VIA VISION 2040

Volume 1: The Role of Transit in a Growing Region

Understanding VIA's Role in History, VIA's Role in the Community, and VIA in Comparison to Peer Agencies

November 2016

Prepared for

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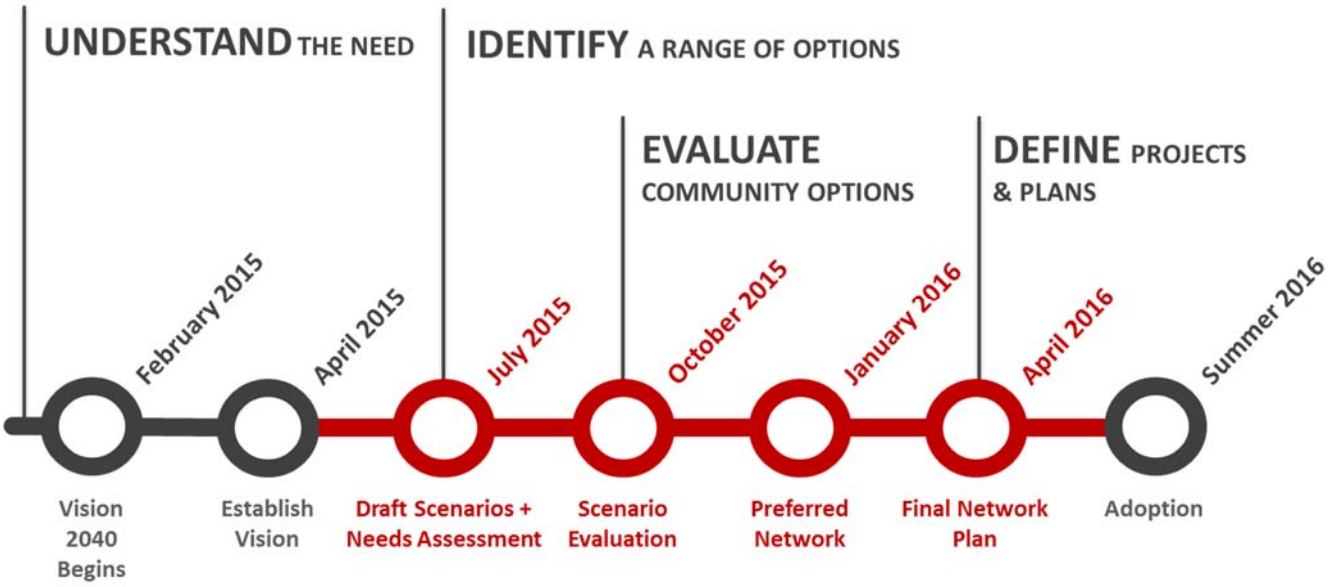
1.0 Introduction

VIA Metropolitan Transit (VIA) updates its long range plan every five years to reassess the region's public transportation needs and establish a strategic framework[1] to guide transit investment in the region. VIA launched the development of the Vision 2040 Long Range Plan in early 2015, building off of the substantial effort completed from 2009-2011 that resulted in the 2035 Long-Range Comprehensive Transportation Plan (SmartWaySA). The Vision 2040 Long Range Plancontinues the development of SmartWaySA and further defines the high-capacity network while considering a regional context.

The Vision 2040 Long Range Plan development process had four key phases, shown in Figure 1.1. This report provides context for the launch of the Vision 2040 (Phase 1: *Understanding the Need*) by describing VIA's role in the region's transportation history, VIA's role in the community today, and VIA's performance in comparison to peer transit agencies across the country. This information provided a baseline for establishing a long range vision for public transportation in the region and assessing the needs to achieve that vision (documented in *Needs Assessment in Volume 1: The Role of Transit in a Growing Region*).

Figure 1.1 Vision 2040 Key Milestones



[1] Documented in *The Visioning Process* in *Volume 2: Developing Vision 2040.*

1.1 Study Area and Existing VIA Service Area

The study area for Vision 2040 covered eight counties within the Greater San Antonio Region (Atascosa, Bandera, Bexar, Comal, Guadalupe, Kendall, Medina, and Wilson), aligning with the San Antonio-New Braunfels Metropolitan Statistical Area (MSA) shown in Figure 1.2 . Within the study area, there are several noteworthy boundaries of importance to the Vision 2040 planning process:

- **VIA Service Area –** VIA's existing service area is 1,213 square miles, which is 98 percent of Bexar County (Figure 1.3). The service area is made up of the unincorporated parts of Bexar County and 13 member cities: Alamo Heights, Balcones Heights, Castle Hills, China Grove, Converse, Elmendorf, Kirby, Leon Valley, Olmos Park, San Antonio, Shavano Park, St. Hedwig, and Terrell Hills. The Bexar County portion of Cibolo also is included in VIA's service area.

- **Alamo Area Metropolitan Planning Organization (AAMPO) –** The AAMPO is responsible for conducting the urban transportation planning process that allows the MPO planning area to receive over $200 million annually in Federal and state transportation funding. The current AAMPO boundary includes the Counties of Bexar, Comal, and Guadalupe, and a portion of Kendall County (Figure 1.3). AAMPO has developed a regional travel demand model that forecasts travel patterns and trip volumes within this planning boundary. VIA used the region's travel demand model to develop ridership projections for the Vision 2040 Long Range Plan scenarios and preferred network in subsequent project phases.

- **Urbanized Area (UZA) –** A UZA is a Census-designated urban area with 50,000 residents or more. The San Antonio UZA (Figure 1.3) was expanded following the 2010 Census to include the Cities of New Braunfels, Cibolo, Marion, Schertz, Selma, and Garden Ridge, and the census-designated place of McQueeney. All areas within the San Antonio UZA are eligible for Federal funding reimbursement for transit. VIA is the designated recipient of the Federal funds and has control over how the funds are spent within the UZA.

Figure 1.2 Vision 2040 Study Area and Existing VIA Service Area

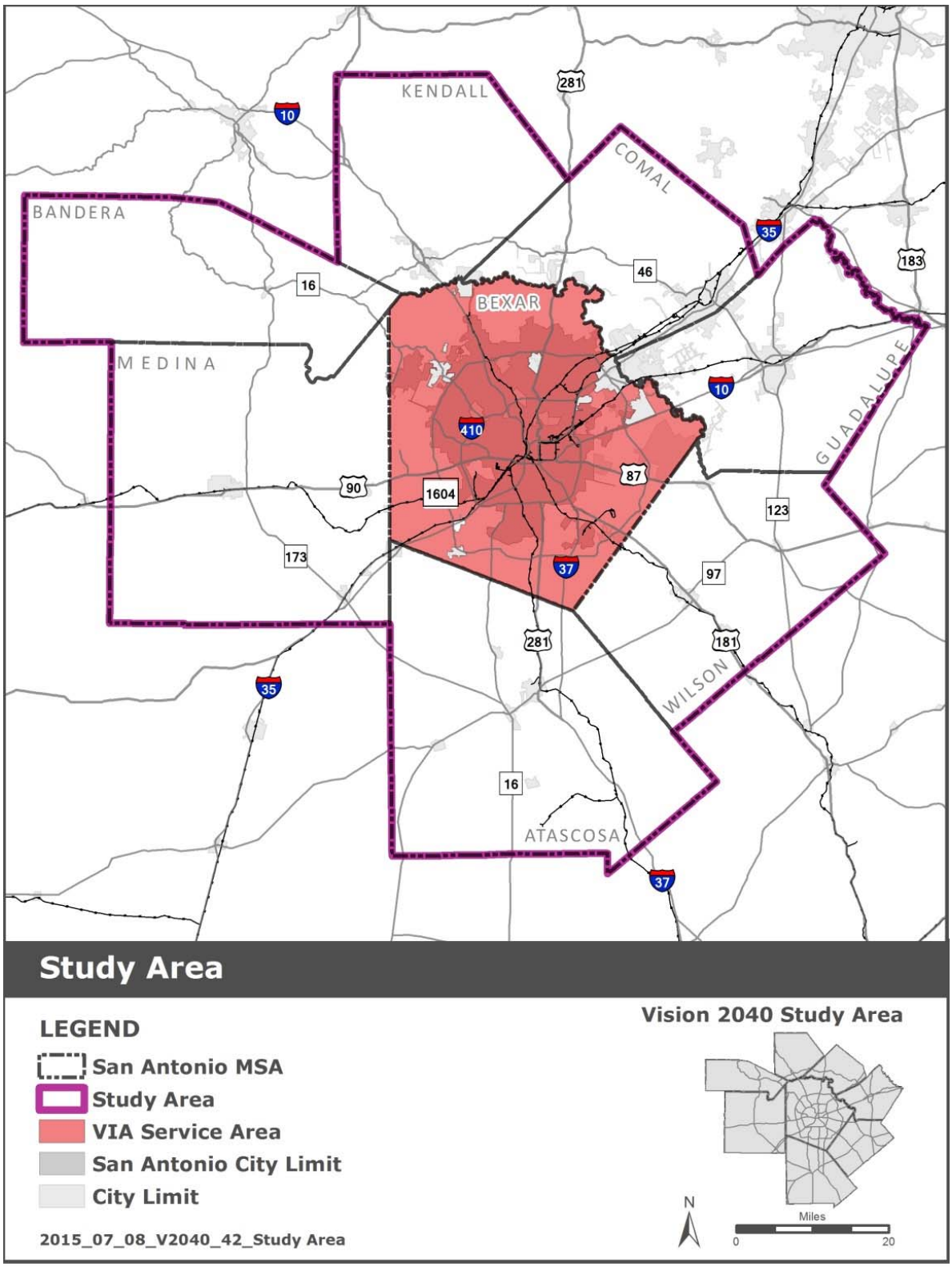
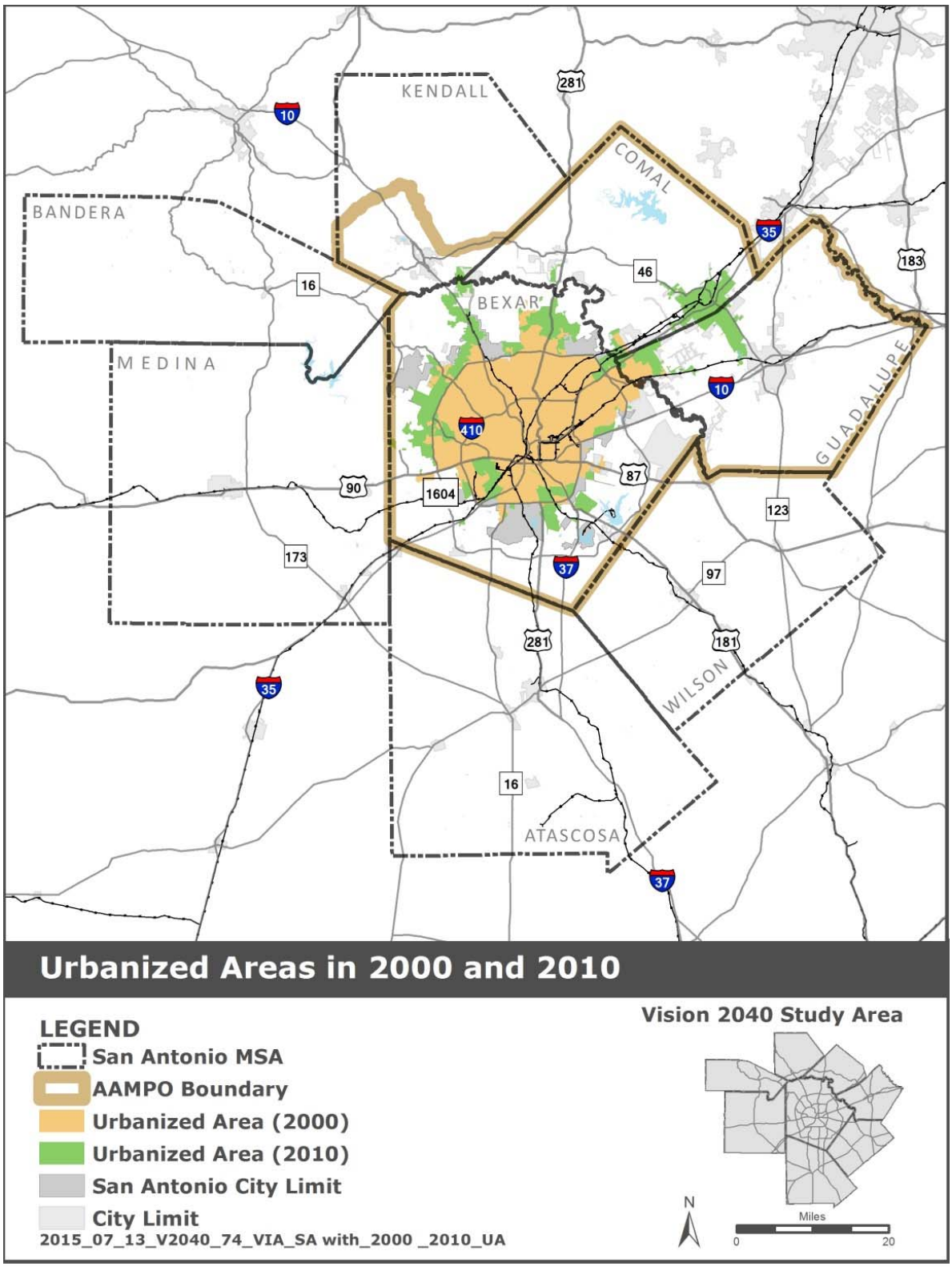


Figure 1.3 San Antonio Urbanized Area in 2000 and 2010



1.2 Document Organization

This report is organized into four sections and served as support for the first phase, *Understanding the Need*, as well as reference material for subsequent phases. The topics covered include:

- **VIA's Role in History –** Section 2.0 summarizes the history of transportation in the Greater San Antonio Region, including how transportation influenced the region's growth and development, as well as the events that led to the creation of VIA. Much of the growth in the region can be tied to key transportation milestones, including the arrival of the first railroad in the late 1800s; evolution of the streetcar system (first mule-drawn, then electric); development of the automobile industry; and rise of the personal automobile. This section describes how the role of public transportation has evolved during each of these milestones. Reflecting back on the factors that shaped growth and development in the region over the last 150 years provides context for thinking through how VIA should respond to projected growth over the next 25 years.

- **VIA's Role in the Community –** Section 3.0 provides an overview of VIA's existing services and the role that public transportation plays in the Greater San Antonio Region. An assessment of 10-year service trends adds to the narrative regarding how regional characteristics, such as congestion, available funding, economic climate, and service changes, influence public transportation performance.

- **VIA in Comparison to Peer Agencies –** Section 4.0 benchmarks VIA's system performance and expenditure trends against eight peer transit agencies to reveal VIA's comparative strengths and areas of opportunity. Understanding historical trends and peer benchmarks provides context to inform VIA's needs assessment and strategy going forward.

- **Vision 2040 Opportunities and Challenges –** Section 5.0 summarizes the key takeaways from this report that were carried forward into subsequent phases that ultimately established the region's public transportation needs; identified a range of options; and defined Vision 2040 policies, programs, and strategies. With projections estimating the region will grow by 1.6 million people over the next 25 years, the Vision 2040 planning process provides an opportunity to anticipate future challenges and develop short- and long-term strategies to address them.

This document established context for the Vision 2040 planning process by providing an overview of the historic and existing transportation landscape that has shaped the region's growth over time. The contextual information provided a basis for VIA, stakeholders, and the public to identify the region's public transportation needs, initiate a public dialog about the region's 2040 transportation vision, and develop an implementable plan serving as a guiding document for VIA's long-term capital investments and operations to achieve that vision.

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2.0 VIA's Role in History

Transportation has played a significant role in shaping growth and development in the Greater San Antonio Region. The region's history since the arrival of the railroad can be defined by three transformational growth periods marked by important transportation milestones that influenced growth and development:

1. **Post-Railroad Boom (1877-1945) –** Arrival of the railroad to San Antonio in 1877 facilitated rapid growth in the region, and residential and commercial development built up around the City's electric streetcar network through the early 1900s. During this period, public transportation was the primary means of mobility and the catalyst for growth and development.

2. **Post-WWII Boom (1945-1977) –** With the growing prevalence of the personal automobile, highways, like the streetcars before them, allowed the region to grow at an even faster pace due to an influx of troops and civilian workers leading up to and following World War II. During this period, highway expansion was the primary means of mobility and regional development patterns became more decentralized, suburban, and auto-oriented.

3. **Role of VIA in a Growing Region (1977 through today) –** The creation of VIA Metropolitan Transit (VIA) in 1977 launched a new era of public transportation in the region, coinciding with an era of rapid population growth that continues today. By 1990, San Antonio had grown to become one of the nation's top 10 most populated cities and continued to grow faster than any of the other top 10 cities through 2010 (Brookings, 2012). Over time, VIA has responded to the changing mobility needs of the growing region by restructuring transit service and introducing new service options. The continuing era of rapid growth in the region requires greater diversity of housing and mobility product, revitalization of underutilized and decaying infrastructure, as well as more collaboration between local governmental entities.

Each growth period has been progressively and substantially larger than the last, and the transportation system has had to adjust to meet the changing demands of a larger population and expanding geographic footprint (Figure 2.1). Recounting the region's transportation history provides important context as the Greater San Antonio Region prepares for the next period of transformational growth with the forecasted addition of 1.6 million more residents by 2040. This section chronicles the key transportation milestones of the three growth periods. Additional maps illustrating the transportation system in the context of regional growth is provided in Appendix A.

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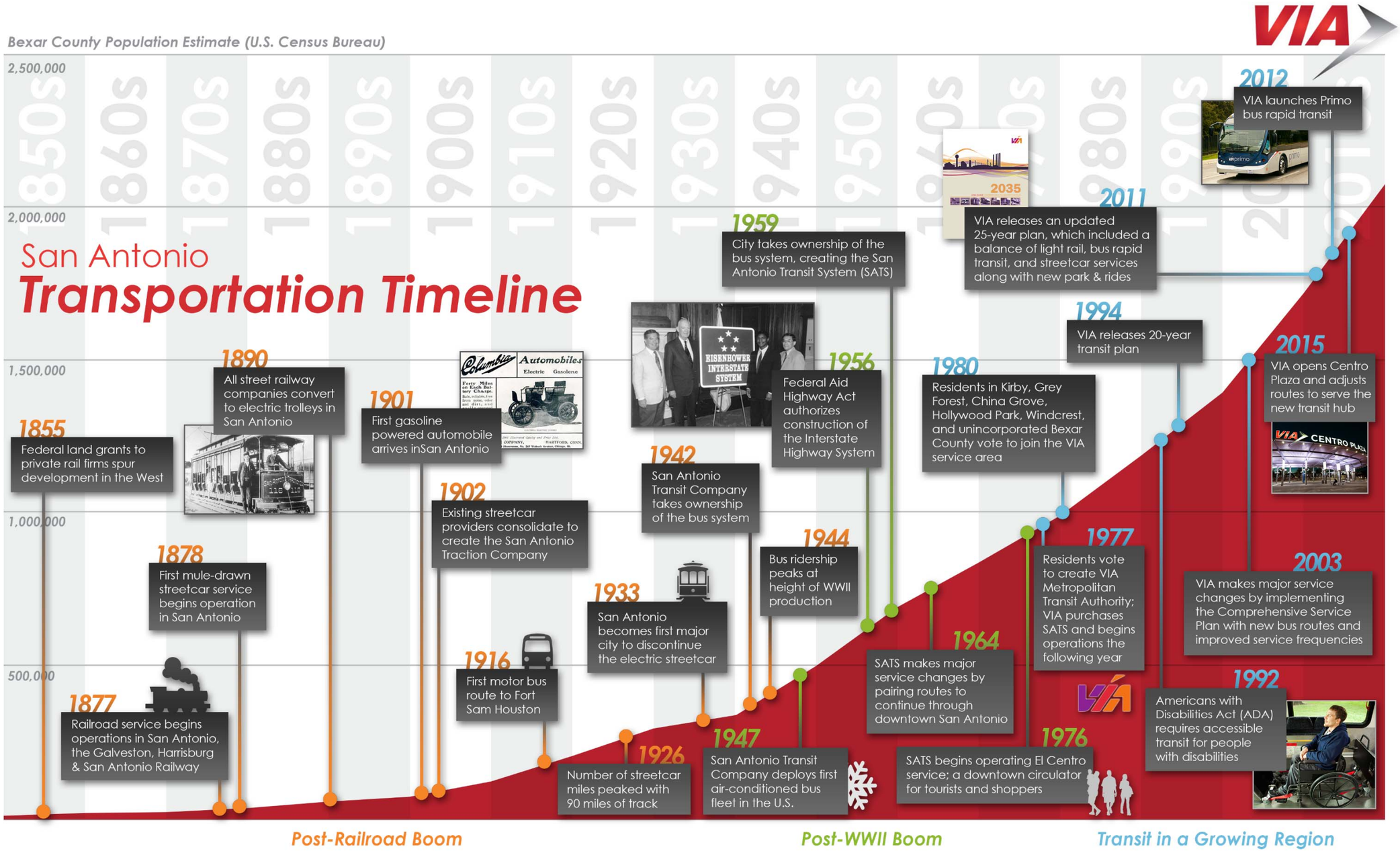
Figure 2.1 Greater San Antonio Regional Transportation Timeline



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2.1 Post-Railroad Boom (1877–1945)

2.1.1 Early Growth in San Antonio Was Galvanized Around Rail

The Galveston, Harrisburg, and San Antonio Railroad, the region's first railway, began operations in San Antonio in 1877. Arrival of railroad service facilitated robust growth in the local economy and a significant increase in the population by providing easier access for visitors, new residents, and new businesses. Additionally, the railroads provided access to imported construction materials that allowed San Antonio to build more modern buildings; pave streets; and install public utilities like gas, sewer, water, power, and street railways (Texas Transportation Museum, 2015b; Hemphill, 2006).

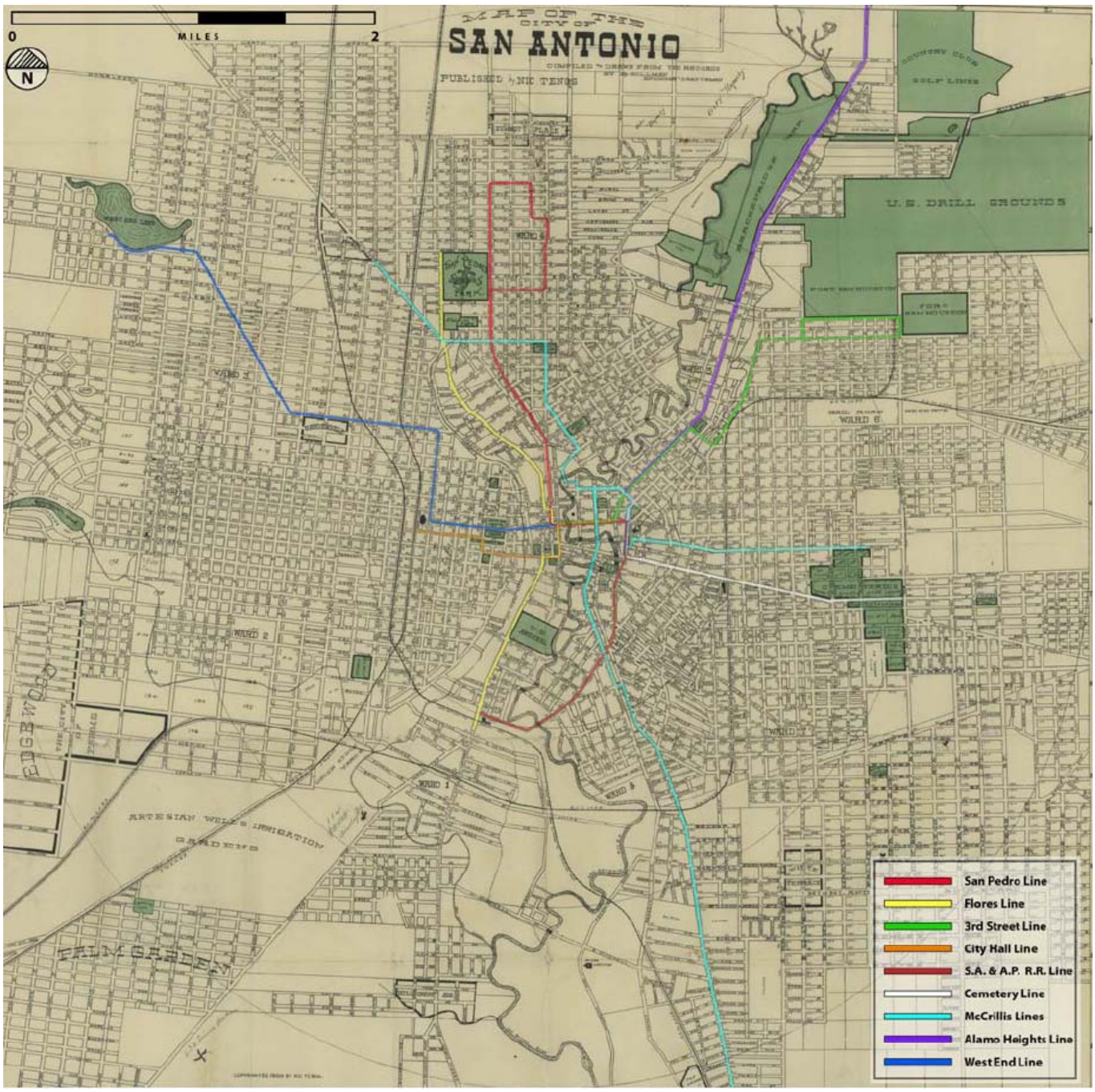
While the railroad served as a catalyst for the region to expand and grow, open aired streetcars running on dedicated tracks provided mobility for a growing population of San Antonio residents. The first mule-drawn streetcar service in San Antonio began operation in 1878. Following creation of the city's first large power-generating station, all street railway companies converted to electric trolleys in 1890, providing radial service shown in Figure 2.2. By 1896, there were as many as eight street railway companies providing streetcar service. By 1902, however, they had all merged into a single operator, which became known as the San Antonio Traction Company.

As population increased in San Antonio, new neighborhoods developed around streetcar lines (Figure 2.3). This allowed the demand for growth to be met, while providing adequate transportation service for residents to access jobs, shopping, and entertainment. Property immediately adjacent to many of these streetcar lines emerged as commercial corridors.

2.1.2 The Motor Bus Provided Greater Service Area Coverage as Development Patterns Changed

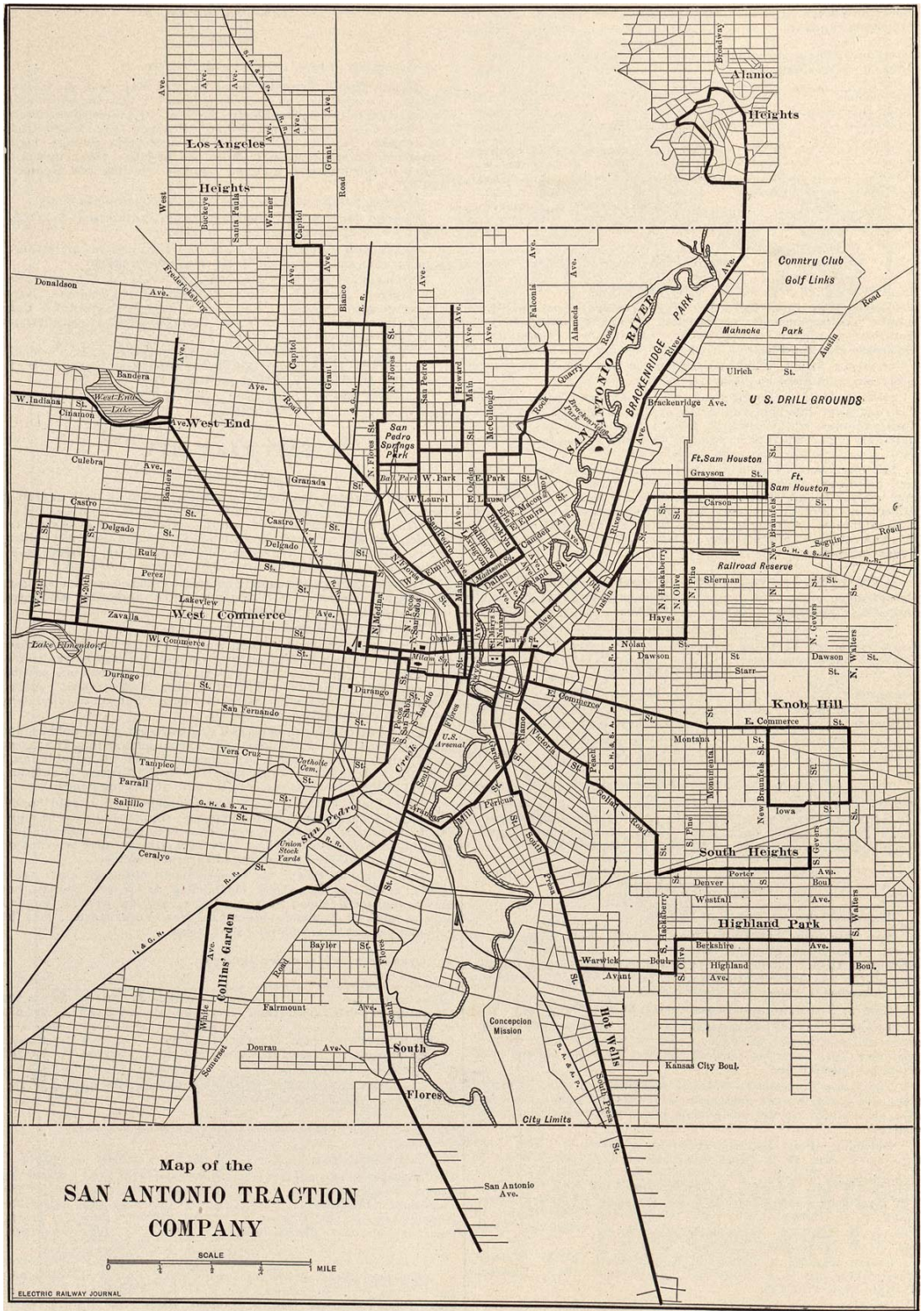
Accelerating growth, unpredictable demand, and the need for greater service coverage paved the way for testing and implementing emerging technologies of the era, such as the motor bus. San Antonio Public Service Company (SAPS) began to experiment with the city's first bus route in 1917, transporting servicemen to and from Fort Sam Houston (Texas Transportation Museum, 2015c). The company began to invest in more bus routes in the 1920s, providing express service to downtown in contrast to the local stop service offered by the streetcar throughout the older, inner-city neighborhoods. Bus service was also extended to previously unserved areas such as neighborhoods developing farther from downtown (Wilkins, 1988a).

Figure 2.2 San Antonio Transit System in 1890



Source: Jason Rodriguez, 2008.

Figure 2.3 1913 San Antonio Traction Company Streetcar Map



Source: University of Texas Libraries.

Transit service by motor bus continued to expand as streetcar service was incrementally reduced and eventually phased out. The total number of streetcar miles peaked in 1926 with 90 miles of track. In the years that followed, several factors contributed to the decline of streetcar ridership and a need for route flexibility:

- The detached single-family neighborhood development pattern that street railway access made popular in the early 1900s continued to be popular in San Antonio, and there was plenty of inexpensive land for development to continue expanding outward more quickly, outpacing the practicality of street railway expansion;

- The city began growing quickly with many households in different areas affected by the Great Depression, making it difficult to predict where the highest demand for transit services would be;

- The franchise agreement that SAPS had with the City of San Antonio to exclusively operate the street railway system required that they maintain the pavement that the tracks lay in, and plans for street widening would have required moving and rebuilding tracks at great expense to the company. The same franchise agreement locked in a five cent streetcar fare years earlier, which did not allow for fares to increase with inflation. This financial burden only increased during the Great Depression. Streetcar ridership began to decrease due to residents living in the part of town served by street railways no longer able to afford the five cent fare. Many residents also were unable to pay rent or taxes, resulting in a decrease in overall tax revenue collected by the City. The City's need for this revenue led to a mutually beneficial agreement between SAPS and the City of San Antonio. SAPS paid $250,000 to the City to cover the tax revenue deficit and was released from their franchise, removing the previously required roadway maintenance expenses (Wilkins, 1988a).

In 1933, after 55 years of streetcar service, San Antonio became the first major city to discontinue the electric street railway system (Texas Transportation Museum, 2015c). SAPS continued to operate bus routes throughout San Antonio until 1942, when a group of local businessmen bought the company, establishing the San Antonio Transit Company. Ridership drastically increased during the height of World War II production, peaking at over 77 million total boardings in 1944 (Wilkins, 1988a).

2.2 Post-WWII Boom (1945 – 1977)

2.2.1 Development Patterns and Highway Investments Respond to a Growing "Car Culture"

While increasing popularity of the personal automobile in the 1930s and 1940s shifted development patterns away from the standard street grid network, growth began to change leading up to and after World War II. The area's dry weather was attractive to the Army Air Corps as a training center, resulting in an influx of troops and civilian workers for military-related activities (Wilkins, 1988a). Due to the increase in automobile ownership, growth continued outward away from downtown San Antonio, primarily to northern suburban areas, increasing automobile traffic throughout the region. The increased traffic and development away from the city center resulted in the construction of highways

in order to support movement throughout the expanding region (Texas Transportation Museum, 2015d).

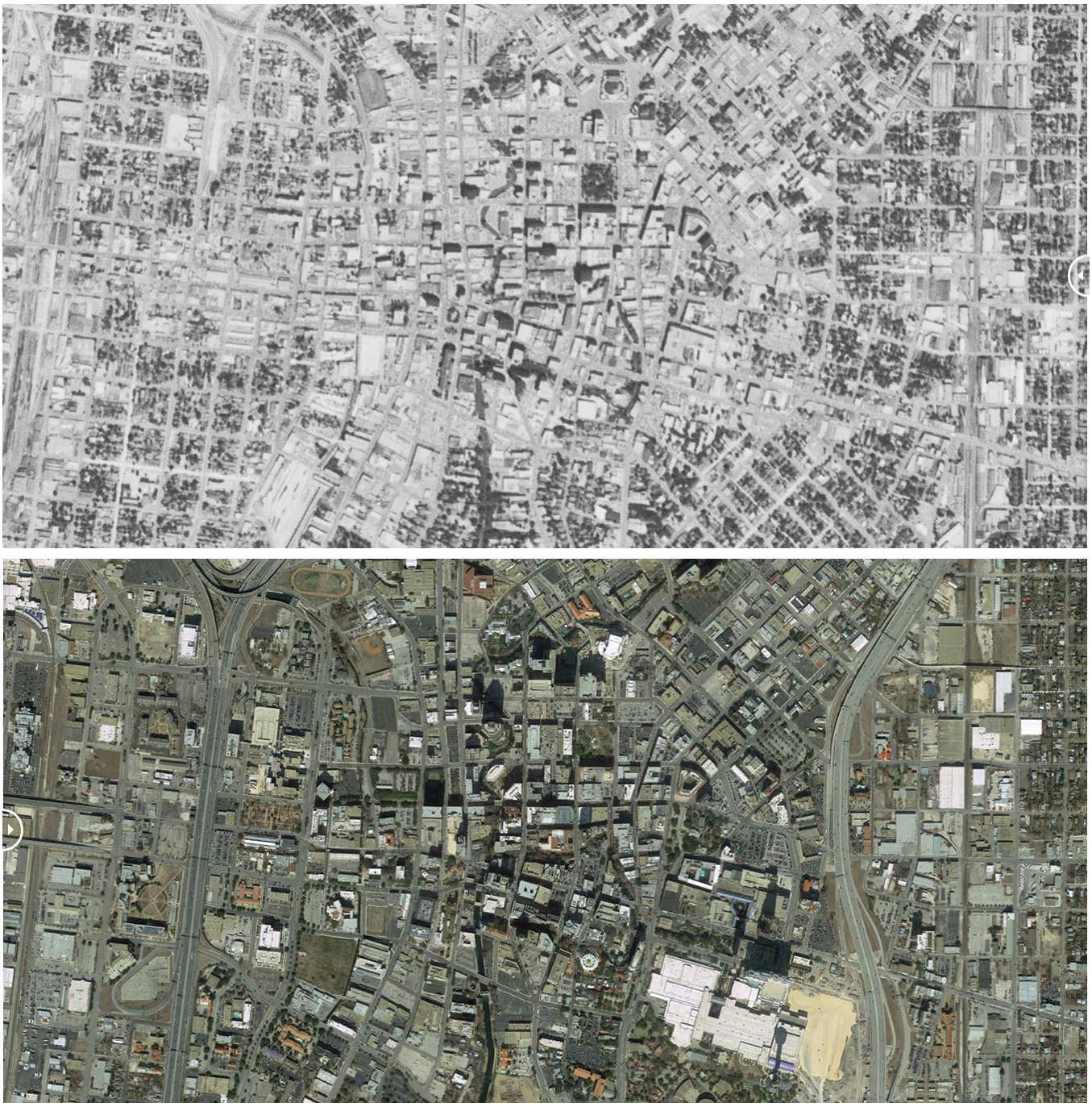
Planning for this new highway network started in 1943, and the region's first expressway, US 281, was completed in 1949. In the same year, the first segment of I-10 was completed, extending between Woodlawn Avenue to Martin Street. With the passage of the Federal Aid Highway Act in 1956 (otherwise known as the National Interstate and Defense Highways Act), the interstate system continued to expand in the following decades, including the construction of I-35, I-37, and Loop 410 (Texas Transportation Museum, 2015d). The construction of these interstates facilitated an increase in suburban development, providing easier and faster travel throughout the region. The effect of the interstate system on the urban form of downtown San Antonio, specifically the construction of I-35 and I-37, is shown in Figure 2.4. Further visualization of highway and interstate influence on development is provided in Appendix A.

2.2.2 Bus Service Shifts from For-Profit Enterprise to City-Run System

As with many other cities in the 1950s, postwar bus ridership began to decline and profit margins began to decline. Growing suburban developments, rapidly increasing automobile ownership, and decline in San Antonio's military population decreased annual ridership to approximately 35 million riders by 1956. In 1957, the Texas Legislature passed House Bill 386, which allowed a city, if approved by voters, to own and operate a bus company and issue bonds backed by fare revenue to cover expenses. Although the San Antonio Transit Company's franchise was set to renew in 1959, the renewal was rejected by the City of San Antonio due to unacceptable proposals by the company. Instead, the City took ownership of the system in 1959, renaming the service as the San Antonio Transit System (SATS) (Wilkins, 1988a).

The City of San Antonio operated SATS for almost 20 years, making major service changes by pairing routes to continue through downtown San Antonio in 1964 and beginning El Centro service, a downtown circulator for tourists and shoppers, in 1976. As the region continued to grow beyond the City of San Antonio, other cities in Bexar County not served by SATS began to have a demand for bus service as well, an increasingly common issue in many urbanized parts of Texas. To address this need, the Texas Legislature passed House Bill 657 in 1977, which allowed voters in multiple cities of a region, and even the unincorporated parts of their respective counties, to approve creation of Metropolitan Transit Authorities (MTA) to operate across multiple jurisdictions. These MTAs could operate on voter-approved sales tax revenues and formula grants from the Federal government to offer mass transit services. Later that year, voters in Bexar County held a confirmation election to approve the creation of VIA Metropolitan Transit Authority (VIA), which then purchased the bus company from the City of San Antonio. The vote to create VIA authorized funding through a one-half percent sales tax in San Antonio and in seven other incorporated municipalities. In a subsequent vote in 1980, residents of five other municipalities and unincorporated Bexar County voted to join the VIA service area.

Figure 2.4 San Antonio Urban Core 1953 (Above) and 2014 (Below)



Source: Institute for Quality Communities, The University of Oklahoma.

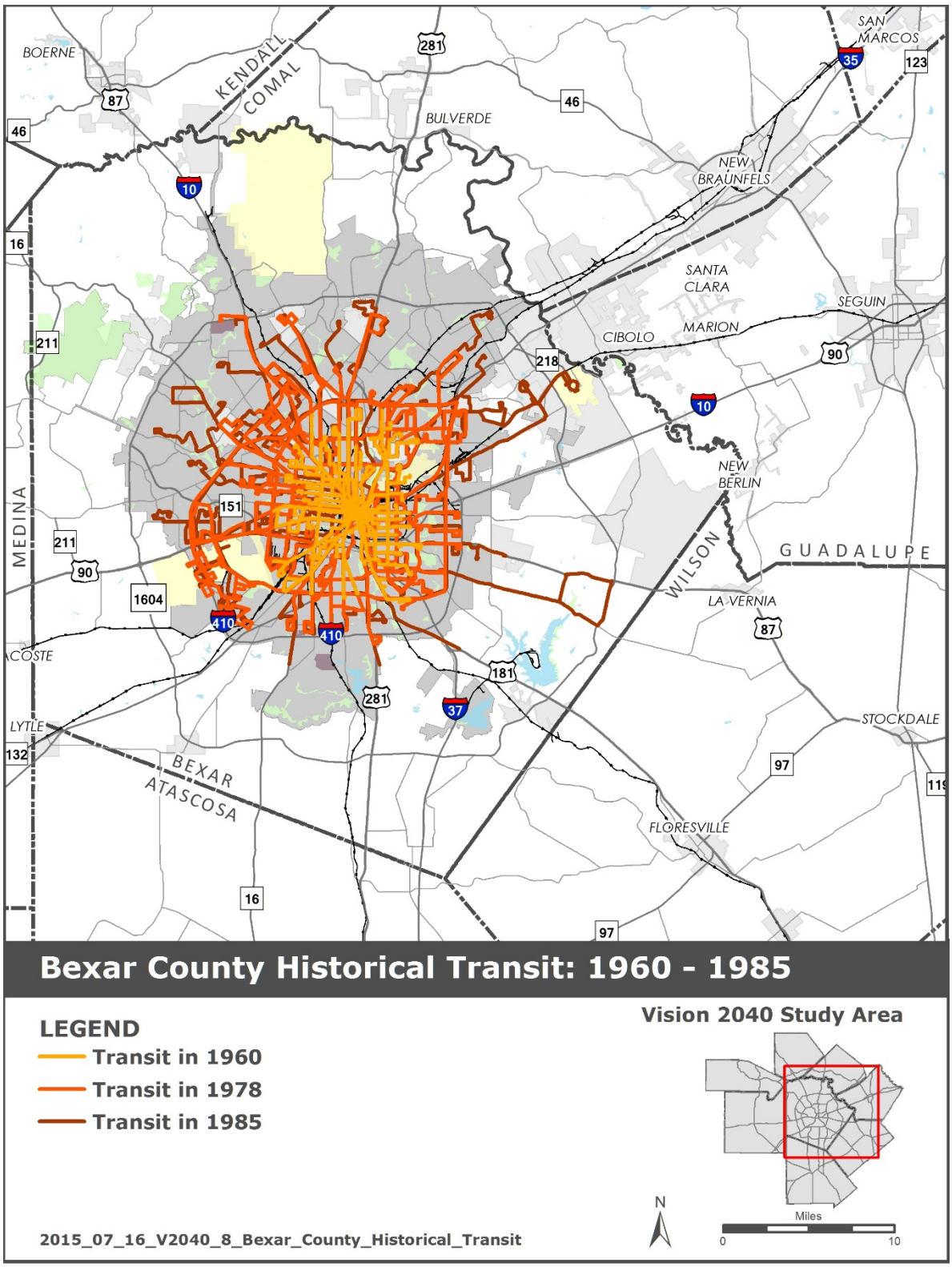
2.3 Role of VIA in a Growing Region (1977 through today)

2.3.1 Key VIA Projects and Milestones Respond to the Changing Needs of a Growing Region

The creation of VIA in 1977 launched a new era of public transportation in the region, coinciding with an era of rapid population growth that continues today. When VIA began operating bus services in 1978, routes included those previously operated by SATS, new crosstown routes, and new express routes along I-10, I-35, and parts of Loop 410. Service also extended to various suburban areas that previously did not have public transportation, such as Leon Valley and Shavano Park. In addition, routes were assigned numbers for the first time. Overall, 14 new local routes and express routes were added to the bus network after the formation of VIA. By 1981, VIA operated over 13 million vehicle miles and carried 34.5 million riders compared to just over 7 million vehicle miles and 20 million riders SATS carried in 1977 (Wilkins, 1988b). More information on the evolution of VIA service is highlighted in a series of maps in Appendix A.

