased ridership at the busiest stops;
- At-grade rail crossings impact the on-time performance of several routes (e.g., Route 520) due to detours or delays while waiting for the train to pass; and
- Need to provide more frequent service throughout the entire day, to meet existing and future demand.

Overall Transportation Mobility and Connections. Residents of the South/West Corridor need transit services that will extend the reach of existing services for trip purposes that are congested or underserved. In the next 30 years, transit person trips are projected to grow by 33 percent in the Corridor, and transit developments must ensure these trips connect with retail centers, universities, employment centers, medical facilities, and other activity centers in the Corridor. New transit
connections are needed that will link this corridor to the overall transit network, including the planned network of high-capacity transit lines envisioned in the Long-Range Comprehensive Transportation Plan.

**Pedestrian Access and Safety.** Access to bus stops and transit stations needs to be improved, particularly to ensure the safety and quality of the pedestrian environment. Current pedestrian conditions are generally of low-quality with gaps in the sidewalk network and challenges crossing wide, fast-moving arterials. All transit services in the Corridor need to be accessible by pedestrians and provide safe paths for pedestrians along large roadways through crossings. City and County transportation and land use policies place transportation safety as a primary goal, and a focus on safety in transit developments for the Corridor will not only enhance mobility and pedestrian access, but also encourage multi-modal travel and economic development.

### 6.2 Cost-Effectiveness

**Transportation System Efficiency.** Congestion on many roads in the Corridor causes transit service to run delayed, impacting on-time performance of routes and causing time and money lost to riders. A focus on efficiency, speed, and reliability of transit service in the Corridor will increase the appeal of transit use, potentially increasing ridership, reducing VMT, and increasing accessibility for residents in the region.

**Cost-Effective Transit Development.** Transit alternatives selected for the Corridor need to take into account capital and operating costs as key considerations, ensuring that taxpayers dollars are spent wisely and get the most benefits for their investment.

### 6.3 Land Use

**Land Use Planning and Community Character.** The Corridor is projected to experience population growth in the next 30 years, particularly in the Guadalupe-Westside and Medical Center areas. To accommodate this growth, adopted local and regional planning policies must continue to support urban infill development and redevelopment focused on key nodes within the Corridor. Transit developments within the Corridor need to be supportive of the scale and character of land use developments envisioned by the City of San Antonio, Bexar County, and VIA.

### 6.4 Economic Development

**Connections to Economic Opportunity.** A large percentage of transit riders in the Corridor use existing transit service to commute to and from employment or shopping centers. The Corridor contains several major employment centers, and a focus on connecting residents with economic opportunities through transit routes should be key to the alternatives proposed later in this study. Transit development in the Corridor must ensure residents have access to regional employment centers in the Corridor, such as South Texas Medical Center, VA Hospital, Brooks City Base, Our Lady of the Lake University, Port San Antonio, South Park Mall, and Stinson Airport.
Reinvestment and Redevelopment. Current city and county policies encourage new employment within the Corridor - over half of the Corridor is designated as an Inner City Revitalization/Infill Policy (ICRIP) area. A key focus of this study should be ensuring transit connections within the Corridor to and from these sites targeted for revitalization and redevelopment. Examples of redevelopment in the Corridor include Brooks City Base and Port San Antonio; however, transit access should continue to encourage the development of more, no matter the size.

6.5 Environment

Minimizing Environmental Impact. The Corridor contains some of the highest personal vehicle rates in the region, with a large proportion of employed persons in the Corridor beginning their trips outside the Corridor and outside Bexar County. A focus for transit development within the Corridor should aim to increase the share of not only residents of the Corridor, but employed persons in the Corridor, choosing transit instead of single occupancy vehicles to reduce congestion, VMT, and greenhouse gas emissions. Transit development should also, when possible, use fuel-efficient vehicles to minimize environmental impact.

6.6 Equity

Ensuring Environmental Justice. The Corridor is home to many low-income and minority households, particularly along McMullen-Zarzamora between Woodlawn Ave and Highway 90. The median household income within the Corridor is just over half of the regional average ($24,130 vs. $40,900), and is not projected to rise significantly in the next 30 years. To ensure equal access to transit and environmental justice for all populations in the Corridor, accessibility to employment and recreational opportunities for these populations is important, and should be a key goal of transit development in the Corridor.