During the 1980s and 1990s, the Greater San Antonio Region continued to grow. The population of Bexar County grew by 43 percent from 980,000 in 1980 to 1.4 million in 2000. During this time, the City of San Antonio made changes in governance, began to invest in itself, and adopted growth policies for the first time, ultimately resulting in Master Plan Policies and a Unified Development Code (UDC). In addition to this policy direction, San Antonio and other cities in Texas began to explore possibilities for rail transit services ranging from the so-called Texas Train á Grande Vitesse (TGV) high-speed rail in the early 1990s to other various light and heavy volume regional rail services. This included a 20-year plan presented by VIA in 1994, which consisted of potential investments in commuter and light rail. Similar discussions in Austin led to further coordination on a possible commuter rail service connecting San Antonio to Austin (Lone Star Rail), since the Texas TGV concept was no longer in development. Momentum from these discussions led to VIA's determination that a "multimodal" facility should be located just west of downtown San Antonio at the historic International and Great Northern depot, where the Grand is located today.

Figure 2.5 Bexar County Historical Transit Routes: 1960-1985



A timeline of VIA's notable projects and achievements showcase the agency's ability to adapt to the needs of residents and support growth in the Greater San Antonio Region:

- 1979 – VIA begins VIAtrans paratransit service.
- 1983 – VIA implements downtown rubber-tire replica streetcar service, which replaced the previous El Centro service connecting major downtown activity centers.
- 1991 – VIA makes major service changes by moving east-west routes in downtown San Antonio from Houston Street to Commerce and Market Streets.
- 1994 – VIA releases a 20-year transit plan, which included light rail service on Fredericksburg Road between downtown San Antonio and the South Texas Medical Center; commuter rail service connecting Kelly Air Force Base (AFB), downtown San Antonio, and the airport with Austin; and a multimodal transit center on the west end of downtown.
- 2003 – VIA makes major service changes by implementing the Comprehensive Service Plan with new bus routes and improved service frequencies.
- 2004 – Residents in the City of San Antonio vote to create an Advanced Transportation District (ATD), providing new revenue for improved transit services and capital transportation improvements to City and Texas Department of Transportation (TxDOT) infrastructure.
- 2006 – VIA introduces vanpool service, and the aging VIAtrans van fleet is replaced by new vehicles.
- 2011 – VIA releases an updated 25-year plan, which included a balance of light rail, bus rapid transit, and streetcar services, along with new park & ride and transit centers. VIA's five-year SmartMove capital plan initiatives aim to complement growth through more efficient transfers, patron amenities, and other improvements. The plan includes three transit centers, multiple park & ride facilities, corridor improvements, and new patron amenities.
- 2012 – VIA launches Primo bus rapid transit in the Fredericksburg corridor (Figure 2.6).
- 2015 – VIA begins bus service operations at the new Centro Plaza on the west end of downtown San Antonio (Figure 2.7).

Brief overviews of these and other regionally-significant studies and initiatives, along with their relevance to the Vision 2040 Long Range Plan development process, are provided in Appendix B.

Figure 2.6 VIA Launches Primo Service in 2012

Source: VIA Metropolitan Transit.

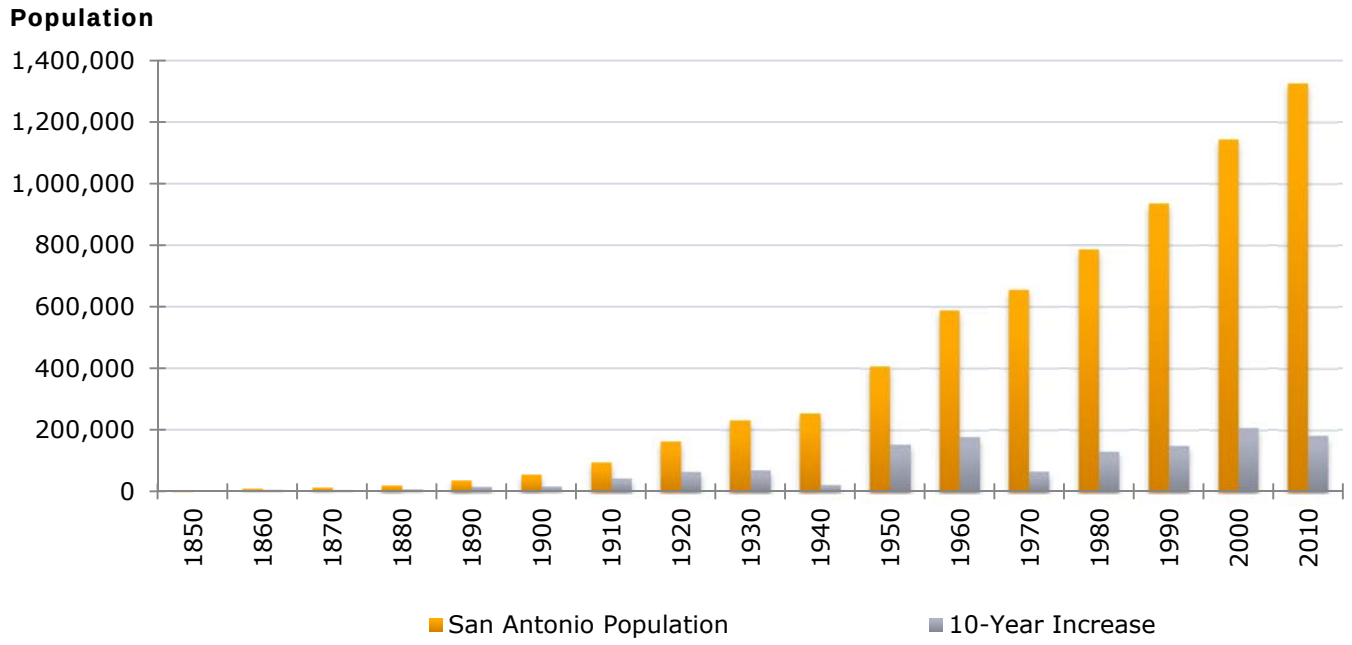
Figure 2.7 Centro Plaza

Source: VIA Metropolitan Transit.

2.3.2 VIA Builds on Past Lessons Learned to Prepare for Continued Regional Growth

Between 2000 and 2010, Texas had the highest absolute growth in population of any state in the U.S., with over 4.2 million new residents. This represents a growth rate of 20.6 percent, and accounts for nearly 16 percent of the total U.S. total population growth over that same period. During this same time period, the City of San Antonio had the highest growth of any major city in Texas, adding 170,000 new residents, a rate of growth that has remained steady since the 1940s.

Figure 2.8 City of San Antonio Historical Population



Source: U.S. Census Bureau.

This growth is not restricted to the City of San Antonio itself; of the estimated nearly 150 people arriving per day to the San Antonio-New Braunfels Metropolitan Statistical Area (MSA), nearly a third are expected to settle in one of the other towns and neighborhoods in the eight-county region. Proportionally, Texas towns, suburbs, and exurbs are growing at a faster rate than their neighboring cities; much of this growth takes place along interstates and highways that were designed to link major urban centers, not to serve as Main Street for quickly growing municipalities.

For VIA, the steady increase in population means that every change in service, every new funding mechanism, and every plan must take the growing population and changing urban landscape into account. It can take up to two years[2] to envision, plan, and implement a new bus route; by this time, over 100,000 new residents will have arrived, and new neighborhoods will have developed. It is not

[2] Including the purchase of new vehicles and the design and construction of new stops.

enough to meet existing needs; VIA must continuously plan for the future. VIA must both serve and shape the cities and neighborhoods it links by anticipating and supporting their transportation needs.

To this end, VIA undergoes a long range planning process every five years to evaluate current needs, future trends, and prioritize planning efforts to identify the most efficient and impactful projects. As a result of its 2035 Long Range Comprehensive Transportation Plan (LRCTP) planning process, VIA has:

- Completed construction of the major transit transfer hub of VIA Villa, including both Centro Plaza and the Grand;
- Initiated design of new transit centers, Brooks City-Base, and the Robert Thompson Transit Center;
- Introduced and expanded high-quality Primo bus service, with real-time information and the ability to control traffic signals;
- Expanded and improved local bus service, vanpool service, and VIAtrans through the SmartMove initiative;
- Expanded the patron amenities and NextGen shelter programs to improve bus stops and other transit facilities;
- Continued to coordinate with other local planning initiatives, such as REnewSA and SA Tomorrow; and
- Participated in the planning process for regional services, such as Lone Star Rail to Austin.

3.0 VIA's Role in the Community

3.1 Overview of Existing VIA Services

VIA Metropolitan Transit (VIA) provides regional mobility within its 1,213-square-mile service area by offering a range of public transportation service options. Existing VIA services include fixed-route bus, paratransit service for customers who cannot ride the bus due to a disability, and vanpool service for commuters.

3.1.1 Fixed-Route Bus

In spring 2015, VIA operated 90 bus routes, providing service to multiple areas in Bexar County. The bus network is similar to a "hub-and-spoke" design, with many routes radiating out from downtown San Antonio. Some routes, known as crosstown routes, are along key corridors that provide a link between two routes rather than connecting to the downtown area, allowing more convenient transfers (VIA Metropolitan Transit, 2013).

VIA's fixed-route buses are organized into six different service levels: Primo, Frequent, Metro, Express, Skip, and VIVA (Table 3.1). Key differentiating characteristics of these service levels, summarized in Table 3.2, include the frequency at which they operate, average stop spacing, span of service, and the types of activity centers that they serve (e.g., neighborhoods versus park & rides). Most routes are available seven days a week, with start times as early as 4:00 a.m., and ending as late as 1:00 a.m. There are two peak periods: 6:00 a.m. to 9:00 a.m. and 3:00 p.m. to 6:00 p.m. The evening hours are between 6:00 p.m. and 10:30 p.m., while the remaining hours are considered the 'base' period (VIA Metropolitan Transit, 2013).

Table 3.1 Overview of VIA's Fixed-Route Service Levels

Service Level	Route Description
primo	Primo is VIA's first bus rapid transit (BRT) service. This distinct service option is characterized by faster travel times, real-time arrival information, distinctive stations, branded buses, and high frequency. VIA currently operates one Primo route, shown in Figure 3.1
FREQUENTSERVICE	Frequent Service routes run every 20 minutes or better during the day. VIA's 17 existing Frequent Service routes are shown in Figure 3.2.
METROSERVICE	Metro Service provides the broadest coverage in the VIA service area, providing local service every 30 and 60 minutes. Some routes run more frequently during the morning and afternoon peak periods. VIA's 59 existing Metro Service routes are shown in Figure 3.2.
EXPRESSSERVICE	Express Service routes are designed for commuters and travel on expressways connecting major employment centers from park & rides. VIA currently operates six Express Service routes shown in Figure 3.1, connecting park & ride lots to the major destinations listed in Table 3.3. In addition to the regularly scheduled routes, VIA offers express special event park & ride service to many San Antonio events throughout the year.
SKIPSERVICE	Skip Service routes are designed for faster travel times along major corridors, allowing the bus to skip some stops. VIA's five Skip Service routes are shown in Figure 3.2.
VIVA	As a subset to its Metro Service, VIA operates three distinct routes to some of San Antonio's most popular entertainment, dining and cultural destinations. **VIVA centro** travels through the heart of downtown from the Alamo to Market Square. **VIVA missions** takes riders to the historic San Antonio Missions, designated as a World Heritage Site. **VIVA culture** connects riders with the zoo, museums, parks, theaters and art galleries. The VIVA routes, shown in Figure 3.3, use distinctive branded buses and rubber-tire trolleys.

Table 3.2 Distinguishing Characteristics of VIA's Fixed Route Service Levels

Service	Total Routes	Total Length (Miles)	Average Stops per Mile	Average Service Span / Day (Hrs:Min)	Average Peak Frequency (Minute)	Typical Running Way	Branding Elements	Adult Fare	Service Typology
primo	1	32.1	3	21:00	10	Major thoroughfare	Visibly distinct stations; branded buses	$1.30	Frequent service connecting high demand activity centers
FREQUENTSERVICE	17	220.7	10	18:00	15	Major thoroughfare/ Local Roadway	N/A	$1.30	Frequent service with lots of stops connecting high demand activity centers
METROSERVICE	59	813.6	8	17:00	37	Local Roadway	N/A	$1.30	Accessible service with lots of stops connecting local neighborhoods
EXPRESSSERVICE	8	255.8	1	15:00	26	Highway/ Major thoroughfare	N/A	$2.60	Commuter service connecting park & rides to major employment centers
SKIPSERVICE	5	146.2	2	16:45	30	Major thoroughfare	N/A	$1.30	Infrequent stops on high volume routes
VIVA	3	49.7	2	15:25	19	Local Roadway	Branded buses; Rubber-tire trolley	$1.30	Accessible service connecting downtown entertainment venues

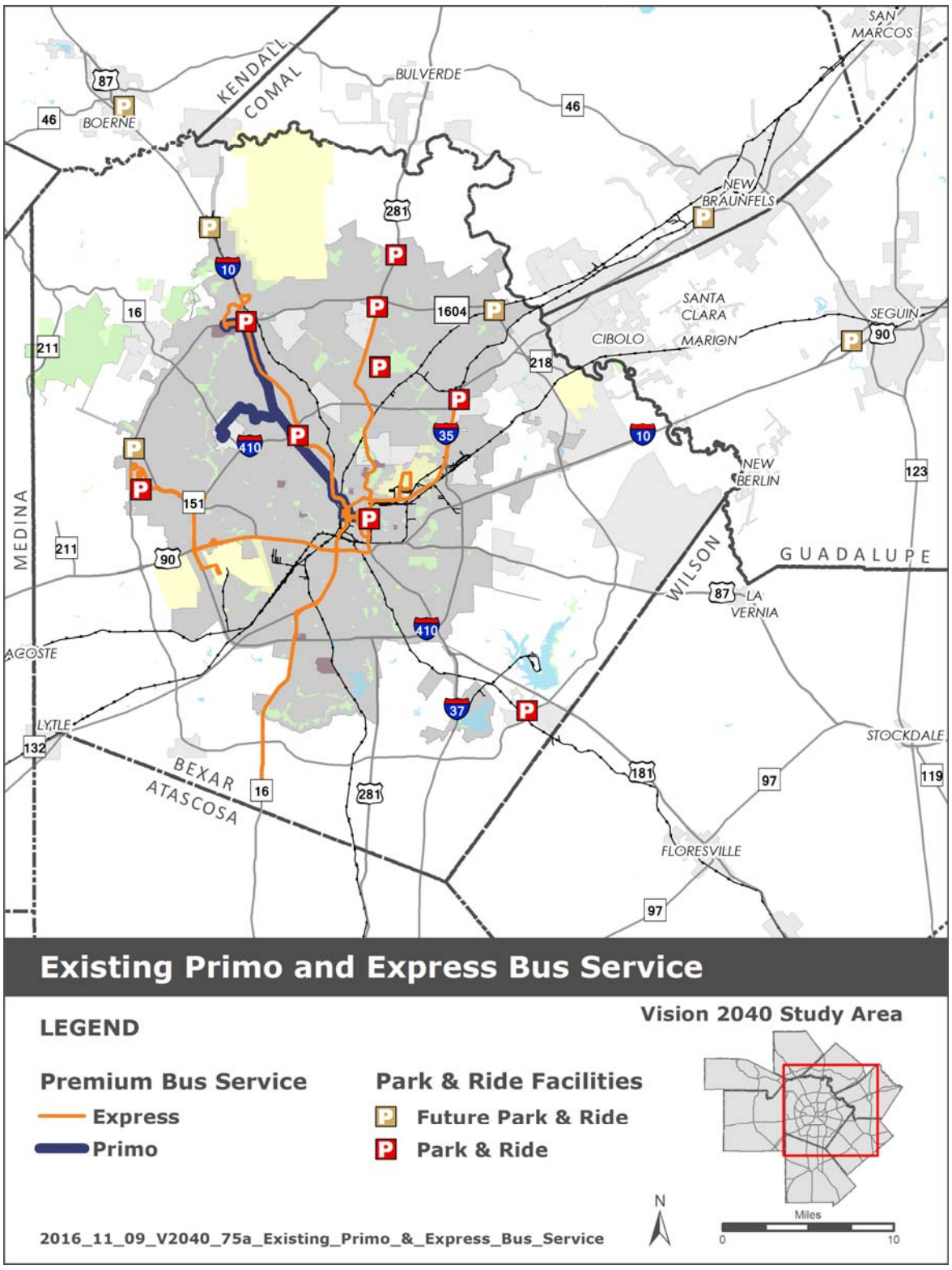
Source: VIA Metropolitan Transit, 2016.

Table 3.3 List of Express Routes and Corresponding Park & Ride Lots

Express Routes	Park & Ride Lots	Highways	Major Destinations
Route 6	Parkhills	US 281 North	Parkhills Park & Ride, Downtown
Route 17	Randolph	I-35 North	Randolph Park & Ride, Downtown
Route 48	N/A	I-35 South	Kings Point, Madla Transit Center, Downtown
Route 64	Sea World	US 90 West	Northwest Vista College, Sea World, Kel-Lac Transit Center, Downtown
Route 93	University, Crossroads	I-10 East	UTSA, University Park & Ride, Crossroads Park & Ride, Centro Plaza, UTSA Downtown, Downtown
Route 94	University, Crossroads	I-10 East	The Rim, Fiesta Texas, UTSA, University Park & Ride, Crossroads Park & Ride (weekends), UTSA Downtown, Downtown

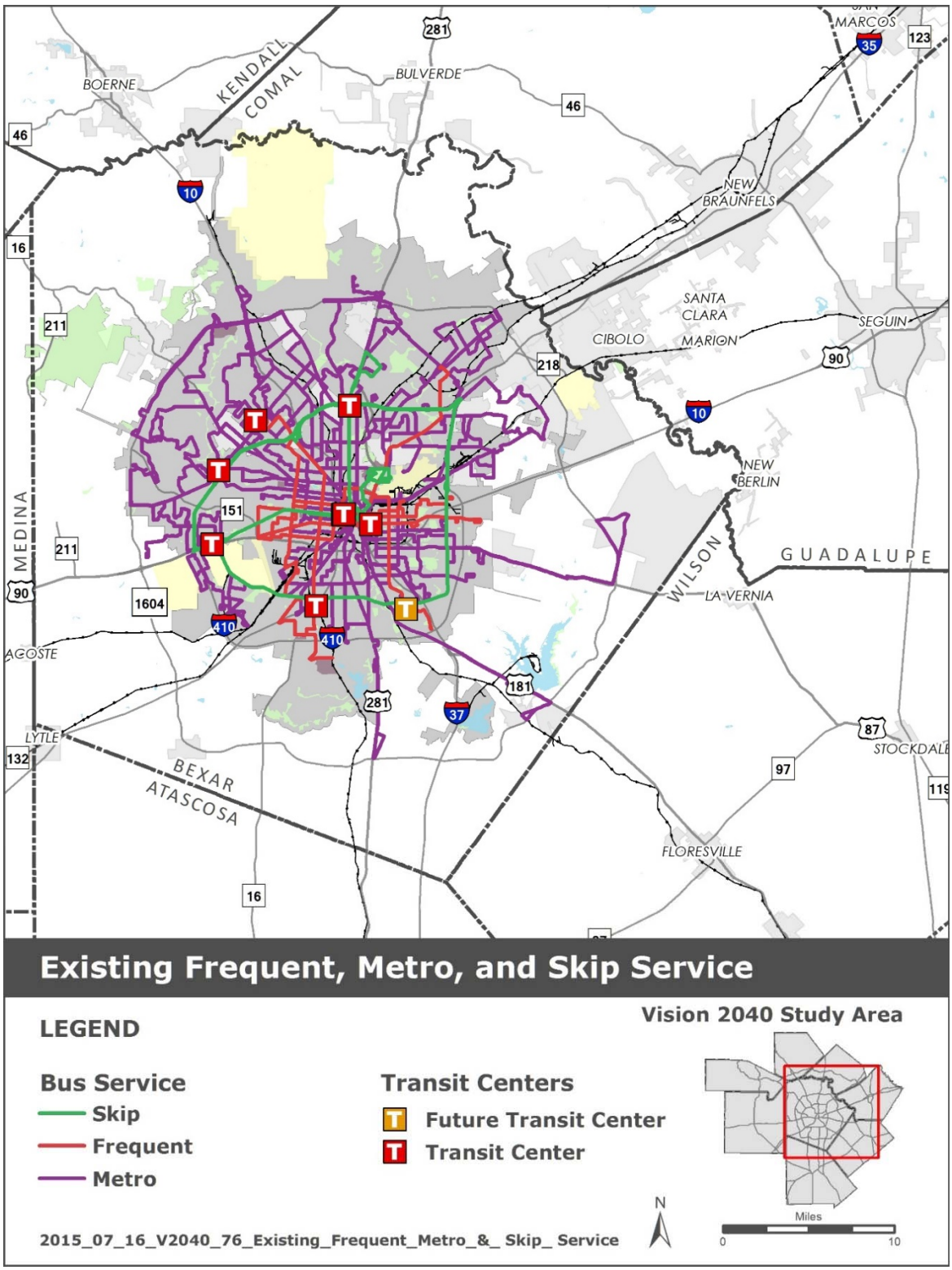
Source: VIA Metropolitan Transit, 2016.

Figure 3.1 Primo and Express Bus Service and Park & Ride Facilities



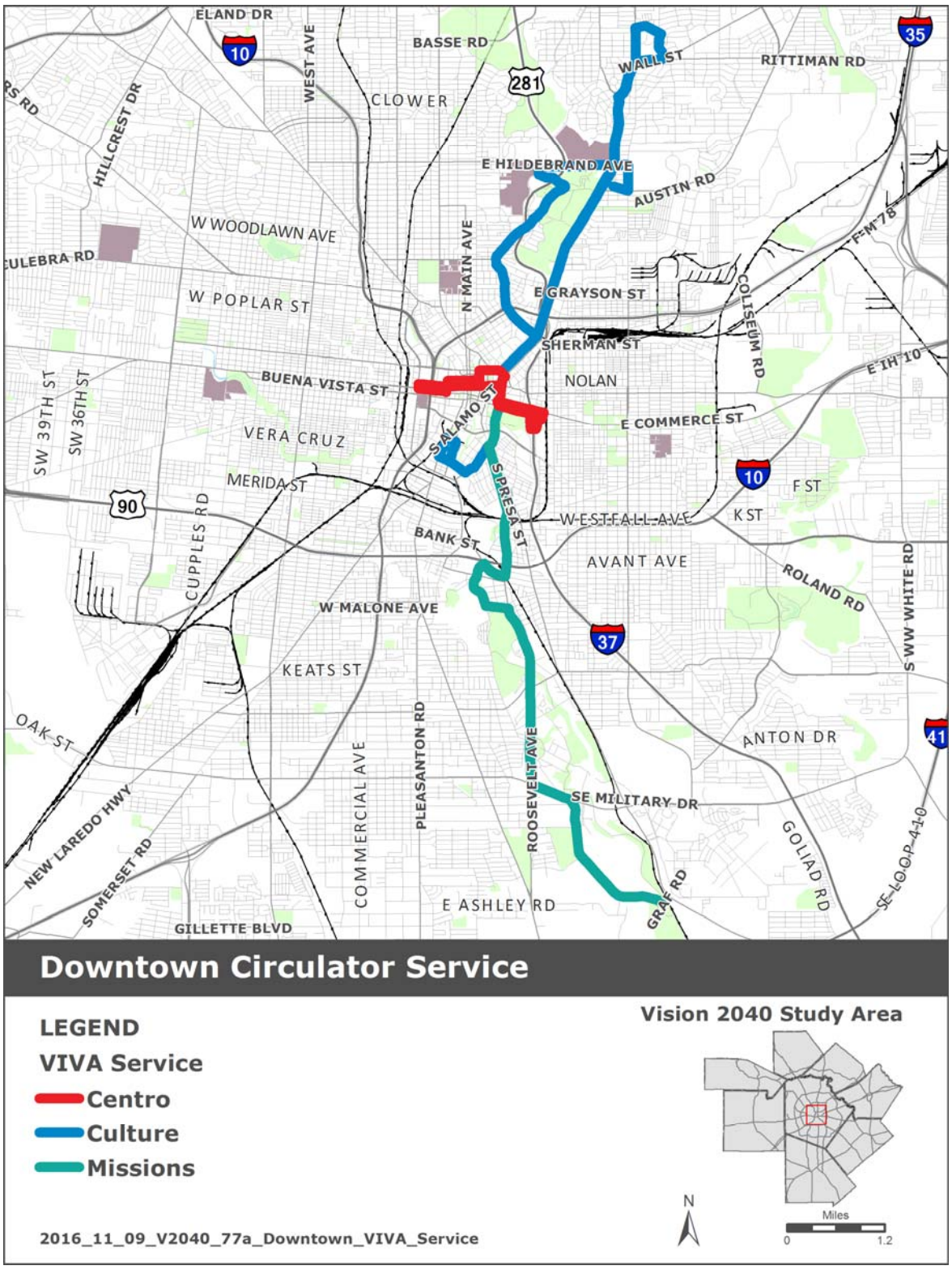
Source: VIA Metropolitan Transit, 2016.

Figure 3.2 Frequent, Metro, and Skip Routes and Transit Centers



Source: VIA Metropolitan Transit, 2015.

Figure 3.3 VIVA Service



Source: VIA Metropolitan Transit, 2016.

3.1.2 Paratransit Service

VIA provides an array of transportation options to those with disabilities and/or mobility impairments. These transportation options help provide comprehensive and accessible services to those who cannot use the fixed-route service and include travel training, VIAtrans (paratransit), and a taxi subsidy service.[3]

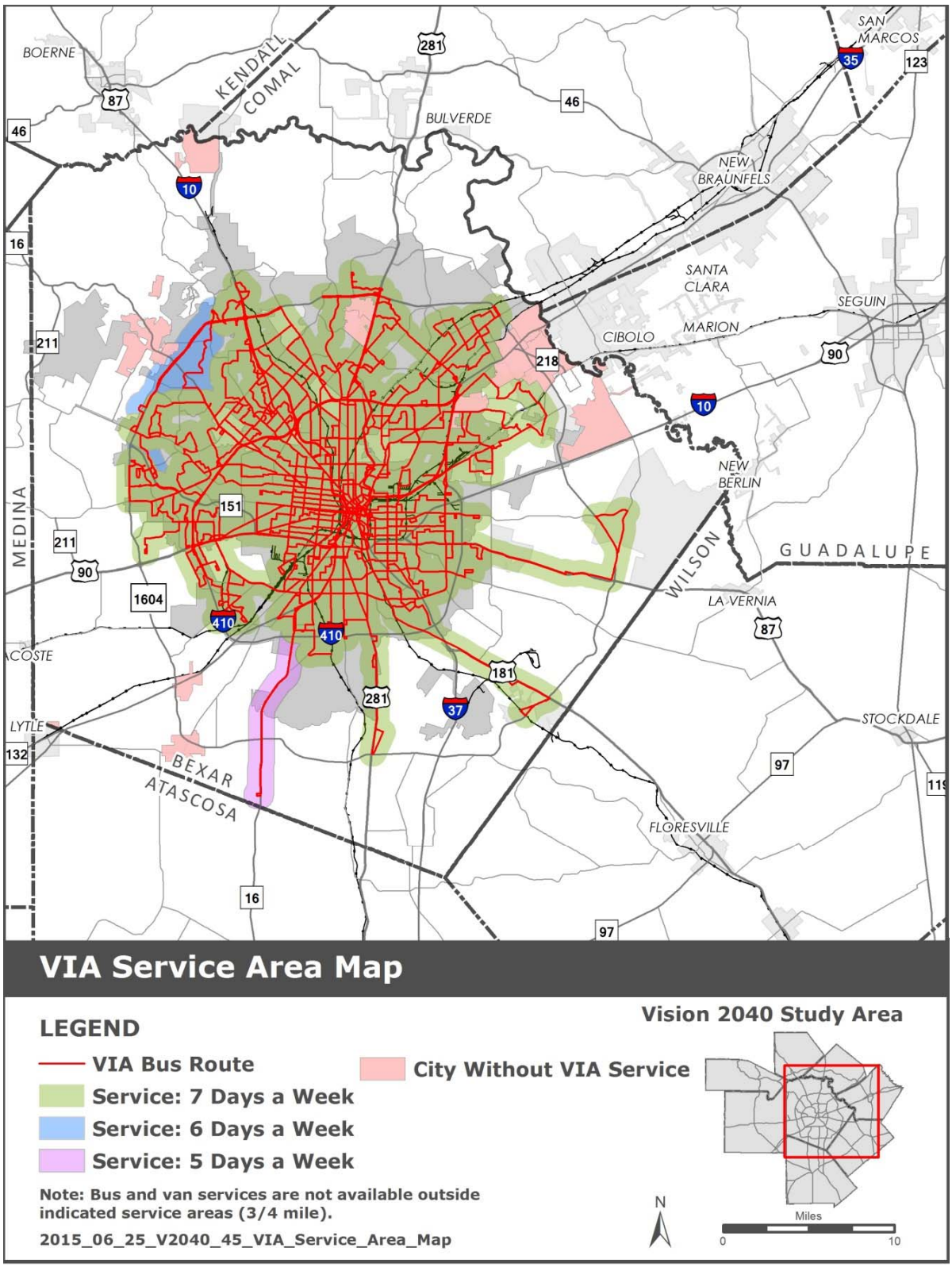
VIAtrans provides curb-to-curb, shared transportation to older adults and people with disabilities. All public transit operators are required under the United States Department of Transportation (DOT) Americans with Disabilities Act (ADA) to provide paratransit services to persons with disabilities to origins and destinations within three-quarters of a mile of all fixed routes. As a result, VIAtrans is comparable to the bus system both in service area (Figure 3.4), days and hours of operation, and system capacity.[4] The entire fleet of VIAtrans vehicles are accessible and feature lifts and ramps to accommodate VIAtrans clients who use mobility aids. Paratransit is generally more expensive per trip than fixed-route transit because the vehicles operate seven days a week and carry fewer passengers, hence requiring more vehicle time to provide the same number of rides as fixed route transit. As of fall 2016, the fare for VIAtrans service is $2.00 per trip.

Eligibility requirements for VIAtrans are consistent with the ADA guidelines of 1990. VIAtrans eligibility is solely based on an individual's functional ability to use regular city bus service, whether it is physical, cognitive, or visual disability. Clients may be asked to participate in a physical functional assessment in order to qualify their eligibility.

[3] NTD refers to demand response as vehicles that do not operate over a fixed route or on a fixed schedule, and/or a vehicle that may be dispatched to pick up several passengers at different pick-up points before taking them to their respective destinations. This report refers to VIAtrans as demand response.

[4] VIAtrans is only available to cities that have chosen to participate in the VIA transit system (VIA Metropolitan Transit, 2014b).

Figure 3.4 VIAtrans Service Area



Source: VIA Metropolitan Transit, 2015.

3.1.3 Vanpool Service

VIA offers a vanpool service for groups of six or more commuters who want to share the cost of driving to work. The vans are provided at a low cost through an agreement between VIA and its vanpool provider. Vanpool participants rent the vans month-to-month, and the price includes a VIA subsidy ($20 per person per month), insurance, 24-hour roadside assistance, and all van maintenance. One member of the group drives and maintains the van in exchange for riding free. Vanpools can go anywhere, as long as trips start or end within Bexar County.

Vanpool participants within the eight-county Greater San Antonio Region also are eligible to participate in the Emergency Ride Home CARE Program offered by the Alamo Area Council of Governments (AACOG).[5] This program provides a limited number of rebate coupons per year to cover cab fare home in the event that a personal or family emergency occurs while at work (AACOG, 2015).

3.2 Community Impact of VIA Transit

3.2.1 VIA Provides Good Accessibility to Key Destinations

One of VIA's key roles is to link residents with their desired destinations. About 63 percent of jobs are located within one-quarter mile of a VIA stop (Table 3.4). Of major employers (those who employ more than 1,000 workers), 85 percent are located within one-quarter mile of a VIA stop, and 51 percent are located within one-quarter mile of a stop with frequent service. The vast majority of parks, hospitals and pharmacies, and sports centers were found to be located close to at least one VIA stop. Nearly two-thirds of households below the poverty line and nearly three-quarters of households that do not own a vehicle have access to VIA service within one-quarter mile.

Table 3.4 Accessibility of Key Destinations to Transit (San Antonio MSA)

	Within Quarter-Mile to Transit	Within Quarter-Mile to Frequent Transit
All Jobs	538,815 (63%)	300,255 (35%)
Major Employers (>1,000 employees)	66 (85%)	39 (51%)
Activity Centers	13 (100%)	10 (77%)
Parks	227 (84%)	70 (26%)
Hospitals and Pharmacies	36 (92%)	20 (51%)
Sports Centers/Stadiums	7 (100%)	3 (43%)

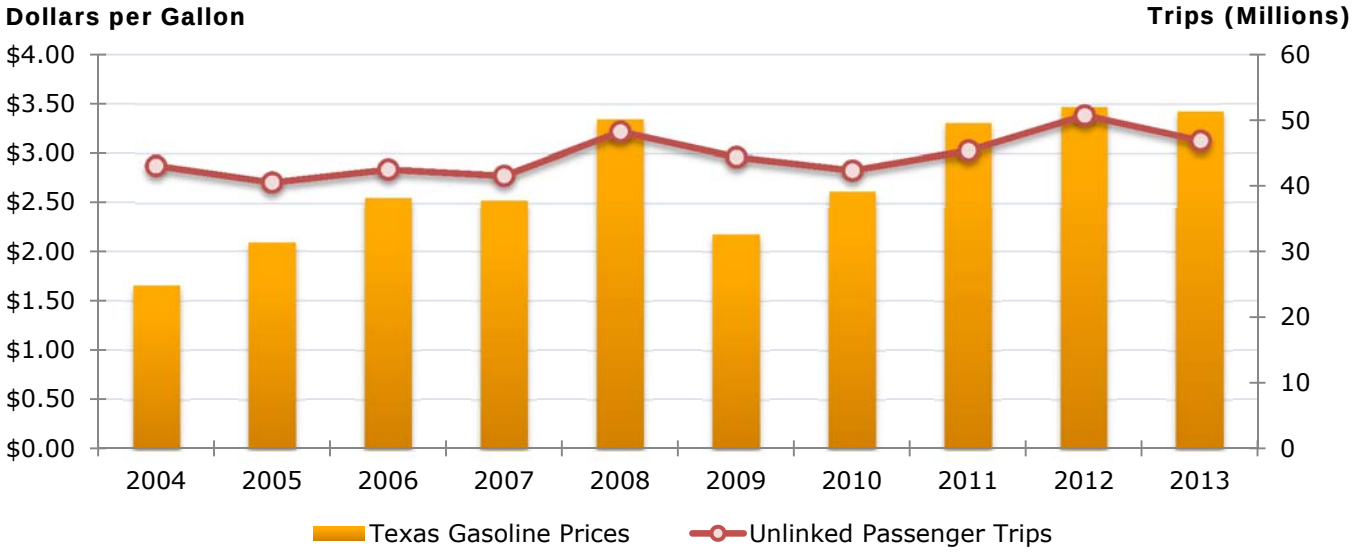
Source: Longitudinal Employer-Household Dynamics (LEHD), 2011; VIA Metropolitan Transit, 2015.

[5] VIA is a supporting partner of AACOG's Emergency Ride Home CARE Program.

3.2.2 VIA Provides Critical Transportation Alternatives

As part of an integrated transportation network, a key role for public transit is to provide transportation alternatives and stability against changes in economic and transportation activity. Usage of VIA services is closely linked to the price of gasoline (Figure 3.5), demonstrating VIA's ability to give consumers transportation choices when the economy fluctuates. The availability of public transit also offers residents the option of not owning or operating a vehicle if they choose. .

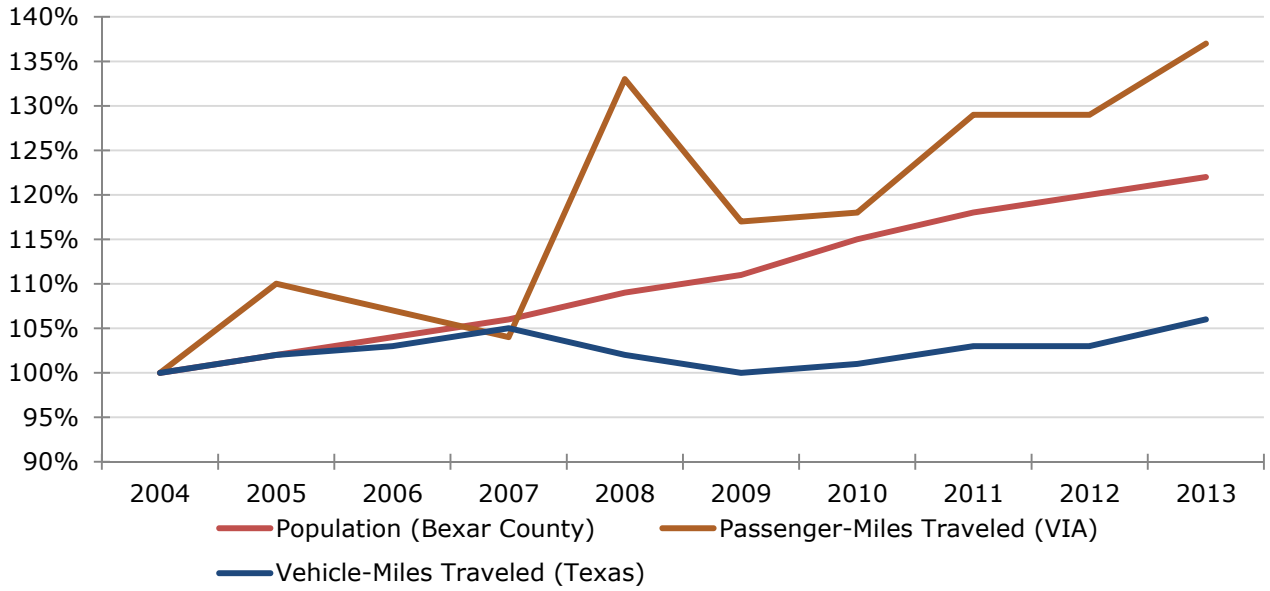
Figure 3.5 Texas Gasoline Price Trend, 2004-2013



Source: U.S. Energy Information Administration.

Since 2004, VIA ridership has grown proportionally faster than both the population in Bexar County and the amount of miles driven in the State of Texas (Figure 3.6). High increases in VIA ridership during the 2008 economic recession are accompanied by decreases in automobile use around the same time. In general, VIA use has grown at about the same rate as the Bexar County population, while auto use has remained relatively constant.

Figure 3.6 VIA Ridership, Population Growth, and Auto Use

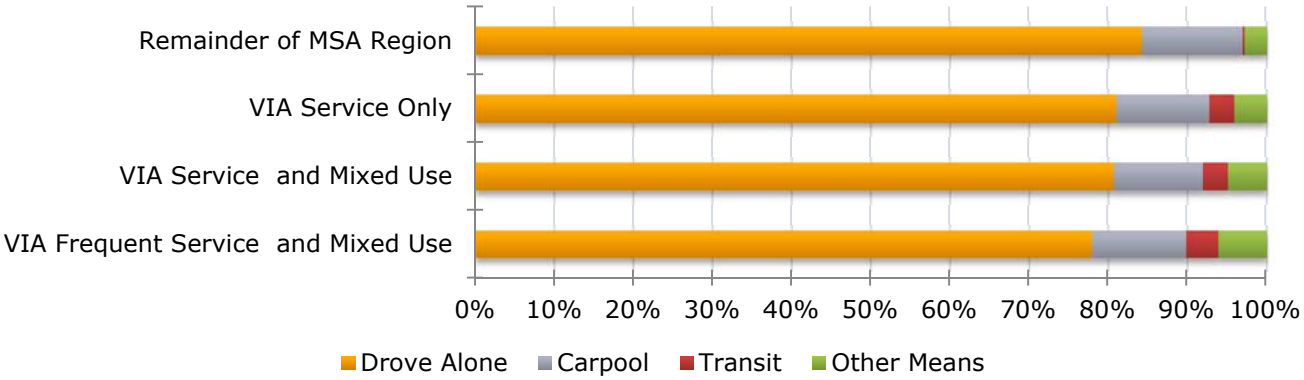


Source: Texas Department of State Health Services, National Transit Database, Federal Highway Administration.

3.2.3 People with Access to VIA Drive Less

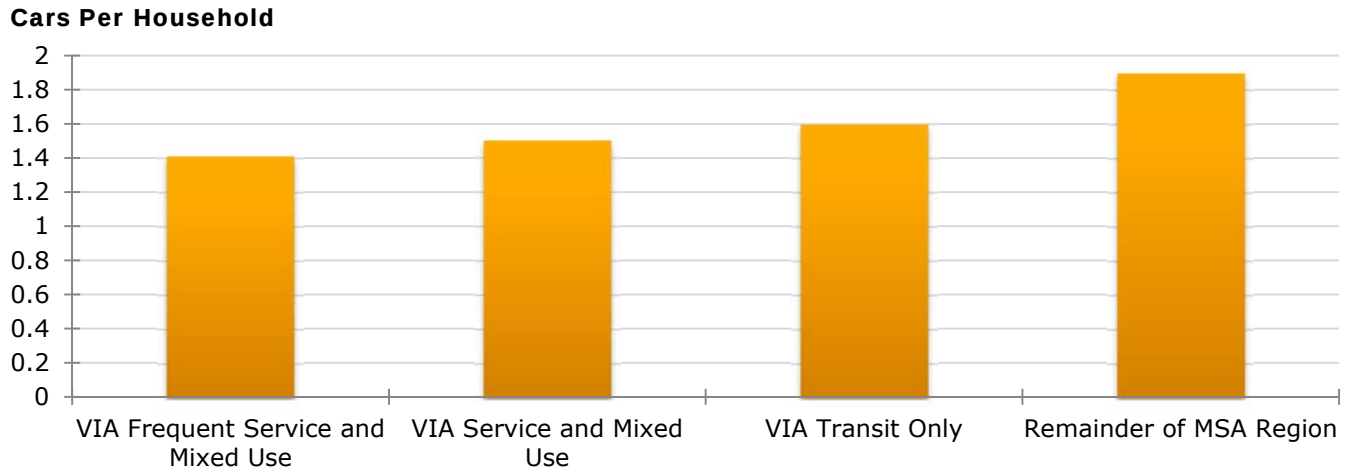
A viable transit system reduces the community's reliance on costly transportation infrastructure by achieving efficiencies of moving more people per trip than single-occupant vehicles. Residents of the VIA service area use transit more frequently (Figure 3.7), own fewer vehicles (Figure 3.8), and drive fewer miles (Figure 3.9) when they are located in transit corridors with frequent transit service (more than four buses per hour), compared to residents of areas without VIA service. Similarly, residents that live in areas with a good mix of both jobs and housing (i.e., mixed use development) are more likely to use transit, own fewer vehicles, and drive fewer miles compared to the regional average.

Figure 3.7 Method of Travel to Work by Service Available



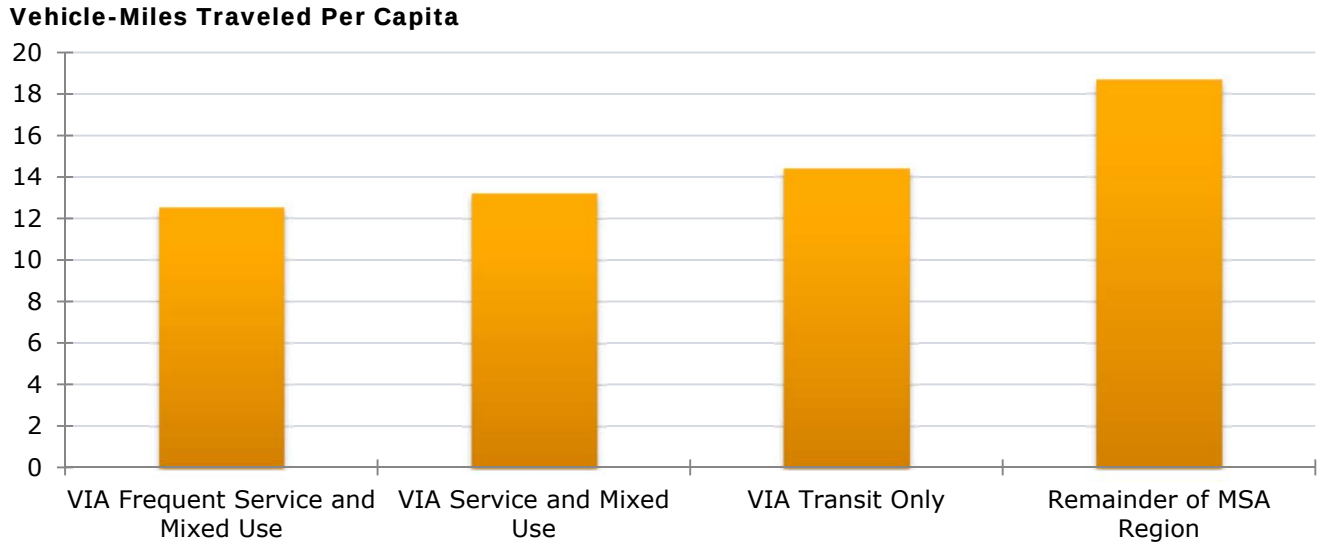
Source: 2009-2013 ACS Five-Year Estimates, National Household Travel Survey 2009, VIA Metropolitan Transit.

Figure 3.8 Average Car Ownership per Household by Land Use and Transit Access



Source: 2009-2013 ACS Five-Year Estimates.

Figure 3.9 Daily Vehicle Miles Travel per Capita by Transit Access



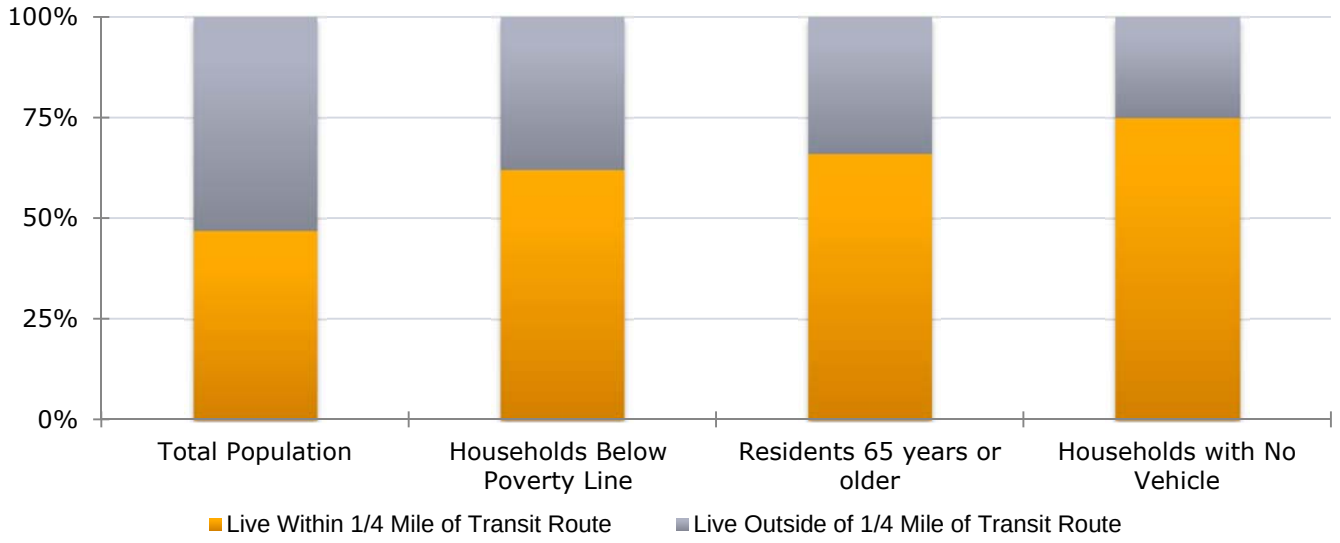
Source: 2009-2013 ACS Five-Year Estimates.

3.2.4 VIA Provides Tangible Benefits to the Community

VIA provides critical service to residents who depend on it. Two 2014 VIA studies, the *Origin and Destination Study* and the *Who Is The Rider?* survey (VIA Metropolitan Transit, 2014) revealed that VIA service is important to low-income workers and riders with limited access to transportation alternatives, representing 54 percent and 62 percent of VIA riders, respectively (Figure 3.10). Survey

results further showed that if VIA transit service was discontinued, about 30 percent of riders would not be able to make the trip by any other means. Moreover, 7 percent of VIA riders are dependent on public transportation to get from place to place due to health conditions that may limit their mobility or ability to use other forms of transportation. While the majority of riders do not solely rely on VIA for transportation, this service is significant for some residents.

Figure 3.10 Population served by VIA



Source: 2009-2013 America Community Survey.

In addition, VIA service accommodates a significant amount of peak-period travel in the most congested corridors and urban areas in the Greater San Antonio Region. According to Texas A&M Transportation Institute's (TTI) 2012 *Urban Mobility Report* (Schrank, Eisele, & Lomax, 2012), if VIA service was discontinued and the riders traveled in private vehicles instead, San Antonio metropolitan area would have experienced an additional 1.8 million hours of delay; consumed 758,000 more gallons of fuel; and produced additional 15.2 million pounds of CO_2. The additional time lost due to travel delay and excess fuel consumed without VIA service represents about $37.3 million, a 4.5-percent increase over current congestion costs in San Antonio metropolitan area (Table 3.5).

Table 3.5 Community Benefits of VIA Transit Service

Measures	Quantity Reduced by Use of VIA Services
Annual Delay (Hours)	1,808,000
Annual Delay per Auto Commuter (Hours)	2
Wasted Fuel (Gallons)	758,313
Annual Congestion Cost (Dollars)	$37,300,000
Excess CO_2 (Pounds)	15,181,668

Source: Texas A&M Transportation Institute, 2012.

4.0 VIA in Comparison to Peer Agencies

This section benchmarks VIA's system performance and expenditure trends against eight peer transit agencies to reveal VIA's comparative strengths and areas of opportunity. Understanding recent performance trends and peer benchmarks provides context to inform VIA's needs assessment and strategy going forward. The eight peer agencies, four from Texas and four from the West and Southwest, were selected based on similarities in population size, budget, services offered, and geographic location (Table 4.1 and Figure 4.1).

Table 4.1 Peer Agencies for Comparison

Agency	Major City	MSA Population[a]	Service Area[b] (square miles)	Service Area Population[b]
VIA	San Antonio	2,278,000	1,213	1,715,000
Capital Metropolitan Transportation Authority (CapMetro)	Austin	1,883,000	522	1,023,000
Dallas Area Rapid Transit (DART)	Dallas	6,811,000	696	2,423,000
Sun Metro Mass Transit System (SunMetro)	El Paso	831,000	251	803,000
Metropolitan Transit Authority of Harris County (METRO)	Houston	6,313,000	1,285	3,528,000
Valley Metro	Phoenix	4,399,000	518	1,665,000
TriMet	Portland	2,315,000	570	1,490,000
Utah Transit Authority (UTA)	Salt Lake City	1,140,000	751	2,165,000
San Diego Metropolitan Transit System (SDMTS)	San Diego	3,211,000	716	1,960,000

Source: U.S. Census Bureau, Population Division.

[a] Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2013.

[b] NTD Agency Profiles, 2012.

Figure 4.1 Peer Agencies

Key observations about how VIA performs relative to its peer agencies are described below. Additional analysis of performance metrics and peer review discussion may be found in Appendix D. Definitions of technical terminology used throughout this peer review are provided in the Glossary.

4.1 VIA Maintains Low Fares

VIA has maintained low fares throughout its 37 years in operation. Today, a single ride is $1.30 and a monthly pass is $38, the lowest of any of VIA's peer agencies.[6] In addition, while a basic VIA pass allows access to Primo service, other agencies' single ride and monthly passes are restricted to regular bus service only. VIA does charge a higher rate of $2.60 per ride for its Express Service.

[6] As of November 2016.

Table 4.2 Fares and Passes by Agency

	TriMet (Portland)	SunMetro (El Paso)	METRO (Houston)	VIA (San Antonio)	CapMetro (Austin)	DART (Dallas)	UTA (Salt Lake City)	SDMTS (San Diego)	ValleyMetro (Phoenix)
Single Ride	$2.50	$1.50	$1.25	$1.30	$1.25[b]	$2.50	$2.50[b]	$2.25[b]	$2.00[b]
Monthly	$100	$48	N/A[a]	$38	$41.25[b]	$80	$83.75[b]	$72[b]	$64[b]

Source: Agency web sites, 2016.

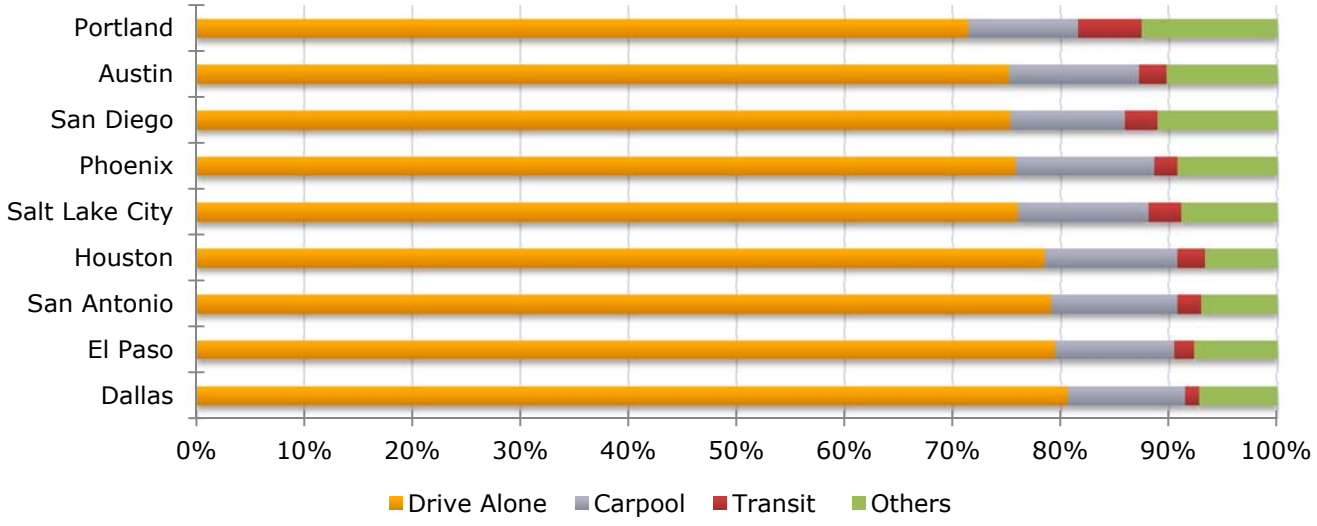
[a] METRO does not offer a monthly pass, but gives five free rides for every 50 paid rides.

[b] Local bus service only (excludes rapid/express buses and/or rail service).

4.2 Transit Comprises a Comparatively Smaller Proportion of Work Trips

Compared to its peers, the area served by VIA lags behind its peer regions in terms of the proportion of commuters who travel to work by transit. Nearly 80 percent of workers who live in the San Antonio-New Braunfels MSA drive alone to work (Figure 4.2). VIA's per capita transit usage among commuters (including all modes – fixed-route bus, VIAtrans, and vanpool) is lower than nearly every other agency, though its bus ridership is similar to the other Texas agencies surveyed (Figure 4.3).

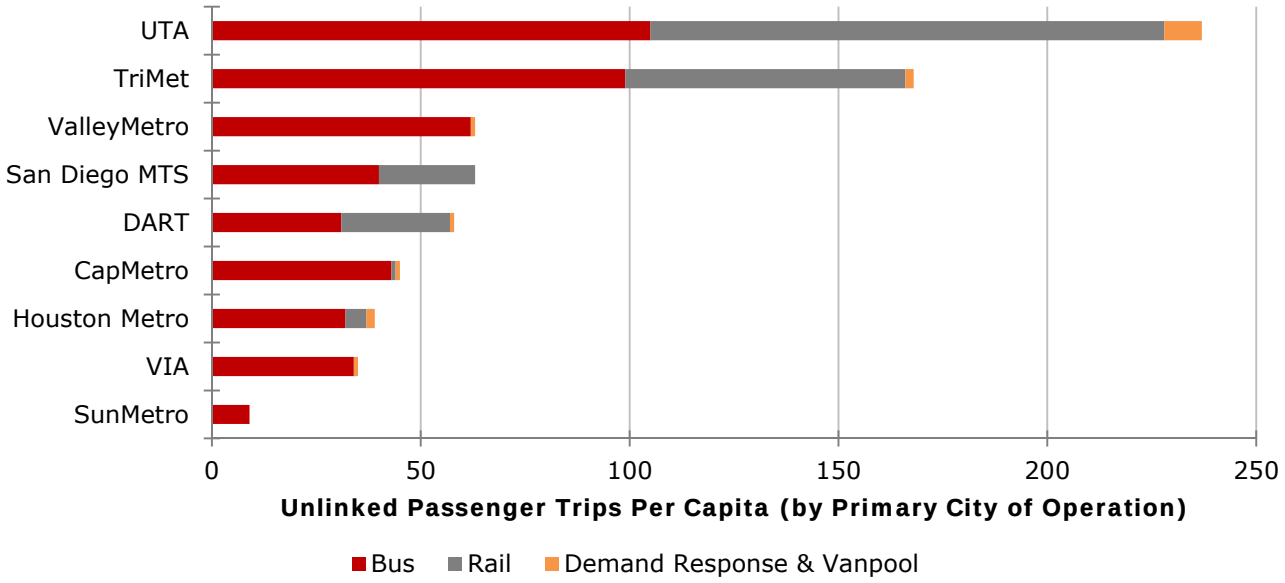
Figure 4.2 Method of Travel to Work by MSA



Source: 2010-2012 American Community Survey, Table 2a: Mode to work at place of residency.

Of the eight peer agencies observed, the three agencies with the lowest proportion of commuters driving alone also had the shortest average trip to work for both driving alone and trips by transit. Workers in the Greater San Antonio Region experience mean travel times to work for both driving trips (22 minutes) and transit trips (45 minutes); these travel times are about average compared to peer cities.

Figure 4.3 Per Capita Transit Ridership (2013)

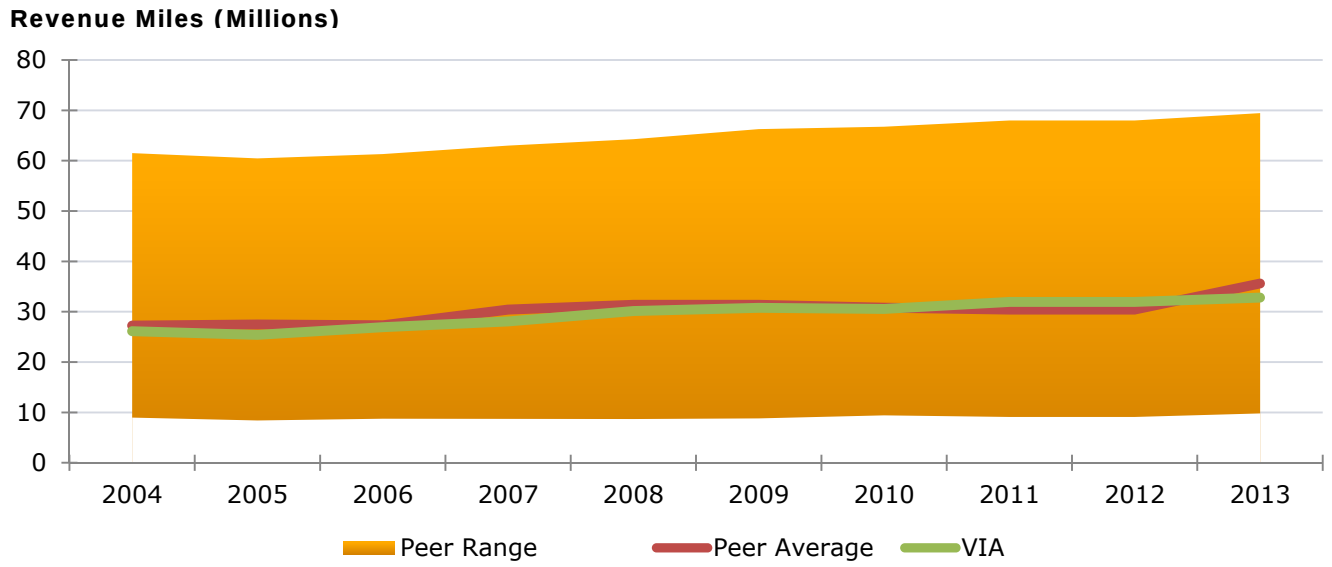


Source: 2013 NTD, 2010-2012 American Community Survey.

4.3 VIA Provides High Service Delivery at Moderate Costs

VIA supplies an average quantity of bus service (in terms of revenue miles driven) compared to its peer agencies at a per-mile cost lower than that of its peers (Figure 4.4). Service delivery is the quantity of bus service provided, measured in revenue miles (total miles driven while vehicle is in passenger service) or revenue hours (total length of time a vehicle is operated in passenger service). VIA has increased its service delivery over the last decade. In 2014, VIA vehicles drove 33 million miles in passenger service.

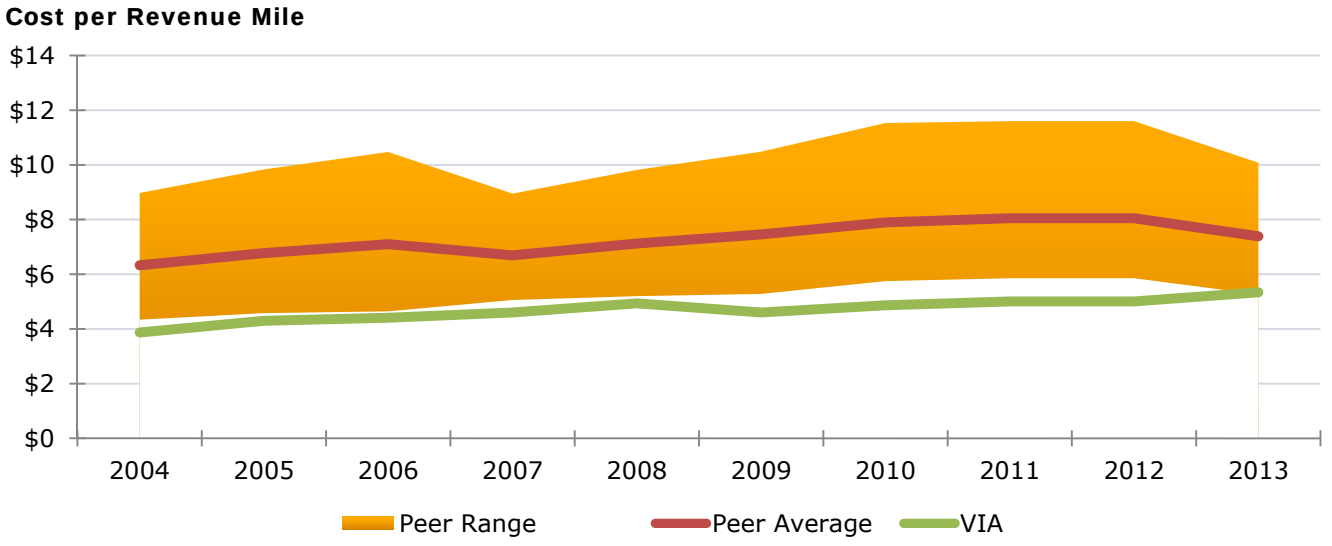
Figure 4.4 Vehicle Revenue Miles by Agency



Source: National Transit Database.

Each of VIA's peer agencies over the past decade has seen operating costs grow, even on a per-revenue-mile basis (Figure 4.5). VIA's cost per mile of service ($5.34 in 2013) is among the lowest of its peer agencies, making VIA a very efficient agency in comparison.

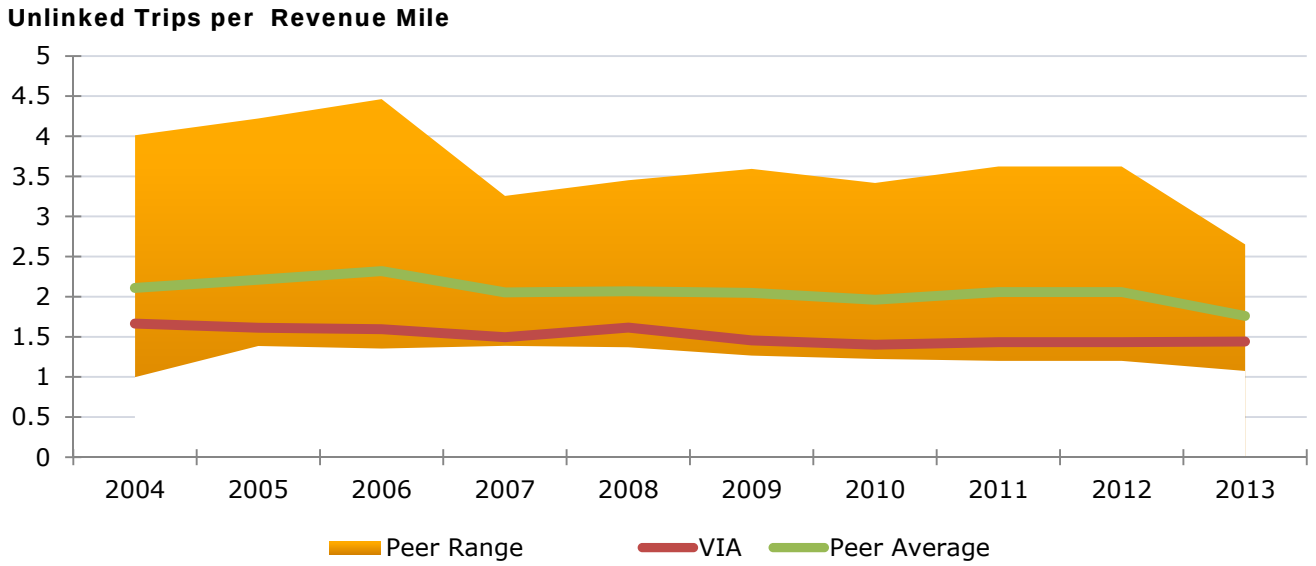
Figure 4.5 Operating Expense per Revenue-Mile by Agency



Source: National Transit Database.

On the other hand, VIA has comparatively low service consumption relative to supply (Figure 4.6). On average, VIA passengers make 1.5 one-way trips for every mile driven by a VIA vehicle; a number which has stayed relatively flat for VIA and decreased for peer agencies.

Figure 4.6 Passenger Trips per Revenue-Mile by Agency



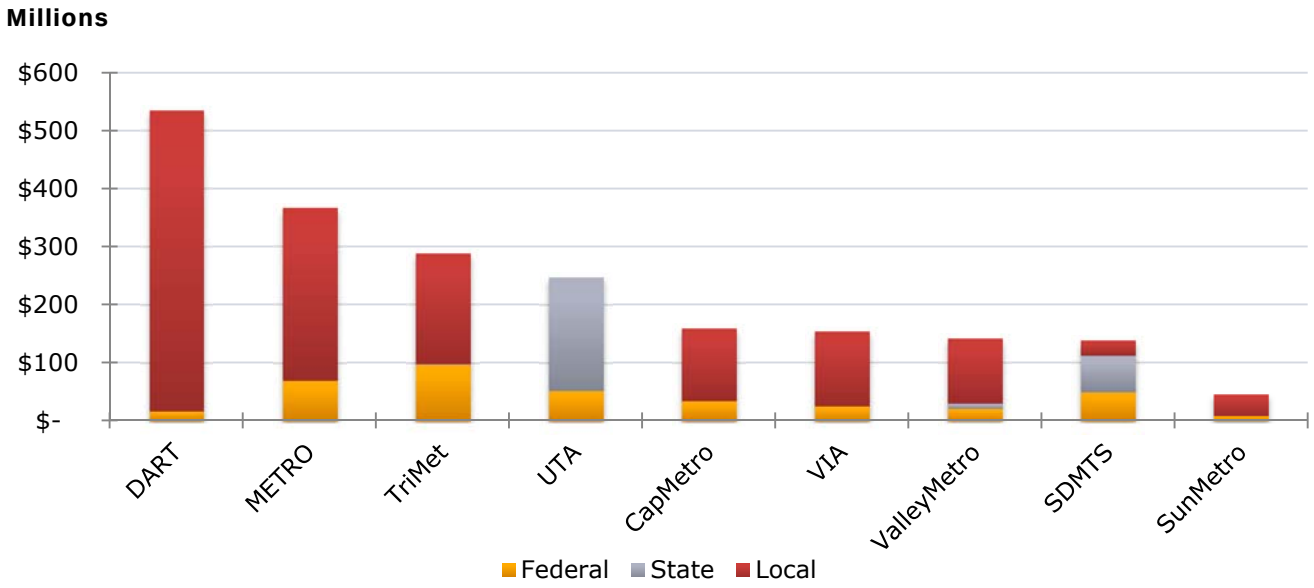
Source: National Transit Database.

4.4 Local Funding is Critical for VIA Operations

VIA and its peer agencies are funded through variety of mechanisms, from local sales taxes to Federal appropriations (Figure 4.7). VIA is funded primarily by two local sales taxes: a one-half percent sales tax levied throughout the system, and one-eighth percent sales tax levied in the City of San Antonio by the Advanced Transportation District used to fund a variety of transportation measures in the region. These two revenue streams make up the majority of VIA's operating expenditures. VIA also receives a small amount of operations funding (about 16 percent in 2013) through the Federal Transit Administration (FTA).

VIA, like its peer agencies in Texas, does not receive any dedicated state funding. Houston, Austin, and Dallas all have a dedicated one percent sales tax allocated to their transit systems. Peer agencies in other cities are funded largely by indirect sales taxes, with the exception of Portland, which funds its transit primarily through payroll taxes.

Figure 4.7 Sources of Operating Funds (2013)



Source: National Transit Database, 2013.

Approximately 16 percent of local funding comes directly from VIA fares (its farebox recovery ratio); this figure ranges from 13 to 40 percent among VIA's peer agencies (Table 4.3). While VIA's farebox recovery ratio is relatively low compared to peer agencies, it is similar to the other Texas agencies.

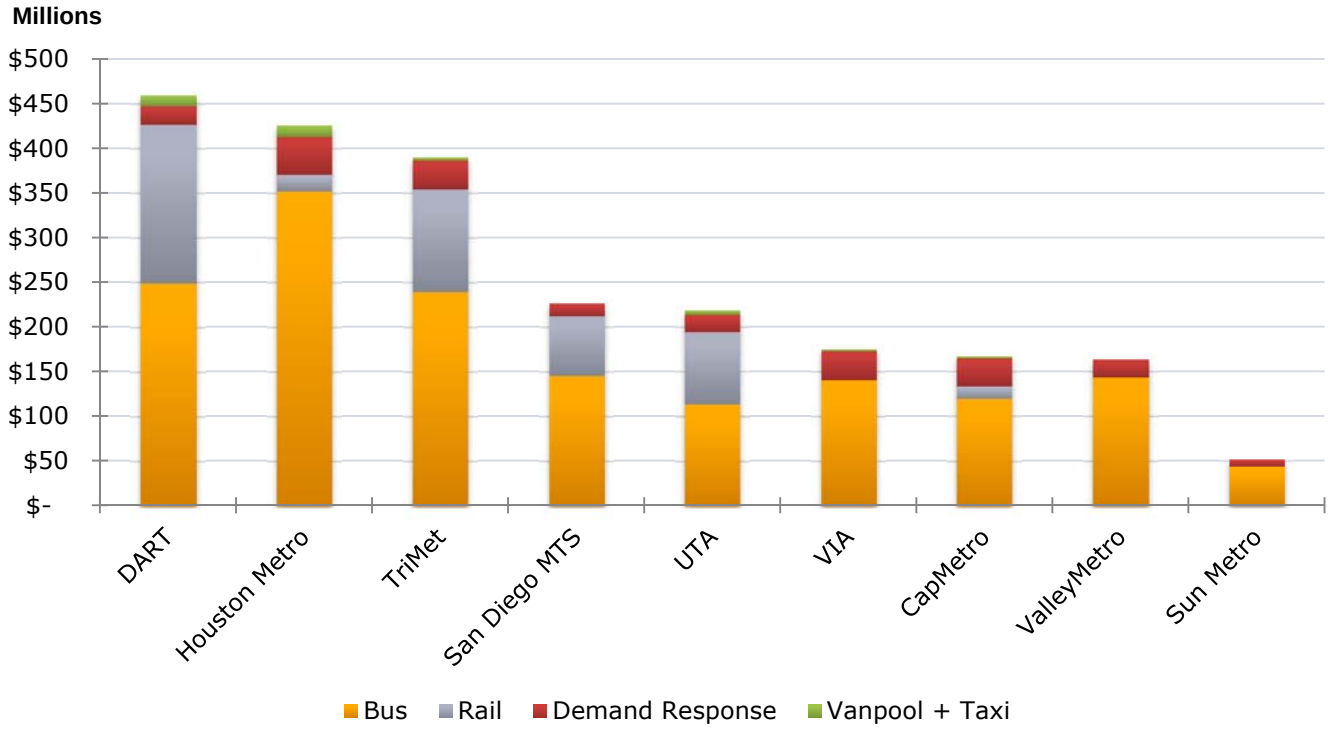
Table 4.3 Fare Revenues, Operating Expenses, and Farebox Recovery by Agency

	Total Fare Revenue (Millions), 2013	Operating Expense (Millions), 2013	Farebox Recovery Ratio
San Diego MTS	$90.7	$226.6	40%
TriMet	$115.2	$389.8	30%
UTA	$52.7	$218.6	24%
Valley Metro	$34.6	$163.6	21%
SunMetro	$9.7	$51.8	19%
Houston Metro	$76.6	$426.1	18%
VIA	$27.2	$175.1	16%
DART	$69.5	$459.9	15%
CapMetro	$21.9	$167.2	13%

Source: National Transit Database, 2013.

About 80 percent of VIA's operating expenses go towards fixed route bus service, with the remainder allocated to paratransit/demand-response service (VIAtrans, about 19 percent) and vanpool service (less than 1 percent). While VIA does spend slightly more on vanpool and demand response proportionally compared to its larger-budgeted peers (DART, Houston Metro, and TriMet), spending is not unusually high in absolute terms, and is close to that of similarly-sized agencies (CapMetro and Valley Metro; Figure 4.8).

Figure 4.8 Operating Expenses (2013)



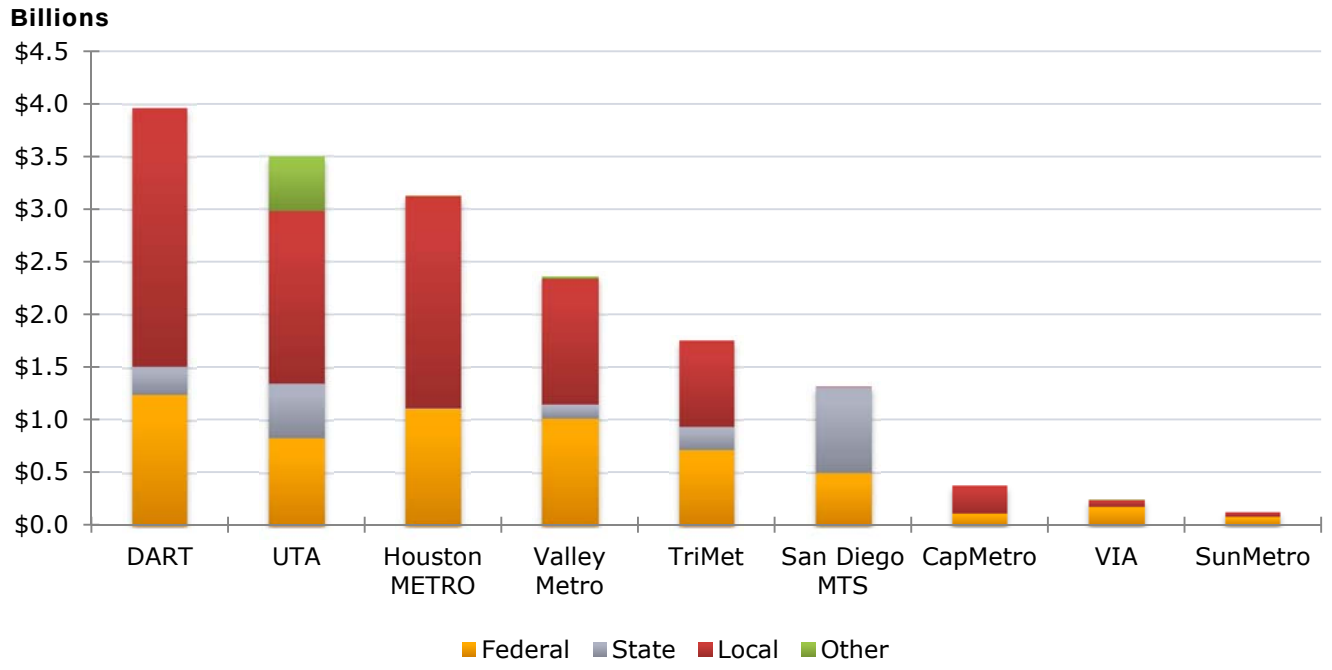
Source: National Transit Database, 2013.

4.5 VIA Has Had Low Capital Expenditures

Over the last decade, VIA spent $242 million on capital improvements, compared to a peer-agency-average of $1.8 billion. Funding for VIA's capital improvements came from a mix of Federal and local sources (Figure 4.9). Most other peer agencies have received substantially more Federal funding for capital projects (for a detailed listing, see Appendix D).

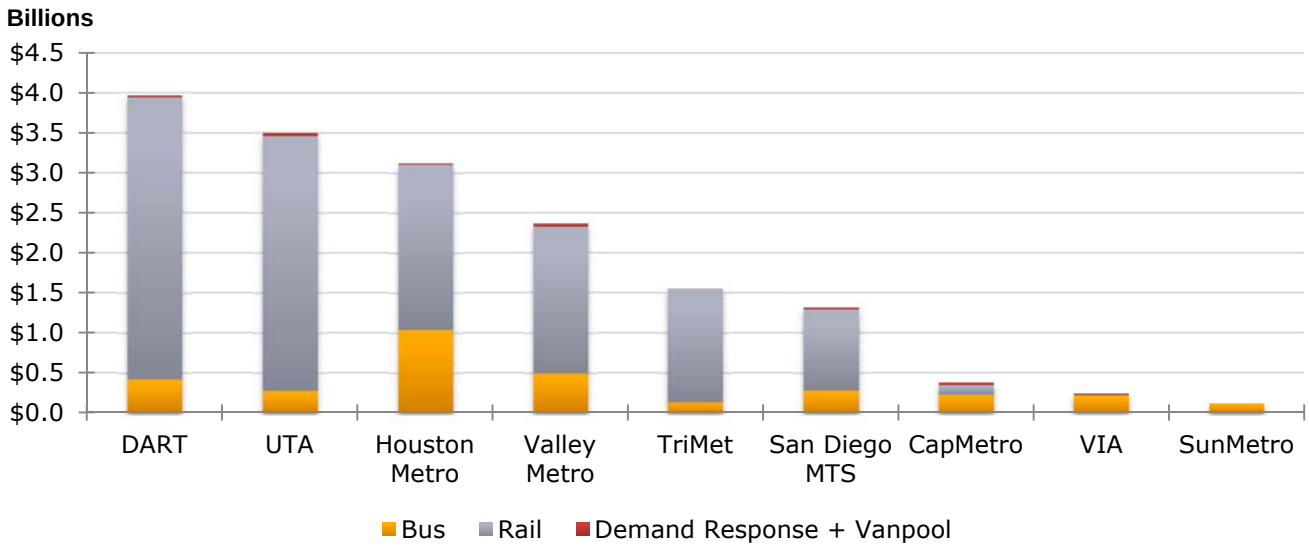
VIA's spending on capital projects over the last decade was the second lowest of its peer agencies. While most other peer agencies directed the majority of their capital spending to rail projects, VIA's spending on bus projects (like VIA's Primo service) also was lower than all but three other agencies (Figure 4.10).

Figure 4.9 Sources of Capital Funds (2004-2013)



Source: National Transit Database, 2013.

Figure 4.10 Capital Expenditures by Agency (2004-2013)



Source: National Transit Database, 2004-2013.

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5.0 Vision 2040 Opportunities and Challenges

As history has shown, the region's public transportation system has gone through phases where it has both shaped the region's growth and urban form (as was the case with the early railroads and electric streetcar system) and been shaped by changing growth patterns (as was the case when responding to outward growth facilitated by highway investments). The next pivotal phase in the Greater San Antonio Region's timeline is how it will prepare for and respond to the predicted influx of 1.6 million new residents over the next 25 years. Vision 2040 provides an opportunity to continue a public dialog about the role public transportation should play in shaping the way the region responds to growth.

As described in this document, VIA provides important community benefits by providing transportation options to people that need them, connecting workers to jobs and other destinations, and promoting communities that are not dependent on automobile access. Based on an assessment of 10-year performance trends, VIA can be described as a lean, efficient agency that is "doing more with less." VIA offers low fares and relies on local funding from a sales tax rate almost half that of other peer transit agencies in Texas, all while operating the most cost efficient system among its peers on a cost per mile basis.

All of this contextual information set the stage for VIA, stakeholders, and the public to identify the region's public transportation needs and develop an implementable plan to serve as a guiding document for VIA's long-term capital investments and operations to achieve the region's 2040 vision for public transportation. Subsequent phases in the Vision 2040 planning process address the region's public transportation opportunities and challenges.

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Appendix A. History of Transportation in the Greater San Antonio Region

This appendix includes two map series that illustrate the region's growth patterns in relation to the transportation network at a snapshot in time.

A.1 Auto-Centric Growth

The first map series, Figures A.1 to A.3, show how the construction of the region's highways facilitated suburban development and outward growth. In 1967, Loop 410 was upgraded to interstate highway standards. While the population was primarily within Loop 410 at this time, some growth in the north was starting to occur (Figure A.1). In 1987, the northern portion of Loop 410 was expanded to six lanes. Between the 1960s and 1980s, the population continued to grow even farther north of Loop 410, though was still within the boundaries of Loop 1604 (Figure A.2). The upgrade of Loop 1604 to four lanes in the late 1990s further facilitated the outward movement from downtown and north San Antonio (Figure A.3).

A.2 Role of VIA in a Growing Region

The second map series shown in Figure A.4 through Figure A.7 show how the region's public transportation system has evolved in response to the changing development patterns, starting with the city-owned San Antonio Transit System (SATS) in 1960 through present day VIA Metropolitan Transit (VIA). As the population moved outward from the city center, transit routes followed, reaching as many residents and destinations as possible. The public transportation in the 1960s primarily served areas with higher densities, with at least 5,000 persons per square mile (Figure A.1). In 1978, VIA extended routes to the north to serve new suburban developments outside Loop 410 (Figure A.2). By the late 1980s, service had expanded farther north to areas closer to Loop 1604 (Figure A.7). Today, VIA provides both radial and crosstown routes between Loop 410 and Loop 1604 to accommodate growing demand in the northern portion of the service area.

Figure A.1 Population Density and Highway Construction, 1960

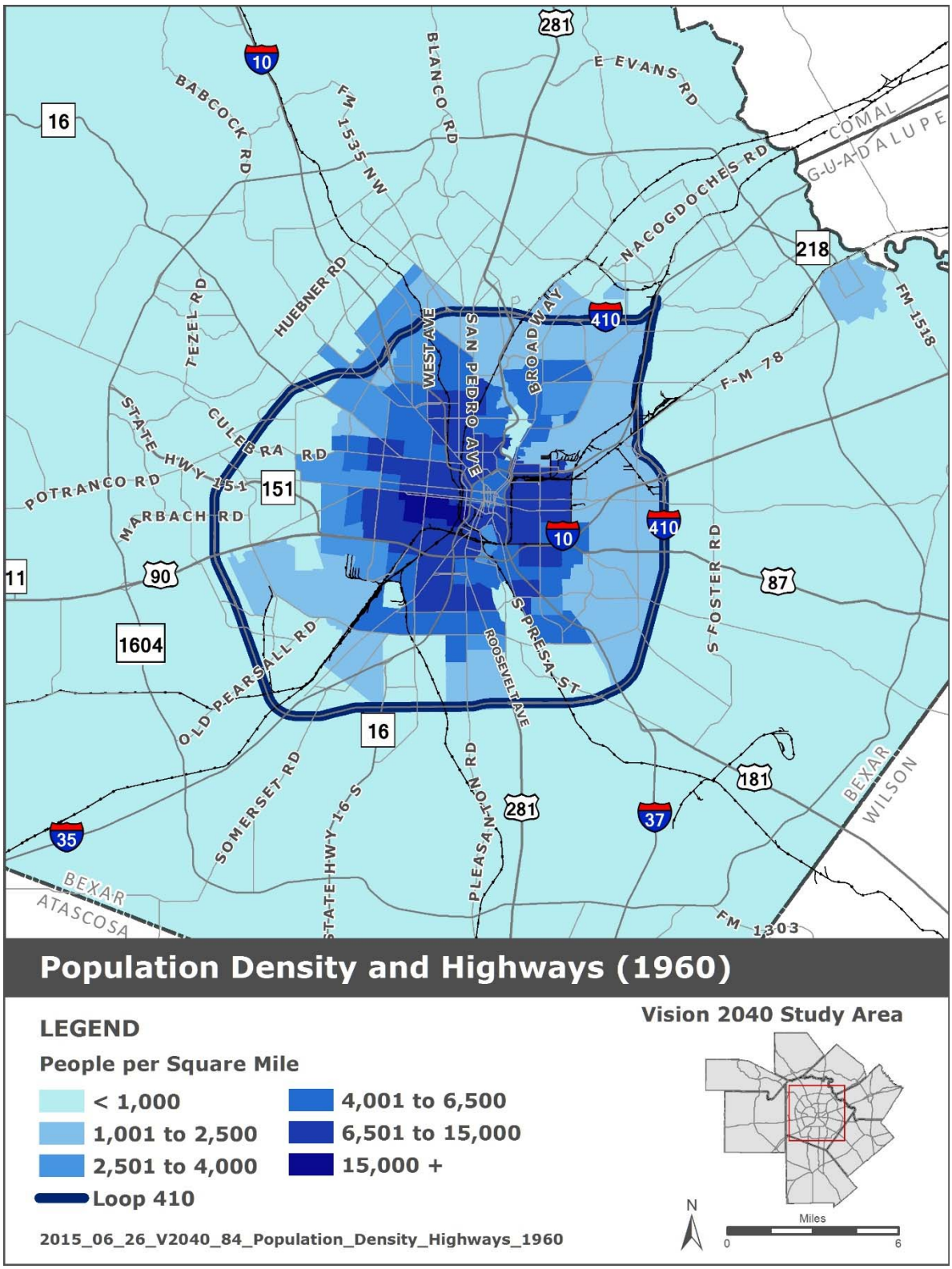


Figure A.2 Population Density and Highway Construction, 1980

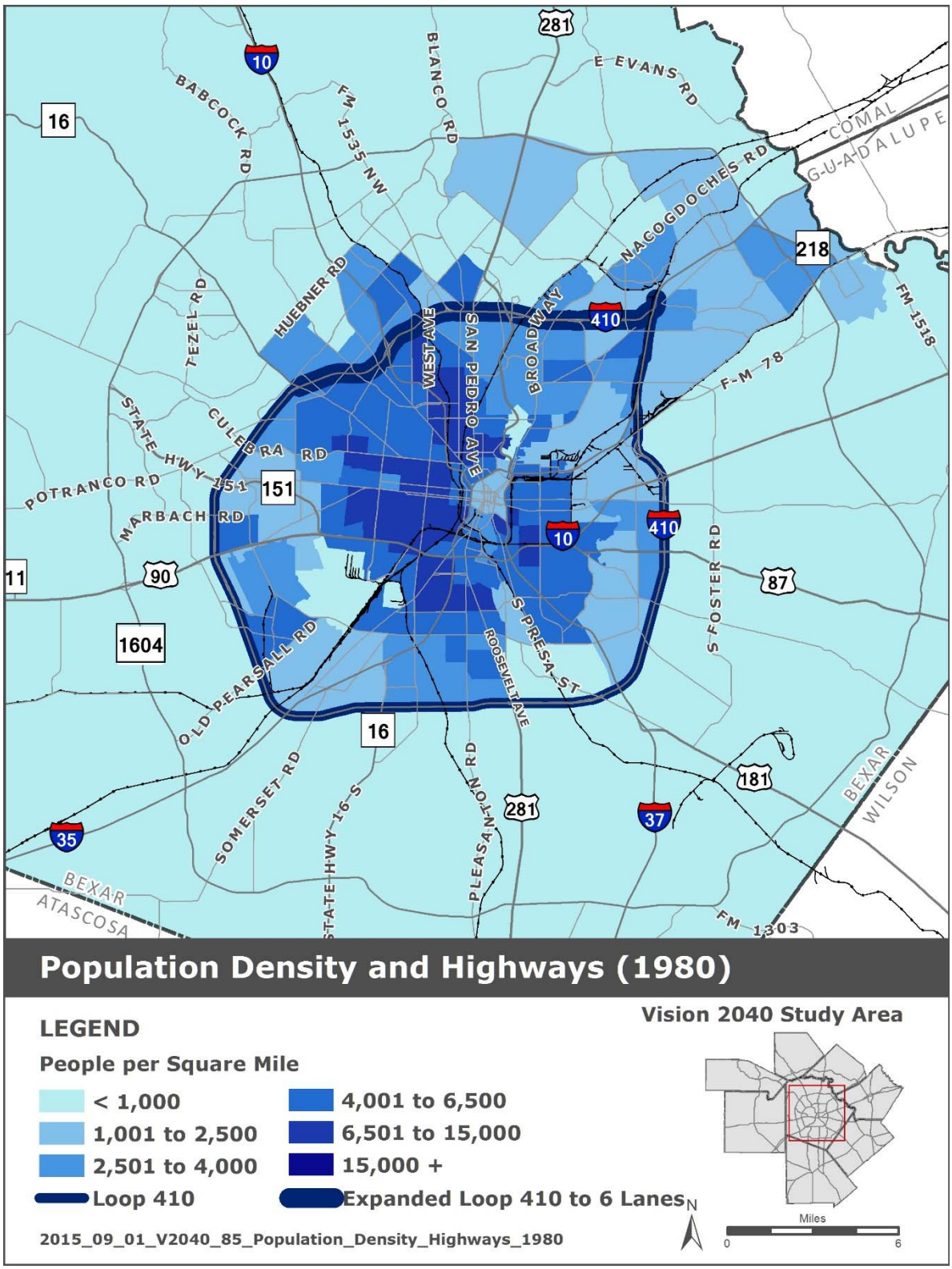


Figure A.3 Population Density and Highway Construction, 1990

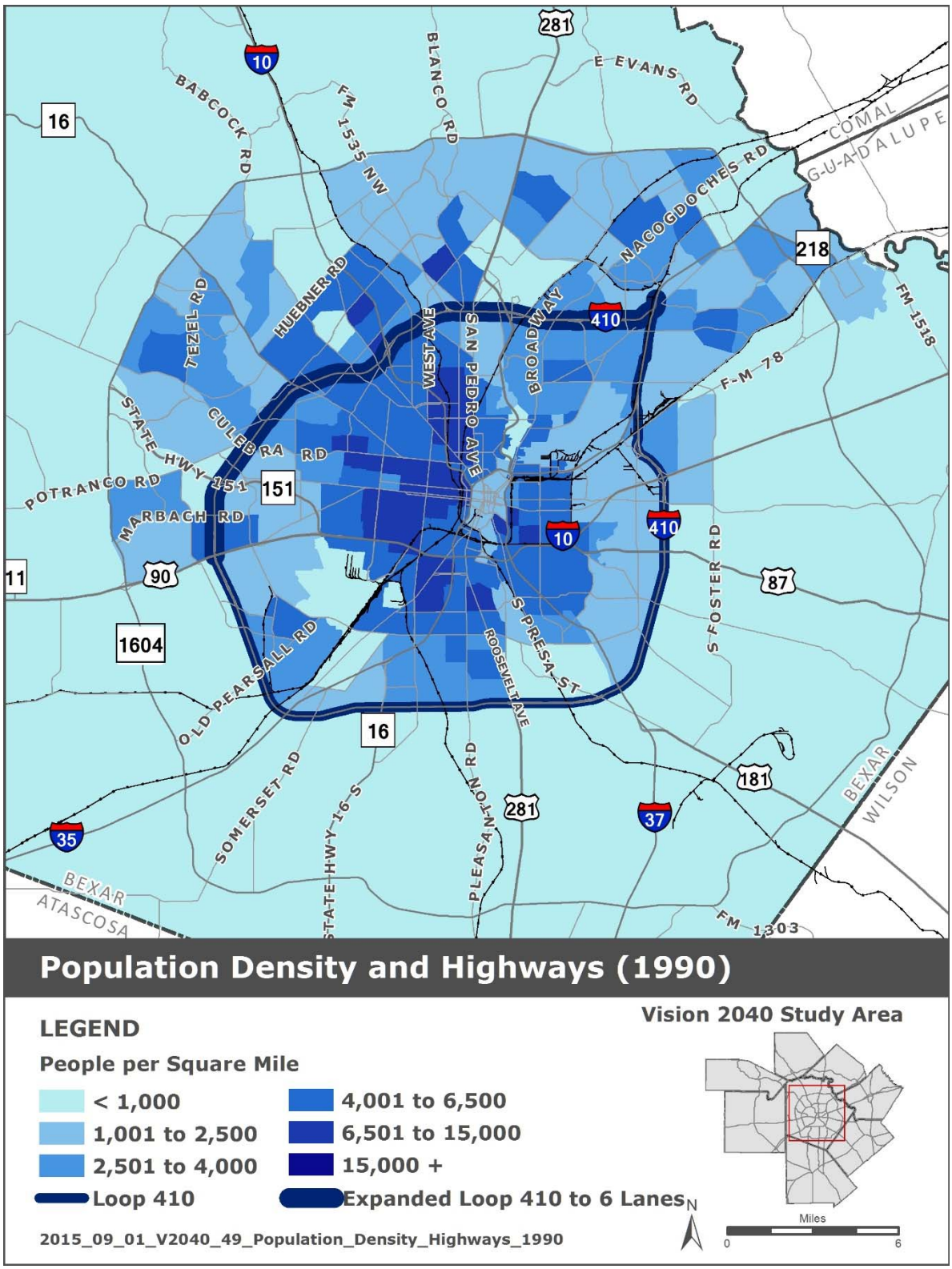


Figure A.4 Population Density and Highway Construction, 2010

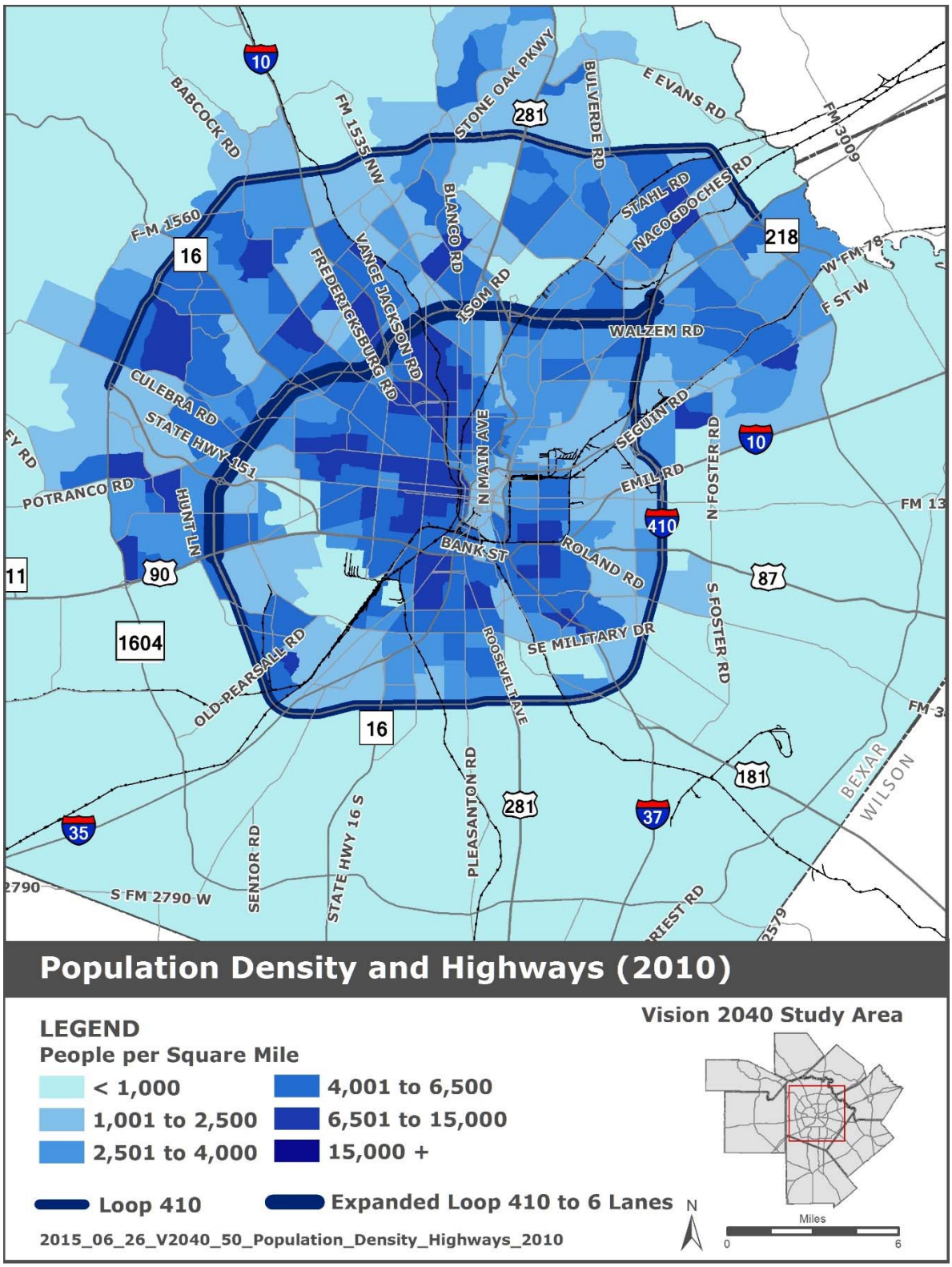


Figure A.5 Bexar County Transit and Population Density Circa 1960

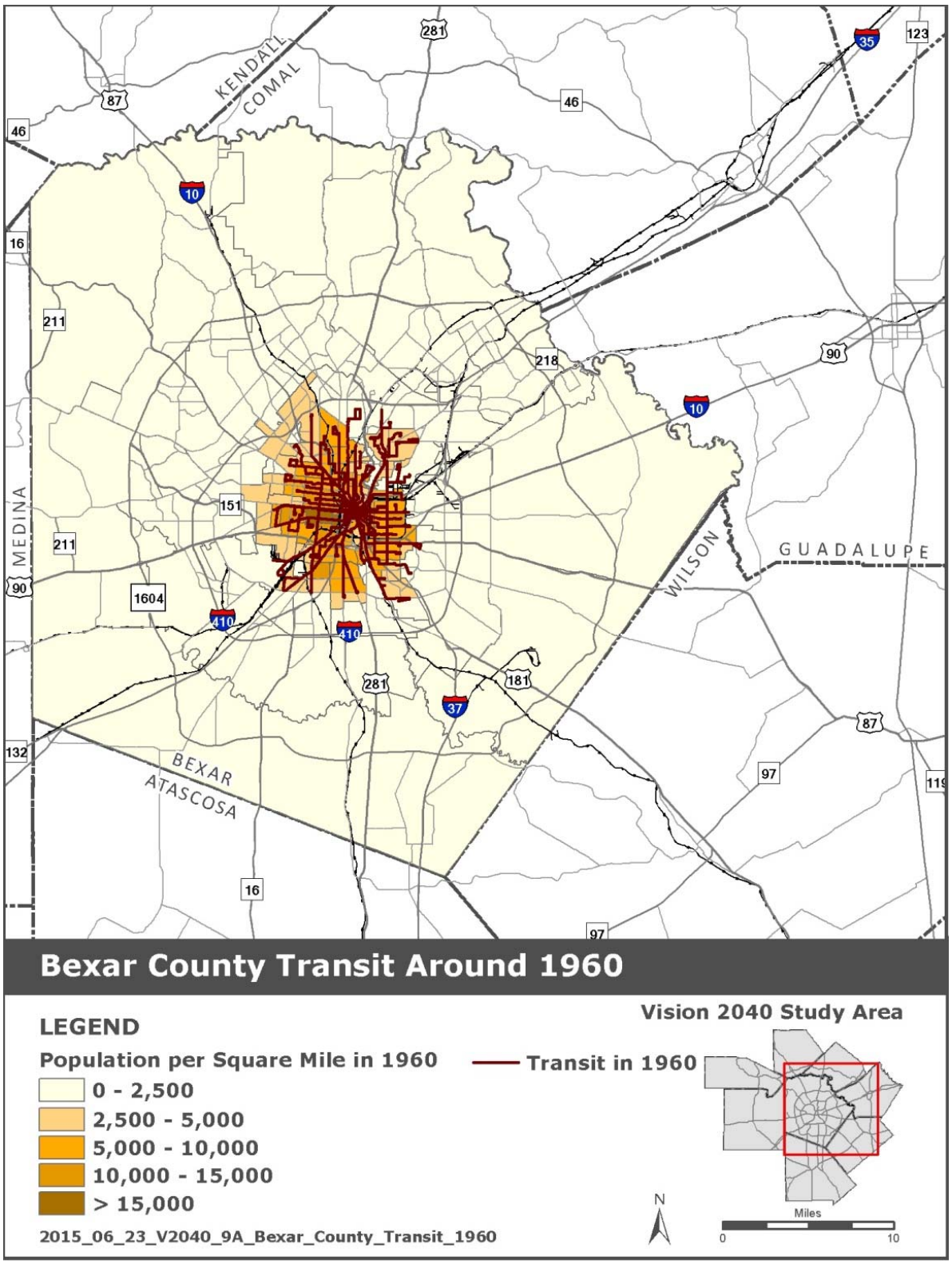


Figure A.6 Bexar County Transit and Population Density Circa 1980

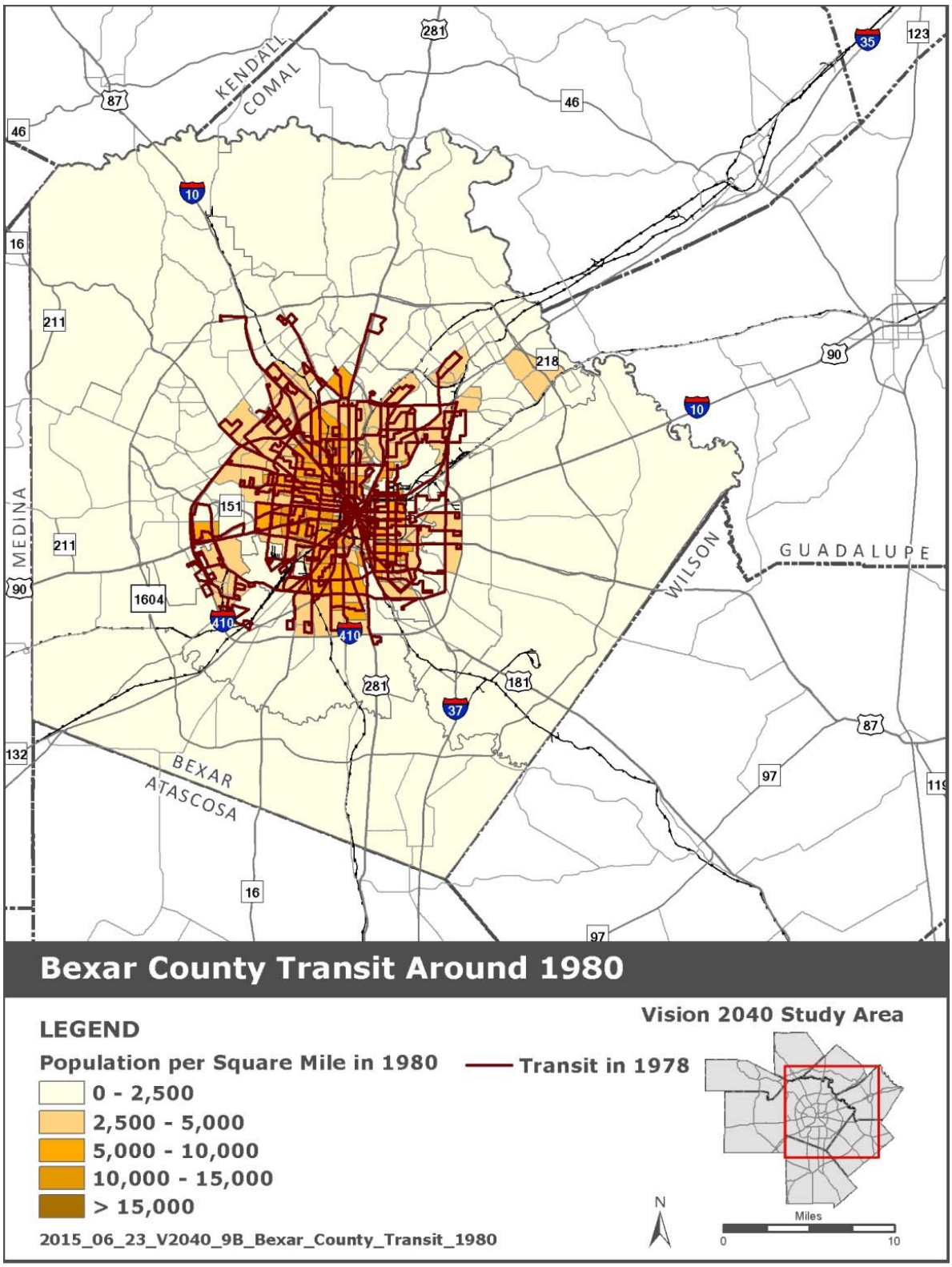


Figure A.7 Bexar County Transit and Population Density Circa 1990

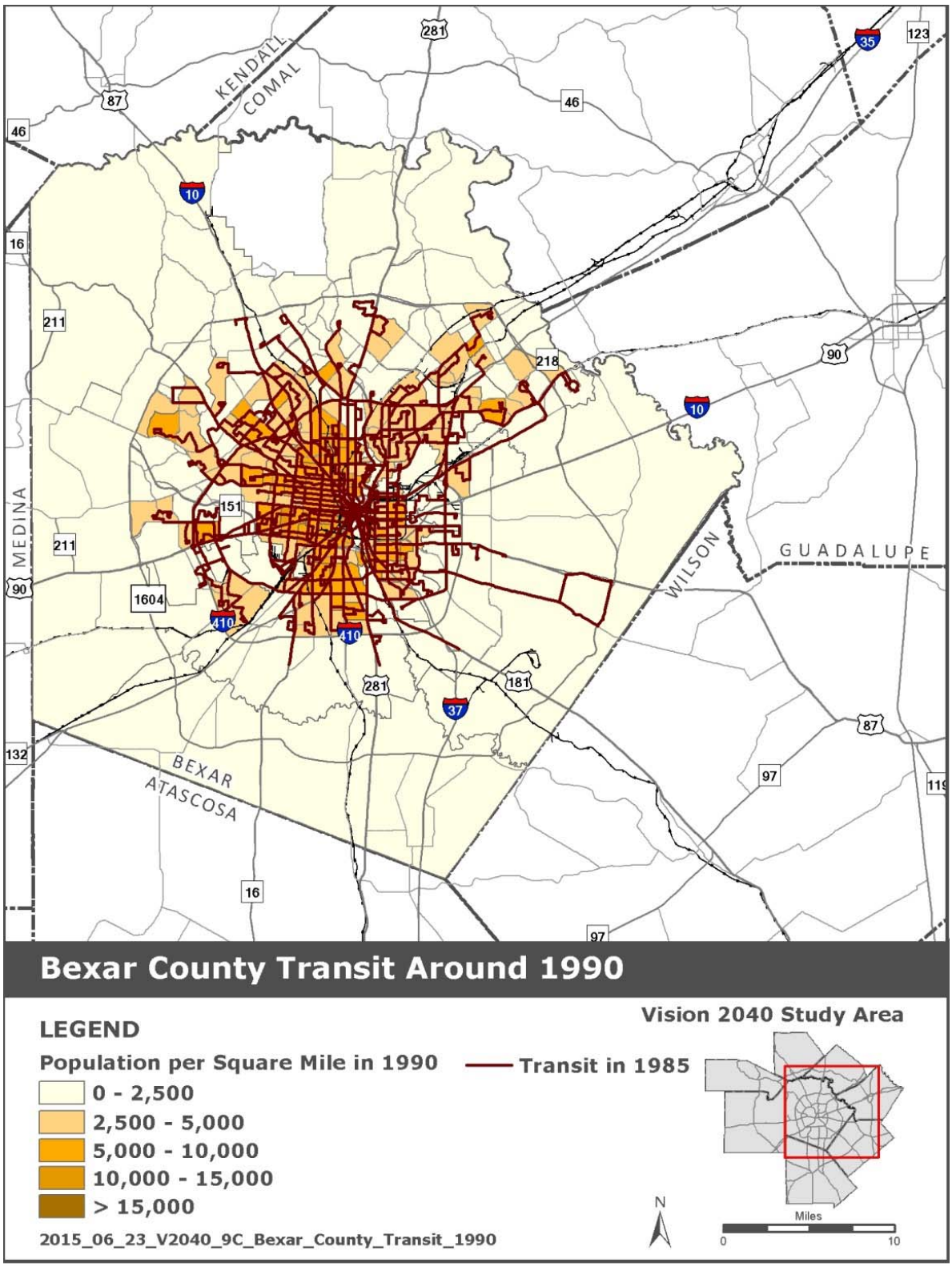
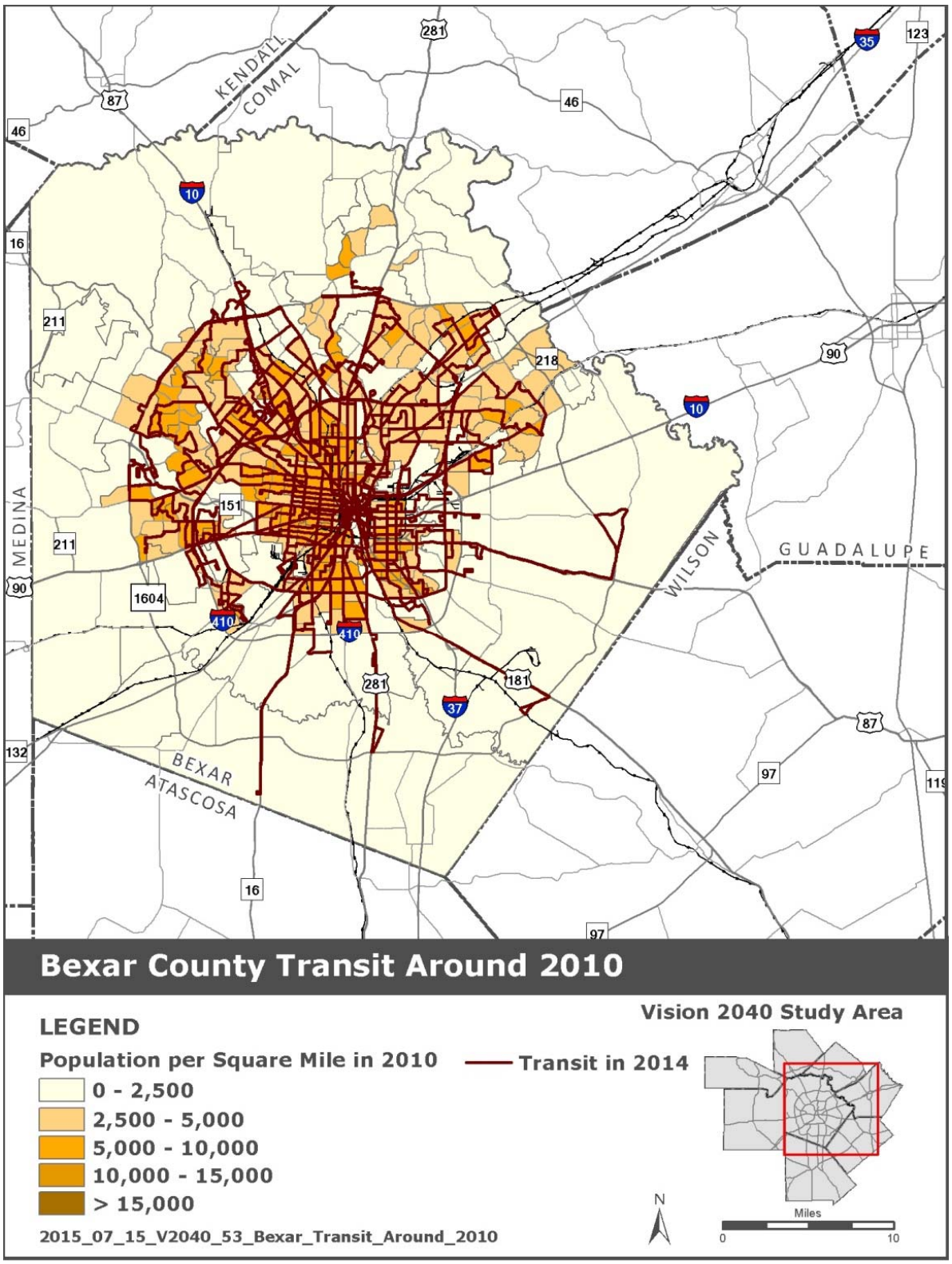


Figure A.8 Bexar County Transit and Population Density Circa 2010



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Appendix B. Summary of Relevant Transportation Studies and Plans

This appendix summarizes various existing and ongoing studies, technical initiatives, and other planning efforts relevant to Vision 2040. Understanding the findings from previous studies and the rationale behind previous transportation investment decisions provides additional context for understanding the need for future transit investment in the region. The reports reviewed in this appendix are organized into five categories:

1. **Long Range Plans –** Comprehensive plans and reports that analyze a large area comprising multiple cities and neighborhoods. These reports investigate current and future conditions of the transportation system and focus on long-term improvements.

2. **Downtown Transit Service Plans –** Analyses and investigations of VIA Metropolitan Transit (VIA) in downtown San Antonio with the goal of improving the efficiency and accessibility of service as it relates to its surroundings.

3. **Land Use Strategies and Plans –** Reports that focus on how VIA and transit relates to surrounding land use.

4. **Transit Needs Analyses and Surveys –** An overview of specific needs of VIA's current and future service. This also provides an overview of the current users.

5. **Major Capital Investment Studies –** Reports concerning specific capital investments under consideration by VIA, such as the feasibility for light rail transit (LRT) or streetcar.

Each summary provides an overview of the report, including the findings and goals, study methodology overview, and a discussion of the document's applicability to the Vision 2040 planning process. All reports are available in electronic format.

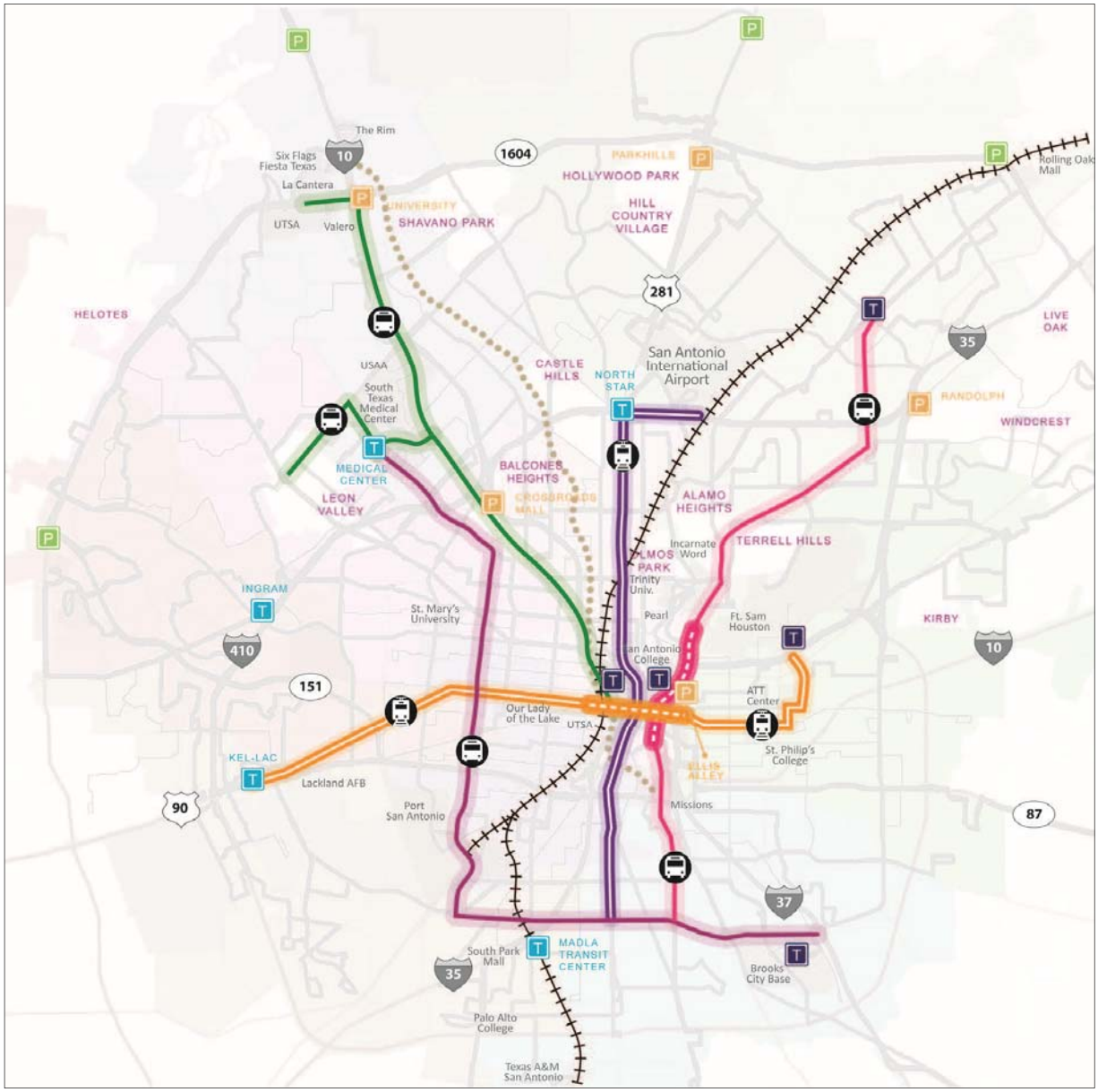
B.1 Long Range Plans

B.1.1 2035 Long Range Comprehensive Transportation Plan (2011)

The 2035 Long Range Comprehensive Transportation Plan (LRCTP) was initiated in 2009, completed in 2011, and serves as the predecessor to Vision 2040. This plan evaluated existing transit routes, new transit alternatives for transportation investments, transit technologies, and funding options to improve future transportation service throughout the 2010 VIA service area into 2035. Final recommendations included two rail lines, three Bus Rapid Transit (BRT) lines, two downtown streetcar

circulators, enhanced bus service, four park & rides, five transit centers, and improved transit amenities (Figure B.1). The study was conducted using a combination of extensive public outreach and an examination of existing and future needs for the region. The 2035 LRCTP served as background information and support throughout the development of Vision 2040. For example, the document provides a detailed analysis of recommendations based on comprehensive community and stakeholder outreach, which were referenced during the Vision 2040 planning process.

Figure B.1 VIA LRCTP High-Capacity Transit Improvement Projects



Source: VIA Metropolitan Transportation 2035 LRCTP, 2011.

B.1.2 LRCTP Implementation Plan (2014)

The 2014 LRCTP Implementation Plan provides a broad summary of the 2035 LRCTP, recommends additional corridors that warrant future study and potential investment, and includes information on evaluation measures that can help establish priorities among the corridors. Recommendations include two corridors for high capacity transit: the South/West Connector corridor and the North/South Central (San Pedro-Pleasanton) corridor. The report used evaluation criteria to rank and prioritize corridors that have significant potential for high-capacity transit. For Vision 2040, this report was used to understand how the methodology, both qualitative and quantitative, used in the LRCTP can impact the prioritization and implementation of future transportation projects. The recommendations from the report were considered in scenario development, as well as the final list of projects and serve as potential methodology for project selection.

B.1.3 Mobility 2040 Metropolitan Transportation Plan (2015)

The Alamo Area Metropolitan Planning Organization (AAMPO) Mobility 2040 Plan (MTP) was adopted in December 2014 and provides an overview of the future transportation needs of the Greater San Antonio Region. Included is a comprehensive summary of the existing conditions of the transportation system and future population and employment, as well as expected funding for future transportation projects. The MTP provides a list of recommended multimodal transportation improvement projects, including roadway, transit, bicycle/pedestrian facilities, and rideshare for the entire region. The MTP used a variety qualitative and quantitative methods, including analysis and future projections of demographic data, a travel demand mode choice model investigating regional travel patterns, and stakeholder input. Vision 2040 applied AAMPO's regional travel demand model to develop ridership forecasts for three future scenarios. As such, Vision 2040 used the same land use, population, and socioeconomic assumptions upon which the MTP was based.

B.1.4 SA2020 (2011)

Launched in the fall of 2010, SA2020 is a community vision for the future of the City of San Antonio, created by residents. This collective effort outlined goals of accelerating the City of San Antonio's success by supporting economic development and new jobs while fostering community arts, education, health, and culture. SA2020's transportation recommendations concentrate on long-term planning and solutions that focus on new and improved infrastructure that minimize continued sprawl. Indicators of success include an increase in complete street miles, an increase in public transit use, a decrease in vehicle miles traveled, and a decrease in commute times. VIA is an active partner in this initiative, collaborating to improve existing services, continue to identify and evaluate new services, and work close with its regional partners to address regional transportation concerns.

B.1.5 City of San Antonio Comprehensive Plan – Phase I (2015)

The City of San Antonio (COSA) Comprehensive Plan is intended to implement the SA2020 vision by providing guidance for future growth, development, land use, urban design, infrastructure, and services within the Greater San Antonio Region. As of spring 2015, the plan is under development as part of an ongoing public outreach and planning process. The Vision 2040 Long Range Plan was

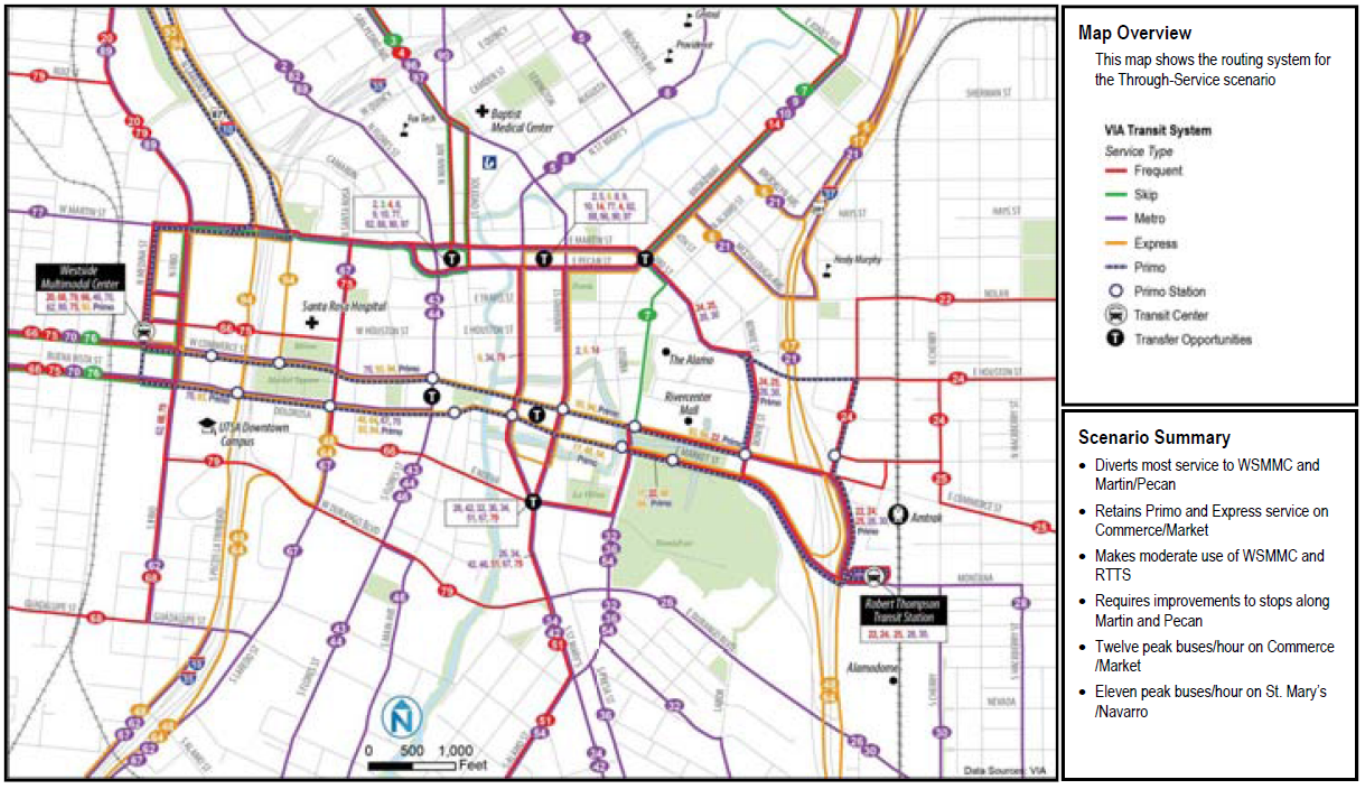
developed in collaboration with COSA's comprehensive plan to ensure visions, goals, and strategies align.

B.2 Downtown Transit Service Plans

B.2.1 VIA Downtown Service Plan (2012)

Conducted in 2012, the VIA Downtown Service Plan evaluated a series of bus route configurations in downtown San Antonio. Specifically, VIA ridership in the downtown area continues to increase; and in order to utilize this demand, additional capacity in terms of new routes, as well as increased frequency on existing routes, is anticipated. This report was in response to a variety of future and current needs, and also evaluated any adverse effects the new routes would have on automobile traffic. Different transit route configurations were developed and ranked based on a set of evaluation criteria, such as passenger travel time, safety, and operating cost. The recommended scenario, shown in Figure B.2, offered favorable benefits without sacrificing too much in the areas where it did not perform as well. For the Vision 2040 Long Range Plan, this report served as a reference when developing transit scenarios in downtown San Antonio, and also provided a set of potential evaluation criteria to consider for selecting the preferred network.

Figure B.2 Map of "District Hub" Scenario

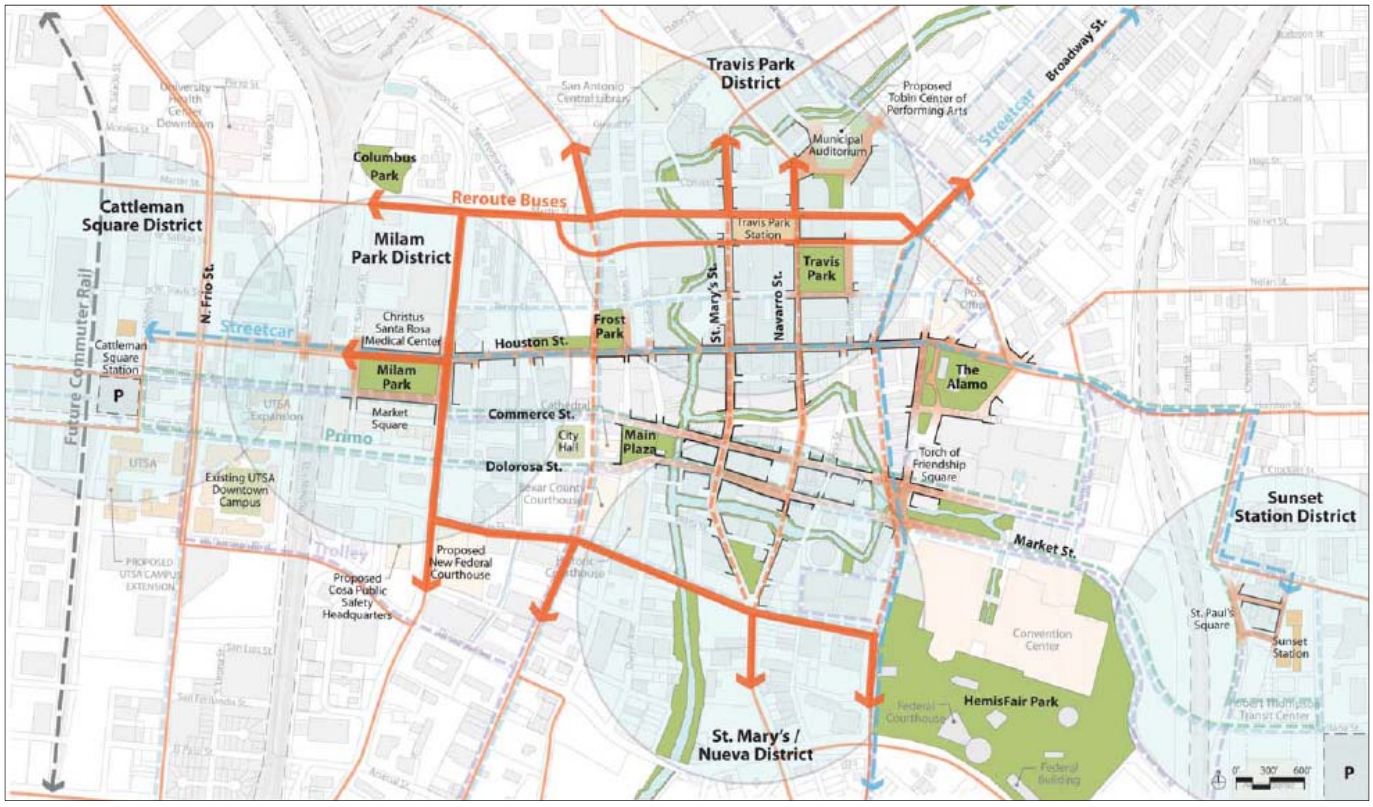


Source: VIA Downtown Service Plan Alternatives Evaluation, 2012.

B.2.2 San Antonio Downtown Transit Plan (2011)

Similar to the previously outlined *VIA Downtown Service Plan*, this report investigates the challenges and opportunities in the City of San Antonio's downtown core with respect of VIA local bus service. The focus of the report is identifying new destinations and investment opportunities to enhance the public environment, using VIA as a catalyst. The final recommendation of this plan includes moving and rerouting major bus routes out of the urban core, as shown in Figure B.3. The report also identified potential transit districts that encourage downtown mixed-use development with a focus on residential opportunities. For Vision 2040, this report provided insight to how VIA service can affect future development in the downtown core, serving as another potential performance metric for evaluating proposed route modifications and station area planning.

Figure B.3 Proposed Bus Rerouting and Transit-Oriented Districts



Source: San Antonio Downtown Transit Plan, 2011.

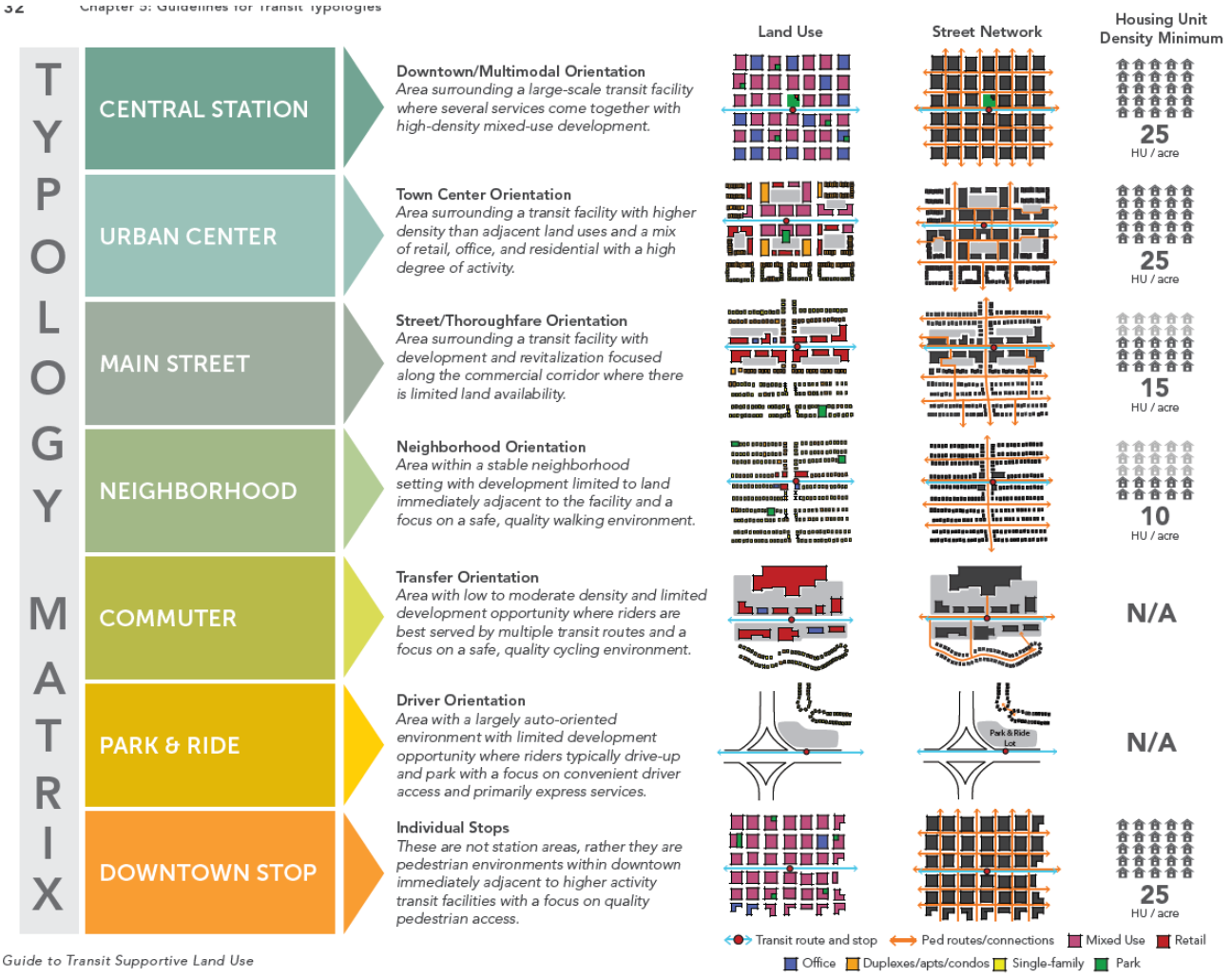
B.3 Land Use Strategies and Plans

B.3.1 2014 Guide to Transit-Supportive Land Use

The *Guide to Transit-Supportive Land Use*, conducted in 2014, provides a framework to identify and implement transit-supportive land use and design policies in order to encourage transit usage, walkability, and ridership within transit corridors. The primary purpose of the report is to help VIA identify resources for the development of transit-supportive communities throughout the Greater

San Antonio Region. The specific recommendations that have come out of the report include transit-supportive guidelines for transit typologies that VIA can implement in and around transit stations, as shown in Figure B.4. These guidelines served as background and reference material to support the Vision 2040 planning process, specifically for station area planning to understand how transit can affect development.

Figure B.4 Typology Matrix



Source: VIA Guide to Transit Supportive Land Use, 2014.

B.3.2 Strategic Housing Policy Toolkit (2014)

The Strategic Housing Policy Toolkit was conducted in September 2014 and provides a framework for COSA, VIA, and the San Antonio Housing Authority to better coordinate housing and transportation within high level of service transit corridors and station areas. Transit-Supportive Land Use (TSLU), along high-capacity transit routes, is one component of VIA's planning efforts. A strong link between transportation and land use planning can influence the economic, cultural, and safety goals of the region. This toolkit provides recommendations and policies that can help incorporate TSLU into the

Vision 2040 Long Range Plan and served as a resource when developing the TSLU strategic plan and other related land use planning.

B.3.3 2014 VIA Transit Urban Design Framework

The VIA Transit Urban Design Framework report was prepared in June 2014, and provides a guide for VIA to create urban transit districts with distinctive and vibrant identities, as well as maximizing VIA's capital investments. The overarching goal of the report is to identify ways to integrate existing and future bus and streetcar facilities into the existing civic infrastructure while facilitating wayfinding and emphasizing VIA's brand identity. Recommendations for new and changed VIA facilities and infrastructure identified in the Vision 2040 Long Range Plan preferred network, such as transit stations, park & rides, and downtown stops, align with these design guidelines for enhancing VIA's brand, especially for realizing the infrastructure's larger impact on VIA's ridership and influence on the surrounding area.

B.3.4 Transit-Supportive Land Use Toolkit (2014)

The primary intent of the TSLU Toolkit is to assist the City of San Antonio and the greater Bexar County region in identifying and developing transit-supportive land use policies, plans, and implementation. Identifying best practices for TSLU facilitates VIA's interests in improving connectivity amongst communities, activity, and employment centers; providing more choices in transportation and housing; and supporting people-oriented communities. This toolkit served as a reference when creating the TSLU strategic plan and other related land use planning conducted as part of Vision 2040 Long Range Plan. The best practice examples outlined in the report provided a valuable tool for this effort. Incorporation of this and other land use focused documents further supports VIA's mission for providing a customer-oriented transit system that improves the community's quality of life.

B.4 Transit Needs Analysis and Surveys

B.4.1 Primo Analysis and Traffic Signal Study (2014)

This study evaluates key elements of the current Primo service along Fredericksburg Road corridor, including what features should be maintained or modified for future routes. The investigation is comprised of a series of analyses, including San Antonio's Traffic Signal System, Transit Signal Priority (TSP) Operations, review of peers with BRT, and evaluation of Primo stations. The study recommended that certain BRT characteristics, such as a dedicated right-of-way and off-board fare collection, should be evaluated for the current and future routes. With the success of Primo, VIA has an opportunity to expand the service and include further enhancements. Therefore, this study served as a reference for the Vision 2040 Long Range Plan, specifically for planning and evaluating future BRT service that may arose from scenario development and service planning.

B.4.2 "Who is The Rider" Report – 2013 Update (2014)

This report outlines the results of the "Who is the Rider" survey distributed to VIA customers in July-August of 2013 and provides data on personal information about riders with the intention of using it for public involvement, marketing, and planning purposes. The key findings from the report describe the typical VIA rider, availability of technology, and perceptions of VIA service. Some

recommendations from the report include implementing reloadable smartcard passes, increasing weekend service, reevaluating the fare structure to provide more benefits to riders below the poverty threshold, and investigating methods to retain riders. This survey served as background information that was integrated into the Vision 2040 needs assessment. Understanding the current riders of the system provides insight on the type of improvements that would best serve them, as well as areas that may benefit from additional service.

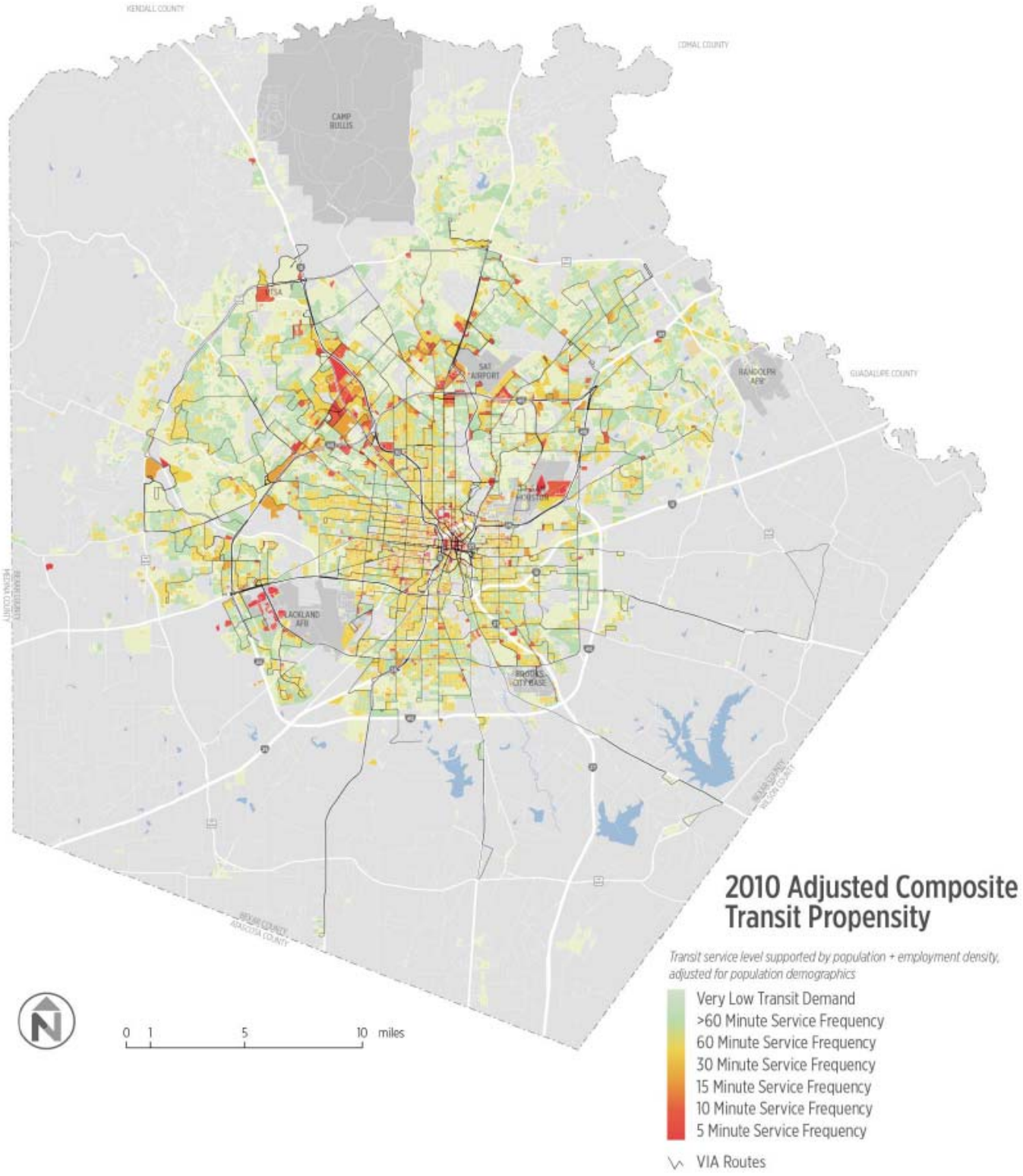
B.4.3 Origin and Destination Survey (2015)

Completed in early 2015, the Origin and Destination Survey summarizes the results from a travel pattern survey of VIA passengers. The purpose of the survey was to understand how riders use the bus network and how these travel patterns changed since 2010. Over 18,000 valid surveys were distributed and the information gathered from this survey is used to improve current and future bus routes and services. Due to how the survey was distributed, travel data is available on a fairly disaggregated level, marking the time, route, day, and geocoded location. This allows improvements to focus on specific routes and/or service at specific times of the day, if needed, and contributed to the development of a transit-focused travel demand model. For the Vision 2040 Long Range Plan, results from this survey served as background information, as well as data for developing and evaluating a proposed transit network.

B.4.4 Transit Propensity Analysis (2015)

The transit propensity analysis completed in 2015 investigates the potential transit demand throughout Bexar County. This report not only evaluates VIA's current service in relation to today's transit demand, but identifies future areas that may warrant additional service and changes in response to projected population and employment. A map displaying the composite transit propensity analysis is shown in Figure B.5, with downtown San Antonio, South Texas Medical Center, Lackland Air Force Base, and other areas having the highest transit propensity. The analysis was conducted using a combination of socioeconomic data and travel patterns derived from the travel demand model and previously described surveys. The results from this analysis provided background information for the Vision 2040 needs assessment and scenario development, especially when identifying potential areas for high capacity transit service.

Figure B.5 2010 Adjusted Composite Transit Propensity



Source: VIA Transit Propensity Analysis.

B.5 Major Capital Investment Studies

B.5.1 Streetcar LPA Report Executive Summary (2014)

Completed in early 2014, this report outlines the evaluation and identification of the alternative streetcar alignments in downtown San Antonio. This study was conducted to understand what alignments are more supportive of a streetcar, in relation to economic development, potential ridership, relationship to the surrounding area, and other aspects. Based on the performance of each alternative, and a series of meetings with the general public, stakeholders, and the VIA Board of Trustees, a locally preferred alternative (LPA) was selected.

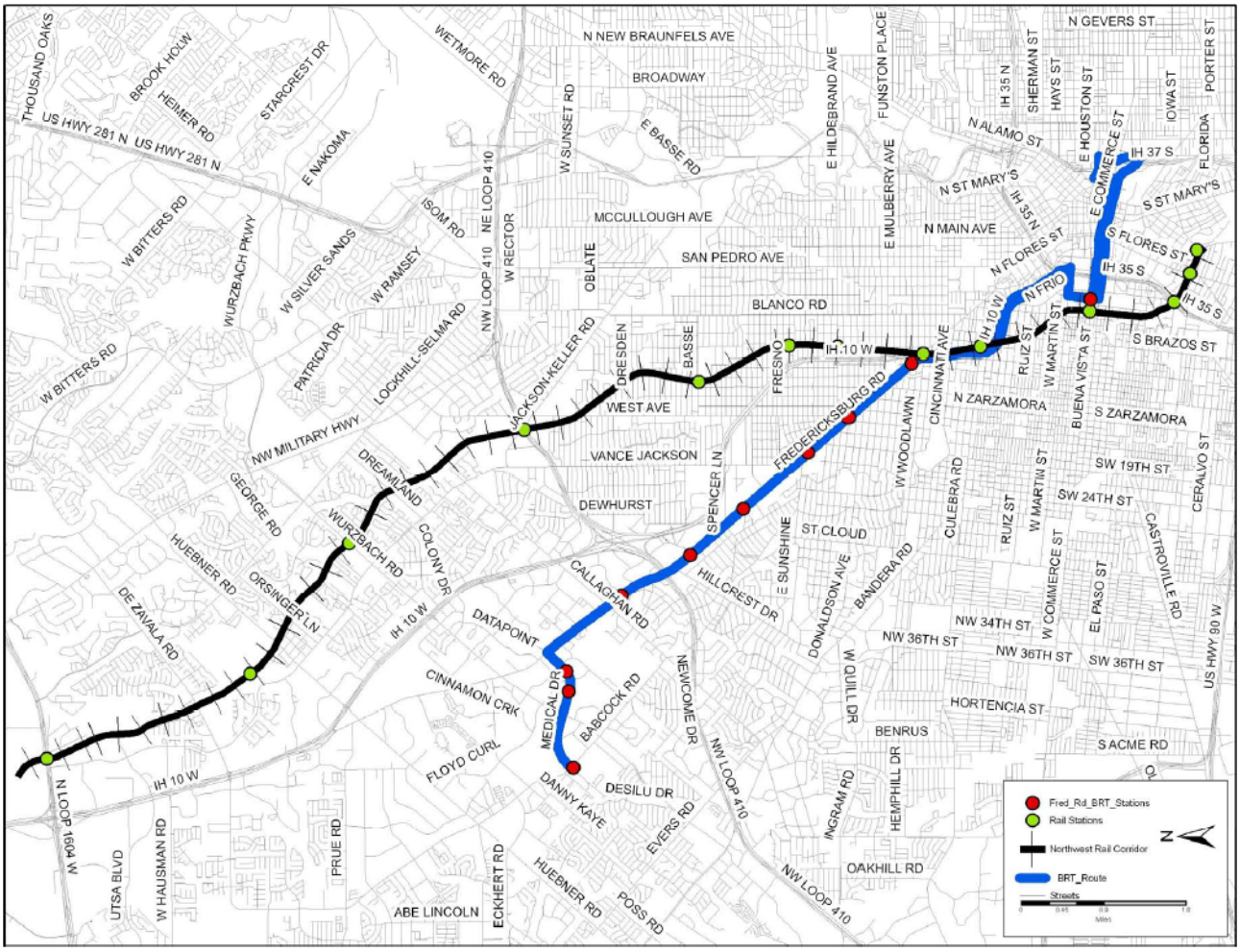
B.5.2 Streetcar Economic Impact Update (2014)

Released in 2014, the Streetcar Economic Impact Update and Market Analysis is an updated assessment of the potential economic impacts due to the construction of transit-oriented development adjacent to the streetcar corridor over a 25-year period. The report found that public- and private-sector stakeholders, with an active interest in downtown development, thought the streetcar would encourage development, though support was cautious. The assessment concluded that with a predicted $280 million in capital expenditures, the conservative streetcar premium results in new development valued $756 million, with a total economic impact of $1.3 billion from the operations of new businesses.

B.5.3 Northwest Corridor Urban Rail Transit Feasibility Kerrville Subdivision (2009)

Completed in 2009, this analysis is a planning-level study of the ridership potential of the Northwest Corridor, specifically reusing an existing Union Pacific Kerrville Subdivision rail line for either light rail or commuter rail technologies between Probandt Street and just north of Loop 1604, as shown in Figure B.6. Also included in the analysis were potential station locations and a travel market analysis in the Northwest Corridor in relation to the planned BRT service along Fredericksburg Road. Ridership estimates were calculated using regression models using various parameters, such as population, land use, and others.

Figure B.6 Northwest Corridor Alignment with Fredericksburg Road BRT



Source: Northwest Corridor Urban Rail Transit Feasibility Kerrville Subdivision, 2009.

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Appendix C. VIA Performance Trends

This appendix provides additional data and analysis of VIA's performance trends related to community impact, ridership, service performance, and expenditures over the last 10 years. It supplements *History, Trends, and Peer Review* by providing detailed figures and reference information for anyone seeking more detailed information on a range of performance-related topics. Many of the evaluation metrics presented here will serve as a baseline for comparing the performance of future transit scenarios.

C.1 Community Impact of VIA

C.1.1 Travel Behavior

Comparing travel behavior of residents in three different areas (defined by land use and transit service), American Community Survey (ACS) data show that households located in mixed-use areas and within one-quarter-mile distance to VIA routes have the lowest average car ownership per household, lowest daily vehicle miles traveled (VMT) per capita, and a greater share of uses of non-automobile transportation modes. In areas within one-quarter-mile distance to VIA routes, but without mixed-use development, there were slight increases in households' average car ownership, average daily VMT, and share of automobile usage. Compared to those residing at more than a one-quarter-mile from VIA service, households with access to VIA service owned fewer cars, traveled shorter vehicle miles, and used transit and other nonmotorized travel modes more. As indicated in Table C.1, 4 percent of households in transit and mixed-use areas took transit to work, while only 0.3 percent of commuters in the remainder of the MSA used transit to work. There were more walking trips and bicycling trips in areas with a combination of transit access and mixed-use development.

Table C.1 Commuters' Travel Behavior

Land Use Type and Transit Service	VIA Frequent Service and Mixed Use	VIA Service and Mixed Use	VIA Service Only	Remainder of MSA Region
Average Car Ownership (per Household)	1.5	1.6	1.6	1.7
Daily VMT (per Capita)	14.0	14.6	14.4	15.7
Mode Split				
Drove Alone	86.76%	87.74%	87.37%	86.88%
Carpool	13.24%	12.26%	12.63%	13.12%
Transit	4.05%	3.14%	3.20%	0.26%
Walk	4.14%	3.01%	2.39%	1.45%
Bicycle	0.26%	0.24%	0.17%	0.18%
Motorcycle	3.68%	0.23%	0.17%	0.17%
Taxicab	0.12%	0.09%	0.08%	0.04%
Other Means	1.44%	1.36%	1.25%	0.82%

Source: 2007 to 2011 American Community Survey Five-Year Estimates, NHTS 2009 Transferability.

C.2 Existing System Performance Trends

C.2.1 Evaluation Criteria

Broadly, three categories of indicators were used to evaluate VIA's performance trends (Table C.2):

1. **Service and Investment –** Includes quantity of service provided and consumed, farebox recovery, operating cost, and use of capital funds;

2. **Service Demand and Supply –** Measures the extent to which transit service supply matches transit demand; and

3. **Cost Efficiency –** Measures the cost of providing service related to service allocated and revenue collected.

Table C.2 Performance Trend Indicators

Service and Investment	Service Demand and Supply	Cost Efficiency
Service Consumption: • Passenger Miles • Passenger Trips **Service Supplied:** • Vehicle Revenue Miles • Vehicle Revenue Hours • Vehicles Operated in Maximum Service **Revenue and Funding:** • Fare Revenues • Fare Rates • Operating Expense • Capital and Operating Funds • Uses of Capital Funds	• Vehicle Miles per Capita • Service Hours per Capita • Passenger Trips per Capita • Passenger Trips per Revenue-Mile • Passenger Trips per Revenue-Hour	• Operating Expense per Capita • Operating Expense per Passenger Trip • Operating Expense per Revenue-Mile • Operating Expense per Revenue-Hour • Farebox Recovery (Percent) • Revenue Miles per Vehicle-Mile

C.2.2 Definition of Terms

Capital Expense. Refers to the costs of long-term assets of a public transit system such as property, buildings and vehicles. Can include bus overhauls, preventive maintenance, mobility management, and even a share of transit providers' ADA paratransit expenses.

Farebox Recovery Ratio. The ratio of money collected from passengers as payment to total annual costs to operate the service.

Fare Revenue. Money collected from passengers as payment for transit service.

Operating Expense. The sum of all recurring costs (e.g., labor, fuel, administration) associated with the operation and maintenance of a transit system; excludes capital equipment purchases, loans, depreciation, and leases.

Passenger-Miles. The sum of all trip lengths in miles taken by passengers on transit vehicles—one mile, per passenger, per vehicle.

Passenger-Trip. A trip made by one person from one origin to one destination. Usually refers to unlinked passenger-trips, where each new vehicle boarded (e.g., as part of a transfer) counts as a separate trip.

Vehicle Revenue Hours. The aggregate hours traveled by transit vehicles while in revenue service (i.e., available for passenger use). Includes any layover/recovery time required to complete the service. (Public Transportation Fact Book, 2014)

Vehicle Revenue Miles. The total distance traveled by transit vehicles in revenue service (i.e., available for passenger use). Includes any unscheduled distance traveled while in service. (Public Transportation Fact Book, 2014)

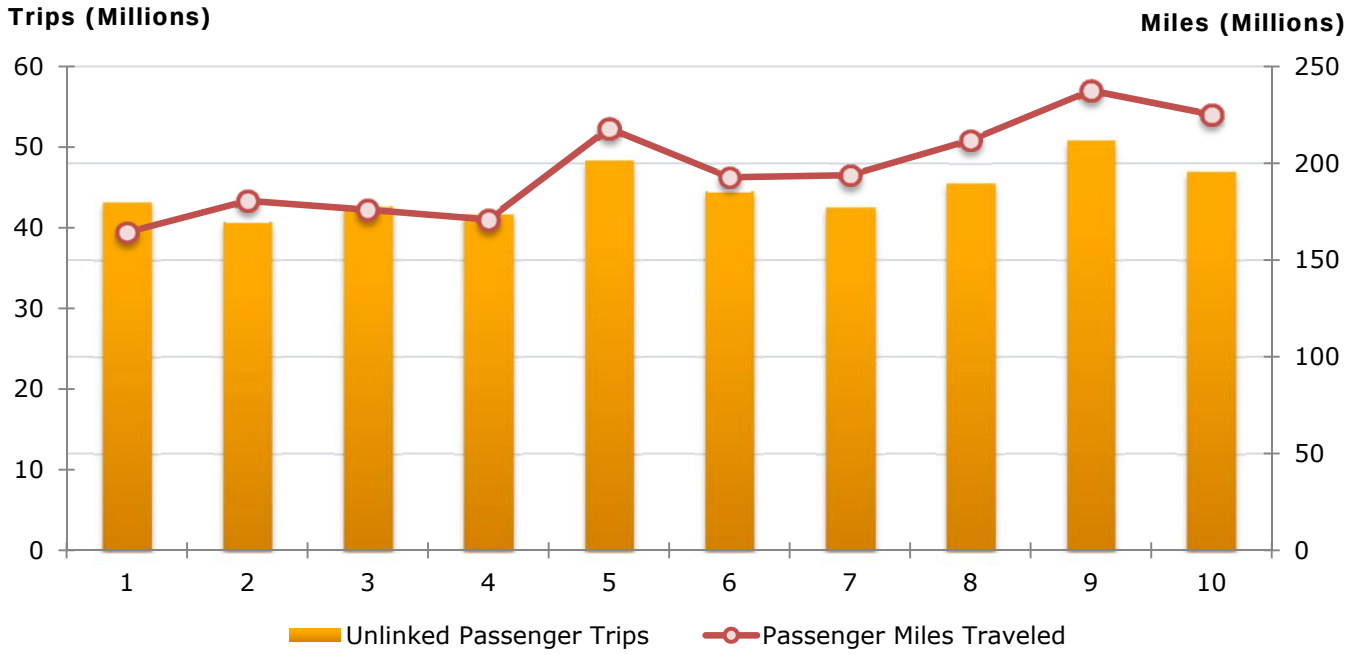
C.2.3 Service and Investment

System service consumption is measured by unlinked passenger trips and passenger-miles traveled. From 2004 to 2013, VIA's unlinked passenger trips increased 9 percent, while passenger miles traveled saw a 37 percent increase (Figure C.1). These measures indicate that people in the region collectively took more transit trips and traveled longer distances using VIA service in 2013 compared to 10 years ago.

Ridership peaks were observed in both 2008 and 2012. The 2008 peak (48 million passenger trips) was likely attributed to high gasoline prices and low unemployment rate. Routes connecting the downtown business district to the north and the northeast parts of the region, where job density is high, experienced the largest increase in ridership that year. The rising unemployment rate through 2010 caused transit ridership to dip to 42 million. As the economy recovered and the unemployment rate decreased, passenger trips reached a new peak of 50.8 million in 2012. Significant ridership increases were found on routes serving clusters of employment opportunities at one or both ends of the trip. Whereas the 2008 had its ridership increases concentrated in the north, the peak of ridership in 2012 was reflected in routes across the region.

Figure C.1 System Service Consumption

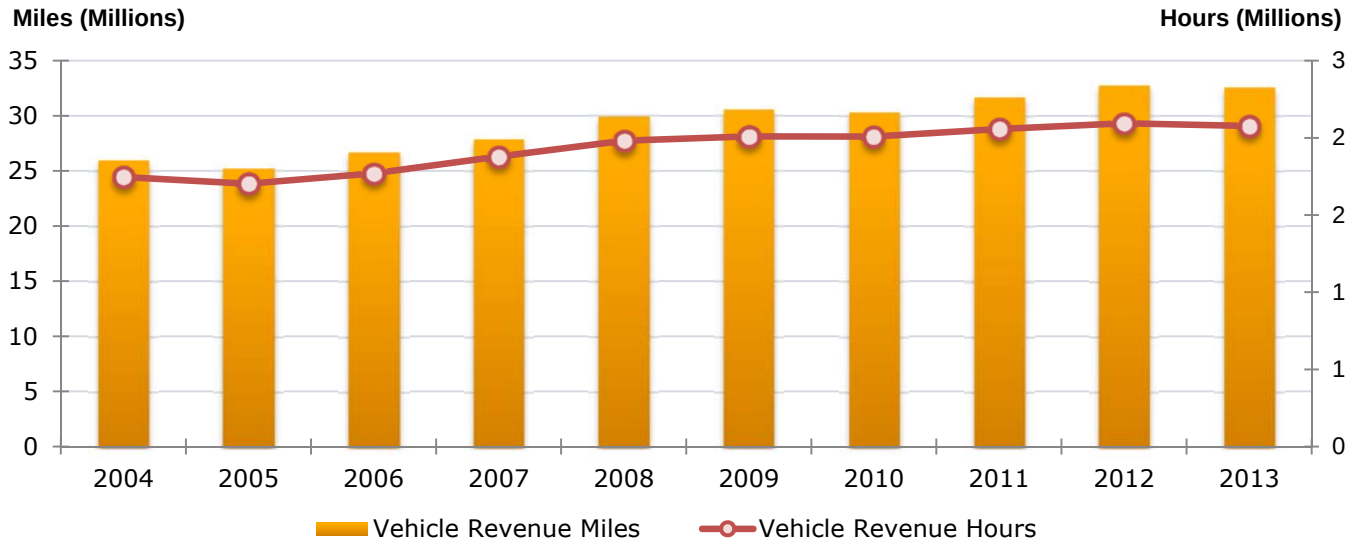
Millions



Source: National Transit Database, 2004 to 2013.

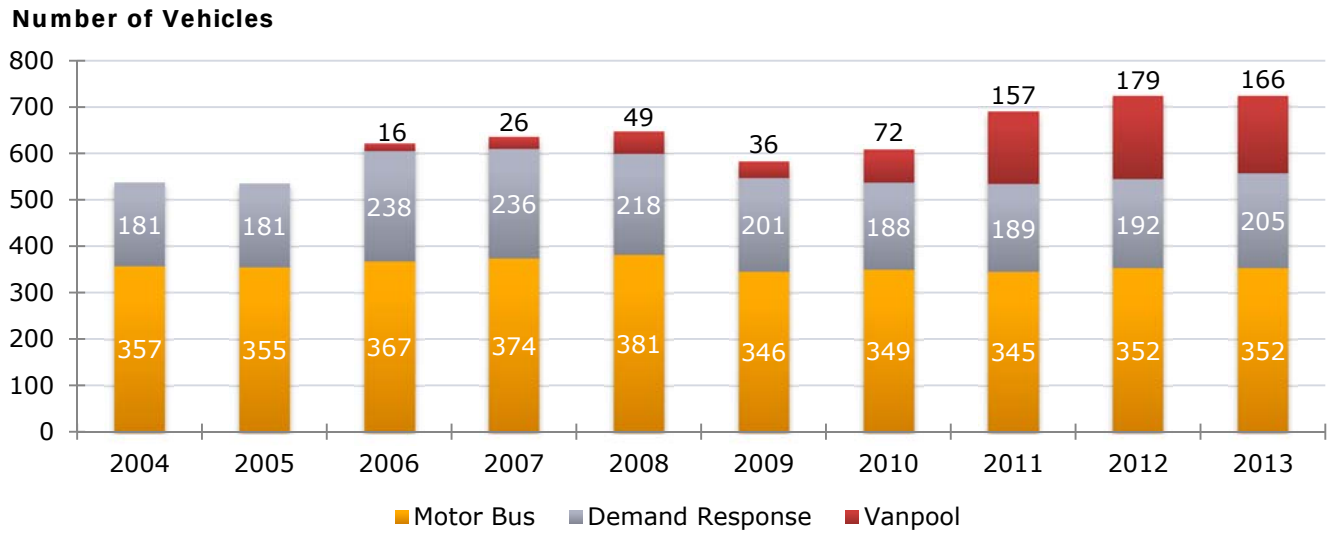
Three indicators were used to measure system service supplied: vehicle revenue miles, vehicle revenue hours, and number of vehicles operated in maximum service. As shown in Figure C.2, both vehicle revenue miles and revenue hours have been increasing steadily between 2004 and 2013. More service was provided in 2008 when demand for public transportation increased significantly (Figure C.3). There was a systemwide reduction in vehicles operated in maximum service between 2009 and 2010, which coincided with low gasoline prices, but this was followed by a steady increase in vanpool service after 2010. Bus and demand response service remained stable from 2010 to 2013. Overall, VIA adjusted its supply of service to meet travel demand of the community and to encourage multimodal mobility.

Figure C.2 Vehicle Revenue Miles and Hours



Source: National Transit Database, 2004 to 2013.

Figure C.3 Vehicles Operated in Maximum Service



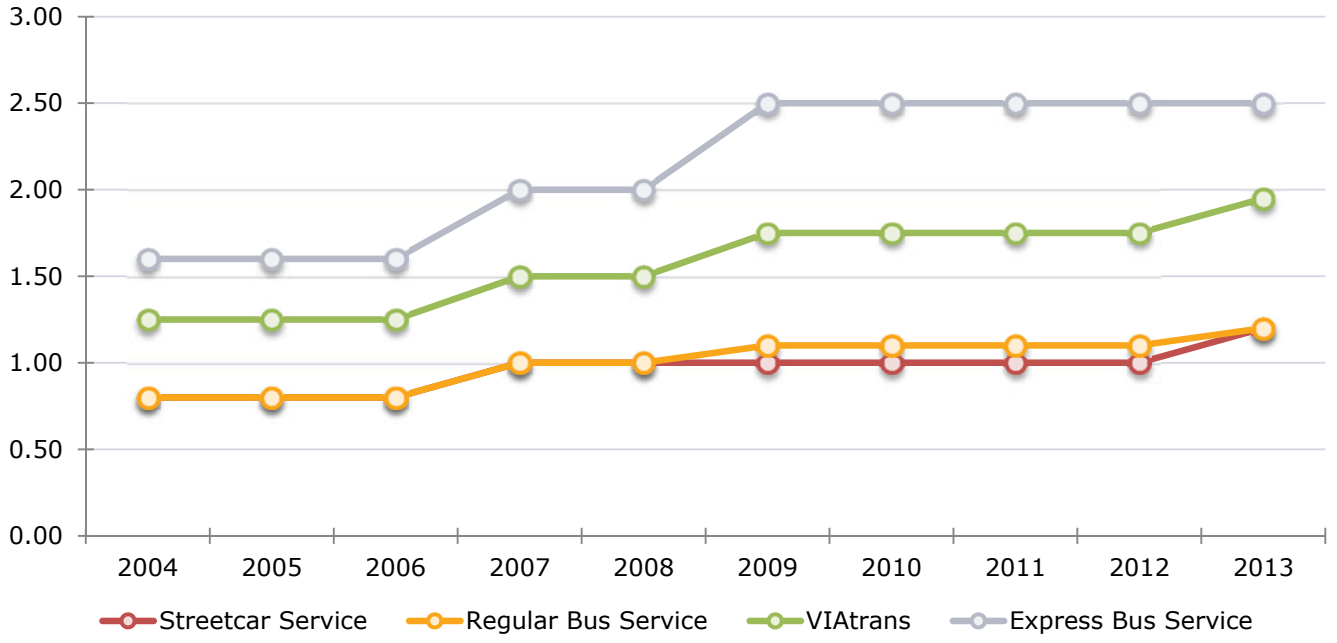
Source: National Transit Database, 2004 to 2013.

Revenue and funding trends were measured using five indicators: fare revenues, fare rates, operating expense, capital and operating funds, and use of capital funds. Fare revenues increased significantly over the period from 2004 to 2013, with a less significant increase between 2009 and 2010. The increase over the last 10 years was attributable to both ridership expansion (Figure C.4) and fare increase (Figure C.5).

Figure C.4 Fare Revenues

Source: National Transit Database, 2004 to 2013.

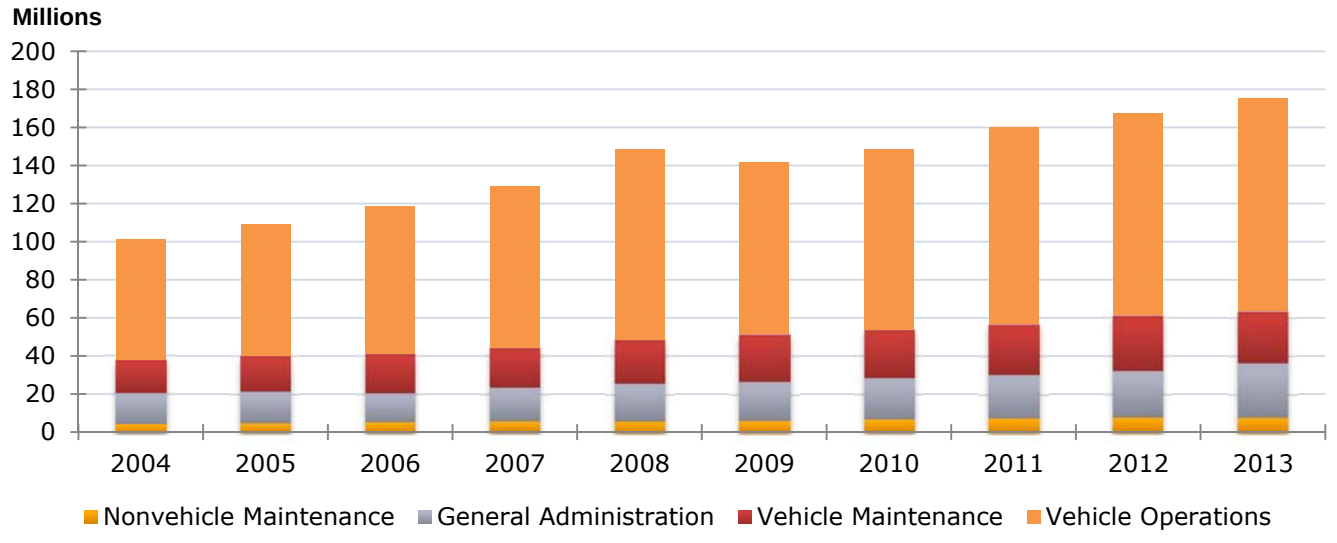
Figure C.5 Fare Rates



Source: VIA Metropolitan Transit.

Total operating expense increased steadily by 73 percent from 2004 to 2013, an average annual growth rate of 6 percent (Figure C.6). The year 2008 saw the most significant expenditure increase (13 percent), primarily attributable to increases in vehicle operations expenses.

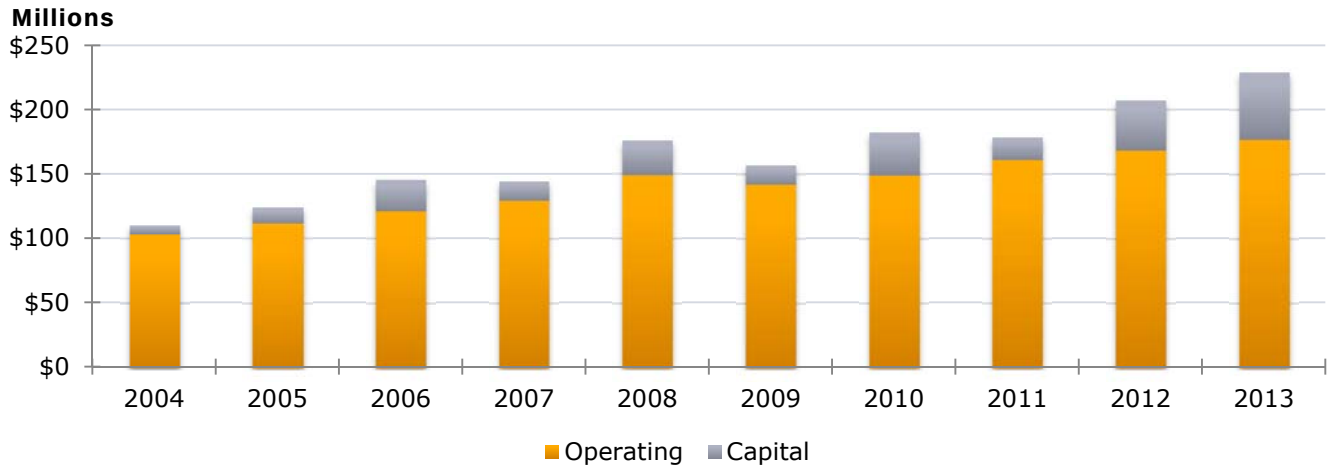
Figure C.6 Operating Expense



Source: National Transit Database, 2004 to 2013.

Systemwide, total funds doubled from 2004 to 2013 (Figure C.7). Operating funds increased steadily at an average annual growth rate of 6 percent. Capital funds increased significantly, from $7 million in 2004 to $52 million in 2013.

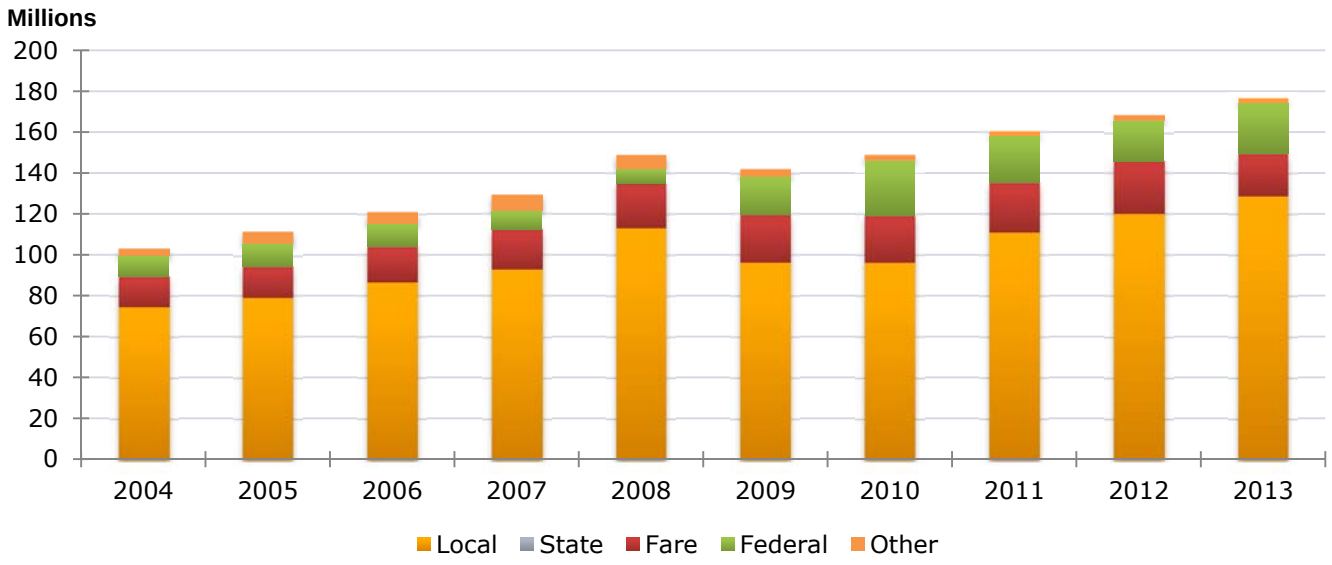
Figure C.7 Capital and Operating Funds



Source: National Transit Database, 2004 to 2013.

Local funding has remained the largest component of operating funds (Figure C.8). Transit fares contributed 12 to 16 percent of operating funds from each year.

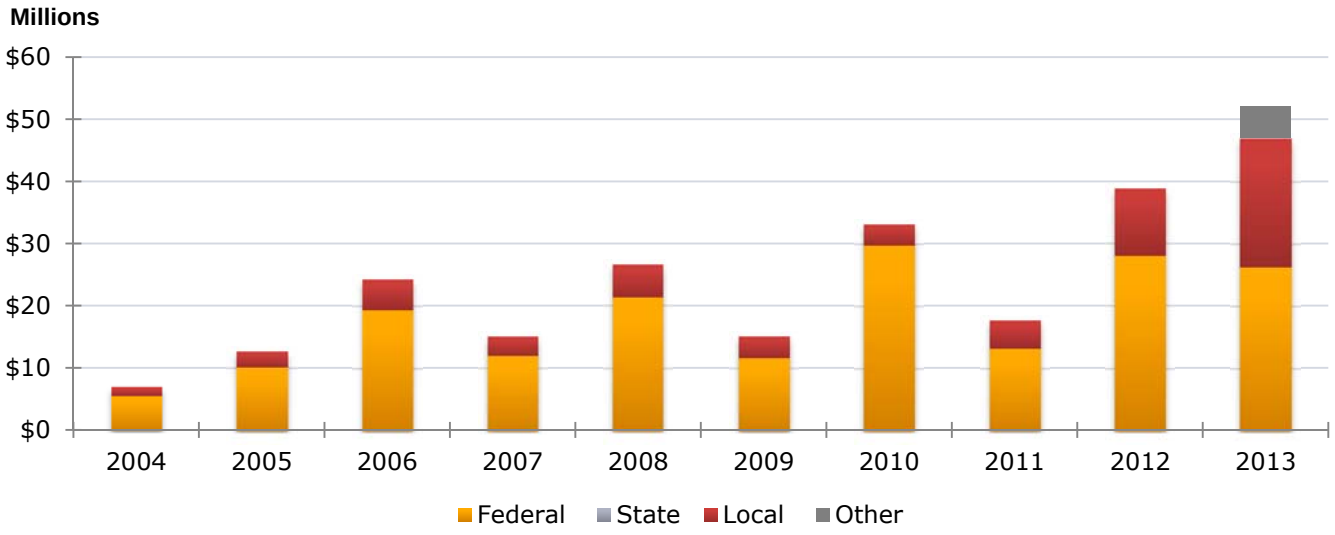
Figure C.8 Sources of Operating Funds



Source: National Transit Database, 2004 to 2013.

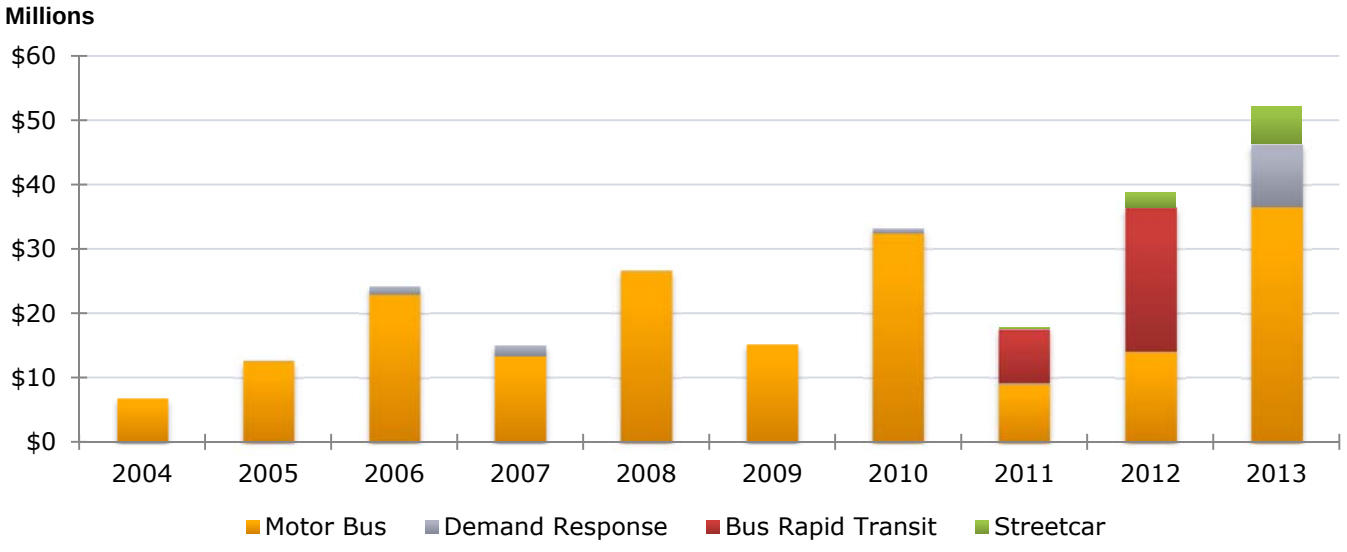
About 60 to 80 percent of capital funds came from Federal funding sources (Figure C.9). After 2011, the share of Federal funding in capital funds decreased by 23 percent when local funding increased significantly, from $4.5 million in 2011 to $20.6 million in 2013. Capital funds were mainly used for motor bus services from 2004 to 2013; however, in 2011 and 2012 about one-half of the capital funds was dedicated to Primo service (Figure C.10).

Figure C.9 Sources of Capital Funds



Source: National Transit Database, 2004 to 2013.

Figure C.10 Uses of Capital Funds



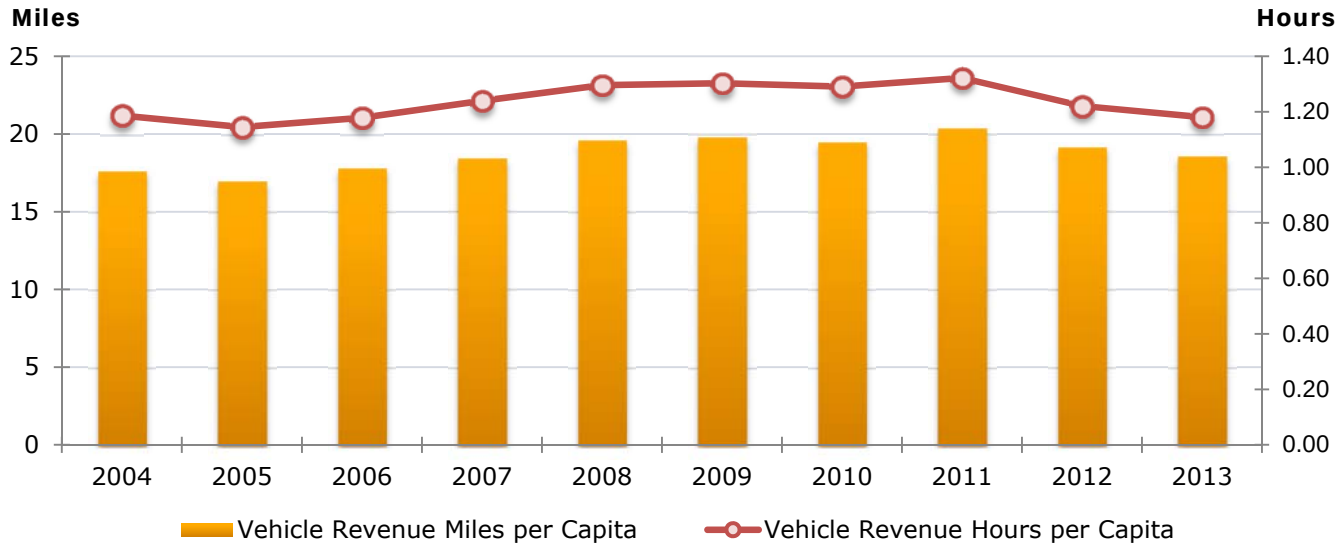
Source: National Transit Database, 2004 to 2013.

C.2.4 Service Demand and Supply

Five indicators were used to measure service effectiveness: vehicle revenue miles per capita; vehicle revenue hours per capita; passenger trips per capita; passenger trips per revenue mile; and passenger trips per revenue hour. Both vehicle revenue miles per capita and vehicle revenue hours per capita measured service supplied relative to service area population, while the other three indicators reflect service consumption related to service area population, and the relationship between service demand and supply.

Both vehicle revenue miles per capita and vehicle revenue hours per capita were stable from 2004 to 2013, with small peaks in 2008 and 2011 (Figure C.11). The former increased 5 percent in 2013 compared to 2004, while the latter remained fairly unchanged. This trend reflects that service supply has been able to keep up with population growth in the region.

Figure C.11 Vehicle Revenue Miles and Revenue Hours per Capita



Source: National Transit Database, 2004 to 2013.

Passenger trips per capita, passenger trips per revenue mile, and passenger trips per revenue hour all decreased between 9 and 13 percent from 2004 to 2013 (Figure C.12 through Figure C.14).

Figure C.12 Passenger Trips per Capita

Source: National Transit Database, 2004 to 2013.

Figure C.13 Passenger Trips per Revenue-Mile

Source: National Transit Database, 2004 to 2013.

Figure C.14 Passenger Trips per Revenue-Hour

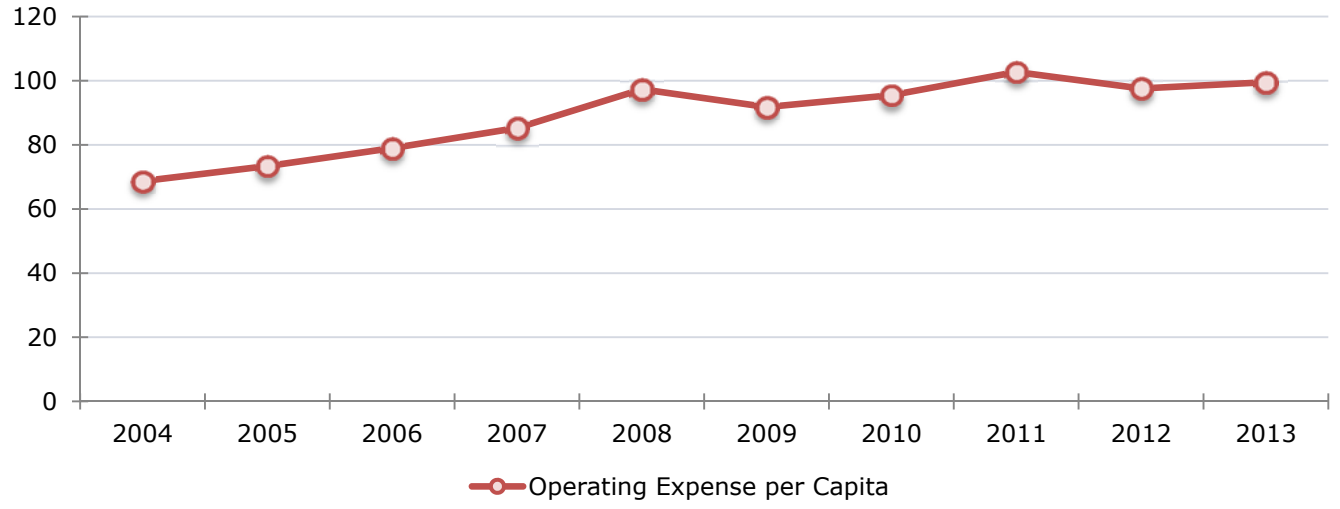
Source: National Transit Database, 2004 to 2013.

C.2.5 Cost Efficiency

Six indicators were used to measure cost efficiency of VIA service from 2004 to 2013: operating expense per capita, operating expense per passenger trip, operating expense per revenue-mile, operating expense per revenue-hour, farebox recovery (percent), and revenue miles per vehicle-mile.

Operating expense per capita has increased 45 percent over the last 10 years, as shown in Figure C.15. It first peaked at $97.34 in 2008, followed by a slight decline to $91.82 in 2009. Then it peaked again at $102.72 in 2011. In 2013, VIA's operating expense per capita was $99.56.

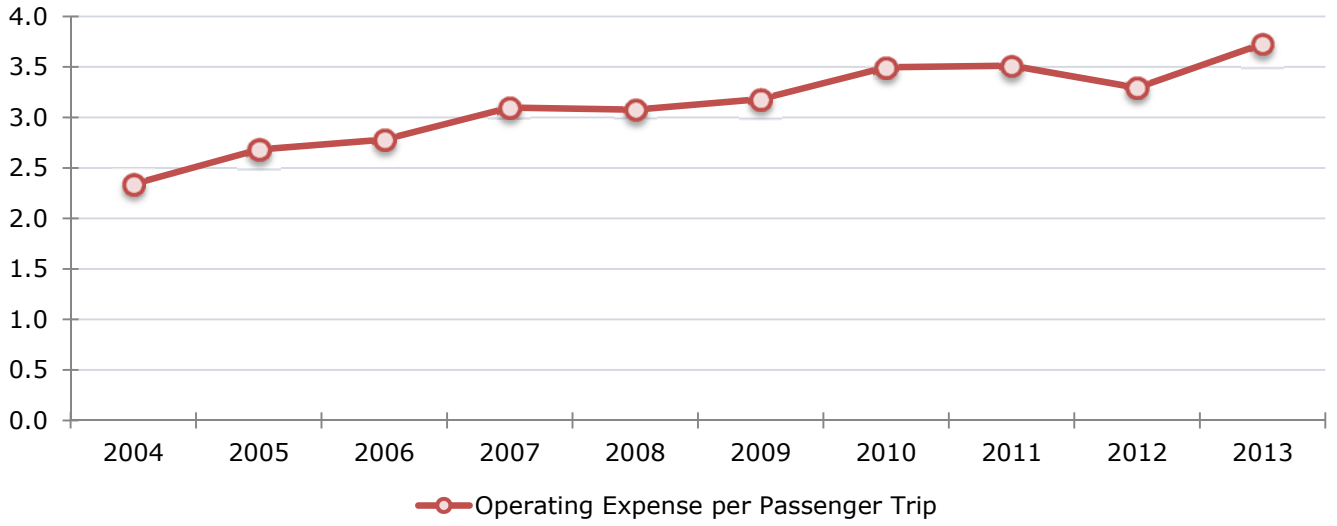
Figure C.15 Operating Expense per Capita



Source: National Transit Database, 2004 to 2013.

Operating expense per passenger trip increased 59 percent, an average annual growth rate of 5 percent, from 2004 to 2013 (Figure C.16).

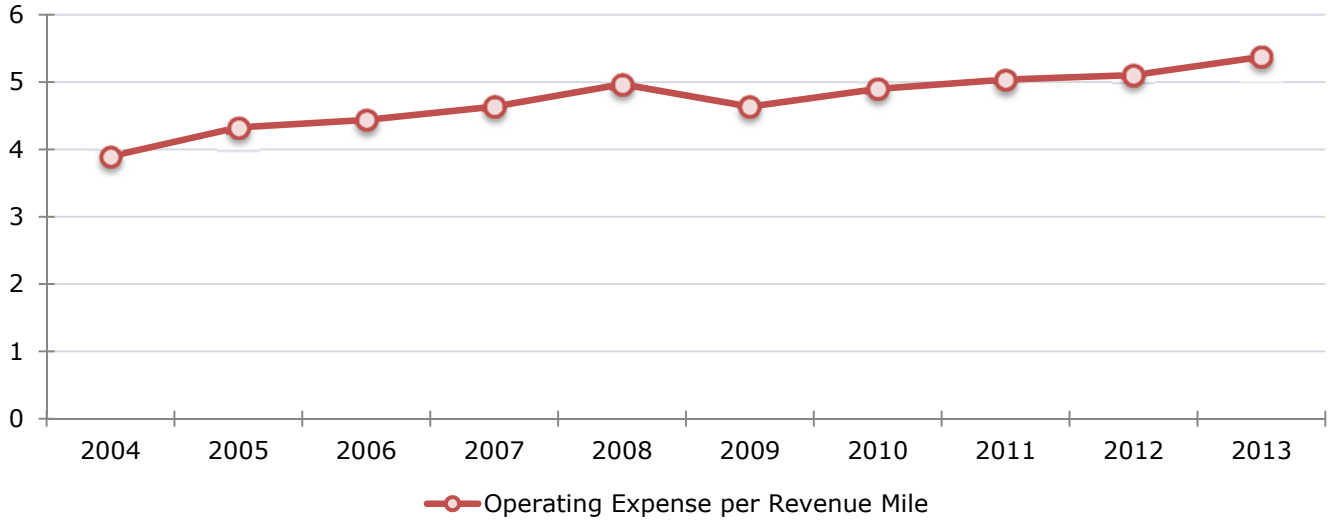
Figure C.16 Operating Expense per Passenger Trip



Source: National Transit Database, 2004 to 2013.

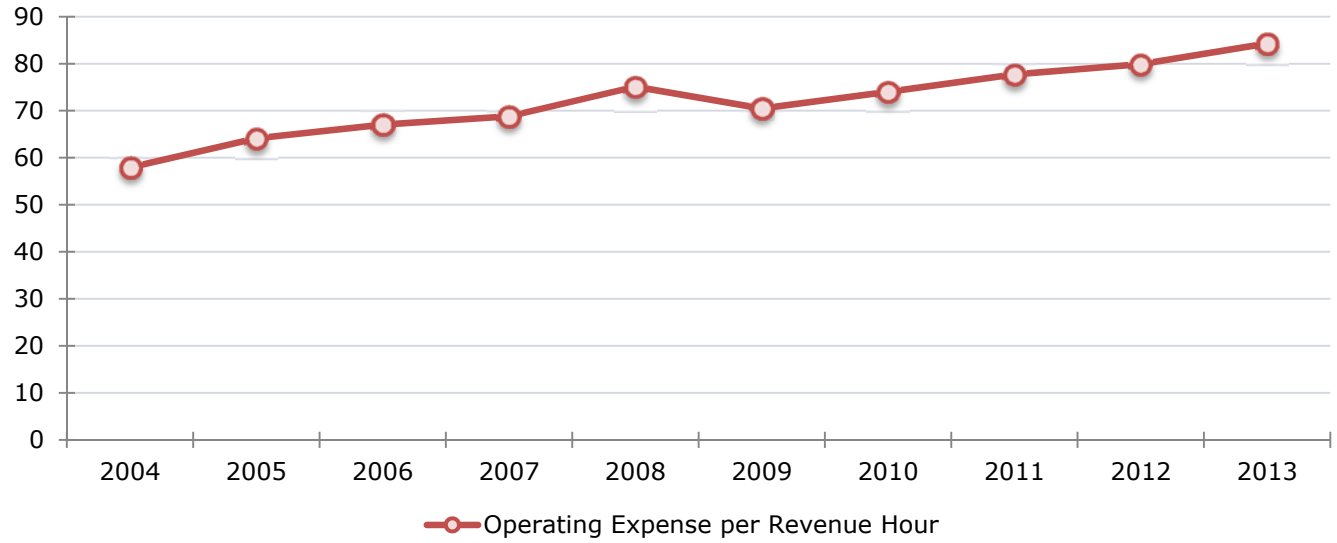
Both operating expense per revenue mile and operating expense per revenue hour increased steadily from 2004 to 2013 (Figure C.17 and Figure C.18). The operating expense per revenue-mile was $5.37 in 2013, 38 percent higher than in 2004. The operating expense per revenue-hour was $84.30, representing a 46 percent increase since 2004.

Figure C.17 Operating Expense per Revenue-Mile



Source: National Transit Database, 2004 to 2013.

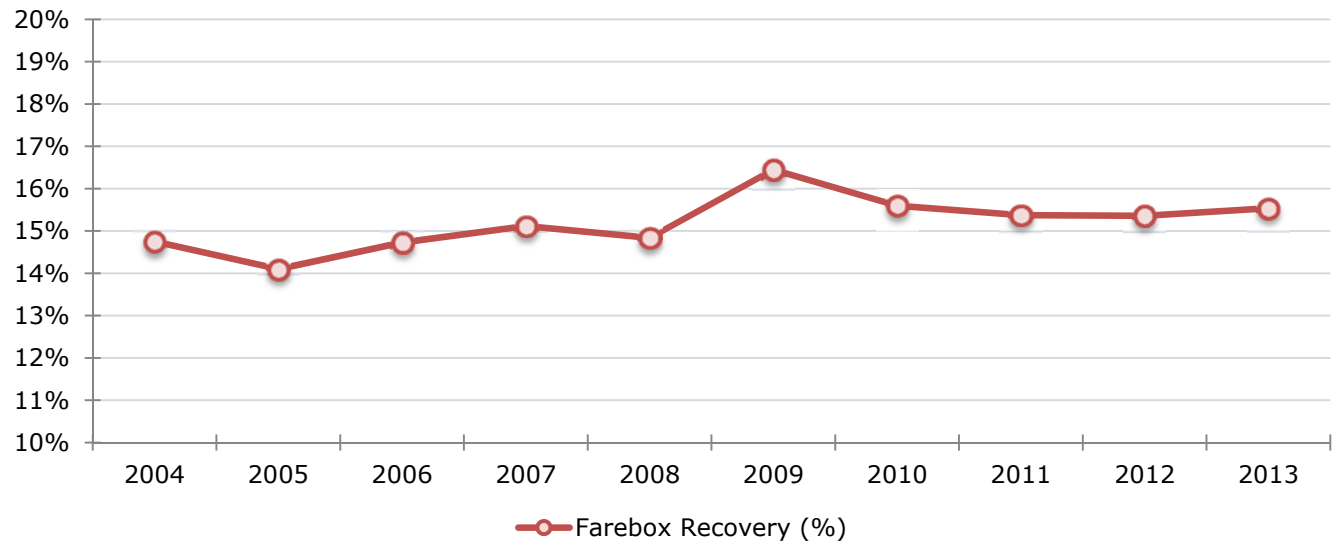
Figure C.18 Operating Expense per Revenue-Hour



Source: National Transit Database, 2004 to 2013.

Farebox recovery is the proportion of user fees collected to total revenues. VIA's farebox recovery rate has remained between 14 and 17 percent over the last decade (Figure C.19).

Figure C.19 Farebox Recovery Ratio

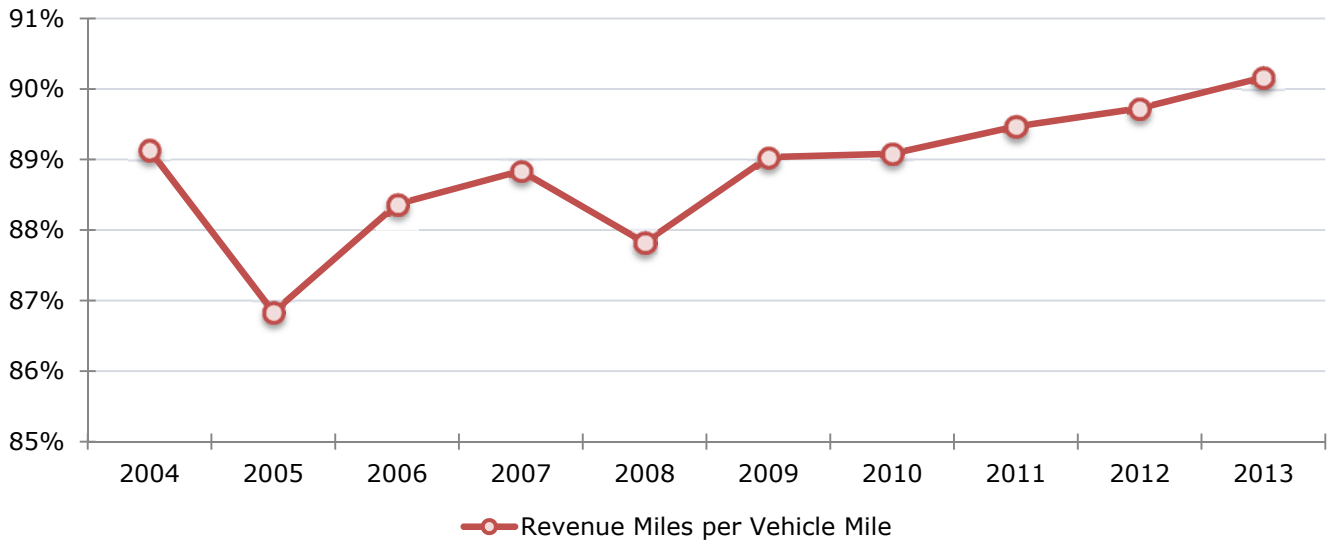


Source: National Transit Database, 2004 to 2013.

The ratio of revenue miles per vehicle-mile is a measure of how efficiently buses are used (Figure C.20). An efficient bus system minimizes the amount of time that buses are driving, but not

in passenger service. Overall, revenue miles per vehicle-mile has increased by about 2 percent over the last 10 years, reflecting improved efficiency in operations.

Figure C.20 Revenue Miles per Vehicle-Mile

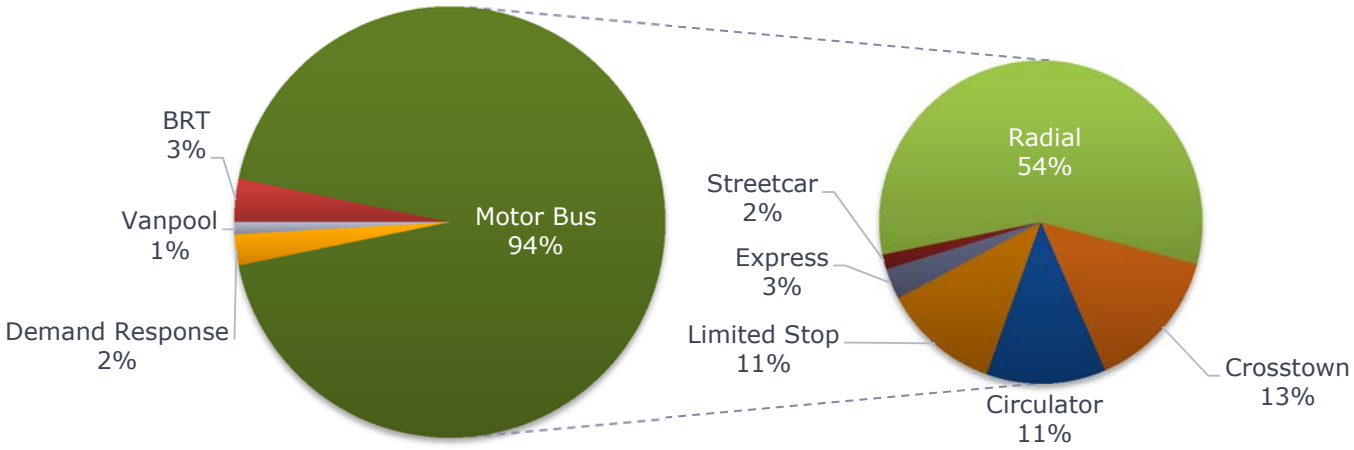


Source: National Transit Database, 2004 to 2013.

C.3 Transit Consumption and Supply Trends by Mode

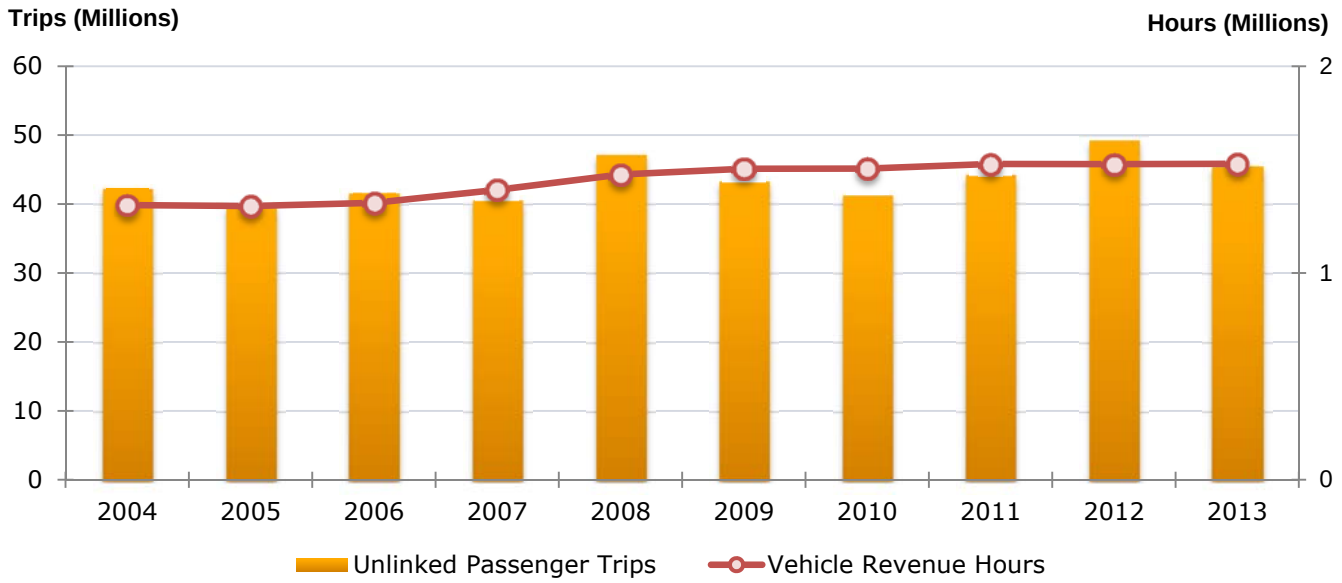
This section presents information related to service supply and consumption by service type (fixed-route bus, VIAtrans, and vanpool). Service supply is represented by vehicle revenue hours, and service consumption is measured by number of unlinked passenger trips. Figures C.21 through C.24 show ridership and service trends by service type. While vanpool and demand-response (VIAtrans) service have grown significantly since their introduction in the last decade, VIA's service is still dominated by bus service, which has grown steadily over time. Note the peak in fixed-route ridership during the economic downturns in 2008 and 2012 (Figure C.22).

Figure C.21 Ridership by Mode



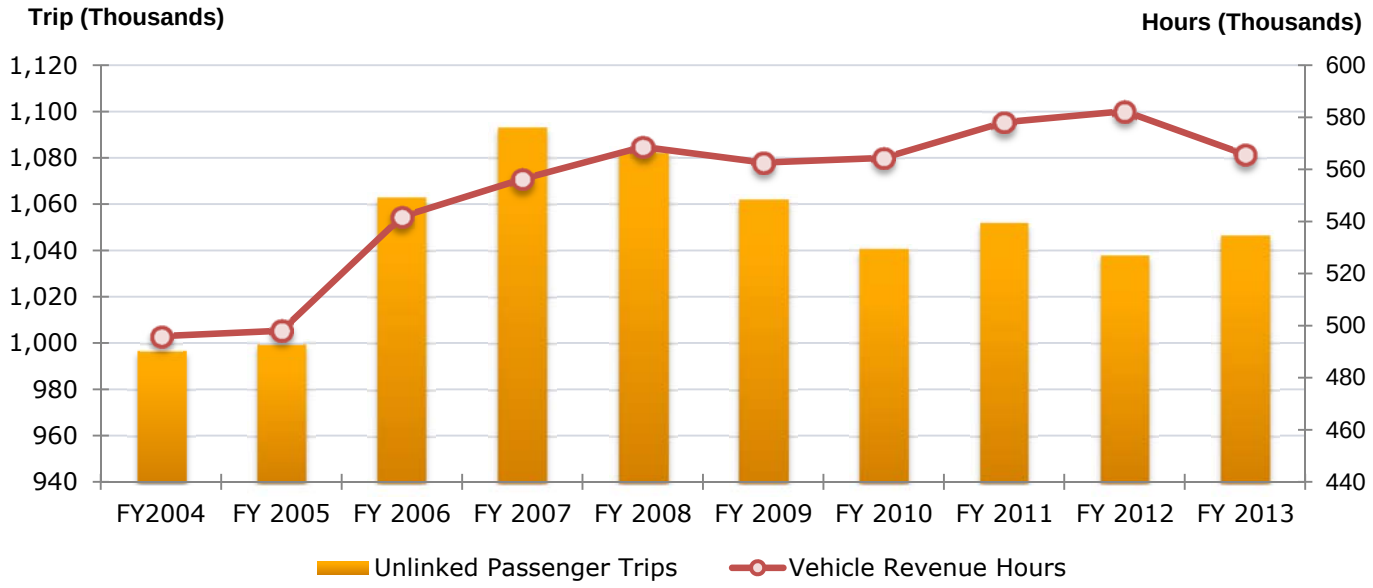
Source: National Transit Database, 2013.

Figure C.22 Fixed-Route Bus Service



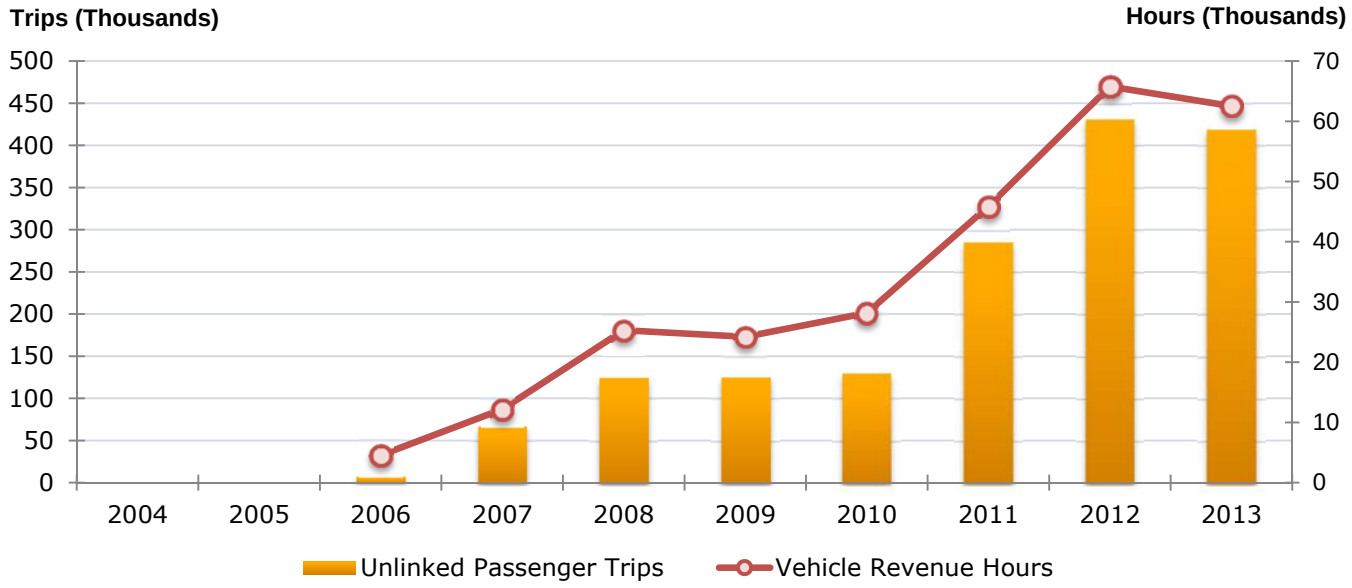
Source: VIA Metropolitan Transit.

Figure C.23 Total VIAtrans



Source: VIA Metropolitan Transit System.

Figure C.24 Vanpool



Source: VIA Metropolitan Transit System.

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Appendix D. Peer Review

A peer review provides context and a baseline for comparison when evaluating an agency's performance. VIA selected eight peer transit agencies for comparison, including four agencies in Texas and four in the western and southwestern United States (Table D.1). Peer agencies were selected based on the following factors:

- **Similar-Sized Service Areas –** The peer review focused on agencies of similar size to San Antonio (in both population and land area). Peer agencies generally include those with existing populations near 1.7 million and service area around 1,200 square miles.

- **Operating and Capital Budgets –** Peer agencies' total combined annual operating and capital budgets (NTD Agency Profiles, 2012) ranged from $67 million (El Paso SunMetro) to $932 million (DART). VIA's combined operating and capital budget in 2012 was $207 million.

- **Modes –** The peer agencies operate a range of transit modes, including modal profiles that look similar to VIA (i.e., fixed-route bus, demand response/paratransit, and vanpool), as well as agencies that have successfully launched high-capacity transit networks (light rail and bus rapid transit [BRT] on dedicated right-of-way). The peer review provides an opportunity for VIA to glean lessons learned from other agencies.

- **Geography –** The peer agencies include other large transit agencies in Texas operating within the same State regulations, as well as agencies in other cities in the western and southwestern United State.

Comparisons with these agencies allows the demographic and socioeconomic characteristics, operating performance, capital programs, governance, and financing mechanisms of VIA to be placed in a national context. This appendix provides additional detail beyond what was presented in *History, Trends, and Peer Review* report for those seeking more information.

Table D.1 Summary of Peer Agencies

Agency	Major City	MSA Population[a]	Service Area[b]	Service Area Population[b]	Operating Budget (in Million Dollars)[b]	Capital Budget (in Million Dollars)[b]	MB[c]	DR	BR	LR	CR	HR[d]	CB	VP
VIA	San Antonio	2,278,000	1,213	1,715,000	$168.5	$38.8	•	•	•					•
CapMetro	Austin	1,883,000	522	1,023,000	$188.2	$34.0	•	•	•			•	•	
DART	Dallas	6,811,000	696	2,423,000	$617.0	$315.2	•	•		•	•			•
Sun Metro	El Paso	831,000	251	803,000	$57.8	$9.1	•	•						
METRO	Houston	6,313,000	1,285	3,528,000	$416.9	$490.1	•	•		•			•	•
Valley Metro	Phoenix	4,399,000	518	1,665,000	$187.3	$12.0	•	•						
TriMet	Portland	2,315,000	570	1,490,000	$396.7	$253.2	•	•		•		•		
UTA	Salt Lake City	1,140,000	751	2,165,000	$218.8	$307.8	•	•		•	•		•	•
SDMTS	San Diego	3,211,000	716	1,960,000	$214.9	$193.8	•	•		•			•	

Source: U.S. Census Bureau, Population Division.

[a] Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2013.

[b] NTD Agency Profiles, 2012.

[d] MB=Motorbus; DR=Demand Response; BR=Bus Rapid Transit; LR=Light Rail; HR=Heavy Rail; CR=Commuter Rail; CB=Commuter Bus; VP=Van Pool.

[c] Capital Metro and TriMet have "Hybrid Rail" – "A vehicle that combines two or more sources of power that can directly or indirectly provide propulsion power, so as to increase efficiency and thereby reduce emissions."

D.1 Demographic and Socioeconomic Characteristics

D.1.1 Demographics/Socioeconomic Characteristics of Each Region

Regional demographics, such as household income and vehicle ownership, influence transit demand within a region and provide context when comparing performance among peer transit agencies. For this comparison, each peer region was defined by its Metropolitan Statistical Area (MSA) (unless otherwise noted due to incomplete or unavailable data). MSAs are geographic boundaries defining an urban area with 50,000 or more residents and often include counties surrounding the core urban area that have common social and economic integration. MSA boundaries are informative descriptors of a region because they include statistics on residents that interact with, or are impacted by, the city center but do not live within the city boundaries.

The most comparable peer regions to the San Antonio-New Braunfels MSA in terms of population, number of households, and total workers are the Dallas-Ft Worth-Arlington, Phoenix-Mesa-Scottsdale, and San Diego-Carlsbad MSAs (Table D.2). The Houston-Woodlands-Sugar Land MSA has 57 percent more population than the San Antonio-New Braunfels MSA, while the population of the Austin-Round Rock, El Paso, and Portland-Vancouver-Hillsboro MSAs are about 40 to 60 percent smaller than that of the San Antonio-New Braunfels MSA. The Salt Lake City MSA has the smallest population size, which is only 14 percent of the population in the San Antonio-New Braunfels MSA.

The San Antonio-New Braunfels MSA has the third-highest average household car ownership of its peers (1.63 cars per household). Households in the Portland-Vancouver-Hillsboro MSA have the smallest car ownership (1.45 cars per household, or 11 percent fewer on average than those in the San Antonio-New Braunfels MSA). Among the eight peer regions, only the El Paso MSA median household income is lower than the San Antonio-New Braunfels MSA. The average household income of the Austin-Round Rock and San Diego-Carlsbad MSA are 24 percent and 42 percent higher than that of the San Antonio-New Braunfels MSA, respectively.

While the majority of the peer MSAs are comparable to the San Antonio-New Braunfels MSA in terms of their percentages of population in poverty, minority population, and population age 65 or over, there are a few differences. The El Paso MSA has a higher percentage of its population in poverty when compared to the San Antonio-New Braunfels MSA, at 24 percent and 15 percent, respectively, while the Salt Lake City MSA has the lowest percentage of its population in poverty at 10 percent (Table D.2). The San Antonio-New Braunfels MSA also has a higher percentage of minorities when compared to almost all peer cities, especially the Portland-Vancouver-Hillsboro MSA (23 percent) and the Salt Lake City MSA (24 percent), also shown in (Table D.2). The El Paso MSA is the only peer with a higher percentage of minorities, at 86 percent.

Table D.2 MSA Demographic and Socioeconomic Characteristics

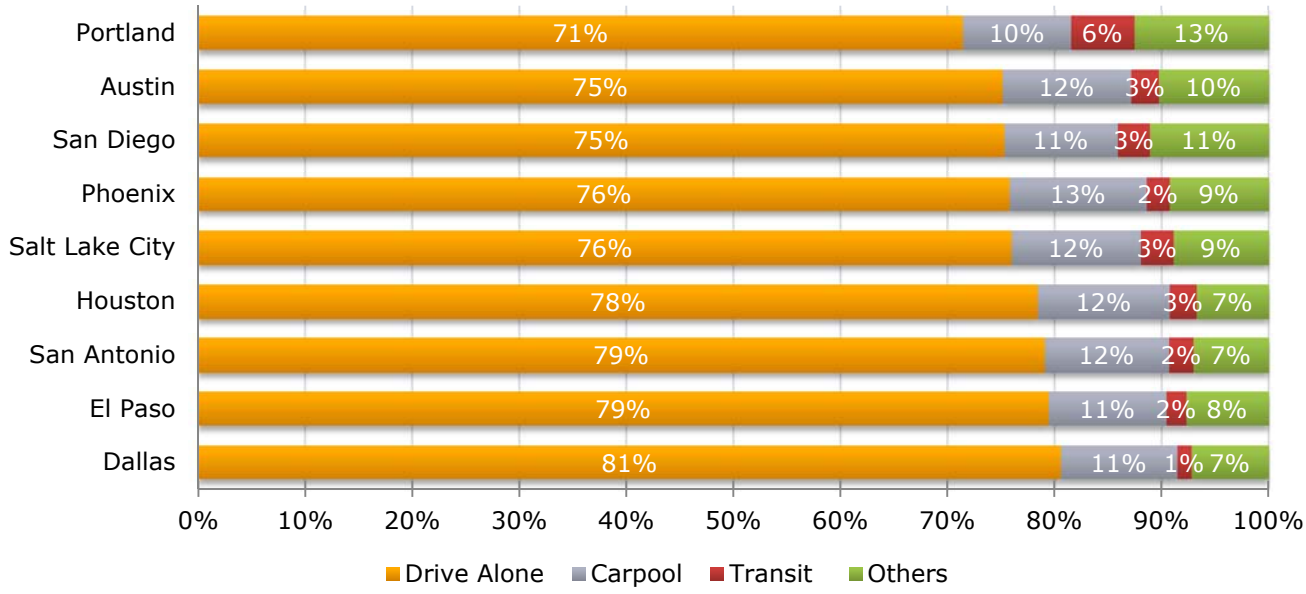
MSA	Population	Number of Households	Average Household Size	Median Household Income	Average Household Car Ownership	Percent of Persons in Poverty	Percent of Minority	Percent of Persons 65 and Over
Austin-Round Rock	1,627,570	620,075	2.35	$57,557	1.75	12%	45%	8%
Dallas-Ft Worth-Arlington	6,154,265	2,207,245	2.47	$56,338	1.79	12%	48%	8%
El Paso	772,280	242,945	2.68	$36,326	1.74	24%	86%	10%
Houston-The Woodlands-Sugar Land	5,709,315	1,966,845	2.52	$55,193	1.76	13%	59%	8%
Phoenix-Mesa-Scottsdale	4,080,705	1,500,830	2.39	$54,706	1.72	12%	40%	12%
Portland-Vancouver-Hillsboro	2,170,800	850,850	2.31	$56,308	1.77	11%	23%	11%
Salt Lake City	1,090,850	366,395	2.56	$58,714	1.95	10%	24%	8%
San Antonio-New Braunfels	2,057,780	726,500	2.46	$49,219	1.75	15%	63%	11%
San Diego-Carlsbad	3,022,470	1,061,790	2.44	$63,042	1.85	11%	50%	11%
Average	**2,965,115**	**1,060,386**	**2.46**	**$54,156**	**1.79**	**13%**	**49%**	**10%**

Source: 2010-2012 American Community Survey.

D.1.2 Travel-to-Work Characteristics

The percentage of people who choose transit to travel to work in the San Antonio-New Braunfels MSA is 3.3 percent, which is lower than all peer MSAs except the El Paso MSA, as shown in Figure D.1. It also has the second-highest commute rate of those driving alone behind the Dallas-Ft Worth-Arlington MSA, at 79 percent. Among peer cities, the Portland-Vancouver-Hillsboro MSA has the highest alternative mode share among these cities, with 19 percent traveling by transit or other mode (Figure D.1).

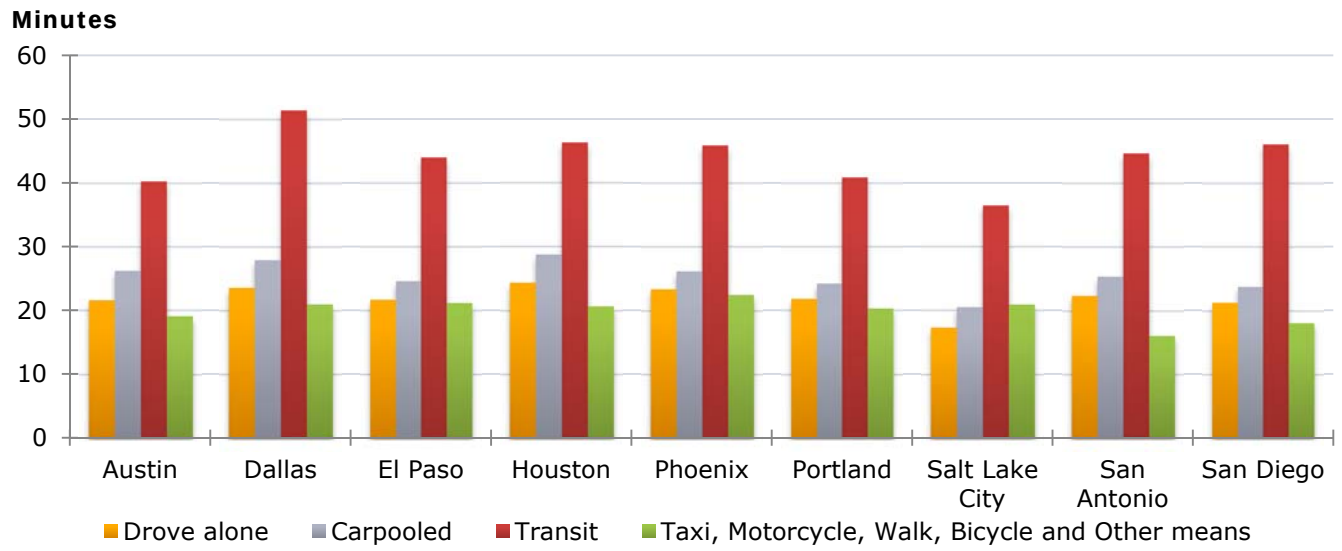
Figure D.1 Modes to Work for Peer MSAs



Source: 2010-2012 American Community Survey.

In the San Antonio-New Braunfels MSA, average travel times to work by transit, driving alone, and carpooling are about the same as the average of the other peer cities (Figure D.2). The average travel time to work by transit is about 45 minutes. The San Antonio-New Braunfels MSA has shorter than average travel times for the "taxi, motorcycle, walk, bicycle, and other means" in comparison to its peers.

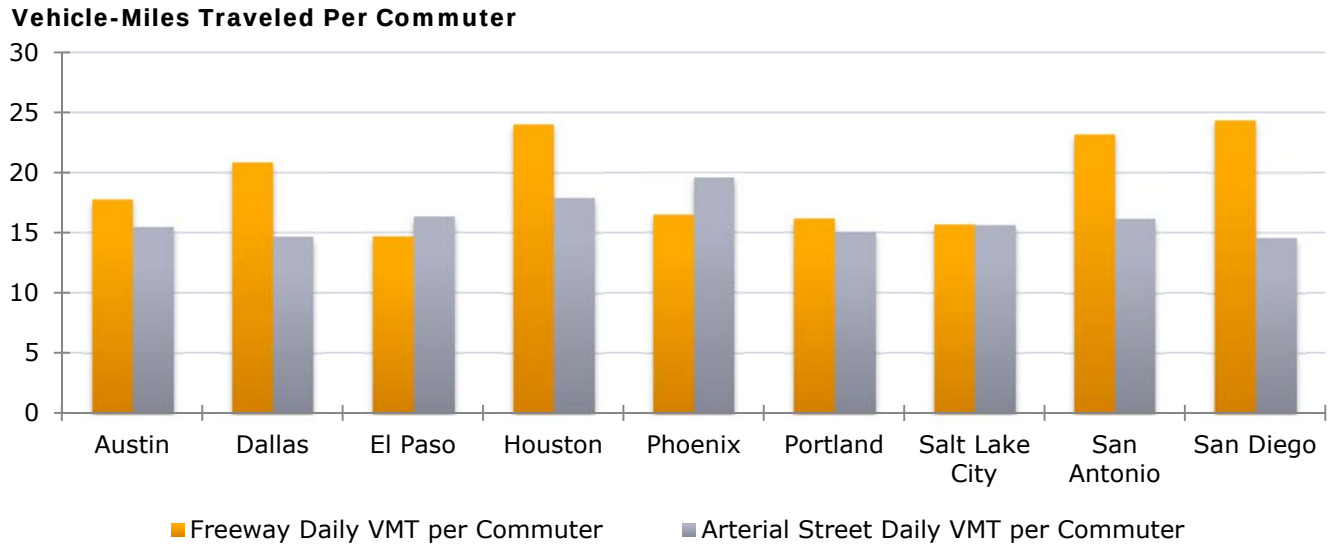
Figure D.2 Average Travel Time to Work by Mode for Peer MSAs



Source: 2010-2012 American Community Survey.

Commuters in the San Antonio-New Braunfels MSA drive longer distances, especially on freeways, than those in many of its peer cities. The San Antonio-New Braunfels MSA and three other peer regions (Dallas-Ft Worth-Arlington, Houston-The Woodlands-Sugar Land, and San Diego-Carlsbad) drive over 20 freeway miles per vehicle per day (Figure D.3). In the other four peer MSAs, commuters drive about 30 percent fewer miles each on freeways. All MSAs' arterial street daily vehicle-miles traveled (VMT) per commuter are close to the San Antonio-New Braunfels MSAs, with an exception of the Phoenix-Mesa-Scottsdale MSA, where daily VMT is about 21 percent higher.

Figure D.3 VMT per Commuter for Peer MSAs

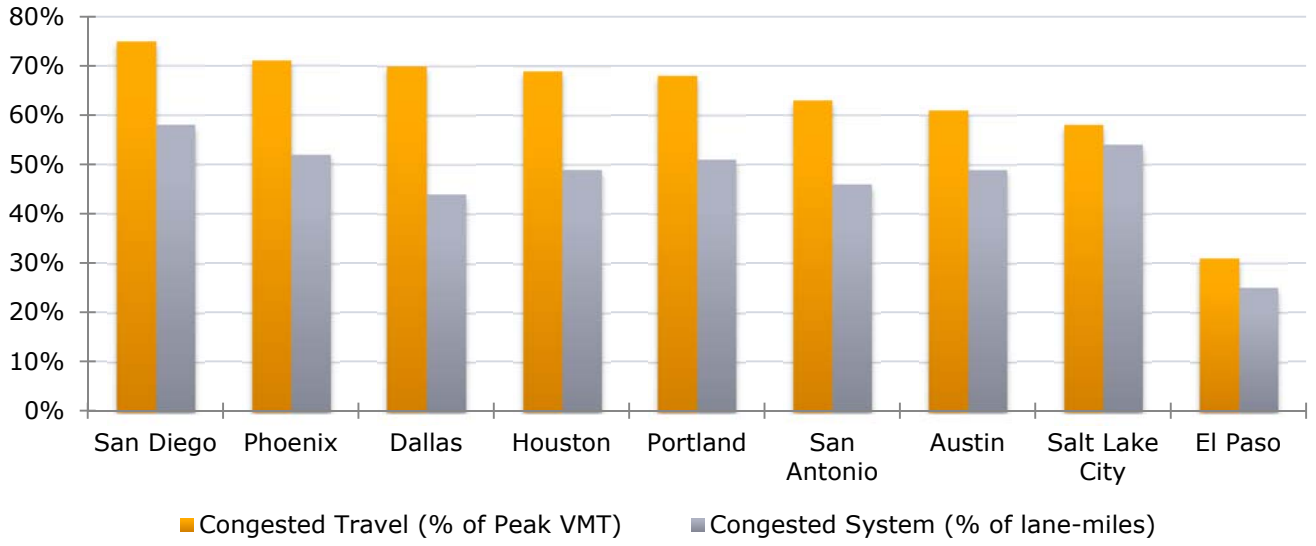


Source: Texas A&M Transportation Institute.

The San Antonio-New Braunfels MSA's overall level of congestion is similar but slightly lower than that of its peer cities, with the exceptions of the El Paso MSA and the San Diego-Carlsbad MSA (Figure D.4). The El Paso MSA is about 50 percent less congested than the San Antonio-New Braunfels MSA, while the San Diego-Carlsbad MSA is about 20 to 25 percent more congested than the San Antonio-New Braunfels MSA.

While a lower percent of the Greater San Antonio Region's network is congested than its peers, a relatively large amount of driving activity (VMT) takes place on the portion of the network that is congested, indicating that congestion is not evenly distributed across the network.

Figure D.4 Percentage of Network Congested for Peer MSAs



Source: Texas A&M Transportation Institute.

High congestion levels cause both direct and indirect costs to commuters and their communities. The costs associated with congested traffic such as: lost hours, excess fuel used, and environmental impacts are estimated annually in Texas A&M Transportation Institute's (TTI) *Urban Mobility Report*. The total annual congestion cost for the San Antonio-New Braunfels MSA and VIA's peer agencies' regions is shown in Table D.3. INRIX, a vehicle congestion database and analytics platform, calculates a Congestion Index for major cities throughout the world. Of the 100 metro regions in North America surveyed in INRIX's latest rankings, the San Antonio-New Braunfels MSA ranks 34th in terms of the impact of congestion on its residents. This information will inform the needs assessment and scenario development by considering opportunities for transit to address the region's congestion challenges.

Table D.3 Traffic and Congestion for Peer MSAs

	Austin-Round Rock	Dallas-Ft Worth-Arlington	El Paso	Houston The Woodlands-Sugar Land	Phoenix-Mesa-Scottsdale	Portland-Vancouver-Hillsboro	Salt Lake City	San Antonio-New Braunfels	San Diego-Carlsbad
Freeway Daily VMT per Commuter (Miles)	18	21	15	24	16	16	16	23	24
Arterial Daily VMT per Commuter (Miles)	15	15	16	18	20	15	16	16	15
Congested Travel (Percent of Peak VMT)	61%	70%	31%	69%	71%	68%	58%	63%	75%
Congested System (Percent of Lane-Miles)	49%	44%	25%	49%	52%	51%	54%	46%	58%
Number of Rush Hours (Hours)	5.75	5	3.5	5.75	5	4.5	4	4	5
								Annual Excess Fuel Consumed	
Total Gallons (Thousands)	17,075	74,806	8,500	65,852	46,166	24,949	9,266	16,776	29,666
Gallons per Auto Commuter	20	20	17	23	20	21	13	16	15
Annual Hours of Delay Total Delay (Thousands)	38,307	167,718	15,990	145,832	82,554	51,987	21,903	39,998	72,331
								Excess CO_2 Due to Congestion	
CO_2 Pounds (Millions)	343	1,505	171	1,324	944	503	185	336	427
CO_2 per Peak Auto Commuter (Pounds)	398	405	335	463	401	415	257	323	218
								Annual Congestion Cost	
Total Dollars (Million)	810	3,578	353	3,120	1,969	1,130	449	825	1,537
Per Auto Commuter (Dollars)	930	957	688	1,090	837	937	620	787	774
						Condition if Public Transportation Service were Discontinued			
Annual Delay Increase (Thousands of Hours)	2,395	6,292	1,169	6,733	2,541	6,951	3,877	1,808	6,401
Annual Delay Increase per Auto Commuter (Hours)	3	2	3	3	1	7	7	2	4
Additional Wasted Fuel (Thousands of Gallons)	1,067	2,806	621	3,040	1,420	3,335	1,640	758	2,625
Annual Congestion Cost Increase (Millions of Dollars)	50.6	134.2	25.8	144.1	60.6	151.1	79.6	37.3	136
TTI Roadway Congestion Index	0.98	1.16	0.79	1.15	1.15	1.1	1.01	1.05	1.32
INRIX Congestion Index	23.3	12.1	N/A	14.4	9.1	16.1	4.5	8.4	14.4
INRIX Rank (Out of 100 Total Metro Regions in North America)	4	21	N/A	15	30	12	55	34	16

Source: TTI 2011 Report, INRIX (April 2013 to April 2014).

D.2 Existing System Performance Trends

D.2.1 Evaluation Criteria

As in Appendix C, three categories of indicators were used to evaluate VIA's performance trends in the context of its peers (Table D.4). Data in this section is drawn from the National Transit Database (NTD), and includes the most recent 10-year period available, 2004-2013.[7]

1. **Service and Investment –** Includes quantity of service provided and consumed, farebox recovery, operating cost, and use of capital funds;
2. **Service Consumption and Supply –** Measures the extent to which transit service supply matches transit demand; and
3. **Cost Efficiency –** Measures the cost of providing service related to service allocated and revenue collected.

Table D.4 Performance Trend Indicators

Service and Investment	Service Consumption and Supply	Cost Efficiency
Service Consumption: • Passenger Trips • Passenger Miles **Service Supplied:** • Vehicle Revenue Miles • Vehicle Revenue Hours **Revenue and Funding:** • Operating Expense • Capital and Operating Funds • Uses of Capital Funds	• Passenger Trips per Revenue-Mile • Passenger Trips per Revenue-Hour	• Operating Expense per Passenger Trip • Operating Expense per Revenue-Mile • Operating Expense per Revenue-Hour

D.2.2 Definition of Terms

Capital Expense. Refers to the costs of long-term assets of a public transit system such as property, buildings, and vehicles. Can include bus overhauls, preventive maintenance, mobility management, and even a share of transit providers' ADA paratransit expenses.

Operating Expense. The sum of all recurring costs (e.g., labor, fuel, administration) associated with the operation and maintenance of a transit system; excludes capital equipment purchases, loans, depreciation, and leases.

[7] Valley Metro statistics in this section use data from NTD agency #9032: City of Phoenix Public Transit Department dba: Valley Metro (bus and DR) only for the City of Phoenix.

Passenger-Miles. The sum of all trip lengths in miles taken by passengers on transit vehicles—one mile, per passenger, per vehicle.

Passenger-Trip. A trip made by one person from one origin to one destination. Usually refers to unlinked passenger-trips, where each new vehicle boarded (e.g., as part of a transfer) counts as a separate trip.

Vehicle Revenue Hours. The aggregate hours traveled by transit vehicles while in service to paying passengers (i.e., available for passenger use). Includes any layover/recovery time required to complete the service. (Public Transportation Fact Book, 2014)

Vehicle Revenue Miles. The aggregate distance traveled by transit vehicles while in service to paying passengers (i.e., available for passenger use). Includes any unscheduled distance traveled while in service. (Public Transportation Fact Book, 2014)

D.3 Service and Investment

D.3.1 Service Consumption

VIA's ridership trends are consistent with its peers in terms of the number of passengers each system carries. Despite slight overall declines in passenger trips among peer agencies (Figure D.5), total passenger miles appear to have remained relatively constant during this time period, as shown in Figure D.6. In 2008, passenger miles traveled rose to over 200 million passenger miles per year. Several peer agencies saw declining ridership, especially following the economic recession in 2008, including METRO, DART, and ValleyMetro. SDMTS experienced a significant ridership jump in 2007 (from 60 million to 83 million) after its integration with the San Diego Trolley.

The eight peer agencies have generally seen flat or declining bus ridership (in terms of passenger trips (Figure D.7) and passenger miles [Figure D.8]) over the past decade. METRO, TriMet, and DART have had the most significant decreases in bus passenger miles, likely corresponding to some passengers shifting modes following the initiation or expansion of rail service by these agencies. In contrast, VIA, SDMTS, and SunMetro have each held steady or grown bus passenger miles during this time (Figure D.8).

Figure D.5 Passenger Trips by Agency
System Total

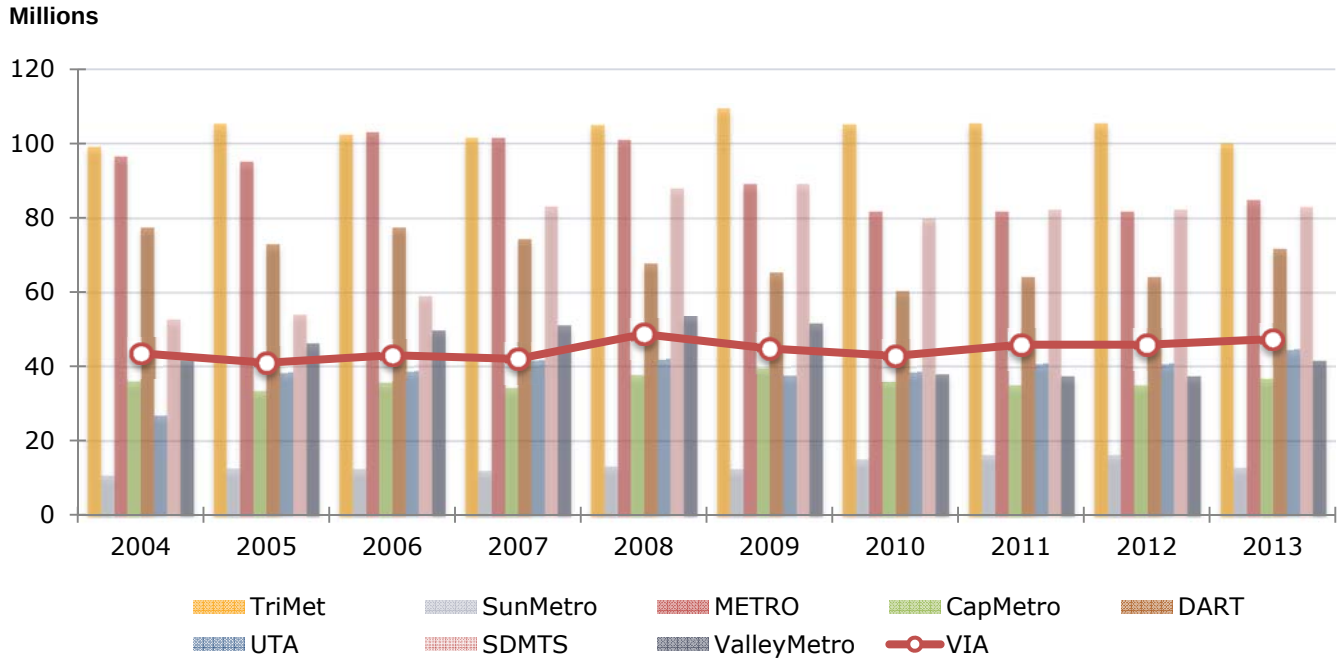


Figure D.6 Passenger Miles by Agency
System Total

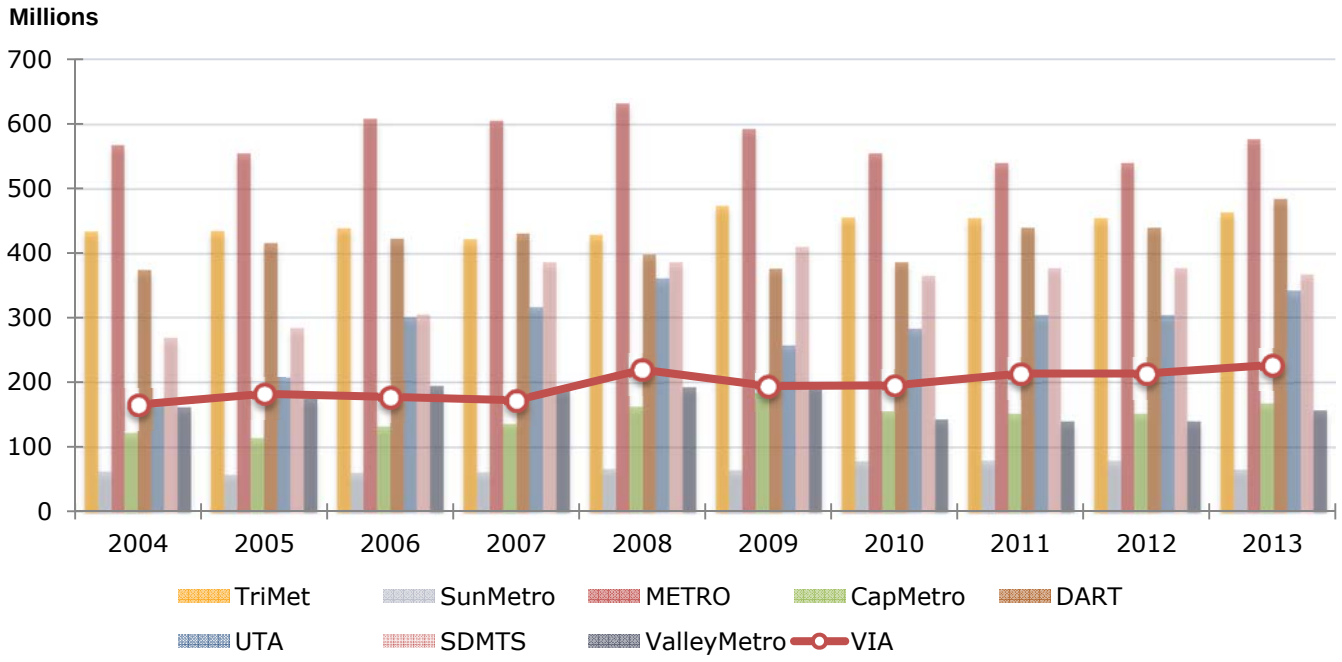


Figure D.7 Passenger Trips by Agency

Bus

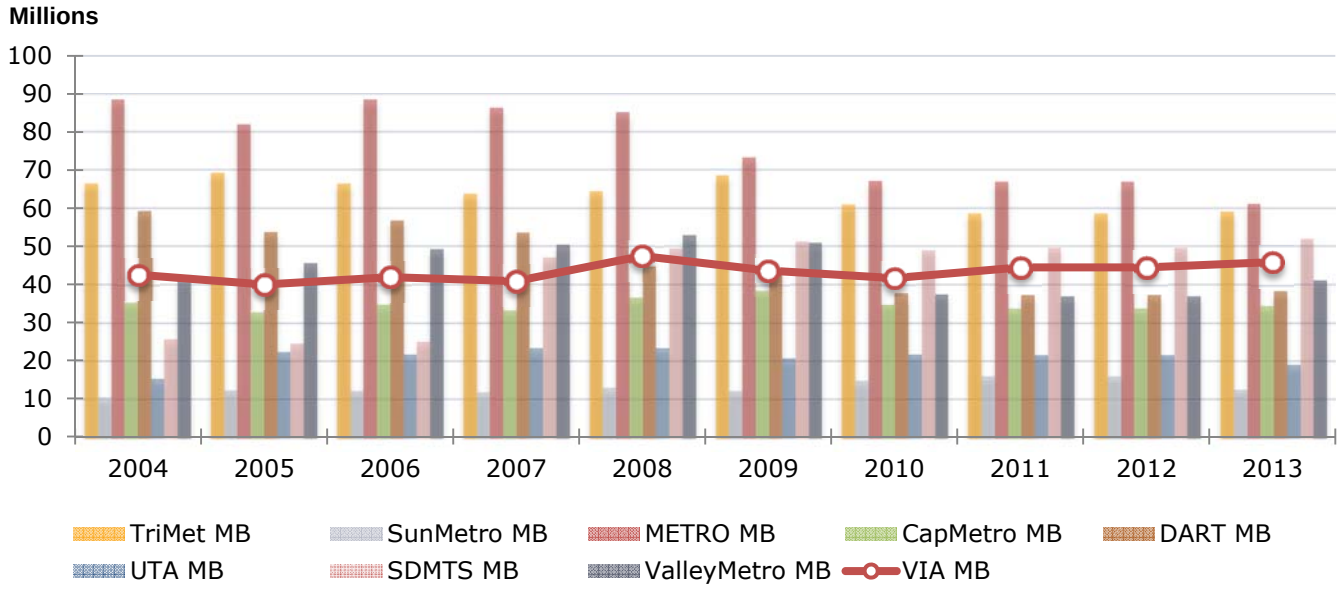
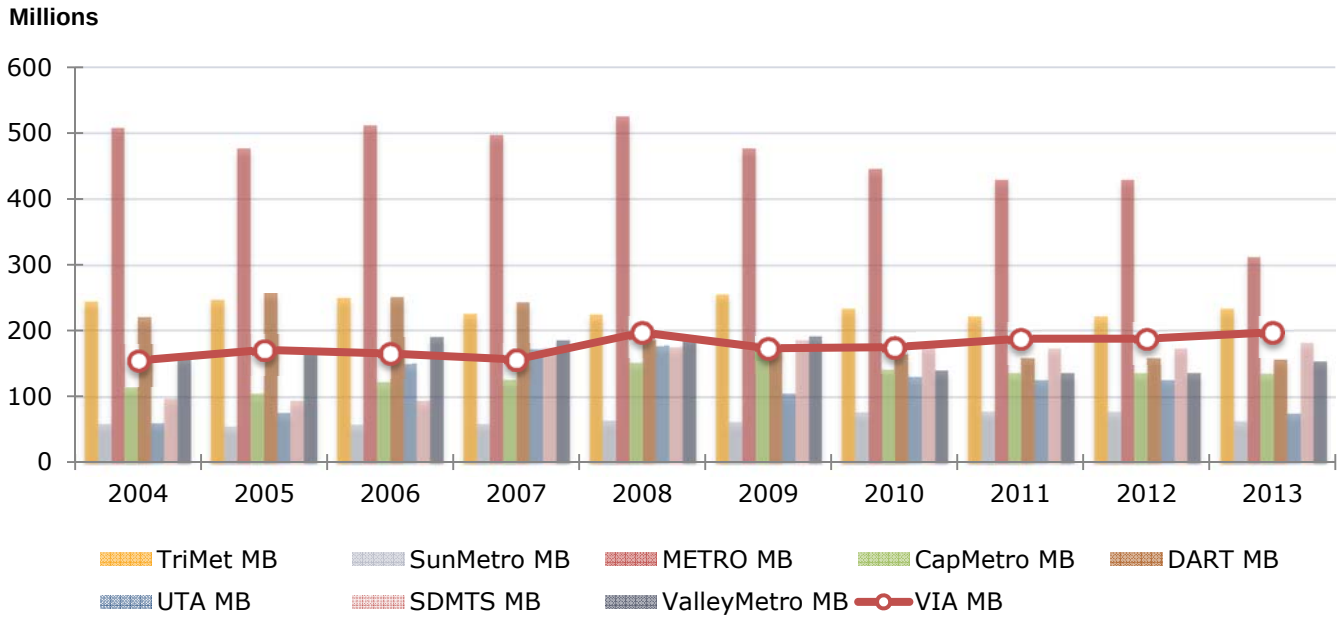


Figure D.8 Passenger Miles by Agency

Bus



D.3.2 Service Provided

The total supply of service provided by an agency is measured in terms of vehicle revenue miles and vehicle revenue hours. For VIA and all peer agencies, the total vehicle revenue miles and revenue hours of service increased slightly between 2004 and 2013 (Figures D.9 and D.10).

Figure D.9 Vehicle Revenue Miles by Agency
System Total

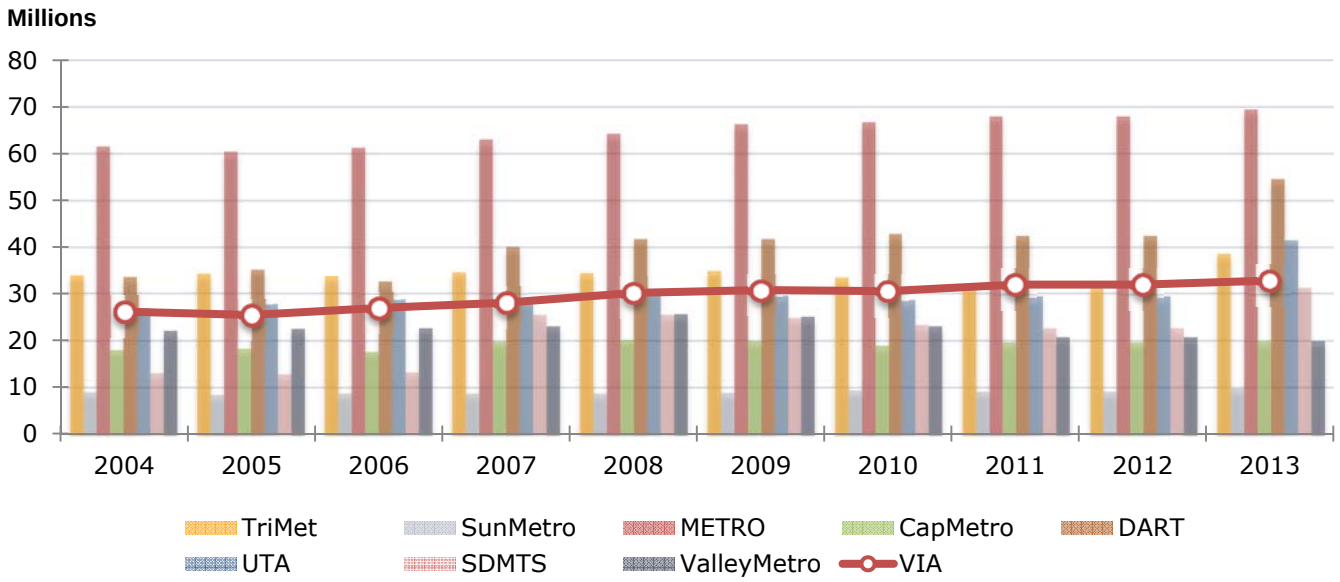
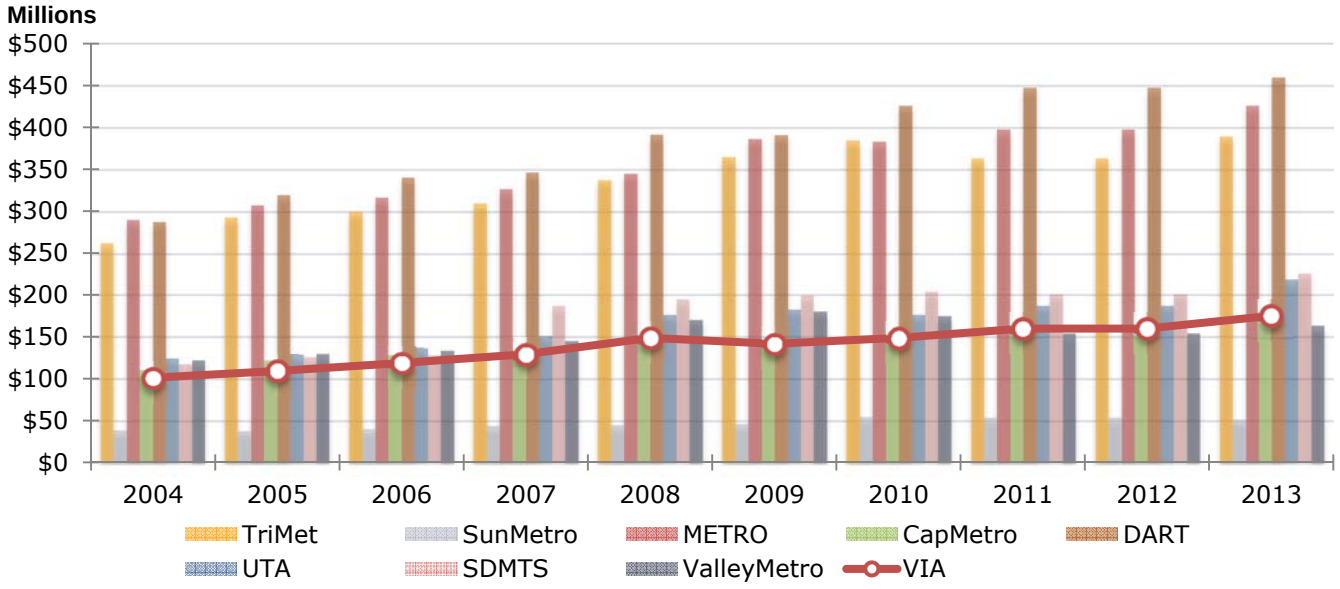


Figure D.10 Vehicle Revenue Hours by Agency
System Total

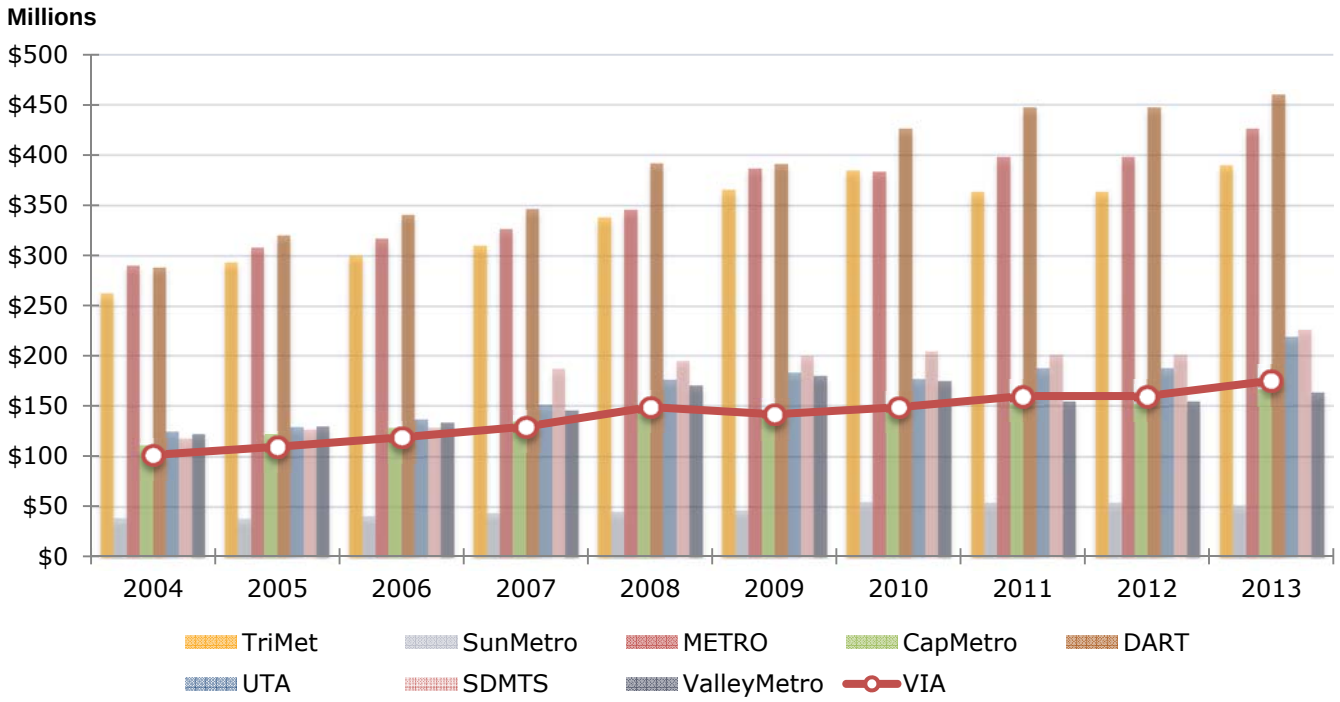


D.3.3 Revenue and Funding

The operating cost trends of VIA and its peer agencies are shown in Figure D.11. DART, METRO, and TriMet all have much larger operating budgets than VIA in part due to their size and operation of rail service. The peer agency with the smallest operating cost is SunMetro. VIA and the four peer agencies closest in size (SDMTS, Valley Metro, UTA, and CapMetro) have seen modest but steady operating cost increases over the past 10 years.

Figure D.11 Operating Cost by Agency

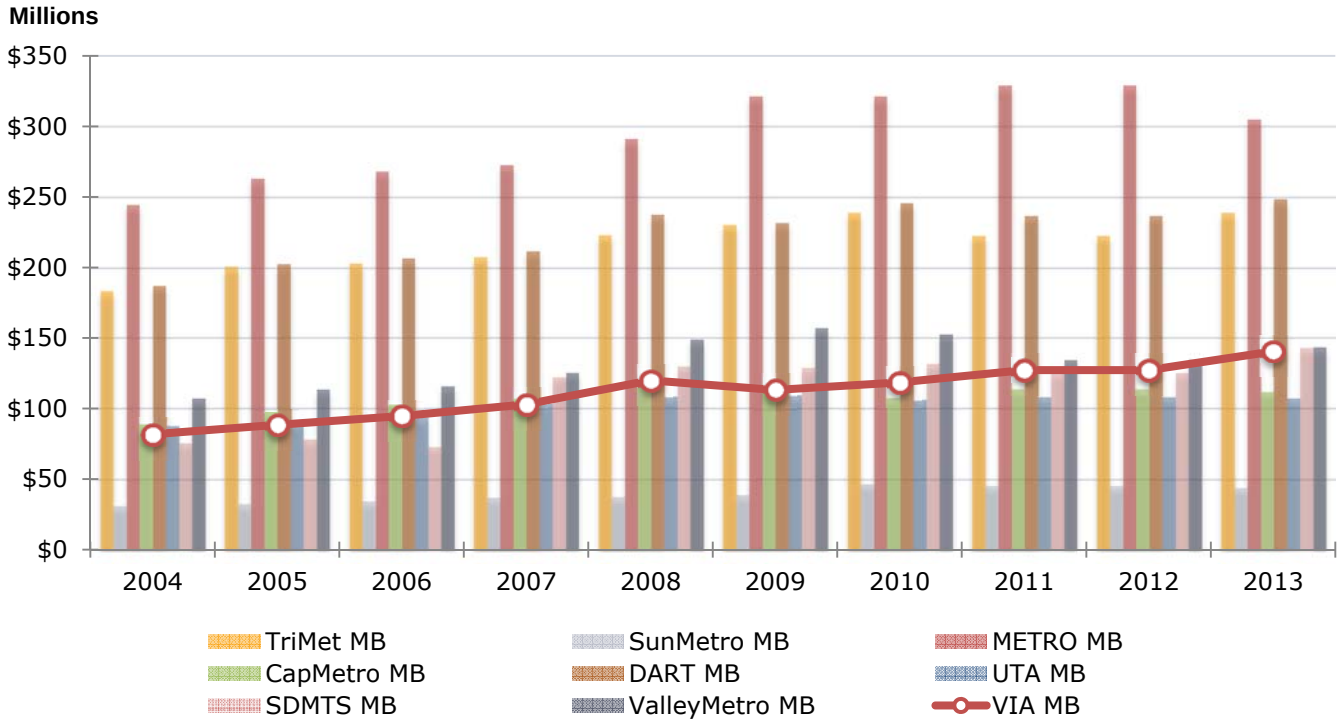
System Total



As they represent the majority of operating expenses, costs for VIA's bus operations have increased at a similar rate as total expenses (Figure D.12). In comparison, costs for bus operations have largely been flat for most peer agencies since 2007, indicating that much of their overall budget growth has been driven by growth in rail service, and to a much lesser extent, demand-response service.

Figure D.12 Operating Cost by Agency

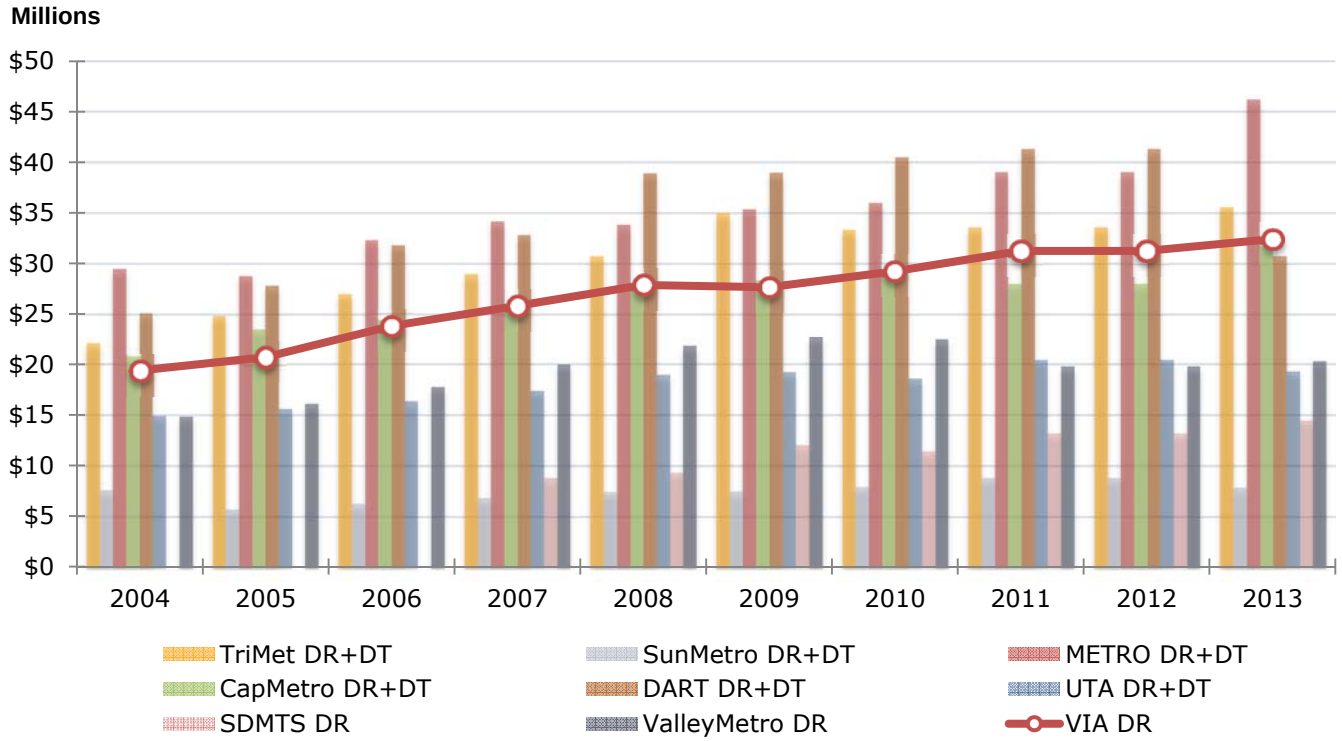
Bus



Note: MB = Motor Bus.

Demand-response service is Federally-mandated, nonfixed route, on-demand service designed to provide transit service to passengers who cannot use the regular bus network due to disability or other reasons. It includes demand-response taxi services, (that is, private taxis used to meet passenger needs). Demand-response costs have generally been rising for all peer agencies, representing about 6 to 19 percent of total operating budgets. A high proportion of VIA's budget (19 percent, though this figure remained constant between 2004 and 2013) is dedicated to demand-response service, higher than any other agency except CapMetro (Figure D.13).

Figure D.13 Operating Cost by Agency
Demand Response

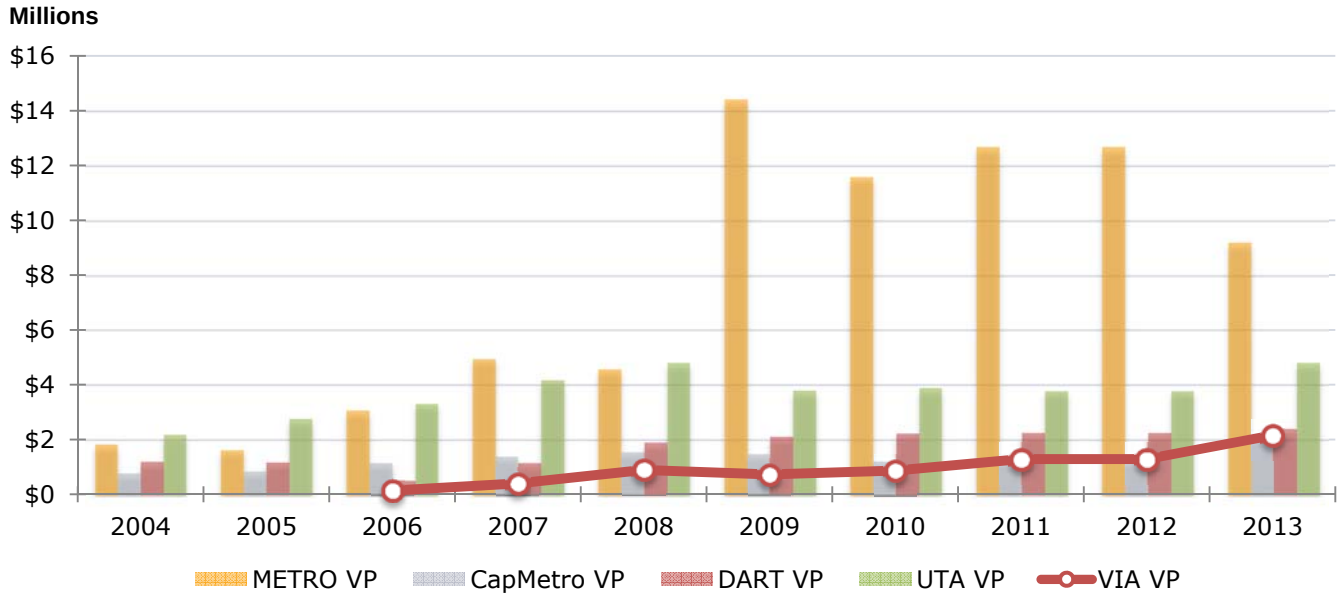


Note: DR = Demand Response, DT = Demand Response Taxi.

Since starting its vanpool program in 2006, VIA's program has grown to a $2.1 million annual operating budget.[8] Four of the eight peer agencies have vanpool service (Figure D.14), the largest being METRO, whose program expanded significantly in 2009.

[8] "A transit mode comprised of vans, small buses and other vehicles operating as a ride sharing arrangement, providing transportation to a group of individuals traveling directly between their homes and a regular destination within the same geographical area" (NTD Glossary, 2010).

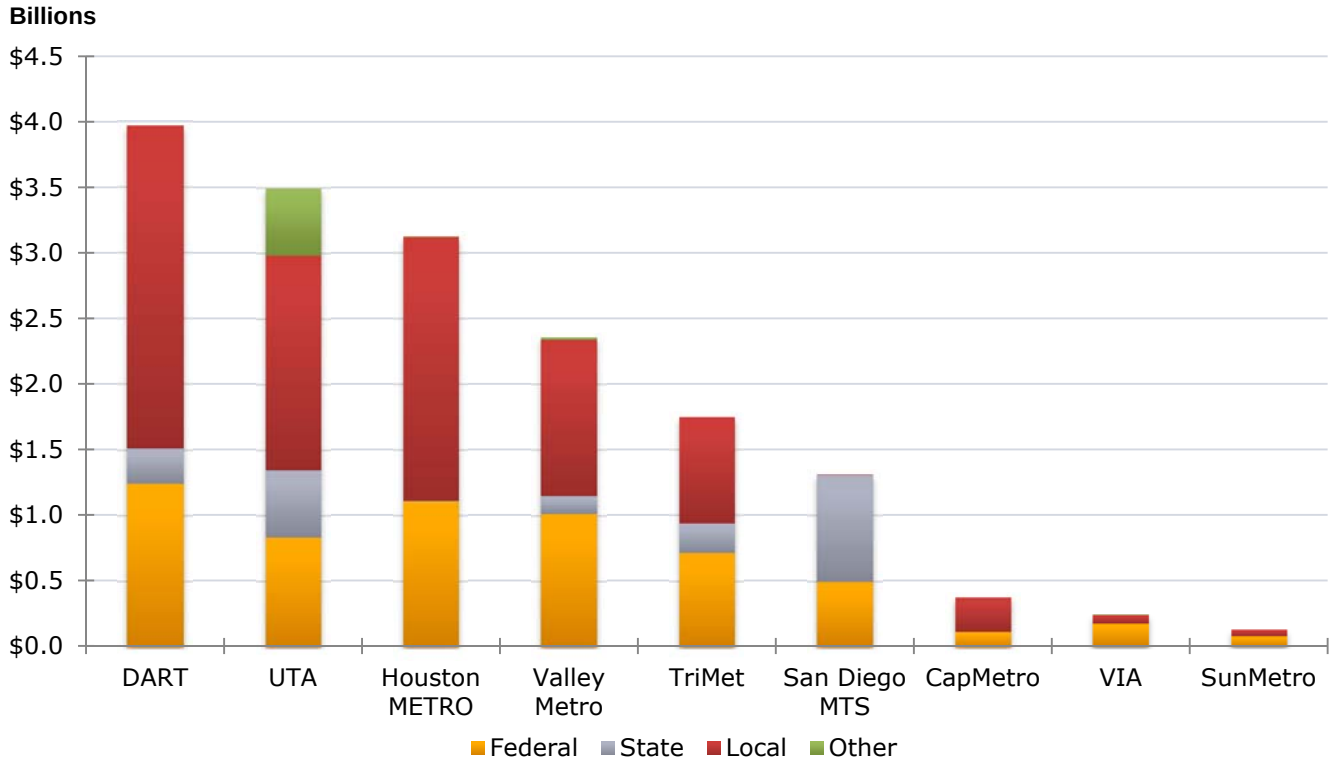
Figure D.14 Operating Cost by Agency
Vanpool



Between 2004 and 2013, six of the eight peer agencies spent more than $1 billion on capital projects (Figure D.15). DART and UTA spent close to $4.0 billion and $3.5 billion over that period, respectively (Figure D.16). Between 2008 and 2010, both agencies reported over $500 million annually in capital expenses (Figure D.16). The other four agencies exceeding $1 billion in capital spending were Houston METRO, Phoenix Valley Metro, Portland TriMet, and SDMTS. All of these agencies invested in implementation of light rail and commuter rail services (Figure D.17). It should be noted that the years showing increases in capital expenses are those with FTA awards of full-funding grant agreements for New Starts and Small Starts projects (Figure D.17). VIA, CapMetro, and SunMetro reported the lowest capital spending over this period, with less than $500 million spent on capital projects. CapMetro started a single-line commuter rail project, while SunMetro and VIA utilized the funding for bus service (Figure D.6). Both VIA and CapMetro invested in mixed-traffic bus rapid transit routes.

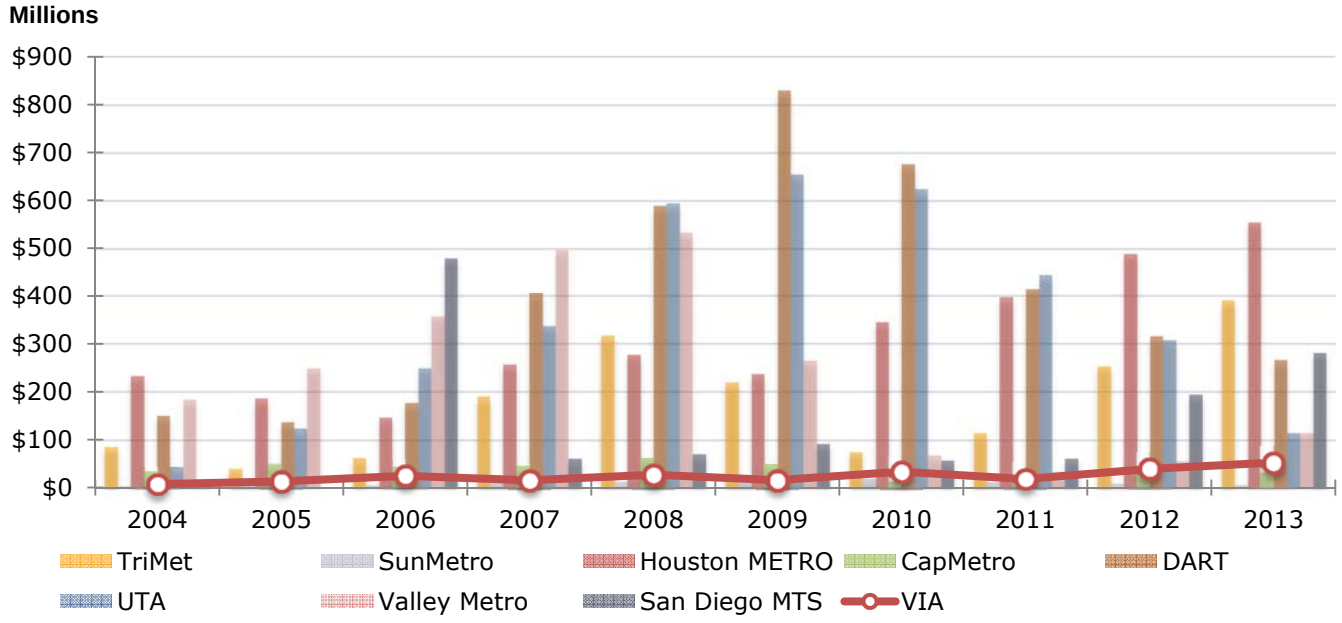
The peer agencies' capital projects were funded primarily with a combination of Federal and local funds. Local funding provided between 25 and 70 percent of the capital funding for most agencies; SDMTS was the only agency relying on state rather than local funding for its capital program (62 percent).

Figure D.15 Capital Expenditures by Source of Funding (2004-2013)



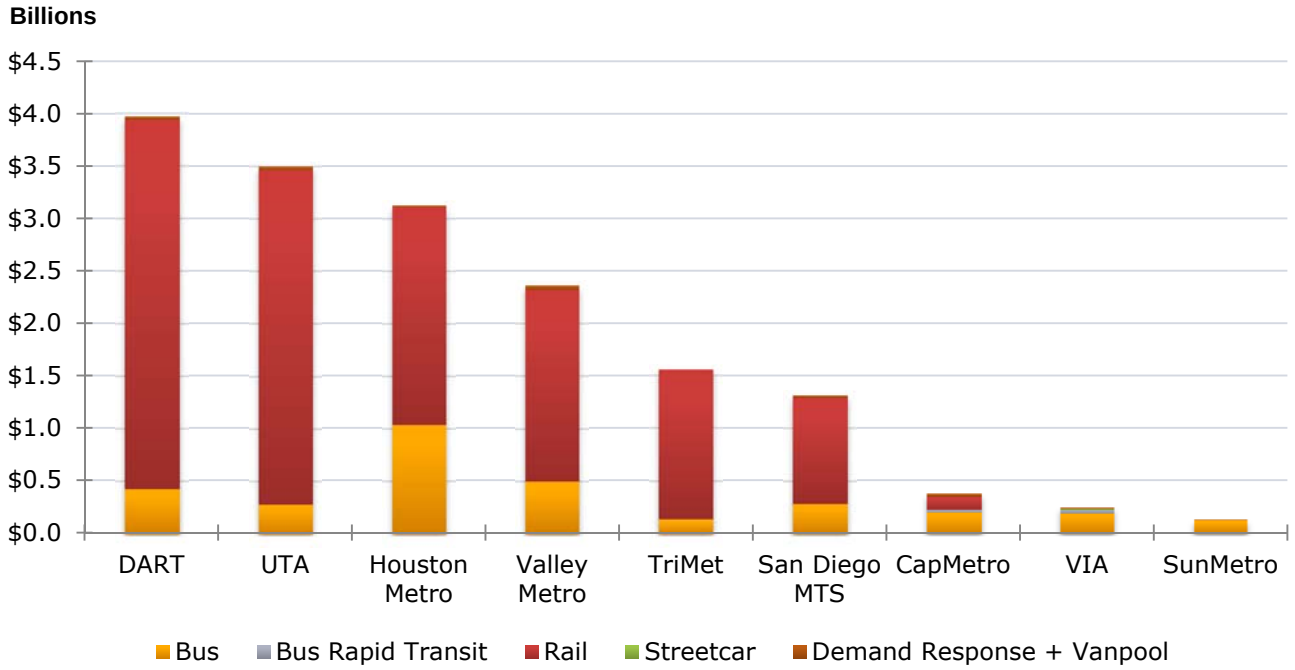
Source: National Transit Database, 2004-2013.

Figure D.16 Capital Expenditures by Agency by Year (2004-2013)



Source: National Transit Database, 2004-2013.

Figure D.17 Capital Expenditures by Mode (2004-2013)



Source: National Transit Database, 2004-2013.

D.3.4 Description of Key Projects

Since 2005,[9] VIA's peer agencies have implemented 16 projects with a total cost of $8.4 billion (projects ranged from $27 million to $1.5 billion) by leveraging local, other Federal, and state funds with the Federal Transit Administration (FTA) Major Capital Improvement Grant funding (i.e., FTA Section 5309 New Starts and Small Starts grants). The projects include light rail (9), BRT (6),[10] and commuter rail (1). FTA New Starts and Small Starts grants over the last 10 years have totaled close to $4.6 billion (individual grants ranged from $20 million to $745 million), covering 55 percent of the costs for these 16 projects, shows the total capital investment in light rail and BRT projects funded with FTA New Starts/Small Starts grants and the number of grants received by peer agency. CapMetro, SunMetro, and SDMTS received relatively fewer grants; these agencies implemented BRT systems, with costs ranging from $27.1 million (SunMetro's Mesa Corridor) to $47.6 million (CapMetro's MetroRapid). Agencies with more federal grant awards (DART, Houston Metro, TriMet, UTA, and Valley Metro) have primarily implemented light rail projects during this period. Over this

[9] Includes funding recommendations in the FY 2016 Annual Report, extending beyond available NTD data presented in this Appendix.

[10] None of the BRT systems listed in Table D.5 employs fixed guideways; rather, they depend on signal priority, high-capacity rolling stock, short headways, and dedicated stations to improve level of service. The San Diego BRT system ("Rapid") does have some dedicated access ramps and shares high-occupancy vehicle (HOV) lanes on its freeway segments, while CapMetro's BRT system ("Metro Rapid") has access to a few transit-only lanes in its downtown segments. SunMetro's BRT system ("BRIO") does not have any priority lane access.

period, UTA has received the most FTA New Starts/Small Starts awards of the peer agencies, with four grants with a total value of $1.1 billion, leveraging $1.5 billion in transit projects. TriMet also has received over $1 billion in FTA New Starts/Small Starts grants since 2005, allowing it to leverage over $2 billion worth of projects.

FTA New Starts/Small Start grants require supplemental funding sources to be provided, for which most peer agencies have relied on local funding (Table D.5). SunMetro and TriMet have received state funding and used other Federal funds (e.g., other FTA funds or Federal Highway Administration (FHWA) flexible funds, such as Congestion Mitigation and Air Quality (CMAQ) and Surface Transportation Program (STP)) for capital investments. Valley Metro also has used other Federal funds for the non-New Starts/Small Starts share. It should be noted that some of these agencies also have invested in major capital projects using other funding sources (i.e., non-New Starts/Small Starts grants), including funding some projects with 100 percent local funds. For example, UTA has been investing in expanding its light rail and commuter rail network for many years. UTA's most recent transit expansion program, FrontLines 2015, was a $2.5 billion plan that included the construction of four light rail lines and one commuter rail line. Only two of these projects were funded with FTA New Starts grants. Houston Metro and CapMetro implemented their first rail lines without FTA New Starts funding.

Table D.5 FTA New Start/Small Start Grant Summary by Agency

Agency	City	State	Project	Mode	Total Cost ($M)	Grant Type	Year of Grant	Grant Amount ($M)	Other Federal ($M)	State Funding ($M)	Local Funding ($M)	Share of Federal
CapMetro	Austin	TX	MetroRapid BRT	BRT	$47.60	FTA SS	2012	$38.00	–	–	$9.60	80%
DART	Dallas	TX	Northwest/Southeast LRT Minimum Operable Segment	LRT	$1,406.22	FTA NS	2006	$700.00	–	–	$706.22	50%
Metro	Houston	TX	North Corridor LRT	LRT	$756.00	FTA NS	2011	$450.00	–	–	$306.00	60%
Metro	Houston	TX	Southeast Corridor LRT	LRT	$822.91	FTA NS	2011	$450.00	–	–	$372.91	55%
SDMTS	San Diego	CA	Mid-City Rapid	BRT	$43.30	FTA SS	2010	$21.65	–	–	$21.65	50%
SunMetro	El Paso	TX	Mesa Corridor BRT	BRT	$27.08	FTA SS	2012	$13.54	$2.00	$6.12	$5.42	50%
SunMetro	El Paso	TX	Dyer Corridor BRT	BRT	$35.25	FTA SS	2014	$20.41	$6.05	$1.51	$7.28	58%
SunMetro	El Paso	TX	Montana Avenue BRT	BRT	$43.36	FTA SS	2016	$25.74	$8.85	–	$8.77	59%
TriMet	Portland	OR	South Corridor I-205/ Portland Mall LRT	LRT	$575.70	FTA NS	2007	$345.40	$90.94	–	$139.35	60%
TriMet	Portland	OR	Portland-Milwaukie LRT	LRT	$1,490.35	FTA NS	2012	$745.18	$140.65	$355.20	$249.33	50%
UTA	Salt Lake City	UT	Weber County to Salt Lake City Commuter Rail	CR	$611.68	FTA NS	2006	$489.35	–	–	$122.33	80%
UTA	Salt Lake City	UT	Mid-Jordan LRT	LRT	$535.37	FTA NS	2009	$428.29	–	–	$107.08	80%
UTA	Salt Lake City	UT	Draper Corridor	LRT	$193.64	FTA NS	2011	$116.18	–	–	$77.46	60%
UTA	Salt Lake City	UT	Provo-Orem BRT	BRT	$159.37	FTA SS	2014	$74.99	–	–	$84.38	47%
Valley Metro	Phoenix	AZ	Central Phoenix/ East Valley LRT	LRT	$1,412.12	FTA NS	2005	$587.20	$59.75	–	$765.17	42%
Valley Metro	Phoenix	AZ	Central Mesa LRT Extension	LRT	$199.01	FTA SS	2012	$74.99	$52.84	–	$71.17	38%

Note: NS=New Starts; SS=Small Starts.

The Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant program provides funding for projects demonstrating benefits in five areas: safety, economic competitiveness, state of good repair, livability, and environmental sustainability. This program is highly competitive and attractive given its flexibility and broad eligibility to fund projects that cannot be funded through traditional U.S. DOT programs (e.g., multimodal, multijurisdictional projects).

Below is a brief summary of TIGER grants awarded to VIA's peer agencies:

- DART received a $23 million TIGER grant for the Downtown Dallas streetcar, matched with State and local funds. DART also received a TIGER grant ($5 million) in the form of a Transportation Infrastructure Finance and Innovation Act (TIFIA) payment for the Orange Line Extension project.
- UTA received a $26 million TIGER grant for the Sugar House Streetcar project.
- CapMetro received an $11.3 million TIGER grant for commuter and freight rail enhancements that were part of the Moving Central Texas Program. Other funding for the program included local (sales tax) and private funds.
- SunMetro received a $10.3 million TIGER grant for the Northgate Transfer Center.
- VIA received a TIGER grant of $15 million for the Westside Multimodal Transit Center, now known as the Centro Plaza and the Grand.

Some agencies also have received funding in recent years (which are not reflected in the available NTD data) from new FTA discretionary grant programs under the Moving Ahead for Progress in the 21st Century Act (MAP-21):

- In September 2014, SDMTS received an $18.05 million grant to purchase compressed natural gas (CNG) buses to replace its old fleet under the Bus Ladders of Opportunity program; and
- In February 2015, DART received a grant of $7.64 million under the FTA Low/No-Emission Vehicle Deployment program to purchase all electric buses for the D-Link service.

D.4 Service Demand and Supply

System productivity compares transit ridership (such as passenger trips or passenger miles) to the quantity of transit provided (such as revenue hours or revenue miles). Two peer agencies, TriMet and SDMTS, are standouts for productivity in terms of passenger trips per revenue mile and revenue hour (Figure D.18 and Figure D.19, respectively). Of the remaining peer agencies' systems, most carry between 20 to 30 passengers per hour or one to two passenger trips per mile. In comparison, VIA averages 23 passengers per hour and 1.5 passengers per mile. Evaluating the transit modes independently reveals the following:

- Bus-only productivity at peer agencies has been decreasing steadily. VIA performs well against its peers, with around 30 passenger per revenue-hour on its buses (Figure D.20).

- VIA's productivity for demand response service is similar to its peers, as illustrated in Figure D.21. While VIA's demand response productivity has fallen slightly during this time, it had the second-highest ridership per revenue-hour of its peers in 2013.
- Since VIA began vanpool service in 2006, productivity has increased steadily (Figure D.22). However, the productivity of VIA's vanpool service still lags behind three of the four peer agencies that offer the service.

Figure D.18 Passenger Trips per Revenue-Mile by Agency

System Total

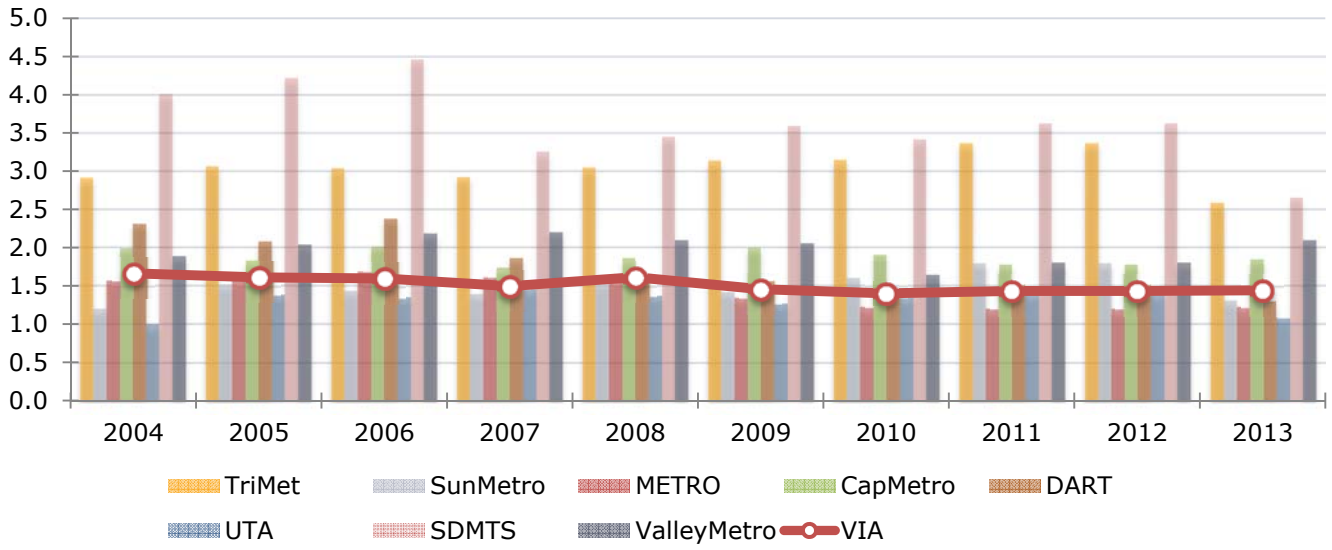


Figure D.19 Passenger Trips per Revenue-Hour by Agency

System Total

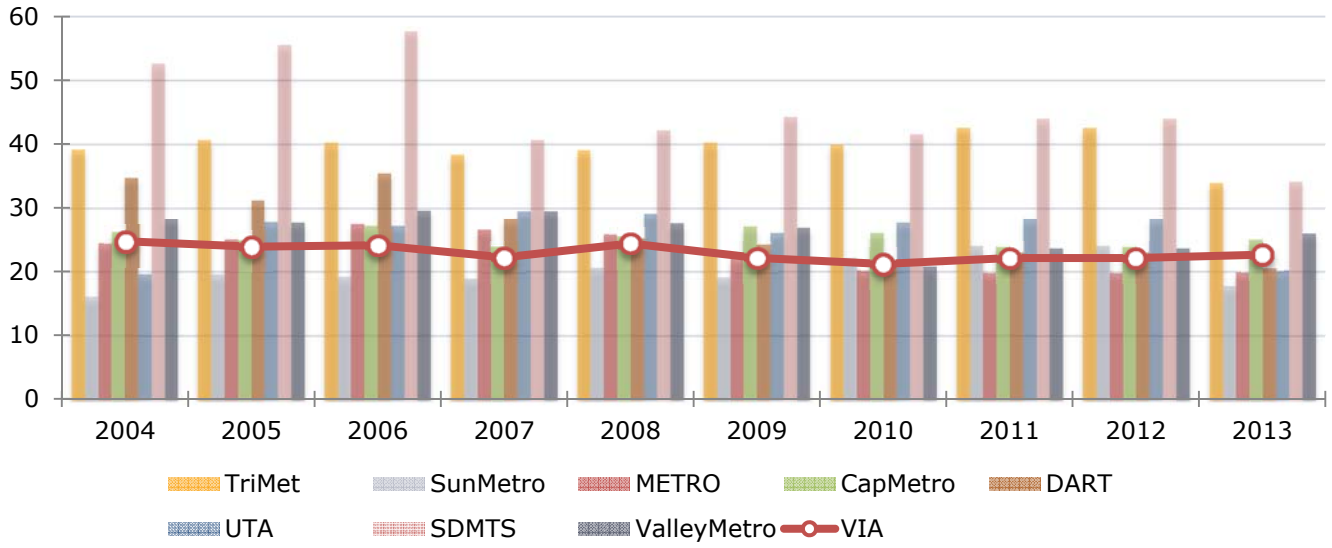


Figure D.20 Passenger Trips per Revenue-Hour by Agency

Bus

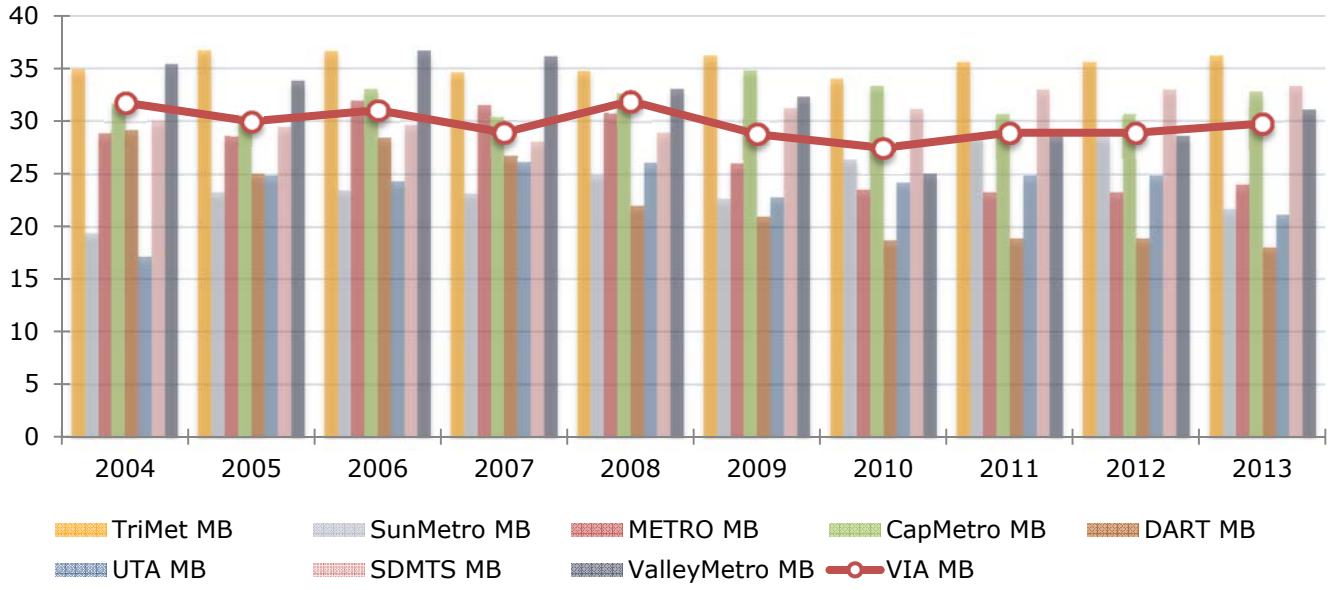


Figure D.21 Passenger Trips per Revenue-Hour by Agency
Demand Response

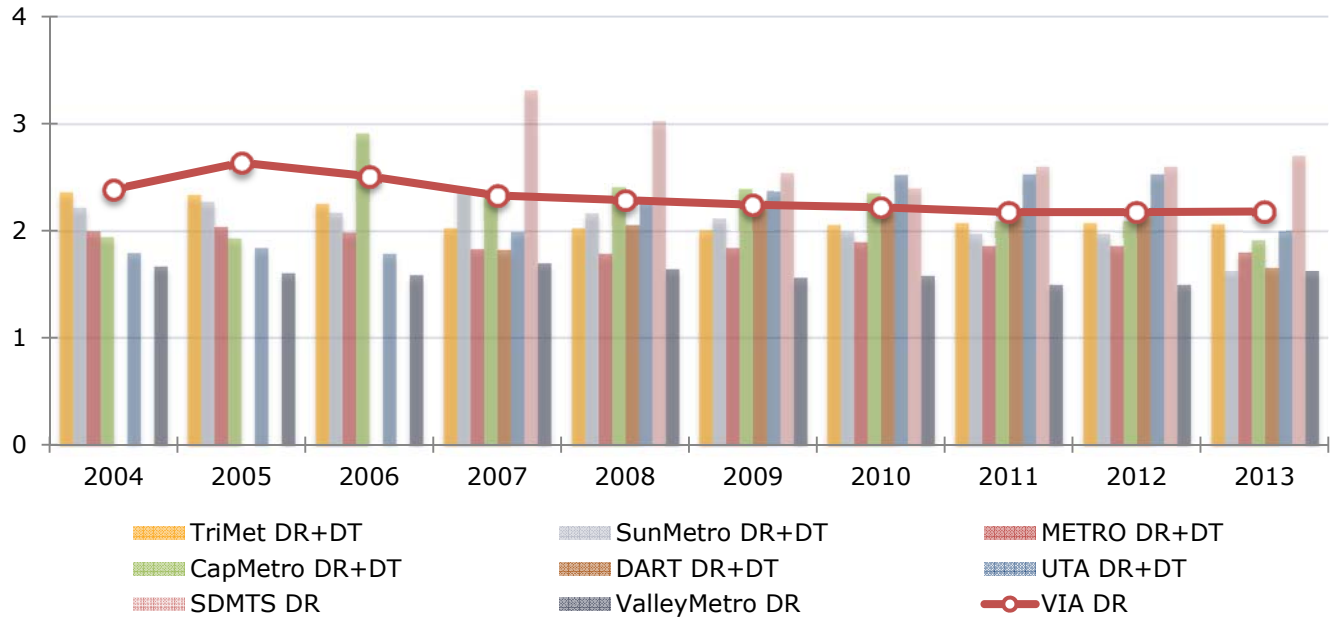
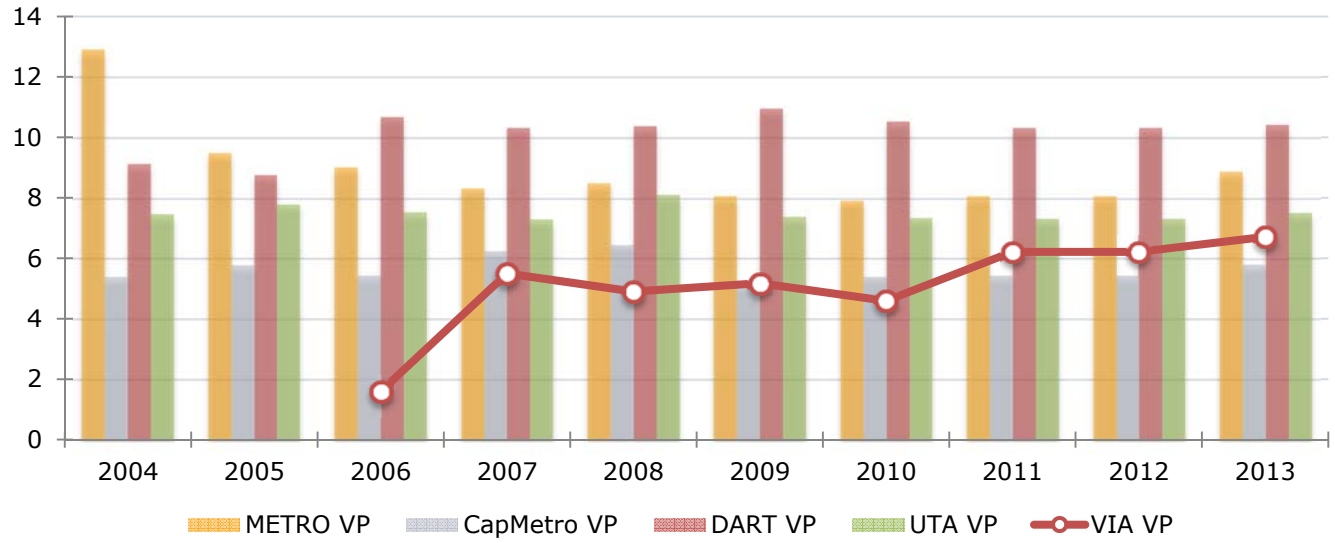


Figure D.22 Passenger Trips per Revenue-Hour by Agency
Vanpool



D.5 Cost Efficiency

Cost efficiency in terms of operating cost per passenger trip is shown by agency in Figure D.23 at the system level and Figure D.24 for bus services. Overall, operating expenses per passenger trip have risen for most agencies. Despite the increasing costs, VIA has consistently operated one of the most cost-effective systems per passenger trip among its peers as well.

Figure D.23 Operating Expense per Passenger Trip by Agency

System Total

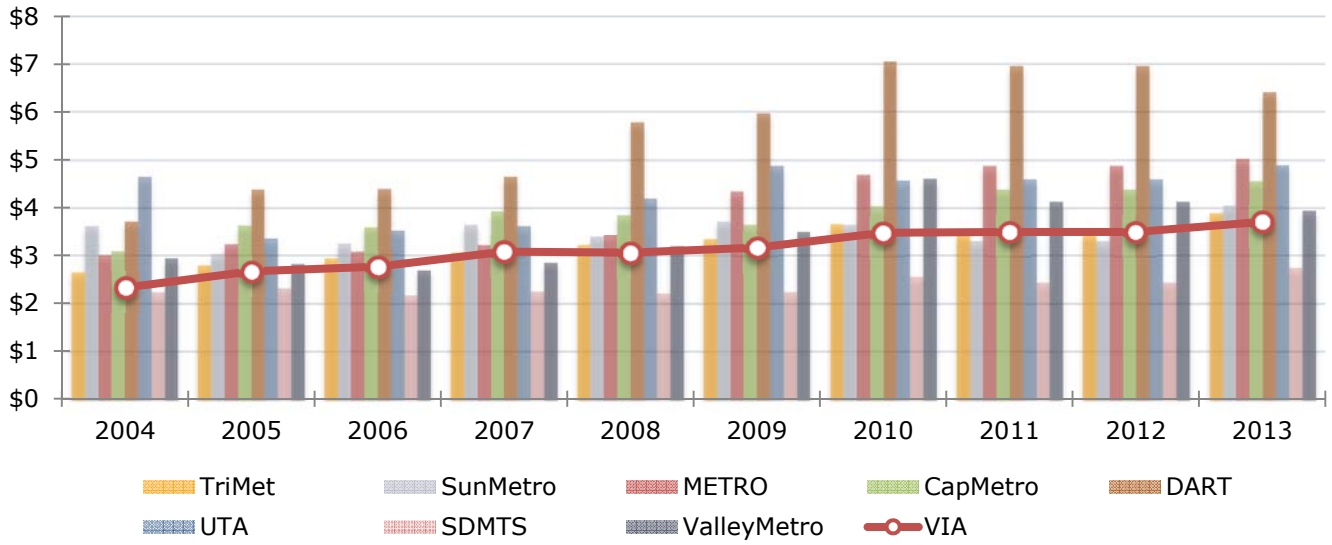
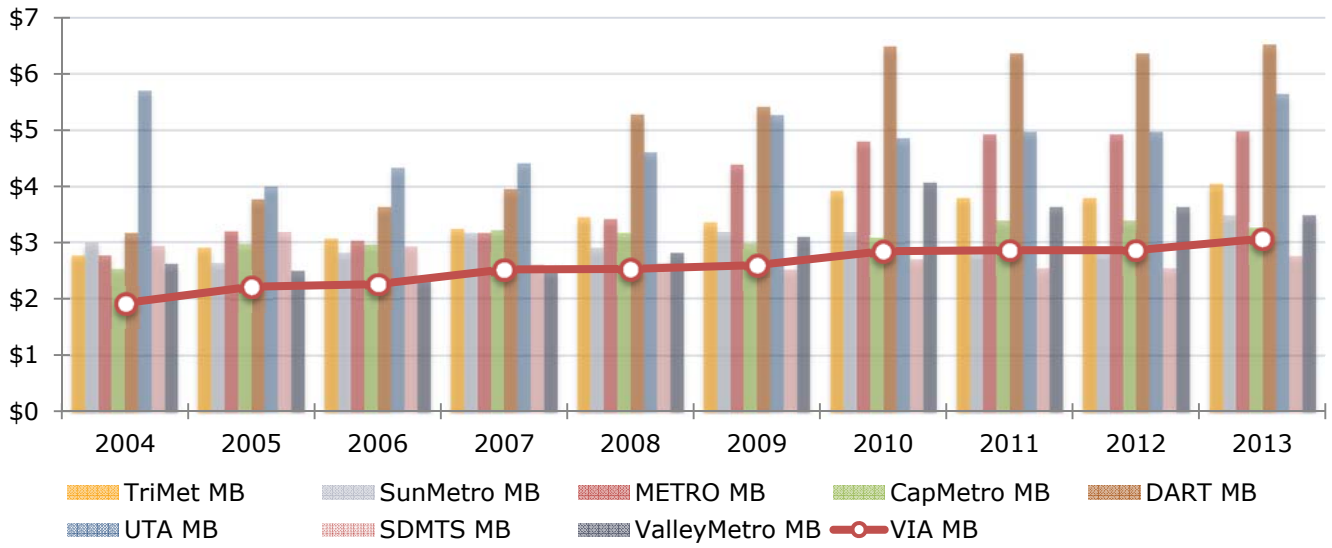


Figure D.24 Operating Expense per Passenger Trip by Agency

Bus



Over the past decade, VIA has been the most cost-effective agency on a per-mile basis among its peers, as shown in Figure 4.5. Costs have risen for all agencies, including VIA, which grew from $3.87 per revenue-mile in 2004 to $5.34 per revenue-mile in 2013 averaged across all modes. In terms of cost effectiveness of bus service alone, VIA has consistently been among the most efficient of its peers (Figure D.26).

Figure D.25 Operating Expense per Revenue-Mile by Agency

System Total

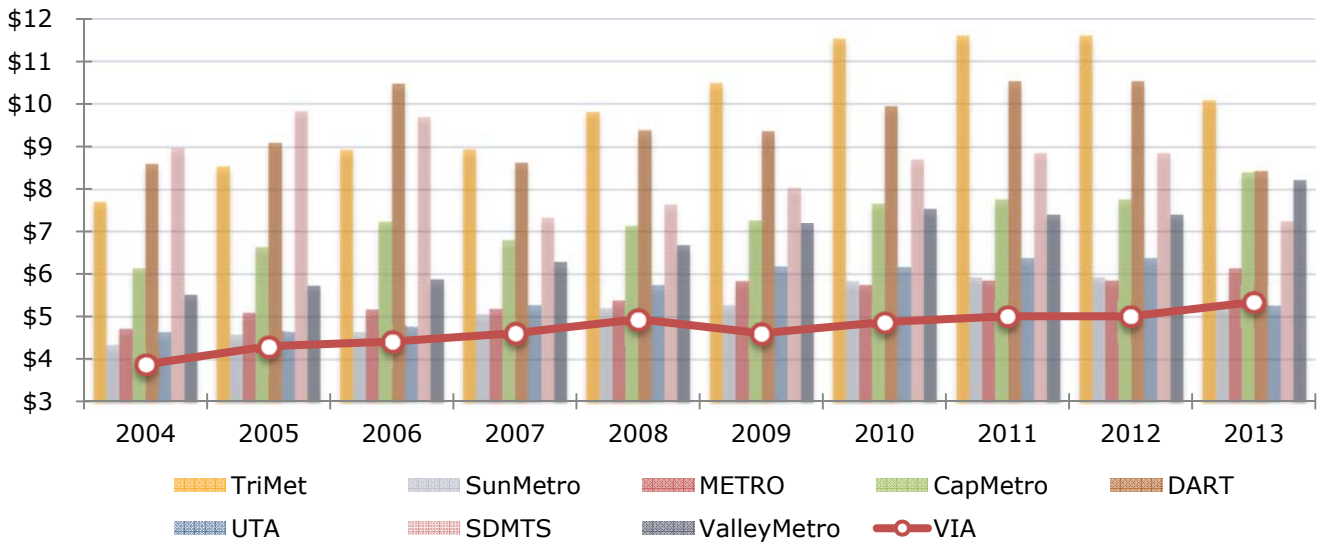
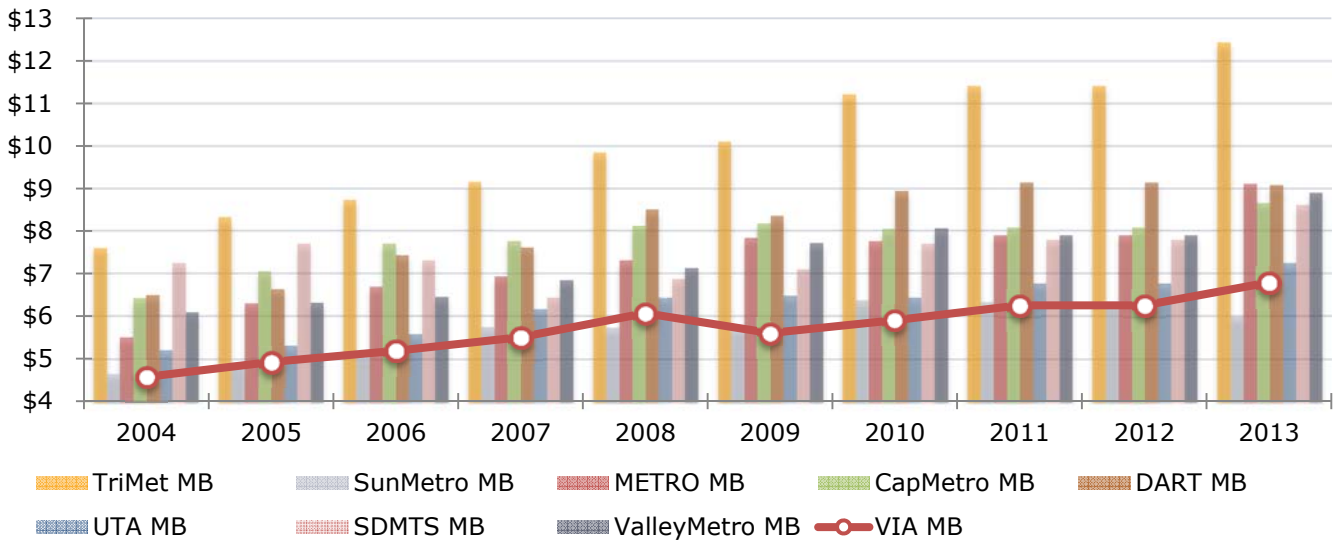


Figure D.26 Operating Expense per Revenue-Mile by Agency

Bus



On a revenue-hour basis, VIA has very low operating expenses when compared with other agencies (Figure D.27 compares trends for the total system, and Figure D.28 compares trends for bus only). Overall, costs per revenue-hour have been rising over the past decade among peer agencies.

Figure D.27 Operating Expense per Revenue-Hour by Agency

System Total

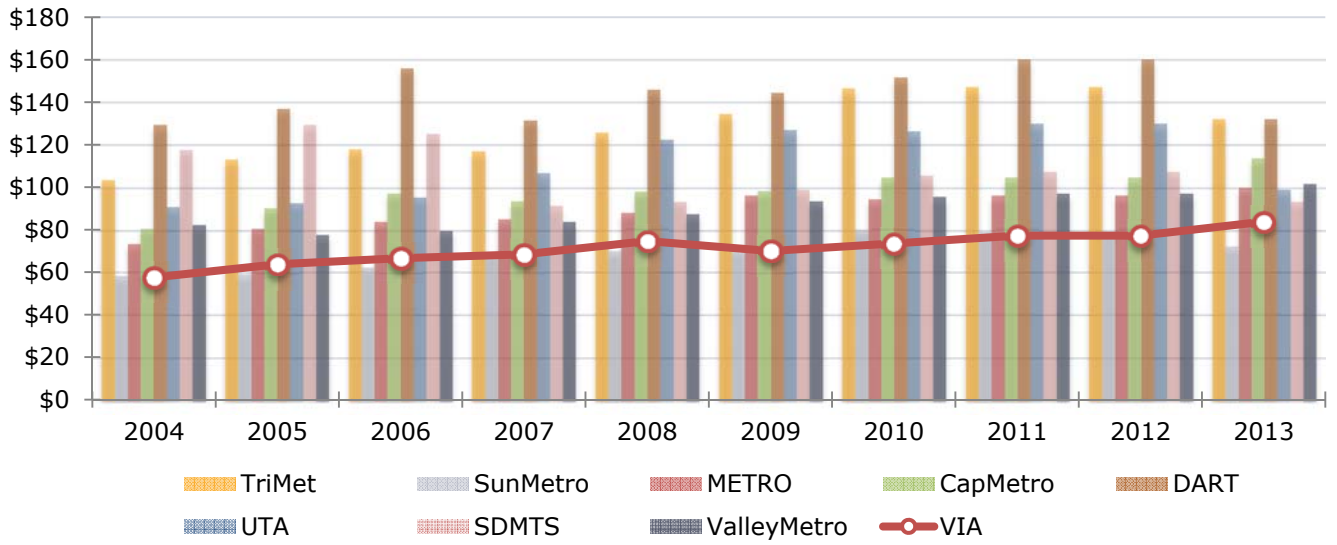


Figure D.28 Operating Expense per Revenue-Hour by Agency

Bus